

# Bonfiglioli

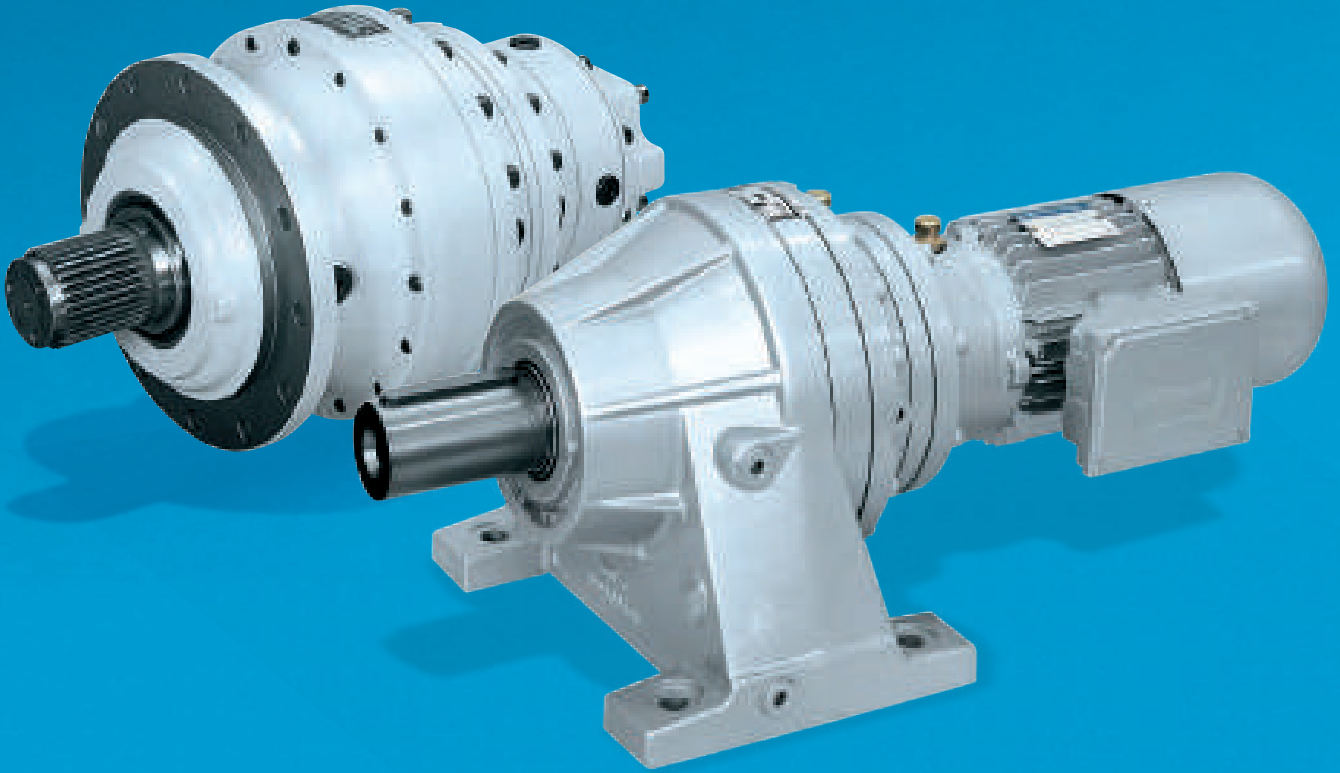
## Riduttori

### 300 Industrial series

Modular planetary gearboxes

### Power Series

 Included



آٲور صنعت

ATOORSANAT



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#### Revisions

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## 1 SYMBOLS AND UNITS OF MEASURE

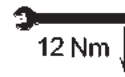
| Symbols    | Units of Measure     | Description   | Symbols    | Units of Measure   | Description  |
|------------|----------------------|---|------------|--------------------|--|
| $A_{c1,2}$ | [N]                  | Calculated thrust load                                  | $p$        | [bar]              | Hydraulic oil pressure   |
| $A_{n1,2}$ | [N]                  | Rated thrust load                                       | $P_1$      | [kW]               | Max transmissible power at gearbox input   |
| $A_{r2}$   | [N]                  | Thrust load at gearbox output shaft                     | $P_1'$     | [kW]               | Transmitted power at gearbox input   |
| $F_h$      | –                    | Lifetime factor for gearbox calculation                 | $P_2$      | [kW]               | Transmitted power at gearbox output  |
| $F_{h1,2}$ | –                    | Lifetime factor for bearing calculation                 | $P_n$      | [kW]               | Motor rated power  |
| $f_{n1,2}$ | –                    | Speed factor referred to input and output shaft loading | $P_{r1}$   | [kW]               | Required input power   |
| $f_L$      | –                    | Lifetime factor   | $P_{r2}$   | [kW]               | Output power at $n_2$ max  |
| $f_m$      | –                    | Increase factor   | $P_{r2}'$  | [kW]               | Output power at $n_2$ min  |
| $f_{h1,2}$ | –                    | Load corrective factor on shafts                        | $P_s$      | [kW]               | Excess power   |
| $f_s$      | –                    | Service factor  | $P_t$      | [kW]               | Gearbox thermal capacity   |
| $f_s'$     | –                    | Service factor required by the application              | $Q$        | [l/min]            | Hydraulic flow rate  |
| $f_t$      | –                    | Thermal factor  | $R_{c1,2}$ | [N]                | Calculated radial load   |
| $f_v$      | –                    | Speed factor  | $R_{n1,2}$ | [N]                | Rated radial load at shaft mid-point   |
| $h$        | [h]                  | Lifetime in hours                                       | $R_{x1,2}$ | [N]                | Rated radial load at gearbox re-calculated with respect to different load application points |
| $i$        | –                    | Reduction ratio   | $t_a$      | [°C]               | Ambient temperature  |
| $K_a$      | –                    | Axial load duty factor                                  | $t_s$      | [°C]               | Surface temperature  |
| $K_r$      | –                    | Radial load factor                                      | $t_o$      | [°C]               | Oil temperature  |
| $l$        | –                    | Intermittence factor                                    | $V$        | [cm <sup>3</sup> ] | Hydraulic motor displacement   |
| $M_2$      | [Nm]                 | Torque delivered to output shaft                        | $V_c$      | [cm <sup>3</sup> ] | (Theoretical) Hydraulic motor displacement   |
| $M_{c2}$   | [Nm]                 | Calculated torque at gearbox output                     | $X$        | [mm]               | Load application distance from shaft shoulder  |
| $M_{2REF}$ | [Nm]                 | Reference torque  | $\eta_d$   | –                  | Dynamic efficiency   |
| $M_{n2}$   | [Nm]                 | Gearbox rated output torque                             | $Z$        | –                  | Frequency of starts  |
| $M_{2max}$ | [Nm]                 | Gearbox max. output torque                              |            |                    |  |
| $M_b$      | [Nm]                 | Rated brake torque                                      |            |                    |  |
| $M_{r1,2}$ | [Nm]                 | Required torque at gearbox                              |            |                    |  |
| $n_{1,2}$  | [min <sup>-1</sup> ] | Angular speed   |            |                    |  |

1 value applies to input shaft  
2 value applies to output shaft





Symbol referring to weight of gearboxes.



The number associated with the wrench symbol indicates the tightening torque for friction coupling screws.



Columns marked with this symbol indicate the reference page showing dimensions.



Negative multidisc brake.



This symbol identifies reference page number.



Hydraulic motor connection.



**DANGER - WARNING**  
This symbol indicates situations of danger, which if ignored, may result in serious injury to the operator.



Cover for standard input flanging.



Inline units.



**IMPORTANT**  
This symbol indicates important technical information.



Right angle units.



Apply to equipment complying with "ATEX" Directive



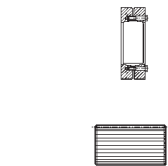
Worm-planetary combined design.



These symbols identify the mounting positions of accessories.



Bevel helical-planetary combined design.



These symbols identify the position of gearbox input (black-filled areas).





## 2 INTRODUCTION

This catalogue presents BONFIGLIOLI RIDOTTORI's range of Series 300 modular planetary gearboxes. The range has been expanded and integrated with new sizes, technical improvements and enhanced modularity right through to the larger sizes. This feature signifies greater flexibility in internal production to ensure quick availability of products in the sizes and types requested either directly from the company or from the many affiliates belonging to the BONFIGLIOLI sales network in various countries around the world.

The gearboxes are tested in conformity with the following standards:

ISO 6336 : 2006 - method B for gears

ISO 281 for bearings

DIN 743 : 2012 for shafts

## 3 ALLOWED TEMPERATURE LIMITS

| Symbols              | Description / Condition   | Value (*)     |             |
|----------------------|---|---------------|-------------|
|                      |   | Synthetic Oil | Mineral Oil |
| $t_a$                | Ambient temperature   |               |             |
| $t_{au \text{ min}}$ | Minimum operating ambient temperature   | -30°C         | -10°C       |
| $t_{au \text{ Max}}$ | Maximum operating ambient temperature   | +50°C         | +40°C       |
| $t_{as \text{ min}}$ | Minimum storage ambient temperature   | -40°C         | -10°C       |
| $t_{as \text{ Max}}$ | Maximum storage ambient temperature   | +50°C         | +50°C       |
| $t_s$                | Surface temperature   |               |             |
| $t_{s \text{ min}}$  | Minimum gearbox surface temperature starting with partial load (#)                                  | -25°C         | -10°C       |
| $t_{sc \text{ min}}$ | Minimum gearbox surface temperature starting with full load   | -10°C         | -5°C        |
| $t_{s \text{ Max}}$  | Maximum casing surface temperature during continuous operation (measured next to the gearbox input) | +100°C        | +100°C (@)  |
| $t_o$                | Oil temperature   |               |             |
| $t_{o \text{ Max}}$  | Maximum oil temperature during continuous operation   | +95°C         | +95°C (@)   |

(\*) = Refer to the table "Selection of the optimal oil viscosity" for further information about minimum and maximum values of different oil viscosity and for using hydraulic circuits. For values of  $t_a < -20^\circ\text{C}$  and  $t_s, t_o > 80^\circ\text{C}$ , choose (as permitted in the product configuration stage) the sealing type of the most suitable material to the type of application. If needed contact Bonfiglioli Technical Service.

(@) = Continuous operation it is not advised if  $t_s$  and  $t_o$  range is  $80^\circ\text{C}$  to  $95^\circ\text{C}$ .

(#) = For full load start-up it is recommended to ramp-up and provide for greater absorption of the motor. If needed, contact Bonfiglioli Technical Service.

## 4 SPECIFICATIONS

The 300 series consist of a range of multi-purpose planetary gearboxes that can be operated by either hydraulic or electric motors. Basic features are:

- 20 frame sizes of modular design
- output torque up to 1,286,700 Nm
- transmissible power up to 1050 kW
- ratios from 3.4:1 to 5234:1
- versions:
  - in-line with 1 to 4 reductions
  - right angle (spiral bevel gear set into first stage) with 2 to 4 reductions
- combinations with:
  - worm gear units
  - bevel-helical gear units
- flange, foot and shaft mounting arrangements
- slow output shafts: keyed, splined male, splined hollow, shrink disk mounted
- input adaptors for:
  - IEC-normalised electric motors
  - integral motor for in-line units up to size 307 and for units combined with bevel helical and worm gears
  - hydraulic motors by major manufacturers and according to SAE J744C
- parallel input shafts
- gearmotors with:
  - electric motors IEC
  - hydraulic orbital motors by BONFIGLIOLI TRASMITAL MG
- negative hydraulic parking brakes for operation by hydraulic motors
- output shaft accessories:
  - flanges
  - pinions
  - splined bars
  - shrink discs

### More design features:

- high ratio of transmissible torque to overall dimensions
- high overhung and axial load capacity due to heavy duty tapered roller bearings featured on H and P versions
- high efficiency
- inner parts are coupled through splined connections rather than keys
- planetary gears mounted onto self-centering carriers to ensure the most even load distribution among planetary gears
- housing made of spheroidal cast iron.

### Configurations

(A 1)

| Configuration | Power                                | Torque                             | Ratios                 | Efficiency | Noise level |
|---------------|--------------------------------------|------------------------------------|------------------------|------------|-------------|
|               | $0.25 \leq P_n \text{ [kW]} \leq 55$ | $M_{2REF} \leq 1286700 \text{ Nm}$ | $3.4 \leq i \leq 2916$ | High       | Medium      |
|               | $0.25 \leq P_n \text{ [kW]} \leq 55$ | $M_{2REF} \leq 656000 \text{ Nm}$  | $7 \leq i \leq 953$    | High       | Medium      |
|               | $0.12 \leq P_n \text{ [kW]} \leq 22$ | $M_{2REF} \leq 656000 \text{ Nm}$  | $370 \leq i \leq 5234$ | Medium     | Low         |
|               | $0.12 \leq P_n \text{ [kW]} \leq 22$ | $M_{2REF} \leq 15680 \text{ Nm}$   | $18.7 \leq i \leq 731$ | High       | Low         |



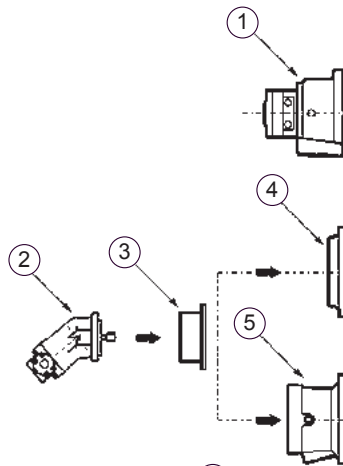
5 VERSIONS

**A** INPUT

**B** REDUCTIONS

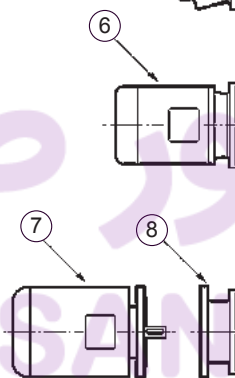
**A**

- 1 Orbital hydraulic motor MG with/without brake
- 2 Hydraulic motor
- 3 Hydraulic motor setting
- 4 Cover
- 5 Negative brake
- 6 Compact electric motor
- 7 IEC electric motor
- 8 Electric motor setting
- 9 Input shaft
- 10 Solid input shaft with fan



**B**

- 11 Right-angle reduction stage
- 12 Single planetary reduction stage
- 13 Two or more planetary reduction stages
- 14 Planetary reduction combined with wormgear unit
- 15 Planetary reduction stage combined with helical bevel gear unit



**C**

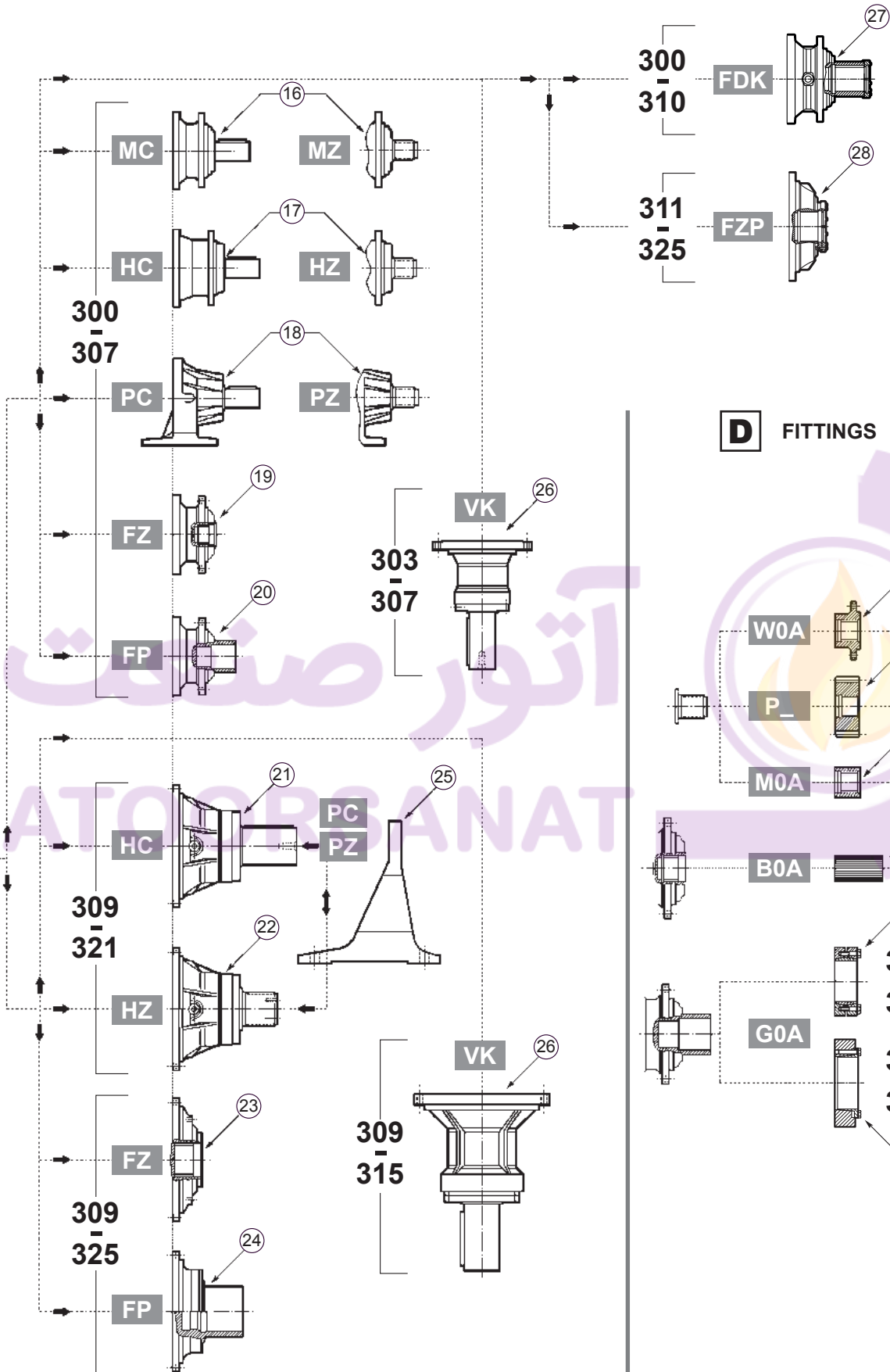
- 16 MC/MZ - Keyed or splined solid shaft output
- 17 HC/HZ - Keyed or splined heavy duty solid output shaft
- 18 PC/PZ - Output with support bracket and keyed or splined solid shaft
- 19 FZ - Splined hollow output shaft
- 20 FP - Hollow output shaft for shrink disc
- 21 HC - Parallel solid output shaft
- 22 HZ - Splined solid output shaft
- 23 FZ - Splined hollow output shaft
- 24 FP - Hollow output shaft for shrink disc
- 25 PC - Foot mount
- 26 VK - Reinforced output with parallel shaft for stirrers and mixers
- 27 FDK - Hollow shaft with double keyway
- 28 FZP - Hollow splined shaft with axial blockage device



**D**

- 29 W0A - Flange
- 30 P\_ - Pinion
- 31 M0A - Sleeve coupling
- 32 End plate
- 33 B0A - Splined bar
- 34 G0A - Shrink disc

**C** OUTPUT



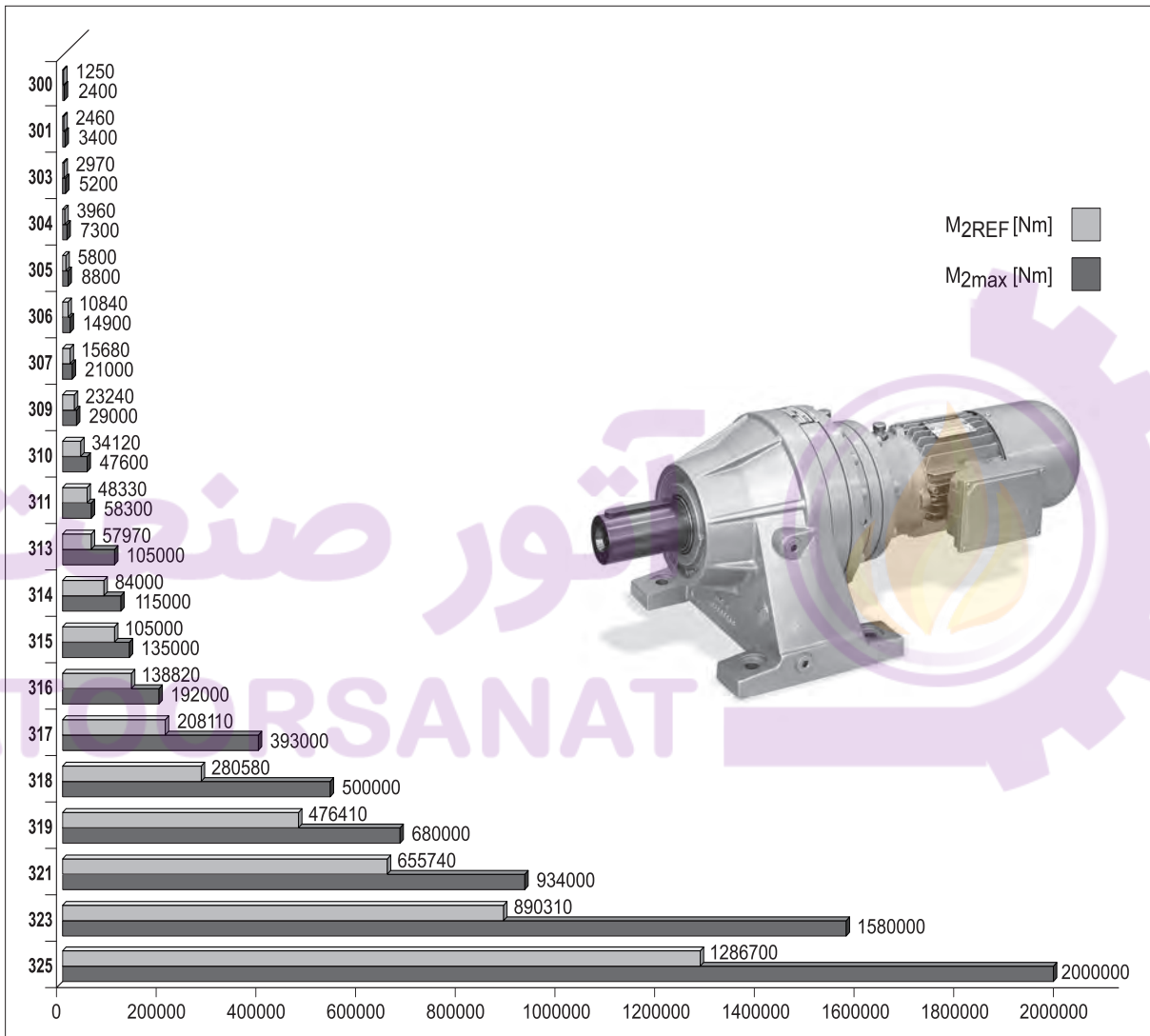


## GENERAL INFORMATION

The following paragraphs contain information on essential elements for selection and correct use of gearmotors.

### 6 OUTPUT TORQUE

(A 2)



#### 6.1 Reference torque $M_{2REF}$ [Nm]

It is the significant value for the size. It is equivalent to the maximum value of nominal torque  $M_{n2}$  for a life factor  $n_2 \times h = 10000$  (referred to single stage configuration L1).

#### 6.2 Rated output torque $M_{n2}$ [Nm]

It is the output torque which the gearbox can transmit with steady load under working condition specified in the calculation method.

### 6.3 Maximum torque $M_{2max}$ [Nm]

It is the output torque that the gearbox can withstand under static or almost static conditions. It is generally meant as a momentary peak load or starting-up torque under load.  
The values in the tables are valid only in versions with output splined shaft (accessories excluded).

### 6.4 Required torque $M_{r2}$ [Nm]

The torque drawn by the application. It must always be equal to or less than rated output torque  $M_{n2}$  for the gearbox under study.

## 7 POWER

### 7.1 Input rated power $P_{n1}$ [kW]

$P_{n1}$  is the maximum power that can be safely applied to the gearbox when the same is operated:

- at a  $n_1$  drive speed
- yielding a theoretical lifetime of 10000 hours
- service factor  $f_s=1$

Check that the formula here below is always satisfied:

$$P_1' \times f_s \leq P_1 \quad (1)$$

### 7.2 Output power $P_2$ [kW]

This value is the net power delivered to the output shaft.  
It can be calculated through the following formulas:

Efficiency values are listed in table (A3).

$$P_2 = P_1 \times \eta_d \quad (2)$$

$$P_2 = \frac{M_{r2} \times n_2}{9550} \quad (3)$$

### 7.3 Thermal power $P_t$ [kW]

This parameter is linked to the gearbox thermal limit. Values for the thermal capacity are listed with-in the rating charts of gearboxes and gearmotors and represent the mechanical power that can be transmitted continuously at an input speed  $n_1$  and at an ambient temperature of 20°C, without the lubricant exceeding the temperature of 85-90°C and the gear case the temperature of 75-80°C, without the use a supplementary cooling system.





## 8 EFFICIENCY

### 8.1 Dynamic efficiency $\eta_d$

The parameter is defined as the relationship of the net power delivered to the output shaft  $P_2$  to the power applied to the input shaft  $P_1$ :

$$\eta_d = \frac{P_2}{P_1} \quad (4)$$

Indicative values for the efficiency are listed in the chart here after.

(A 3)

| No. of reductions | Configuration |                              |                                |
|-------------------|---------------|------------------------------|--------------------------------|
|                   | Planetary     | Combined with worm gear unit | Combined with right-angle unit |
| 1                 | 0.97          | —                            | —                              |
| 2                 | 0.94          | 0.73                         | —                              |
| 3                 | 0.91          | 0.70                         | 0.91                           |
| 4                 | 0.88          | —                            | —                              |

## 9 REDUCTION RATIO $i$

It is defined as the relationship of the speed the input shaft is driven at and the speed delivered at the output shaft of a gearbox.

$$i = \frac{n_1}{n_2} \quad (5)$$

## 10 ANGULAR SPEED

### 10.1 Input speed $n_1$ [min<sup>-1</sup>]

The speed the gearbox is driven at.

The value is coincident with the motor speed if this is directly connected to the gearbox.

Input speed should never exceed the  $n_{1max}$  value listed in the gearbox rating chart.

### 10.2 Output speed $n_2$ [min<sup>-1</sup>]

It is calculated from drive speed  $n_1$  and gear ratio  $i$ , as per the following equation:

$$n_2 = \frac{n_1}{i} \quad (6)$$

## 11 SERVICE FACTOR $f_s$

This is the relationship of the gear unit rated power to the power of the electric motor actually driving the unit.

$$f_s = \frac{P_{n1}}{P_1} \quad (7)$$

## 12 SERVICE FACTOR REQUESTED BY APPLICATION $f_s'$

It's a coefficient that represents the severity of the application. This factor takes into account, although approximately, the type of load the gearbox operates with, the specific duty cycle as well as the operating daily hours.

The table (A4) is of reference when determining the appropriate service factor for the application.

(A 4)

| Service factor $f_s'$ required depending on the application |                              |                           |             |              |               |               |
|---|------------------------------|---------------------------|-------------|--------------|---------------|---------------|
| Type of load  | Number of starts/hour<br>$z$ | Total operating hours (h) |             |              |               |               |
|   |                              | $\leq 5000$               | 10000       | 15000        | 25000         | 50000         |
|   |                              | Daily operating hours (h) |             |              |               |               |
|   |                              | $h < 4$                   | $4 < h < 8$ | $8 < h < 12$ | $12 < h < 16$ | $16 < h < 24$ |
| Uniform load  | $Z < 10$                     | 0.90                      | 1.00        | 1.15         | 1.30          | 1.60          |
|   | $10 < Z < 30$                | 0.95                      | 1.15        | 1.30         | 1.50          | 1.80          |
|   | $30 < Z < 100$               | 1.00                      | 1.25        | 1.45         | 1.60          | 2.00          |
| Moderate shock load   | $Z < 10$                     | 1.00                      | 1.25        | 1.45         | 1.60          | 2.00          |
|   | $10 < Z < 30$                | 1.10                      | 1.40        | 1.60         | 1.80          | 2.20          |
|   | $30 < Z < 100$               | 1.20                      | 1.50        | 1.70         | 2.00          | 2.40          |
| Heavy shock load  | $Z < 10$                     | 1.20                      | 1.50        | 1.70         | 2.00          | 2.40          |
|   | $10 < Z < 30$                | 1.30                      | 1.60        | 1.80         | 2.10          | 2.60          |
|   | $30 < Z < 100$               | 1.40                      | 1.75        | 2.00         | 2.30          | 2.80          |

## 13 LIFE FACTOR $F_{h1}$ , $F_{h2}$

Factor resulting by multiplying angular speed at input ( $n_1$ ) or output ( $n_2$ ) by actual operating working hours  $h$ , break times excluded.

$$F_{h1} = (n_1 \times h) \quad (8)$$

$$F_{h2} = (n_2 \times h) \quad (9)$$

Life factor is directly proportional to gearbox rpms during the whole duty time



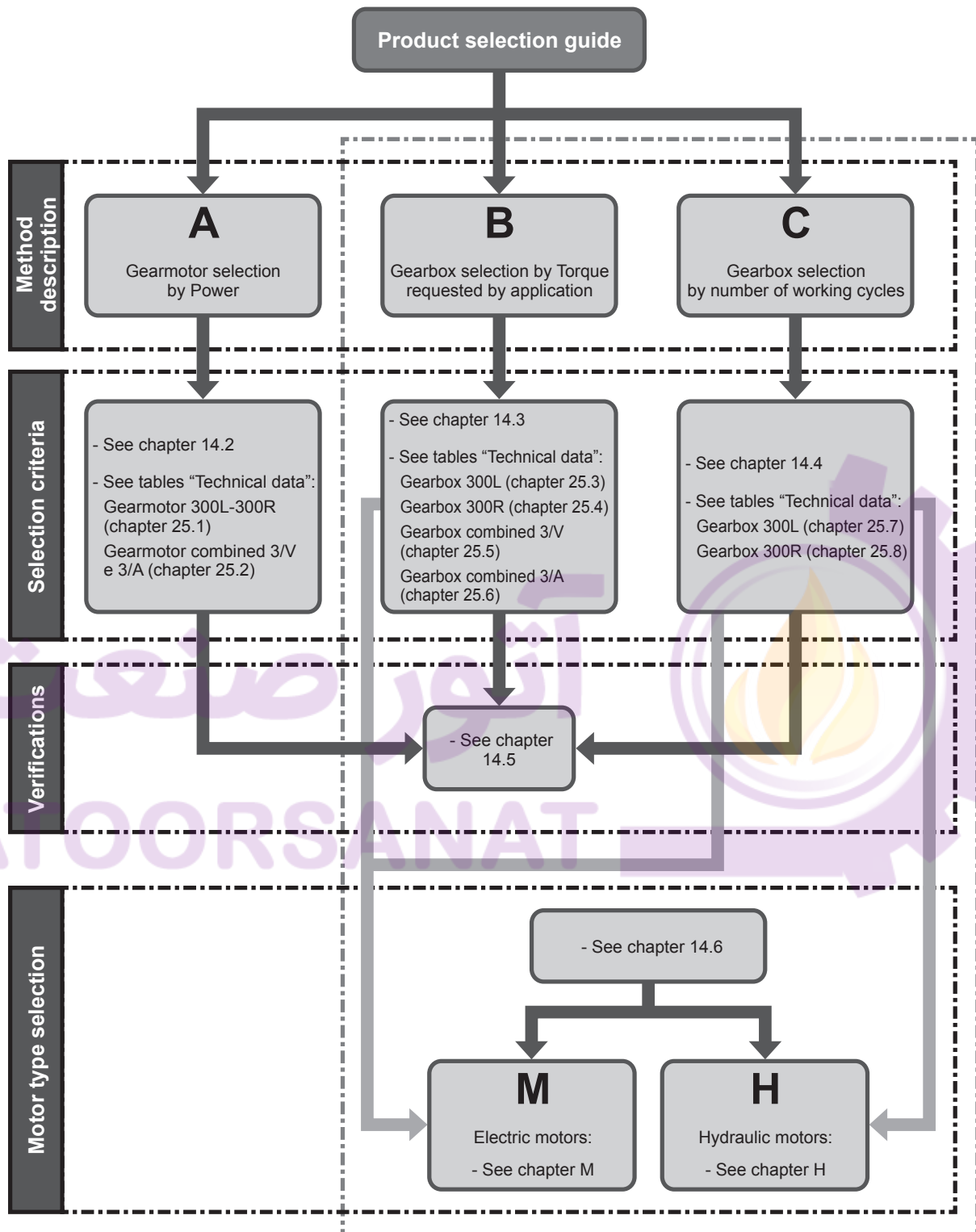
## 14 PRODUCT SELECTION

| Bonfiglioli                               |    | TECHNICAL DATA REQUIRED FOR THE SELECTION OF 300 |   |   |                                 | Nr:                        |   |
|---|----|--|---|---|---------------------------------|----------------------------|---|
|   |    |  |   |   |                                 | Date:                      |   |
|   |    |  |   |   |                                 | Rev_                       | Date:                                     |
| <b>A ) GENERAL DATA</b>                   |    |  |   |   |                                 |                            |   |
| #   | 1  | Company / Customer                               |   |   |                                 |                            |   |
| #   | 2  | Contact  |   |   |                                 |                            |   |
| #   | 3  | Branch / Distributor                             |   |   |                                 |                            |   |
| #   | 4  | Order quantity                                   |   |   |                                 |                            |   |
| #   | 5  | Delivery time                                    |   |   |                                 |                            |   |
| <b>B<sub>1</sub>) ELECTRIC MOTOR</b>      |    |  |   | <b>B<sub>2</sub>) HYDRAULIC MOTOR</b>                         |                                 |                            |   |
| #   | 6  | Motor Type                                       |   |   |                                 |                            |   |
| #   | 7  | $P_{n1}$   | Rated motor Power                             | [kW]  | V                               | Displacement               | [cm <sup>3</sup> ]                        |
| #   | 8  | $P_{r1}$   | Motor power demand                            | [kW]  | $\Delta p$                      | Max drop of pressure       | [bar]                                     |
| #   | 9  | $n_1$  | Input speed                                   | [min <sup>-1</sup> ]  | Q                               | Max oil flow rate          | [l/min]                                   |
| #   | 10 | Pole number                                      |   |   |                                 |                            |   |
| #   | 11 | Motor mounting: B3 - B5 - B14                    |   |   |                                 |                            |   |
| <b>C<sub>1</sub>) PLANETARY GEARBOX</b>   |    |  |   | <b>C<sub>2</sub>) ATEX CONDITION [ GROUP II ] -2014/34/EU</b> |                                 |                            |   |
| #   | 12 | Gearbox configuration                            |   |   |                                 |                            |   |
| #   | 13 | i  | Gear ratio                                    | Category: [2=standard / 3=special]                            |                                 |                            |   |
| #   | 14 | $n_2$  | Output speed                                  | [min <sup>-1</sup> ]  | Atmosphere: [G=gas / D=dust]    |                            |   |
| #   | 15 | $M_{r2}$   | Output torque demand                          | [Nm]  | Zone: [1 - 21 / 2 - 22]         |                            |   |
| #   | 16 | $M_{p2}$   | Peak torque demand                            | [Nm]  | Temperature Class [T4 / 135 °C] |                            |   |
| #   | 17 | $f_s$  | Service factor demand                         |   |                                 |                            |   |
| #   | 18 | Rotation of the output shaft [frontal view]:     |   | CW  |                                 | CCW                        |   |
| #   | 19 | $L_{10H}$  | Bearings lifetime                             | [h]   |                                 |                            |   |
| #   | 20 | Gears lifetime                                   |   | [h]   |                                 |                            |   |
| #   | 21 | $SF_{min}$                                       | Safety for tooth root stress                  | standard reference (ISO preferred)                            |                                 |                            |   |
| #   | 22 | $SH_{min}$                                       | Safety for flank pressure                     | standard reference (ISO preferred)                            |                                 |                            |   |
| <b>D ) ADDITIONAL LOADS</b>               |    |  |   |   |                                 |                            |   |
| #   | 23 | $R_{c2}$   | Radial load on output shaft                   | [N]   |                                 |                            |   |
| #   | 24 | $x_2$  | Load application distance from shaft shoulder | [mm]  |                                 |                            |   |
| #   | 26 | $R_{c1}$   | Radial load on input shaft                    | [N]   |                                 |                            |   |
| #   | 27 | $x_1$  | Load application distance from shaft shoulder | [mm]  |                                 |                            |   |
| #   | 29 | $A_{n2}$   | Thrust load on output shaft (+ / -)           | [N]   |                                 |                            |   |
| #   | 30 | $A_{n1}$   | Thrust load on input shaft (+ / -)            | [N]   |                                 |                            |   |
| <b>E ) APPLICATION</b>                    |    |  |   |   |                                 |                            |   |
| #   | 31 | Type of application                              |   |   |                                 |                            |   |
| #   | 32 | Duty cycle                                       |   | Time phase %  | Time phase hours                | Gearbox output torque [Nm] | Gearbox output speed [min <sup>-1</sup> ] |
|   |    |  |   | ****  | ****                            |                            |   |
|   |    |  |   | ****  | ****                            |                            |   |
|   |    |  |   | ****  | ****                            |                            |   |
|   |    |  |   | ****  | ****                            |                            |   |
|   |    |  |   | ****  | ****                            |                            |   |
|   |    |  |   | ****  | ****                            |                            |   |
| #   | 33 | Notes about Duty Cycle:                          |   |   |                                 |                            |   |
|   |    | Duty type  |   | S1  | S2                              | S3                         | S4-S8                                     |
| #   | 34 | $v_A$  | Ambient air velocity                          | [m/s]   | ≤ 0.5                           | > 0.5 ≤ 1.4                | > 1.4                                     |
| #   | 35 | $t_a$  | Ambient temperature range                     | [°C]  |                                 |                            |   |
| #   | 36 | Altitude a.s.l.                                  |   | [m]   |                                 |                            |   |
| #   | 37 | Rating according FEM class                       |   | T-  | L-                              | M-                         |   |
| <b>F ) OPTIONS OR ADDITIONAL REQUESTS</b> |    |  |   |   |                                 |                            |   |
| #   | 38 | Lubrication                                      |   |   |                                 |                            |   |
| #   | 39 | Supplementary cooling systems                    |   |   |                                 |                            |   |
| #   | 40 | Paint coating                                    |   |   |                                 |                            |   |
| #   | 41 | To specific requests for testing                 |   |   |                                 |                            |   |
| <b>G ) NOTES</b>                          |    |  |   |   |                                 |                            |   |
| #   | 42 | Notes and additional Customer requirements:      |   |   |                                 |                            |   |
| #   | 43 | PLP number if present for Special Gearbox        |   |   |                                 |                            |   |

# Mandatory for the selection

The form, duly filled in, can be forwarded to our Technical Service which will assist the Customer in selecting the most suitable drive for the specific application.

14.1 PRODUCT SELECTION GUIDE



**NOTE:**

The selection criteria and specifications reported in this catalogue are not valid for every and each application, including those where the gearbox operates as a safety device preventing injury to persons or damage to objects, as is the case with hoisting equipment.

For these applications, the gearbox should be selected according to specific criteria and in compliance with the applicable safety regulations. Should this be the case we recommend that you seek advice from BONFIGLIOLI Technical Service.



For the selection of gear units in ATEX configuration, see also the specific chapter on page 480.

## 14.2 METHOD A (Gearbox selection by power)

Based on application type, it should be defined :

a) Required service factor  $f_s'$  (see tab A4);

b) Required drive power:

$$P_{r1} = \frac{M_{r2} \times n_2}{9550 \times \eta_d} \quad (10)$$

Table (A3) lists the indicative values of efficiency  $\eta_d$  for the different types of gearboxes.

c) After required power  $P_{r1}$  and output speed  $n_2$  are known, locate the gearmotor rating charts and select the one relevant to normalized power  $P_n$  equal to or greater than  $P_{r1}$ :

$$P_n \geq P_{r1} \quad (11)$$

Unless otherwise specified, power  $P_n$  listed in the motor rating chart refers to continuous duty S1. For motors operating in conditions other than S1, determine type of duty according to CEI 2-3/IEC 60034-1 standards.

Note that for duty cycles from S2 to S8 and motor frame sizes up to 132 included, power may be upgraded over that specified for continuous duty. In this event, the condition to be verified is the following:

$$P_n = \frac{P_{r1}}{f_m} \quad (12)$$

The adjusting factor  $f_m$  can be obtained from table (A5).

|       | DUTY           |      |      |                        |      |     | Please contact us |
|-------|----------------|------|------|------------------------|------|-----|-------------------|
|       | S2             |      |      | S3*                    |      |     |                   |
|       | Cycle duration |      |      | Cyclic duration factor |      |     |                   |
|       | 10             | 30   | 60   | 25%                    | 40%  | 60% |                   |
| $f_m$ | 1.35           | 1.15 | 1.05 | 1.25                   | 1.15 | 1.1 |                   |

\* Cycle time must be equal to or less than 10 minutes. Should this not be the case contact our Technical Service for assistance.

Cyclic duration rate: see formula (25).

For the output speed  $n_2$ , or closest to, select the gearmotor that yields a service factor  $f_s$  meeting the following condition:

$$f_s \geq f_s' \quad (13)$$



In case of FP configuration, please see Verification paragraph (chapter 14.5 - item g) .

### 14.3 METHOD B (Gearbox selection by Torque requested by application)

Based on application type, it should be defined :

a) Required service factor  $f_s'$  (see tab A4);

b) Determine calculated torque according to required output torque  $M_{r2}$  as follows:

$$M_{c2} = M_{r2} \times f_s' \quad (14)$$

c) Determine gear ratio from required output speed  $n_2$  and drive speed  $n_1$ :

$$i = \frac{n_1}{n_2} \quad (15)$$

d) Once  $M_{c2}$  and  $i$  are determined, locate the gearbox rating chart for the drive speed  $n_1$  and select a gearbox featuring the ratio  $i$  nearest to calculated ratio that also satisfies the condition:

$$M_{n2} \geq M_{c2} \quad (16)$$

If a IEC-normalised motor is to be fitted onto the gearbox, check availability of the applicable adapter.



In case of FP configuration, please see Verification paragraph (chapter 14.5 - item g) .

### 14.4 METHOD C (Gearbox selection by number of working cycles)

a) Determine the following according to the required application:

- Required service factor  $f_s'$  (see tab. A4)
- required gearbox working life  $h$
- required drive unit (hydraulic, electric or others).

b) Define the calculated torque with the required output torque  $M_{r2}$ :

$$M_{c2} = M_{r2} \times f_s' \quad (17)$$

c) Calculate the life factor with required working life  $h$  and output speed  $n_2$ :

$$Fh_2 = (n_2 \times h) \quad (18)$$

d) Calculate the required reduction ratio:

$$i = \frac{n_1}{n_2} \quad (19)$$



e) Select gearbox size which, having a reduction ratio close to the calculated value, which satisfies the following

$$M_{c2} \leq M_{n2} \quad (20)$$

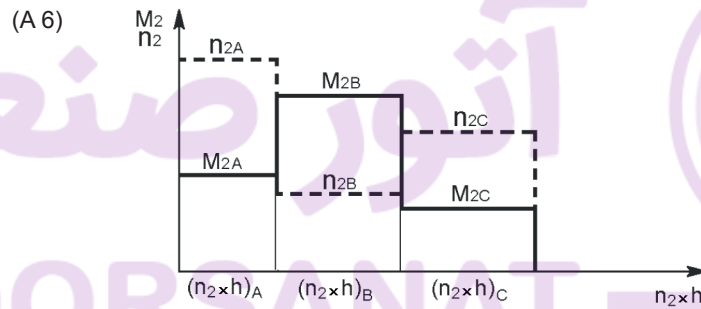
$$Fh_2 \leq (n_2 \times h) \quad (21)$$

where  $M_{n2}$  and  $Fh_2$  are indicated in the tables on technical features for each gearbox size.

In case of applications in which the required torque  $M_{r2}$  and speed  $n_2$  vary within a wide range, best selection could be an equivalent required torque given by:

$$M_{r2} = \sqrt[4]{\frac{(n_2 \times h)_A \times M_A^4 + (n_2 \times h)_B \times M_B^4 + (n_2 \times h)_C \times M_C^4 + \dots}{(n_2 \times h)_A + (n_2 \times h)_B + (n_2 \times h)_C + \dots}} \quad (22)$$

referred to:



and calculating the life factor  $Fh$  with:

$$Fh_{calc} = (n_2 \times h)_A + (n_2 \times h)_B + (n_2 \times h)_C + \dots \quad (23)$$



Then follow the same procedure as specified in d) and e).

In case of **FP** configuration, please see Verification paragraph (chapter 14.5 - item g) .



## 14.5 VERIFICATION

After selecting the drive units, please check the following:

### a) Thermal power

Make sure that the thermal capacity of the gearbox is equal to or greater than the the mechanical power required by the application, as per equation (24).

If this is not the case provide a supplementary cooling system or select a larger gearbox.

When the duty cycle is formed by short operating periods and rest time is long enough for the unit to cool down, the thermal capacity is hardly significant and it may be omitted from calculation.

For ambient temperatures other than 20°C, intermittent duty and drive speed  $n_1$  other than the reference speed listed in the rating charts,  $P_t$  is to be adjusted through thermal factor  $f_t$  and/or speed factor  $f_v$  as listed in table (A7).

Finally, make sure that the following condition is always satisfied:

$$P_{r1} \leq P_t \times f_t \times f_v \quad (24)$$

(A7)

| $t_a \text{ max. } [^{\circ}\text{C}]$ | Continuous duty | $f_t$                        |     |     |     |
|--|-----------------|------------------------------|-----|-----|-----|
|  |                 | Intermittent duty            |     |     |     |
|  |                 | Cyclic duration factor % (I) |     |     |     |
|  |                 | 80                           | 60  | 40  | 20  |
| 10                                     | 1.2             | 1.3                          | 1.6 | 1.8 | 2.0 |
| 20                                     | 1.0             | 1.1                          | 1.3 | 1.5 | 1.7 |
| 30                                     | 0.9             | 1.0                          | 1.2 | 1.3 | 1.5 |
| 40                                     | 0.7             | 0.8                          | 0.9 | 1.0 | 1.2 |
| 50                                     | 0.5             | 0.6                          | 0.7 | 0.8 | 0.9 |

| $n_1$ | $f_v$ |
|-------|-------|
| 500   | 1.35  |
| 900   | 1.2   |
| 1500  | 1.0   |
| 1800  | 0.85  |

Cyclic duration factor is the relationship of operating time under load  $t_f$  to total cycle time ( $t_f + t_r$ , where  $t_r$  stands for time at rest), expressed as a percentage.

$$I = \frac{t_f}{t_f + t_r} \times 100 \quad (25)$$

Should the gear unit in the conventional configuration fall short of thermal capacity and not verify the condition (24) above, it is recommended that the fan cooled input shaft - ordering code FV\_\_ is specified instead. The relevant thermal capacity is listed in the charts here after.



(A 8)

|     |    | Thermal capacity<br>$P_t$ [kW] @ $n_1 = 1450 \text{ min}^{-1}$ |       |       |       |        |        |
|-----|----|--|-------|-------|-------|--------|--------|
|     |    |  |       |       |       |        |        |
|     |    | FV05B  | FV06B | FV07A | FV07B | FV010B | FV011B |
| 303 | L1 | 29   | -     | -     | -     | -      | -      |
| 304 | L1 | 30   | -     | -     | -     | -      | -      |
| 305 | L1 | 31   | -     | -     | -     | -      | -      |
| 306 | L1 | -  | 45    | -     | -     | -      | -      |
|     | L2 | 31   | -     | -     | -     | -      | -      |
| 307 | L1 | -  | -     | 49    | 49    | -      | -      |
|     | L2 | 36   | -     | -     | -     | -      | -      |
| 309 | L1 | -  | -     | 52    | 52    | -      | -      |
|     | L2 | 36   | -     | -     | -     | -      | -      |
| 310 | L1 | -  | -     | -     | -     | 62     | -      |
|     | L2 | -  | 49    | -     | -     | -      | -      |
|     | L3 | 36   | -     | -     | -     | -      | -      |
| 311 | L1 | -  | -     | -     | -     | -      | 62 (*) |
|     | L2 | -  | -     | 53    | 52    | -      | -      |
|     | L3 | 36   | -     | -     | -     | -      | -      |
| 313 | L1 | -  | -     | -     | -     | -      | -      |
|     | L2 | -  | -     | 57    | 57    | -      | -      |
|     | L3 | 36   | -     | -     | -     | -      | -      |
| 314 | L2 | -  | -     | -     | -     | 67     | -      |
|     | L3 | -  | 52    | -     | -     | -      | -      |
|     | L4 | 33   | -     | -     | -     | -      | -      |
| 315 | L2 | -  | -     | -     | -     | -      | 72 (*) |
|     | L3 | -  | -     | 57    | 57    | -      | -      |
|     | L4 | 36   | -     | -     | -     | -      | -      |
| 316 | L2 | -  | -     | -     | -     | -      | 72 (*) |
|     | L3 | -  | -     | 57    | 57    | -      | -      |
|     | L4 | 36   | -     | -     | -     | -      | -      |
| 317 | L2 | -  | -     | -     | -     | -      | 77 (*) |
|     | L3 | -  | -     | 62    | 62    | -      | -      |
|     | L4 | 36   | -     | -     | -     | -      | -      |
| 318 | L3 | -  | -     | -     | -     | -      | 62 (*) |
|     | L4 | -  | -     | 45    | 45    | -      | -      |
| 319 | L3 | -  | -     | -     | -     | -      | 77 (*) |
|     | L4 | -  | -     | 57    | 57    | -      | -      |
| 321 | L3 | -  | -     | -     | -     | -      | 87 (*) |
|     | L4 | -  | -     | 62    | 62    | -      | -      |
| 323 | L4 | -  | -     | -     | -     | -      | 87 (*) |
| 325 | L4 | -  | -     | -     | -     | -      | 87 (*) |

|     |        | Thermal capacity<br>$P_t$ [kW] @ $n_1 = 1450 \text{ min}^{-1}$ |       |
|-----|--------|--|-------|
|     |        |  |       |
|     |        | FV05B  | FV06B |
| 307 | R2     | 52   | -     |
| 309 | R2     | 52   | -     |
| 310 | R2 (B) | -  | 82    |
|     | R2 (C) | -  | 82    |
| 311 | R2 (B) | -  | 102   |
|     | R2 (C) | -  | 117   |
|     | R3     | 58   | -     |
| 313 | R2 (B) | -  | 102   |
|     | R2 (C) | -  | 117   |
|     | R3     | 58   | -     |
| 314 | R3 (B) | -  | 82    |
|     | R3 (C) | -  | 82    |
|     | R4     | -  | -     |
| 315 | R3 (B) | -  | 102   |
|     | R3 (C) | -  | 117   |
|     | R4     | 58   | -     |
| 316 | R3 (B) | -  | 102   |
|     | R3 (C) | -  | 117   |
|     | R4     | 63   | -     |
| 317 | R3 (B) | -  | 117   |
|     | R3 (C) | -  | 127   |
|     | R4     | 68   | -     |
| 318 | R4 (B) | -  | 108   |
|     | R4 (C) | -  | 137   |
| 319 | R4 (B) | -  | 122   |
|     | R4 (C) | -  | 142   |
| 321 | R4 (B) | -  | 132   |
|     | R4 (C) | -  | 152   |

\* @  $n_1 = 1150 \text{ min}^{-1}$

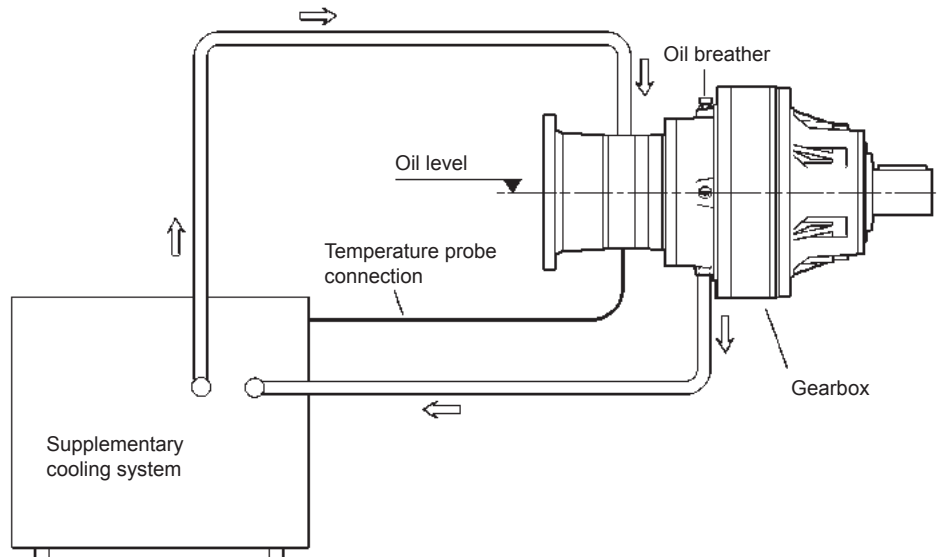
**NOTE: The thermal power values indicated in the selection charts for each size apply to the versions without negative multidisc brake.**

**For the versions fitted with brakes, please contact our sales organization.**

### b) Supplementary cooling systems

In the event transmitted mechanical power is higher than transmissible thermal power (see tables of gearbox specifications), gearboxes are available complete with a cooling system.

These separate cooling systems are made up of an air-oil heat exchanger, a motor pump, a filter for warm oil and an electric system that incorporates an overload cutout for electric motors. A special feature of these cooling systems is their low noise.



### Technical data

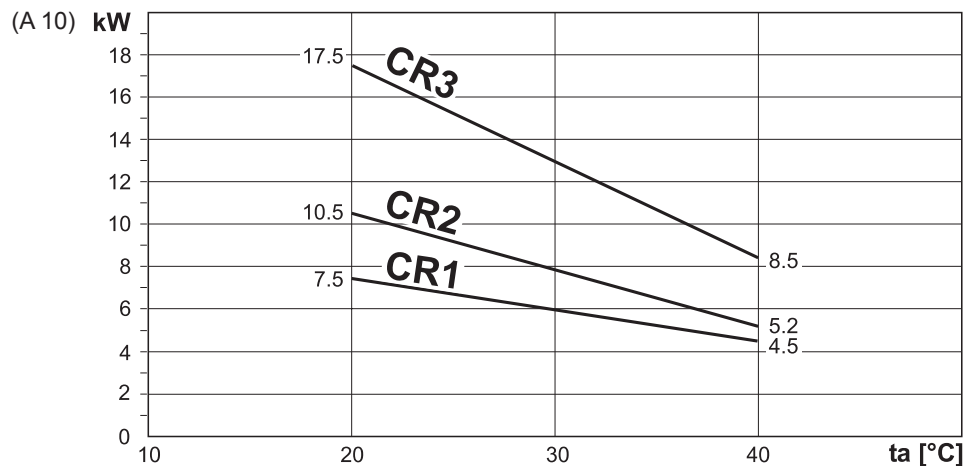
| (A 9)                |                     | CR1  | CR2  | CR3  |
|----------------------|---------------------|------|------|------|
| Power absorption     | [kW]                | 0.55 | 0.75 | 1.1  |
| Pumpflow             | [l/min]             | 13   | 22   | 34   |
| Air flow             | [m <sup>3</sup> /h] | 850  | 1500 | 2000 |
| Noise level at 1 mt. | [dB(A)]             | 68   | 70   | 75   |
| Weight               | [kg]                | 24   | 36   | 58   |

### Selection criteria

Power  $P$  to be transmitted is known. Once you have determined that it is higher than thermal power  $P_t$ , calculate excess power  $P_s$  using this formula:

$$P_s = 0.1 \times (P - P_t) \quad (26)$$

Select cooling system size in chart (A10) according to ambient temperature  $t_a$  (20° - 40°C). Check that the cooling system you have selected will fit the gearbox (see table A11). If this is not the case, contact our sales organization.

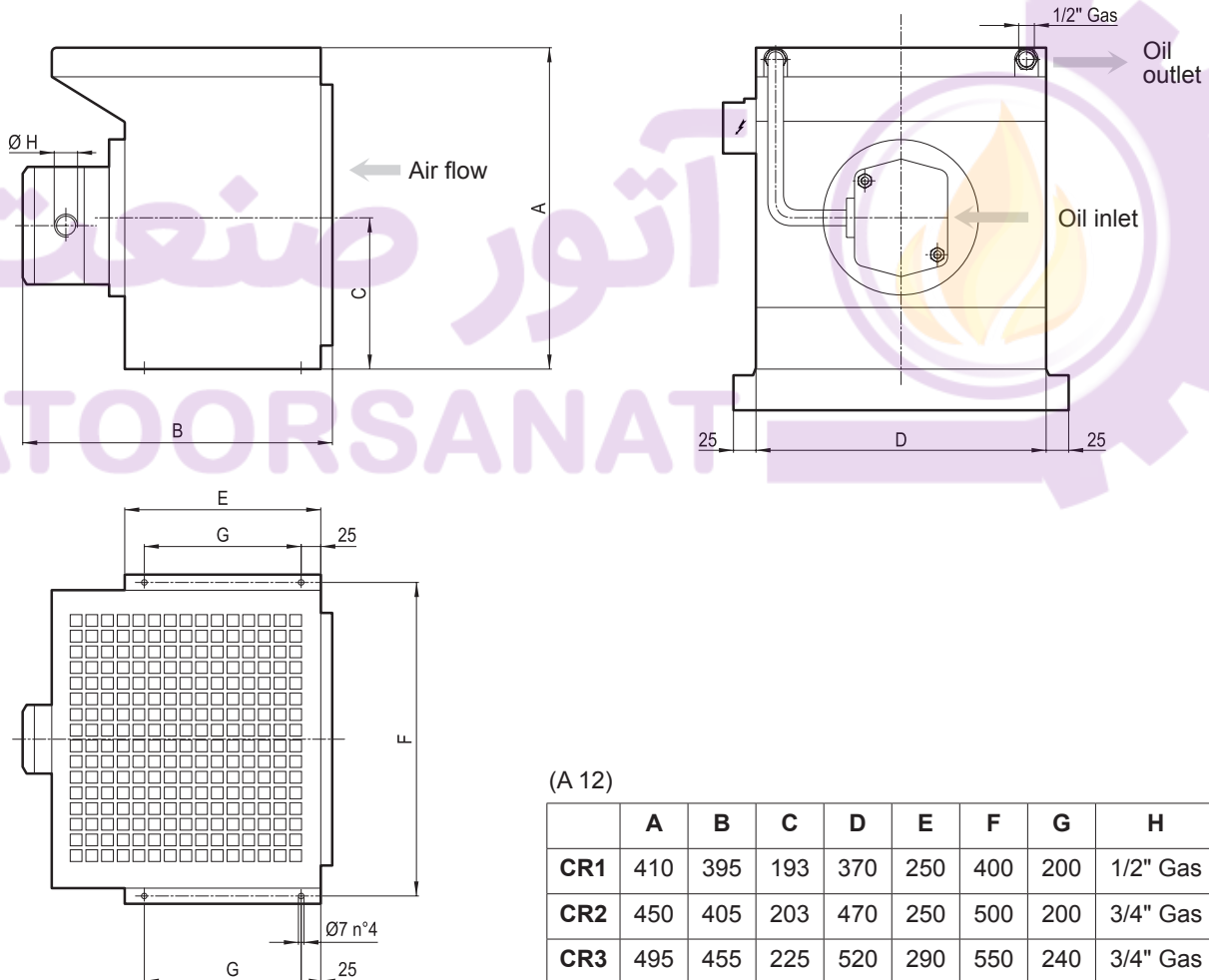




(A 11)

| Gearbox | L1  | L2  | L3  | L4  | R2  | R3  | R4 |
|---------|-----|-----|-----|-----|-----|-----|----|
| 306     | CR1 | CR1 | —   | —   | —   | —   | —  |
| 307     | CR1 | CR1 | —   | —   | CR1 | —   | —  |
| 309     | CR1 | CR1 | CR1 | —   | CR1 | —   | —  |
| 310     | CR2 | CR1 | CR1 | —   | —   | CR1 | —  |
| 311     | CR2 | CR1 | CR1 | —   | CR1 | CR1 | —  |
| 313     | CR2 | CR1 | CR1 | —   | CR1 | CR1 | —  |
| 314     | CR3 | CR2 | CR1 | —   | —   | CR1 | —  |
| 315     | CR3 | CR2 | CR1 | —   | —   | CR1 | —  |
| 316     | CR3 | CR2 | CR1 | —   | —   | CR1 | —  |
| 317     | CR3 | CR2 | CR2 | CR1 | —   | —   | —  |
| 318     | CR3 | CR2 | CR2 | CR1 | —   | —   | —  |
| 319     | CR3 | CR2 | CR2 | CR1 | —   | —   | —  |
| 321     | CR3 | CR2 | CR2 | CR2 | —   | —   | —  |

Dimensions



(A 12)

|     | A   | B   | C   | D   | E   | F   | G   | H        |
|-----|-----|-----|-----|-----|-----|-----|-----|----------|
| CR1 | 410 | 395 | 193 | 370 | 250 | 400 | 200 | 1/2" Gas |
| CR2 | 450 | 405 | 203 | 470 | 250 | 500 | 200 | 3/4" Gas |
| CR3 | 495 | 455 | 225 | 520 | 290 | 550 | 240 | 3/4" Gas |

**c) Maximum torque**

Make sure that neither the momentary peak torque nor the starting torque under load ever exceed the  $M_{2max}$  value that the gearbox is rated for (see figure A2).

**d) Radial loads**

Examine the application and establish:

- overhung load applying to input and/or output shaft through the following formula:

$$R_{c1-2} = \frac{2000 \times M_{r1-2} \times K_r}{d} \quad (27)$$

$R_{c1-2}$  = overhung load [N]

1 = for input shaft

2 = for output shaft

$M_{r1-2}$  = Torque at the shaft [Nm]

d = P.C.D [mm] of transmission element (sprocket, gear, pulley, etc.)

$K_r = 1$  chain transmission

$K_r = 1.25$  gear transmission

$K_r = 1.5-2.5$  V-belt transmission

- Define the trust load position X onto shaft. Check this value with the chart indicating the load  $R_{x1-2}$  bearable by the gearbox. Check that the following is satisfied:

$$R_{c1-2} \leq R_{x1-2} \times fh_{1-2} \quad (28)$$

where  $fh_{1-2}$  are the radial and thrust load corrective factor depending on the required life factor  $Fh_1$  and  $Fh_2$  (refers to radial and thrust loads in the "Dimensions" chapter).

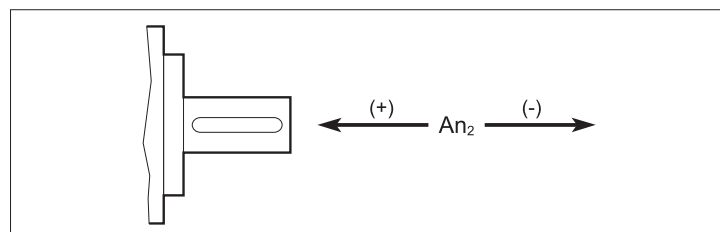
**e) Thrust loads**

Check the thrust load, when exerted onto the output shaft, as specified for the radial load.

The following should be satisfied:

$$\pm A_{c2} \leq \pm A_{n2} \times fh_2 \quad (29)$$

(A 13)



where  $fh_2$  are the radial and thrust load corrective factor depending on the required life factor  $Fh_2$  (refers to radial and thrust loads in the "Dimensions" chapter).

When a thrust load is combined with an axial load contact our Sales Dept. for a proper checking procedure.



#### f) VK output

Determine:

- Radial load  $R_{c2}$
- Thrust load  $A_{c2}$
- Offset x of load  $R_{c2}$

Look up the diagram relevant to the gearbox under study and identify permitted radial load  $R_{x2}$  corresponding to distance X and the ratio  $An2/Rn2$  nearest to value  $Ac2/Rc2$ .

Make sure the following equation is verified:

$$R_{x2} \geq R_{c2} \quad (30)$$

Values in the diagram refer to:

- $n_2 = 10$  rpm
- 10000 hrs theoretical lifetime

For different output speed  $n_2$ , or lifetime expectancy, consider:

- a speed factor  $f_{n2}$  as per table (A14):

(A 14)

|          |     |      |      |      |      |      |      |      |
|----------|-----|------|------|------|------|------|------|------|
| $n_2$    | 1   | 2.5  | 5    | 10   | 15   | 25   | 50   | 100  |
| $f_{n2}$ | 2.0 | 1.51 | 1.23 | 1.00 | 0.88 | 0.76 | 0.62 | 0.50 |

- a lifetime factor  $f_L$  according to table (A15).

(A 15)

|          |        |        |         |         |         |         |          |      |
|----------|--------|--------|---------|---------|---------|---------|----------|------|
| Lifetime | 2500 h | 5000 h | 10000 h | 15000 h | 25000 h | 50000 h | 100000 h | 100  |
| $f_L$    | 0.66   | 0.81   | 1.00    | 1.13    | 1.32    | 1.62    | 2.00     | 0.50 |

This condition must be verified:

$$R_{x2} \times f_{n2} \geq R_{c2} \times f_L \quad (31)$$

#### g) FP output (FDK and FZP when and if available)

On shaft-mounted installations, gearmotors produce a reaction force due to fixing position and motor weight and/or external loads from other connection elements.

These forces combination is added to normal load condition and will influence :

- bearings life
- output shaft resistance
- flange tightening condition

In the event that there is an additional load (like a large size electric motor) and /or a single stage gearbox (with particular attention to sizes from 300 to 307), it's recommended to contact our Technical Service.

For the specific reaction loads due to fixing position, in the dimensional section for each size are reported the minimum length for torque reaction arms (single or double) that can reach the rated performances.

## 14.6 HOW TO SELECT THE MOTOR

### 14.6.1 Electric motor (see section M in this catalogue)

a)  $n_2$  and dynamic efficiency  $\eta_d$  are known, calculate input power based on torque  $M_{r2}$  as follows

$$P_{r1} = \frac{M_{r2} \times n_2}{9550 \times \eta_d} \quad [\text{kW}] \quad (32)$$

Table (A3) reports the values of efficiency  $\eta_d$  related to the different reduction stages of the gearboxes of series 300.

b) Look up the motor selection charts and select a size with such rated power to satisfy this condition:

$$P_{r1} \leq P_n \quad (33)$$

4-pole motors and over should be preferred.

Unless otherwise specified, power  $P_n$  of motors indicated in the catalogue refers to continuous duty S1. For motors used in conditions other than S1, the type of duty required by reference to CEI 2-3/IEC 34-1 Standards must be mentioned.

For duties from S2 to S8 in particular and for motor frame 132 or smaller, extra power can be obtained with respect to continuous duty power, consequently the following condition must be satisfied:

$$\frac{P_{r1}}{f_m} \leq P_n \quad (34)$$


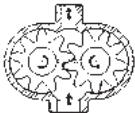

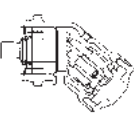

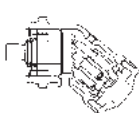
The increased power factor  $f_m$  can be obtained from table (A5).

For duties other than S1 with considerable number of starts per hour, factor Z must be considered (it is ascertained by using the information in the motors chapter). Factor Z defines the maximum number of starts for the application under consideration.

### 14.6.2 Hydraulic motor (see section H in this catalogue)

Determine hydraulic motor type according to the application, choosing from the options given in guidance table (A16).

(A 16)

| Duty             | Light  |   | Medium   |  | Heavy  |   |
|------------------|--|---|--|--|--|---|
| Pressure p [bar] | <175   |   | 175 - 200  |  | 200 - 450  |   |
| Motor design     | orbital<br> | gear motor<br> | radial piston<br> | axial piston<br> | cam motor<br> | axial piston<br> |
| Speed            | medium<br>$\leq 700$   | high<br>$\leq 3000$   | medium<br>$\leq 500$   | high<br>$\leq 4000$  | low<br>$\leq 200$  | medium<br>$\leq 4000$   |
| $\eta_{mh}$      | 0.80   | 0.85  | 0.95   | 0.93   | 0.93   | 0.93  |
| $\eta_v$         | 0.90   | 0.87  | 0.95   | 0.95   | 0.95   | 0.95  |





Based on the specifications of gearbox input:

- input torque  $M_{r1}$  [Nm]
- input speed  $n_1$  [ $\text{min}^{-1}$ ]

and on allowed pressure  $p$  [bar] for the hydraulic circuit, calculate the displacement of the hydraulic motor by formula:

$$V_c = \frac{20 \times p \times M_{r1}}{p \times \eta_{mh}} \text{ [cm}^3\text{]} \quad (35)$$

where  $\eta_{mh}$  is the hydraulic mechanical efficiency of the motor (tab. A16).

Select a motor size with displacement  $V$  that satisfies the following condition:

$$V_c \leq V \quad (36)$$

Calculate the flow required for the hydraulic motor

$$Q_1 = \frac{V \times n_1}{\eta_v \times 1000} \text{ [l/min]} \quad (37)$$

where  $\eta_v$  is volumetric efficiency.

For hydraulic orbital motors by BONFIGLIOLI TRASMITAL, please see section H in this catalogue. For other types of hydraulic motors, see the relevant technical literature.

## 15 INSTALLATION

Observing a few rules for correct installation is essential to the reliable and proper operation of the gearbox.

The rules set out here are intended as a preliminary guide to selecting gearbox.

For effective and proper installation, follow the instructions given in the Installation, use and maintenance manual available from our Sales network.

Following is a brief outline of installation rules:

### a) Fastening:

– Place the gearbox on a surface providing adequate rigidity. Mating surfaces should be machined and flat.

– This applies especially to flange-mounted gearboxes with splined hollow output shafts (refer to the Installation, Operation and Maintenance Manual available on [www.bonfiglioli.com](http://www.bonfiglioli.com)).

– In applications that involve high radial loads at the output end, flange mounting is recommended for some gearboxes as this mounting pattern benefits from the double pilot diameters provided on these gearboxes (refer to the Installation, Operation and Maintenance Manual available on [www.bonfiglioli.com](http://www.bonfiglioli.com)).

– Make sure the gearbox is suitable for the required mounting position.

– Use bolts specified in Use and Maintenance Manual (available on [www.bonfiglioli.com](http://www.bonfiglioli.com)) and tighten the bolts to the rated values specified in the relevant charts.

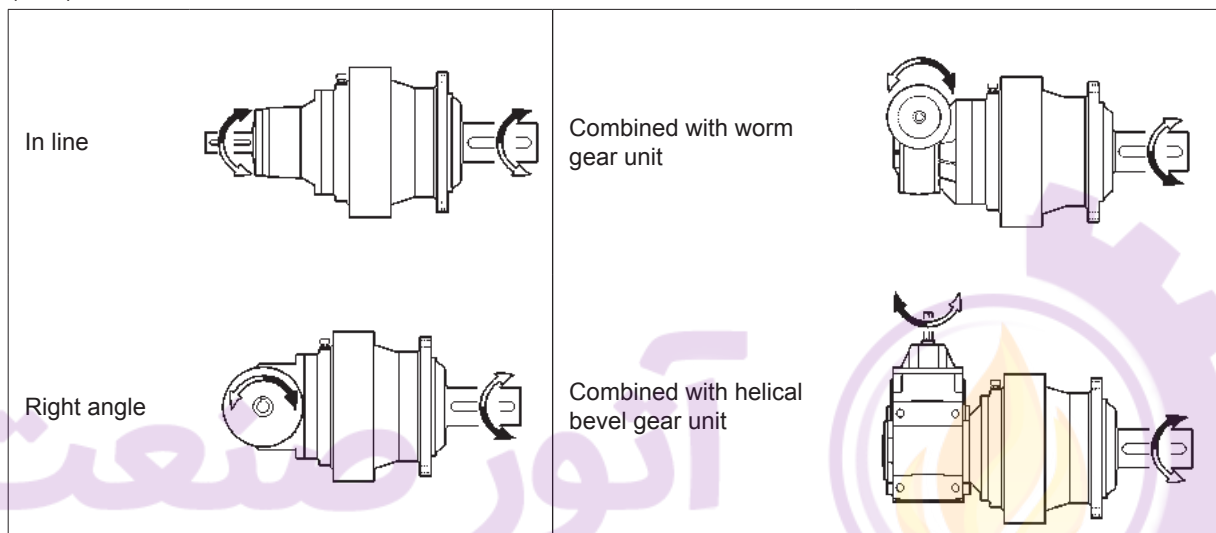
#### b) Connections

– When fitting transmission elements onto the gearbox do not tap them with hammers or similar tools. To slide these parts in, use the service screws and tappings provided at the shaft ends. Be sure to clean off any grease or rust preventative from the shafts before fitting any parts.

– Direction of rotation

Before wiring the motor please note the input/output shaft arrangement, as described in the diagram here after:

(A 17)



**RA/RO:** For the monodirectional applications or for the applications requiring a sense of rotation prevailing on that opposite to it, the selection of "RA/RO" option ensures the declared performance. For applications not requiring a prevailing sense of rotation with respect to each other, the performances are guaranteed regardless of the selected "RA/RO" option.

#### c) Paint coating

– Use paint compatible with the primer applied to the gearbox, see "Supply conditions". Prior to painting, tape the seal rings installed on the shafts. Contact with the solvent may damage the seals with subsequent oil leakage.

#### d) Lubrication

– Prior to commissioning, fill the gearbox with the recommended type and quantity of oil (refer to the Installation, Operation and Maintenance Manual available on [www.bonfiglioli.com](http://www.bonfiglioli.com)). The level is to be checked through the appropriate plug, or sight glass, each gearbox is provided with, and located according to the mounting position originally specified.

NOTE: Combined gearboxes feature separate lubrication for planetary stages and for worm gears (series 3/V) or bevel helical units (series 3/A).

The operations described above are not to be performed with life-lubed gearboxes, that are factory filled with synthetic oil.



## 16 LUBRICATION

Refer to the User's Manual available at [www.bonfiglioli.com](http://www.bonfiglioli.com) for indications about checking the oil level and its replacement.

Do not mix mineral oils with synthetic oils and/or different brands.

However, oil level should be checked at regular intervals and topped up as required.

Check monthly if unit operates under intermittent duty, more frequently if duty is continuous.

### 16.1 Selection of the optimal oil viscosity (data relating to Shell Oils)

|                     |                     | Operating ambient temperature [C°] |     |     |     |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
|---------------------|---------------------|------------------------------------|-----|-----|-----|--|-----|-----|----|---|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|
|                     |                     | -40                                | -35 | -30 | -25 | -20                                    | -15 | -10 | -5 | 0 | +5 | +10 | +15 | +20 | +25 | +30 | +35 | +40 | +45 | +50 |   |   |
|                     |                     | suitability seals check            |     |     |     | standard seals provided in the catalog |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
| Splash lubrication  | Mineral oil         | 150 VG                             |     |     |     |  |     |     | *  |   |    |     |     |     |     |     |     |     |     |     |   |   |
|                     |                     | 220 VG                             | ⊘   |     |     |  |     |     | *  |   |    |     |     |     |     |     |     |     |     |     |   | ☎ |
|                     |                     | 320 VG                             | ⊘   | ☎   |     |  |     |     |    | * |    |     |     |     |     |     |     |     |     |     |   |   |
|                     |                     | 460 VG                             |     |     |     |  |     |     |    | * |    |     |     |     |     |     |     |     |     |     |   |   |
|                     | Synthetic oil (PAG) | 150 VG                             |     |     | *   |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   | ☎ |
|                     |                     | 220 VG                             | ⊘   | ☎   |     | *                                      |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
| 320 VG              |                     |                                    |     | *   |     |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
| Synthetic oil (PAO) | 150 VG              |                                    |     | *   |     |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     | ☎ |   |
|                     | 220 VG              | ⊘                                  | ☎   |     | *   |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
|                     | 320 VG              |                                    |     | *   |     |  |     |     |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
| Forced lubrication  | Mineral oil         | 150 VG                             |     |     |     |  |     |     | *  |   |    |     |     |     |     |     |     |     |     |     |   |   |
|                     |                     | 220 VG                             | ⊘   |     |     |  |     |     | *  |   |    |     |     |     |     |     |     |     |     |     |   | ☎ |
|                     |                     | 320 VG                             |     | ☎   |     |  |     |     |    | * |    |     |     |     |     |     |     |     |     |     |   |   |
|                     |                     | 460 VG                             |     |     |     |  |     |     |    | * |    |     |     |     |     |     |     |     |     |     |   |   |
|                     | Synthetic oil (PAG) | 150 VG                             |     |     |     |  |     | *   | *  |   |    |     |     |     |     |     |     |     |     |     |   | ☎ |
|                     |                     | 220 VG                             | ⊘   |     | ☎   |  |     | *   | *  |   |    |     |     |     |     |     |     |     |     |     |   |   |
| 320 VG              |                     |                                    |     |     |     |  | *   | *   |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
| Synthetic oil (PAO) | 150 VG              |                                    |     |     |     |  | *   | *   |    |   |    |     |     |     |     |     |     |     |     |     | ☎ |   |
|                     | 220 VG              | ⊘                                  |     | ☎   |     |  | *   | *   |    |   |    |     |     |     |     |     |     |     |     |     |   |   |
|                     | 320 VG              |                                    |     |     |     |  | *   | *   |    |   |    |     |     |     |     |     |     |     |     |     |   |   |

☐ Recommended operating limits

⊘ Allowed operating limits. ☎

⊘ Forbidden operating limits.

\* = It is recommended to ramp-up and to provide for greater absorption of the motor.

If needed and in the event of impulse loads, contact Bonfiglioli Technical Service. ☎

## 16.2 Lubrication for 300 series gearboxes

All gearboxes are oil-bath lubricated. For applications calling for gearboxes with a vertically positioned axis, in which oil coverage during operation would not be sufficient to ensure correct lubrication of upper bearings, suitable life lubrication systems are used.

Before start-up, fill the gearbox with the correct quantity of oil, selecting the viscosity level as per table (A10). These gearboxes are provided with oil filling, level and drain plugs.

Prior to starting-up, fill the gearbox with the appropriate quantity of oil.

Gearboxes are generally provided with oil fill, level and drain plugs. As such, the mounting position needs always to be specified when ordering the gearbox.

For the reference charts of oil plugs placement and quantity of lubricant, refer to the Installation, Operation and Maintenance Manual (available on [www.bonfiglioli.com](http://www.bonfiglioli.com)).

– Note: For applications with non-routine operating conditions, consult factory with complete information.

– Unless otherwise specified, gear units are supplied unlubricated. Primary gear units belonging to 3/V and 3/A combinations instead may be supplied factory filled with long-life synthetic lubricant, depending on their frame size, as indicated in the Use and Maintenance Manual (available at [www.bonfiglioli.com](http://www.bonfiglioli.com)).

– The oil capacities listed for the various types of unit are indicative only. Fill the gearbox up to the level plug, located as per the mounting position specified when ordering to ensure the gearbox is properly filled.

– Should transmitted power exceed the thermal capacity of the unit a supplementary cooling unit must be provided (see: Supplementary cooling systems).

NOTE: Combined gearboxes and gearmotors feature separate lubrication for planetary stages and for worm gearboxes (3/V) or helical bevel units (3/A).

## 16.3 Brakes lubrication

The hydraulically operated multidisc brakes are lubricated by the same oil as the gearbox.



## 17 STORAGE

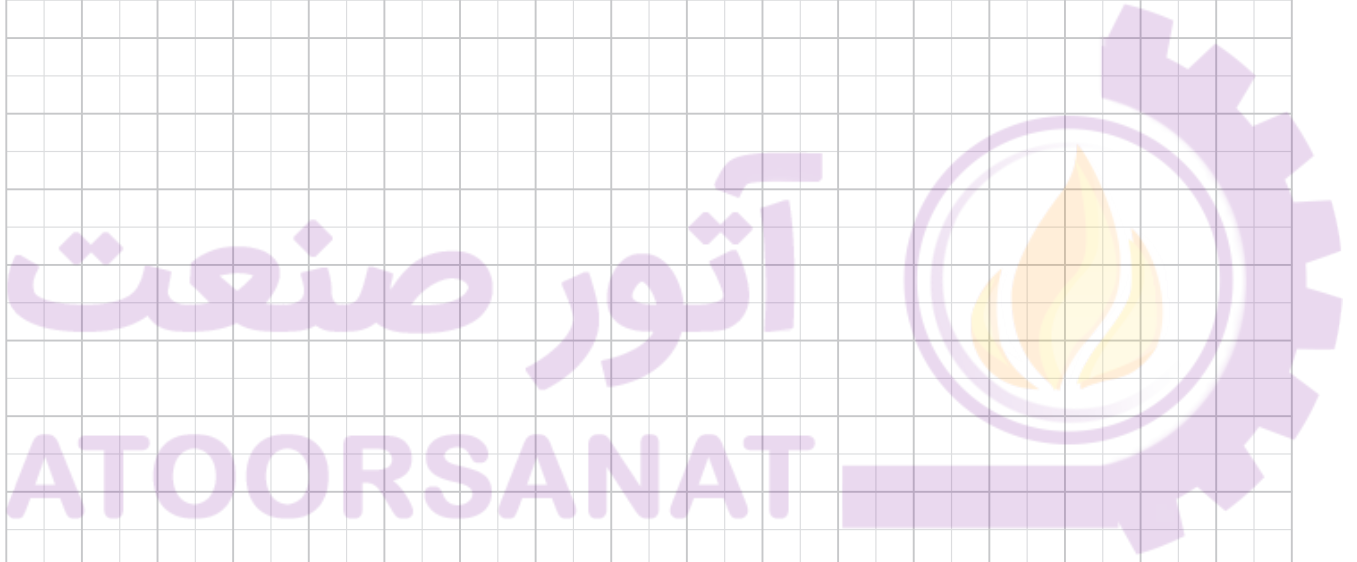
Observe the following instructions to ensure correct storage of delivered products:

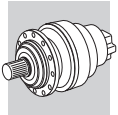
- a) Do not store outdoors, in areas exposed to weather or with excessive humidity.
- b) Always place boards, wood, or other material between the products and the floor. The gearbox should not have direct contact with the floor.
- c) For storage periods of over 60 days, all machined surfaces such as flanges, shafts and couplings must be protected with a suitable anti-oxidation product.
- d) When units are expected to be in storage for more than 6 months, the following extra measures are required:
  - Smear all machined parts with grease to prevent oxidation.
  - Place the gearbox so that the breather plug is uppermost and fill it with oil (this does not apply to life-lubricated gearboxes). Before the gearbox is put into operation, the appropriate type and quantity of oil should be restored.

## 18 SUPPLY CONDITIONS

Gearboxes are supplied as follows:

- a) arranged for installation in the mounting position specified in the purchase order;
- b) Unlubricated. Inner parts are protected by a film of the oil used for testing purpose;
- c) when no specific protection class is requested, the surfaces of gearboxes are protected to at least corrosivity class C2 (UNI EN ISO 12944-2), realized with a grey antioxidant water-based primer Ral 7042. Mating surface are not coated .
- d) tested to factory specifications;
- e) suitably packed;
- f) complete with mounting hardware for IEC electric or hydraulic motors;
- g) gearboxes lubricated "for life" are factory filled with oil.

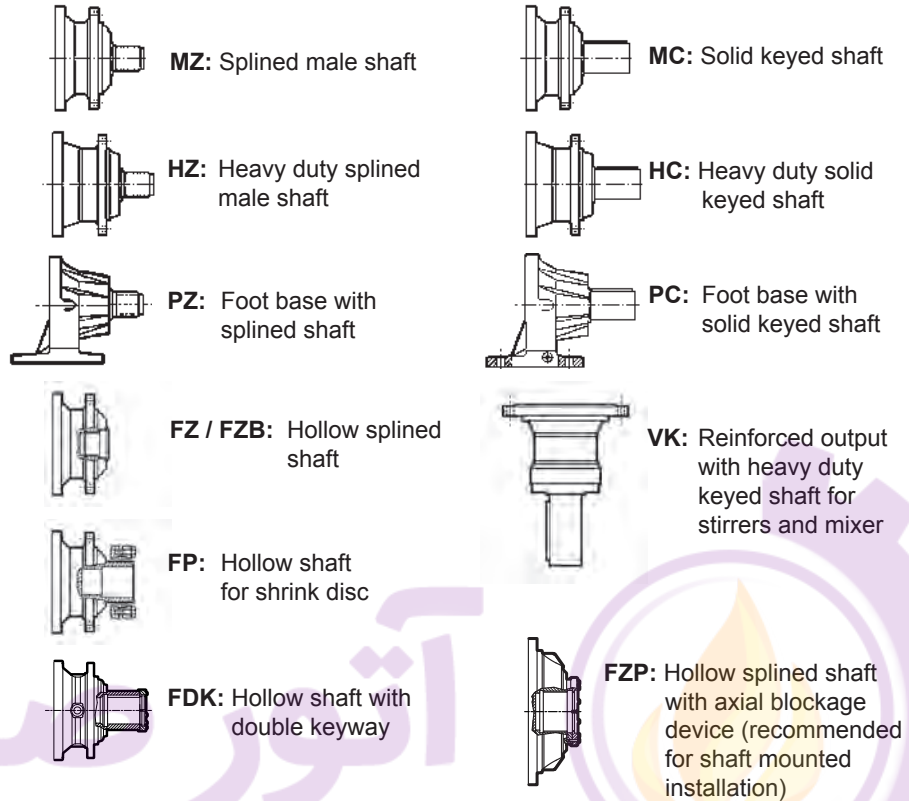




19 300 GEARBOX DESIGNATION

**3 11 L 2 16.7 HZ**

OUTPUT VERSION



Reduction ratio

Fill in the value of the transm. ratio (including point and decimals) reported in the selection charts

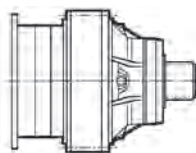
Es. :  $1/5.33 = 5.33$     $1/44.6 = 44.6$     $1/131 = 131$

No. OF REDUCTIONS

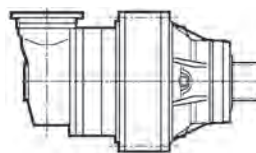
1, 2, 3, 4

DESIGN

L = Linear



R = Right angle

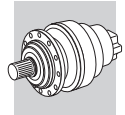


GEARBOX SIZE

|          |     |          |     |          |     |          |     |          |     |
|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|
| 00 = 300 | 246 | 05 = 305 | 290 | 10 = 310 | 338 | 15 = 315 | 386 | 19 = 319 | 428 |
| 01 = 301 | 256 | 06 = 306 | 302 | 11 = 311 | 350 | 16 = 316 | 398 | 21 = 321 | 438 |
| 03 = 303 | 266 | 07 = 307 | 314 | 13 = 313 | 362 | 17 = 317 | 408 | 23 = 323 | 448 |
| 04 = 304 | 278 | 09 = 309 | 326 | 14 = 314 | 374 | 18 = 318 | 418 | 25 = 325 | 452 |

SERIES





**6A S5EC A A W0A ... ..**

OPTIONS  
GASKET  
STANDARD = NBR  
PV = Fluoro elastomer  
( hydraulic inputs  
BONFIGLIOLI  
TECHNICAL SERVICE )

ONLY FOR RIGHT ANGLE DESIGN  
preferential input direction of rotation

RA = left  
RO = right



25

SURFACE PROTECTION  
C2 (default), C3, C4

37

PAINTING  
RAL7042 (default), RAL5010,  
RAL9005, RAL9006, RAL9010

37

CERTIFICATES  
AC, CC

38

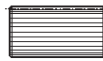
SUPPLEMENTARY COOLING SYSTEM  
CR1, CR2, CR3

19

OUTPUT FITTINGS



P... = Pinions



B0A = Splined bar



M0A = Sleeve coupling



G0A = Shrink disc



W0A = Flange

MOTOR FLANGE ORIENTATION

461

MOUNTING POSITION

38

INPUT

Without motor adaptor

|      |      |      |      |      |
|------|------|------|------|------|
| V9AA | V9AC | V9AE | V9AG | V9AL |
| V9AB | V9AD | V9AF | V9AH |      |

Input keyed shaft

|       |      |      |      |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|------|------|------|
|       | V01A | V01B | V05B | V06B | V07A | V07B | V10B | V11B | V15B |
| diam. | Ø24  | Ø38  | Ø48  | Ø60  | Ø60  | Ø80  | Ø80  | Ø80  | Ø120 |

Solid input shaft with fan

|       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
|       | FV05B | FV06B | FV07A | FV07B | FV10B | FV11B |
| diam. | Ø48   | Ø60   | Ø60   | Ø80   | Ø80   | Ø80   |

Electric motor connection

P+IEC (P71...P250)

Integrated gearmotor with in-built compact electric motor  
(available up to size 307)

S2, S3, S4

Hydraulic Motor connection  
( PV option BONFIGLIOLI  
TECHNICAL SERVICE )

S5AP, COAA, HOBA, ...

461

Hydraulic motor MG  
( PV option BONFIGLIOLI  
TECHNICAL SERVICE )

471

ONLY WITH HYDRAULIC MOTOR ADAPTOR

Standard negative multidisc brake



6 = Type : 4, 5, 6  
A = Braking torque : A, B, C, ...

460

Negative multidisc brake for MG hydraulic motor  
SF = Without brake

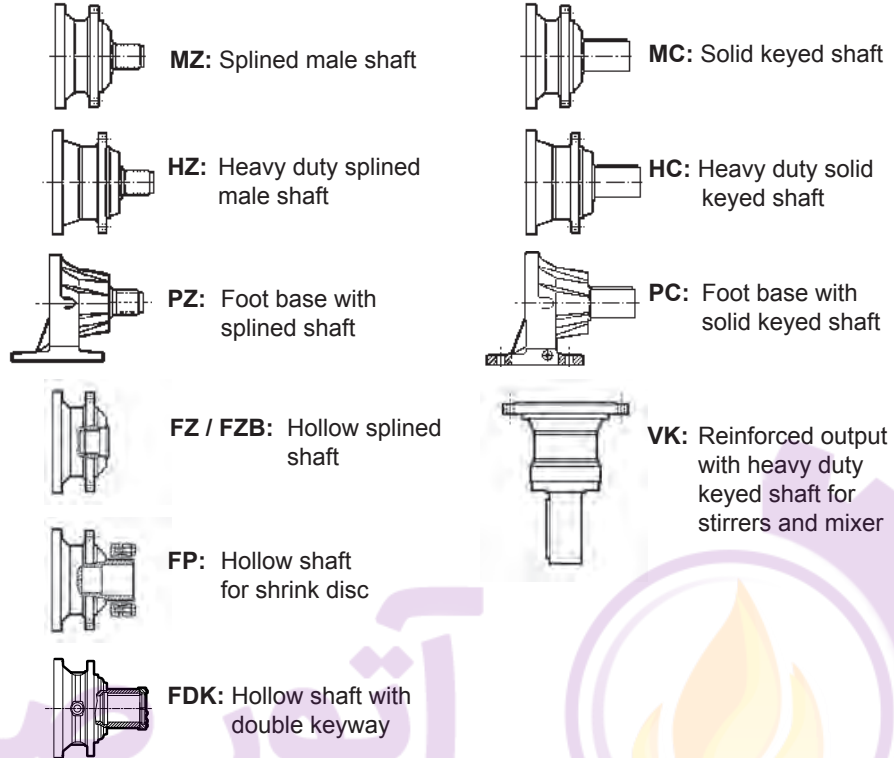
477



20 3/V GEARBOX DESIGNATION

**3/V 05 L 3 623 PC**

OUTPUT VERSION



REDUCTION RATIO

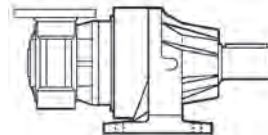
Fill in the value of the transm. ratio reported in the selection charts  
Es. : 1/773 = 773

No. OF REDUCTIONS

3, 4

DESIGN

L = Combined 300 unit,  
2 or 3 planetary stages + worm gear units

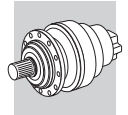


GEARBOX SIZE

|             |     |             |     |             |     |             |     |             |     |
|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|
| 00 = 3/V 00 | 250 | 05 = 3/V 05 | 294 | 10 = 3/V 10 | 342 | 15 = 3/V 15 | 390 | 19 = 3/V 19 | 432 |
| 01 = 3/V 01 | 260 | 06 = 3/V 06 | 306 | 11 = 3/V 11 | 354 | 16 = 3/V 16 | 402 | 21 = 3/V 21 | 442 |
| 03 = 3/V 03 | 270 | 07 = 3/V 07 | 318 | 13 = 3/V 13 | 366 | 17 = 3/V 17 | 412 |             |     |
| 04 = 3/V 04 | 282 | 09 = 3/V 09 | 330 | 14 = 3/V 14 | 378 | 18 = 3/V 18 | 422 |             |     |

SERIES


Combined 300 gearboxes / Worm gear units





**P80 B5 AF W0A ...**

OPTIONS

GASKET  
STANDARD = NBR  
**PV** = Fluoro elastomer

SURFACE PROTECTION  
**C2** (default), **C3**, **C4** 

PAINTING  
**RAL7042** (default), **RAL5010**, **RAL9005**, **RAL9006**, **RAL9010** 

CERTIFICATES  
**AC**, **CC** 

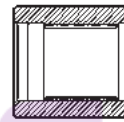
OUTPUT FITTINGS



**P...** = Pinions



**B0A** = Splined bar



**M0A** = Sleeve coupling



**G0A** = Shrink disc

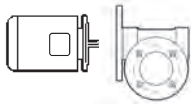


**W0A** = Flange

MOUNTING POSITION 

DESIGN  
**B5**, **B14**

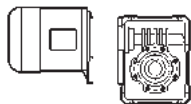
ENTRATA



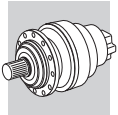
Electric motor connection **P+IEC** (P63...P180)



Input keyed shaft **HS**



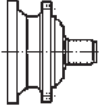
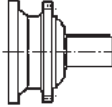
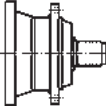
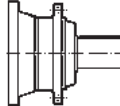
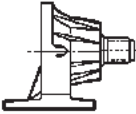
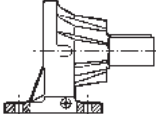
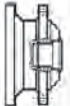
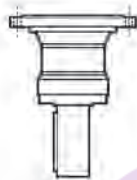
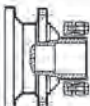
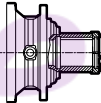
Integrated gearmotor with in-built compact electric motor **S1**, **S2**, **S3**



21 3/A GEARBOX DESIGNATION

**3/A 06 L 2 69.9 PC**

OUTPUT VERSION

|   |   |   |   |
|---|---|---|---|
|    | <b>MZ:</b> Splined male shaft               |  | <b>MC:</b> Solid keyed shaft  |
|    | <b>HZ:</b> Heavy duty splined male shaft    |  | <b>HC:</b> Heavy duty solid keyed shaft   |
|    | <b>PZ:</b> Foot base with splined shaft     |   | <b>PC:</b> Foot base with solid keyed shaft                                     |
|    | <b>FZ / FZB:</b> Hollow splined shaft       |  | <b>VK:</b> Reinforced output with heavy duty keyed shaft for stirrers and mixer |
|   | <b>FP:</b> Hollow shaft for shrink disc     |   |   |
|  | <b>FDK:</b> Hollow shaft with double keyway |   |   |

REDUCTION RATIO

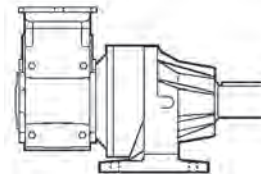
Fill in the value of the transm. ratio reported in the selection charts  
Es. : 1/19.4 = 19.4    1/175 = 175

No. OF REDUCTIONS

2

DESIGN

L = Combined 300 unit,  
1 planetary stages + A helical bevel units



GEARBOX SIZE

**00** = 3/A 00 (300+A10)  
**01** = 3/A 01 (301+A20)  
**03** = 3/A 03 (303+A30)  
**04** = 3/A 04 (304+A41)

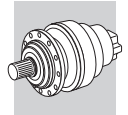
|     |
|-----|
| 251 |
| 261 |
| 271 |
| 283 |

**05** = 3/A 05 (305+A41)  
**06** = 3/A 06 (306+A50)  
**07** = 3/A 07 (307+A60)

|     |
|-----|
| 295 |
| 307 |
| 319 |

SERIES

Combined 300 gearboxes / A series helical bevel gear units



**S4 EF W0A ...**

OPTIONS  
GASKET  
STANDARD = NBR  
PV = Fluoro elastomer

SURFACE PROTECTION  
C2 (default), C3, C4



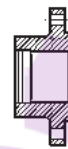
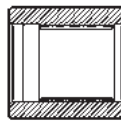
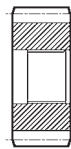
PAINTING  
RAL7042 (default), RAL5010,  
RAL9005, RAL9006, RAL9010



CERTIFICATES  
AC, CC



OUTPUT FITTINGS



P... = Pinions

B0A = Splined bar

M0A = Sleeve coupling

G0A = Shrink disc

W0A = Flange

MOUNTING POSITION



INPUT



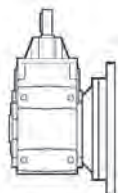
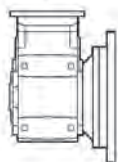
Integrated gearmotor with in-built compact electric motor

S2, S3, S4

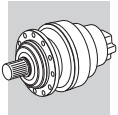


Electric motor connection

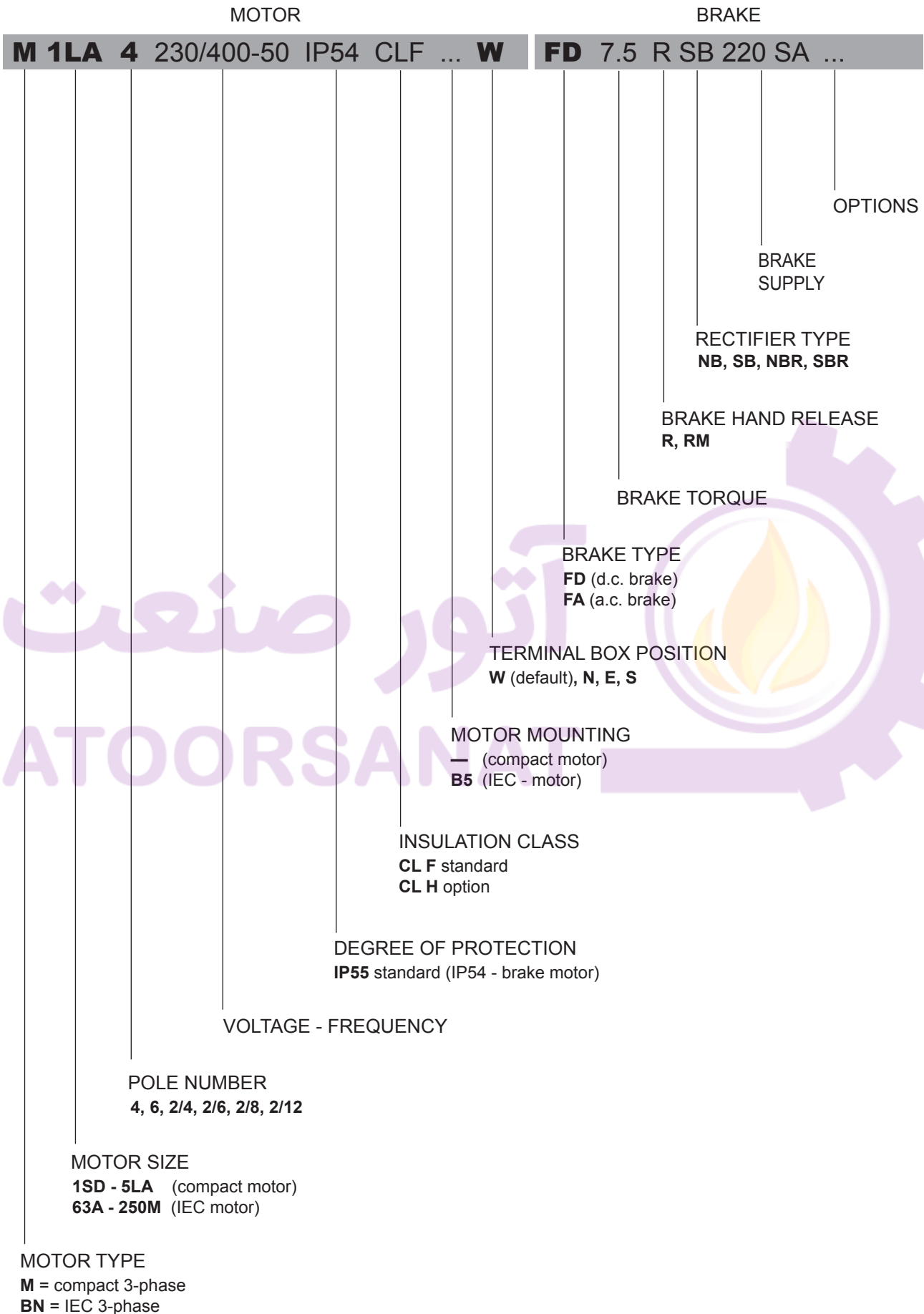
P+IEC (P63...P180)

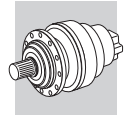


Input keyed shaft HS



22 MOTOR DESIGNATION





## 23 ADDITIONAL OPTIONS

### 23.1 SURFACE PROTECTION

When no specific protection class is requested, the surfaces of gearboxes are protected to at least corrosivity class C2 (UNI EN ISO 12944-2). For improved resistance to atmospheric corrosion, gearboxes can be delivered with C3 and C4 surface protection, obtained by painting the complete gearbox.

| SURFACE PROTECTION | Typical environments  | Maximum surface temperature | Corrosivity class according to UNI EN ISO 12944-2 |
|--------------------|---|-----------------------------|---|
| <b>C3</b>          | Urban and industrial environments with up to 100% relative humidity (medium air pollution)              | 120°C                       | C3  |
| <b>C4</b>          | Industrial areas, coastal areas, chemical plant, with up to 100% relative humidity (high air pollution) | 120°C                       | C4  |

Gearboxes with optional protection to class C3 or C4 are available in a choice of colours. If no specific colour is requested (see the "PAINTING" option) gearboxes are finished in RAL 7042. Gearboxes can also be supplied with surface protection for corrosivity class C5 according to UNI EN ISO 12944-2. Contact our Technical Service for further details.

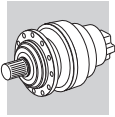
### 23.2 PAINTING

Gearboxes with optional protection to class C3 or C4 are available in the colours listed in the following table.

| PAINTING        | Colour          | RAL number |
|-----------------|-----------------|------------|
| <b>RAL7042*</b> | Traffic Grey A  | 7042       |
| <b>RAL5010</b>  | Gentian Blue    | 5010       |
| <b>RAL9005</b>  | Jet Black       | 9005       |
| <b>RAL9006</b>  | White Aluminium | 9006       |
| <b>RAL9010</b>  | Pure White      | 9010       |

\* Gearboxes are supplied in this standard colour if no other colour is specified.

NOTE – "PAINTING" options can only be specified in conjunction with "SURFACE PROTECTION" options.



### 23.3 CERTIFICATES

#### AC - Certificate of compliance

The document certifies the compliance of the product with the purchase order and the construction in conformity with the applicable procedures of the Bonfiglioli Quality System.

#### CC - Inspection certificate

The document entails checking on order compliance, the visual inspection of external conditions and of mating dimensions. Checking on main functional parameters in unloaded conditions is also performed along with oil seal proofing, both in static and in running conditions. Units inspected are sampled within the shipping batch and marked individually.

### 23.4 TACONITE SEALS

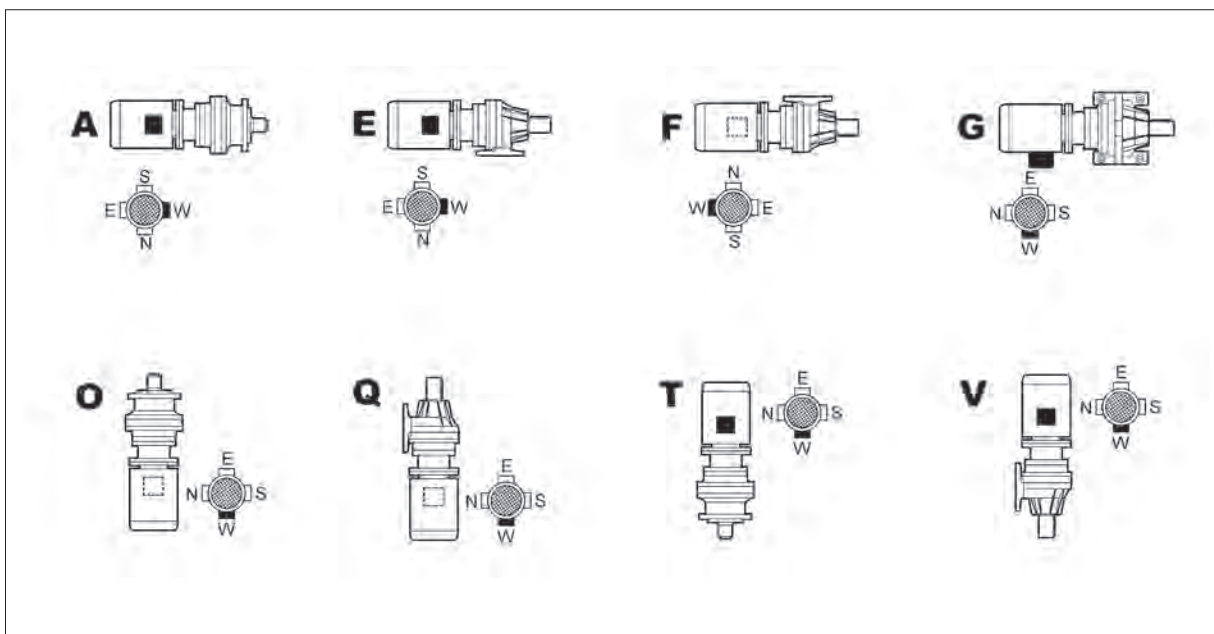
Taconite seals are recommended for environments characterised by the presence of abrasive dust or powders. Taconite seals incorporate a combination of sealing rings, labyrinths and a grease chamber. This option is available for **FP** and **FZ** version from size 314 to 325. For detailed information please contact our Technical Service.

## 24 MOUNTING POSITION

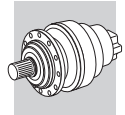
The product designation is only complete when the mounting position is also specified. Please refer to table (A18) for in-line gear units and to (A19) for right angle drives.

### 24.1 In-line units

(A2)



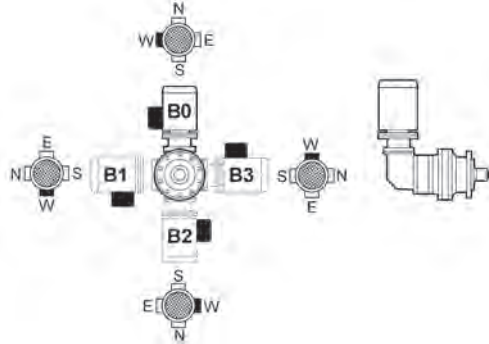




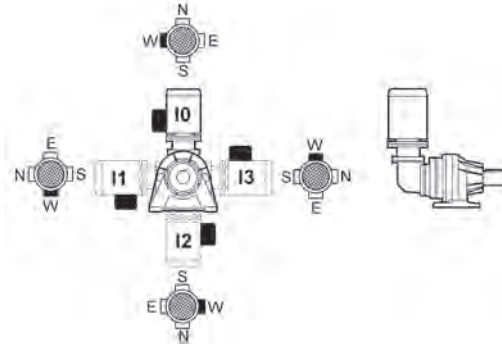
24.2 Right angle units

(A 3)

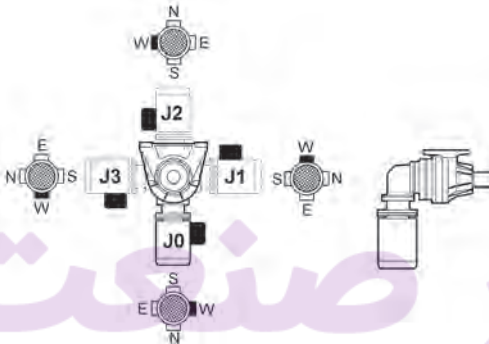
**B0 - B1 - B2 - B3**



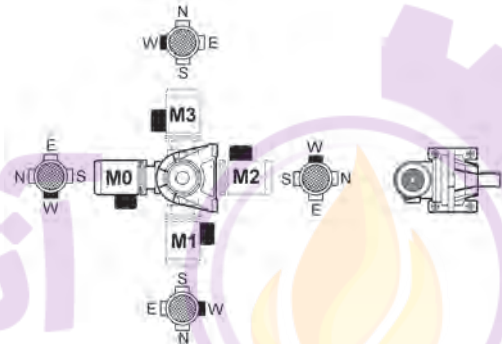
**I0 - I1 - I2 - I3**



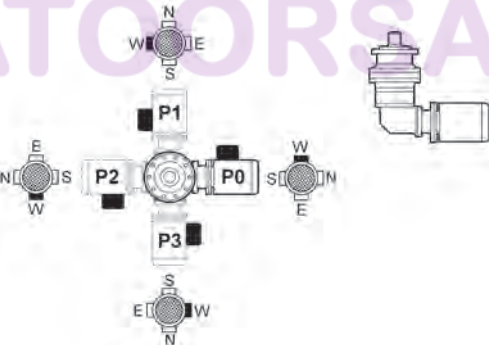
**J0 - J1 - J2 - J3**



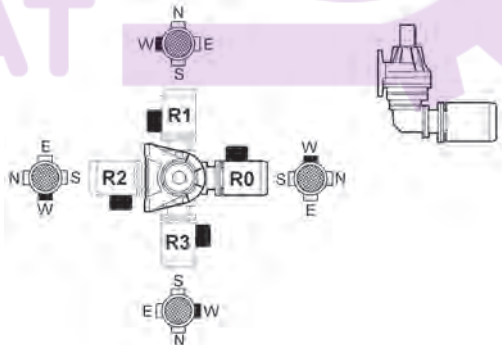
**M0 - M1 - M2 - M3**



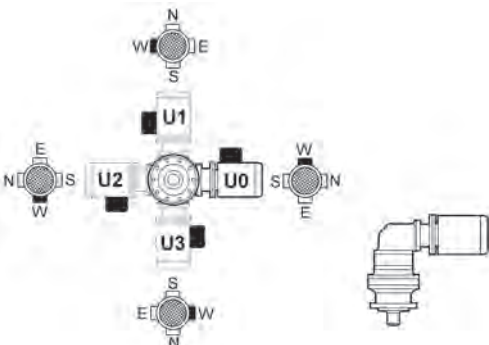
**P0 - P1 - P2 - P3**



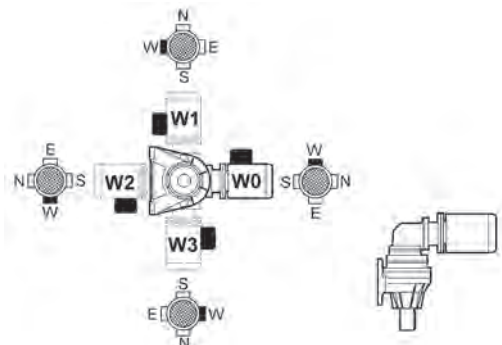
**R0 - R1 - R2 - R3**

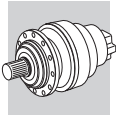


**U0 - U1 - U2 - U3**



**W0 - W1 - W2 - W3**

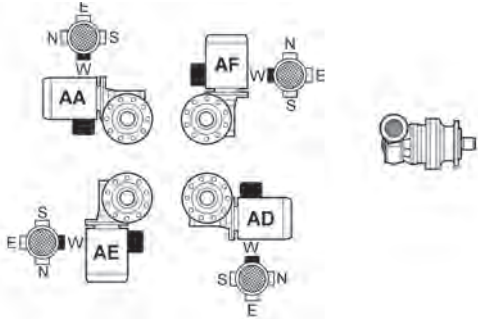




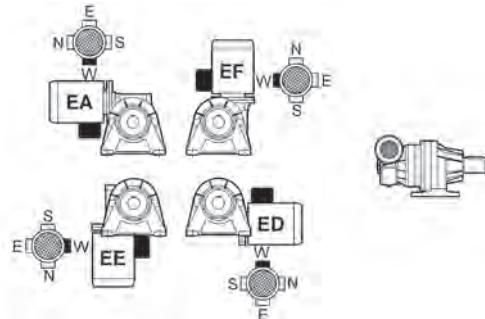
24.3 3/V Series

(A4)

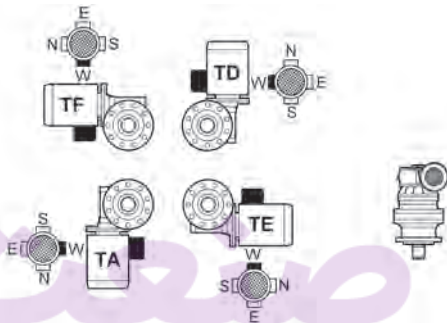
**AA - AE - AF - AD**



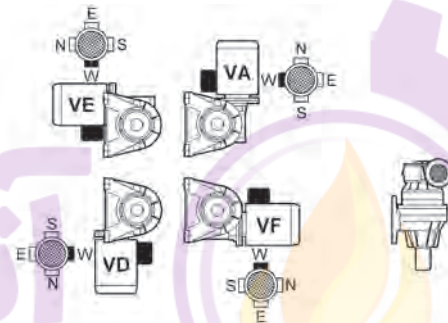
**EA - EE - EF - ED**



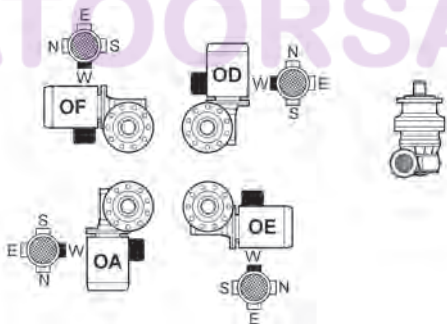
**TA - TE - TF - TD**



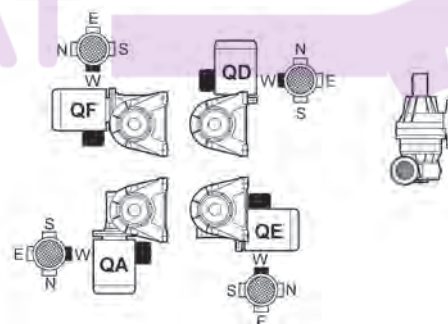
**VA - VE - VF - VD**



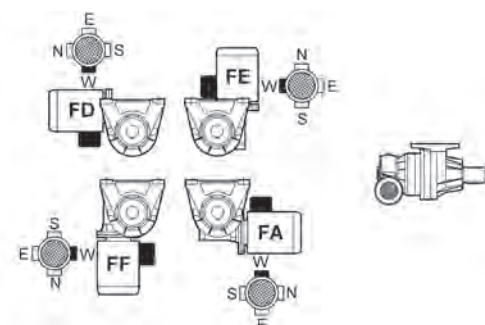
**OA - OE - OF - OD**

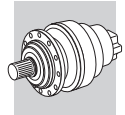


**QA - QE - QF - QD**



**FA - FE - FF - FD**

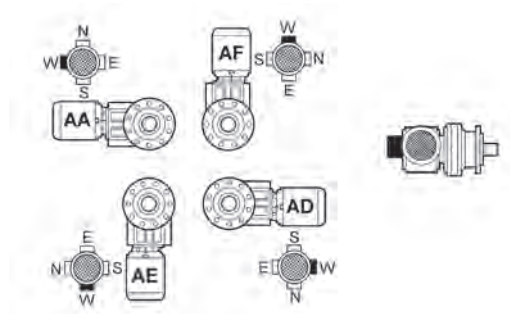




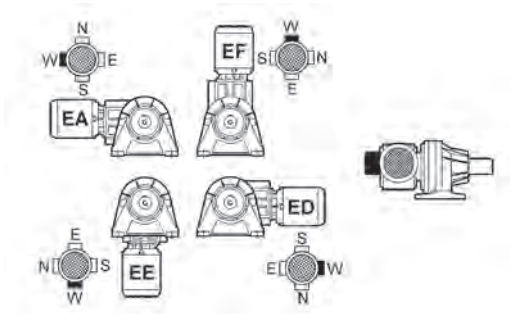
**24.4 3/A Series**

(A 5)

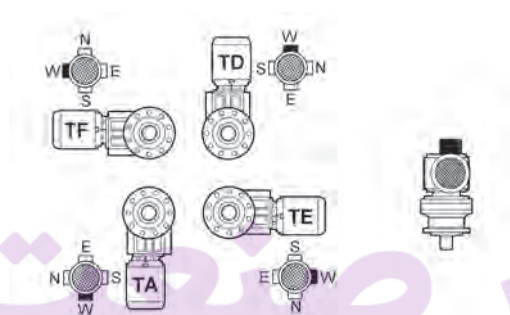
**AA - AE - AF - AD**



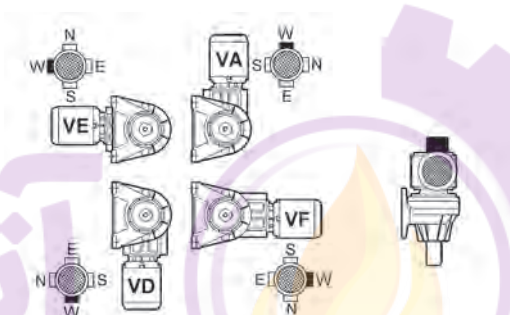
**EA - EE - EF - ED**



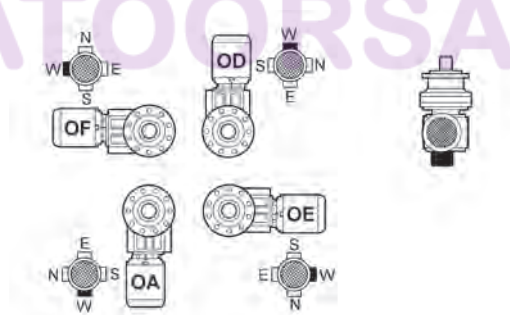
**TA - TE - TF - TD**



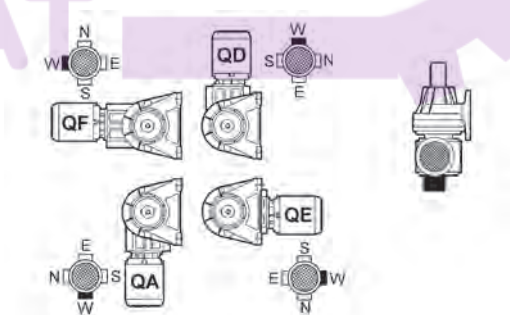
**VA - VE - VF - VD**



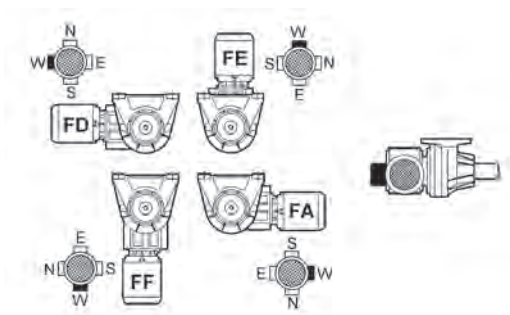
**OA - OE - OF - OD**

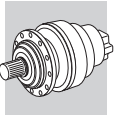


**QA - QE - QF - QD**

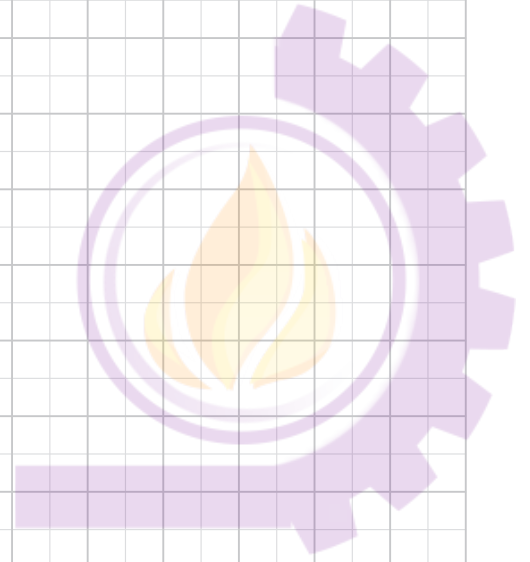


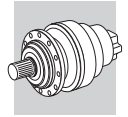
**FA - FE - FF - FD**





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## 25 RATING CHARTS

### A GEARMOTOR SELECTION BY POWER

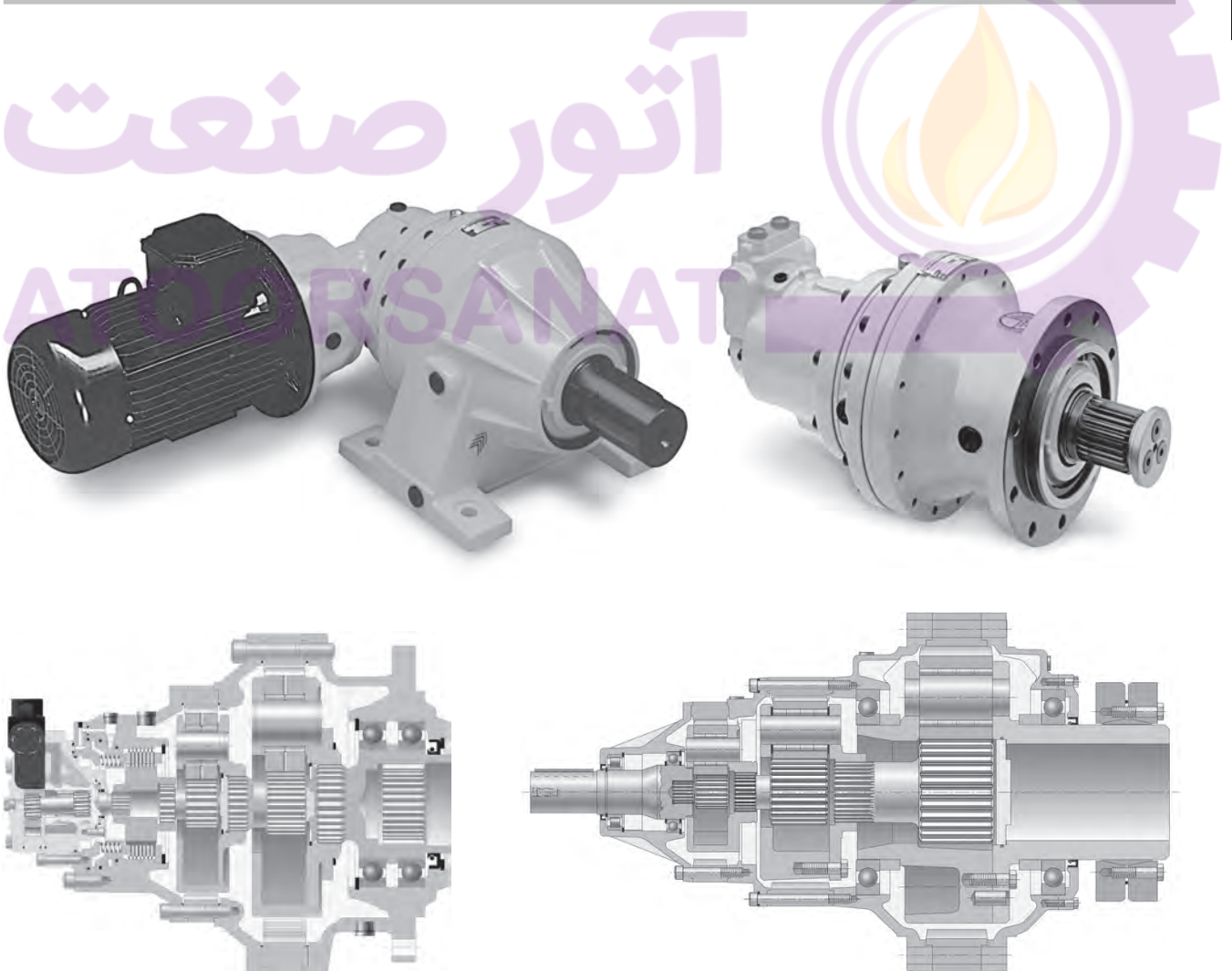
A

### B GEARBOX SELECTION BY APPLICATION TORQUE

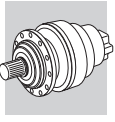
B

### C GEARBOX SELECTION BY NUMBER OF WORKING CYCLES

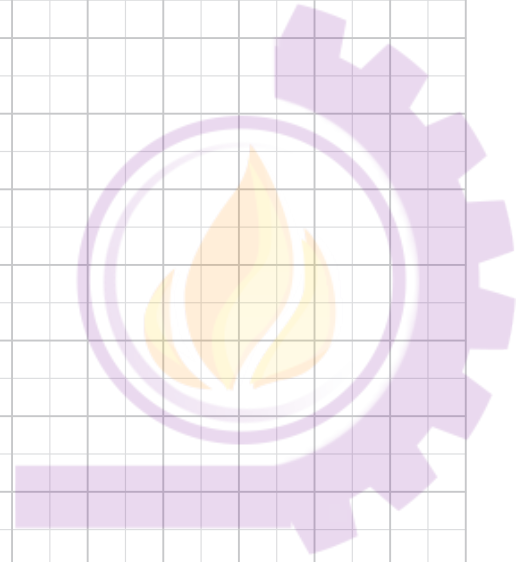
C

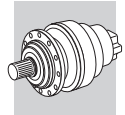






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## 25.1 300 L - 300 R GEARMOTOR RATING CHARTS

Reading the rating chart.

1  
 ↓

| <b>P<sub>1</sub> = 30 kW</b>        |                       |                |      |                      |        |   |         |   |                     |    |        |        |         |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|---|---------|---|---------------------|----|--------|--------|---------|-----|
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |   |         |   | Rn <sub>2</sub> [N] |    |        |        |         |     |
|                                     |                       |                |      |                      |        |   |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ      |     |
| 1.1                                 | 239514                | 1.5            | 1389 | 30.0                 | 319 L4 | — | BN200L4 | — | —                   | —  | 636100 | 700800 | 199500  | 426 |
| 1.2                                 | 206034                | 1.7            | 1195 | 30.0                 | 319 L4 | — | BN200L4 | — | —                   | —  | 608000 | 669900 | 189700  | 426 |
| 1.3                                 | 193443                | 2.7            | 1122 | 35.0                 | 321 L4 | — | BN200L4 | — | —                   | —  | 731900 | 867900 | 1114500 | 436 |
| 1.4                                 | 182670                | 1.5            | 1059 | 22.0                 | 318 L4 | — | BN200L4 | — | —                   | —  | 503000 | 520700 | 182200  | 416 |
| 1.4                                 | 178055                | 1.0            | 1032 | 18.0                 | 317 L4 | — | BN200L4 | — | —                   | —  | 403600 | 429700 | 135500  | 406 |

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11  
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12  
↑

■ Thermal capacity lower than power applied

1 Rating of electric motor connected to the gearbox

9 IEC motor size and pole number

2 Gearbox output speed

10 Integral motor frame size and pole number

Rated torque to the output shaft based on:

Permitted overhung loading on output shaft, based on:

- 3
- specified service factor
  - 10000 h theoretical lifetime

- 11
- service factor  $f_s=1$
  - 10000 h theoretical lifetime
  - speed of output  $n_2$

4 Service factor

For forces not applied at shaft midpoint, see diagrams provided in the specific gearbox overall dimensioning pages

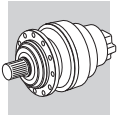
5 Gear ratio

6 Gearbox thermal capacity

12 Dimensions page. Gearmotor overall dimensions refer to matches with BONFIGLIOLI motors only

7 Frame size of the in-line gear unit

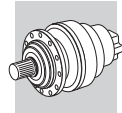
8 Frame size of the right-angle gear unit.  
NOTE: letters (B) (C) near size indication identify different angle reduction dimensions.  
See dimensions pages.



$P_1 = 0.25 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |        |   | Rn <sub>2</sub> [N] |       |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|--------|---|---------------------|-------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |        |        |   | MC                  | MZ    | HC/PC | HZ/PZ  | FZ     |       |     |
| 0.47                                | 4439                  | 1.6            | 2916 | 6.0                  | 306 L4 | —      | BN71A4 | — | —                   | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.57                                | 3688                  | 3.0            | 2423 | 7.5                  | 307 L4 | —      | BN71A4 | — | —                   | 52000 | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.59                                | 3557                  | 2.0            | 2337 | 6.0                  | 306 L4 | —      | BN71A4 | — | —                   | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.62                                | 3415                  | 1.1            | 2243 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.67                                | 3157                  | 2.2            | 2074 | 6.0                  | 306 L4 | —      | BN71A4 | — | —                   | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.69                                | 3031                  | 0.9            | 1991 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 266 |
| 0.69                                | 3031                  | 1.2            | 1991 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 278 |
| 0.69                                | 3031                  | 1.8            | 1991 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.74                                | 2823                  | 1.7            | 1854 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.76                                | 2764                  | 1.1            | 1815 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 278 |
| 0.87                                | 2415                  | 0.9            | 1586 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 266 |
| 0.87                                | 2415                  | 1.6            | 1586 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 278 |
| 0.87                                | 2415                  | 2.0            | 1586 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 1.0                                 | 2086                  | 1.2            | 1370 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 62200  | 74000  | 23800 | 266 |
| 1.0                                 | 2086                  | 2.2            | 1370 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 62200  | 74000  | 23800 | 290 |
| 1.0                                 | 2046                  | 1.8            | 1344 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 36000 | 42000 | 61900  | 74000  | 23700 | 278 |
| 1.1                                 | 1946                  | 1.4            | 1278 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 36000 | 41900 | 60900  | 73300  | 23300 | 266 |
| 1.1                                 | 1946                  | 2.8            | 1278 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 36000 | 41900 | 60900  | 73300  | 23300 | 290 |
| 1.1                                 | 1941                  | 1.2            | 1275 | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 11800 | 11800 | 29800  | 34000  | 7750  | 256 |
| 1.1                                 | 1935                  | 2.0            | 1271 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 36000 | 41800 | 60800  | 73200  | 23200 | 278 |
| 1.2                                 | 1772                  | 1.6            | 1164 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 35200 | 40600 | 59200  | 71300  | 22600 | 278 |
| 1.2                                 | 1687                  | 1.0            | 1108 | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 11300 | 11300 | 28600  | 32900  | 7400  | 256 |
| 1.3                                 | 1671                  | 1.4            | 1098 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 34500 | 39800 | 58200  | 70000  | 22100 | 266 |
| 1.3                                 | 1671                  | 2.7            | 1098 | 6.0                  | 305 L4 | —      | BN71A4 | — | —                   | 34500 | 39800 | 58200  | 70000  | 22100 | 290 |
| 1.4                                 | 1555                  | 1.5            | 1022 | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 11000 | 11000 | 27900  | 32100  | 7200  | 256 |
| 1.4                                 | 1551                  | 1.8            | 1018 | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 33600 | 38800 | 56900  | 68500  | 21600 | 266 |
| 1.4                                 | 1551                  | 2.5            | 1018 | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 33600 | 38800 | 56900  | 68500  | 21600 | 278 |
| 1.5                                 | 1434                  | 1.6            | 942  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 10700 | 10700 | 27200  | 31300  | 7010  | 256 |
| 1.5                                 | 1364                  | 1.6            | 896  | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 32200 | 37200 | 54800  | 65900  | 20700 | 266 |
| 1.7                                 | 1254                  | 1.8            | 824  | 12.0                 | —      | 303 R4 | BN71A4 | — | —                   | 31300 | 36200 | 53400  | 64300  | 20100 | 268 |
| 1.7                                 | 1246                  | 0.9            | 819  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 9940  | 9940  | 25600  | 29400  | 6540  | 246 |
| 1.7                                 | 1246                  | 1.8            | 819  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 10200 | 10200 | 26100  | 30000  | 6690  | 256 |
| 1.7                                 | 1242                  | 2.2            | 816  | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 31300 | 36100 | 53300  | 64100  | 20000 | 266 |
| 1.7                                 | 1213                  | 1.5            | 797  | 12.0                 | —      | 303 R4 | BN71A4 | — | —                   | 31000 | 35800 | 52900  | 63600  | 19900 | 268 |
| 1.7                                 | 1213                  | 2.8            | 797  | 12.0                 | —      | 305 R4 | BN71A4 | — | —                   | 31000 | 35800 | 52900  | 63600  | 19900 | 292 |
| 1.8                                 | 1167                  | 1.3            | 766  | 10.0                 | —      | 301 R4 | BN71A4 | — | —                   | 9950  | 9950  | 25600  | 29400  | 6540  | 258 |
| 1.8                                 | 1149                  | 1.0            | 755  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 9680  | 9680  | 25000  | 28700  | 6360  | 246 |
| 1.8                                 | 1149                  | 1.9            | 755  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 9900  | 9900  | 25500  | 29300  | 6510  | 256 |
| 1.9                                 | 1093                  | 2.0            | 718  | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 29900 | 34600 | 51300  | 61700  | 19200 | 266 |
| 2.0                                 | 1069                  | 2.5            | 702  | 6.0                  | 304 L4 | —      | BN71A4 | — | —                   | 29700 | 34300 | 50900  | 61300  | 19100 | 278 |
| 2.0                                 | 1065                  | 2.5            | 699  | 12.0                 | —      | 304 R4 | BN71A4 | — | —                   | 29700 | 34300 | 50900  | 61200  | 19000 | 280 |
| 2.1                                 | 1003                  | 2.1            | 659  | 12.0                 | —      | 303 R4 | BN71A4 | — | —                   | 29100 | 33600 | 50000  | 60100  | 18700 | 268 |
| 2.1                                 | 989                   | 2.3            | 649  | 6.0                  | 303 L4 | —      | BN71A4 | — | —                   | 29000 | 33400 | 49700  | 59800  | 18600 | 266 |
| 2.2                                 | 938                   | 1.1            | 616  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 9260  | 9260  | 24000  | 27600  | 6090  | 246 |
| 2.2                                 | 938                   | 2.3            | 616  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 9260  | 9260  | 24000  | 27600  | 6090  | 256 |
| 2.3                                 | 933                   | 1.6            | 613  | 10.0                 | —      | 301 R4 | BN71A4 | — | —                   | 9240  | 9240  | 23900  | 27500  | 6080  | 258 |
| 2.4                                 | 863                   | 2.8            | 567  | 12.0                 | —      | 303 R4 | BN71A4 | — | —                   | 27700 | 32000 | 47700  | 57400  | 17800 | 268 |
| 2.5                                 | 852                   | 3.0            | 560  | 12.0                 | —      | 304 R4 | BN71A4 | — | —                   | 27600 | 31800 | 47600  | 57200  | 17700 | 280 |
| 2.5                                 | 849                   | 1.2            | 558  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 8950  | 8950  | 23300  | 26700  | 5890  | 246 |
| 2.5                                 | 849                   | 2.5            | 558  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 8950  | 8950  | 23300  | 26700  | 5890  | 256 |
| 2.6                                 | 804                   | 2.5            | 528  | 12.0                 | —      | 303 R4 | BN71A4 | — | —                   | 27000 | 31200 | 46700  | 56200  | 17300 | 268 |
| 2.8                                 | 752                   | 1.4            | 494  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 8600  | 8600  | 22400  | 25800  | 5650  | 246 |
| 2.8                                 | 752                   | 2.8            | 494  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 8600  | 8600  | 22400  | 25800  | 5650  | 256 |
| 2.8                                 | 748                   | 0.9            | 491  | 10.0                 | —      | 300 R4 | BN71A4 | — | —                   | 8580  | 8580  | 22400  | 25700  | 5640  | 248 |
| 2.8                                 | 748                   | 1.9            | 491  | 10.0                 | —      | 301 R4 | BN71A4 | — | —                   | 8580  | 8580  | 22400  | 25700  | 5640  | 258 |
| 3.0                                 | 690                   | 1.5            | 453  | 10.0                 | —      | 300 R4 | BN71A4 | — | —                   | 8350  | 8350  | 21900  | 25100  | 5490  | 248 |
| 3.0                                 | 690                   | 2.8            | 453  | 10.0                 | —      | 301 R4 | BN71A4 | — | —                   | 8350  | 8350  | 21900  | 25100  | 5490  | 258 |
| 3.1                                 | 681                   | 1.5            | 447  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 8320  | 8320  | 21800  | 25000  | 5470  | 246 |
| 3.1                                 | 681                   | 3.0            | 447  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 8320  | 8320  | 21800  | 25000  | 5470  | 256 |
| 3.4                                 | 614                   | 1.1            | 403  | 6.0                  | 300 L4 | —      | BN71A4 | — | —                   | 8040  | 8040  | 21100  | 24300  | 5280  | 246 |
| 3.4                                 | 614                   | 2.2            | 403  | 6.0                  | 301 L4 | —      | BN71A4 | — | —                   | 8040  | 8040  | 21100  | 24300  | 5280  | 256 |
| 3.5                                 | 599                   | 1.1            | 394  | 10.0                 | —      | 300 R4 | BN71A4 | — | —                   | 7970  | 7970  | 21000  | 24100  | 5240  | 248 |
| 3.5                                 | 599                   | 2.3            | 394  | 10.0                 | —      | 301 R4 | BN71A4 | — | —                   | 7970  | 7970  | 21000  | 24100  | 5240  | 258 |
| 3.5                                 | 612                   | 2.8            | 389  | 7.5                  | 303 L3 | —      | BN71A4 | — | —                   | 24400 | 28200 | 42600  | 51300  | 15700 | 266 |
| 3.7                                 | 589                   | 1.1            | 374  | 7.5                  | 300 L3 | —      | BN71A4 | — | —                   | 7840  | 7840  | 20600  | 23700  | 5150  | 246 |





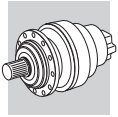
$P_1 = 0.25 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$ | $P_t$<br>kW |        |        |        |   | $R_{n2}$ [N] |      |       |       |       |      |     |
|----------------------------|----------------|-------|-----|-------------|--------|--------|--------|---|--------------|------|-------|-------|-------|------|-----|
|                            |                |       |     |             |        |        |        |   | MC           | MZ   | HC/PC | HZ/PZ | FZ    |      |     |
| 3.7                        | 589            | 2.3   | 374 | 7.5         | 301 L3 | —      | BN71A4 | — | —            | 7840 | 7840  | 20600 | 23700 | 5150 | 256 |
| 3.8                        | 553            | 1.8   | 363 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 7760 | 7760  | 20500 | 23500 | 5100 | 248 |
| 4.2                        | 503            | 1.9   | 330 | 6.0         | 300 L4 | —      | BN71A4 | — | —            | 7520 | 7520  | 19900 | 22900 | 4940 | 246 |
| 4.6                        | 471            | 1.4   | 299 | 7.5         | 300 L3 | —      | BN71A4 | — | —            | 7270 | 7270  | 19300 | 22200 | 4780 | 246 |
| 4.6                        | 471            | 2.8   | 299 | 7.5         | 301 L3 | —      | BN71A4 | — | —            | 7270 | 7270  | 19300 | 22200 | 4780 | 256 |
| 4.7                        | 443            | 2.1   | 291 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 7210 | 7210  | 19100 | 22000 | 4740 | 248 |
| 5.1                        | 408            | 2.3   | 268 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 7020 | 7020  | 18700 | 21500 | 4610 | 248 |
| 5.8                        | 377            | 1.7   | 240 | 7.5         | 300 L3 | —      | BN71A4 | — | —            | 6760 | 6760  | 18100 | 20800 | 4440 | 246 |
| 5.8                        | 361            | 1.8   | 237 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 6740 | 6740  | 18000 | 20700 | 4430 | 248 |
| 6.2                        | 348            | 2.6   | 221 | 7.5         | 300 L3 | —      | BN71A4 | — | —            | 6580 | 6580  | 17600 | 20300 | 4320 | 246 |
| 6.4                        | 327            | 2.8   | 215 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 6520 | 6520  | 17500 | 20100 | 4280 | 248 |
| 7.2                        | 302            | 2.2   | 192 | 7.5         | 300 L3 | —      | BN71A4 | — | —            | 6280 | 6280  | 16900 | 19400 | 4130 | 246 |
| 9.6                        | 218            | 3.0   | 143 | 10.0        | —      | 300 R4 | BN71A4 | — | —            | 5690 | 5690  | 15500 | 17800 | 3740 | 248 |
| 10.4                       | 209            | 2.6   | 133 | 12.0        | —      | 300 R3 | BN71A4 | — | —            | 5550 | 5550  | 15100 | 17400 | 3650 | 248 |

$P_1 = 0.37 \text{ kW}$

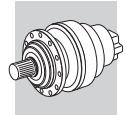
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |        |       | $R_{n2}$ [N] |       |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|--------|-------|--------------|-------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |        |       | MC           | MZ    | HC/PC | HZ/PZ  | FZ     |       |     |
| 0.47                       | 6672           | 1.0   | 2916 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.57                       | 5543           | 2.0   | 2423 | 7.5         | 307 L4 | —      | BN71B4 | M1SD4 | —            | 52000 | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.59                       | 5346           | 1.3   | 2337 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.66                       | 4744           | 1.5   | 2074 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.69                       | 4555           | 1.2   | 1991 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.74                       | 4243           | 1.1   | 1854 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.74                       | 4217           | 2.4   | 1843 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.86                       | 3653           | 2.4   | 1597 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.86                       | 3629           | 1.1   | 1586 | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 64000  | 74000  | 24000 | 278 |
| 0.86                       | 3629           | 1.3   | 1586 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 64000  | 74000  | 24000 | 290 |
| 0.93                       | 3374           | 3.0   | 1475 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 101000 | 119000 | 35000 | 302 |
| 1.0                        | 3135           | 1.5   | 1370 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 62200  | 74000  | 23800 | 290 |
| 1.0                        | 3074           | 1.2   | 1344 | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 42000 | 61900  | 74000  | 23700 | 278 |
| 1.1                        | 2927           | 2.9   | 1279 | 6.0         | 306 L4 | —      | BN71B4 | M1SD4 | —            | 45000 | 51000 | 99700  | 116100 | 34000 | 302 |
| 1.1                        | 2924           | 1.0   | 1278 | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 41900 | 60900  | 73300  | 23300 | 266 |
| 1.1                        | 2924           | 1.9   | 1278 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 41900 | 60900  | 73300  | 23300 | 290 |
| 1.1                        | 2908           | 1.3   | 1271 | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 36000 | 41800 | 60800  | 73200  | 23200 | 278 |
| 1.2                        | 2663           | 1.1   | 1164 | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 35200 | 40600 | 59200  | 71300  | 22600 | 278 |
| 1.2                        | 2512           | 0.9   | 1098 | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 33700 | 38900 | 57000  | 68600  | 21600 | 266 |
| 1.2                        | 2512           | 1.8   | 1098 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 34500 | 39800 | 58200  | 70000  | 22100 | 290 |
| 1.3                        | 2338           | 1.0   | 1022 | 6.0         | 301 L4 | —      | BN71B4 | M1SD4 | —            | 10700 | 10700 | 27300  | 31400  | 7040  | 256 |
| 1.3                        | 2330           | 1.2   | 1018 | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 33600 | 38800 | 56900  | 68500  | 21600 | 266 |
| 1.3                        | 2330           | 1.7   | 1018 | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 33600 | 38800 | 56900  | 68500  | 21600 | 278 |
| 1.3                        | 2330           | 2.3   | 1018 | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 33600 | 38800 | 56900  | 68500  | 21600 | 290 |
| 1.5                        | 2156           | 1.1   | 942  | 6.0         | 301 L4 | —      | BN71B4 | M1SD4 | —            | 10700 | 10700 | 27200  | 31300  | 7010  | 256 |
| 1.5                        | 2051           | 1.1   | 896  | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 32200 | 37200 | 54800  | 65900  | 20700 | 266 |
| 1.5                        | 2051           | 2.1   | 896  | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 32200 | 37200 | 54800  | 65900  | 20700 | 290 |
| 1.7                        | 1884           | 1.2   | 824  | 12.0        | —      | 303 R4 | BN71B4 | M1SD4 | —            | 31300 | 36200 | 53400  | 64300  | 20100 | 268 |
| 1.7                        | 1884           | 2.2   | 824  | 12.0        | —      | 305 R4 | BN71B4 | M1SD4 | —            | 31300 | 36200 | 53400  | 64300  | 20100 | 292 |
| 1.7                        | 1873           | 1.2   | 819  | 6.0         | 301 L4 | —      | BN71B4 | M1SD4 | —            | 10200 | 10200 | 26100  | 30000  | 6690  | 256 |
| 1.7                        | 1867           | 1.5   | 816  | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 31300 | 36100 | 53300  | 64100  | 20000 | 266 |
| 1.7                        | 1867           | 2.0   | 816  | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 31300 | 36100 | 53300  | 64100  | 20000 | 278 |
| 1.7                        | 1867           | 2.9   | 816  | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 31300 | 36100 | 53300  | 64100  | 20000 | 290 |
| 1.7                        | 1824           | 1.0   | 797  | 12.0        | —      | 303 R4 | BN71B4 | M1SD4 | —            | 31000 | 35800 | 52900  | 63600  | 19900 | 268 |
| 1.7                        | 1824           | 1.9   | 797  | 12.0        | —      | 305 R4 | BN71B4 | M1SD4 | —            | 31000 | 35800 | 52900  | 63600  | 19900 | 292 |
| 1.8                        | 1727           | 1.3   | 755  | 6.0         | 301 L4 | —      | BN71B4 | M1SD4 | —            | 9900  | 9900  | 25500  | 29300  | 6510  | 256 |
| 1.9                        | 1643           | 1.3   | 718  | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 29900 | 34600 | 51300  | 61700  | 19200 | 266 |
| 1.9                        | 1643           | 2.5   | 718  | 6.0         | 305 L4 | —      | BN71B4 | M1SD4 | —            | 29900 | 34600 | 51300  | 61700  | 19200 | 290 |
| 2.0                        | 1606           | 1.6   | 702  | 6.0         | 304 L4 | —      | BN71B4 | M1SD4 | —            | 29700 | 34300 | 50900  | 61300  | 19100 | 278 |
| 2.0                        | 1600           | 1.6   | 699  | 12.0        | —      | 304 R4 | BN71B4 | M1SD4 | —            | 29700 | 34300 | 50900  | 61200  | 19000 | 280 |
| 2.1                        | 1508           | 1.4   | 659  | 12.0        | —      | 303 R4 | BN71B4 | M1SD4 | —            | 29100 | 33600 | 50000  | 60100  | 18700 | 268 |
| 2.1                        | 1508           | 2.7   | 659  | 12.0        | —      | 305 R4 | BN71B4 | M1SD4 | —            | 29100 | 33600 | 50000  | 60100  | 18700 | 292 |
| 2.1                        | 1486           | 1.6   | 649  | 6.0         | 303 L4 | —      | BN71B4 | M1SD4 | —            | 29000 | 33400 | 49700  | 59800  | 18600 | 266 |





$P_1 = 0.37 \text{ kW}$

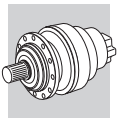
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |        |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|--------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |     |                      |        |        |        |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 2.1                                 | 1486                  | 2.4            | 649 | 6.0                  | 304 L4 | —      | BN71B4 | M1SD4 | 29000               | 33400 | 49700 | 59800 | 18600 | 278 |
| 2.2                                 | 1410                  | 1.5            | 616 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 9260                | 9260  | 24000 | 27600 | 6090  | 256 |
| 2.2                                 | 1403                  | 1.0            | 613 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 9240                | 9240  | 23900 | 27500 | 6080  | 258 |
| 2.4                                 | 1297                  | 1.9            | 567 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 27700               | 32000 | 47700 | 57400 | 17800 | 268 |
| 2.4                                 | 1280                  | 2.0            | 560 | 12.0                 | —      | 304 R4 | BN71B4 | M1SD4 | 27600               | 31800 | 47600 | 57200 | 17700 | 280 |
| 2.5                                 | 1276                  | 1.7            | 558 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 8950                | 8950  | 23300 | 26700 | 5890  | 256 |
| 2.5                                 | 1272                  | 2.2            | 556 | 6.0                  | 303 L4 | —      | BN71B4 | M1SD4 | 27500               | 31700 | 47500 | 57100 | 17600 | 266 |
| 2.5                                 | 1272                  | 2.9            | 556 | 6.0                  | 304 L4 | —      | BN71B4 | M1SD4 | 27500               | 31700 | 47500 | 57100 | 17600 | 278 |
| 2.6                                 | 1208                  | 1.7            | 528 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 27000               | 31200 | 46700 | 56200 | 17300 | 268 |
| 2.8                                 | 1130                  | 0.9            | 494 | 6.0                  | 300 L4 | —      | BN71B4 | M1SD4 | 8400                | 8400  | 22000 | 25300 | 5520  | 246 |
| 2.8                                 | 1130                  | 1.8            | 494 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 8600                | 8600  | 22400 | 25800 | 5650  | 256 |
| 2.8                                 | 1126                  | 2.4            | 492 | 6.0                  | 303 L4 | —      | BN71B4 | M1SD4 | 26400               | 30500 | 45800 | 55100 | 16900 | 266 |
| 2.8                                 | 1124                  | 1.3            | 491 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 8580                | 8580  | 22400 | 25700 | 5640  | 258 |
| 3.0                                 | 1037                  | 1.0            | 453 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 8350                | 8350  | 21900 | 25100 | 5490  | 248 |
| 3.0                                 | 1037                  | 1.9            | 453 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 8350                | 8350  | 21900 | 25100 | 5490  | 258 |
| 3.0                                 | 1033                  | 2.2            | 452 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 25700               | 29600 | 44600 | 53700 | 16500 | 268 |
| 3.1                                 | 1023                  | 1.0            | 447 | 6.0                  | 300 L4 | —      | BN71B4 | M1SD4 | 8320                | 8320  | 21800 | 25000 | 5470  | 246 |
| 3.1                                 | 1023                  | 2.0            | 447 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 8320                | 8320  | 21800 | 25000 | 5470  | 256 |
| 3.1                                 | 1020                  | 2.8            | 446 | 6.0                  | 303 L4 | —      | BN71B4 | M1SD4 | 25500               | 29500 | 44400 | 53400 | 16400 | 266 |
| 3.2                                 | 1008                  | 2.5            | 426 | 7.5                  | 304 L3 | —      | BN71B4 | M1SD4 | 25200               | 29000 | 43800 | 52700 | 16100 | 278 |
| 3.3                                 | 946                   | 2.6            | 414 | 12.0                 | —      | 304 R4 | BN71B4 | M1SD4 | 24900               | 28800 | 43400 | 52300 | 16000 | 280 |
| 3.3                                 | 945                   | 2.5            | 413 | 6.0                  | 303 L4 | —      | BN71B4 | M1SD4 | 24900               | 28800 | 43400 | 52200 | 16000 | 266 |
| 3.4                                 | 922                   | 1.5            | 403 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 8040                | 8040  | 21100 | 24300 | 5280  | 256 |
| 3.4                                 | 951                   | 2.0            | 402 | 7.5                  | 303 L3 | —      | BN71B4 | M1SD4 | 24700               | 28500 | 43100 | 51800 | 15800 | 266 |
| 3.5                                 | 901                   | 1.5            | 394 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 7970                | 7970  | 21000 | 24100 | 5240  | 258 |
| 3.5                                 | 893                   | 2.2            | 390 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 24400               | 28200 | 42700 | 51400 | 15700 | 268 |
| 3.5                                 | 920                   | 1.8            | 389 | 7.5                  | 303 L3 | —      | BN71B4 | M1SD4 | 24400               | 28200 | 42600 | 51300 | 15700 | 266 |
| 3.7                                 | 885                   | 1.5            | 374 | 7.5                  | 301 L3 | —      | BN71B4 | M1SD4 | 7840                | 7840  | 20600 | 23700 | 5150  | 256 |
| 3.8                                 | 833                   | 2.8            | 364 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 23900               | 27600 | 41800 | 50300 | 15300 | 268 |
| 3.8                                 | 831                   | 1.2            | 363 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 7760                | 7760  | 20500 | 23500 | 5100  | 248 |
| 3.8                                 | 831                   | 2.4            | 363 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 7760                | 7760  | 20500 | 23500 | 5100  | 258 |
| 4.0                                 | 807                   | 3.0            | 341 | 7.5                  | 304 L3 | —      | BN71B4 | M1SD4 | 23400               | 27000 | 41000 | 49300 | 15000 | 278 |
| 4.1                                 | 768                   | 3.0            | 336 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 23200               | 26800 | 40800 | 49100 | 14900 | 268 |
| 4.1                                 | 756                   | 1.3            | 330 | 6.0                  | 300 L4 | —      | BN71B4 | M1SD4 | 7520                | 7520  | 19900 | 22900 | 4940  | 246 |
| 4.1                                 | 756                   | 2.5            | 330 | 6.0                  | 301 L4 | —      | BN71B4 | M1SD4 | 7520                | 7520  | 19900 | 22900 | 4940  | 256 |
| 4.3                                 | 760                   | 2.4            | 321 | 7.5                  | 303 L3 | —      | BN71B4 | M1SD4 | 22900               | 26400 | 40300 | 48500 | 14700 | 266 |
| 4.4                                 | 715                   | 2.6            | 313 | 12.0                 | —      | 303 R4 | BN71B4 | M1SD4 | 22700               | 26200 | 39900 | 48100 | 14600 | 268 |
| 4.6                                 | 708                   | 0.9            | 299 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 7270                | 7270  | 19300 | 22200 | 4780  | 246 |
| 4.6                                 | 708                   | 1.8            | 299 | 7.5                  | 301 L3 | —      | BN71B4 | M1SD4 | 7270                | 7270  | 19300 | 22200 | 4780  | 256 |
| 4.7                                 | 666                   | 1.4            | 291 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 7210                | 7210  | 19100 | 22000 | 4740  | 248 |
| 4.7                                 | 666                   | 2.8            | 291 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 7210                | 7210  | 19100 | 22000 | 4740  | 258 |
| 5.1                                 | 614                   | 1.5            | 268 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 7020                | 7020  | 18700 | 21500 | 4610  | 248 |
| 5.7                                 | 567                   | 1.1            | 240 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 6760                | 6760  | 18100 | 20800 | 4440  | 246 |
| 5.7                                 | 567                   | 2.3            | 240 | 7.5                  | 301 L3 | —      | BN71B4 | M1SD4 | 6760                | 6760  | 18100 | 20800 | 4440  | 256 |
| 5.8                                 | 543                   | 1.2            | 237 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 6740                | 6740  | 18000 | 20700 | 4430  | 248 |
| 5.8                                 | 543                   | 2.4            | 237 | 10.0                 | —      | 301 R4 | BN71B4 | M1SD4 | 6740                | 6740  | 18000 | 20700 | 4430  | 258 |
| 6.2                                 | 523                   | 1.7            | 221 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 6580                | 6580  | 17600 | 20300 | 4320  | 246 |
| 6.4                                 | 492                   | 1.9            | 215 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 6520                | 6520  | 17500 | 20100 | 4280  | 248 |
| 7.1                                 | 454                   | 1.4            | 192 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 6280                | 6280  | 16900 | 19400 | 4130  | 246 |
| 7.1                                 | 454                   | 2.9            | 192 | 7.5                  | 301 L3 | —      | BN71B4 | M1SD4 | 6280                | 6280  | 16900 | 19400 | 4130  | 256 |
| 7.7                                 | 419                   | 2.1            | 177 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 6110                | 6110  | 16500 | 19000 | 4020  | 246 |
| 7.8                                 | 401                   | 2.2            | 175 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 6090                | 6090  | 16500 | 18900 | 4000  | 248 |
| 8.6                                 | 363                   | 2.4            | 159 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 5890                | 5890  | 16000 | 18300 | 3870  | 248 |
| 9.6                                 | 328                   | 2.0            | 143 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 5690                | 5690  | 15500 | 17800 | 3740  | 248 |
| 9.7                                 | 336                   | 2.6            | 142 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 5670                | 5670  | 15400 | 17700 | 3730  | 246 |
| 10.3                                | 314                   | 1.7            | 133 | 12.0                 | —      | 300 R3 | BN71B4 | M1SD4 | 5550                | 5550  | 15100 | 17400 | 3650  | 248 |
| 10.5                                | 310                   | 2.8            | 131 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 5520                | 5520  | 15100 | 17300 | 3630  | 246 |
| 10.6                                | 297                   | 2.9            | 130 | 10.0                 | —      | 300 R4 | BN71B4 | M1SD4 | 5510                | 5510  | 15000 | 17300 | 3620  | 248 |
| 11.8                                | 274                   | 2.4            | 116 | 7.5                  | 300 L3 | —      | BN71B4 | M1SD4 | 5300                | 5300  | 14500 | 16700 | 3490  | 246 |
| 12.9                                | 252                   | 2.6            | 106 | 12.0                 | —      | 300 R3 | BN71B4 | M1SD4 | 5160                | 5160  | 14200 | 16300 | 3390  | 248 |



$P_1 = 0.55 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |        |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|--------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |        |        |       | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 0.57                                | 8101                  | 1.4            | 2423 | 7.5                  | 307 L4 | —      | BN80A4 | M1LA4 | 52000               | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.57                                | 8101                  | 2.1            | 2423 | 7.5                  | 309 L4 | —      | BN80A4 | —     | —                   | —     | 110000 | 145000 | 36000 | 326 |
| 0.67                                | 6934                  | 1.0            | 2074 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 45000               | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.68                                | 6826                  | 2.1            | 2041 | 7.5                  | 307 L4 | —      | BN80A4 | M1LA4 | 52000               | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.69                                | 6697                  | 2.5            | 2003 | 7.5                  | 309 L4 | —      | BN80A4 | —     | —                   | —     | 110000 | 145000 | 36000 | 326 |
| 0.75                                | 6164                  | 1.6            | 1843 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 45000               | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.79                                | 5910                  | 2.7            | 1767 | 7.5                  | 307 L4 | —      | BN80A4 | M1LA4 | 52000               | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.81                                | 5761                  | 3.0            | 1723 | 7.5                  | 309 L4 | —      | BN80A4 | —     | —                   | —     | 110000 | 145000 | 36000 | 326 |
| 0.87                                | 5339                  | 1.6            | 1597 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 45000               | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.87                                | 5319                  | 2.8            | 1591 | 7.5                  | 307 L4 | —      | BN80A4 | M1LA4 | 52000               | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.94                                | 4931                  | 2.0            | 1475 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 45000               | 51000 | 101000 | 119000 | 35000 | 302 |
| 1.0                                 | 4582                  | 1.0            | 1370 | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 36000               | 42000 | 62200  | 74000  | 23800 | 290 |
| 1.1                                 | 4278                  | 2.0            | 1279 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 45000               | 51000 | 99700  | 116100 | 34000 | 302 |
| 1.1                                 | 4274                  | 1.3            | 1278 | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 36000               | 41900 | 60900  | 73300  | 23300 | 290 |
| 1.1                                 | 4262                  | 2.9            | 1274 | 7.5                  | 307 L4 | —      | BN80A4 | M1LA4 | 50200               | 63000 | 107100 | 140400 | 43600 | 314 |
| 1.1                                 | 4250                  | 0.9            | 1271 | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 36000               | 41800 | 60800  | 73200  | 23200 | 278 |
| 1.3                                 | 3671                  | 1.2            | 1098 | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 34500               | 39800 | 58200  | 70000  | 22100 | 290 |
| 1.3                                 | 3660                  | 2.1            | 1095 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 42900               | 48600 | 95200  | 110800 | 32200 | 302 |
| 1.4                                 | 3406                  | 1.1            | 1018 | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 33600               | 38800 | 56900  | 68500  | 21600 | 278 |
| 1.4                                 | 3406                  | 1.6            | 1018 | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 33600               | 38800 | 56900  | 68500  | 21600 | 290 |
| 1.4                                 | 3394                  | 2.8            | 1015 | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 41900               | 47400 | 93000  | 108300 | 31400 | 302 |
| 1.6                                 | 2997                  | 1.4            | 896  | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 32200               | 37200 | 54800  | 65900  | 20700 | 290 |
| 1.6                                 | 2933                  | 2.6            | 877  | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 39900               | 45200 | 89000  | 103700 | 29900 | 302 |
| 1.7                                 | 2776                  | 2.3            | 830  | 12.0                 | —      | 306 R4 | BN80A4 | M1LA4 | 39100               | 44300 | 87600  | 102000 | 29400 | 304 |
| 1.7                                 | 2754                  | 1.5            | 824  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 31300               | 36200 | 53400  | 64300  | 20100 | 292 |
| 1.7                                 | 2729                  | 1.0            | 816  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 31300               | 36100 | 53300  | 64100  | 20000 | 266 |
| 1.7                                 | 2729                  | 1.4            | 816  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 31300               | 36100 | 53300  | 64100  | 20000 | 278 |
| 1.7                                 | 2729                  | 2.0            | 816  | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 31300               | 36100 | 53300  | 64100  | 20000 | 290 |
| 1.7                                 | 2705                  | 2.8            | 809  | 6.0                  | 306 L4 | —      | BN80A4 | M1LA4 | 38800               | 44000 | 86900  | 101200 | 29200 | 302 |
| 1.7                                 | 2665                  | 1.3            | 797  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 31000               | 35800 | 52900  | 63600  | 19900 | 292 |
| 1.9                                 | 2401                  | 1.7            | 718  | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 29900               | 34600 | 51300  | 61700  | 19200 | 290 |
| 2.0                                 | 2347                  | 1.1            | 702  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 29700               | 34300 | 50900  | 61300  | 19100 | 278 |
| 2.0                                 | 2339                  | 1.1            | 699  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 29700               | 34300 | 50900  | 61200  | 19000 | 280 |
| 2.1                                 | 2225                  | 2.7            | 665  | 12.0                 | —      | 306 R4 | BN80A4 | M1LA4 | 36400               | 41200 | 82000  | 95400  | 27300 | 304 |
| 2.1                                 | 2203                  | 1.0            | 659  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 29100               | 33600 | 50000  | 60100  | 18700 | 268 |
| 2.1                                 | 2203                  | 1.8            | 659  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 29100               | 33600 | 50000  | 60100  | 18700 | 292 |
| 2.1                                 | 2172                  | 1.1            | 649  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 29000               | 33400 | 49700  | 59800  | 18600 | 266 |
| 2.1                                 | 2172                  | 1.6            | 649  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 29000               | 33400 | 49700  | 59800  | 18600 | 278 |
| 2.1                                 | 2172                  | 2.1            | 649  | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 29000               | 33400 | 49700  | 59800  | 18600 | 290 |
| 2.3                                 | 2061                  | 1.0            | 616  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 9260                | 9260  | 24000  | 27600  | 6090  | 256 |
| 2.5                                 | 1895                  | 1.3            | 567  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 27700               | 32000 | 47700  | 57400  | 17800 | 268 |
| 2.5                                 | 1895                  | 2.6            | 567  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 27700               | 32000 | 47700  | 57400  | 17800 | 292 |
| 2.5                                 | 1871                  | 1.4            | 560  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 27600               | 31800 | 47600  | 57200  | 17700 | 280 |
| 2.5                                 | 1865                  | 1.1            | 558  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 8950                | 8950  | 23300  | 26700  | 5890  | 256 |
| 2.5                                 | 1860                  | 1.5            | 556  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 27500               | 31700 | 47500  | 57100  | 17600 | 266 |
| 2.5                                 | 1860                  | 2.0            | 556  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 27500               | 31700 | 47500  | 57100  | 17600 | 278 |
| 2.5                                 | 1860                  | 3.0            | 556  | 6.0                  | 305 L4 | —      | BN80A4 | M1LA4 | 27500               | 31700 | 47500  | 57100  | 17600 | 290 |
| 2.6                                 | 1765                  | 1.1            | 528  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 27000               | 31200 | 46700  | 56200  | 17300 | 268 |
| 2.6                                 | 1765                  | 2.2            | 528  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 27000               | 31200 | 46700  | 56200  | 17300 | 292 |
| 2.8                                 | 1651                  | 1.3            | 494  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 8600                | 8600  | 22400  | 25800  | 5650  | 256 |
| 2.8                                 | 1646                  | 1.6            | 492  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 26400               | 30500 | 45800  | 55100  | 16900 | 266 |
| 2.8                                 | 1646                  | 2.3            | 492  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 26400               | 30500 | 45800  | 55100  | 16900 | 278 |
| 3.1                                 | 1515                  | 1.3            | 453  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 8350                | 8350  | 21900  | 25100  | 5490  | 258 |
| 3.1                                 | 1510                  | 1.5            | 452  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 25700               | 29600 | 44600  | 53700  | 16500 | 268 |
| 3.1                                 | 1510                  | 2.4            | 452  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 25700               | 29600 | 44600  | 53700  | 16500 | 280 |
| 3.1                                 | 1495                  | 1.4            | 447  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 8320                | 8320  | 21800  | 25000  | 5470  | 256 |
| 3.1                                 | 1490                  | 1.9            | 446  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 25500               | 29500 | 44400  | 53400  | 16400 | 266 |
| 3.1                                 | 1490                  | 2.5            | 446  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 25500               | 29500 | 44400  | 53400  | 16400 | 278 |
| 3.3                                 | 1473                  | 1.7            | 426  | 7.5                  | 304 L3 | —      | BN80A4 | M1LA4 | 25200               | 29000 | 43800  | 52700  | 16100 | 278 |
| 3.4                                 | 1383                  | 1.8            | 414  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 24900               | 28800 | 43400  | 52300  | 16000 | 280 |
| 3.4                                 | 1382                  | 1.7            | 413  | 6.0                  | 303 L4 | —      | BN80A4 | M1LA4 | 24900               | 28800 | 43400  | 52200  | 16000 | 266 |
| 3.4                                 | 1382                  | 2.2            | 413  | 6.0                  | 304 L4 | —      | BN80A4 | M1LA4 | 24900               | 28800 | 43400  | 52200  | 16000 | 278 |
| 3.4                                 | 1348                  | 1.0            | 403  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 8040                | 8040  | 21100  | 24300  | 5280  | 256 |
| 3.5                                 | 1389                  | 1.4            | 402  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 24700               | 28500 | 43100  | 51800  | 15800 | 266 |
| 3.5                                 | 1389                  | 2.7            | 402  | 7.5                  | 305 L3 | —      | BN80A4 | M1LA4 | 24700               | 28500 | 43100  | 51800  | 15800 | 290 |

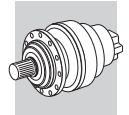
A



$P_1 = 0.55 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |        |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|--------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |        |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 3.5                                 | 1316                  | 1.0            | 394  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 7970                | 7970  | 21000 | 24100 | 5240  | 258 |
| 3.6                                 | 1305                  | 1.5            | 390  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 24400               | 28200 | 42700 | 51400 | 15700 | 268 |
| 3.6                                 | 1305                  | 2.9            | 390  | 12.0                 | —      | 305 R4 | BN80A4 | M1LA4 | 24400               | 28200 | 42700 | 51400 | 15700 | 292 |
| 3.6                                 | 1344                  | 1.3            | 389  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 24400               | 28200 | 42600 | 51300 | 15700 | 266 |
| 3.6                                 | 1344                  | 2.4            | 389  | 7.5                  | 305 L3 | —      | BN80A4 | M1LA4 | 24400               | 28200 | 42600 | 51300 | 15700 | 290 |
| 3.7                                 | 1293                  | 1.0            | 374  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 7840                | 7840  | 20600 | 23700 | 5150  | 256 |
| 3.8                                 | 1217                  | 1.9            | 364  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 23900               | 27600 | 41800 | 50300 | 15300 | 268 |
| 3.8                                 | 1217                  | 2.4            | 364  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 23900               | 27600 | 41800 | 50300 | 15300 | 280 |
| 3.8                                 | 1214                  | 1.6            | 363  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 7760                | 7760  | 20500 | 23500 | 5100  | 258 |
| 4.1                                 | 1180                  | 2.1            | 341  | 7.5                  | 304 L3 | —      | BN80A4 | M1LA4 | 23400               | 27000 | 41000 | 49300 | 15000 | 278 |
| 4.1                                 | 1129                  | 2.1            | 338  | 12.0                 | —      | 304 R4 | BN80A4 | M1LA4 | 23300               | 26900 | 40900 | 49200 | 14900 | 280 |
| 4.1                                 | 1122                  | 2.0            | 336  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 23200               | 26800 | 40800 | 49100 | 14900 | 268 |
| 4.2                                 | 1105                  | 1.7            | 330  | 6.0                  | 301 L4 | —      | BN80A4 | M1LA4 | 7520                | 7520  | 19900 | 22900 | 4940  | 256 |
| 4.3                                 | 1111                  | 1.7            | 321  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 22900               | 26400 | 40300 | 48500 | 14700 | 266 |
| 4.4                                 | 1045                  | 1.8            | 313  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 22700               | 26200 | 39900 | 48100 | 14600 | 268 |
| 4.6                                 | 1034                  | 1.3            | 299  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 7270                | 7270  | 19300 | 22200 | 4780  | 256 |
| 4.8                                 | 973                   | 1.0            | 291  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 7210                | 7210  | 19100 | 22000 | 4740  | 248 |
| 4.8                                 | 973                   | 1.9            | 291  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 7210                | 7210  | 19100 | 22000 | 4740  | 258 |
| 4.8                                 | 970                   | 2.7            | 290  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 22100               | 25600 | 39100 | 47000 | 14200 | 268 |
| 5.0                                 | 956                   | 2.3            | 276  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 21800               | 25200 | 38500 | 46300 | 14000 | 266 |
| 5.1                                 | 944                   | 2.5            | 273  | 7.5                  | 304 L3 | —      | BN80A4 | M1LA4 | 21700               | 25000 | 38300 | 46100 | 13900 | 278 |
| 5.2                                 | 897                   | 1.0            | 268  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 7020                | 7020  | 18700 | 21500 | 4610  | 248 |
| 5.2                                 | 897                   | 2.1            | 268  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 7020                | 7020  | 18700 | 21500 | 4610  | 258 |
| 5.4                                 | 891                   | 2.1            | 258  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 21300               | 24600 | 37700 | 45300 | 13600 | 266 |
| 5.4                                 | 853                   | 2.2            | 255  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 21200               | 24500 | 37600 | 45200 | 13600 | 268 |
| 5.8                                 | 829                   | 1.6            | 240  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 6760                | 6760  | 18100 | 20800 | 4440  | 256 |
| 5.9                                 | 794                   | 1.6            | 237  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 6740                | 6740  | 18000 | 20700 | 4430  | 258 |
| 6.0                                 | 772                   | 2.4            | 231  | 12.0                 | —      | 303 R4 | BN80A4 | M1LA4 | 20500               | 23700 | 36500 | 43900 | 13200 | 268 |
| 6.3                                 | 764                   | 1.2            | 221  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 6580                | 6580  | 17600 | 20300 | 4320  | 246 |
| 6.3                                 | 764                   | 2.3            | 221  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 6580                | 6580  | 17600 | 20300 | 4320  | 256 |
| 6.3                                 | 762                   | 3.0            | 220  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 20200               | 23300 | 36000 | 43300 | 13000 | 266 |
| 6.5                                 | 719                   | 1.3            | 215  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 6520                | 6520  | 17500 | 20100 | 4280  | 248 |
| 6.5                                 | 719                   | 2.5            | 215  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 6520                | 6520  | 17500 | 20100 | 4280  | 258 |
| 7.2                                 | 664                   | 1.0            | 192  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 6280                | 6280  | 16900 | 19400 | 4130  | 246 |
| 7.2                                 | 664                   | 2.0            | 192  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 6280                | 6280  | 16900 | 19400 | 4130  | 256 |
| 7.3                                 | 658                   | 2.8            | 190  | 7.5                  | 303 L3 | —      | BN80A4 | M1LA4 | 19200               | 22200 | 34400 | 41400 | 12300 | 266 |
| 7.8                                 | 612                   | 1.4            | 177  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 6110                | 6110  | 16500 | 19000 | 4020  | 246 |
| 7.8                                 | 612                   | 2.9            | 177  | 7.5                  | 301 L3 | —      | BN80A4 | M1LA4 | 6110                | 6110  | 16500 | 19000 | 4020  | 256 |
| 7.9                                 | 587                   | 1.5            | 175  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 6090                | 6090  | 16500 | 18900 | 4000  | 248 |
| 8.8                                 | 531                   | 1.6            | 159  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 5890                | 5890  | 16000 | 18300 | 3870  | 248 |
| 9.7                                 | 479                   | 1.4            | 143  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 5690                | 5690  | 15500 | 17800 | 3740  | 248 |
| 9.7                                 | 479                   | 2.7            | 143  | 10.0                 | —      | 301 R4 | BN80A4 | M1LA4 | 5690                | 5690  | 15500 | 17800 | 3740  | 258 |
| 9.8                                 | 491                   | 1.8            | 142  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 5670                | 5670  | 15400 | 17700 | 3730  | 246 |
| 10.5                                | 459                   | 1.2            | 133  | 12.0                 | —      | 300 R3 | BN80A4 | M1LA4 | 5420                | 5420  | 14800 | 17000 | 3570  | 248 |
| 10.5                                | 459                   | 2.5            | 133  | 12.0                 | —      | 301 R3 | BN80A4 | M1LA4 | 5550                | 5550  | 15100 | 17400 | 3650  | 258 |
| 10.6                                | 453                   | 1.9            | 131  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 5520                | 5520  | 15100 | 17300 | 3630  | 246 |
| 10.7                                | 434                   | 2.0            | 130  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 5510                | 5510  | 15000 | 17300 | 3620  | 248 |
| 12.0                                | 401                   | 1.6            | 116  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 5300                | 5300  | 14500 | 16700 | 3490  | 246 |
| 13.1                                | 368                   | 1.8            | 106  | 12.0                 | —      | 300 R3 | BN80A4 | M1LA4 | 5160                | 5160  | 14200 | 16300 | 3390  | 248 |
| 13.1                                | 354                   | 2.4            | 106  | 10.0                 | —      | 300 R4 | BN80A4 | M1LA4 | 5150                | 5150  | 14100 | 16200 | 3380  | 248 |
| 13.3                                | 363                   | 2.4            | 105  | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 5130                | 5130  | 14100 | 16200 | 3370  | 246 |
| 16.2                                | 296                   | 2.9            | 85.6 | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 4790                | 4790  | 13300 | 15200 | 3150  | 246 |
| 16.3                                | 294                   | 2.2            | 85.2 | 12.0                 | —      | 300 R3 | BN80A4 | M1LA4 | 4790                | 4790  | 13200 | 15200 | 3150  | 248 |
| 19.9                                | 242                   | 2.7            | 69.9 | 7.5                  | 300 L3 | —      | BN80A4 | M1LA4 | 4480                | 4480  | 12500 | 14300 | 2950  | 246 |
| 20.4                                | 236                   | 2.8            | 68.2 | 12.0                 | —      | 300 R3 | BN80A4 | M1LA4 | 4440                | 4440  | 12400 | 14200 | 2920  | 248 |
| 21.5                                | 231                   | 2.4            | 64.8 | 7.5                  | 300 L2 | —      | BN80A4 | M1LA4 | 4370                | 4370  | 12200 | 14000 | 2870  | 246 |

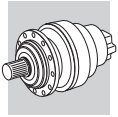




$P_1 = 0.75 \text{ kW}$

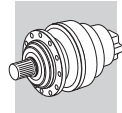
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | i    | $P_t$<br>kW |        |        |        |       | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|--------|-------|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |        |       | MC           | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 0.55                       | 11325          | 2.3   | 2523 | 11.0        | 310 L4 | —      | BN80B4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.58                       | 10872          | 1.0   | 2423 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.58                       | 10872          | 1.6   | 2423 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.69                       | 9161           | 1.6   | 2041 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.69                       | 9075           | 2.9   | 2022 | 11.0        | 310 L4 | —      | BN80B4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.70                       | 8988           | 1.9   | 2003 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.76                       | 8272           | 1.2   | 1843 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 45000        | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.79                       | 7932           | 2.0   | 1767 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.81                       | 7731           | 2.2   | 1723 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.87                       | 7202           | 2.4   | 1605 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.88                       | 7166           | 1.2   | 1597 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 45000        | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.88                       | 7138           | 2.1   | 1591 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.95                       | 6618           | 1.5   | 1475 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 45000        | 51000 | 101000 | 119000 | 35000 | 302 |
| 0.99                       | 6320           | 2.5   | 1408 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 51900        | 65000 | 109000 | 144700 | 45000 | 314 |
| 1.0                        | 6195           | 2.7   | 1380 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 110000 | 143800 | 35800 | 326 |
| 1.1                        | 5771           | 2.9   | 1286 | 7.5         | 309 L4 | —      | BN80B4 | —     | —            | —     | 109200 | 140800 | 35000 | 326 |
| 1.1                        | 5742           | 1.5   | 1279 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 45000        | 51000 | 99700  | 116100 | 34000 | 302 |
| 1.1                        | 5736           | 1.0   | 1278 | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 36000        | 41900 | 60900  | 73300  | 23300 | 290 |
| 1.1                        | 5720           | 2.2   | 1274 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 50200        | 63000 | 107100 | 140400 | 43600 | 314 |
| 1.2                        | 5191           | 2.7   | 1157 | 7.5         | 307 L4 | —      | BN80B4 | M2SA4 | 48600        | 60900 | 104100 | 136400 | 42200 | 314 |
| 1.3                        | 4927           | 0.9   | 1098 | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 33700        | 38900 | 57000  | 68600  | 21600 | 290 |
| 1.3                        | 4912           | 1.6   | 1095 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 42900        | 48600 | 95200  | 110800 | 32200 | 302 |
| 1.4                        | 4571           | 1.2   | 1018 | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 33600        | 38800 | 56900  | 68500  | 21600 | 290 |
| 1.4                        | 4555           | 2.1   | 1015 | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 41900        | 47400 | 93000  | 108300 | 31400 | 302 |
| 1.6                        | 4022           | 1.1   | 896  | 7.5         | 305 L4 | —      | BN80B4 | M2SA4 | 46300        | 58000 | 99600  | 130500 | 40200 | 290 |
| 1.6                        | 3936           | 2.0   | 877  | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 39900        | 45200 | 89000  | 103700 | 29900 | 302 |
| 1.7                        | 3726           | 1.7   | 830  | 12.0        | —      | 306 R4 | BN80B4 | M2SA4 | 39100        | 44300 | 87600  | 102000 | 29400 | 304 |
| 1.7                        | 3696           | 1.1   | 824  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 31300        | 36200 | 53400  | 64300  | 20100 | 292 |
| 1.7                        | 3663           | 1.0   | 816  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 31300        | 36100 | 53300  | 64100  | 20000 | 278 |
| 1.7                        | 3663           | 1.5   | 816  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 31300        | 36100 | 53300  | 64100  | 20000 | 290 |
| 1.7                        | 3630           | 2.1   | 809  | 6.0         | 306 L4 | —      | BN80B4 | M2SA4 | 38800        | 44000 | 86900  | 101200 | 29200 | 302 |
| 1.8                        | 3577           | 1.0   | 797  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 31000        | 35800 | 52900  | 63600  | 19900 | 292 |
| 1.9                        | 3223           | 1.3   | 718  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 29900        | 34600 | 51300  | 61700  | 19200 | 290 |
| 2.1                        | 2986           | 2.0   | 665  | 12.0        | —      | 306 R4 | BN80B4 | M2SA4 | 36400        | 41200 | 82000  | 95400  | 27300 | 304 |
| 2.1                        | 2957           | 1.4   | 659  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 29100        | 33600 | 50000  | 60100  | 18700 | 292 |
| 2.2                        | 2915           | 1.2   | 649  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 29000        | 33400 | 49700  | 59800  | 18600 | 278 |
| 2.2                        | 2915           | 1.5   | 649  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 29000        | 33400 | 49700  | 59800  | 18600 | 290 |
| 2.5                        | 2544           | 1.0   | 567  | 12.0        | —      | 303 R4 | BN80B4 | M2SA4 | 27700        | 32000 | 47700  | 57400  | 17800 | 268 |
| 2.5                        | 2544           | 1.9   | 567  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 27700        | 32000 | 47700  | 57400  | 17800 | 292 |
| 2.5                        | 2511           | 1.0   | 560  | 12.0        | —      | 304 R4 | BN80B4 | M2SA4 | 27600        | 31800 | 47600  | 57200  | 17700 | 280 |
| 2.5                        | 2496           | 1.1   | 556  | 6.0         | 303 L4 | —      | BN80B4 | M2SA4 | 27500        | 31700 | 47500  | 57100  | 17600 | 266 |
| 2.5                        | 2496           | 1.5   | 556  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 27500        | 31700 | 47500  | 57100  | 17600 | 278 |
| 2.5                        | 2496           | 2.2   | 556  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 27500        | 31700 | 47500  | 57100  | 17600 | 290 |
| 2.5                        | 2468           | 2.9   | 550  | 12.0        | —      | 306 R4 | BN80B4 | M2SA4 | 34100        | 38700 | 77400  | 90100  | 25600 | 304 |
| 2.7                        | 2369           | 1.7   | 528  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 27000        | 31200 | 46700  | 56200  | 17300 | 292 |
| 2.8                        | 2216           | 0.9   | 494  | 6.0         | 301 L4 | —      | BN80B4 | M2SA4 | 8400         | 8400  | 22000  | 25300  | 5520  | 256 |
| 2.8                        | 2209           | 1.2   | 492  | 6.0         | 303 L4 | —      | BN80B4 | M2SA4 | 26400        | 30500 | 45800  | 55100  | 16900 | 266 |
| 2.8                        | 2209           | 1.7   | 492  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 26400        | 30500 | 45800  | 55100  | 16900 | 278 |
| 2.8                        | 2209           | 2.4   | 492  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 26400        | 30500 | 45800  | 55100  | 16900 | 290 |
| 3.1                        | 2033           | 0.9   | 453  | 10.0        | —      | 301 R4 | BN80B4 | M2SA4 | 8350         | 8350  | 21900  | 25100  | 5490  | 258 |
| 3.1                        | 2027           | 1.1   | 452  | 12.0        | —      | 303 R4 | BN80B4 | M2SA4 | 25700        | 29600 | 44600  | 53700  | 16500 | 268 |
| 3.1                        | 2027           | 1.8   | 452  | 12.0        | —      | 304 R4 | BN80B4 | M2SA4 | 25700        | 29600 | 44600  | 53700  | 16500 | 280 |
| 3.1                        | 2027           | 2.3   | 452  | 12.0        | —      | 305 R4 | BN80B4 | M2SA4 | 25700        | 29600 | 44600  | 53700  | 16500 | 292 |
| 3.1                        | 2006           | 1.0   | 447  | 6.0         | 301 L4 | —      | BN80B4 | M2SA4 | 8320         | 8320  | 21800  | 25000  | 5470  | 256 |
| 3.1                        | 2000           | 1.4   | 446  | 6.0         | 303 L4 | —      | BN80B4 | M2SA4 | 25500        | 29500 | 44400  | 53400  | 16400 | 266 |
| 3.1                        | 2000           | 1.9   | 446  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 25500        | 29500 | 44400  | 53400  | 16400 | 278 |
| 3.1                        | 2000           | 2.7   | 446  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 25500        | 29500 | 44400  | 53400  | 16400 | 290 |
| 3.3                        | 1976           | 1.2   | 426  | 7.5         | 304 L3 | —      | BN80B4 | M2SA4 | 25200        | 29000 | 43800  | 52700  | 16100 | 278 |
| 3.4                        | 1856           | 1.3   | 414  | 12.0        | —      | 304 R4 | BN80B4 | M2SA4 | 24900        | 28800 | 43400  | 52300  | 16000 | 280 |
| 3.4                        | 1855           | 1.3   | 413  | 6.0         | 303 L4 | —      | BN80B4 | M2SA4 | 24900        | 28800 | 43400  | 52200  | 16000 | 266 |
| 3.4                        | 1855           | 1.6   | 413  | 6.0         | 304 L4 | —      | BN80B4 | M2SA4 | 24900        | 28800 | 43400  | 52200  | 16000 | 278 |
| 3.4                        | 1855           | 2.5   | 413  | 6.0         | 305 L4 | —      | BN80B4 | M2SA4 | 24900        | 28800 | 43400  | 52200  | 16000 | 290 |
| 3.5                        | 1865           | 1.0   | 402  | 7.5         | 303 L3 | —      | BN80B4 | M2SA4 | 24700        | 28500 | 43100  | 51800  | 15800 | 266 |
| 3.5                        | 1865           | 2.0   | 402  | 7.5         | 305 L3 | —      | BN80B4 | M2SA4 | 24700        | 28500 | 43100  | 51800  | 15800 | 290 |
| 3.6                        | 1751           | 1.1   | 390  | 12.0        | —      | 303 R4 | BN80B4 | M2SA4 | 24400        | 28200 | 42700  | 51400  | 15700 | 268 |

A



$P_1 = 0.75 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |        |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|--------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |        |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 3.6                                 | 1751                  | 2.1            | 390  | 12.0                 | —      | 305 R4 | BN80B4 | M2SA4 | 24400               | 28200 | 42700 | 51400 | 15700 | 292 |
| 3.6                                 | 1804                  | 0.9            | 389  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 24400               | 28200 | 42600 | 51300 | 15700 | 266 |
| 3.6                                 | 1804                  | 1.8            | 389  | 7.5                  | 305 L3 | —      | BN80B4 | M2SA4 | 24400               | 28200 | 42600 | 51300 | 15700 | 290 |
| 3.8                                 | 1633                  | 1.4            | 364  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 23900               | 27600 | 41800 | 50300 | 15300 | 268 |
| 3.8                                 | 1633                  | 1.8            | 364  | 12.0                 | —      | 304 R4 | BN80B4 | M2SA4 | 23900               | 27600 | 41800 | 50300 | 15300 | 280 |
| 3.8                                 | 1633                  | 2.8            | 364  | 12.0                 | —      | 305 R4 | BN80B4 | M2SA4 | 23900               | 27600 | 41800 | 50300 | 15300 | 292 |
| 3.9                                 | 1629                  | 1.2            | 363  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 7760                | 7760  | 20500 | 23500 | 5100  | 258 |
| 4.1                                 | 1584                  | 1.5            | 341  | 7.5                  | 304 L3 | —      | BN80B4 | M2SA4 | 23400               | 27000 | 41000 | 49300 | 15000 | 278 |
| 4.1                                 | 1515                  | 1.6            | 338  | 12.0                 | —      | 304 R4 | BN80B4 | M2SA4 | 23300               | 26900 | 40900 | 49200 | 14900 | 280 |
| 4.2                                 | 1506                  | 1.5            | 336  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 23200               | 26800 | 40800 | 49100 | 14900 | 268 |
| 4.2                                 | 1482                  | 1.3            | 330  | 12.0                 | 301 L4 | —      | BN80B4 | M2SA4 | 23200               | 26800 | 40800 | 49100 | 14900 | 256 |
| 4.4                                 | 1492                  | 1.2            | 321  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 22900               | 26400 | 40300 | 48500 | 14700 | 266 |
| 4.4                                 | 1492                  | 2.4            | 321  | 7.5                  | 305 L3 | —      | BN80B4 | M2SA4 | 22900               | 26400 | 40300 | 48500 | 14700 | 290 |
| 4.5                                 | 1403                  | 1.3            | 313  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 22700               | 26200 | 39900 | 48100 | 14600 | 268 |
| 4.5                                 | 1403                  | 2.6            | 313  | 12.0                 | —      | 305 R4 | BN80B4 | M2SA4 | 22700               | 26200 | 39900 | 48100 | 14600 | 292 |
| 4.6                                 | 1376                  | 2.5            | 307  | 12.0                 | —      | 304 R4 | BN80B4 | M2SA4 | 22500               | 26000 | 39700 | 47800 | 14500 | 280 |
| 4.7                                 | 1388                  | 0.9            | 299  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 7270                | 7270  | 19300 | 22200 | 4780  | 256 |
| 4.8                                 | 1305                  | 1.4            | 291  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 7210                | 7210  | 19100 | 22000 | 4740  | 258 |
| 4.8                                 | 1301                  | 2.0            | 290  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 22100               | 25600 | 39100 | 47000 | 14200 | 268 |
| 4.8                                 | 1301                  | 2.8            | 290  | 12.0                 | —      | 304 R4 | BN80B4 | M2SA4 | 22100               | 25600 | 39100 | 47000 | 14200 | 280 |
| 5.1                                 | 1283                  | 1.7            | 276  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 21800               | 25200 | 38500 | 46300 | 14000 | 266 |
| 5.1                                 | 1267                  | 1.9            | 273  | 7.5                  | 304 L3 | —      | BN80B4 | M2SA4 | 21700               | 25000 | 38300 | 46100 | 13900 | 278 |
| 5.2                                 | 1204                  | 1.6            | 268  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 7020                | 7020  | 18700 | 21500 | 4610  | 258 |
| 5.4                                 | 1195                  | 1.5            | 258  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 21300               | 24600 | 37700 | 45300 | 13600 | 266 |
| 5.5                                 | 1145                  | 1.6            | 255  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 21200               | 24500 | 37600 | 45200 | 13600 | 268 |
| 5.8                                 | 1112                  | 1.2            | 240  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 6760                | 6760  | 18100 | 20800 | 4440  | 256 |
| 5.9                                 | 1066                  | 1.2            | 237  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 6740                | 6740  | 18000 | 20700 | 4430  | 258 |
| 6.1                                 | 1037                  | 1.8            | 231  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 20500               | 23700 | 36500 | 43900 | 13200 | 268 |
| 6.3                                 | 1026                  | 1.7            | 221  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 6580                | 6580  | 17600 | 20300 | 4320  | 256 |
| 6.4                                 | 1023                  | 2.2            | 220  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 20200               | 23300 | 36000 | 43300 | 13000 | 266 |
| 6.5                                 | 965                   | 0.9            | 215  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 6370                | 6370  | 17100 | 19700 | 4190  | 248 |
| 6.5                                 | 965                   | 1.9            | 215  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 6520                | 6520  | 17500 | 20100 | 4280  | 258 |
| 6.5                                 | 962                   | 2.8            | 214  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 20000               | 23100 | 35700 | 42900 | 12800 | 268 |
| 6.9                                 | 936                   | 2.6            | 202  | 7.5                  | 304 L3 | —      | BN80B4 | M2SA4 | 19600               | 22600 | 35000 | 42100 | 12600 | 278 |
| 7.3                                 | 891                   | 1.5            | 192  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 6280                | 6280  | 16900 | 19400 | 4130  | 256 |
| 7.4                                 | 883                   | 2.1            | 190  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 19200               | 22200 | 34400 | 41400 | 12300 | 266 |
| 7.6                                 | 830                   | 2.8            | 185  | 12.0                 | —      | 303 R4 | BN80B4 | M2SA4 | 19100               | 22000 | 34100 | 41100 | 12200 | 268 |
| 7.9                                 | 824                   | 2.7            | 178  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 18800               | 21700 | 33700 | 40600 | 12100 | 266 |
| 7.9                                 | 822                   | 1.1            | 177  | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 6110                | 6110  | 16500 | 19000 | 4020  | 246 |
| 7.9                                 | 822                   | 2.2            | 177  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 6110                | 6110  | 16500 | 19000 | 4020  | 256 |
| 8.0                                 | 787                   | 1.1            | 175  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 6090                | 6090  | 16500 | 18900 | 4000  | 248 |
| 8.0                                 | 787                   | 2.2            | 175  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 6090                | 6090  | 16500 | 18900 | 4000  | 258 |
| 8.6                                 | 760                   | 2.9            | 164  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 18300               | 21100 | 32900 | 39600 | 11700 | 266 |
| 8.8                                 | 713                   | 1.2            | 159  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 5890                | 5890  | 16000 | 18300 | 3870  | 248 |
| 8.8                                 | 713                   | 2.4            | 159  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 5890                | 5890  | 16000 | 18300 | 3870  | 258 |
| 9.2                                 | 708                   | 2.6            | 152  | 7.5                  | 303 L3 | —      | BN80B4 | M2SA4 | 17900               | 20600 | 32200 | 38700 | 11500 | 266 |
| 9.8                                 | 643                   | 1.0            | 143  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 5690                | 5690  | 15500 | 17800 | 3740  | 248 |
| 9.8                                 | 643                   | 2.0            | 143  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 5690                | 5690  | 15500 | 17800 | 3740  | 258 |
| 9.9                                 | 659                   | 1.3            | 142  | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 5670                | 5670  | 15400 | 17700 | 3730  | 246 |
| 9.9                                 | 659                   | 2.6            | 142  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 5670                | 5670  | 15400 | 17700 | 3730  | 256 |
| 10.5                                | 617                   | 1.9            | 133  | 12.0                 | —      | 301 R3 | BN80B4 | M2SA4 | 5550                | 5550  | 15100 | 17400 | 3650  | 258 |
| 10.7                                | 607                   | 1.4            | 131  | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 5520                | 5520  | 15100 | 17300 | 3630  | 246 |
| 10.7                                | 607                   | 2.8            | 131  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 5520                | 5520  | 15100 | 17300 | 3630  | 256 |
| 10.8                                | 582                   | 1.5            | 130  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 5510                | 5510  | 15000 | 17300 | 3620  | 248 |
| 10.8                                | 582                   | 3.0            | 130  | 10.0                 | —      | 301 R4 | BN80B4 | M2SA4 | 5510                | 5510  | 15000 | 17300 | 3620  | 258 |
| 12.1                                | 538                   | 1.2            | 116  | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 5300                | 5300  | 14500 | 16700 | 3490  | 246 |
| 12.1                                | 538                   | 2.4            | 116  | 7.5                  | 301 L3 | —      | BN80B4 | M2SA4 | 5300                | 5300  | 14500 | 16700 | 3490  | 256 |
| 13.2                                | 494                   | 1.3            | 106  | 12.0                 | —      | 300 R3 | BN80B4 | M2SA4 | 5160                | 5160  | 14200 | 16300 | 3390  | 248 |
| 13.2                                | 494                   | 2.6            | 106  | 12.0                 | —      | 301 R3 | BN80B4 | M2SA4 | 5160                | 5160  | 14200 | 16300 | 3390  | 258 |
| 13.2                                | 475                   | 1.8            | 106  | 10.0                 | —      | 300 R4 | BN80B4 | M2SA4 | 5150                | 5150  | 14100 | 16200 | 3380  | 248 |
| 13.4                                | 487                   | 1.8            | 105  | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 5130                | 5130  | 14100 | 16200 | 3370  | 246 |
| 16.4                                | 397                   | 2.1            | 85.6 | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 4790                | 4790  | 13300 | 15200 | 3150  | 246 |
| 16.4                                | 395                   | 1.6            | 85.2 | 12.0                 | —      | 300 R3 | BN80B4 | M2SA4 | 4790                | 4790  | 13200 | 15200 | 3150  | 248 |
| 17.8                                | 365                   | 2.3            | 78.7 | 12.0                 | —      | 300 R3 | BN80B4 | M2SA4 | 4660                | 4660  | 12900 | 14900 | 3060  | 248 |
| 18.1                                | 360                   | 2.4            | 77.5 | 7.5                  | 300 L3 | —      | BN80B4 | M2SA4 | 4640                | 4640  | 12900 | 14800 | 3050  | 246 |



$P_1 = 0.75 \text{ kW}$

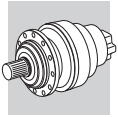
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |        |       | $R_{n2}$ [N] |      |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|--------|-------|--------------|------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |        |       | MC           | MZ   | HC/PC | HZ/PZ | FZ    |      |     |
| 20.0                       | 324            | 2.0   | 69.9 | 7.5         | 300 L3 | —      | BN80B4 | M2SA4 | —            | 4480 | 4480  | 12500 | 14300 | 2950 | 246 |
| 20.5                       | 317            | 2.1   | 68.2 | 12.0        | —      | 300 R3 | BN80B4 | M2SA4 | —            | 4440 | 4440  | 12400 | 14200 | 2920 | 248 |
| 21.6                       | 311            | 1.8   | 64.8 | 7.5         | 300 L2 | —      | BN80B4 | M2SA4 | —            | 4370 | 4370  | 12200 | 14000 | 2870 | 246 |
| 22.1                       | 294            | 2.9   | 63.2 | 7.5         | 300 L3 | —      | BN80B4 | M2SA4 | —            | 4330 | 4330  | 12100 | 13900 | 2850 | 246 |
| 22.2                       | 292            | 2.9   | 62.9 | 12.0        | —      | 300 R3 | BN80B4 | M2SA4 | —            | 4330 | 4330  | 12100 | 13900 | 2840 | 248 |
| 27.0                       | 249            | 2.6   | 51.9 | 7.5         | 300 L2 | —      | BN80B4 | M2SA4 | —            | 4060 | 4060  | 11400 | 13100 | 2670 | 246 |

$P_1 = 1.1 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |        |       | $R_{n2}$ [N] |       |        |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|--------|-------|--------------|-------|--------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |        |       | MC           | MZ    | HC/PC  | HZ/PZ  | FZ     |       |     |
| 0.55                       | 16877          | 1.5   | 2523 | 11.0        | 310 L4 | —      | BN90S4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.57                       | 16202          | 1.0   | 2423 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 110000 | 145000 | 36000 | 326 |
| 0.66                       | 14021          | 2.4   | 2096 | 11.0        | 311 L4 | —      | BN90S4 | —     | —            | —     | —      | 157000 | 195000 | 65000 | 350 |
| 0.68                       | 13652          | 1.0   | 2041 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 52000        | 65000 | 109000 | 145000 | 45000  | 314   |     |
| 0.69                       | 13523          | 1.9   | 2022 | 11.0        | 310 L4 | —      | BN90S4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.69                       | 13394          | 1.3   | 2003 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 110000 | 145000 | 36000 | 326 |
| 0.77                       | 12001          | 2.2   | 1794 | 11.0        | 310 L4 | —      | BN90S4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.79                       | 11820          | 1.3   | 1767 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 52000        | 65000 | 109000 | 145000 | 45000  | 314   |     |
| 0.81                       | 11521          | 1.5   | 1723 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 110000 | 145000 | 36000 | 326 |
| 0.83                       | 11179          | 2.3   | 1672 | 11.0        | 310 L4 | —      | BN90S4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.87                       | 10732          | 1.6   | 1605 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 110000 | 145000 | 36000 | 326 |
| 0.87                       | 10638          | 1.4   | 1591 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 52000        | 65000 | 109000 | 145000 | 45000  | 314   |     |
| 0.94                       | 9862           | 1.0   | 1475 | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 45000        | 51000 | 101000 | 119000 | 35000  | 302   |     |
| 0.97                       | 9616           | 2.7   | 1438 | 11.0        | 310 L4 | —      | BN90S4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.99                       | 9419           | 1.7   | 1408 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 51900        | 65000 | 109000 | 144700 | 45000  | 314   |     |
| 1.0                        | 9232           | 1.8   | 1380 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 110000 | 143800 | 35800 | 326 |
| 1.1                        | 8599           | 1.9   | 1286 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 109200 | 140800 | 35000 | 326 |
| 1.1                        | 8557           | 1.0   | 1279 | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 45000        | 51000 | 99700  | 116100 | 34000  | 302   |     |
| 1.1                        | 8524           | 1.4   | 1274 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 50200        | 63000 | 107100 | 140400 | 43600  | 314   |     |
| 1.2                        | 7736           | 1.8   | 1157 | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 48600        | 60900 | 104100 | 136400 | 42200  | 314   |     |
| 1.2                        | 7687           | 2.1   | 1149 | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 105500 | 136100 | 33700 | 326 |
| 1.3                        | 7320           | 1.1   | 1095 | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 42900        | 48600 | 95200  | 110800 | 32200  | 302   |     |
| 1.4                        | 6788           | 1.4   | 1015 | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 41900        | 47400 | 93000  | 108300 | 31400  | 302   |     |
| 1.4                        | 6682           | 2.1   | 999  | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 46300        | 58000 | 99600  | 130500 | 40200  | 314   |     |
| 1.4                        | 6682           | 2.7   | 999  | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 101200 | 130500 | 32200 | 326 |
| 1.5                        | 6061           | 2.5   | 906  | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 44800        | 56200 | 96700  | 126800 | 38900  | 314   |     |
| 1.5                        | 6061           | 3.0   | 906  | 7.5         | 309 L4 | —      | BN90S4 | —     | —            | —     | —      | 98300  | 126800 | 31100 | 326 |
| 1.6                        | 5866           | 1.3   | 877  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 39900        | 45200 | 89000  | 103700 | 29900  | 302   |     |
| 1.7                        | 5553           | 1.1   | 830  | 12.0        | —      | 306 R4 | BN90S4 | M2SB4 | 39100        | 44300 | 87600  | 102000 | 29400  | 304   |     |
| 1.7                        | 5458           | 1.0   | 816  | 6.0         | 305 L4 | —      | BN90S4 | M2SB4 | 31300        | 36100 | 53300  | 64100  | 20000  | 290   |     |
| 1.7                        | 5409           | 1.4   | 809  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 38800        | 44000 | 86900  | 101200 | 29200  | 302   |     |
| 1.7                        | 5354           | 2.5   | 801  | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 43000        | 53900 | 93200  | 122100 | 37400  | 314   |     |
| 2.0                        | 4679           | 2.0   | 700  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 37000        | 41900 | 83200  | 96900  | 27800  | 302   |     |
| 2.0                        | 4613           | 2.1   | 690  | 15.0        | —      | 307 R4 | BN90S4 | M2SB4 | 40900        | 51300 | 89100  | 116800 | 35500  | 316   |     |
| 2.1                        | 4449           | 1.4   | 665  | 12.0        | —      | 306 R4 | BN90S4 | M2SB4 | 36400        | 41200 | 82000  | 95400  | 27300  | 304   |     |
| 2.1                        | 4407           | 0.9   | 659  | 12.0        | —      | 305 R4 | BN90S4 | M2SB4 | 29100        | 33600 | 50000  | 60100  | 18700  | 292   |     |
| 2.1                        | 4371           | 3.0   | 654  | 7.5         | 307 L4 | —      | BN90S4 | M2SB4 | 40200        | 50400 | 87700  | 114900 | 34900  | 314   |     |
| 2.1                        | 4344           | 1.0   | 649  | 6.0         | 305 L4 | —      | BN90S4 | M2SB4 | 29000        | 33400 | 49700  | 59800  | 18600  | 290   |     |
| 2.2                        | 4250           | 2.2   | 636  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 35800        | 40600 | 80800  | 94100  | 26900  | 302   |     |
| 2.4                        | 3949           | 2.1   | 590  | 12.0        | —      | 306 R4 | BN90S4 | M2SB4 | 34900        | 39600 | 79100  | 92100  | 26200  | 304   |     |
| 2.4                        | 3941           | 2.4   | 589  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 34900        | 39600 | 79000  | 92000  | 26200  | 302   |     |
| 2.5                        | 3791           | 1.3   | 567  | 12.0        | —      | 305 R4 | BN90S4 | M2SB4 | 27700        | 32000 | 47700  | 57400  | 17800  | 292   |     |
| 2.5                        | 3719           | 1.0   | 556  | 6.0         | 304 L4 | —      | BN90S4 | M2SB4 | 27500        | 31700 | 47500  | 57100  | 17600  | 278   |     |
| 2.5                        | 3719           | 1.5   | 556  | 6.0         | 305 L4 | —      | BN90S4 | M2SB4 | 27500        | 31700 | 47500  | 57100  | 17600  | 290   |     |
| 2.5                        | 3678           | 2.0   | 550  | 12.0        | —      | 306 R4 | BN90S4 | M2SB4 | 34100        | 38700 | 77400  | 90100  | 25600  | 304   |     |
| 2.6                        | 3531           | 1.1   | 528  | 12.0        | —      | 305 R4 | BN90S4 | M2SB4 | 27000        | 31200 | 46700  | 56200  | 17300  | 292   |     |
| 2.7                        | 3406           | 2.8   | 509  | 6.0         | 306 L4 | —      | BN90S4 | M2SB4 | 33300        | 37700 | 75600  | 88100  | 25000  | 302   |     |
| 2.8                        | 3292           | 1.1   | 492  | 6.0         | 304 L4 | —      | BN90S4 | M2SB4 | 26400        | 30500 | 45800  | 55100  | 16900  | 278   |     |
| 2.8                        | 3292           | 1.6   | 492  | 6.0         | 305 L4 | —      | BN90S4 | M2SB4 | 26400        | 30500 | 45800  | 55100  | 16900  | 290   |     |
| 2.8                        | 3280           | 2.8   | 490  | 15.0        | —      | 307 R4 | BN90S4 | M2SB4 | 36500        | 45800 | 80500  | 105400 | 31700  | 316   |     |
| 2.8                        | 3264           | 2.8   | 488  | 12.0        | —      | 306 R4 | BN90S4 | M2SB4 | 32800        | 37100 | 74700  | 87000  | 24600  | 304   |     |



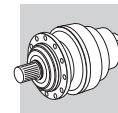




$P_1 = 1.1 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |        |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|--------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |     |                      |        |        |        |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 3.1                                 | 3041                  | 2.3            | 455 | 12.0                 | —      | 306 R4 | BN90S4 | M2SB4 | 32000               | 36300 | 73100 | 85100 | 24100 | 304 |
| 3.1                                 | 3021                  | 1.2            | 452 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 25700               | 29600 | 44600 | 53700 | 16500 | 280 |
| 3.1                                 | 3021                  | 1.6            | 452 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 25700               | 29600 | 44600 | 53700 | 16500 | 292 |
| 3.1                                 | 2980                  | 0.9            | 446 | 6.0                  | 303 L4 | —      | BN90S4 | M2SB4 | 25500               | 29500 | 44400 | 53400 | 16400 | 266 |
| 3.1                                 | 2980                  | 1.2            | 446 | 6.0                  | 304 L4 | —      | BN90S4 | M2SB4 | 25500               | 29500 | 44400 | 53400 | 16400 | 278 |
| 3.1                                 | 2980                  | 1.8            | 446 | 6.0                  | 305 L4 | —      | BN90S4 | M2SB4 | 25500               | 29500 | 44400 | 53400 | 16400 | 290 |
| 3.4                                 | 2764                  | 1.1            | 413 | 6.0                  | 304 L4 | —      | BN90S4 | M2SB4 | 24900               | 28800 | 43400 | 52200 | 16000 | 278 |
| 3.4                                 | 2764                  | 1.7            | 413 | 6.0                  | 305 L4 | —      | BN90S4 | M2SB4 | 24900               | 28800 | 43400 | 52200 | 16000 | 290 |
| 3.4                                 | 2801                  | 2.0            | 405 | 7.5                  | 306 L3 | —      | BN90S4 | M2SB4 | 30800               | 34900 | 70600 | 82200 | 23100 | 302 |
| 3.5                                 | 2779                  | 1.4            | 402 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 24700               | 28500 | 43100 | 51800 | 15800 | 290 |
| 3.6                                 | 2614                  | 2.6            | 391 | 6.0                  | 306 L4 | —      | BN90S4 | M2SB4 | 30400               | 34500 | 69900 | 81400 | 22900 | 302 |
| 3.6                                 | 2609                  | 1.4            | 390 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 24400               | 28200 | 42700 | 51400 | 15700 | 292 |
| 3.6                                 | 2601                  | 2.9            | 389 | 12.0                 | —      | 306 R4 | BN90S4 | M2SB4 | 30400               | 34400 | 69800 | 81200 | 22800 | 304 |
| 3.6                                 | 2689                  | 1.2            | 389 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 24400               | 28200 | 42600 | 51300 | 15700 | 290 |
| 3.8                                 | 2434                  | 0.9            | 364 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 23900               | 27600 | 41800 | 50300 | 15300 | 268 |
| 3.8                                 | 2434                  | 1.2            | 364 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 23900               | 27600 | 41800 | 50300 | 15300 | 280 |
| 3.8                                 | 2434                  | 1.9            | 364 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 23900               | 27600 | 41800 | 50300 | 15300 | 292 |
| 4.1                                 | 2360                  | 1.0            | 341 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 23400               | 27000 | 41000 | 49300 | 15000 | 278 |
| 4.1                                 | 2257                  | 1.1            | 338 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 23300               | 26900 | 40900 | 49200 | 14900 | 280 |
| 4.1                                 | 2244                  | 1.0            | 336 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 23200               | 26800 | 40800 | 49100 | 14900 | 268 |
| 4.1                                 | 2244                  | 2.0            | 336 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 23200               | 26800 | 40800 | 49100 | 14900 | 292 |
| 4.3                                 | 2244                  | 2.5            | 325 | 7.5                  | 306 L3 | —      | BN90S4 | M2SB4 | 28600               | 32400 | 66100 | 76900 | 21500 | 302 |
| 4.3                                 | 2223                  | 1.6            | 321 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 22900               | 26400 | 40300 | 48500 | 14700 | 290 |
| 4.4                                 | 2091                  | 1.7            | 313 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 22700               | 26200 | 39900 | 48100 | 14600 | 292 |
| 4.5                                 | 2050                  | 1.7            | 307 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 22500               | 26000 | 39700 | 47800 | 14500 | 280 |
| 4.8                                 | 1945                  | 1.0            | 291 | 10.0                 | —      | 301 R4 | BN90S4 | M2SB4 | 7210                | 7210  | 19100 | 22000 | 4740  | 258 |
| 4.8                                 | 1939                  | 1.4            | 290 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 22100               | 25600 | 39100 | 47000 | 14200 | 268 |
| 4.8                                 | 1939                  | 1.9            | 290 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 22100               | 25600 | 39100 | 47000 | 14200 | 280 |
| 4.8                                 | 1939                  | 2.7            | 290 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 22100               | 25600 | 39100 | 47000 | 14200 | 292 |
| 4.8                                 | 1992                  | 2.8            | 288 | 7.5                  | 306 L3 | —      | BN90S4 | M2SB4 | 27500               | 31200 | 63700 | 74200 | 20700 | 302 |
| 5.0                                 | 1912                  | 1.2            | 276 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 21800               | 25200 | 38500 | 46300 | 14000 | 266 |
| 5.0                                 | 1912                  | 2.3            | 276 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 21800               | 25200 | 38500 | 46300 | 14000 | 290 |
| 5.1                                 | 1888                  | 1.3            | 273 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 21700               | 25000 | 38300 | 46100 | 13900 | 278 |
| 5.2                                 | 1855                  | 3.0            | 268 | 7.5                  | 306 L3 | —      | BN90S4 | M2SB4 | 26900               | 30400 | 62400 | 72700 | 20200 | 302 |
| 5.2                                 | 1794                  | 1.0            | 268 | 10.0                 | —      | 301 R4 | BN90S4 | M2SB4 | 7020                | 7020  | 18700 | 21500 | 4610  | 258 |
| 5.2                                 | 1789                  | 2.0            | 267 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 21500               | 24900 | 38100 | 45900 | 13800 | 280 |
| 5.4                                 | 1781                  | 1.0            | 258 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 21300               | 24600 | 37700 | 45300 | 13600 | 266 |
| 5.4                                 | 1781                  | 2.0            | 258 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 21300               | 24600 | 37700 | 45300 | 13600 | 290 |
| 5.4                                 | 1707                  | 1.1            | 255 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 21200               | 24500 | 37600 | 45200 | 13600 | 268 |
| 5.4                                 | 1707                  | 2.1            | 255 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 21200               | 24500 | 37600 | 45200 | 13600 | 292 |
| 6.0                                 | 1545                  | 1.2            | 231 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 20500               | 23700 | 36500 | 43900 | 13200 | 268 |
| 6.0                                 | 1545                  | 2.3            | 231 | 12.0                 | —      | 305 R4 | BN90S4 | M2SB4 | 20500               | 23700 | 36500 | 43900 | 13200 | 292 |
| 6.1                                 | 1515                  | 2.3            | 227 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 20400               | 23500 | 36300 | 43600 | 13100 | 280 |
| 6.3                                 | 1528                  | 1.2            | 221 | 7.5                  | 301 L3 | —      | BN90S4 | M2SB4 | 6580                | 6580  | 17600 | 20300 | 4320  | 256 |
| 6.3                                 | 1524                  | 1.5            | 220 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 20200               | 23300 | 36000 | 43300 | 13000 | 266 |
| 6.3                                 | 1524                  | 2.4            | 220 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 20200               | 23300 | 36000 | 43300 | 13000 | 278 |
| 6.5                                 | 1438                  | 1.3            | 215 | 10.0                 | —      | 301 R4 | BN90S4 | M2SB4 | 6520                | 6520  | 17500 | 20100 | 4280  | 258 |
| 6.5                                 | 1433                  | 1.9            | 214 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 20000               | 23100 | 35700 | 42900 | 12800 | 268 |
| 6.5                                 | 1433                  | 2.5            | 214 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 20000               | 23100 | 35700 | 42900 | 12800 | 280 |
| 6.9                                 | 1395                  | 1.7            | 202 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 19600               | 22600 | 35000 | 42100 | 12600 | 278 |
| 7.2                                 | 1328                  | 1.0            | 192 | 7.5                  | 301 L3 | —      | BN90S4 | M2SB4 | 6280                | 6280  | 16900 | 19400 | 4130  | 256 |
| 7.3                                 | 1316                  | 1.4            | 190 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 19200               | 22200 | 34400 | 41400 | 12300 | 266 |
| 7.3                                 | 1316                  | 2.7            | 190 | 7.5                  | 305 L3 | —      | BN90S4 | M2SB4 | 19200               | 22200 | 34400 | 41400 | 12300 | 290 |
| 7.5                                 | 1237                  | 1.9            | 185 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 19100               | 22000 | 34100 | 41100 | 12200 | 268 |
| 7.5                                 | 1237                  | 2.8            | 185 | 12.0                 | —      | 304 R4 | BN90S4 | M2SB4 | 19100               | 22000 | 34100 | 41100 | 12200 | 280 |
| 7.8                                 | 1228                  | 1.8            | 178 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 18800               | 21700 | 33700 | 40600 | 12100 | 266 |
| 7.8                                 | 1228                  | 2.3            | 178 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 18800               | 21700 | 33700 | 40600 | 12100 | 278 |
| 7.8                                 | 1225                  | 1.4            | 177 | 7.5                  | 301 L3 | —      | BN90S4 | M2SB4 | 6110                | 6110  | 16500 | 19000 | 4020  | 256 |
| 7.9                                 | 1173                  | 1.5            | 175 | 10.0                 | —      | 301 R4 | BN90S4 | M2SB4 | 6090                | 6090  | 16500 | 18900 | 4000  | 258 |
| 8.4                                 | 1139                  | 2.1            | 165 | 7.5                  | 304 L3 | —      | BN90S4 | M2SB4 | 18300               | 21200 | 33000 | 39600 | 11800 | 278 |
| 8.5                                 | 1132                  | 1.9            | 164 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 18300               | 21100 | 32900 | 39600 | 11700 | 266 |
| 8.8                                 | 1062                  | 1.6            | 159 | 10.0                 | —      | 301 R4 | BN90S4 | M2SB4 | 5890                | 5890  | 16000 | 18300 | 3870  | 258 |
| 8.8                                 | 1059                  | 2.5            | 158 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 18100               | 20900 | 32600 | 39200 | 11600 | 268 |
| 9.1                                 | 1055                  | 1.7            | 152 | 7.5                  | 303 L3 | —      | BN90S4 | M2SB4 | 17900               | 20600 | 32200 | 38700 | 11500 | 266 |
| 9.4                                 | 991                   | 2.3            | 148 | 12.0                 | —      | 303 R4 | BN90S4 | M2SB4 | 17700               | 20400 | 31900 | 38400 | 11400 | 268 |





$P_1 = 1.1 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |        |       | $R_{n2}$ [N] |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|--------|-------|--------------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |        |        |        |       | MC           | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 9.7                        | 958            | 1.4   | 143  | 10.0        | —      | 301 R4 | BN90S4 | M2SB4 | 5690         | 5690  | 15500 | 17800 | 3740  | 258 |
| 9.8                        | 981            | 1.8   | 142  | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 5670         | 5670  | 15400 | 17700 | 3730  | 256 |
| 9.8                        | 978            | 2.7   | 141  | 7.5         | 303 L3 | —      | BN90S4 | M2SB4 | 17400        | 20100 | 31500 | 37900 | 11200 | 266 |
| 10.5                       | 919            | 1.3   | 133  | 12.0        | —      | 301 R3 | BN90S4 | M2SB4 | 5550         | 5550  | 15100 | 17400 | 3650  | 258 |
| 10.6                       | 905            | 1.0   | 131  | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 5520         | 5520  | 15100 | 17300 | 3630  | 246 |
| 10.6                       | 905            | 1.9   | 131  | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 5520         | 5520  | 15100 | 17300 | 3630  | 256 |
| 10.7                       | 867            | 1.0   | 130  | 10.0        | —      | 300 R4 | BN90S4 | M2SB4 | 5510         | 5510  | 15000 | 17300 | 3620  | 248 |
| 10.7                       | 867            | 2.0   | 130  | 10.0        | —      | 301 R4 | BN90S4 | M2SB4 | 5510         | 5510  | 15000 | 17300 | 3620  | 258 |
| 11.2                       | 861            | 2.1   | 124  | 7.5         | 303 L3 | —      | BN90S4 | M2SB4 | 16700        | 19300 | 30300 | 36500 | 10700 | 266 |
| 11.5                       | 839            | 2.9   | 121  | 14.0        | —      | 304 R3 | BN90S4 | M2SB4 | 16600        | 19100 | 30100 | 36200 | 10600 | 280 |
| 12.0                       | 801            | 1.6   | 116  | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 5300         | 5300  | 14500 | 16700 | 3490  | 256 |
| 12.2                       | 791            | 2.3   | 114  | 14.0        | —      | 303 R3 | BN90S4 | M2SB4 | 16200        | 18700 | 29500 | 35500 | 10400 | 268 |
| 12.3                       | 779            | 2.3   | 113  | 7.5         | 303 L3 | —      | BN90S4 | M2SB4 | 16200        | 18600 | 29400 | 35400 | 10400 | 266 |
| 13.1                       | 736            | 1.8   | 106  | 12.0        | —      | 301 R3 | BN90S4 | M2SB4 | 5160         | 5160  | 14200 | 16300 | 3390  | 258 |
| 13.1                       | 708            | 1.2   | 106  | 10.0        | —      | 300 R4 | BN90S4 | M2SB4 | 5150         | 5150  | 14100 | 16200 | 3380  | 248 |
| 13.1                       | 708            | 2.4   | 106  | 10.0        | —      | 301 R4 | BN90S4 | M2SB4 | 5150         | 5150  | 14100 | 16200 | 3380  | 258 |
| 13.3                       | 725            | 1.2   | 105  | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 5130         | 5130  | 14100 | 16200 | 3370  | 246 |
| 13.3                       | 725            | 2.3   | 105  | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 5130         | 5130  | 14100 | 16200 | 3370  | 256 |
| 15.2                       | 633            | 2.9   | 91.5 | 14.0        | —      | 303 R3 | BN90S4 | M2SB4 | 15100        | 17400 | 27600 | 33200 | 9670  | 268 |
| 16.2                       | 592            | 1.4   | 85.6 | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 4790         | 4790  | 13300 | 15200 | 3150  | 246 |
| 16.2                       | 592            | 2.8   | 85.6 | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 4790         | 4790  | 13300 | 15200 | 3150  | 256 |
| 16.3                       | 589            | 1.1   | 85.2 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 4790         | 4790  | 13200 | 15200 | 3150  | 248 |
| 16.3                       | 589            | 2.2   | 85.2 | 12.0        | —      | 301 R3 | BN90S4 | M2SB4 | 4790         | 4790  | 13200 | 15200 | 3150  | 258 |
| 17.7                       | 544            | 1.6   | 78.7 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 4660         | 4660  | 12900 | 14900 | 3060  | 248 |
| 17.7                       | 544            | 2.9   | 78.7 | 12.0        | —      | 301 R3 | BN90S4 | M2SB4 | 4660         | 4660  | 12900 | 14900 | 3060  | 258 |
| 17.9                       | 536            | 1.6   | 77.5 | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 4640         | 4640  | 12900 | 14800 | 3050  | 246 |
| 19.9                       | 483            | 1.3   | 69.9 | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 4480         | 4480  | 12500 | 14300 | 2950  | 246 |
| 19.9                       | 483            | 2.7   | 69.9 | 7.5         | 301 L3 | —      | BN90S4 | M2SB4 | 4480         | 4480  | 12500 | 14300 | 2950  | 256 |
| 20.4                       | 472            | 1.4   | 68.2 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 4440         | 4440  | 12400 | 14200 | 2920  | 248 |
| 20.4                       | 472            | 2.8   | 68.2 | 12.0        | —      | 301 R3 | BN90S4 | M2SB4 | 4440         | 4440  | 12400 | 14200 | 2920  | 258 |
| 21.5                       | 463            | 1.2   | 64.8 | 7.5         | 300 L2 | —      | BN90S4 | M2SB4 | 4370         | 4370  | 12200 | 14000 | 2870  | 246 |
| 21.5                       | 463            | 2.5   | 64.8 | 7.5         | 301 L2 | —      | BN90S4 | M2SB4 | 4370         | 4370  | 12200 | 14000 | 2870  | 256 |
| 22.0                       | 437            | 1.9   | 63.2 | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 4330         | 4330  | 12100 | 13900 | 2850  | 246 |
| 22.1                       | 435            | 2.0   | 62.9 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 4330         | 4330  | 12100 | 13900 | 2840  | 248 |
| 26.8                       | 371            | 1.8   | 51.9 | 7.5         | 300 L2 | —      | BN90S4 | M2SB4 | 4060         | 4060  | 11400 | 13100 | 2670  | 246 |
| 26.9                       | 357            | 2.4   | 51.6 | 7.5         | 300 L3 | —      | BN90S4 | M2SB4 | 4050         | 4050  | 11400 | 13100 | 2660  | 246 |
| 27.6                       | 349            | 2.4   | 50.4 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 4020         | 4020  | 11300 | 13000 | 2640  | 248 |
| 33                         | 297            | 2.2   | 41.5 | 7.5         | 300 L2 | —      | BN90S4 | M2SB4 | 3770         | 3770  | 10700 | 12300 | 2480  | 246 |
| 34                         | 285            | 2.3   | 41.2 | 12.0        | —      | 300 R3 | BN90S4 | M2SB4 | 3760         | 3760  | 10600 | 12200 | 2470  | 248 |
| 42                         | 238            | 2.7   | 33.3 | 7.5         | 300 L2 | —      | BN90S4 | M2SB4 | 3500         | 3500  | 9990  | 11500 | 2300  | 246 |
| 75                         | 132            | 2.8   | 18.5 | 12.0        | —      | 300 R2 | BN90S4 | M2SB4 | 2870         | 2870  | 8370  | 9620  | 1890  | 248 |

$P_1 = 1.5 \text{ kW}$

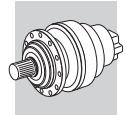
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |   |         |       | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|---|---------|-------|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |        |   |         |       | MC           | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 0.56                       | 22651          | 1.1   | 2523 | 11.0        | 310 L4 | — | BN90LA4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.64                       | 19631          | 2.5   | 2187 | 11.0        | 313 L4 | — | BN90LA4 | —     | —            | —     | 192000 | 231000 | 80000 | 362 |
| 0.67                       | 18817          | 1.8   | 2096 | 11.0        | 311 L4 | — | BN90LA4 | —     | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.70                       | 18150          | 1.4   | 2022 | 11.0        | 310 L4 | — | BN90LA4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.70                       | 17976          | 0.9   | 2003 | 7.5         | 309 L4 | — | BN90LA4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.79                       | 16107          | 1.6   | 1794 | 11.0        | 310 L4 | — | BN90LA4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.80                       | 15863          | 1.0   | 1767 | 7.5         | 307 L4 | — | BN90LA4 | M3SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.80                       | 15855          | 2.7   | 1766 | 11.0        | 311 L4 | — | BN90LA4 | —     | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.82                       | 15463          | 1.1   | 1723 | 7.5         | 309 L4 | — | BN90LA4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.84                       | 15078          | 2.3   | 1680 | 11.0        | 311 L4 | — | BN90LA4 | —     | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.84                       | 15004          | 1.7   | 1672 | 11.0        | 310 L4 | — | BN90LA4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.88                       | 14403          | 1.2   | 1605 | 7.5         | 309 L4 | — | BN90LA4 | —     | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.89                       | 14277          | 1.1   | 1591 | 7.5         | 307 L4 | — | BN90LA4 | M3SA4 | 52000        | 65000 | 109000 | 145000 | 45000 | 314 |
| 0.98                       | 12906          | 2.0   | 1438 | 11.0        | 310 L4 | — | BN90LA4 | —     | —            | —     | 133000 | 166000 | 65000 | 338 |
| 1.0                        | 12641          | 1.2   | 1408 | 7.5         | 307 L4 | — | BN90LA4 | M3SA4 | 51900        | 65000 | 109000 | 144700 | 45000 | 314 |
| 1.0                        | 12390          | 1.3   | 1380 | 7.5         | 309 L4 | — | BN90LA4 | —     | —            | —     | 110000 | 143800 | 35800 | 326 |

A








$P_1 = 1.5 \text{ kW}$

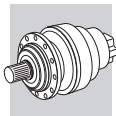
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |       | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 1.1                                 | 11541                 | 1.4            | 1286 | 7.5                  | 309 L4 | —      | BN90LA4 | —     | —                   | —     | 109200 | 140800 | 35000 | 326 |
| 1.1                                 | 11440                 | 1.1            | 1274 | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 50200               | 63000 | 107100 | 140400 | 43600 | 314 |
| 1.1                                 | 11300                 | 2.4            | 1259 | 11.0                 | 310 L4 | —      | BN90LA4 | —     | —                   | —     | 128500 | 161600 | 62700 | 338 |
| 1.2                                 | 10451                 | 2.8            | 1164 | 11.0                 | 310 L4 | —      | BN90LA4 | —     | —                   | —     | 125500 | 157900 | 61100 | 338 |
| 1.2                                 | 10382                 | 1.4            | 1157 | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 48600               | 60900 | 104100 | 136400 | 42200 | 314 |
| 1.2                                 | 10317                 | 1.6            | 1149 | 7.5                  | 309 L4 | —      | BN90LA4 | —     | —                   | —     | 105500 | 136100 | 33700 | 326 |
| 1.4                                 | 9110                  | 1.0            | 1015 | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 41900               | 47400 | 93000  | 108300 | 31400 | 302 |
| 1.4                                 | 8968                  | 1.5            | 999  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 46300               | 58000 | 99600  | 130500 | 40200 | 314 |
| 1.4                                 | 8968                  | 2.0            | 999  | 7.5                  | 309 L4 | —      | BN90LA4 | —     | —                   | —     | 101200 | 130500 | 32200 | 326 |
| 1.6                                 | 8135                  | 1.9            | 906  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 44800               | 56200 | 96700  | 126800 | 38900 | 314 |
| 1.6                                 | 8135                  | 2.2            | 906  | 7.5                  | 309 L4 | —      | BN90LA4 | —     | —                   | —     | 98300  | 126800 | 31100 | 326 |
| 1.6                                 | 8061                  | 2.9            | 898  | 15.0                 | —      | 310 R4 | BN90LA4 | —     | —                   | —     | 116100 | 146000 | 56100 | 340 |
| 1.6                                 | 7872                  | 1.0            | 877  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 39900               | 45200 | 89000  | 103700 | 29900 | 302 |
| 1.7                                 | 7260                  | 1.1            | 809  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 38800               | 44000 | 86900  | 101200 | 29200 | 302 |
| 1.8                                 | 7186                  | 1.9            | 801  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 43000               | 53900 | 93200  | 122100 | 37400 | 314 |
| 1.8                                 | 7186                  | 2.5            | 801  | 7.5                  | 309 L4 | —      | BN90LA4 | —     | —                   | —     | 94700  | 122100 | 29900 | 326 |
| 2.0                                 | 6482                  | 2.3            | 722  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 41500               | 52100 | 90400  | 118400 | 36100 | 314 |
| 2.0                                 | 6280                  | 1.5            | 700  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 37000               | 41900 | 83200  | 96900  | 27800 | 302 |
| 2.0                                 | 6191                  | 1.6            | 690  | 15.0                 | —      | 307 R4 | BN90LA4 | M3SA4 | 40900               | 51300 | 89100  | 116800 | 35500 | 316 |
| 2.0                                 | 6191                  | 2.4            | 690  | 15.0                 | —      | 309 R4 | BN90LA4 | —     | —                   | —     | 90600  | 116800 | 28400 | 328 |
| 2.1                                 | 5971                  | 1.0            | 665  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 36400               | 41200 | 82000  | 95400  | 27300 | 304 |
| 2.2                                 | 5866                  | 2.2            | 654  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 40200               | 50400 | 87700  | 114900 | 34900 | 314 |
| 2.2                                 | 5705                  | 1.7            | 636  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 35800               | 40600 | 80800  | 94100  | 26900 | 302 |
| 2.4                                 | 5299                  | 1.6            | 590  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 34900               | 39600 | 79100  | 92100  | 26200 | 304 |
| 2.4                                 | 5290                  | 1.8            | 589  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 34900               | 39600 | 79000  | 92000  | 26200 | 302 |
| 2.4                                 | 5217                  | 2.4            | 581  | 15.0                 | —      | 307 R4 | BN90LA4 | M3SA4 | 38600               | 48500 | 84700  | 110900 | 33600 | 316 |
| 2.4                                 | 5194                  | 2.9            | 579  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 38600               | 48400 | 84500  | 110800 | 33500 | 314 |
| 2.5                                 | 5087                  | 1.0            | 567  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 27700               | 32000 | 47700  | 57400  | 17800 | 292 |
| 2.5                                 | 4992                  | 1.1            | 556  | 6.0                  | 305 L4 | —      | BN90LA4 | M3SA4 | 27500               | 31700 | 47500  | 57100  | 17600 | 290 |
| 2.6                                 | 4936                  | 1.5            | 550  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 34100               | 38700 | 77400  | 90100  | 25600 | 304 |
| 2.8                                 | 4571                  | 2.1            | 509  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 33300               | 37700 | 75600  | 88100  | 25000 | 302 |
| 2.9                                 | 4419                  | 1.2            | 492  | 6.0                  | 305 L4 | —      | BN90LA4 | M3SA4 | 26400               | 30500 | 45800  | 55100  | 16900 | 290 |
| 2.9                                 | 4403                  | 2.1            | 490  | 15.0                 | —      | 307 R4 | BN90LA4 | M3SA4 | 36500               | 45800 | 80500  | 105400 | 31700 | 316 |
| 2.9                                 | 4381                  | 2.1            | 488  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 32800               | 37100 | 74700  | 87000  | 24600 | 304 |
| 3.0                                 | 4172                  | 2.9            | 465  | 7.5                  | 307 L4 | —      | BN90LA4 | M3SA4 | 35800               | 45000 | 79200  | 103700 | 31200 | 314 |
| 3.1                                 | 4081                  | 1.7            | 455  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 32000               | 36300 | 73100  | 85100  | 24100 | 304 |
| 3.1                                 | 4054                  | 0.9            | 452  | 12.0                 | —      | 304 R4 | BN90LA4 | M3SA4 | 25700               | 29600 | 44600  | 53700  | 16500 | 280 |
| 3.1                                 | 4054                  | 1.2            | 452  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 25700               | 29600 | 44600  | 53700  | 16500 | 292 |
| 3.2                                 | 4000                  | 0.9            | 446  | 6.0                  | 304 L4 | —      | BN90LA4 | M3SA4 | 25500               | 29500 | 44400  | 53400  | 16400 | 278 |
| 3.2                                 | 4000                  | 1.4            | 446  | 6.0                  | 305 L4 | —      | BN90LA4 | M3SA4 | 25500               | 29500 | 44400  | 53400  | 16400 | 290 |
| 3.2                                 | 3988                  | 2.5            | 444  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 31800               | 36000 | 72600  | 84500  | 23900 | 302 |
| 3.4                                 | 3768                  | 2.3            | 420  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 31200               | 35300 | 71400  | 83100  | 23400 | 304 |
| 3.4                                 | 3709                  | 1.3            | 413  | 6.0                  | 305 L4 | —      | BN90LA4 | M3SA4 | 24900               | 28800 | 43400  | 52200  | 16000 | 290 |
| 3.5                                 | 3759                  | 1.5            | 405  | 7.5                  | 306 L3 | —      | BN90LA4 | M3SA4 | 30800               | 34900 | 70600  | 82200  | 23100 | 302 |
| 3.5                                 | 3729                  | 1.0            | 402  | 7.5                  | 305 L3 | —      | BN90LA4 | M3SA4 | 24700               | 28500 | 43100  | 51800  | 15800 | 290 |
| 3.6                                 | 3509                  | 1.9            | 391  | 6.0                  | 306 L4 | —      | BN90LA4 | M3SA4 | 30400               | 34500 | 69900  | 81400  | 22900 | 302 |
| 3.6                                 | 3502                  | 1.1            | 390  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 24400               | 28200 | 42700  | 51400  | 15700 | 292 |
| 3.6                                 | 3491                  | 2.2            | 389  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 30400               | 34400 | 69800  | 81200  | 22800 | 304 |
| 3.9                                 | 3266                  | 0.9            | 364  | 12.0                 | —      | 304 R4 | BN90LA4 | M3SA4 | 23300               | 26900 | 40900  | 49300  | 15000 | 280 |
| 3.9                                 | 3266                  | 1.4            | 364  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 23900               | 27600 | 41800  | 50300  | 15300 | 292 |
| 4.2                                 | 3123                  | 2.8            | 336  | 11.0                 | 307 L3 | —      | BN90LA4 | M3SA4 | 32200               | 40400 | 71900  | 94200  | 28000 | 314 |
| 4.2                                 | 3012                  | 1.5            | 336  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 23200               | 26800 | 40800  | 49100  | 14900 | 292 |
| 4.3                                 | 3012                  | 1.8            | 325  | 7.5                  | 306 L3 | —      | BN90LA4 | M3SA4 | 28600               | 32400 | 66100  | 76900  | 21500 | 302 |
| 4.4                                 | 2983                  | 1.2            | 321  | 7.5                  | 305 L3 | —      | BN90LA4 | M3SA4 | 22900               | 26400 | 40300  | 48500  | 14700 | 290 |
| 4.5                                 | 2806                  | 1.3            | 313  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 22700               | 26200 | 39900  | 48100  | 14600 | 292 |
| 4.5                                 | 2797                  | 2.7            | 312  | 12.0                 | —      | 306 R4 | BN90LA4 | M3SA4 | 28200               | 32000 | 65300  | 76000  | 21200 | 304 |
| 4.6                                 | 2752                  | 1.3            | 307  | 12.0                 | —      | 304 R4 | BN90LA4 | M3SA4 | 22500               | 26000 | 39700  | 47800  | 14500 | 280 |
| 4.9                                 | 2603                  | 1.0            | 290  | 12.0                 | —      | 303 R4 | BN90LA4 | M3SA4 | 22100               | 25600 | 39100  | 47000  | 14200 | 268 |
| 4.9                                 | 2603                  | 1.4            | 290  | 12.0                 | —      | 304 R4 | BN90LA4 | M3SA4 | 22100               | 25600 | 39100  | 47000  | 14200 | 280 |
| 4.9                                 | 2603                  | 2.0            | 290  | 12.0                 | —      | 305 R4 | BN90LA4 | M3SA4 | 22100               | 25600 | 39100  | 47000  | 14200 | 292 |
| 4.9                                 | 2673                  | 2.1            | 288  | 7.5                  | 306 L3 | —      | BN90LA4 | M3SA4 | 27500               | 31200 | 63700  | 74200  | 20700 | 302 |
| 5.1                                 | 2566                  | 1.7            | 276  | 7.5                  | 305 L3 | —      | BN90LA4 | M3SA4 | 21800               | 25200 | 38500  | 46300  | 14000 | 290 |
| 5.2                                 | 2534                  | 0.9            | 273  | 7.5                  | 304 L3 | —      | BN90LA4 | M3SA4 | 21700               | 25000 | 38300  | 46100  | 13900 | 278 |
| 5.3                                 | 2490                  | 2.2            | 268  | 7.5                  | 306 L3 | —      | BN90LA4 | M3SA4 | 26900               | 30400 | 62400  | 72700  | 20200 | 302 |
| 5.3                                 | 2400                  | 1.5            | 267  | 12.0                 | —      | 304 R4 | BN90LA4 | M3SA4 | 21500               | 24900 | 38100  | 45900  | 13800 | 280 |



$P_1 = 1.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |  |  |  |  | R <sub>n2</sub> [N] |       |       |       |       |  |
|-------------------------------------|-----------------------|----------------|------|----------------------|---|---|---|---|---------------------|-------|-------|-------|-------|---|
|                                     |                       |                |      |                      |   |   |   |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |   |
| 5.5                                 | 2390                  | 1.5            | 258  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 21300               | 24600 | 37700 | 45300 | 13600 | 290   |
| 5.5                                 | 2290                  | 1.6            | 255  | 12.0                 | —   | 305 R4  | BN90LA4   | M3SA4   | 21200               | 24500 | 37600 | 45200 | 13600 | 292   |
| 6.1                                 | 2073                  | 1.7            | 231  | 12.0                 | —   | 305 R4  | BN90LA4   | M3SA4   | 20500               | 23700 | 36500 | 43900 | 13200 | 292   |
| 6.2                                 | 2033                  | 1.7            | 227  | 12.0                 | —   | 304 R4  | BN90LA4   | M3SA4   | 20400               | 23500 | 36300 | 43600 | 13100 | 280   |
| 6.4                                 | 2045                  | 1.1            | 220  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 20200               | 23300 | 36000 | 43300 | 13000 | 266   |
| 6.4                                 | 2045                  | 1.8            | 220  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 20200               | 23300 | 36000 | 43300 | 13000 | 278   |
| 6.4                                 | 2045                  | 2.3            | 220  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 20200               | 23300 | 36000 | 43300 | 13000 | 290   |
| 6.6                                 | 1929                  | 0.9            | 215  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 6520                | 6520  | 17500 | 20100 | 4280  | 258   |
| 6.6                                 | 1923                  | 1.4            | 214  | 12.0                 | —   | 303 R4  | BN90LA4   | M3SA4   | 20000               | 23100 | 35700 | 42900 | 12800 | 268   |
| 6.6                                 | 1923                  | 1.9            | 214  | 12.0                 | —   | 304 R4  | BN90LA4   | M3SA4   | 20000               | 23100 | 35700 | 42900 | 12800 | 280   |
| 6.6                                 | 1923                  | 2.8            | 214  | 12.0                 | —   | 305 R4  | BN90LA4   | M3SA4   | 19600               | 22600 | 34900 | 42000 | 12500 | 292   |
| 7.0                                 | 1872                  | 1.3            | 202  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 19600               | 22600 | 35000 | 42100 | 12600 | 278   |
| 7.4                                 | 1766                  | 1.0            | 190  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 19200               | 22200 | 34400 | 41400 | 12300 | 266   |
| 7.4                                 | 1766                  | 2.0            | 190  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 19200               | 22200 | 34400 | 41400 | 12300 | 290   |
| 7.6                                 | 1660                  | 1.4            | 185  | 12.0                 | —   | 303 R4  | BN90LA4   | M3SA4   | 19100               | 22000 | 34100 | 41100 | 12200 | 268   |
| 7.6                                 | 1660                  | 2.1            | 185  | 12.0                 | —   | 304 R4  | BN90LA4   | M3SA4   | 19100               | 22000 | 34100 | 41100 | 12200 | 280   |
| 7.6                                 | 1660                  | 2.7            | 185  | 12.0                 | —   | 305 R4  | BN90LA4   | M3SA4   | 19100               | 22000 | 34100 | 41100 | 12200 | 292   |
| 7.9                                 | 1648                  | 1.3            | 178  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 18800               | 21700 | 33700 | 40600 | 12100 | 266   |
| 7.9                                 | 1648                  | 1.7            | 178  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 18800               | 21700 | 33700 | 40600 | 12100 | 278   |
| 7.9                                 | 1648                  | 2.7            | 178  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 18800               | 21700 | 33700 | 40600 | 12100 | 290   |
| 8.0                                 | 1644                  | 1.1            | 177  | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 6110                | 6110  | 16500 | 19000 | 4020  | 256   |
| 8.0                                 | 1575                  | 1.1            | 175  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 6090                | 6090  | 16500 | 18900 | 4000  | 258   |
| 8.6                                 | 1528                  | 1.6            | 165  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 18300               | 21200 | 33000 | 39600 | 11800 | 278   |
| 8.6                                 | 1520                  | 1.4            | 164  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 18300               | 21100 | 32900 | 39600 | 11700 | 266   |
| 8.6                                 | 1520                  | 2.9            | 164  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 18300               | 21100 | 32900 | 39600 | 11700 | 290   |
| 8.9                                 | 1426                  | 1.2            | 159  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 5890                | 5890  | 16000 | 18300 | 3870  | 258   |
| 8.9                                 | 1421                  | 1.9            | 158  | 12.0                 | —   | 303 R4  | BN90LA4   | M3SA4   | 18100               | 20900 | 32600 | 39200 | 11600 | 268   |
| 8.9                                 | 1421                  | 2.5            | 158  | 12.0                 | —   | 304 R4  | BN90LA4   | M3SA4   | 18100               | 20900 | 32600 | 39200 | 11600 | 280   |
| 9.2                                 | 1415                  | 1.3            | 152  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 17900               | 20600 | 32200 | 38700 | 11500 | 266   |
| 9.2                                 | 1415                  | 2.5            | 152  | 7.5                  | 305 L3  | —   | BN90LA4   | M3SA4   | 17900               | 20600 | 32200 | 38700 | 11500 | 290   |
| 9.4                                 | 1388                  | 2.5            | 150  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 17800               | 20500 | 32000 | 38500 | 11400 | 278   |
| 9.5                                 | 1330                  | 2.6            | 148  | 12.0                 | —   | 304 R4  | BN90LA4   | M3SA4   | 17700               | 20400 | 31900 | 38400 | 11400 | 280   |
| 9.5                                 | 1330                  | 1.7            | 148  | 12.0                 | —   | 303 R4  | BN90LA4   | M3SA4   | 17700               | 20400 | 31900 | 38400 | 11400 | 268   |
| 9.8                                 | 1286                  | 1.0            | 143  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 5690                | 5690  | 15500 | 17800 | 3740  | 258   |
| 9.9                                 | 1317                  | 1.3            | 142  | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 5670                | 5670  | 15400 | 17700 | 3730  | 256   |
| 10.0                                | 1313                  | 2.0            | 141  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 17400               | 20100 | 31500 | 37900 | 11200 | 266   |
| 10.0                                | 1313                  | 2.7            | 141  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 17400               | 20100 | 31500 | 37900 | 11200 | 278   |
| 10.6                                | 1233                  | 0.9            | 133  | 12.0                 | —   | 301 R3  | BN90LA4   | M3SA4   | 5550                | 5550  | 15100 | 17400 | 3650  | 258   |
| 10.8                                | 1215                  | 1.4            | 131  | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 5520                | 5520  | 15100 | 17300 | 3630  | 256   |
| 10.8                                | 1211                  | 2.9            | 130  | 7.5                  | 304 L3  | —   | BN90LA4   | M3SA4   | 17000               | 19600 | 30700 | 37000 | 10900 | 278   |
| 10.9                                | 1164                  | 1.5            | 130  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 5510                | 5510  | 15000 | 17300 | 3620  | 258   |
| 10.9                                | 1160                  | 2.3            | 129  | 12.0                 | —   | 303 R4  | BN90LA4   | M3SA4   | 16900               | 19500 | 30600 | 36900 | 10800 | 268   |
| 11.3                                | 1155                  | 1.6            | 124  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 16700               | 19300 | 30300 | 36500 | 10700 | 266   |
| 11.6                                | 1125                  | 2.1            | 121  | 14.0                 | —   | 304 R3  | BN90LA4   | M3SA4   | 16600               | 19100 | 30100 | 36200 | 10600 | 280   |
| 12.2                                | 1075                  | 1.2            | 116  | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 5300                | 5300  | 14500 | 16700 | 3490  | 256   |
| 12.3                                | 1062                  | 1.7            | 114  | 14.0                 | —   | 303 R3  | BN90LA4   | M3SA4   | 16200               | 18700 | 29500 | 35500 | 10400 | 268   |
| 12.5                                | 1046                  | 1.7            | 113  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 16200               | 18600 | 29400 | 35400 | 10400 | 266   |
| 13.2                                | 988                   | 1.3            | 106  | 12.0                 | —   | 301 R3  | BN90LA4   | M3SA4   | 5160                | 5160  | 14200 | 16300 | 3390  | 258   |
| 13.3                                | 950                   | 0.9            | 106  | 10.0                 | —   | 300 R4  | BN90LA4   | M3SA4   | 5030                | 5030  | 13800 | 15900 | 3310  | 248   |
| 13.3                                | 950                   | 1.8            | 106  | 10.0                 | —   | 301 R4  | BN90LA4   | M3SA4   | 5150                | 5150  | 14100 | 16200 | 3380  | 258   |
| 13.4                                | 973                   | 1.7            | 105  | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 5130                | 5130  | 14100 | 16200 | 3370  | 256   |
| 13.5                                | 970                   | 2.7            | 105  | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 15800               | 18200 | 28800 | 34600 | 10100 | 266   |
| 14.5                                | 900                   | 2.7            | 97.0 | 14.0                 | —   | 304 R3  | BN90LA4   | M3SA4   | 15400               | 17700 | 28100 | 33800 | 9860  | 280   |
| 15.4                                | 849                   | 2.1            | 91.5 | 14.0                 | —   | 303 R3  | BN90LA4   | M3SA4   | 15100               | 17400 | 27600 | 33200 | 9670  | 268   |
| 15.6                                | 837                   | 2.7            | 90.2 | 7.5                  | 303 L3  | —   | BN90LA4   | M3SA4   | 15000               | 17300 | 27500 | 33100 | 9620  | 266   |
| 16.5                                | 794                   | 1.1            | 85.6 | 7.5                  | 300 L3  | —   | BN90LA4   | M3SA4   | 4790                | 4790  | 13300 | 15200 | 3150  | 246   |
| 16.5                                | 794                   | 2.1            | 85.6 | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 4790                | 4790  | 13300 | 15200 | 3150  | 256   |
| 16.6                                | 790                   | 1.6            | 85.2 | 12.0                 | —   | 301 R3  | BN90LA4   | M3SA4   | 4790                | 4790  | 13200 | 15200 | 3150  | 258   |
| 17.9                                | 731                   | 3.0            | 78.7 | 14.0                 | —   | 303 R3  | BN90LA4   | M3SA4   | 14300               | 16500 | 26400 | 31800 | 9190  | 268   |
| 17.9                                | 730                   | 1.2            | 78.7 | 12.0                 | —   | 300 R3  | BN90LA4   | M3SA4   | 4660                | 4660  | 12900 | 14900 | 3060  | 248   |
| 17.9                                | 730                   | 2.2            | 78.7 | 12.0                 | —   | 301 R3  | BN90LA4   | M3SA4   | 4660                | 4660  | 12900 | 14900 | 3060  | 258   |
| 18.2                                | 719                   | 1.2            | 77.5 | 7.5                  | 300 L3  | —   | BN90LA4   | M3SA4   | 4640                | 4640  | 12900 | 14800 | 3050  | 246   |
| 18.2                                | 719                   | 2.3            | 77.5 | 7.5                  | 301 L3  | —   | BN90LA4   | M3SA4   | 4640                | 4640  | 12900 | 14800 | 3050  | 256   |
| 19.2                                | 681                   | 2.7            | 73.3 | 14.0                 | —   | 303 R3  | BN90LA4   | M3SA4   | 14000               | 16200 | 25900 | 31100 | 8980  | 268   |
| 20.2                                | 649                   | 1.0            | 69.9 | 7.5                  | 300 L3  | —   | BN90LA4   | M3SA4   | 4480                | 4480  | 12500 | 14300 | 2950  | 246   |

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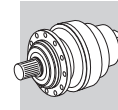
$P_1 = 1.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |       | $R_{n2}$ [N] |      |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|-------|--------------|------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |         |       | MC           | MZ   | HC/PC | HZ/PZ | FZ   |     |
| 20.2                       | 649            | 2.0   | 69.9 | 7.5         | 301 L3 | —      | BN90LA4 | M3SA4 | 4480         | 4480 | 12500 | 14300 | 2950 | 256 |
| 20.7                       | 633            | 1.0   | 68.2 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 4440         | 4440 | 12400 | 14200 | 2920 | 248 |
| 20.7                       | 633            | 2.1   | 68.2 | 12.0        | —      | 301 R3 | BN90LA4 | M3SA4 | 4440         | 4440 | 12400 | 14200 | 2920 | 258 |
| 21.8                       | 621            | 1.9   | 64.8 | 7.5         | 301 L2 | —      | BN90LA4 | M3SA4 | 4370         | 4370 | 12200 | 14000 | 2870 | 256 |
| 22.3                       | 587            | 1.4   | 63.2 | 7.5         | 300 L3 | —      | BN90LA4 | M3SA4 | 4330         | 4330 | 12100 | 13900 | 2850 | 246 |
| 22.3                       | 587            | 2.8   | 63.2 | 7.5         | 301 L3 | —      | BN90LA4 | M3SA4 | 4330         | 4330 | 12100 | 13900 | 2850 | 256 |
| 22.4                       | 584            | 1.5   | 62.9 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 4330         | 4330 | 12100 | 13900 | 2840 | 248 |
| 22.4                       | 584            | 2.8   | 62.9 | 12.0        | —      | 301 R3 | BN90LA4 | M3SA4 | 4330         | 4330 | 12100 | 13900 | 2840 | 258 |
| 27.2                       | 498            | 1.3   | 51.9 | 7.5         | 300 L2 | —      | BN90LA4 | M3SA4 | 4060         | 4060 | 11400 | 13100 | 2670 | 246 |
| 27.2                       | 498            | 2.6   | 51.9 | 7.5         | 301 L2 | —      | BN90LA4 | M3SA4 | 4060         | 4060 | 11400 | 13100 | 2670 | 256 |
| 27.3                       | 479            | 1.8   | 51.6 | 7.5         | 300 L3 | —      | BN90LA4 | M3SA4 | 4050         | 4050 | 11400 | 13100 | 2660 | 246 |
| 28.0                       | 468            | 1.8   | 50.4 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 4020         | 4020 | 11300 | 13000 | 2640 | 248 |
| 34                         | 398            | 1.6   | 41.5 | 7.5         | 300 L2 | —      | BN90LA4 | M3SA4 | 3770         | 3770 | 10700 | 12300 | 2480 | 246 |
| 34                         | 382            | 1.7   | 41.2 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 3760         | 3760 | 10600 | 12200 | 2470 | 248 |
| 37                         | 368            | 2.3   | 38.4 | 7.5         | 300 L2 | —      | BN90LA4 | M3SA4 | 3670         | 3670 | 10400 | 12000 | 2410 | 246 |
| 38                         | 346            | 2.4   | 37.3 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 3630         | 3630 | 10300 | 11900 | 2390 | 248 |
| 42                         | 319            | 2.0   | 33.3 | 7.5         | 300 L2 | —      | BN90LA4 | M3SA4 | 3500         | 3500 | 9990  | 11500 | 2300 | 246 |
| 46                         | 294            | 2.9   | 30.7 | 7.5         | 300 L2 | —      | BN90LA4 | M3SA4 | 3410         | 3410 | 9750  | 11200 | 2240 | 246 |
| 46                         | 282            | 3.0   | 30.4 | 12.0        | —      | 300 R3 | BN90LA4 | M3SA4 | 3400         | 3400 | 9730  | 11200 | 2230 | 248 |
| 76                         | 177            | 2.1   | 18.5 | 12.0        | —      | 300 R2 | BN90LA4 | M3SA4 | 2870         | 2870 | 8370  | 9620  | 1890 | 248 |

$P_1 = 1.85 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |   | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|---|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |         |   | MC           | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 0.55                       | 28202          | 0.9   | 2523 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.64                       | 24442          | 2.0   | 2187 | 11.0        | 313 L4 | —      | BN90LB4 | — | —            | —     | 192000 | 231000 | 80000 | 362 |
| 0.66                       | 23430          | 1.5   | 2096 | 11.0        | 311 L4 | —      | BN90LB4 | — | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.69                       | 22598          | 1.2   | 2022 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.77                       | 20306          | 2.9   | 1817 | 11.0        | 313 L4 | —      | BN90LB4 | — | —            | —     | 192000 | 231000 | 80000 | 362 |
| 0.77                       | 20055          | 1.3   | 1794 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.79                       | 19742          | 2.2   | 1766 | 11.0        | 311 L4 | —      | BN90LB4 | — | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.83                       | 18774          | 1.8   | 1680 | 11.0        | 311 L4 | —      | BN90LB4 | — | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.83                       | 18681          | 1.4   | 1672 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.87                       | 17934          | 0.9   | 1605 | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 110000 | 145000 | 36000 | 326 |
| 0.97                       | 16070          | 1.6   | 1438 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 133000 | 166000 | 65000 | 338 |
| 0.98                       | 15819          | 2.7   | 1415 | 11.0        | 311 L4 | —      | BN90LB4 | — | —            | —     | 157000 | 195000 | 65000 | 350 |
| 0.99                       | 15739          | 1.0   | 1408 | 7.5         | 307 L4 | —      | BN90LB4 | — | 51900        | 65000 | 109000 | 144700 | 45000 | 314 |
| 1.0                        | 15427          | 1.1   | 1380 | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 110000 | 143800 | 35800 | 326 |
| 1.1                        | 14370          | 1.1   | 1286 | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 109200 | 140800 | 35000 | 326 |
| 1.1                        | 14070          | 2.0   | 1259 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 128500 | 161600 | 62700 | 338 |
| 1.2                        | 13012          | 2.3   | 1164 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 125500 | 157900 | 61100 | 338 |
| 1.2                        | 12927          | 1.1   | 1157 | 7.5         | 307 L4 | —      | BN90LB4 | — | 48600        | 60900 | 104100 | 136400 | 42200 | 314 |
| 1.2                        | 12845          | 1.3   | 1149 | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 105500 | 136100 | 33700 | 326 |
| 1.4                        | 11406          | 2.5   | 1021 | 11.0        | 310 L4 | —      | BN90LB4 | — | —            | —     | 120700 | 151800 | 58500 | 338 |
| 1.4                        | 11166          | 1.2   | 999  | 7.5         | 307 L4 | —      | BN90LB4 | — | 46300        | 58000 | 99600  | 130500 | 40200 | 314 |
| 1.4                        | 11166          | 1.6   | 999  | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 101200 | 130500 | 32200 | 326 |
| 1.5                        | 10129          | 1.5   | 906  | 7.5         | 307 L4 | —      | BN90LB4 | — | 44800        | 56200 | 96700  | 126800 | 38900 | 314 |
| 1.5                        | 10129          | 1.8   | 906  | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 98300  | 126800 | 31100 | 326 |
| 1.5                        | 10037          | 2.3   | 898  | 15.0        | —      | 310 R4 | BN90LB4 | — | —            | —     | 116100 | 146000 | 56100 | 340 |
| 1.7                        | 8947           | 1.5   | 801  | 7.5         | 307 L4 | —      | BN90LB4 | — | 43000        | 53900 | 93200  | 122100 | 37400 | 314 |
| 1.7                        | 8947           | 2.0   | 801  | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 94700  | 122100 | 29900 | 326 |
| 1.9                        | 8071           | 1.9   | 722  | 7.5         | 307 L4 | —      | BN90LB4 | — | 41500        | 52100 | 90400  | 118400 | 36100 | 314 |
| 1.9                        | 8071           | 2.6   | 722  | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 91800  | 118400 | 28900 | 326 |
| 2.0                        | 7819           | 1.2   | 700  | 6.0         | 306 L4 | —      | BN90LB4 | — | 37000        | 41900 | 83200  | 96900  | 27800 | 302 |
| 2.0                        | 7709           | 1.3   | 690  | 15.0        | —      | 307 R4 | BN90LB4 | — | 40900        | 51300 | 89100  | 116800 | 35500 | 316 |
| 2.0                        | 7709           | 1.9   | 690  | 15.0        | —      | 309 R4 | BN90LB4 | — | —            | —     | 90600  | 116800 | 28400 | 328 |
| 2.1                        | 7304           | 1.8   | 654  | 7.5         | 307 L4 | —      | BN90LB4 | — | 40200        | 50400 | 87700  | 114900 | 34900 | 314 |
| 2.1                        | 7304           | 2.5   | 654  | 7.5         | 309 L4 | —      | BN90LB4 | — | —            | —     | 89100  | 114900 | 27900 | 326 |
| 2.2                        | 7103           | 1.3   | 636  | 6.0         | 306 L4 | —      | BN90LB4 | — | 35800        | 40600 | 80800  | 94100  | 26900 | 302 |
| 2.4                        | 6598           | 1.3   | 590  | 12.0        | —      | 306 R4 | BN90LB4 | — | 34900        | 39600 | 79100  | 92100  | 26200 | 304 |
| 2.4                        | 6586           | 1.4   | 589  | 6.0         | 306 L4 | —      | BN90LB4 | — | 34900        | 39600 | 79000  | 92000  | 26200 | 302 |

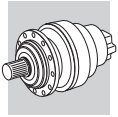




$P_1 = 1.85 \text{ kW}$

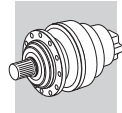
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |       |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|---------|---|---------------------|-------|-------|-------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |         |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ     |       |     |
| 2.4                                 | 6495                  | 1.9            | 581 | 15.0                 | —      | 307 R4 | BN90LB4 | — | —                   | 38600 | 48500 | 84700 | 110900 | 33600 | 316 |
| 2.4                                 | 6495                  | 2.4            | 581 | 15.0                 | —      | 309 R4 | BN90LB4 | — | —                   | —     | —     | 86000 | 110900 | 26900 | 328 |
| 2.4                                 | 6467                  | 2.3            | 579 | 7.5                  | 307 L4 | —      | BN90LB4 | — | —                   | 38600 | 48400 | 84500 | 110800 | 33500 | 314 |
| 2.5                                 | 6146                  | 1.2            | 550 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 34100 | 38700 | 77400 | 90100  | 25600 | 304 |
| 2.7                                 | 5691                  | 1.7            | 509 | 6.0                  | 306 L4 | —      | BN90LB4 | — | —                   | 33300 | 37700 | 75600 | 88100  | 25000 | 302 |
| 2.7                                 | 5691                  | 2.5            | 509 | 7.5                  | 307 L4 | —      | BN90LB4 | — | —                   | 37000 | 46400 | 81400 | 106600 | 32100 | 314 |
| 2.7                                 | 5691                  | 2.5            | 509 | 7.5                  | 309 L4 | —      | BN90LB4 | — | —                   | —     | —     | 82700 | 106600 | 25700 | 326 |
| 2.8                                 | 5502                  | 1.0            | 492 | 6.0                  | 305 L4 | —      | BN90LB4 | — | —                   | 26400 | 30500 | 45800 | 55100  | 16900 | 290 |
| 2.8                                 | 5482                  | 1.7            | 490 | 15.0                 | —      | 307 R4 | BN90LB4 | — | —                   | 36500 | 45800 | 80500 | 105400 | 31700 | 316 |
| 2.8                                 | 5482                  | 2.6            | 490 | 15.0                 | —      | 309 R4 | BN90LB4 | — | —                   | —     | —     | 81700 | 105400 | 25400 | 328 |
| 2.8                                 | 5455                  | 1.7            | 488 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 32800 | 37100 | 74700 | 87000  | 24600 | 304 |
| 3.0                                 | 5195                  | 2.3            | 465 | 7.5                  | 307 L4 | —      | BN90LB4 | — | —                   | 35800 | 45000 | 79200 | 103700 | 31200 | 314 |
| 3.0                                 | 5106                  | 2.7            | 457 | 15.0                 | —      | 309 R4 | BN90LB4 | — | —                   | —     | —     | 80000 | 103200 | 24800 | 328 |
| 3.1                                 | 5081                  | 1.4            | 455 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 32000 | 36300 | 73100 | 85100  | 24100 | 304 |
| 3.1                                 | 5061                  | 2.6            | 453 | 15.0                 | —      | 307 R4 | BN90LB4 | — | —                   | 35500 | 44600 | 78600 | 102900 | 30900 | 316 |
| 3.1                                 | 5048                  | 0.9            | 452 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 25700 | 29600 | 44600 | 53700  | 16500 | 292 |
| 3.1                                 | 4980                  | 1.1            | 446 | 6.0                  | 305 L4 | —      | BN90LB4 | — | —                   | 25500 | 29500 | 44400 | 53400  | 16400 | 290 |
| 3.1                                 | 4965                  | 2.0            | 444 | 6.0                  | 306 L4 | —      | BN90LB4 | — | —                   | 31800 | 36000 | 72600 | 84500  | 23900 | 302 |
| 3.3                                 | 4692                  | 1.9            | 420 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 31200 | 35300 | 71400 | 83100  | 23400 | 304 |
| 3.4                                 | 4619                  | 2.6            | 413 | 15.0                 | —      | 307 R4 | BN90LB4 | — | —                   | 34500 | 43200 | 76400 | 100100 | 30000 | 316 |
| 3.4                                 | 4618                  | 1.0            | 413 | 6.0                  | 305 L4 | —      | BN90LB4 | — | —                   | 24900 | 28800 | 43400 | 52200  | 16000 | 290 |
| 3.4                                 | 4532                  | 2.6            | 406 | 7.5                  | 307 L4 | —      | BN90LB4 | — | —                   | 34300 | 43000 | 76000 | 99600  | 29800 | 314 |
| 3.4                                 | 4681                  | 1.2            | 405 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 30800 | 34900 | 70600 | 82200  | 23100 | 302 |
| 3.6                                 | 4369                  | 1.6            | 391 | 6.0                  | 306 L4 | —      | BN90LB4 | — | —                   | 30400 | 34500 | 69900 | 81400  | 22900 | 302 |
| 3.6                                 | 4347                  | 1.7            | 389 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 30400 | 34400 | 69800 | 81200  | 22800 | 304 |
| 3.8                                 | 4067                  | 1.1            | 364 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 23900 | 27600 | 41800 | 50300  | 15300 | 292 |
| 4.1                                 | 3888                  | 2.3            | 336 | 11.0                 | 307 L3 | —      | BN90LB4 | — | —                   | 32200 | 40400 | 71900 | 94200  | 28000 | 314 |
| 4.1                                 | 3751                  | 1.2            | 336 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 23200 | 26800 | 40800 | 49100  | 14900 | 292 |
| 4.3                                 | 3750                  | 1.5            | 325 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 28600 | 32400 | 66100 | 76900  | 21500 | 302 |
| 4.3                                 | 3715                  | 1.0            | 321 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 22900 | 26400 | 40300 | 48500  | 14700 | 290 |
| 4.4                                 | 3494                  | 1.0            | 313 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 22700 | 26200 | 39900 | 48100  | 14600 | 292 |
| 4.5                                 | 3483                  | 2.2            | 312 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 28200 | 32000 | 65300 | 76000  | 21200 | 304 |
| 4.5                                 | 3426                  | 1.0            | 307 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 22500 | 26000 | 39700 | 47800  | 14500 | 280 |
| 4.8                                 | 3241                  | 1.1            | 290 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 22100 | 25600 | 39100 | 47000  | 14200 | 280 |
| 4.8                                 | 3241                  | 1.6            | 290 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 22100 | 25600 | 39100 | 47000  | 14200 | 292 |
| 4.8                                 | 3230                  | 2.6            | 289 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 27500 | 31200 | 63800 | 74300  | 20700 | 304 |
| 4.8                                 | 3328                  | 1.7            | 288 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 27500 | 31200 | 63700 | 74200  | 20700 | 302 |
| 5.0                                 | 3195                  | 1.4            | 276 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 21800 | 25200 | 38500 | 46300  | 14000 | 290 |
| 5.2                                 | 3100                  | 1.8            | 268 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 26900 | 30400 | 62400 | 72700  | 20200 | 302 |
| 5.2                                 | 2989                  | 1.2            | 267 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 21500 | 24900 | 38100 | 45900  | 13800 | 280 |
| 5.4                                 | 2976                  | 1.2            | 258 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 21300 | 24600 | 37700 | 45300  | 13600 | 290 |
| 5.4                                 | 2852                  | 1.3            | 255 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 21200 | 24500 | 37600 | 45200  | 13600 | 292 |
| 5.6                                 | 2778                  | 3.0            | 249 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 26200 | 29700 | 61000 | 71000  | 19700 | 304 |
| 5.8                                 | 2751                  | 3.0            | 238 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 25800 | 29200 | 60200 | 70100  | 19400 | 302 |
| 6.0                                 | 2582                  | 1.4            | 231 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 20500 | 23700 | 36500 | 43900  | 13200 | 292 |
| 6.0                                 | 2574                  | 2.9            | 230 | 12.0                 | —      | 306 R4 | BN90LB4 | — | —                   | 25500 | 28900 | 59600 | 69400  | 19200 | 304 |
| 6.1                                 | 2532                  | 1.4            | 227 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 20400 | 23500 | 36300 | 43600  | 13100 | 280 |
| 6.3                                 | 2563                  | 2.5            | 222 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 25200 | 28600 | 58900 | 68600  | 18900 | 302 |
| 6.3                                 | 2546                  | 1.4            | 220 | 7.5                  | 304 L3 | —      | BN90LB4 | — | —                   | 20200 | 23300 | 36000 | 43300  | 13000 | 278 |
| 6.3                                 | 2546                  | 1.9            | 220 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 20200 | 23300 | 36000 | 43300  | 13000 | 290 |
| 6.5                                 | 2395                  | 1.1            | 214 | 12.0                 | —      | 303 R4 | BN90LB4 | — | —                   | 20000 | 23100 | 35700 | 42900  | 12800 | 268 |
| 6.5                                 | 2395                  | 1.5            | 214 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 20000 | 23100 | 35700 | 42900  | 12800 | 280 |
| 6.5                                 | 2395                  | 2.3            | 214 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 20000 | 23100 | 35700 | 42900  | 12800 | 292 |
| 6.9                                 | 2331                  | 1.0            | 202 | 7.5                  | 304 L3 | —      | BN90LB4 | — | —                   | 19600 | 22600 | 35000 | 42100  | 12600 | 278 |
| 7.3                                 | 2199                  | 1.6            | 190 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 19200 | 22200 | 34400 | 41400  | 12300 | 290 |
| 7.3                                 | 2193                  | 3.0            | 190 | 7.5                  | 306 L3 | —      | BN90LB4 | — | —                   | 23900 | 27100 | 56200 | 65500  | 18000 | 302 |
| 7.5                                 | 2067                  | 1.1            | 185 | 12.0                 | —      | 303 R4 | BN90LB4 | — | —                   | 19100 | 22000 | 34100 | 41100  | 12200 | 268 |
| 7.5                                 | 2067                  | 1.7            | 185 | 12.0                 | —      | 304 R4 | BN90LB4 | — | —                   | 19100 | 22000 | 34100 | 41100  | 12200 | 280 |
| 7.5                                 | 2067                  | 2.2            | 185 | 12.0                 | —      | 305 R4 | BN90LB4 | — | —                   | 19100 | 22000 | 34100 | 41100  | 12200 | 292 |
| 7.8                                 | 2052                  | 1.1            | 178 | 7.5                  | 303 L3 | —      | BN90LB4 | — | —                   | 18800 | 21700 | 33700 | 40600  | 12100 | 266 |
| 7.8                                 | 2052                  | 1.4            | 178 | 7.5                  | 304 L3 | —      | BN90LB4 | — | —                   | 18800 | 21700 | 33700 | 40600  | 12100 | 278 |
| 7.8                                 | 2052                  | 2.2            | 178 | 7.5                  | 305 L3 | —      | BN90LB4 | — | —                   | 18800 | 21700 | 33700 | 40600  | 12100 | 290 |
| 7.9                                 | 1961                  | 0.9            | 175 | 10.0                 | —      | 301 R4 | BN90LB4 | — | —                   | 5950  | 5950  | 16100 | 18500  | 3910  | 258 |
| 8.4                                 | 1903                  | 1.3            | 165 | 7.5                  | 304 L3 | —      | BN90LB4 | — | —                   | 18300 | 21200 | 33000 | 39600  | 11800 | 278 |
| 8.5                                 | 1892                  | 1.2            | 164 | 7.5                  | 303 L3 | —      | BN90LB4 | — | —                   | 18300 | 21100 | 32900 | 39600  | 11700 | 266 |

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$P_1 = 1.85 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |   | $R_{n2}$ [N] |       |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|---|--------------|-------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |        |        |         |   | MC           | MZ    | HC/PC | HZ/PZ | FZ    |       |     |
| 8.5                        | 1892           | 2.3   | 164  | 7.5         | 305 L3 | —      | BN90LB4 | — | —            | 18300 | 21100 | 32900 | 39600 | 11700 | 290 |
| 8.8                        | 1775           | 1.0   | 159  | 10.0        | —      | 301 R4 | BN90LB4 | — | —            | 5890  | 5890  | 16000 | 18300 | 3870  | 258 |
| 8.8                        | 1770           | 1.5   | 158  | 12.0        | —      | 303 R4 | BN90LB4 | — | —            | 18100 | 20900 | 32600 | 39200 | 11600 | 268 |
| 8.8                        | 1770           | 2.0   | 158  | 12.0        | —      | 304 R4 | BN90LB4 | — | —            | 18100 | 20900 | 32600 | 39200 | 11600 | 280 |
| 9.1                        | 1762           | 1.0   | 152  | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 17900 | 20600 | 32200 | 38700 | 11500 | 266 |
| 9.1                        | 1762           | 2.0   | 152  | 7.5         | 305 L3 | —      | BN90LB4 | — | —            | 17900 | 20600 | 32200 | 38700 | 11500 | 290 |
| 9.3                        | 1728           | 2.0   | 150  | 7.5         | 304 L3 | —      | BN90LB4 | — | —            | 17800 | 20500 | 32000 | 38500 | 11400 | 278 |
| 9.4                        | 1656           | 2.1   | 148  | 12.0        | —      | 304 R4 | BN90LB4 | — | —            | 17700 | 20400 | 31900 | 38400 | 11400 | 280 |
| 9.4                        | 1656           | 1.4   | 148  | 12.0        | —      | 303 R4 | BN90LB4 | — | —            | 17700 | 20400 | 31900 | 38400 | 11400 | 268 |
| 9.4                        | 1656           | 2.7   | 148  | 12.0        | —      | 305 R4 | BN90LB4 | — | —            | 17700 | 20400 | 31900 | 38400 | 11400 | 292 |
| 9.8                        | 1640           | 1.0   | 142  | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 5670  | 5670  | 15400 | 17700 | 3730  | 256 |
| 9.8                        | 1635           | 1.6   | 141  | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 17400 | 20100 | 31500 | 37900 | 11200 | 266 |
| 9.8                        | 1635           | 2.2   | 141  | 7.5         | 304 L3 | —      | BN90LB4 | — | —            | 17400 | 20100 | 31500 | 37900 | 11200 | 278 |
| 10.6                       | 1512           | 1.1   | 131  | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 5520  | 5520  | 15100 | 17300 | 3630  | 256 |
| 10.7                       | 1508           | 2.3   | 130  | 7.5         | 304 L3 | —      | BN90LB4 | — | —            | 17000 | 19600 | 30700 | 37000 | 10900 | 278 |
| 10.7                       | 1449           | 1.2   | 130  | 10.0        | —      | 301 R4 | BN90LB4 | — | —            | 5510  | 5510  | 15000 | 17300 | 3620  | 258 |
| 10.8                       | 1445           | 1.8   | 129  | 12.0        | —      | 303 R4 | BN90LB4 | — | —            | 16900 | 19500 | 30600 | 36900 | 10800 | 268 |
| 10.8                       | 1445           | 2.4   | 129  | 12.0        | —      | 304 R4 | BN90LB4 | — | —            | 16900 | 19500 | 30600 | 36900 | 10800 | 280 |
| 11.2                       | 1439           | 1.3   | 124  | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 16700 | 19300 | 30300 | 36500 | 10700 | 266 |
| 11.2                       | 1439           | 2.5   | 124  | 7.5         | 305 L3 | —      | BN90LB4 | — | —            | 16700 | 19300 | 30300 | 36500 | 10700 | 290 |
| 11.5                       | 1401           | 1.7   | 121  | 14.0        | —      | 304 R3 | BN90LB4 | — | —            | 16600 | 19100 | 30100 | 36200 | 10600 | 280 |
| 12.0                       | 1339           | 1.0   | 116  | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 5300  | 5300  | 14500 | 16700 | 3490  | 256 |
| 12.2                       | 1322           | 1.4   | 114  | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 16200 | 18700 | 29500 | 35500 | 10400 | 268 |
| 12.2                       | 1322           | 2.7   | 114  | 14.0        | —      | 305 R3 | BN90LB4 | — | —            | 16200 | 18700 | 29500 | 35500 | 10400 | 292 |
| 12.3                       | 1302           | 1.4   | 113  | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 16200 | 18600 | 29400 | 35400 | 10400 | 266 |
| 12.3                       | 1302           | 2.8   | 113  | 7.5         | 305 L3 | —      | BN90LB4 | — | —            | 16200 | 18600 | 29400 | 35400 | 10400 | 290 |
| 12.6                       | 1277           | 2.6   | 111  | 7.5         | 304 L3 | —      | BN90LB4 | — | —            | 16000 | 18500 | 29200 | 35200 | 10300 | 278 |
| 12.7                       | 1224           | 2.8   | 109  | 12.0        | —      | 304 R4 | BN90LB4 | — | —            | 16000 | 18500 | 29200 | 35100 | 10300 | 280 |
| 13.1                       | 1230           | 1.1   | 106  | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 5160  | 5160  | 14200 | 16300 | 3390  | 258 |
| 13.1                       | 1183           | 1.4   | 106  | 10.0        | —      | 301 R4 | BN90LB4 | — | —            | 5150  | 5150  | 14100 | 16200 | 3380  | 258 |
| 13.3                       | 1212           | 1.4   | 105  | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 5130  | 5130  | 14100 | 16200 | 3370  | 256 |
| 13.3                       | 1208           | 2.1   | 105  | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 15800 | 18200 | 28800 | 34600 | 10100 | 266 |
| 13.3                       | 1208           | 2.9   | 105  | 7.5         | 304 L3 | —      | BN90LB4 | — | —            | 15800 | 18200 | 28800 | 34600 | 10100 | 278 |
| 14.3                       | 1121           | 2.1   | 97.0 | 14.0        | —      | 304 R3 | BN90LB4 | — | —            | 15400 | 17700 | 28100 | 33800 | 9860  | 280 |
| 15.2                       | 1058           | 1.7   | 91.5 | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 15100 | 17400 | 27600 | 33200 | 9670  | 268 |
| 15.4                       | 1042           | 2.2   | 90.2 | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 15000 | 17300 | 27500 | 33100 | 9620  | 266 |
| 16.2                       | 989            | 1.7   | 85.6 | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 4790  | 4790  | 13300 | 15200 | 3150  | 256 |
| 16.3                       | 984            | 1.3   | 85.2 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 4790  | 4790  | 13200 | 15200 | 3150  | 258 |
| 17.7                       | 910            | 2.4   | 78.7 | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 14300 | 16500 | 26400 | 31800 | 9190  | 268 |
| 17.7                       | 909            | 0.9   | 78.7 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 4660  | 4660  | 12900 | 14900 | 3060  | 248 |
| 17.7                       | 909            | 1.7   | 78.7 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 4660  | 4660  | 12900 | 14900 | 3060  | 258 |
| 17.9                       | 895            | 0.9   | 77.5 | 7.5         | 300 L3 | —      | BN90LB4 | — | —            | 4640  | 4640  | 12900 | 14800 | 3050  | 246 |
| 17.9                       | 895            | 1.9   | 77.5 | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 4640  | 4640  | 12900 | 14800 | 3050  | 256 |
| 18.0                       | 893            | 2.8   | 77.2 | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 14200 | 16400 | 26300 | 31600 | 9140  | 266 |
| 19.0                       | 847            | 2.1   | 73.3 | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 14000 | 16200 | 25900 | 31100 | 8980  | 268 |
| 19.2                       | 835            | 2.7   | 72.3 | 7.5         | 303 L3 | —      | BN90LB4 | — | —            | 13900 | 16100 | 25700 | 31000 | 8940  | 266 |
| 19.9                       | 807            | 1.6   | 69.9 | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 4480  | 4480  | 12500 | 14300 | 2950  | 256 |
| 20.4                       | 789            | 1.6   | 68.2 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 4440  | 4440  | 12400 | 14200 | 2920  | 258 |
| 21.5                       | 774            | 1.5   | 64.8 | 7.5         | 301 L2 | —      | BN90LB4 | — | —            | 4370  | 4370  | 12200 | 14000 | 2870  | 256 |
| 22.0                       | 731            | 1.2   | 63.2 | 7.5         | 300 L3 | —      | BN90LB4 | — | —            | 4330  | 4330  | 12100 | 13900 | 2850  | 246 |
| 22.0                       | 731            | 2.3   | 63.2 | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 4330  | 4330  | 12100 | 13900 | 2850  | 256 |
| 22.0                       | 729            | 3.0   | 63.1 | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 13300 | 15400 | 24700 | 29700 | 8540  | 268 |
| 22.1                       | 727            | 1.2   | 62.9 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 4330  | 4330  | 12100 | 13900 | 2840  | 248 |
| 22.1                       | 727            | 2.3   | 62.9 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 4330  | 4330  | 12100 | 13900 | 2840  | 258 |
| 24.9                       | 666            | 2.7   | 55.8 | 9.0         | 303 L2 | —      | BN90LB4 | — | —            | 12800 | 14800 | 23800 | 28700 | 8200  | 266 |
| 25.7                       | 626            | 2.9   | 54.2 | 14.0        | —      | 303 R3 | BN90LB4 | — | —            | 12700 | 14600 | 23600 | 28400 | 8120  | 268 |
| 26.8                       | 620            | 1.0   | 51.9 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 4060  | 4060  | 11400 | 13100 | 2670  | 246 |
| 26.8                       | 620            | 2.1   | 51.9 | 7.5         | 301 L2 | —      | BN90LB4 | — | —            | 4060  | 4060  | 11400 | 13100 | 2670  | 256 |
| 26.9                       | 597            | 1.4   | 51.6 | 7.5         | 300 L3 | —      | BN90LB4 | — | —            | 4050  | 4050  | 11400 | 13100 | 2660  | 246 |
| 26.9                       | 597            | 2.7   | 51.6 | 7.5         | 301 L3 | —      | BN90LB4 | — | —            | 4050  | 4050  | 11400 | 13100 | 2660  | 256 |
| 27.6                       | 583            | 1.5   | 50.4 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 4020  | 4020  | 11300 | 13000 | 2640  | 248 |
| 27.6                       | 583            | 2.8   | 50.4 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 4020  | 4020  | 11300 | 13000 | 2640  | 258 |
| 33                         | 496            | 1.3   | 41.5 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 3770  | 3770  | 10700 | 12300 | 2480  | 246 |
| 33                         | 496            | 2.6   | 41.5 | 7.5         | 301 L2 | —      | BN90LB4 | — | —            | 3770  | 3770  | 10700 | 12300 | 2480  | 256 |
| 34                         | 476            | 1.4   | 41.2 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 3760  | 3760  | 10600 | 12200 | 2470  | 248 |

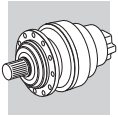


$P_1 = 1.85 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |   | $R_{n2}$ [N] |      |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|---|--------------|------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |         |   | MC           | MZ   | HC/PC | HZ/PZ | FZ    |      |     |
| 34                         | 476            | 2.7   | 41.2 | 12.0        | —      | 301 R3 | BN90LB4 | — | —            | 3760 | 3760  | 10600 | 12200 | 2470 | 258 |
| 36                         | 458            | 1.8   | 38.4 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 3670 | 3670  | 10400 | 12000 | 2410 | 246 |
| 37                         | 431            | 2.0   | 37.3 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 3630 | 3630  | 10300 | 11900 | 2390 | 248 |
| 42                         | 397            | 1.6   | 33.3 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 3500 | 3500  | 9990  | 11500 | 2300 | 246 |
| 45                         | 366            | 2.3   | 30.7 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 3410 | 3410  | 9750  | 11200 | 2240 | 246 |
| 46                         | 351            | 2.4   | 30.4 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 3400 | 3400  | 9730  | 11200 | 2230 | 248 |
| 56                         | 287            | 2.5   | 24.8 | 12.0        | —      | 300 R3 | BN90LB4 | — | —            | 3170 | 3170  | 9150  | 10500 | 2090 | 248 |
| 56                         | 296            | 2.9   | 24.8 | 18.0        | —      | 303 R2 | BN90LB4 | — | —            | 9750 | 11300 | 18700 | 22500 | 6250 | 268 |
| 57                         | 294            | 2.7   | 24.6 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 3160 | 3160  | 9130  | 10500 | 2080 | 246 |
| 69                         | 240            | 2.7   | 20.1 | 7.5         | 300 L2 | —      | BN90LB4 | — | —            | 2960 | 2960  | 8590  | 9870  | 1940 | 246 |
| 75                         | 220            | 1.7   | 18.5 | 12.0        | —      | 300 R2 | BN90LB4 | — | —            | 2870 | 2870  | 8370  | 9620  | 1890 | 248 |
| 94                         | 176            | 2.9   | 14.8 | 12.0        | —      | 300 R2 | BN90LB4 | — | —            | 2670 | 2670  | 7830  | 9000  | 1750 | 248 |
| 154                        | 111            | 2.9   | 9.0  | 7.5         | 300 L1 | —      | BN90LB4 | — | —            | 2260 | 2260  | 6750  | 7750  | 1490 | 246 |

$P_1 = 2.2 \text{ kW}$

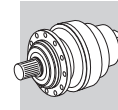
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |       | $R_{n2}$ [N] |       |        |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|-------|--------------|-------|--------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |          |       | MC           | MZ    | HC/PC  | HZ/PZ  | FZ     |       |     |
| 0.64                       | 28676          | 1.7   | 2187 | 11.0        | 313 L4 | —      | BN100LA4 | —     | —            | —     | —      | 192000 | 231000 | 80000 | 362 |
| 0.67                       | 27488          | 1.2   | 2096 | 11.0        | 311 L4 | —      | BN100LA4 | —     | —            | —     | —      | 157000 | 195000 | 65000 | 350 |
| 0.70                       | 26513          | 1.0   | 2022 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.78                       | 23823          | 2.4   | 1817 | 11.0        | 313 L4 | —      | BN100LA4 | —     | —            | —     | —      | 192000 | 231000 | 80000 | 362 |
| 0.79                       | 23529          | 1.1   | 1794 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.80                       | 23161          | 1.9   | 1766 | 11.0        | 311 L4 | —      | BN100LA4 | —     | —            | —     | —      | 157000 | 195000 | 65000 | 350 |
| 0.84                       | 22026          | 1.5   | 1680 | 11.0        | 311 L4 | —      | BN100LA4 | —     | —            | —     | —      | 157000 | 195000 | 65000 | 350 |
| 0.84                       | 21917          | 1.2   | 1672 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 0.94                       | 19694          | 2.9   | 1502 | 11.0        | 313 L4 | —      | BN100LA4 | —     | —            | —     | —      | 192000 | 231000 | 80000 | 362 |
| 0.98                       | 18853          | 1.4   | 1438 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 133000 | 166000 | 65000 | 338 |
| 1.0                        | 18559          | 2.3   | 1415 | 11.0        | 311 L4 | —      | BN100LA4 | —     | —            | —     | —      | 157000 | 195000 | 65000 | 350 |
| 1.0                        | 18277          | 2.9   | 1394 | 11.0        | 313 L4 | —      | BN100LA4 | —     | —            | —     | —      | 192000 | 229000 | 79900 | 362 |
| 1.0                        | 18099          | 0.9   | 1380 | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 110000 | 143800 | 35800 | 326 |
| 1.1                        | 16859          | 1.0   | 1286 | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 109200 | 140800 | 35000 | 326 |
| 1.1                        | 16508          | 1.7   | 1259 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 128500 | 161600 | 62700 | 338 |
| 1.1                        | 16133          | 2.7   | 1230 | 11.0        | 311 L4 | —      | BN100LA4 | —     | —            | —     | —      | 150800 | 187900 | 62300 | 350 |
| 1.2                        | 15266          | 1.9   | 1164 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 125500 | 157900 | 61100 | 338 |
| 1.2                        | 15166          | 0.9   | 1157 | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 47500        | 59600 | 101900 | 133600 | 41300  | 314   |     |
| 1.2                        | 15070          | 1.1   | 1149 | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 105500 | 136100 | 33700 | 326 |
| 1.4                        | 13382          | 2.1   | 1021 | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 120700 | 151800 | 58500 | 338 |
| 1.4                        | 13100          | 1.1   | 999  | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 46300        | 58000 | 99600  | 130500 | 40200  | 314   |     |
| 1.4                        | 13100          | 1.4   | 999  | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 101200 | 130500 | 32200 | 326 |
| 1.5                        | 12310          | 2.7   | 939  | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 117700 | 148000 | 56900 | 338 |
| 1.6                        | 11883          | 1.3   | 906  | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 44800        | 56200 | 96700  | 126800 | 38900  | 314   |     |
| 1.6                        | 11883          | 1.5   | 906  | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 98300  | 126800 | 31100 | 326 |
| 1.6                        | 11776          | 2.0   | 898  | 15.0        | —      | 310 R4 | BN100LA4 | —     | —            | —     | —      | 116100 | 146000 | 56100 | 340 |
| 1.7                        | 10723          | 2.6   | 818  | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 112900 | 142000 | 54300 | 338 |
| 1.8                        | 10497          | 1.3   | 801  | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 43000        | 53900 | 93200  | 122100 | 37400  | 314   |     |
| 1.8                        | 10497          | 1.7   | 801  | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 94700  | 122100 | 29900 | 326 |
| 1.9                        | 9922           | 2.7   | 757  | 15.0        | —      | 310 R4 | BN100LA4 | —     | —            | —     | —      | 110300 | 138700 | 52900 | 340 |
| 1.9                        | 9516           | 2.8   | 726  | 11.0        | 310 L4 | —      | BN100LA4 | —     | —            | —     | —      | 108900 | 137000 | 52200 | 338 |
| 2.0                        | 9470           | 1.6   | 722  | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 41500        | 52100 | 90400  | 118400 | 36100  | 314   |     |
| 2.0                        | 9470           | 2.2   | 722  | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 91800  | 118400 | 28900 | 326 |
| 2.0                        | 9173           | 1.0   | 700  | 6.0         | 306 L4 | —      | BN100LA4 | M3LA4 | 37000        | 41900 | 83200  | 96900  | 27800  | 302   |     |
| 2.0                        | 9044           | 1.1   | 690  | 15.0        | —      | 307 R4 | BN100LA4 | M3LA4 | 40900        | 51300 | 89100  | 116800 | 35500  | 316   |     |
| 2.0                        | 9044           | 1.6   | 690  | 15.0        | —      | 309 R4 | BN100LA4 | —     | —            | —     | —      | 90600  | 116800 | 28400 | 328 |
| 2.2                        | 8569           | 1.5   | 654  | 7.5         | 307 L4 | —      | BN100LA4 | M3LA4 | 40200        | 50400 | 87700  | 114900 | 34900  | 314   |     |
| 2.2                        | 8569           | 2.1   | 654  | 7.5         | 309 L4 | —      | BN100LA4 | —     | —            | —     | —      | 89100  | 114900 | 27900 | 326 |
| 2.2                        | 8374           | 2.6   | 639  | 15.0        | —      | 310 R4 | BN100LA4 | —     | —            | —     | —      | 104800 | 131800 | 50000 | 340 |
| 2.2                        | 8333           | 1.1   | 636  | 6.0         | 306 L4 | —      | BN100LA4 | M3LA4 | 35800        | 40600 | 80800  | 94100  | 26900  | 302   |     |
| 2.4                        | 7741           | 1.1   | 590  | 12.0        | —      | 306 R4 | BN100LA4 | M3LA4 | 34900        | 39600 | 79100  | 92100  | 26200  | 304   |     |
| 2.4                        | 7732           | 2.8   | 590  | 15.0        | —      | 310 R4 | BN100LA4 | —     | —            | —     | —      | 102400 | 128700 | 48700 | 340 |
| 2.4                        | 7727           | 1.2   | 589  | 6.0         | 306 L4 | —      | BN100LA4 | M3LA4 | 34900        | 39600 | 79000  | 92000  | 26200  | 302   |     |
| 2.4                        | 7620           | 1.7   | 581  | 15.0        | —      | 307 R4 | BN100LA4 | M3LA4 | 38600        | 48500 | 84700  | 110900 | 33600  | 316   |     |



$P_1 = 2.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|----------|-------|---------------------|-------|-------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ  | FZ    |     |
| 2.4                                 | 7620                  | 2.1            | 581 | 15.0                 | —      | 309 R4 | BN100LA4 | —     | —                   | —     | 86000 | 110900 | 26900 | 328 |
| 2.4                                 | 7588                  | 2.0            | 579 | 7.5                  | 307 L4 | —      | BN100LA4 | M3LA4 | 38600               | 48400 | 84500 | 110800 | 33500 | 314 |
| 2.4                                 | 7588                  | 2.8            | 579 | 7.5                  | 309 L4 | —      | BN100LA4 | —     | —                   | —     | 85900 | 110800 | 26800 | 326 |
| 2.6                                 | 7211                  | 1.0            | 550 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 34100               | 38700 | 77400 | 90100  | 25600 | 304 |
| 2.8                                 | 6677                  | 1.4            | 509 | 6.0                  | 306 L4 | —      | BN100LA4 | M3LA4 | 33300               | 37700 | 75600 | 88100  | 25000 | 302 |
| 2.8                                 | 6677                  | 2.1            | 509 | 7.5                  | 307 L4 | —      | BN100LA4 | M3LA4 | 37000               | 46400 | 81400 | 106600 | 32100 | 314 |
| 2.8                                 | 6677                  | 2.1            | 509 | 7.5                  | 309 L4 | —      | BN100LA4 | —     | —                   | —     | 82700 | 106600 | 25700 | 326 |
| 2.9                                 | 6431                  | 1.5            | 490 | 15.0                 | —      | 307 R4 | BN100LA4 | M3LA4 | 36500               | 45800 | 80500 | 105400 | 31700 | 316 |
| 2.9                                 | 6431                  | 2.2            | 490 | 15.0                 | —      | 309 R4 | BN100LA4 | —     | —                   | —     | 81700 | 105400 | 25400 | 328 |
| 2.9                                 | 6399                  | 1.4            | 488 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 32800               | 37100 | 74700 | 87000  | 24600 | 304 |
| 3.0                                 | 6095                  | 2.0            | 465 | 7.5                  | 307 L4 | —      | BN100LA4 | M3LA4 | 35800               | 45000 | 79200 | 103700 | 31200 | 314 |
| 3.1                                 | 5991                  | 2.3            | 457 | 15.0                 | —      | 309 R4 | BN100LA4 | —     | —                   | —     | 80000 | 103200 | 24800 | 328 |
| 3.1                                 | 5961                  | 1.2            | 455 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 32000               | 36300 | 73100 | 85100  | 24100 | 304 |
| 3.1                                 | 5938                  | 2.3            | 453 | 15.0                 | —      | 307 R4 | BN100LA4 | M3LA4 | 35500               | 44600 | 78600 | 102900 | 30900 | 316 |
| 3.2                                 | 5843                  | 0.9            | 446 | 6.0                  | 305 L4 | —      | BN100LA4 | M3LA4 | 25500               | 29500 | 44400 | 53400  | 16400 | 290 |
| 3.2                                 | 5825                  | 1.7            | 444 | 6.0                  | 306 L4 | —      | BN100LA4 | M3LA4 | 31800               | 36000 | 72600 | 84500  | 23900 | 302 |
| 3.4                                 | 5505                  | 1.6            | 420 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 31200               | 35300 | 71400 | 83100  | 23400 | 304 |
| 3.4                                 | 5419                  | 2.2            | 413 | 15.0                 | —      | 307 R4 | BN100LA4 | M3LA4 | 34500               | 43200 | 76400 | 100100 | 30000 | 316 |
| 3.5                                 | 5317                  | 2.2            | 406 | 7.5                  | 307 L4 | —      | BN100LA4 | M3LA4 | 34300               | 43000 | 76000 | 99600  | 29800 | 314 |
| 3.5                                 | 5491                  | 1.0            | 405 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 30800               | 34900 | 70600 | 82200  | 23100 | 302 |
| 3.6                                 | 5126                  | 1.3            | 391 | 6.0                  | 306 L4 | —      | BN100LA4 | M3LA4 | 30400               | 34500 | 69900 | 81400  | 22900 | 302 |
| 3.6                                 | 5100                  | 1.5            | 389 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 30400               | 34400 | 69800 | 81200  | 22800 | 304 |
| 3.8                                 | 4909                  | 2.9            | 374 | 15.0                 | —      | 309 R4 | BN100LA4 | —     | —                   | —     | 75400 | 97200  | 23200 | 328 |
| 3.9                                 | 4772                  | 1.0            | 364 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 23900               | 27600 | 41800 | 50300  | 15300 | 292 |
| 3.9                                 | 4758                  | 2.6            | 363 | 15.0                 | —      | 307 R4 | BN100LA4 | M3LA4 | 33000               | 41400 | 73500 | 96300  | 28700 | 316 |
| 4.2                                 | 4562                  | 1.9            | 336 | 11.0                 | 307 L3 | —      | BN100LA4 | M3LA4 | 32200               | 40400 | 71900 | 94200  | 28000 | 314 |
| 4.2                                 | 4562                  | 2.9            | 336 | 11.0                 | 309 L3 | —      | BN100LA4 | —     | —                   | —     | 73000 | 94200  | 22400 | 326 |
| 4.2                                 | 4400                  | 1.0            | 336 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 23200               | 26800 | 40800 | 49100  | 14900 | 292 |
| 4.3                                 | 4342                  | 2.6            | 331 | 15.0                 | —      | 307 R4 | BN100LA4 | M3LA4 | 32000               | 40200 | 71500 | 93700  | 27800 | 316 |
| 4.3                                 | 4400                  | 1.3            | 325 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 28600               | 32400 | 66100 | 76900  | 21500 | 302 |
| 4.5                                 | 4086                  | 1.9            | 312 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 28200               | 32000 | 65300 | 76000  | 21200 | 304 |
| 4.9                                 | 3802                  | 1.0            | 290 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 22100               | 25600 | 39100 | 47000  | 14200 | 280 |
| 4.9                                 | 3802                  | 1.4            | 290 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 22100               | 25600 | 39100 | 47000  | 14200 | 292 |
| 4.9                                 | 3789                  | 2.2            | 289 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 27500               | 31200 | 63800 | 74300  | 20700 | 304 |
| 4.9                                 | 3905                  | 1.4            | 288 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 27500               | 31200 | 63700 | 74200  | 20700 | 302 |
| 5.0                                 | 3844                  | 2.9            | 284 | 11.0                 | 307 L3 | —      | BN100LA4 | M3LA4 | 30400               | 38100 | 68300 | 89400  | 26400 | 314 |
| 5.1                                 | 3749                  | 1.2            | 276 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 21800               | 25200 | 38500 | 46300  | 14000 | 290 |
| 5.3                                 | 3637                  | 1.5            | 268 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 26900               | 30400 | 62400 | 72700  | 20200 | 302 |
| 5.3                                 | 3507                  | 1.0            | 267 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 21500               | 24900 | 38100 | 45900  | 13800 | 280 |
| 5.5                                 | 3492                  | 1.0            | 258 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 21300               | 24600 | 37700 | 45300  | 13600 | 290 |
| 5.5                                 | 3346                  | 1.1            | 255 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 21200               | 24500 | 37600 | 45200  | 13600 | 292 |
| 5.7                                 | 3260                  | 2.5            | 249 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 26200               | 29700 | 61000 | 71000  | 19700 | 304 |
| 5.9                                 | 3244                  | 2.7            | 239 | 11.0                 | 307 L3 | —      | BN100LA4 | M3LA4 | 28700               | 36000 | 64900 | 85000  | 25000 | 314 |
| 5.9                                 | 3228                  | 2.5            | 238 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 25800               | 29200 | 60200 | 70100  | 19400 | 302 |
| 6.1                                 | 3029                  | 1.2            | 231 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 20500               | 23700 | 36500 | 43900  | 13200 | 292 |
| 6.1                                 | 3019                  | 2.5            | 230 | 12.0                 | —      | 306 R4 | BN100LA4 | M3LA4 | 25500               | 28900 | 59600 | 69400  | 19200 | 304 |
| 6.2                                 | 2970                  | 1.2            | 227 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 20400               | 23500 | 36300 | 43600  | 13100 | 280 |
| 6.4                                 | 3007                  | 2.2            | 222 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 25200               | 28600 | 58900 | 68600  | 18900 | 302 |
| 6.4                                 | 2987                  | 1.2            | 220 | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 20200               | 23300 | 36000 | 43300  | 13000 | 278 |
| 6.4                                 | 2987                  | 1.6            | 220 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 20200               | 23300 | 36000 | 43300  | 13000 | 290 |
| 6.6                                 | 2810                  | 1.0            | 214 | 12.0                 | —      | 303 R4 | BN100LA4 | M3LA4 | 20000               | 23100 | 35700 | 42900  | 12800 | 268 |
| 6.6                                 | 2810                  | 1.3            | 214 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 20000               | 23100 | 35700 | 42900  | 12800 | 280 |
| 6.6                                 | 2810                  | 1.9            | 214 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 20000               | 23100 | 35700 | 42900  | 12800 | 292 |
| 6.9                                 | 2777                  | 2.9            | 205 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 24500               | 27800 | 57600 | 67000  | 18400 | 302 |
| 7.4                                 | 2580                  | 1.4            | 190 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 19200               | 22200 | 34400 | 41400  | 12300 | 290 |
| 7.4                                 | 2572                  | 2.5            | 190 | 7.5                  | 306 L3 | —      | BN100LA4 | M3LA4 | 23900               | 27100 | 56200 | 65500  | 18000 | 302 |
| 7.6                                 | 2425                  | 1.0            | 185 | 12.0                 | —      | 303 R4 | BN100LA4 | M3LA4 | 18600               | 21500 | 33400 | 40200  | 11900 | 268 |
| 7.6                                 | 2425                  | 1.4            | 185 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 19100               | 22000 | 34100 | 41100  | 12200 | 280 |
| 7.6                                 | 2425                  | 1.9            | 185 | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 19100               | 22000 | 34100 | 41100  | 12200 | 292 |
| 7.9                                 | 2407                  | 0.9            | 178 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 18800               | 21700 | 33700 | 40600  | 12100 | 266 |
| 7.9                                 | 2407                  | 1.2            | 178 | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 18800               | 21700 | 33700 | 40600  | 12100 | 278 |
| 7.9                                 | 2407                  | 1.8            | 178 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 18800               | 21700 | 33700 | 40600  | 12100 | 290 |
| 8.6                                 | 2233                  | 1.1            | 165 | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 18300               | 21200 | 33000 | 39600  | 11800 | 278 |
| 8.6                                 | 2220                  | 1.0            | 164 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 18300               | 21100 | 32900 | 39600  | 11700 | 266 |
| 8.6                                 | 2220                  | 2.0            | 164 | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 18300               | 21100 | 32900 | 39600  | 11700 | 290 |

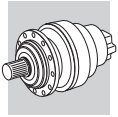




$P_1 = 2.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 8.9                                 | 2076                  | 1.3            | 158  | 12.0                 | —      | 303 R4 | BN100LA4 | M3LA4 | 18100               | 20900 | 32600 | 39200 | 11600 | 268 |
| 8.9                                 | 2076                  | 1.7            | 158  | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 18100               | 20900 | 32600 | 39200 | 11600 | 280 |
| 8.9                                 | 2076                  | 2.6            | 158  | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 18100               | 20900 | 32600 | 39200 | 11600 | 292 |
| 9.2                                 | 2068                  | 1.7            | 152  | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 17900               | 20600 | 32200 | 38700 | 11500 | 290 |
| 9.4                                 | 2028                  | 1.7            | 150  | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 17800               | 20500 | 32000 | 38500 | 11400 | 278 |
| 9.5                                 | 1943                  | 1.8            | 148  | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 17700               | 20400 | 31900 | 38400 | 11400 | 280 |
| 9.5                                 | 1943                  | 1.2            | 148  | 12.0                 | —      | 303 R4 | BN100LA4 | M3LA4 | 17700               | 20400 | 31900 | 38400 | 11400 | 268 |
| 9.5                                 | 1943                  | 2.3            | 148  | 12.0                 | —      | 305 R4 | BN100LA4 | M3LA4 | 17700               | 20400 | 31900 | 38400 | 11400 | 292 |
| 9.8                                 | 1954                  | 2.8            | 144  | 14.0                 | —      | 306 R3 | BN100LA4 | M3LA4 | 21800               | 24700 | 51800 | 60300 | 16400 | 304 |
| 10.0                                | 1918                  | 1.4            | 141  | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 17400               | 20100 | 31500 | 37900 | 11200 | 266 |
| 10.0                                | 1918                  | 1.8            | 141  | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 17400               | 20100 | 31500 | 37900 | 11200 | 278 |
| 10.0                                | 1918                  | 2.7            | 141  | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 17400               | 20100 | 31500 | 37900 | 11200 | 290 |
| 10.8                                | 1774                  | 1.0            | 131  | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 5520                | 5520  | 15100 | 17300 | 3630  | 256 |
| 10.8                                | 1769                  | 2.0            | 130  | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 17000               | 19600 | 30700 | 37000 | 10900 | 278 |
| 10.9                                | 1700                  | 1.0            | 130  | 10.0                 | —      | 301 R4 | BN100LA4 | M3LA4 | 5510                | 5510  | 15000 | 17300 | 3620  | 258 |
| 10.9                                | 1695                  | 1.5            | 129  | 12.0                 | —      | 303 R4 | BN100LA4 | M3LA4 | 16900               | 19500 | 30600 | 36900 | 10800 | 268 |
| 10.9                                | 1695                  | 2.1            | 129  | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 16900               | 19500 | 30600 | 36900 | 10800 | 280 |
| 11.3                                | 1688                  | 1.1            | 124  | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 16700               | 19300 | 30300 | 36500 | 10700 | 266 |
| 11.3                                | 1688                  | 2.1            | 124  | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 16700               | 19300 | 30300 | 36500 | 10700 | 290 |
| 11.6                                | 1644                  | 1.5            | 121  | 14.0                 | —      | 304 R3 | BN100LA4 | M3LA4 | 16600               | 19100 | 30100 | 36200 | 10600 | 280 |
| 12.3                                | 1551                  | 1.2            | 114  | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 16200               | 18700 | 29500 | 35500 | 10400 | 268 |
| 12.3                                | 1551                  | 2.3            | 114  | 14.0                 | —      | 305 R3 | BN100LA4 | M3LA4 | 16200               | 18700 | 29500 | 35500 | 10400 | 292 |
| 12.5                                | 1528                  | 1.2            | 113  | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 16200               | 18600 | 29400 | 35400 | 10400 | 266 |
| 12.5                                | 1528                  | 2.3            | 113  | 7.5                  | 305 L3 | —      | BN100LA4 | M3LA4 | 16200               | 18600 | 29400 | 35400 | 10400 | 290 |
| 12.8                                | 1498                  | 2.3            | 111  | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 16000               | 18500 | 29200 | 35200 | 10300 | 278 |
| 12.9                                | 1436                  | 2.3            | 109  | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 16000               | 18500 | 29200 | 35100 | 10300 | 280 |
| 13.2                                | 1443                  | 0.9            | 106  | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 5160                | 5160  | 14200 | 16300 | 3390  | 258 |
| 13.3                                | 1388                  | 1.2            | 106  | 10.0                 | —      | 301 R4 | BN100LA4 | M3LA4 | 5150                | 5150  | 14100 | 16200 | 3380  | 258 |
| 13.4                                | 1422                  | 1.2            | 105  | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 5130                | 5130  | 14100 | 16200 | 3370  | 256 |
| 13.5                                | 1417                  | 1.8            | 105  | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 15800               | 18200 | 28800 | 34600 | 10100 | 266 |
| 13.5                                | 1417                  | 2.5            | 105  | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 15800               | 18200 | 28800 | 34600 | 10100 | 278 |
| 14.5                                | 1315                  | 1.8            | 97.0 | 14.0                 | —      | 304 R3 | BN100LA4 | M3LA4 | 15400               | 17700 | 28100 | 33800 | 9860  | 280 |
| 15.4                                | 1241                  | 1.5            | 91.5 | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 15100               | 17400 | 27600 | 33200 | 9670  | 268 |
| 15.4                                | 1241                  | 2.9            | 91.5 | 14.0                 | —      | 305 R3 | BN100LA4 | M3LA4 | 15100               | 17400 | 27600 | 33200 | 9670  | 292 |
| 15.6                                | 1223                  | 1.8            | 90.2 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 15000               | 17300 | 27500 | 33100 | 9620  | 266 |
| 15.6                                | 1223                  | 2.7            | 90.2 | 7.5                  | 304 L3 | —      | BN100LA4 | M3LA4 | 15000               | 17300 | 27500 | 33100 | 9620  | 278 |
| 15.8                                | 1172                  | 2.8            | 89.4 | 12.0                 | —      | 304 R4 | BN100LA4 | M3LA4 | 15000               | 17300 | 27400 | 33000 | 9590  | 280 |
| 16.5                                | 1161                  | 1.4            | 85.6 | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 4790                | 4790  | 13300 | 15200 | 3150  | 256 |
| 16.6                                | 1155                  | 1.1            | 85.2 | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 4790                | 4790  | 13200 | 15200 | 3150  | 258 |
| 17.9                                | 1067                  | 2.0            | 78.7 | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 14300               | 16500 | 26400 | 31800 | 9190  | 268 |
| 17.9                                | 1067                  | 2.7            | 78.7 | 14.0                 | —      | 304 R3 | BN100LA4 | M3LA4 | 14300               | 16500 | 26400 | 31800 | 9190  | 280 |
| 17.9                                | 1066                  | 1.5            | 78.7 | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 4660                | 4660  | 12900 | 14900 | 3060  | 258 |
| 18.2                                | 1051                  | 1.6            | 77.5 | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 4640                | 4640  | 12900 | 14800 | 3050  | 256 |
| 18.3                                | 1047                  | 2.4            | 77.2 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 266 |
| 19.2                                | 994                   | 1.8            | 73.3 | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 14000               | 16200 | 25900 | 31100 | 8980  | 268 |
| 19.5                                | 980                   | 2.3            | 72.3 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 13900               | 16100 | 25700 | 31000 | 8940  | 266 |
| 20.2                                | 947                   | 1.4            | 69.9 | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 4480                | 4480  | 12500 | 14300 | 2950  | 256 |
| 20.7                                | 925                   | 1.4            | 68.2 | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 4440                | 4440  | 12400 | 14200 | 2920  | 258 |
| 21.8                                | 908                   | 1.3            | 64.8 | 7.5                  | 301 L2 | —      | BN100LA4 | M3LA4 | 4370                | 4370  | 12200 | 14000 | 2870  | 256 |
| 22.3                                | 858                   | 1.0            | 63.2 | 7.5                  | 300 L3 | —      | BN100LA4 | M3LA4 | 4330                | 4330  | 12100 | 13900 | 2850  | 246 |
| 22.3                                | 858                   | 1.9            | 63.2 | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 4330                | 4330  | 12100 | 13900 | 2850  | 256 |
| 22.4                                | 855                   | 2.5            | 63.1 | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 268 |
| 22.4                                | 855                   | 2.9            | 63.1 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 266 |
| 22.4                                | 853                   | 1.0            | 62.9 | 12.0                 | —      | 300 R3 | BN100LA4 | M3LA4 | 4330                | 4330  | 12100 | 13900 | 2840  | 248 |
| 22.4                                | 853                   | 1.9            | 62.9 | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 4330                | 4330  | 12100 | 13900 | 2840  | 258 |
| 23.8                                | 828                   | 2.9            | 59.1 | 9.0                  | 304 L2 | —      | BN100LA4 | M3LA4 | 13000               | 15000 | 24200 | 29200 | 8360  | 278 |
| 25.3                                | 782                   | 2.3            | 55.8 | 9.0                  | 303 L2 | —      | BN100LA4 | M3LA4 | 12800               | 14800 | 23800 | 28700 | 8200  | 266 |
| 26.0                                | 735                   | 2.5            | 54.2 | 14.0                 | —      | 303 R3 | BN100LA4 | M3LA4 | 12700               | 14600 | 23600 | 28400 | 8120  | 268 |
| 26.4                                | 724                   | 3.0            | 53.4 | 7.5                  | 303 L3 | —      | BN100LA4 | M3LA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 266 |
| 27.2                                | 727                   | 1.8            | 51.9 | 7.5                  | 301 L2 | —      | BN100LA4 | M3LA4 | 4060                | 4060  | 11400 | 13100 | 2670  | 256 |
| 27.3                                | 700                   | 1.2            | 51.6 | 7.5                  | 300 L3 | —      | BN100LA4 | M3LA4 | 4050                | 4050  | 11400 | 13100 | 2660  | 246 |
| 27.3                                | 700                   | 2.3            | 51.6 | 7.5                  | 301 L3 | —      | BN100LA4 | M3LA4 | 4050                | 4050  | 11400 | 13100 | 2660  | 256 |
| 28.0                                | 684                   | 1.2            | 50.4 | 12.0                 | —      | 300 R3 | BN100LA4 | M3LA4 | 4020                | 4020  | 11300 | 13000 | 2640  | 248 |
| 28.0                                | 684                   | 2.4            | 50.4 | 12.0                 | —      | 301 R3 | BN100LA4 | M3LA4 | 4020                | 4020  | 11300 | 13000 | 2640  | 258 |
| 32                                  | 625                   | 2.9            | 44.6 | 9.0                  | 303 L2 | —      | BN100LA4 | M3LA4 | 11900               | 13700 | 22300 | 26800 | 7610  | 266 |

A

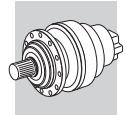


$P_1 = 2.2 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |       | $Rn_2$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|-------|------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |          |       | MC         | MZ    | HC/PC | HZ/PZ | FZ   |     |
| 34                         | 582            | 1.1   | 41.5 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 3770       | 3770  | 10700 | 12300 | 2480 | 246 |
| 34                         | 582            | 2.2   | 41.5 | 7.5         | 301 L2 | —      | BN100LA4 | M3LA4 | 3770       | 3770  | 10700 | 12300 | 2480 | 256 |
| 34                         | 558            | 1.2   | 41.2 | 12.0        | —      | 300 R3 | BN100LA4 | M3LA4 | 3760       | 3760  | 10600 | 12200 | 2470 | 248 |
| 34                         | 558            | 2.3   | 41.2 | 12.0        | —      | 301 R3 | BN100LA4 | M3LA4 | 3760       | 3760  | 10600 | 12200 | 2470 | 258 |
| 37                         | 537            | 1.6   | 38.4 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 3670       | 3670  | 10400 | 12000 | 2410 | 246 |
| 37                         | 537            | 2.9   | 38.4 | 7.5         | 301 L2 | —      | BN100LA4 | M3LA4 | 3670       | 3670  | 10400 | 12000 | 2410 | 256 |
| 38                         | 505            | 1.7   | 37.3 | 12.0        | —      | 300 R3 | BN100LA4 | M3LA4 | 3630       | 3630  | 10300 | 11900 | 2390 | 248 |
| 42                         | 466            | 1.4   | 33.3 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 3500       | 3500  | 9990  | 11500 | 2300 | 246 |
| 42                         | 466            | 2.8   | 33.3 | 7.5         | 301 L2 | —      | BN100LA4 | M3LA4 | 3500       | 3500  | 9990  | 11500 | 2300 | 256 |
| 46                         | 430            | 2.0   | 30.7 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 3410       | 3410  | 9750  | 11200 | 2240 | 246 |
| 46                         | 412            | 2.0   | 30.4 | 12.0        | —      | 300 R3 | BN100LA4 | M3LA4 | 3400       | 3400  | 9730  | 11200 | 2230 | 248 |
| 57                         | 337            | 2.2   | 24.8 | 12.0        | —      | 300 R3 | BN100LA4 | M3LA4 | 3170       | 3170  | 9150  | 10500 | 2090 | 248 |
| 57                         | 347            | 2.5   | 24.8 | 18.0        | —      | 303 R2 | BN100LA4 | M3LA4 | 9750       | 11300 | 18700 | 22500 | 6250 | 268 |
| 57                         | 344            | 2.3   | 24.6 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 3160       | 3160  | 9130  | 10500 | 2080 | 246 |
| 70                         | 281            | 2.3   | 20.1 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 2960       | 2960  | 8590  | 9870  | 1940 | 246 |
| 76                         | 258            | 1.4   | 18.5 | 12.0        | —      | 300 R2 | BN100LA4 | M3LA4 | 2870       | 2870  | 8370  | 9620  | 1890 | 248 |
| 76                         | 258            | 2.9   | 18.5 | 12.0        | —      | 301 R2 | BN100LA4 | M3LA4 | 2870       | 2870  | 8370  | 9620  | 1890 | 258 |
| 78                         | 255            | 2.9   | 18.2 | 7.5         | 300 L2 | —      | BN100LA4 | M3LA4 | 2860       | 2860  | 8330  | 9580  | 1880 | 246 |
| 96                         | 207            | 2.5   | 14.8 | 12.0        | —      | 300 R2 | BN100LA4 | M3LA4 | 2670       | 2670  | 7830  | 9000  | 1750 | 248 |
| 157                        | 130            | 2.5   | 9.0  | 7.5         | 300 L1 | —      | BN100LA4 | M3LA4 | 2260       | 2260  | 6750  | 7750  | 1490 | 246 |

$P_1 = 3 \text{ kW}$

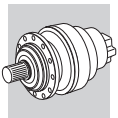
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |       | $Rn_2$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|-------|------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |          |       | MC         | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 0.64                       | 38491          | 1.3   | 2187 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 192000 | 231000 | 80000 | 362 |
| 0.67                       | 36897          | 0.9   | 2096 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 157000 | 195000 | 65000 | 350 |
| 0.78                       | 31977          | 1.8   | 1817 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 192000 | 231000 | 80000 | 362 |
| 0.80                       | 31089          | 1.4   | 1766 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 157000 | 195000 | 65000 | 350 |
| 0.84                       | 29565          | 1.2   | 1680 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 157000 | 195000 | 65000 | 350 |
| 0.94                       | 26435          | 2.2   | 1502 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 192000 | 231000 | 80000 | 362 |
| 0.98                       | 25307          | 1.0   | 1438 | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 133000 | 166000 | 65000 | 338 |
| 1.0                        | 24911          | 1.7   | 1415 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 157000 | 195000 | 65000 | 350 |
| 1.0                        | 24533          | 2.1   | 1394 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 192000 | 229000 | 79900 | 362 |
| 1.1                        | 22274          | 2.5   | 1266 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 188000 | 222500 | 77400 | 362 |
| 1.1                        | 22158          | 1.2   | 1259 | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 128500 | 161600 | 62700 | 338 |
| 1.1                        | 21655          | 2.0   | 1230 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 150800 | 187900 | 62300 | 350 |
| 1.2                        | 20491          | 1.4   | 1164 | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 125500 | 157900 | 61100 | 338 |
| 1.3                        | 19658          | 2.7   | 1117 | 11.0        | 313 L4 | —      | BN100LB4 | —     | —          | —     | 181100 | 214300 | 74200 | 362 |
| 1.3                        | 18628          | 2.3   | 1058 | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 144200 | 179600 | 59200 | 350 |
| 1.4                        | 17963          | 1.6   | 1021 | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 120700 | 151800 | 58500 | 338 |
| 1.4                        | 17584          | 1.0   | 999  | 7.5         | 309 L4 | —      | BN100LB4 | —     | —          | —     | 101200 | 130500 | 32200 | 326 |
| 1.4                        | 17352          | 2.4   | 986  | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 141100 | 175800 | 57800 | 350 |
| 1.5                        | 16524          | 2.0   | 939  | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 117700 | 148000 | 56900 | 338 |
| 1.6                        | 15951          | 1.0   | 906  | 7.5         | 307 L4 | —      | BN100LB4 | M3LB4 | 43800      | 54900 | 94700  | 124200 | 38000 | 314 |
| 1.6                        | 15951          | 1.1   | 906  | 7.5         | 309 L4 | —      | BN100LB4 | —     | —          | —     | 98300  | 126800 | 31100 | 326 |
| 1.6                        | 15905          | 2.9   | 904  | 11.0        | 311 L4 | —      | BN100LB4 | —     | —          | —     | 137500 | 171300 | 56200 | 350 |
| 1.6                        | 15807          | 1.5   | 898  | 15.0        | —      | 310 R4 | BN100LB4 | —     | —          | —     | 116100 | 146000 | 56100 | 340 |
| 1.7                        | 14393          | 1.9   | 818  | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 112900 | 142000 | 54300 | 338 |
| 1.8                        | 14090          | 0.9   | 801  | 7.5         | 307 L4 | —      | BN100LB4 | M3LB4 | 42000      | 52700 | 91300  | 119600 | 36500 | 314 |
| 1.8                        | 14090          | 1.3   | 801  | 7.5         | 309 L4 | —      | BN100LB4 | —     | —          | —     | 94700  | 122100 | 29900 | 326 |
| 1.9                        | 13319          | 2.0   | 757  | 15.0        | —      | 310 R4 | BN100LB4 | —     | —          | —     | 110300 | 138700 | 52900 | 340 |
| 1.9                        | 13132          | 2.3   | 746  | 22.0        | —      | 311 R4 | BN100LB4 | —     | —          | —     | 129800 | 161700 | 52700 | 352 |
| 1.9                        | 12773          | 2.1   | 726  | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 108900 | 137000 | 52200 | 338 |
| 2.0                        | 12711          | 1.2   | 722  | 7.5         | 307 L4 | —      | BN100LB4 | M3LB4 | 41500      | 52100 | 90400  | 118400 | 36100 | 314 |
| 2.0                        | 12711          | 1.7   | 722  | 7.5         | 309 L4 | —      | BN100LB4 | —     | —          | —     | 91800  | 118400 | 28900 | 326 |
| 2.0                        | 12140          | 1.2   | 690  | 15.0        | —      | 309 R4 | BN100LB4 | —     | —          | —     | 90600  | 116800 | 28400 | 328 |
| 2.2                        | 11502          | 1.1   | 654  | 7.5         | 307 L4 | —      | BN100LB4 | M3LB4 | 40200      | 50400 | 87700  | 114900 | 34900 | 314 |
| 2.2                        | 11502          | 1.6   | 654  | 7.5         | 309 L4 | —      | BN100LB4 | —     | —          | —     | 89100  | 114900 | 27900 | 326 |
| 2.2                        | 11240          | 1.9   | 639  | 15.0        | —      | 310 R4 | BN100LB4 | —     | —          | —     | 104800 | 131800 | 50000 | 340 |
| 2.2                        | 11205          | 2.4   | 637  | 11.0        | 310 L4 | —      | BN100LB4 | —     | —          | —     | 104700 | 131700 | 50000 | 338 |
| 2.4                        | 10378          | 2.1   | 590  | 15.0        | —      | 310 R4 | BN100LB4 | —     | —          | —     | 102400 | 128700 | 48700 | 340 |



$P_1 = 3 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|----------|-------|---------------------|-------|-------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ  | FZ    |     |
| 2.4                                 | 10229                 | 1.2            | 581 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 38600               | 48500 | 84700 | 110900 | 33600 | 316 |
| 2.4                                 | 10229                 | 1.5            | 581 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 86000 | 110900 | 26900 | 328 |
| 2.4                                 | 10185                 | 1.5            | 579 | 7.5                  | 307 L4 | —      | BN100LB4 | M3LB4 | 38600               | 48400 | 84500 | 110800 | 33500 | 314 |
| 2.4                                 | 10185                 | 2.1            | 579 | 7.5                  | 309 L4 | —      | BN100LB4 | —     | —                   | —     | 85900 | 110800 | 26800 | 326 |
| 2.7                                 | 9102                  | 2.8            | 517 | 15.0                 | —      | 310 R4 | BN100LB4 | —     | —                   | —     | 98400 | 123800 | 46600 | 340 |
| 2.8                                 | 8963                  | 1.1            | 509 | 6.0                  | 306 L4 | —      | BN100LB4 | M3LB4 | 33300               | 37700 | 75600 | 88100  | 25000 | 302 |
| 2.8                                 | 8962                  | 1.6            | 509 | 7.5                  | 307 L4 | —      | BN100LB4 | M3LB4 | 37000               | 46400 | 81400 | 106600 | 32100 | 314 |
| 2.8                                 | 8962                  | 1.6            | 509 | 7.5                  | 309 L4 | —      | BN100LB4 | —     | —                   | —     | 82700 | 106600 | 25700 | 326 |
| 2.8                                 | 8929                  | 2.9            | 507 | 11.0                 | 310 L4 | —      | BN100LB4 | —     | —                   | —     | 97900 | 123000 | 46300 | 338 |
| 2.9                                 | 8633                  | 1.1            | 490 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 36500               | 45800 | 80500 | 105400 | 31700 | 316 |
| 2.9                                 | 8633                  | 1.6            | 490 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 81700 | 105400 | 25400 | 328 |
| 2.9                                 | 8590                  | 1.1            | 488 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 32800               | 37100 | 74700 | 87000  | 24600 | 304 |
| 3.0                                 | 8181                  | 1.5            | 465 | 7.5                  | 307 L4 | —      | BN100LB4 | M3LB4 | 35800               | 45000 | 79200 | 103700 | 31200 | 314 |
| 3.0                                 | 8181                  | 2.2            | 465 | 7.5                  | 309 L4 | —      | BN100LB4 | —     | —                   | —     | 80400 | 103700 | 24900 | 326 |
| 3.1                                 | 8041                  | 1.7            | 457 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 80000 | 103200 | 24800 | 328 |
| 3.1                                 | 7993                  | 2.5            | 454 | 15.0                 | —      | 310 R4 | BN100LB4 | —     | —                   | —     | 94700 | 119000 | 44700 | 340 |
| 3.1                                 | 7970                  | 1.7            | 453 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 35500               | 44600 | 78600 | 102900 | 30900 | 316 |
| 3.2                                 | 7819                  | 1.3            | 444 | 6.0                  | 306 L4 | —      | BN100LB4 | M3LB4 | 31800               | 36000 | 72600 | 84500  | 23900 | 302 |
| 3.4                                 | 7389                  | 1.2            | 420 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 31200               | 35300 | 71400 | 83100  | 23400 | 304 |
| 3.4                                 | 7274                  | 1.6            | 413 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 34500               | 43200 | 76400 | 100100 | 30000 | 316 |
| 3.4                                 | 7274                  | 2.5            | 413 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 77700 | 100100 | 24000 | 328 |
| 3.5                                 | 7137                  | 1.7            | 406 | 7.5                  | 307 L4 | —      | BN100LB4 | M3LB4 | 34300               | 43000 | 76000 | 99600  | 29800 | 314 |
| 3.5                                 | 7137                  | 2.5            | 406 | 7.5                  | 309 L4 | —      | BN100LB4 | —     | —                   | —     | 77200 | 99600  | 23800 | 326 |
| 3.6                                 | 6893                  | 2.8            | 392 | 11.0                 | 310 L4 | —      | BN100LB4 | —     | —                   | —     | 90500 | 113900 | 42500 | 338 |
| 3.6                                 | 6880                  | 1.0            | 391 | 6.0                  | 306 L4 | —      | BN100LB4 | M3LB4 | 30400               | 34500 | 69900 | 81400  | 22900 | 302 |
| 3.6                                 | 6845                  | 1.1            | 389 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 30400               | 34400 | 69800 | 81200  | 22800 | 304 |
| 3.8                                 | 6589                  | 2.2            | 374 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 75400 | 97200  | 23200 | 328 |
| 3.9                                 | 6387                  | 1.9            | 363 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 33000               | 41400 | 73500 | 96300  | 28700 | 316 |
| 4.0                                 | 6144                  | 2.4            | 349 | 7.5                  | 307 L4 | —      | BN100LB4 | M3LB4 | 32600               | 40900 | 72700 | 95200  | 28300 | 314 |
| 4.2                                 | 6124                  | 1.4            | 336 | 11.0                 | 307 L3 | —      | BN100LB4 | M3LB4 | 32200               | 40400 | 71900 | 94200  | 28000 | 314 |
| 4.2                                 | 6124                  | 2.2            | 336 | 11.0                 | 309 L3 | —      | BN100LB4 | —     | —                   | —     | 73000 | 94200  | 22400 | 326 |
| 4.3                                 | 5828                  | 2.0            | 331 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 32000               | 40200 | 71500 | 93700  | 27800 | 316 |
| 4.3                                 | 5828                  | 3.0            | 331 | 15.0                 | —      | 309 R4 | BN100LB4 | —     | —                   | —     | 72700 | 93700  | 22300 | 328 |
| 4.3                                 | 5906                  | 0.9            | 325 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 28600               | 32400 | 66100 | 76900  | 21500 | 302 |
| 4.5                                 | 5485                  | 1.4            | 312 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 28200               | 32000 | 65300 | 76000  | 21200 | 304 |
| 4.7                                 | 5280                  | 2.7            | 300 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 31000               | 38900 | 69400 | 91000  | 26900 | 316 |
| 4.9                                 | 5104                  | 1.0            | 290 | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 22100               | 25600 | 39100 | 47000  | 14200 | 292 |
| 4.9                                 | 5086                  | 1.6            | 289 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 27500               | 31200 | 63800 | 74300  | 20700 | 304 |
| 4.9                                 | 5242                  | 1.0            | 288 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 27500               | 31200 | 63700 | 74200  | 20700 | 302 |
| 5.0                                 | 5007                  | 2.3            | 284 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 30400               | 38200 | 68300 | 89500  | 26500 | 316 |
| 5.0                                 | 5160                  | 2.2            | 284 | 11.0                 | 307 L3 | —      | BN100LB4 | M3LB4 | 30400               | 38100 | 68300 | 89400  | 26400 | 314 |
| 5.3                                 | 4883                  | 1.1            | 268 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 26900               | 30400 | 62400 | 72700  | 20200 | 302 |
| 5.7                                 | 4375                  | 1.9            | 249 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 26200               | 29700 | 61000 | 71000  | 19700 | 304 |
| 5.9                                 | 4355                  | 2.0            | 239 | 11.0                 | 307 L3 | —      | BN100LB4 | M3LB4 | 28700               | 36000 | 64900 | 85000  | 25000 | 314 |
| 5.9                                 | 4355                  | 3.0            | 239 | 11.0                 | 309 L3 | —      | BN100LB4 | —     | —                   | —     | 65900 | 85000  | 20000 | 326 |
| 5.9                                 | 4333                  | 1.9            | 238 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 25800               | 29200 | 60200 | 70100  | 19400 | 302 |
| 6.1                                 | 4087                  | 2.7            | 232 | 15.0                 | —      | 307 R4 | BN100LB4 | M3LB4 | 28400               | 35700 | 64300 | 84200  | 24700 | 316 |
| 6.1                                 | 4053                  | 1.9            | 230 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 25500               | 28900 | 59600 | 69400  | 19200 | 304 |
| 6.4                                 | 4036                  | 1.6            | 222 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 25200               | 28600 | 58900 | 68600  | 18900 | 302 |
| 6.4                                 | 4010                  | 0.9            | 220 | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 19700               | 22800 | 35200 | 42400  | 12700 | 278 |
| 6.4                                 | 4010                  | 1.2            | 220 | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 20200               | 23300 | 36000 | 43300  | 13000 | 290 |
| 6.6                                 | 3771                  | 1.0            | 214 | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 20000               | 23100 | 35700 | 42900  | 12800 | 280 |
| 6.6                                 | 3771                  | 1.4            | 214 | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 20000               | 23100 | 35700 | 42900  | 12800 | 292 |
| 6.6                                 | 3760                  | 2.6            | 214 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 24900               | 28200 | 58300 | 67900  | 18700 | 304 |
| 6.9                                 | 3727                  | 2.2            | 205 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 24500               | 27800 | 57600 | 67000  | 18400 | 302 |
| 7.0                                 | 3669                  | 3.0            | 202 | 11.0                 | 307 L3 | —      | BN100LB4 | M3LB4 | 27100               | 34000 | 61600 | 80700  | 23600 | 314 |
| 7.4                                 | 3464                  | 1.0            | 190 | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 19200               | 22200 | 34400 | 41400  | 12300 | 290 |
| 7.4                                 | 3453                  | 1.9            | 190 | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 23900               | 27100 | 56200 | 65500  | 18000 | 302 |
| 7.6                                 | 3254                  | 1.1            | 185 | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 19100               | 22000 | 34100 | 41100  | 12200 | 280 |
| 7.6                                 | 3254                  | 1.4            | 185 | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 19100               | 22000 | 34100 | 41100  | 12200 | 292 |
| 7.8                                 | 3185                  | 3.0            | 181 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 23600               | 26700 | 55500 | 64600  | 17700 | 304 |
| 7.9                                 | 3231                  | 1.4            | 178 | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 18800               | 21700 | 33700 | 40600  | 12100 | 290 |
| 8.4                                 | 2953                  | 2.6            | 168 | 12.0                 | —      | 306 R4 | BN100LB4 | M3LB4 | 23000               | 26000 | 54200 | 63100  | 17300 | 304 |
| 8.6                                 | 2979                  | 1.5            | 164 | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 18300               | 21100 | 32900 | 39600  | 11700 | 290 |
| 8.9                                 | 2787                  | 1.0            | 158 | 12.0                 | —      | 303 R4 | BN100LB4 | M3LB4 | 18100               | 20900 | 32600 | 39200  | 11600 | 268 |

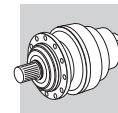
A



$P_1 = 3 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 8.9                                 | 2787                  | 1.3            | 158  | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 18100               | 20900 | 32600 | 39200 | 11600 | 280 |
| 8.9                                 | 2787                  | 1.9            | 158  | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 18100               | 20900 | 32600 | 39200 | 11600 | 292 |
| 9.2                                 | 2775                  | 1.3            | 152  | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 17900               | 20600 | 32200 | 38700 | 11500 | 290 |
| 9.3                                 | 2767                  | 2.7            | 152  | 7.5                  | 306 L3 | —      | BN100LB4 | M3LB4 | 22200               | 25200 | 52600 | 61300 | 16700 | 302 |
| 9.4                                 | 2722                  | 1.3            | 150  | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 17800               | 20500 | 32000 | 38500 | 11400 | 278 |
| 9.5                                 | 2608                  | 1.3            | 148  | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 17700               | 20400 | 31900 | 38400 | 11400 | 280 |
| 9.5                                 | 2608                  | 1.7            | 148  | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 17700               | 20400 | 31900 | 38400 | 11400 | 292 |
| 9.8                                 | 2623                  | 2.1            | 144  | 14.0                 | —      | 306 R3 | BN100LB4 | M3LB4 | 21800               | 24700 | 51800 | 60300 | 16400 | 304 |
| 10.0                                | 2575                  | 1.0            | 141  | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 17400               | 20100 | 31500 | 37900 | 11200 | 266 |
| 10.0                                | 2575                  | 1.4            | 141  | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 17400               | 20100 | 31500 | 37900 | 11200 | 278 |
| 10.0                                | 2575                  | 2.0            | 141  | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 17400               | 20100 | 31500 | 37900 | 11200 | 290 |
| 10.8                                | 2374                  | 1.5            | 130  | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 17000               | 19600 | 30700 | 37000 | 10900 | 278 |
| 10.9                                | 2275                  | 1.2            | 129  | 12.0                 | —      | 303 R4 | BN100LB4 | M3LB4 | 16900               | 19500 | 30600 | 36900 | 10800 | 268 |
| 10.9                                | 2275                  | 1.6            | 129  | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 16900               | 19500 | 30600 | 36900 | 10800 | 280 |
| 10.9                                | 2275                  | 2.3            | 129  | 12.0                 | —      | 305 R4 | BN100LB4 | M3LB4 | 16900               | 19500 | 30600 | 36900 | 10800 | 292 |
| 11.3                                | 2265                  | 1.6            | 124  | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 16700               | 19300 | 30300 | 36500 | 10700 | 290 |
| 11.6                                | 2207                  | 1.1            | 121  | 14.0                 | —      | 304 R3 | BN100LB4 | M3LB4 | 16600               | 19100 | 30100 | 36200 | 10600 | 280 |
| 11.8                                | 2169                  | 3.0            | 119  | 14.0                 | —      | 306 R3 | BN100LB4 | M3LB4 | 20500               | 23200 | 48900 | 57000 | 15400 | 304 |
| 12.3                                | 2082                  | 1.7            | 114  | 14.0                 | —      | 305 R3 | BN100LB4 | M3LB4 | 16200               | 18700 | 29500 | 35500 | 10400 | 292 |
| 12.5                                | 2051                  | 1.8            | 113  | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 16200               | 18600 | 29400 | 35400 | 10400 | 290 |
| 12.8                                | 2011                  | 1.7            | 111  | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 16000               | 18500 | 29200 | 35200 | 10300 | 278 |
| 12.9                                | 1927                  | 1.7            | 109  | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 16000               | 18500 | 29200 | 35100 | 10300 | 280 |
| 13.3                                | 1863                  | 0.9            | 106  | 10.0                 | —      | 301 R4 | BN100LB4 | M3LB4 | 5030                | 5030  | 13800 | 15900 | 3310  | 258 |
| 13.5                                | 1902                  | 1.4            | 105  | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 15800               | 18200 | 28800 | 34600 | 10100 | 266 |
| 13.5                                | 1902                  | 1.9            | 105  | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 15800               | 18200 | 28800 | 34600 | 10100 | 278 |
| 13.5                                | 1902                  | 2.6            | 105  | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 15800               | 18200 | 28800 | 34600 | 10100 | 290 |
| 14.5                                | 1765                  | 1.4            | 97.0 | 14.0                 | —      | 304 R3 | BN100LB4 | M3LB4 | 15400               | 17700 | 28100 | 33800 | 9860  | 280 |
| 15.4                                | 1666                  | 1.1            | 91.5 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 15100               | 17400 | 27600 | 33200 | 9670  | 268 |
| 15.4                                | 1666                  | 2.1            | 91.5 | 14.0                 | —      | 305 R3 | BN100LB4 | M3LB4 | 15100               | 17400 | 27600 | 33200 | 9670  | 292 |
| 15.6                                | 1642                  | 1.4            | 90.2 | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 15000               | 17300 | 27500 | 33100 | 9620  | 266 |
| 15.6                                | 1642                  | 2.0            | 90.2 | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 15000               | 17300 | 27500 | 33100 | 9620  | 278 |
| 15.6                                | 1642                  | 2.6            | 90.2 | 7.5                  | 305 L3 | —      | BN100LB4 | M3LB4 | 15000               | 17300 | 27500 | 33100 | 9620  | 290 |
| 15.8                                | 1573                  | 2.1            | 89.4 | 12.0                 | —      | 304 R4 | BN100LB4 | M3LB4 | 15000               | 17300 | 27400 | 33000 | 9590  | 280 |
| 16.5                                | 1558                  | 1.1            | 85.6 | 7.5                  | 301 L3 | —      | BN100LB4 | M3LB4 | 4790                | 4790  | 13300 | 15200 | 3150  | 256 |
| 17.9                                | 1433                  | 1.5            | 78.7 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 14300               | 16500 | 26400 | 31800 | 9190  | 268 |
| 17.9                                | 1433                  | 2.0            | 78.7 | 14.0                 | —      | 304 R3 | BN100LB4 | M3LB4 | 14300               | 16500 | 26400 | 31800 | 9190  | 280 |
| 17.9                                | 1432                  | 1.1            | 78.7 | 12.0                 | —      | 301 R3 | BN100LB4 | M3LB4 | 4660                | 4660  | 12900 | 14900 | 3060  | 258 |
| 18.2                                | 1410                  | 1.2            | 77.5 | 7.5                  | 301 L3 | —      | BN100LB4 | M3LB4 | 4640                | 4640  | 12900 | 14800 | 3050  | 256 |
| 18.3                                | 1406                  | 1.8            | 77.2 | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 14200               | 16400 | 26300 | 31600 | 9140  | 266 |
| 18.3                                | 1406                  | 2.5            | 77.2 | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 14200               | 16400 | 26300 | 31600 | 9140  | 278 |
| 19.2                                | 1335                  | 1.4            | 73.3 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 14000               | 16200 | 25900 | 31100 | 8980  | 268 |
| 19.2                                | 1335                  | 2.7            | 73.3 | 14.0                 | —      | 305 R3 | BN100LB4 | M3LB4 | 14000               | 16200 | 25900 | 31100 | 8980  | 292 |
| 19.5                                | 1315                  | 2.5            | 72.3 | 7.5                  | 304 L3 | —      | BN100LB4 | M3LB4 | 13900               | 16100 | 25700 | 31000 | 8940  | 278 |
| 19.5                                | 1315                  | 1.7            | 72.3 | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 13900               | 16100 | 25700 | 31000 | 8940  | 266 |
| 20.2                                | 1272                  | 1.0            | 69.9 | 7.5                  | 301 L3 | —      | BN100LB4 | M3LB4 | 4480                | 4480  | 12500 | 14300 | 2950  | 256 |
| 20.7                                | 1242                  | 1.0            | 68.2 | 12.0                 | —      | 301 R3 | BN100LB4 | M3LB4 | 4440                | 4440  | 12400 | 14200 | 2920  | 258 |
| 21.8                                | 1218                  | 0.9            | 64.8 | 7.5                  | 301 L2 | —      | BN100LB4 | M3LB4 | 4370                | 4370  | 12200 | 14000 | 2870  | 256 |
| 22.3                                | 1151                  | 1.4            | 63.2 | 7.5                  | 301 L3 | —      | BN100LB4 | M3LB4 | 4330                | 4330  | 12100 | 13900 | 2850  | 256 |
| 22.4                                | 1148                  | 1.9            | 63.1 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 268 |
| 22.4                                | 1148                  | 2.5            | 63.1 | 14.0                 | —      | 304 R3 | BN100LB4 | M3LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 280 |
| 22.4                                | 1148                  | 2.2            | 63.1 | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 266 |
| 22.4                                | 1145                  | 1.4            | 62.9 | 12.0                 | —      | 301 R3 | BN100LB4 | M3LB4 | 4330                | 4330  | 12100 | 13900 | 2840  | 258 |
| 23.8                                | 1112                  | 2.1            | 59.1 | 9.0                  | 304 L2 | —      | BN100LB4 | M3LB4 | 13000               | 15000 | 24200 | 29200 | 8360  | 278 |
| 25.3                                | 1049                  | 1.7            | 55.8 | 9.0                  | 303 L2 | —      | BN100LB4 | M3LB4 | 12800               | 14800 | 23800 | 28700 | 8200  | 266 |
| 26.0                                | 986                   | 1.8            | 54.2 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 12700               | 14600 | 23600 | 28400 | 8120  | 268 |
| 26.4                                | 972                   | 2.2            | 53.4 | 7.5                  | 303 L3 | —      | BN100LB4 | M3LB4 | 12600               | 14500 | 23500 | 28300 | 8080  | 266 |
| 27.2                                | 976                   | 1.3            | 51.9 | 7.5                  | 301 L2 | —      | BN100LB4 | M3LB4 | 4060                | 4060  | 11400 | 13100 | 2670  | 256 |
| 27.3                                | 940                   | 0.9            | 51.6 | 7.5                  | 300 L3 | —      | BN100LB4 | M3LB4 | 3960                | 3960  | 11200 | 12800 | 2600  | 246 |
| 27.3                                | 940                   | 1.7            | 51.6 | 7.5                  | 301 L3 | —      | BN100LB4 | M3LB4 | 4050                | 4050  | 11400 | 13100 | 2660  | 256 |
| 28.0                                | 918                   | 0.9            | 50.4 | 12.0                 | —      | 300 R3 | BN100LB4 | M3LB4 | 3930                | 3930  | 11100 | 12700 | 2580  | 248 |
| 28.0                                | 918                   | 1.8            | 50.4 | 12.0                 | —      | 301 R3 | BN100LB4 | M3LB4 | 4020                | 4020  | 11300 | 13000 | 2640  | 258 |
| 28.1                                | 915                   | 2.6            | 50.3 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 12300               | 14200 | 23100 | 27800 | 7920  | 268 |
| 29.8                                | 890                   | 2.7            | 47.3 | 9.0                  | 304 L2 | —      | BN100LB4 | M3LB4 | 12100               | 14000 | 22700 | 27300 | 7760  | 278 |
| 30                                  | 848                   | 2.5            | 46.6 | 14.0                 | —      | 303 R3 | BN100LB4 | M3LB4 | 12000               | 13900 | 22600 | 27200 | 7720  | 268 |
| 32                                  | 839                   | 2.2            | 44.6 | 9.0                  | 303 L2 | —      | BN100LB4 | M3LB4 | 11900               | 13700 | 22300 | 26800 | 7610  | 266 |





$P_1 = 3 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |       | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|-------|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |          |       | MC           | MZ    | HC/PC | HZ/PZ | FZ   |     |
| 33                         | 775            | 2.7   | 42.6 | 14.0        | —      | 303 R3 | BN100LB4 | M3LB4 | 11700        | 13500 | 22000 | 26400 | 7490 | 268 |
| 34                         | 781            | 1.7   | 41.5 | 7.5         | 301 L2 | —      | BN100LB4 | M3LB4 | 3770         | 3770  | 10700 | 12300 | 2480 | 256 |
| 34                         | 749            | 1.7   | 41.2 | 12.0        | —      | 301 R3 | BN100LB4 | M3LB4 | 3760         | 3760  | 10600 | 12200 | 2470 | 258 |
| 37                         | 722            | 3.0   | 38.4 | 9.0         | 303 L2 | —      | BN100LB4 | M3LB4 | 11300        | 13000 | 21300 | 25600 | 7240 | 266 |
| 37                         | 721            | 1.2   | 38.4 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 3670         | 3670  | 10400 | 12000 | 2410 | 246 |
| 37                         | 721            | 2.1   | 38.4 | 7.5         | 301 L2 | —      | BN100LB4 | M3LB4 | 3670         | 3670  | 10400 | 12000 | 2410 | 256 |
| 38                         | 678            | 1.2   | 37.3 | 12.0        | —      | 300 R3 | BN100LB4 | M3LB4 | 3630         | 3630  | 10300 | 11900 | 2390 | 248 |
| 38                         | 678            | 2.4   | 37.3 | 12.0        | —      | 301 R3 | BN100LB4 | M3LB4 | 3630         | 3630  | 10300 | 11900 | 2390 | 258 |
| 39                         | 672            | 2.7   | 35.8 | 9.0         | 303 L2 | —      | BN100LB4 | M3LB4 | 10800        | 12400 | 20400 | 24600 | 6910 | 266 |
| 42                         | 626            | 1.0   | 33.3 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 3420         | 3420  | 9790  | 11200 | 2250 | 246 |
| 42                         | 626            | 2.1   | 33.3 | 7.5         | 301 L2 | —      | BN100LB4 | M3LB4 | 3420         | 3420  | 9790  | 11200 | 2250 | 256 |
| 46                         | 577            | 1.5   | 30.7 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 3330         | 3330  | 9550  | 11000 | 2190 | 246 |
| 46                         | 577            | 2.7   | 30.7 | 7.5         | 301 L2 | —      | BN100LB4 | M3LB4 | 3410         | 3410  | 9750  | 11200 | 2240 | 256 |
| 46                         | 554            | 1.5   | 30.4 | 12.0        | —      | 300 R3 | BN100LB4 | M3LB4 | 3400         | 3400  | 9730  | 11200 | 2230 | 248 |
| 46                         | 554            | 2.9   | 30.4 | 12.0        | —      | 301 R3 | BN100LB4 | M3LB4 | 3400         | 3400  | 9730  | 11200 | 2230 | 258 |
| 57                         | 452            | 1.6   | 24.8 | 12.0        | —      | 300 R3 | BN100LB4 | M3LB4 | 3170         | 3170  | 9150  | 10500 | 2090 | 248 |
| 57                         | 466            | 1.8   | 24.8 | 18.0        | —      | 303 R2 | BN100LB4 | M3LB4 | 9750         | 11300 | 18700 | 22500 | 6250 | 268 |
| 57                         | 462            | 1.7   | 24.6 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 3160         | 3160  | 9130  | 10500 | 2080 | 246 |
| 70                         | 377            | 1.7   | 20.1 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 2960         | 2960  | 8590  | 9870  | 1940 | 246 |
| 76                         | 347            | 1.1   | 18.5 | 12.0        | —      | 300 R2 | BN100LB4 | M3LB4 | 2870         | 2870  | 8370  | 9620  | 1890 | 248 |
| 76                         | 347            | 2.1   | 18.5 | 12.0        | —      | 301 R2 | BN100LB4 | M3LB4 | 2870         | 2870  | 8370  | 9620  | 1890 | 258 |
| 78                         | 342            | 2.2   | 18.2 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 2860         | 2860  | 8330  | 9580  | 1880 | 246 |
| 95                         | 279            | 2.6   | 14.8 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 2670         | 2670  | 7840  | 9010  | 1760 | 246 |
| 96                         | 277            | 1.8   | 14.8 | 12.0        | —      | 300 R2 | BN100LB4 | M3LB4 | 2670         | 2670  | 7830  | 9000  | 1750 | 248 |
| 116                        | 228            | 3.0   | 12.1 | 7.5         | 300 L2 | —      | BN100LB4 | M3LB4 | 2500         | 2500  | 7380  | 8480  | 1640 | 246 |
| 119                        | 222            | 2.7   | 11.8 | 12.0        | —      | 300 R2 | BN100LB4 | M3LB4 | 2480         | 2480  | 7330  | 8420  | 1630 | 248 |
| 157                        | 175            | 1.8   | 9.0  | 7.5         | 300 L1 | —      | BN100LB4 | M3LB4 | 2260         | 2260  | 6750  | 7750  | 1490 | 246 |
| 196                        | 140            | 2.9   | 7.2  | 7.5         | 300 L1 | —      | BN100LB4 | M3LB4 | 2100         | 2100  | 6310  | 7250  | 1380 | 246 |

$P_1 = 4 \text{ kW}$

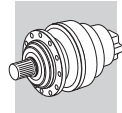
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |   | $R_{n2}$ [N] |    |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|---|--------------|----|--------|--------|-------|-----|
|                            |                |       |      |             |        |        |         |   | MC           | MZ | HC/PC  | HZ/PZ  | FZ    |     |
| 0.65                       | 51963          | 0.9   | 2187 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 192000 | 231000 | 80000 | 362 |
| 0.79                       | 43169          | 1.3   | 1817 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 192000 | 231000 | 80000 | 362 |
| 0.81                       | 41970          | 1.0   | 1766 | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 157000 | 195000 | 65000 | 350 |
| 0.95                       | 35687          | 1.6   | 1502 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 192000 | 231000 | 80000 | 362 |
| 1.0                        | 33630          | 1.3   | 1415 | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 157000 | 195000 | 65000 | 350 |
| 1.0                        | 33119          | 1.6   | 1394 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 192000 | 229000 | 79900 | 362 |
| 1.1                        | 30069          | 1.9   | 1266 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 188000 | 222500 | 77400 | 362 |
| 1.1                        | 29913          | 0.9   | 1259 | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 128500 | 161600 | 62700 | 338 |
| 1.2                        | 29234          | 1.5   | 1230 | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 150800 | 187900 | 62300 | 350 |
| 1.2                        | 27663          | 1.1   | 1164 | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 125500 | 157900 | 61100 | 338 |
| 1.3                        | 26538          | 2.0   | 1117 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 181100 | 214300 | 74200 | 362 |
| 1.4                        | 25148          | 1.7   | 1058 | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 144200 | 179600 | 59200 | 350 |
| 1.4                        | 24249          | 1.2   | 1021 | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 120700 | 151800 | 58500 | 338 |
| 1.4                        | 24094          | 2.3   | 1014 | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 175900 | 208200 | 71800 | 362 |
| 1.5                        | 23425          | 1.8   | 986  | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 141100 | 175800 | 57800 | 350 |
| 1.5                        | 22307          | 1.5   | 939  | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 117700 | 148000 | 56900 | 338 |
| 1.6                        | 21472          | 2.2   | 904  | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 137500 | 171300 | 56200 | 350 |
| 1.6                        | 21339          | 1.1   | 898  | 15.0        | —      | 310 R4 | BN112M4 | — | —            | —  | 116100 | 146000 | 56100 | 340 |
| 1.6                        | 21130          | 2.5   | 889  | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 169100 | 200100 | 68800 | 362 |
| 1.7                        | 19596          | 2.3   | 825  | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 133800 | 166600 | 54500 | 350 |
| 1.7                        | 19431          | 1.4   | 818  | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 112900 | 142000 | 54300 | 338 |
| 1.8                        | 19022          | 1.0   | 801  | 7.5         | 309 L4 | —      | BN112M4 | — | —            | —  | 94700  | 122100 | 29900 | 326 |
| 1.8                        | 18768          | 2.8   | 790  | 11.0        | 313 L4 | —      | BN112M4 | — | —            | —  | 163200 | 193100 | 66100 | 362 |
| 1.8                        | 18494          | 2.4   | 778  | 22.0        | —      | 313 R4 | BN112M4 | — | —            | —  | 162500 | 192300 | 65800 | 364 |
| 1.9                        | 17980          | 1.5   | 757  | 15.0        | —      | 310 R4 | BN112M4 | — | —            | —  | 110300 | 138700 | 52900 | 340 |
| 1.9                        | 17728          | 1.7   | 746  | 22.0        | —      | 311 R4 | BN112M4 | — | —            | —  | 129800 | 161700 | 52700 | 352 |
| 2.0                        | 17244          | 1.6   | 726  | 11.0        | 310 L4 | —      | BN112M4 | — | —            | —  | 108900 | 137000 | 52200 | 338 |
| 2.0                        | 17205          | 2.7   | 724  | 11.0        | 311 L4 | —      | BN112M4 | — | —            | —  | 128700 | 160300 | 52200 | 350 |
| 2.0                        | 17160          | 1.2   | 722  | 7.5         | 309 L4 | —      | BN112M4 | — | —            | —  | 91800  | 118400 | 28900 | 326 |

A



$P_1 = 4 \text{ kW}$

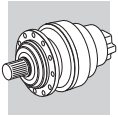
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|---------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |         |       | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 2.1                                 | 16388                 | 0.9            | 690 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 90600  | 116800 | 28400 | 328 |
| 2.2                                 | 15527                 | 1.2            | 654 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 89100  | 114900 | 27900 | 326 |
| 2.2                                 | 15174                 | 1.4            | 639 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 104800 | 131800 | 50000 | 340 |
| 2.2                                 | 15126                 | 1.8            | 637 | 11.0                 | 310 L4 | —      | BN112M4 | —     | —                   | —     | 104700 | 131700 | 50000 | 338 |
| 2.3                                 | 14937                 | 2.7            | 629 | 22.0                 | —      | 311 R4 | BN112M4 | —     | —                   | —     | 123300 | 153600 | 49800 | 352 |
| 2.3                                 | 14890                 | 2.7            | 627 | 11.0                 | 311 L4 | —      | BN112M4 | —     | —                   | —     | 123200 | 153500 | 49700 | 350 |
| 2.4                                 | 14010                 | 1.6            | 590 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 102400 | 128700 | 48700 | 340 |
| 2.5                                 | 13809                 | 0.9            | 581 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 37700               | 47400 | 82900  | 108700 | 32800 | 316 |
| 2.5                                 | 13809                 | 1.1            | 581 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 86000  | 110900 | 26900 | 328 |
| 2.5                                 | 13750                 | 1.1            | 579 | 7.5                  | 307 L4 | —      | BN112M4 | M3LC4 | 37700               | 47300 | 82800  | 108500 | 32800 | 314 |
| 2.5                                 | 13750                 | 1.5            | 579 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 85900  | 110800 | 26800 | 326 |
| 2.6                                 | 13208                 | 2.4            | 556 | 11.0                 | 310 L4 | —      | BN112M4 | —     | —                   | —     | 100600 | 126500 | 47800 | 338 |
| 2.8                                 | 12287                 | 2.1            | 517 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 98400  | 123800 | 46600 | 340 |
| 2.8                                 | 12099                 | 1.2            | 509 | 7.5                  | 307 L4 | —      | BN112M4 | M3LC4 | 36100               | 45300 | 79700  | 104400 | 31400 | 314 |
| 2.8                                 | 12099                 | 1.2            | 509 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 82700  | 106600 | 25700 | 326 |
| 2.8                                 | 12054                 | 2.1            | 507 | 11.0                 | 310 L4 | —      | BN112M4 | —     | —                   | —     | 97900  | 123000 | 46300 | 338 |
| 2.9                                 | 11654                 | 1.2            | 490 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 81700  | 105400 | 25400 | 328 |
| 2.9                                 | 11639                 | 3.0            | 490 | 22.0                 | —      | 311 R4 | BN112M4 | —     | —                   | —     | 114400 | 142500 | 45800 | 352 |
| 3.1                                 | 11045                 | 1.1            | 465 | 7.5                  | 307 L4 | —      | BN112M4 | M3LC4 | 35800               | 45000 | 79200  | 103700 | 31200 | 314 |
| 3.1                                 | 11045                 | 1.7            | 465 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 80400  | 103700 | 24900 | 326 |
| 3.1                                 | 10856                 | 1.3            | 457 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 80000  | 103200 | 24800 | 328 |
| 3.1                                 | 10791                 | 1.9            | 454 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 94700  | 119000 | 44700 | 340 |
| 3.2                                 | 10760                 | 1.2            | 453 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 34700               | 43600 | 76900  | 100800 | 30200 | 316 |
| 3.2                                 | 10708                 | 2.8            | 451 | 11.0                 | 310 L4 | —      | BN112M4 | —     | —                   | —     | 94400  | 118700 | 44500 | 338 |
| 3.2                                 | 10555                 | 0.9            | 444 | 6.0                  | 306 L4 | —      | BN112M4 | M3LC4 | 31100               | 35200 | 71100  | 82800  | 23300 | 302 |
| 3.4                                 | 9963                  | 2.9            | 419 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 92400  | 116200 | 43500 | 340 |
| 3.5                                 | 9820                  | 1.2            | 413 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 34500               | 43200 | 76400  | 100100 | 30000 | 316 |
| 3.5                                 | 9820                  | 1.8            | 413 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 77700  | 100100 | 24000 | 328 |
| 3.5                                 | 9635                  | 1.2            | 406 | 7.5                  | 307 L4 | —      | BN112M4 | M3LC4 | 34300               | 43000 | 76000  | 99600  | 29800 | 314 |
| 3.5                                 | 9635                  | 1.8            | 406 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 77200  | 99600  | 23800 | 326 |
| 3.7                                 | 9306                  | 2.1            | 392 | 11.0                 | 310 L4 | —      | BN112M4 | —     | —                   | —     | 90500  | 113900 | 42500 | 338 |
| 3.8                                 | 8895                  | 1.6            | 374 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 75400  | 97200  | 23200 | 328 |
| 3.9                                 | 8630                  | 2.8            | 363 | 15.0                 | —      | 310 R4 | BN112M4 | —     | —                   | —     | 88500  | 111300 | 41500 | 340 |
| 3.9                                 | 8622                  | 1.4            | 363 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 33000               | 41400 | 73500  | 96300  | 28700 | 316 |
| 4.1                                 | 8294                  | 1.8            | 349 | 7.5                  | 307 L4 | —      | BN112M4 | M3LC4 | 32600               | 40900 | 72700  | 95200  | 28300 | 314 |
| 4.1                                 | 8294                  | 2.6            | 349 | 7.5                  | 309 L4 | —      | BN112M4 | —     | —                   | —     | 73800  | 95200  | 22700 | 326 |
| 4.3                                 | 8267                  | 1.1            | 336 | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 32200               | 40400 | 71900  | 94200  | 28000 | 314 |
| 4.3                                 | 8267                  | 1.6            | 336 | 11.0                 | 309 L3 | —      | BN112M4 | —     | —                   | —     | 73000  | 94200  | 22400 | 326 |
| 4.3                                 | 7868                  | 1.5            | 331 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 32000               | 40200 | 71500  | 93700  | 27800 | 316 |
| 4.3                                 | 7868                  | 2.2            | 331 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 72700  | 93700  | 22300 | 328 |
| 4.6                                 | 7405                  | 1.0            | 312 | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 28200               | 32000 | 65300  | 76000  | 21200 | 304 |
| 4.8                                 | 7127                  | 2.0            | 300 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 31000               | 38900 | 69400  | 91000  | 26900 | 316 |
| 4.9                                 | 6866                  | 1.2            | 289 | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 27500               | 31200 | 63800  | 74300  | 20700 | 304 |
| 5.0                                 | 6759                  | 1.7            | 284 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 30400               | 38200 | 68300  | 89500  | 26500 | 316 |
| 5.0                                 | 6759                  | 2.5            | 284 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 69400  | 89500  | 21200 | 328 |
| 5.0                                 | 6966                  | 1.6            | 284 | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 30400               | 38100 | 68300  | 89400  | 26400 | 314 |
| 5.0                                 | 6966                  | 2.3            | 284 | 11.0                 | 309 L3 | —      | BN112M4 | —     | —                   | —     | 69400  | 89400  | 21100 | 326 |
| 5.5                                 | 6131                  | 2.4            | 258 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 29500               | 37000 | 66400  | 87000  | 25600 | 316 |
| 5.5                                 | 6131                  | 2.8            | 258 | 15.0                 | —      | 309 R4 | BN112M4 | —     | —                   | —     | 67400  | 87000  | 20500 | 328 |
| 5.8                                 | 5906                  | 1.4            | 249 | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 26200               | 29700 | 61000  | 71000  | 19700 | 304 |
| 6.0                                 | 5879                  | 1.5            | 239 | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 28700               | 36000 | 64900  | 85000  | 25000 | 314 |
| 6.0                                 | 5879                  | 2.2            | 239 | 11.0                 | 309 L3 | —      | BN112M4 | —     | —                   | —     | 65900  | 85000  | 20000 | 326 |
| 6.0                                 | 5850                  | 1.4            | 238 | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 25800               | 29200 | 60200  | 70100  | 19400 | 302 |
| 6.2                                 | 5517                  | 2.0            | 232 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 28400               | 35700 | 64300  | 84200  | 24700 | 316 |
| 6.2                                 | 5472                  | 1.4            | 230 | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 25500               | 28900 | 59600  | 69400  | 19200 | 304 |
| 6.4                                 | 5476                  | 2.4            | 223 | 11.0                 | 309 L3 | —      | BN112M4 | —     | —                   | —     | 64500  | 83200  | 19500 | 326 |
| 6.4                                 | 5449                  | 1.2            | 222 | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 25200               | 28600 | 58900  | 68600  | 18900 | 302 |
| 6.5                                 | 5428                  | 2.3            | 221 | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 28000               | 35100 | 63300  | 83000  | 24300 | 314 |
| 6.7                                 | 5091                  | 1.1            | 214 | 12.0                 | —      | 305 R4 | BN112M4 | M3LC4 | 20000               | 23100 | 35700  | 42900  | 12800 | 292 |
| 6.7                                 | 5076                  | 1.9            | 214 | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 24900               | 28200 | 58300  | 67900  | 18700 | 304 |
| 7.0                                 | 4886                  | 2.9            | 206 | 15.0                 | —      | 307 R4 | BN112M4 | M3LC4 | 27300               | 34300 | 62000  | 81200  | 23700 | 316 |
| 7.0                                 | 5032                  | 1.6            | 205 | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 24500               | 27800 | 57600  | 67000  | 18400 | 302 |
| 7.1                                 | 4953                  | 2.2            | 202 | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 27100               | 34000 | 61600  | 80700  | 23600 | 314 |
| 7.5                                 | 4661                  | 1.4            | 190 | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 23900               | 27100 | 56200  | 65500  | 18000 | 302 |
| 7.7                                 | 4394                  | 1.0            | 185 | 12.0                 | —      | 305 R4 | BN112M4 | M3LC4 | 19100               | 22000 | 34100  | 41100  | 12200 | 292 |



$P_1 = 4 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 7.9                                 | 4299                  | 2.2            | 181  | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 23600               | 26700 | 55500 | 64600 | 17700 | 304 |
| 8.1                                 | 4362                  | 1.0            | 178  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 18800               | 21700 | 33700 | 40600 | 12100 | 290 |
| 8.1                                 | 4349                  | 2.8            | 177  | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 26000               | 32600 | 59300 | 77700 | 22600 | 314 |
| 8.5                                 | 3987                  | 1.9            | 168  | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 23000               | 26000 | 54200 | 63100 | 17300 | 304 |
| 8.7                                 | 4022                  | 1.1            | 164  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 18300               | 21100 | 32900 | 39600 | 11700 | 290 |
| 8.9                                 | 3969                  | 2.7            | 162  | 11.0                 | 307 L3 | —      | BN112M4 | M3LC4 | 25200               | 31600 | 57700 | 75600 | 21900 | 314 |
| 9.0                                 | 3762                  | 0.9            | 158  | 12.0                 | —      | 304 R4 | BN112M4 | M3LC4 | 18100               | 20900 | 32600 | 39200 | 11600 | 280 |
| 9.0                                 | 3762                  | 1.4            | 158  | 12.0                 | —      | 305 R4 | BN112M4 | M3LC4 | 18100               | 20900 | 32600 | 39200 | 11600 | 292 |
| 9.1                                 | 3751                  | 2.6            | 158  | 12.0                 | —      | 306 R4 | BN112M4 | M3LC4 | 22500               | 25500 | 53200 | 62000 | 16900 | 304 |
| 9.4                                 | 3747                  | 1.0            | 152  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 17900               | 20600 | 32200 | 38700 | 11500 | 290 |
| 9.4                                 | 3735                  | 2.0            | 152  | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 22200               | 25200 | 52600 | 61300 | 16700 | 302 |
| 9.6                                 | 3674                  | 0.9            | 150  | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 17800               | 20500 | 32000 | 38500 | 11400 | 278 |
| 9.7                                 | 3520                  | 1.0            | 148  | 12.0                 | —      | 304 R4 | BN112M4 | M3LC4 | 17700               | 20400 | 31900 | 38400 | 11400 | 280 |
| 9.7                                 | 3520                  | 1.3            | 148  | 12.0                 | —      | 305 R4 | BN112M4 | M3LC4 | 17700               | 20400 | 31900 | 38400 | 11400 | 292 |
| 9.9                                 | 3542                  | 1.6            | 144  | 14.0                 | —      | 306 R3 | BN112M4 | M3LC4 | 21800               | 24700 | 51800 | 60300 | 16400 | 304 |
| 10.1                                | 3476                  | 1.0            | 141  | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 17400               | 20100 | 31500 | 37900 | 11200 | 278 |
| 10.1                                | 3476                  | 1.5            | 141  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 17400               | 20100 | 31500 | 37900 | 11200 | 290 |
| 10.1                                | 3464                  | 2.3            | 141  | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 21700               | 24600 | 51500 | 59900 | 16300 | 302 |
| 11.0                                | 3205                  | 1.1            | 130  | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 17000               | 19600 | 30700 | 37000 | 10900 | 278 |
| 11.1                                | 3071                  | 1.1            | 129  | 12.0                 | —      | 304 R4 | BN112M4 | M3LC4 | 16900               | 19500 | 30600 | 36900 | 10800 | 280 |
| 11.1                                | 3071                  | 1.7            | 129  | 12.0                 | —      | 305 R4 | BN112M4 | M3LC4 | 16900               | 19500 | 30600 | 36900 | 10800 | 292 |
| 11.5                                | 3058                  | 1.2            | 124  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 16700               | 19300 | 30300 | 36500 | 10700 | 290 |
| 11.8                                | 2979                  | 2.6            | 121  | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 20600               | 23400 | 49200 | 57300 | 15500 | 302 |
| 11.9                                | 2942                  | 2.9            | 120  | 22.0                 | —      | 307 R3 | BN112M4 | M3LC4 | 22800               | 28600 | 52700 | 69100 | 19800 | 316 |
| 12.0                                | 2928                  | 2.2            | 119  | 14.0                 | —      | 306 R3 | BN112M4 | M3LC4 | 20500               | 23200 | 48900 | 57000 | 15400 | 304 |
| 12.5                                | 2811                  | 1.3            | 114  | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 16200               | 18700 | 29500 | 35500 | 10400 | 292 |
| 12.7                                | 2769                  | 1.3            | 113  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 16200               | 18600 | 29400 | 35400 | 10400 | 290 |
| 12.7                                | 2760                  | 2.7            | 112  | 7.5                  | 306 L3 | —      | BN112M4 | M3LC4 | 20100               | 22800 | 48100 | 56000 | 15100 | 302 |
| 12.9                                | 2715                  | 1.2            | 111  | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 16000               | 18500 | 29200 | 35200 | 10300 | 278 |
| 13.1                                | 2601                  | 1.3            | 109  | 12.0                 | —      | 304 R4 | BN112M4 | M3LC4 | 16000               | 18500 | 29200 | 35100 | 10300 | 280 |
| 13.7                                | 2568                  | 1.0            | 105  | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 15800               | 18200 | 28800 | 34600 | 10100 | 266 |
| 13.7                                | 2568                  | 1.4            | 105  | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 15800               | 18200 | 28800 | 34600 | 10100 | 278 |
| 13.7                                | 2568                  | 2.0            | 105  | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 15800               | 18200 | 28800 | 34600 | 10100 | 290 |
| 14.5                                | 2420                  | 2.7            | 98.5 | 14.0                 | —      | 306 R3 | BN112M4 | M3LC4 | 19200               | 21800 | 46200 | 53800 | 14400 | 304 |
| 14.7                                | 2383                  | 1.0            | 97.0 | 14.0                 | —      | 304 R3 | BN112M4 | M3LC4 | 15400               | 17700 | 28100 | 33800 | 9860  | 280 |
| 15.6                                | 2248                  | 1.6            | 91.5 | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 15100               | 17400 | 27600 | 33200 | 9670  | 292 |
| 15.9                                | 2216                  | 1.0            | 90.2 | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 15000               | 17300 | 27500 | 33100 | 9620  | 266 |
| 15.9                                | 2216                  | 1.5            | 90.2 | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 15000               | 17300 | 27500 | 33100 | 9620  | 278 |
| 15.9                                | 2216                  | 1.9            | 90.2 | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 15000               | 17300 | 27500 | 33100 | 9620  | 290 |
| 16.0                                | 2124                  | 1.6            | 89.4 | 12.0                 | —      | 304 R4 | BN112M4 | M3LC4 | 15000               | 17300 | 27400 | 33000 | 9590  | 280 |
| 18.2                                | 1934                  | 1.1            | 78.7 | 14.0                 | —      | 303 R3 | BN112M4 | M3LC4 | 14300               | 16500 | 26400 | 31800 | 9190  | 268 |
| 18.2                                | 1934                  | 1.5            | 78.7 | 14.0                 | —      | 304 R3 | BN112M4 | M3LC4 | 14300               | 16500 | 26400 | 31800 | 9190  | 280 |
| 18.2                                | 1934                  | 2.2            | 78.7 | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 14300               | 16500 | 26400 | 31800 | 9190  | 292 |
| 18.5                                | 1898                  | 1.3            | 77.2 | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 14200               | 16400 | 26300 | 31600 | 9140  | 266 |
| 18.5                                | 1898                  | 1.8            | 77.2 | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 14200               | 16400 | 26300 | 31600 | 9140  | 278 |
| 18.5                                | 1898                  | 2.5            | 77.2 | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 14200               | 16400 | 26300 | 31600 | 9140  | 290 |
| 19.5                                | 1802                  | 1.0            | 73.3 | 14.0                 | —      | 303 R3 | BN112M4 | M3LC4 | 14000               | 16200 | 25900 | 31100 | 8980  | 268 |
| 19.5                                | 1802                  | 2.0            | 73.3 | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 14000               | 16200 | 25900 | 31100 | 8980  | 292 |
| 19.8                                | 1776                  | 1.9            | 72.3 | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 13900               | 16100 | 25700 | 31000 | 8940  | 278 |
| 19.8                                | 1776                  | 1.3            | 72.3 | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 13900               | 16100 | 25700 | 31000 | 8940  | 266 |
| 19.8                                | 1776                  | 2.3            | 72.3 | 7.5                  | 305 L3 | —      | BN112M4 | M3LC4 | 13900               | 16100 | 25700 | 31000 | 8940  | 290 |
| 22.6                                | 1554                  | 1.1            | 63.2 | 7.5                  | 301 L3 | —      | BN112M4 | M3LC4 | 4330                | 4330  | 12100 | 13900 | 2850  | 256 |
| 22.7                                | 1550                  | 1.4            | 63.1 | 14.0                 | —      | 303 R3 | BN112M4 | M3LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 268 |
| 22.7                                | 1550                  | 1.8            | 63.1 | 14.0                 | —      | 304 R3 | BN112M4 | M3LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 280 |
| 22.7                                | 1550                  | 2.8            | 63.1 | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 292 |
| 22.7                                | 1549                  | 1.6            | 63.1 | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 266 |
| 22.7                                | 1549                  | 2.2            | 63.1 | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 278 |
| 22.7                                | 1546                  | 1.1            | 62.9 | 12.0                 | —      | 301 R3 | BN112M4 | M3LC4 | 4330                | 4330  | 12100 | 13900 | 2840  | 258 |
| 24.2                                | 1501                  | 1.6            | 59.1 | 9.0                  | 304 L2 | —      | BN112M4 | M3LC4 | 13000               | 15000 | 24200 | 29200 | 8360  | 278 |
| 25.6                                | 1416                  | 1.3            | 55.8 | 9.0                  | 303 L2 | —      | BN112M4 | M3LC4 | 12800               | 14800 | 23800 | 28700 | 8200  | 266 |
| 25.6                                | 1416                  | 2.5            | 55.8 | 9.0                  | 305 L2 | —      | BN112M4 | M3LC4 | 12800               | 14800 | 23800 | 28700 | 8200  | 290 |
| 26.4                                | 1331                  | 1.4            | 54.2 | 14.0                 | —      | 303 R3 | BN112M4 | M3LC4 | 12700               | 14600 | 23600 | 28400 | 8120  | 268 |
| 26.4                                | 1331                  | 2.7            | 54.2 | 14.0                 | —      | 305 R3 | BN112M4 | M3LC4 | 12700               | 14600 | 23600 | 28400 | 8120  | 292 |
| 26.8                                | 1312                  | 1.7            | 53.4 | 7.5                  | 303 L3 | —      | BN112M4 | M3LC4 | 12600               | 14500 | 23500 | 28300 | 8080  | 266 |
| 26.8                                | 1312                  | 2.5            | 53.4 | 7.5                  | 304 L3 | —      | BN112M4 | M3LC4 | 12600               | 14500 | 23500 | 28300 | 8080  | 278 |

A



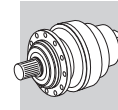
$P_1 = 4 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |       | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|-------|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |         |       | MC           | MZ    | HC/PC | HZ/PZ | FZ   |     |
| 27.5                       | 1318           | 1.0   | 51.9 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 4060         | 4060  | 11400 | 13100 | 2670 | 256 |
| 27.7                       | 1269           | 1.3   | 51.6 | 7.5         | 301 L3 | —      | BN112M4 | M3LC4 | 4050         | 4050  | 11400 | 13100 | 2660 | 256 |
| 28.4                       | 1239           | 1.3   | 50.4 | 12.0        | —      | 303 R3 | BN112M4 | M3LC4 | 4020         | 4020  | 11300 | 13000 | 2640 | 258 |
| 28.4                       | 1235           | 1.9   | 50.3 | 14.0        | —      | 303 R3 | BN112M4 | M3LC4 | 12300        | 14200 | 23100 | 27800 | 7920 | 268 |
| 28.4                       | 1235           | 2.8   | 50.3 | 14.0        | —      | 304 R3 | BN112M4 | M3LC4 | 12300        | 14200 | 23100 | 27800 | 7920 | 280 |
| 30                         | 1201           | 2.0   | 47.3 | 9.0         | 304 L2 | —      | BN112M4 | M3LC4 | 12100        | 14000 | 22700 | 27300 | 7760 | 278 |
| 31                         | 1145           | 1.9   | 46.6 | 14.0        | —      | 303 R3 | BN112M4 | M3LC4 | 12000        | 13900 | 22600 | 27200 | 7720 | 268 |
| 31                         | 1145           | 2.5   | 46.6 | 14.0        | —      | 304 R3 | BN112M4 | M3LC4 | 12000        | 13900 | 22600 | 27200 | 7720 | 280 |
| 32                         | 1133           | 1.6   | 44.6 | 9.0         | 303 L2 | —      | BN112M4 | M3LC4 | 11900        | 13700 | 22300 | 26800 | 7610 | 266 |
| 33                         | 1071           | 3.0   | 43.6 | 7.5         | 304 L3 | —      | BN112M4 | M3LC4 | 11800        | 13600 | 22100 | 26600 | 7550 | 278 |
| 34                         | 1046           | 2.0   | 42.6 | 14.0        | —      | 303 R3 | BN112M4 | M3LC4 | 11700        | 13500 | 22000 | 26400 | 7490 | 268 |
| 34                         | 1054           | 1.2   | 41.5 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 3770         | 3770  | 10700 | 12300 | 2480 | 256 |
| 35                         | 1011           | 1.3   | 41.2 | 12.0        | —      | 301 R3 | BN112M4 | M3LC4 | 3760         | 3760  | 10600 | 12200 | 2470 | 258 |
| 37                         | 975            | 2.2   | 38.4 | 9.0         | 303 L2 | —      | BN112M4 | M3LC4 | 11300        | 13000 | 21300 | 25600 | 7240 | 266 |
| 37                         | 975            | 2.9   | 38.4 | 9.0         | 304 L2 | —      | BN112M4 | M3LC4 | 11300        | 13000 | 21300 | 25600 | 7240 | 278 |
| 37                         | 974            | 1.6   | 38.4 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 3670         | 3670  | 10400 | 12000 | 2410 | 256 |
| 38                         | 915            | 0.9   | 37.3 | 12.0        | —      | 300 R3 | BN112M4 | M3LC4 | 3550         | 3550  | 10100 | 11600 | 2330 | 248 |
| 38                         | 915            | 1.7   | 37.3 | 12.0        | —      | 301 R3 | BN112M4 | M3LC4 | 3630         | 3630  | 10300 | 11900 | 2390 | 258 |
| 39                         | 913            | 2.6   | 37.1 | 14.0        | —      | 303 R3 | BN112M4 | M3LC4 | 11200        | 12900 | 21100 | 25400 | 7160 | 268 |
| 40                         | 908            | 2.0   | 35.8 | 9.0         | 303 L2 | —      | BN112M4 | M3LC4 | 11000        | 12700 | 20800 | 25100 | 7070 | 266 |
| 43                         | 845            | 1.5   | 33.3 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 3500         | 3500  | 9990  | 11500 | 2300 | 256 |
| 45                         | 773            | 2.7   | 31.5 | 14.0        | —      | 303 R3 | BN112M4 | M3LC4 | 10600        | 12200 | 20100 | 24100 | 6770 | 268 |
| 46                         | 781            | 2.7   | 30.8 | 9.0         | 303 L2 | —      | BN112M4 | M3LC4 | 10500        | 12100 | 19900 | 24000 | 6720 | 266 |
| 47                         | 779            | 1.1   | 30.7 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 3410         | 3410  | 9750  | 11200 | 2240 | 246 |
| 47                         | 779            | 2.0   | 30.7 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 3410         | 3410  | 9750  | 11200 | 2240 | 256 |
| 47                         | 747            | 1.1   | 30.4 | 12.0        | —      | 300 R3 | BN112M4 | M3LC4 | 3400         | 3400  | 9730  | 11200 | 2230 | 248 |
| 47                         | 747            | 2.1   | 30.4 | 12.0        | —      | 301 R3 | BN112M4 | M3LC4 | 3400         | 3400  | 9730  | 11200 | 2230 | 258 |
| 54                         | 671            | 2.7   | 26.4 | 9.0         | 303 L2 | —      | BN112M4 | M3LC4 | 9960         | 11500 | 19000 | 22900 | 6390 | 266 |
| 58                         | 610            | 1.2   | 24.8 | 12.0        | —      | 300 R3 | BN112M4 | M3LC4 | 3170         | 3170  | 9150  | 10500 | 2090 | 248 |
| 58                         | 610            | 2.3   | 24.8 | 12.0        | —      | 301 R3 | BN112M4 | M3LC4 | 3170         | 3170  | 9150  | 10500 | 2090 | 258 |
| 58                         | 629            | 1.4   | 24.8 | 18.0        | —      | 303 R2 | BN112M4 | M3LC4 | 9750         | 11300 | 18700 | 22500 | 6250 | 268 |
| 58                         | 624            | 1.3   | 24.6 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 3160         | 3160  | 9130  | 10500 | 2080 | 246 |
| 58                         | 624            | 2.4   | 24.6 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 3160         | 3160  | 9130  | 10500 | 2080 | 256 |
| 71                         | 510            | 1.3   | 20.1 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 2960         | 2960  | 8590  | 9870  | 1940 | 246 |
| 71                         | 510            | 2.5   | 20.1 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 2960         | 2960  | 8590  | 9870  | 1940 | 256 |
| 78                         | 468            | 1.6   | 18.5 | 12.0        | —      | 301 R2 | BN112M4 | M3LC4 | 2870         | 2870  | 8370  | 9620  | 1890 | 258 |
| 79                         | 461            | 1.6   | 18.2 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 2860         | 2860  | 8330  | 9580  | 1880 | 246 |
| 79                         | 461            | 2.9   | 18.2 | 7.5         | 301 L2 | —      | BN112M4 | M3LC4 | 2860         | 2860  | 8330  | 9580  | 1880 | 256 |
| 96                         | 377            | 1.9   | 14.8 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 2670         | 2670  | 7840  | 9010  | 1760 | 246 |
| 97                         | 375            | 1.4   | 14.8 | 12.0        | —      | 300 R2 | BN112M4 | M3LC4 | 2670         | 2670  | 7830  | 9000  | 1750 | 248 |
| 97                         | 375            | 2.5   | 14.8 | 12.0        | —      | 301 R2 | BN112M4 | M3LC4 | 2670         | 2670  | 7830  | 9000  | 1750 | 258 |
| 118                        | 307            | 2.2   | 12.1 | 7.5         | 300 L2 | —      | BN112M4 | M3LC4 | 2500         | 2500  | 7380  | 8480  | 1640 | 246 |
| 121                        | 300            | 2.0   | 11.8 | 12.0        | —      | 300 R2 | BN112M4 | M3LC4 | 2480         | 2480  | 7330  | 8420  | 1630 | 248 |
| 159                        | 236            | 1.4   | 9.00 | 7.5         | 300 L1 | —      | BN112M4 | M3LC4 | 2260         | 2260  | 6750  | 7750  | 1490 | 246 |
| 159                        | 236            | 2.7   | 9.00 | 7.5         | 301 L1 | —      | BN112M4 | M3LC4 | 2260         | 2260  | 6750  | 7750  | 1490 | 256 |
| 164                        | 222            | 2.8   | 8.74 | 12.0        | —      | 300 R2 | BN112M4 | M3LC4 | 2240         | 2240  | 6690  | 7690  | 1470 | 248 |
| 199                        | 189            | 2.2   | 7.20 | 7.5         | 300 L1 | —      | BN112M4 | M3LC4 | 2100         | 2100  | 6310  | 7250  | 1380 | 246 |






$P_1 = 5.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |   |         |   | $R_{n2}$ [N] |    |        |        |        |     |
|----------------------------|----------------|-------|------|-------------|--------|---|---------|---|--------------|----|--------|--------|--------|-----|
|                            |                |       |      |             |        |   |         |   | MC           | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.76                       | 59957          | 2.6   | 1893 | 18.0        | 317 L4 | — | BN132S4 | — | —            | —  | 442000 | 470000 | 150000 | 408 |
| 0.79                       | 57559          | 1.0   | 1817 | 11.0        | 313 L4 | — | BN132S4 | — | —            | —  | 192000 | 231000 | 80000  | 362 |
| 0.80                       | 57190          | 1.5   | 1805 | 18.0        | 315 L4 | — | BN132S4 | — | —            | —  | 206000 | 243000 | 90000  | 386 |
| 0.80                       | 56908          | 1.2   | 1796 | 15.0        | 314 L4 | — | BN132S4 | — | —            | —  | 206000 | 243000 | 90000  | 374 |
| 0.96                       | 47582          | 1.2   | 1502 | 11.0        | 313 L4 | — | BN132S4 | — | —            | —  | 192000 | 231000 | 80000  | 362 |
| 0.96                       | 47277          | 1.8   | 1492 | 18.0        | 315 L4 | — | BN132S4 | — | —            | —  | 206000 | 243000 | 90000  | 386 |
| 0.97                       | 47044          | 1.4   | 1485 | 15.0        | 314 L4 | — | BN132S4 | — | —            | —  | 206000 | 243000 | 90000  | 374 |
| 1.0                        | 44840          | 1.0   | 1415 | 11.0        | 311 L4 | — | BN132S4 | — | —            | —  | 157000 | 195000 | 65000  | 350 |
| 1.0                        | 44159          | 1.2   | 1394 | 11.0        | 313 L4 | — | BN132S4 | — | —            | —  | 192000 | 229000 | 79900  | 362 |
| 1.1                        | 40669          | 2.4   | 1284 | 18.0        | 315 L4 | — | BN132S4 | — | —            | —  | 201500 | 236600 | 87400  | 386 |





$P_1 = 5.5 \text{ kW}$

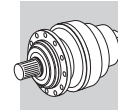
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |  |  |  |  | Rn <sub>2</sub> [N] |       |        |        |       |  |
|-------------------------------------|-----------------------|----------------|------|----------------------|---|---|---|---|---------------------|-------|--------|--------|-------|---|
|                                     |                       |                |      |                      |   |   |   |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |   |
| 1.1                                 | 40468                 | 1.9            | 1277 | 15.0                 | 314 L4  | —   | BN132S4   | —   | —                   | —     | 201200 | 236300 | 87300 | 374   |
| 1.1                                 | 40092                 | 1.4            | 1266 | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 188000 | 222500 | 77400 | 362   |
| 1.2                                 | 38979                 | 1.1            | 1230 | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 150800 | 187900 | 62300 | 350   |
| 1.3                                 | 35384                 | 1.5            | 1117 | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 181100 | 214300 | 74200 | 362   |
| 1.3                                 | 34984                 | 2.7            | 1104 | 18.0                 | 315 L4  | —   | BN132S4   | —   | —                   | —     | 192600 | 226200 | 83200 | 386   |
| 1.3                                 | 34811                 | 2.2            | 1099 | 15.0                 | 314 L4  | —   | BN132S4   | —   | —                   | —     | 192400 | 225800 | 83000 | 374   |
| 1.4                                 | 33530                 | 1.3            | 1058 | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 144200 | 179600 | 59200 | 350   |
| 1.4                                 | 32869                 | 2.5            | 1038 | 15.0                 | 314 L4  | —   | BN132S4   | —   | —                   | —     | 189100 | 222000 | 81400 | 374   |
| 1.4                                 | 32125                 | 1.7            | 1014 | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 175900 | 208200 | 71800 | 362   |
| 1.5                                 | 31233                 | 1.4            | 986  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 141100 | 175800 | 57800 | 350   |
| 1.5                                 | 29743                 | 1.1            | 939  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 115300 | 145000 | 55600 | 338   |
| 1.6                                 | 29331                 | 2.5            | 926  | 15.0                 | 314 L4  | —   | BN132S4   | —   | —                   | —     | 182700 | 214500 | 78400 | 374   |
| 1.6                                 | 28807                 | 2.7            | 909  | 40.0                 | —   | 315 R4  | BN132S4   | —   | —                   | —     | 181700 | 213400 | 77900 | 388   |
| 1.6                                 | 28630                 | 1.6            | 904  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 137500 | 171300 | 56200 | 350   |
| 1.6                                 | 28174                 | 1.9            | 889  | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 169100 | 200100 | 68800 | 362   |
| 1.7                                 | 27172                 | 3.0            | 858  | 15.0                 | 314 L4  | —   | BN132S4   | —   | —                   | —     | 178600 | 209700 | 76400 | 374   |
| 1.7                                 | 26127                 | 1.7            | 825  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 133800 | 166600 | 54500 | 350   |
| 1.8                                 | 25908                 | 1.1            | 818  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 112900 | 142000 | 54300 | 338   |
| 1.8                                 | 25024                 | 2.1            | 790  | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 163200 | 193100 | 66100 | 362   |
| 1.9                                 | 24658                 | 1.8            | 778  | 22.0                 | —   | 313 R4  | BN132S4   | —   | —                   | —     | 162500 | 192300 | 65800 | 364   |
| 1.9                                 | 23973                 | 1.1            | 757  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 110300 | 138700 | 52900 | 340   |
| 1.9                                 | 23637                 | 1.3            | 746  | 22.0                 | —   | 311 R4  | BN132S4   | —   | —                   | —     | 129800 | 161700 | 52700 | 352   |
| 2.0                                 | 22992                 | 1.2            | 726  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 108900 | 137000 | 52200 | 338   |
| 2.0                                 | 22941                 | 2.0            | 724  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 128700 | 160300 | 52200 | 350   |
| 2.0                                 | 22879                 | 0.9            | 722  | 7.5                  | 309 L4  | —   | BN132S4   | —   | —                   | —     | 89900  | 116000 | 28200 | 326   |
| 2.1                                 | 22021                 | 2.3            | 695  | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 157000 | 185900 | 63300 | 362   |
| 2.2                                 | 20485                 | 2.5            | 647  | 22.0                 | —   | 313 R4  | BN132S4   | —   | —                   | —     | 153700 | 181900 | 61800 | 364   |
| 2.3                                 | 20233                 | 1.1            | 639  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 104800 | 131800 | 50000 | 340   |
| 2.3                                 | 20168                 | 1.3            | 637  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 104700 | 131700 | 50000 | 338   |
| 2.3                                 | 20051                 | 2.6            | 633  | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 152700 | 180700 | 61400 | 362   |
| 2.3                                 | 19916                 | 2.0            | 629  | 22.0                 | —   | 311 R4  | BN132S4   | —   | —                   | —     | 123300 | 153600 | 49800 | 352   |
| 2.3                                 | 19853                 | 2.0            | 627  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 123200 | 153500 | 49700 | 350   |
| 2.3                                 | 19443                 | 3.0            | 614  | 22.0                 | —   | 314 R4  | BN132S4   | —   | —                   | —     | 161500 | 189600 | 68400 | 376   |
| 2.4                                 | 18681                 | 1.2            | 590  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 102400 | 128700 | 48700 | 340   |
| 2.5                                 | 18333                 | 1.2            | 579  | 7.5                  | 309 L4  | —   | BN132S4   | —   | —                   | —     | 85900  | 110800 | 26800 | 326   |
| 2.5                                 | 17984                 | 2.4            | 568  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 119600 | 149000 | 48100 | 350   |
| 2.6                                 | 17611                 | 1.8            | 556  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 100600 | 126500 | 47800 | 338   |
| 2.7                                 | 16935                 | 2.9            | 535  | 22.0                 | —   | 313 R4  | BN132S4   | —   | —                   | —     | 145100 | 171800 | 58000 | 364   |
| 2.8                                 | 16464                 | 2.3            | 520  | 22.0                 | —   | 311 R4  | BN132S4   | —   | —                   | —     | 116500 | 145100 | 46700 | 352   |
| 2.8                                 | 16383                 | 1.6            | 517  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 98400  | 123800 | 46600 | 340   |
| 2.8                                 | 16273                 | 3.0            | 514  | 11.0                 | 313 L4  | —   | BN132S4   | —   | —                   | —     | 143400 | 169700 | 57300 | 362   |
| 2.8                                 | 16224                 | 2.7            | 512  | 11.0                 | 311 L4  | —   | BN132S4   | —   | —                   | —     | 116000 | 144500 | 46500 | 350   |
| 2.8                                 | 16072                 | 1.6            | 507  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 97900  | 123000 | 46300 | 338   |
| 2.9                                 | 15539                 | 0.9            | 490  | 15.0                 | —   | 309 R4  | BN132S4   | —   | —                   | —     | 80100  | 103300 | 24800 | 328   |
| 2.9                                 | 15519                 | 2.2            | 490  | 22.0                 | —   | 311 R4  | BN132S4   | —   | —                   | —     | 114400 | 142500 | 45800 | 352   |
| 3.1                                 | 14726                 | 1.2            | 465  | 7.5                  | 309 L4  | —   | BN132S4   | —   | —                   | —     | 80400  | 103700 | 24900 | 326   |
| 3.2                                 | 14474                 | 1.0            | 457  | 15.0                 | —   | 309 R4  | BN132S4   | —   | —                   | —     | 80000  | 103200 | 24800 | 328   |
| 3.2                                 | 14388                 | 1.4            | 454  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 94700  | 119000 | 44700 | 340   |
| 3.2                                 | 14347                 | 0.9            | 453  | 15.0                 | —   | 307 R4  | BN132S4   | M4SA4   | 35500               | 44600 | 78600  | 102900 | 30900 | 316   |
| 3.2                                 | 14277                 | 2.1            | 451  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 94400  | 118700 | 44500 | 338   |
| 3.3                                 | 13873                 | 2.7            | 438  | 22.0                 | —   | 311 R4  | BN132S4   | —   | —                   | —     | 110600 | 137800 | 44100 | 352   |
| 3.4                                 | 13284                 | 2.2            | 419  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 92400  | 116200 | 43500 | 340   |
| 3.5                                 | 13093                 | 0.9            | 413  | 15.0                 | —   | 307 R4  | BN132S4   | M4SA4   | 33700               | 42300 | 74900  | 98100  | 29300 | 316   |
| 3.5                                 | 13093                 | 1.4            | 413  | 15.0                 | —   | 309 R4  | BN132S4   | —   | —                   | —     | 77700  | 100100 | 24000 | 328   |
| 3.6                                 | 12847                 | 0.9            | 406  | 7.5                  | 307 L4  | —   | BN132S4   | M4SA4   | 33500               | 42000 | 74400  | 97500  | 29100 | 314   |
| 3.6                                 | 12847                 | 1.4            | 406  | 7.5                  | 309 L4  | —   | BN132S4   | —   | —                   | —     | 77200  | 99600  | 23800 | 326   |
| 3.7                                 | 12407                 | 1.6            | 392  | 11.0                 | 310 L4  | —   | BN132S4   | —   | —                   | —     | 90500  | 113900 | 42500 | 338   |
| 3.8                                 | 11860                 | 1.2            | 374  | 15.0                 | —   | 309 R4  | BN132S4   | —   | —                   | —     | 75400  | 97200  | 23200 | 328   |
| 4.0                                 | 11507                 | 2.1            | 363  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 88500  | 111300 | 41500 | 340   |
| 4.0                                 | 11496                 | 1.1            | 363  | 15.0                 | —   | 307 R4  | BN132S4   | M4SA4   | 33000               | 41400 | 73500  | 96300  | 28700 | 316   |
| 4.1                                 | 11482                 | 1.7            | 350  | 18.0                 | 310 L3  | —   | BN132S4   | —   | —                   | —     | 87600  | 110100 | 41000 | 338   |
| 4.1                                 | 11058                 | 1.3            | 349  | 7.5                  | 307 L4  | —   | BN132S4   | M4SA4   | 32600               | 40900 | 72700  | 95200  | 28300 | 314   |
| 4.1                                 | 11058                 | 1.9            | 349  | 7.5                  | 309 L4  | —   | BN132S4   | —   | —                   | —     | 73800  | 95200  | 22700 | 326   |
| 4.3                                 | 11022                 | 1.2            | 336  | 11.0                 | 309 L3  | —   | BN132S4   | —   | —                   | —     | 73000  | 94200  | 22400 | 326   |
| 4.3                                 | 10586                 | 2.6            | 334  | 15.0                 | —   | 310 R4  | BN132S4   | —   | —                   | —     | 86300  | 108600 | 40300 | 340   |

A



$P_1 = 5.5 \text{ kW}$

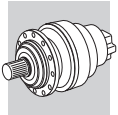
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|-------|---------------------|-------|-------|--------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |       | MC                  | MZ    | HC/PC | HZ/PZ  | FZ    |     |
| 4.3                                 | 10491                 | 1.1            | 331  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 32000               | 40200 | 71500 | 93700  | 27800 | 316 |
| 4.3                                 | 10491                 | 1.6            | 331  | 15.0                 | —      | 309 R4 | BN132S4 | —     | —                   | —     | 72700 | 93700  | 22300 | 328 |
| 4.7                                 | 9660                  | 2.4            | 305  | 15.0                 | —      | 310 R4 | BN132S4 | —     | —                   | —     | 84000 | 105600 | 39100 | 340 |
| 4.8                                 | 9503                  | 1.5            | 300  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 31000               | 38900 | 69400 | 91000  | 26900 | 316 |
| 4.9                                 | 9674                  | 2.4            | 295  | 18.0                 | 310 L3 | —      | BN132S4 | —     | —                   | —     | 83200 | 104600 | 38700 | 338 |
| 4.9                                 | 9539                  | 2.8            | 291  | 18.0                 | 311 L3 | —      | BN132S4 | —     | —                   | —     | 97900 | 121900 | 38500 | 350 |
| 5.0                                 | 9155                  | 0.9            | 289  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 26900               | 30500 | 62500 | 72800  | 20200 | 304 |
| 5.1                                 | 9012                  | 1.3            | 284  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 30400               | 38200 | 68300 | 89500  | 26500 | 316 |
| 5.1                                 | 9012                  | 1.9            | 284  | 15.0                 | —      | 309 R4 | BN132S4 | —     | —                   | —     | 69400 | 89500  | 21200 | 328 |
| 5.1                                 | 9287                  | 1.2            | 284  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 30400               | 38100 | 68300 | 89400  | 26400 | 314 |
| 5.1                                 | 9287                  | 1.7            | 284  | 11.0                 | 309 L3 | —      | BN132S4 | —     | —                   | —     | 69400 | 89400  | 21100 | 326 |
| 5.1                                 | 8967                  | 2.9            | 283  | 15.0                 | —      | 310 R4 | BN132S4 | —     | —                   | —     | 82100 | 103300 | 38100 | 340 |
| 5.6                                 | 8183                  | 2.8            | 258  | 15.0                 | —      | 310 R4 | BN132S4 | —     | —                   | —     | 79900 | 100500 | 37000 | 340 |
| 5.6                                 | 8175                  | 1.8            | 258  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 29500               | 37000 | 66400 | 87000  | 25600 | 316 |
| 5.6                                 | 8175                  | 2.1            | 258  | 15.0                 | —      | 309 R4 | BN132S4 | —     | —                   | —     | 67400 | 87000  | 20500 | 328 |
| 5.8                                 | 8165                  | 2.3            | 249  | 18.0                 | 310 L3 | —      | BN132S4 | —     | —                   | —     | 79100 | 99400  | 36600 | 338 |
| 5.8                                 | 7875                  | 1.0            | 249  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 26200               | 29700 | 61000 | 71000  | 19700 | 304 |
| 6.0                                 | 7838                  | 1.1            | 239  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 28700               | 36000 | 64900 | 85000  | 25000 | 314 |
| 6.0                                 | 7838                  | 1.7            | 239  | 11.0                 | 309 L3 | —      | BN132S4 | —     | —                   | —     | 65900 | 85000  | 20000 | 326 |
| 6.0                                 | 7800                  | 1.0            | 238  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 25800               | 29200 | 60200 | 70100  | 19400 | 302 |
| 6.2                                 | 7356                  | 1.5            | 232  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 28400               | 35700 | 64300 | 84200  | 24700 | 316 |
| 6.2                                 | 7356                  | 2.3            | 232  | 15.0                 | —      | 309 R4 | BN132S4 | —     | —                   | —     | 65300 | 84200  | 19800 | 328 |
| 6.3                                 | 7295                  | 1.0            | 230  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 25500               | 28900 | 59600 | 69400  | 19200 | 304 |
| 6.3                                 | 7539                  | 2.8            | 230  | 18.0                 | 310 L3 | —      | BN132S4 | —     | —                   | —     | 77200 | 97100  | 35600 | 338 |
| 6.5                                 | 7301                  | 1.8            | 223  | 11.0                 | 309 L3 | —      | BN132S4 | —     | —                   | —     | 64500 | 83200  | 19500 | 326 |
| 6.5                                 | 7237                  | 1.8            | 221  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 28000               | 35100 | 63300 | 83000  | 24300 | 314 |
| 6.7                                 | 6768                  | 1.4            | 214  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 24900               | 28200 | 58300 | 67900  | 18700 | 304 |
| 7.0                                 | 6514                  | 2.2            | 206  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 27300               | 34300 | 62000 | 81200  | 23700 | 316 |
| 7.0                                 | 6709                  | 1.2            | 205  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 24500               | 27800 | 57600 | 67000  | 18400 | 302 |
| 7.1                                 | 6604                  | 1.7            | 202  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 27100               | 34000 | 61600 | 80700  | 23600 | 314 |
| 7.1                                 | 6604                  | 2.5            | 202  | 11.0                 | 309 L3 | —      | BN132S4 | —     | —                   | —     | 62600 | 80700  | 18900 | 326 |
| 7.6                                 | 6041                  | 2.3            | 191  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 26600               | 33400 | 60600 | 79400  | 23200 | 316 |
| 7.6                                 | 6041                  | 2.9            | 191  | 15.0                 | —      | 309 R4 | BN132S4 | —     | —                   | —     | 61600 | 79400  | 18500 | 328 |
| 7.6                                 | 6215                  | 1.0            | 190  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 23900               | 27100 | 56200 | 65500  | 18000 | 302 |
| 7.9                                 | 5983                  | 2.4            | 183  | 11.0                 | 309 L3 | —      | BN132S4 | —     | —                   | —     | 60800 | 78400  | 18300 | 326 |
| 8.0                                 | 5733                  | 1.6            | 181  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 23600               | 26700 | 55500 | 64600  | 17700 | 304 |
| 8.1                                 | 5799                  | 2.1            | 177  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 26000               | 32600 | 59300 | 77700  | 22600 | 314 |
| 8.6                                 | 5316                  | 1.4            | 168  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 23000               | 26000 | 54200 | 63100  | 17300 | 304 |
| 8.9                                 | 5292                  | 2.0            | 162  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 25200               | 31600 | 57700 | 75600  | 21900 | 314 |
| 9.1                                 | 5016                  | 1.1            | 158  | 12.0                 | —      | 305 R4 | BN132S4 | M4SA4 | 18100               | 20900 | 32600 | 39200  | 11600 | 292 |
| 9.1                                 | 5001                  | 1.9            | 158  | 12.0                 | —      | 306 R4 | BN132S4 | M4SA4 | 22500               | 25500 | 53200 | 62000  | 16900 | 304 |
| 9.5                                 | 4980                  | 1.5            | 152  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 22200               | 25200 | 52600 | 61300  | 16700 | 302 |
| 9.7                                 | 4694                  | 1.0            | 148  | 12.0                 | —      | 305 R4 | BN132S4 | M4SA4 | 17300               | 20000 | 31300 | 37600  | 11100 | 292 |
| 9.8                                 | 4794                  | 2.8            | 146  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 24400               | 30600 | 56000 | 73300  | 21200 | 314 |
| 10.0                                | 4722                  | 1.2            | 144  | 14.0                 | —      | 306 R3 | BN132S4 | M4SA4 | 21800               | 24700 | 51800 | 60300  | 16400 | 304 |
| 10.2                                | 4634                  | 1.1            | 141  | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 17400               | 20100 | 31500 | 37900  | 11200 | 290 |
| 10.2                                | 4618                  | 1.7            | 141  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 21700               | 24600 | 51500 | 59900  | 16300 | 302 |
| 10.4                                | 4546                  | 2.4            | 139  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 24000               | 30100 | 55100 | 72200  | 20800 | 314 |
| 11.1                                | 4095                  | 1.3            | 129  | 12.0                 | —      | 305 R4 | BN132S4 | M4SA4 | 16900               | 19500 | 30600 | 36900  | 10800 | 292 |
| 11.6                                | 3929                  | 2.8            | 124  | 15.0                 | —      | 307 R4 | BN132S4 | M4SA4 | 24800               | 31100 | 56900 | 74500  | 21600 | 316 |
| 11.9                                | 3973                  | 2.0            | 121  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 20600               | 23400 | 49200 | 57300  | 15500 | 302 |
| 12.0                                | 3923                  | 2.2            | 120  | 22.0                 | —      | 307 R3 | BN132S4 | M4SA4 | 22800               | 28600 | 52700 | 69100  | 19800 | 316 |
| 12.1                                | 3904                  | 1.7            | 119  | 14.0                 | —      | 306 R3 | BN132S4 | M4SA4 | 20500               | 23200 | 48900 | 57000  | 15400 | 304 |
| 12.6                                | 3747                  | 1.0            | 114  | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 16200               | 18700 | 29500 | 35500  | 10400 | 292 |
| 12.7                                | 3711                  | 2.8            | 113  | 11.0                 | 307 L3 | —      | BN132S4 | M4SA4 | 22400               | 28100 | 51800 | 67900  | 19500 | 314 |
| 12.8                                | 3691                  | 1.0            | 113  | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 16200               | 18600 | 29400 | 35400  | 10400 | 290 |
| 12.8                                | 3680                  | 2.0            | 112  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 20100               | 22800 | 48100 | 56000  | 15100 | 302 |
| 13.0                                | 3620                  | 0.9            | 111  | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 16000               | 18500 | 29200 | 35200  | 10300 | 278 |
| 13.2                                | 3469                  | 1.0            | 109  | 12.0                 | —      | 304 R4 | BN132S4 | —     | 16000               | 18500 | 29200 | 35100  | 10300 | 280 |
| 13.8                                | 3424                  | 1.0            | 105  | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 15800               | 18200 | 28800 | 34600  | 10100 | 278 |
| 13.8                                | 3424                  | 1.5            | 105  | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 15800               | 18200 | 28800 | 34600  | 10100 | 290 |
| 13.8                                | 3414                  | 2.6            | 104  | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 19600               | 22200 | 47000 | 54700  | 14700 | 302 |
| 14.5                                | 3243                  | 2.6            | 99.0 | 22.0                 | —      | 307 R3 | BN132S4 | M4SA4 | 21400               | 26900 | 49800 | 65200  | 18600 | 316 |
| 14.6                                | 3227                  | 2.0            | 98.5 | 14.0                 | —      | 306 R3 | BN132S4 | M4SA4 | 19200               | 21800 | 46200 | 53800  | 14400 | 304 |
| 15.7                                | 2998                  | 1.2            | 91.5 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 15100               | 17400 | 27600 | 33200  | 9670  | 292 |



$P_1 = 5.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 16.0                                | 2955                  | 1.1            | 90.2 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 15000               | 17300 | 27500 | 33100 | 9620  | 278 |
| 16.0                                | 2955                  | 1.4            | 90.2 | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 15000               | 17300 | 27500 | 33100 | 9620  | 290 |
| 16.1                                | 2831                  | 1.2            | 89.4 | 12.0                 | —      | 304 R4 | BN132S4 | —     | 15000               | 17300 | 27400 | 33000 | 9590  | 280 |
| 16.3                                | 2892                  | 3.0            | 88.3 | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 18500               | 21000 | 44700 | 52100 | 13900 | 302 |
| 17.0                                | 2776                  | 2.7            | 84.7 | 14.0                 | —      | 306 R3 | BN132S4 | M4SA4 | 18300               | 20700 | 44200 | 51400 | 13700 | 304 |
| 17.6                                | 2681                  | 2.6            | 81.9 | 7.5                  | 306 L3 | —      | BN132S4 | M4SA4 | 18100               | 20500 | 43700 | 50900 | 13600 | 302 |
| 18.3                                | 2579                  | 1.1            | 78.7 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 14300               | 16500 | 26400 | 31800 | 9190  | 280 |
| 18.3                                | 2579                  | 1.7            | 78.7 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 14300               | 16500 | 26400 | 31800 | 9190  | 292 |
| 18.6                                | 2530                  | 1.0            | 77.2 | 7.5                  | 303 L3 | —      | BN132S4 | M4SA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 266 |
| 18.6                                | 2530                  | 1.4            | 77.2 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 278 |
| 18.6                                | 2530                  | 1.9            | 77.2 | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 290 |
| 19.6                                | 2402                  | 1.5            | 73.3 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 14000               | 16200 | 25900 | 31100 | 8980  | 292 |
| 19.9                                | 2453                  | 2.2            | 72.5 | 13.0                 | 306 L2 | —      | BN132S4 | M4SA4 | 17400               | 19700 | 42100 | 49100 | 13000 | 302 |
| 19.9                                | 2368                  | 1.4            | 72.3 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 13900               | 16100 | 25700 | 31000 | 8940  | 278 |
| 19.9                                | 2368                  | 0.9            | 72.3 | 7.5                  | 303 L3 | —      | BN132S4 | M4SA4 | 13600               | 15700 | 25200 | 30300 | 8730  | 266 |
| 19.9                                | 2368                  | 1.8            | 72.3 | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 13600               | 15700 | 25200 | 30300 | 8730  | 290 |
| 22.8                                | 2066                  | 1.1            | 63.1 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 13300               | 15400 | 24700 | 29700 | 8540  | 268 |
| 22.8                                | 2066                  | 1.4            | 63.1 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 13300               | 15400 | 24700 | 29700 | 8540  | 280 |
| 22.8                                | 2066                  | 2.1            | 63.1 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 292 |
| 22.8                                | 2066                  | 1.2            | 63.1 | 7.5                  | 303 L3 | —      | BN132S4 | M4SA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 266 |
| 22.8                                | 2066                  | 1.7            | 63.1 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 278 |
| 22.8                                | 2066                  | 2.3            | 63.1 | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 290 |
| 24.3                                | 2001                  | 1.2            | 59.1 | 9.0                  | 304 L2 | —      | BN132S4 | M4SA4 | 13000               | 15000 | 24200 | 29200 | 8360  | 278 |
| 25.6                                | 1903                  | 2.7            | 56.3 | 13.0                 | 306 L2 | —      | BN132S4 | M4SA4 | 16000               | 18100 | 39100 | 45500 | 12000 | 302 |
| 25.8                                | 1888                  | 1.0            | 55.8 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 12800               | 14800 | 23800 | 28700 | 8200  | 266 |
| 25.8                                | 1888                  | 1.9            | 55.8 | 9.0                  | 305 L2 | —      | BN132S4 | M4SA4 | 12800               | 14800 | 23800 | 28700 | 8200  | 290 |
| 26.6                                | 1775                  | 1.0            | 54.2 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 12700               | 14600 | 23600 | 28400 | 8120  | 268 |
| 26.6                                | 1775                  | 2.0            | 54.2 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 12700               | 14600 | 23600 | 28400 | 8120  | 292 |
| 27.0                                | 1750                  | 1.2            | 53.4 | 7.5                  | 303 L3 | —      | BN132S4 | M4SA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 266 |
| 27.0                                | 1750                  | 1.8            | 53.4 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 278 |
| 27.0                                | 1750                  | 2.3            | 53.4 | 7.5                  | 305 L3 | —      | BN132S4 | M4SA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 290 |
| 27.9                                | 1691                  | 1.0            | 51.6 | 7.5                  | 301 L3 | —      | BN132S4 | M4SA4 | 3960                | 3960  | 11200 | 12800 | 2600  | 256 |
| 28.6                                | 1652                  | 1.0            | 50.4 | 12.0                 | —      | 301 R3 | BN132S4 | —     | 3930                | 3930  | 11100 | 12700 | 2580  | 258 |
| 28.6                                | 1647                  | 1.4            | 50.3 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 12300               | 14200 | 23100 | 27800 | 7920  | 268 |
| 28.6                                | 1647                  | 2.1            | 50.3 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 12300               | 14200 | 23100 | 27800 | 7920  | 280 |
| 28.6                                | 1647                  | 2.7            | 50.3 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 12300               | 14200 | 23100 | 27800 | 7920  | 292 |
| 30                                  | 1601                  | 1.5            | 47.3 | 9.0                  | 304 L2 | —      | BN132S4 | M4SA4 | 12100               | 14000 | 22700 | 27300 | 7760  | 278 |
| 31                                  | 1527                  | 1.4            | 46.6 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 12000               | 13900 | 22600 | 27200 | 7720  | 268 |
| 31                                  | 1527                  | 1.9            | 46.6 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 12000               | 13900 | 22600 | 27200 | 7720  | 280 |
| 31                                  | 1527                  | 2.8            | 46.6 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 12000               | 13900 | 22600 | 27200 | 7720  | 292 |
| 32                                  | 1511                  | 1.2            | 44.6 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 11900               | 13700 | 22300 | 26800 | 7610  | 266 |
| 32                                  | 1511                  | 2.4            | 44.6 | 9.0                  | 305 L2 | —      | BN132S4 | M4SA4 | 11900               | 13700 | 22300 | 26800 | 7610  | 290 |
| 33                                  | 1428                  | 2.2            | 43.6 | 7.5                  | 304 L3 | —      | BN132S4 | M4SA4 | 11800               | 13600 | 22100 | 26600 | 7550  | 278 |
| 34                                  | 1395                  | 1.5            | 42.6 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 11700               | 13500 | 22000 | 26400 | 7490  | 268 |
| 34                                  | 1395                  | 2.3            | 42.6 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 11700               | 13500 | 22000 | 26400 | 7490  | 280 |
| 34                                  | 1395                  | 2.7            | 42.6 | 14.0                 | —      | 305 R3 | BN132S4 | M4SA4 | 11700               | 13500 | 22000 | 26400 | 7490  | 292 |
| 35                                  | 1406                  | 0.9            | 41.5 | 7.5                  | 301 L2 | —      | BN132S4 | M4SA4 | 3770                | 3770  | 10700 | 12300 | 2480  | 256 |
| 35                                  | 1348                  | 1.0            | 41.2 | 12.0                 | —      | 301 R3 | BN132S4 | —     | 3760                | 3760  | 10600 | 12200 | 2470  | 258 |
| 38                                  | 1299                  | 1.7            | 38.4 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 11300               | 13000 | 21300 | 25600 | 7240  | 266 |
| 38                                  | 1299                  | 2.2            | 38.4 | 9.0                  | 304 L2 | —      | BN132S4 | M4SA4 | 11300               | 13000 | 21300 | 25600 | 7240  | 278 |
| 38                                  | 1298                  | 1.2            | 38.4 | 7.5                  | 301 L2 | —      | BN132S4 | M4SA4 | 3670                | 3670  | 10400 | 12000 | 2410  | 256 |
| 39                                  | 1221                  | 1.3            | 37.3 | 12.0                 | —      | 301 R3 | BN132S4 | —     | 3630                | 3630  | 10300 | 11900 | 2390  | 258 |
| 39                                  | 1217                  | 2.0            | 37.1 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 268 |
| 39                                  | 1217                  | 2.8            | 37.1 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 280 |
| 40                                  | 1210                  | 1.5            | 35.8 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 11000               | 12700 | 20800 | 25100 | 7070  | 266 |
| 40                                  | 1210                  | 2.9            | 35.8 | 9.0                  | 305 L2 | —      | BN132S4 | M4SA4 | 11000               | 12700 | 20800 | 25100 | 7070  | 290 |
| 43                                  | 1126                  | 1.2            | 33.3 | 7.5                  | 301 L2 | —      | BN132S4 | M4SA4 | 3500                | 3500  | 9990  | 11500 | 2300  | 256 |
| 46                                  | 1031                  | 2.0            | 31.5 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 268 |
| 46                                  | 1031                  | 3.0            | 31.5 | 14.0                 | —      | 304 R3 | BN132S4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 280 |
| 47                                  | 1041                  | 2.1            | 30.8 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 10500               | 12100 | 19900 | 24000 | 6720  | 266 |
| 47                                  | 1041                  | 2.7            | 30.8 | 9.0                  | 304 L2 | —      | BN132S4 | M4SA4 | 10500               | 12100 | 19900 | 24000 | 6720  | 278 |
| 47                                  | 1039                  | 1.5            | 30.7 | 7.5                  | 301 L2 | —      | BN132S4 | M4SA4 | 3410                | 3410  | 9750  | 11200 | 2240  | 256 |
| 47                                  | 996                   | 1.6            | 30.4 | 12.0                 | —      | 301 R3 | BN132S4 | —     | 3400                | 3400  | 9730  | 11200 | 2230  | 258 |
| 54                                  | 894                   | 2.0            | 26.4 | 9.0                  | 303 L2 | —      | BN132S4 | M4SA4 | 9960                | 11500 | 19000 | 22900 | 6390  | 266 |
| 56                                  | 841                   | 2.4            | 25.7 | 14.0                 | —      | 303 R3 | BN132S4 | —     | 9870                | 11400 | 18900 | 22700 | 6330  | 268 |

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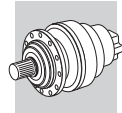
$P_1 = 5.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |         |       | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|---------|-------|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |        |         |       | MC           | MZ    | HC/PC | HZ/PZ | FZ   |     |
| 58                         | 813            | 1.7   | 24.8 | 12.0        | —      | 301 R3 | BN132S4 | —     | 3170         | 3170  | 9150  | 10500 | 2090 | 258 |
| 58                         | 838            | 1.0   | 24.8 | 18.0        | —      | 303 R2 | BN132S4 | M4SA4 | 9750         | 11300 | 18700 | 22500 | 6250 | 268 |
| 59                         | 832            | 1.0   | 24.6 | 7.5         | 300 L2 | —      | BN132S4 | M4SA4 | 3090         | 3090  | 8940  | 10300 | 2030 | 246 |
| 59                         | 832            | 1.8   | 24.6 | 7.5         | 301 L2 | —      | BN132S4 | M4SA4 | 3160         | 3160  | 9130  | 10500 | 2080 | 256 |
| 59                         | 830            | 2.6   | 24.5 | 9.0         | 303 L2 | —      | BN132S4 | M4SA4 | 9720         | 11200 | 18600 | 22400 | 6230 | 266 |
| 63                         | 769            | 2.7   | 22.7 | 9.0         | 303 L2 | —      | BN132S4 | M4SA4 | 9470         | 10900 | 18200 | 21900 | 6080 | 266 |
| 69                         | 703            | 2.6   | 20.8 | 9.0         | 303 L2 | —      | BN132S4 | M4SA4 | 9190         | 10600 | 17700 | 21300 | 5900 | 266 |
| 72                         | 679            | 0.9   | 20.1 | 7.5         | 300 L2 | —      | BN132S4 | M4SA4 | 2960         | 2960  | 8590  | 9870  | 1940 | 246 |
| 72                         | 679            | 1.9   | 20.1 | 7.5         | 301 L2 | —      | BN132S4 | M4SA4 | 2960         | 2960  | 8590  | 9870  | 1940 | 256 |
| 75                         | 650            | 2.4   | 19.2 | 18.0        | —      | 303 R2 | BN132S4 | M4SA4 | 8960         | 10300 | 17300 | 20800 | 5750 | 268 |
| 78                         | 624            | 1.2   | 18.5 | 12.0        | —      | 301 R2 | BN132S4 | M4SA4 | 2870         | 2870  | 8370  | 9620  | 1890 | 258 |
| 79                         | 615            | 1.2   | 18.2 | 7.5         | 300 L2 | —      | BN132S4 | M4SA4 | 2860         | 2860  | 8330  | 9580  | 1880 | 246 |
| 79                         | 615            | 2.2   | 18.2 | 7.5         | 301 L2 | —      | BN132S4 | M4SA4 | 2860         | 2860  | 8330  | 9580  | 1880 | 256 |
| 97                         | 502            | 1.4   | 14.8 | 7.5         | 300 L2 | —      | BN132S4 | M4SA4 | 2670         | 2670  | 7840  | 9010  | 1760 | 246 |
| 97                         | 502            | 2.5   | 14.8 | 7.5         | 301 L2 | —      | BN132S4 | M4SA4 | 2670         | 2670  | 7840  | 9010  | 1760 | 256 |
| 98                         | 499            | 1.0   | 14.8 | 12.0        | —      | 300 R2 | BN132S4 | M4SA4 | 2670         | 2670  | 7830  | 9000  | 1750 | 248 |
| 98                         | 499            | 1.9   | 14.8 | 12.0        | —      | 301 R2 | BN132S4 | M4SA4 | 2670         | 2670  | 7830  | 9000  | 1750 | 258 |
| 119                        | 410            | 1.7   | 12.1 | 7.5         | 300 L2 | —      | BN132S4 | M4SA4 | 2500         | 2500  | 7380  | 8480  | 1640 | 246 |
| 119                        | 410            | 3.0   | 12.1 | 7.5         | 301 L2 | —      | BN132S4 | M4SA4 | 2500         | 2500  | 7380  | 8480  | 1640 | 256 |
| 122                        | 400            | 1.5   | 11.8 | 12.0        | —      | 300 R2 | BN132S4 | M4SA4 | 2480         | 2480  | 7330  | 8420  | 1630 | 248 |
| 122                        | 400            | 2.9   | 11.8 | 12.0        | —      | 301 R2 | BN132S4 | M4SA4 | 2480         | 2480  | 7330  | 8420  | 1630 | 258 |
| 149                        | 338            | 2.2   | 9.67 | 11.0        | 303 L1 | —      | BN132S4 | M4SA4 | 7120         | 8220  | 14100 | 16900 | 4570 | 266 |
| 160                        | 314            | 1.0   | 9.00 | 7.5         | 300 L1 | —      | BN132S4 | M4SA4 | 2260         | 2260  | 6750  | 7750  | 1490 | 246 |
| 160                        | 314            | 2.0   | 9.00 | 7.5         | 301 L1 | —      | BN132S4 | M4SA4 | 2260         | 2260  | 6750  | 7750  | 1490 | 256 |
| 165                        | 296            | 2.1   | 8.74 | 12.0        | —      | 300 R2 | BN132S4 | M4SA4 | 2240         | 2240  | 6690  | 7690  | 1470 | 248 |
| 200                        | 251            | 1.6   | 7.20 | 7.5         | 300 L1 | —      | BN132S4 | M4SA4 | 2100         | 2100  | 6310  | 7250  | 1380 | 246 |
| 200                        | 251            | 3.0   | 7.20 | 7.5         | 301 L1 | —      | BN132S4 | M4SA4 | 2100         | 2100  | 6310  | 7250  | 1380 | 256 |
| 202                        | 241            | 2.4   | 7.13 | 12.0        | —      | 300 R2 | BN132S4 | M4SA4 | 2090         | 2090  | 6300  | 7230  | 1380 | 248 |
| 250                        | 201            | 2.3   | 5.77 | 7.5         | 300 L1 | —      | BN132S4 | M4SA4 | 1950         | 1950  | 5910  | 6790  | 1280 | 246 |






$P_1 = 7.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |   | $R_{n2}$ [N] |    |        |        |        |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|---|--------------|----|--------|--------|--------|-----|
|                            |                |       |      |             |        |        |          |   | MC           | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.76                       | 83274          | 1.9   | 1893 | 18.0        | 317 L4 | —      | BN132MA4 | — | —            | —  | 442000 | 470000 | 150000 | 408 |
| 0.80                       | 79431          | 1.1   | 1805 | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 206000 | 243000 | 90000  | 386 |
| 0.90                       | 70166          | 2.4   | 1595 | 18.0        | 317 L4 | —      | BN132MA4 | — | —            | —  | 442000 | 470000 | 150000 | 408 |
| 0.96                       | 65663          | 1.3   | 1492 | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 206000 | 243000 | 90000  | 386 |
| 0.97                       | 65339          | 1.0   | 1485 | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 206000 | 243000 | 90000  | 374 |
| 1.1                        | 58004          | 2.9   | 1318 | 18.0        | 317 L4 | —      | BN132MA4 | — | —            | —  | 434300 | 462400 | 147000 | 408 |
| 1.1                        | 56484          | 1.7   | 1284 | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 201500 | 236600 | 87400  | 386 |
| 1.1                        | 56205          | 1.4   | 1277 | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 201200 | 236300 | 87300  | 374 |
| 1.1                        | 55684          | 1.0   | 1266 | 11.0        | 313 L4 | —      | BN132MA4 | — | —            | —  | 188000 | 222500 | 77400  | 362 |
| 1.2                        | 54449          | 2.2   | 1237 | 18.0        | 316 L4 | —      | BN132MA4 | — | —            | —  | 331400 | 368600 | 144000 | 398 |
| 1.3                        | 49144          | 1.1   | 1117 | 11.0        | 313 L4 | —      | BN132MA4 | — | —            | —  | 181100 | 214300 | 74200  | 362 |
| 1.3                        | 48588          | 2.0   | 1104 | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 192600 | 226200 | 83200  | 386 |
| 1.3                        | 48349          | 1.6   | 1099 | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 192400 | 225800 | 83000  | 374 |
| 1.4                        | 46570          | 0.9   | 1058 | 11.0        | 311 L4 | —      | BN132MA4 | — | —            | —  | 141200 | 175900 | 57900  | 350 |
| 1.4                        | 45878          | 2.2   | 1043 | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 189400 | 222300 | 81600  | 386 |
| 1.4                        | 45878          | 2.9   | 1043 | 18.0        | 316 L4 | —      | BN132MA4 | — | —            | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                        | 45651          | 1.8   | 1038 | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 189100 | 222000 | 81400  | 374 |
| 1.4                        | 44619          | 1.2   | 1014 | 11.0        | 313 L4 | —      | BN132MA4 | — | —            | —  | 175900 | 208200 | 71800  | 362 |
| 1.5                        | 43379          | 1.0   | 986  | 11.0        | 311 L4 | —      | BN132MA4 | — | —            | —  | 141100 | 175800 | 57800  | 350 |
| 1.5                        | 40915          | 2.3   | 930  | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 183000 | 214800 | 78500  | 386 |
| 1.6                        | 40738          | 1.8   | 926  | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 182700 | 214500 | 78400  | 374 |
| 1.6                        | 40010          | 1.9   | 909  | 40.0        | —      | 315 R4 | BN132MA4 | — | —            | —  | 181700 | 213400 | 77900  | 388 |
| 1.6                        | 39764          | 1.2   | 904  | 11.0        | 311 L4 | —      | BN132MA4 | — | —            | —  | 137500 | 171300 | 56200  | 350 |
| 1.6                        | 39130          | 1.4   | 889  | 11.0        | 313 L4 | —      | BN132MA4 | — | —            | —  | 169100 | 200100 | 68800  | 362 |
| 1.7                        | 37926          | 2.7   | 862  | 18.0        | 315 L4 | —      | BN132MA4 | — | —            | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                        | 37738          | 2.2   | 858  | 15.0        | 314 L4 | —      | BN132MA4 | — | —            | —  | 178600 | 209700 | 76400  | 374 |
| 1.7                        | 36288          | 1.2   | 825  | 11.0        | 311 L4 | —      | BN132MA4 | — | —            | —  | 133800 | 166600 | 54500  | 350 |
| 1.8                        | 34755          | 1.5   | 790  | 11.0        | 313 L4 | —      | BN132MA4 | — | —            | —  | 163200 | 193100 | 66100  | 362 |





$P_1 = 7.5 \text{ kW}$

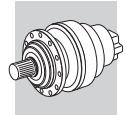
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |  |  |  |  | Rn <sub>2</sub> [N] |       |        |        |       |  |
|-------------------------------------|-----------------------|----------------|-----|----------------------|---|---|---|---|---------------------|-------|--------|--------|-------|---|
|                                     |                       |                |     |                      |   |   |   |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |   |
| 1.8                                 | 34417                 | 2.6            | 782 | 40.0                 | —   | 315 R4  | BN132MA4  | —   | —                   | —     | 173700 | 203900 | 74100 | 388   |
| 1.9                                 | 34248                 | 1.3            | 778 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 162500 | 192300 | 65800 | 364   |
| 1.9                                 | 32829                 | 0.9            | 746 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 129800 | 161700 | 52700 | 352   |
| 2.0                                 | 32463                 | 2.5            | 738 | 15.0                 | 314 L4  | —   | BN132MA4  | —   | —                   | —     | 170700 | 200400 | 72700 | 374   |
| 2.0                                 | 31862                 | 1.5            | 724 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 128700 | 160300 | 52200 | 350   |
| 2.1                                 | 30585                 | 1.7            | 695 | 11.0                 | 313 L4  | —   | BN132MA4  | —   | —                   | —     | 157000 | 185900 | 63300 | 362   |
| 2.2                                 | 29407                 | 2.7            | 668 | 15.0                 | 314 L4  | —   | BN132MA4  | —   | —                   | —     | 165700 | 194500 | 70300 | 374   |
| 2.2                                 | 28452                 | 1.8            | 647 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 153700 | 181900 | 61800 | 364   |
| 2.3                                 | 28012                 | 0.9            | 637 | 11.0                 | 310 L4  | —   | BN132MA4  | —   | —                   | —     | 104700 | 131700 | 50000 | 338   |
| 2.3                                 | 27848                 | 1.9            | 633 | 11.0                 | 313 L4  | —   | BN132MA4  | —   | —                   | —     | 152700 | 180700 | 61400 | 362   |
| 2.3                                 | 27662                 | 1.4            | 629 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 123300 | 153600 | 49800 | 352   |
| 2.3                                 | 27574                 | 1.4            | 627 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 123200 | 153500 | 49700 | 350   |
| 2.3                                 | 27005                 | 2.1            | 614 | 22.0                 | —   | 314 R4  | BN132MA4  | —   | —                   | —     | 161500 | 189600 | 68400 | 376   |
| 2.5                                 | 24978                 | 1.7            | 568 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 119600 | 149000 | 48100 | 350   |
| 2.6                                 | 24805                 | 2.2            | 564 | 11.0                 | 313 L4  | —   | BN132MA4  | —   | —                   | —     | 147500 | 174500 | 59100 | 362   |
| 2.6                                 | 24460                 | 1.3            | 556 | 11.0                 | 310 L4  | —   | BN132MA4  | —   | —                   | —     | 100600 | 126500 | 47800 | 338   |
| 2.7                                 | 23520                 | 2.1            | 535 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 145100 | 171800 | 58000 | 364   |
| 2.7                                 | 23230                 | 3.0            | 528 | 22.0                 | —   | 314 R4  | BN132MA4  | —   | —                   | —     | 154400 | 181300 | 65000 | 376   |
| 2.8                                 | 22867                 | 1.7            | 520 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 116500 | 145100 | 46700 | 352   |
| 2.8                                 | 22754                 | 1.1            | 517 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 98400  | 123800 | 46600 | 340   |
| 2.8                                 | 22601                 | 2.2            | 514 | 11.0                 | 313 L4  | —   | BN132MA4  | —   | —                   | —     | 143400 | 169700 | 57300 | 362   |
| 2.8                                 | 22533                 | 2.0            | 512 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 116000 | 144500 | 46500 | 350   |
| 2.8                                 | 22322                 | 1.1            | 507 | 11.0                 | 310 L4  | —   | BN132MA4  | —   | —                   | —     | 97900  | 123000 | 46300 | 338   |
| 2.9                                 | 21828                 | 2.4            | 496 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 141900 | 168000 | 56600 | 364   |
| 2.9                                 | 21555                 | 1.6            | 490 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 114400 | 142500 | 45800 | 352   |
| 3.2                                 | 19983                 | 1.0            | 454 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 94700  | 119000 | 44700 | 340   |
| 3.2                                 | 19876                 | 2.7            | 452 | 11.0                 | 313 L4  | —   | BN132MA4  | —   | —                   | —     | 138000 | 163300 | 54900 | 362   |
| 3.2                                 | 19829                 | 1.5            | 451 | 11.0                 | 310 L4  | —   | BN132MA4  | —   | —                   | —     | 94400  | 118700 | 44500 | 338   |
| 3.2                                 | 19818                 | 2.4            | 450 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 137900 | 163200 | 54800 | 364   |
| 3.3                                 | 19268                 | 1.9            | 438 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 110600 | 137800 | 44100 | 352   |
| 3.4                                 | 18450                 | 1.6            | 419 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 92400  | 116200 | 43500 | 340   |
| 3.5                                 | 18184                 | 1.0            | 413 | 15.0                 | —   | 309 R4  | BN132MA4  | —   | —                   | —     | 77700  | 100100 | 24000 | 328   |
| 3.5                                 | 18162                 | 2.2            | 413 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 108700 | 135400 | 43300 | 352   |
| 3.5                                 | 18055                 | 2.3            | 410 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 108500 | 135200 | 43200 | 350   |
| 3.6                                 | 17843                 | 1.0            | 406 | 7.5                  | 309 L4  | —   | BN132MA4  | —   | —                   | —     | 77200  | 99600  | 23800 | 326   |
| 3.7                                 | 17233                 | 1.1            | 392 | 11.0                 | 310 L4  | —   | BN132MA4  | —   | —                   | —     | 90500  | 113900 | 42500 | 338   |
| 3.7                                 | 17048                 | 2.7            | 387 | 22.0                 | —   | 313 R4  | BN132MA4  | —   | —                   | —     | 131800 | 156000 | 52100 | 364   |
| 4.0                                 | 15982                 | 1.5            | 363 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 88500  | 111300 | 41500 | 340   |
| 4.1                                 | 15947                 | 1.2            | 350 | 18.0                 | 310 L3  | —   | BN132MA4  | —   | —                   | —     | 87600  | 110100 | 41000 | 338   |
| 4.1                                 | 15359                 | 1.0            | 349 | 7.5                  | 307 L4  | —   | BN132MA4  | M4LA4   | 31800               | 40000 | 71200  | 93300  | 27700 | 314   |
| 4.1                                 | 15359                 | 1.4            | 349 | 7.5                  | 309 L4  | —   | BN132MA4  | —   | —                   | —     | 73800  | 95200  | 22700 | 326   |
| 4.1                                 | 15294                 | 2.6            | 348 | 11.0                 | 311 L4  | —   | BN132MA4  | —   | —                   | —     | 103200 | 128600 | 40900 | 350   |
| 4.2                                 | 15014                 | 2.6            | 341 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 102700 | 127900 | 40600 | 352   |
| 4.3                                 | 14702                 | 1.9            | 334 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 86300  | 108600 | 40300 | 340   |
| 4.3                                 | 14571                 | 1.2            | 331 | 15.0                 | —   | 309 R4  | BN132MA4  | —   | —                   | —     | 72700  | 93700  | 22300 | 328   |
| 4.5                                 | 14152                 | 2.8            | 322 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 100900 | 125600 | 39800 | 352   |
| 4.7                                 | 13417                 | 1.7            | 305 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 84000  | 105600 | 39100 | 340   |
| 4.7                                 | 13821                 | 2.8            | 304 | 18.0                 | 313 L3  | —   | BN132MA4  | —   | —                   | —     | 122500 | 145000 | 48100 | 362   |
| 4.8                                 | 13199                 | 1.1            | 300 | 15.0                 | —   | 307 R4  | BN132MA4  | M4LA4   | 31000               | 38900 | 69400  | 91000  | 26900 | 316   |
| 4.9                                 | 13437                 | 1.7            | 295 | 18.0                 | 310 L3  | —   | BN132MA4  | —   | —                   | —     | 83200  | 104600 | 38700 | 338   |
| 4.9                                 | 12915                 | 2.9            | 294 | 22.0                 | —   | 311 R4  | BN132MA4  | —   | —                   | —     | 98100  | 122200 | 38600 | 352   |
| 4.9                                 | 13248                 | 2.0            | 291 | 18.0                 | 311 L3  | —   | BN132MA4  | —   | —                   | —     | 97900  | 121900 | 38500 | 350   |
| 5.1                                 | 12517                 | 0.9            | 284 | 15.0                 | —   | 307 R4  | BN132MA4  | M4LA4   | 29700               | 37300 | 66900  | 87700  | 25900 | 316   |
| 5.1                                 | 12517                 | 1.4            | 284 | 15.0                 | —   | 309 R4  | BN132MA4  | —   | —                   | —     | 69400  | 89500  | 21200 | 328   |
| 5.1                                 | 12899                 | 1.2            | 284 | 11.0                 | 309 L3  | —   | BN132MA4  | —   | —                   | —     | 69400  | 89400  | 21100 | 326   |
| 5.1                                 | 12454                 | 2.1            | 283 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 82100  | 103300 | 38100 | 340   |
| 5.6                                 | 11365                 | 2.0            | 258 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 79900  | 100500 | 37000 | 340   |
| 5.6                                 | 11354                 | 1.3            | 258 | 15.0                 | —   | 307 R4  | BN132MA4  | M4LA4   | 29500               | 37000 | 66400  | 87000  | 25600 | 316   |
| 5.6                                 | 11354                 | 1.5            | 258 | 15.0                 | —   | 309 R4  | BN132MA4  | —   | —                   | —     | 67400  | 87000  | 20500 | 328   |
| 5.8                                 | 11340                 | 1.6            | 249 | 18.0                 | 310 L3  | —   | BN132MA4  | —   | —                   | —     | 79100  | 99400  | 36600 | 338   |
| 6.0                                 | 10886                 | 1.2            | 239 | 11.0                 | 309 L3  | —   | BN132MA4  | —   | —                   | —     | 65900  | 85000  | 20000 | 326   |
| 6.2                                 | 10295                 | 2.4            | 234 | 15.0                 | —   | 310 R4  | BN132MA4  | —   | —                   | —     | 77600  | 97600  | 35800 | 340   |
| 6.2                                 | 10217                 | 1.1            | 232 | 15.0                 | —   | 307 R4  | BN132MA4  | M4LA4   | 28400               | 35700 | 64300  | 84200  | 24700 | 316   |
| 6.2                                 | 10217                 | 1.6            | 232 | 15.0                 | —   | 309 R4  | BN132MA4  | —   | —                   | —     | 65300  | 84200  | 19800 | 328   |
| 6.3                                 | 10470                 | 2.0            | 230 | 18.0                 | 310 L3  | —   | BN132MA4  | —   | —                   | —     | 77200  | 97100  | 35600 | 338   |

A



$P_1 = 7.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |       |     |
| 6.5                                 | 10141                 | 1.3            | 223  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | —     | 64500 | 83200 | 19500 | 326 |
| 6.5                                 | 10051                 | 1.3            | 221  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 28000               | 35100 | 63300 | 83000 | 24300 | 314   |     |
| 6.7                                 | 9399                  | 1.0            | 214  | 12.0                 | —      | 306 R4 | BN132MA4 | M4LA4 | 24900               | 28200 | 58300 | 67900 | 18700 | 304   |     |
| 7.0                                 | 9057                  | 2.4            | 206  | 15.0                 | —      | 310 R4 | BN132MA4 | —     | —                   | —     | 74700 | 93900 | 34300 | 340   |     |
| 7.0                                 | 9048                  | 1.6            | 206  | 15.0                 | —      | 307 R4 | BN132MA4 | M4LA4 | 27300               | 34300 | 62000 | 81200 | 23700 | 316   |     |
| 7.0                                 | 9048                  | 2.2            | 206  | 15.0                 | —      | 309 R4 | BN132MA4 | —     | —                   | —     | 63000 | 81200 | 19000 | 328   |     |
| 7.1                                 | 9182                  | 2.4            | 202  | 18.0                 | 310 L3 | —      | BN132MA4 | —     | —                   | —     | 74200 | 93300 | 34100 | 338   |     |
| 7.1                                 | 9173                  | 1.2            | 202  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 27100               | 34000 | 61600 | 80700 | 23600 | 314   |     |
| 7.1                                 | 9173                  | 1.8            | 202  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | 62600 | 80700 | 18900 | 326   |     |
| 7.6                                 | 8390                  | 1.7            | 191  | 15.0                 | —      | 307 R4 | BN132MA4 | M4LA4 | 26600               | 33400 | 60600 | 79400 | 23200 | 316   |     |
| 7.6                                 | 8390                  | 2.1            | 191  | 15.0                 | —      | 309 R4 | BN132MA4 | —     | —                   | —     | 61600 | 79400 | 18500 | 328   |     |
| 7.6                                 | 8331                  | 2.8            | 189  | 15.0                 | —      | 310 R4 | BN132MA4 | —     | —                   | —     | 72800 | 91500 | 33400 | 340   |     |
| 7.9                                 | 8309                  | 1.7            | 183  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | 60800 | 78400 | 18300 | 326   |     |
| 8.0                                 | 7962                  | 1.2            | 181  | 12.0                 | —      | 306 R4 | BN132MA4 | M4LA4 | 23600               | 26700 | 55500 | 64600 | 17700 | 304   |     |
| 8.1                                 | 8064                  | 2.3            | 177  | 18.0                 | 310 L3 | —      | BN132MA4 | —     | —                   | —     | 71400 | 89800 | 32600 | 338   |     |
| 8.1                                 | 8054                  | 1.5            | 177  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 26000               | 32600 | 59300 | 77700 | 22600 | 314   |     |
| 8.6                                 | 7383                  | 1.0            | 168  | 12.0                 | —      | 306 R4 | BN132MA4 | M4LA4 | 23000               | 26000 | 54200 | 63100 | 17300 | 304   |     |
| 8.7                                 | 7268                  | 2.2            | 165  | 15.0                 | —      | 309 R4 | BN132MA4 | —     | —                   | —     | 59000 | 76100 | 17700 | 328   |     |
| 8.8                                 | 7445                  | 3.0            | 164  | 18.0                 | 310 L3 | —      | BN132MA4 | —     | —                   | —     | 69700 | 87600 | 31800 | 338   |     |
| 8.9                                 | 7350                  | 1.5            | 162  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 25200               | 31600 | 57700 | 75600 | 21900 | 314   |     |
| 8.9                                 | 7350                  | 2.2            | 162  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | 58600 | 75600 | 17500 | 326   |     |
| 9.1                                 | 6946                  | 1.4            | 158  | 12.0                 | —      | 306 R4 | BN132MA4 | M4LA4 | 22500               | 25500 | 53200 | 62000 | 16900 | 304   |     |
| 9.5                                 | 6917                  | 1.1            | 152  | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 22200               | 25200 | 52600 | 61300 | 16700 | 302   |     |
| 9.5                                 | 6686                  | 2.8            | 152  | 15.0                 | —      | 309 R4 | BN132MA4 | —     | —                   | —     | 57500 | 74200 | 17200 | 328   |     |
| 9.8                                 | 6658                  | 2.0            | 146  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 24400               | 30600 | 56000 | 73300 | 21200 | 314   |     |
| 10.2                                | 6414                  | 1.2            | 141  | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 21700               | 24600 | 51500 | 59900 | 16300 | 302   |     |
| 10.4                                | 6314                  | 1.7            | 139  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 24000               | 30100 | 55100 | 72200 | 20800 | 314   |     |
| 10.4                                | 6314                  | 2.5            | 139  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | 56000 | 72200 | 16700 | 326   |     |
| 11.1                                | 5687                  | 0.9            | 129  | 12.0                 | —      | 305 R4 | BN132MA4 | M4LA4 | 16900               | 19500 | 30600 | 36900 | 10800 | 292   |     |
| 11.4                                | 5727                  | 2.3            | 126  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 23200               | 29100 | 53500 | 70100 | 20200 | 314   |     |
| 11.4                                | 5727                  | 2.9            | 126  | 11.0                 | 309 L3 | —      | BN132MA4 | —     | —                   | —     | 54400 | 70100 | 16100 | 326   |     |
| 11.6                                | 5458                  | 2.0            | 124  | 15.0                 | —      | 307 R4 | BN132MA4 | M4LA4 | 24800               | 31100 | 56900 | 74500 | 21600 | 316   |     |
| 11.9                                | 5517                  | 1.4            | 121  | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 20600               | 23400 | 49200 | 57300 | 15500 | 302   |     |
| 12.0                                | 5449                  | 1.6            | 120  | 22.0                 | —      | 307 R3 | BN132MA4 | M4LA4 | 22800               | 28600 | 52700 | 69100 | 19800 | 316   |     |
| 12.0                                | 5449                  | 2.4            | 120  | 22.0                 | —      | 309 R3 | BN132MA4 | —     | —                   | —     | 53600 | 69100 | 15900 | 328   |     |
| 12.1                                | 5422                  | 1.2            | 119  | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 20500               | 23200 | 48900 | 57000 | 15400 | 304   |     |
| 12.7                                | 5154                  | 2.0            | 113  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 22400               | 28100 | 51800 | 67900 | 19500 | 314   |     |
| 12.8                                | 5111                  | 1.4            | 112  | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 20100               | 22800 | 48100 | 56000 | 15100 | 302   |     |
| 13.7                                | 4623                  | 2.9            | 105  | 15.0                 | —      | 307 R4 | BN132MA4 | M4LA4 | 24100               | 30300 | 55400 | 72700 | 21000 | 316   |     |
| 13.8                                | 4756                  | 1.1            | 105  | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 15800               | 18200 | 28800 | 34600 | 10100 | 290   |     |
| 13.8                                | 4741                  | 1.9            | 104  | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 19600               | 22200 | 47000 | 54700 | 14700 | 302   |     |
| 14.4                                | 4564                  | 2.7            | 100  | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 21500               | 27000 | 50000 | 65500 | 18700 | 314   |     |
| 14.5                                | 4504                  | 1.9            | 99.0 | 22.0                 | —      | 307 R3 | BN132MA4 | M4LA4 | 21400               | 26900 | 49800 | 65200 | 18600 | 316   |     |
| 14.5                                | 4504                  | 2.8            | 99.0 | 22.0                 | —      | 309 R3 | BN132MA4 | —     | —                   | —     | 50600 | 65200 | 14900 | 328   |     |
| 14.6                                | 4482                  | 1.4            | 98.5 | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 19200               | 21800 | 46200 | 53800 | 14400 | 304   |     |
| 15.5                                | 4232                  | 2.9            | 93.0 | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 21000               | 26300 | 48900 | 64000 | 18200 | 314   |     |
| 16.0                                | 4104                  | 1.0            | 90.2 | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 15000               | 17300 | 27500 | 33100 | 9620  | 290   |     |
| 16.3                                | 4016                  | 2.1            | 88.3 | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 18500               | 21000 | 44700 | 52100 | 13900 | 302   |     |
| 17.0                                | 3856                  | 2.0            | 84.7 | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 18300               | 20700 | 44200 | 51400 | 13700 | 304   |     |
| 17.3                                | 3795                  | 2.7            | 83.4 | 22.0                 | —      | 307 R3 | BN132MA4 | M4LA4 | 20200               | 25400 | 47300 | 62000 | 17600 | 316   |     |
| 17.6                                | 3724                  | 1.9            | 81.9 | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 18100               | 20500 | 43700 | 50900 | 13600 | 302   |     |
| 17.9                                | 3666                  | 2.8            | 80.6 | 11.0                 | 307 L3 | —      | BN132MA4 | M4LA4 | 20000               | 25100 | 46800 | 61300 | 17400 | 314   |     |
| 18.3                                | 3582                  | 1.2            | 78.7 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 14300               | 16500 | 26400 | 31800 | 9190  | 292   |     |
| 18.6                                | 3514                  | 1.0            | 77.2 | 7.5                  | 304 L3 | —      | BN132MA4 | M4LA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 278   |     |
| 18.6                                | 3514                  | 1.4            | 77.2 | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 14200               | 16400 | 26300 | 31600 | 9140  | 290   |     |
| 18.7                                | 3504                  | 2.4            | 77.0 | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 17700               | 20100 | 42900 | 50000 | 13300 | 302   |     |
| 19.6                                | 3336                  | 1.1            | 73.3 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 14000               | 16200 | 25900 | 31100 | 8980  | 292   |     |
| 19.8                                | 3317                  | 2.2            | 72.9 | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 17400               | 19700 | 42200 | 49200 | 13100 | 304   |     |
| 19.9                                | 3407                  | 1.6            | 72.5 | 13.0                 | 306 L2 | —      | BN132MA4 | M4LA4 | 17400               | 19700 | 42100 | 49100 | 13000 | 302   |     |
| 19.9                                | 3289                  | 1.0            | 72.3 | 7.5                  | 304 L3 | —      | BN132MA4 | M4LA4 | 13900               | 16100 | 25700 | 31000 | 8940  | 278   |     |
| 19.9                                | 3289                  | 1.3            | 72.3 | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 13900               | 16100 | 25700 | 31000 | 8940  | 290   |     |
| 21.3                                | 3072                  | 2.3            | 67.5 | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 17000               | 19200 | 41300 | 48000 | 12700 | 304   |     |
| 22.1                                | 2968                  | 2.5            | 65.2 | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 16800               | 19000 | 40800 | 47500 | 12600 | 302   |     |
| 22.8                                | 2870                  | 1.0            | 63.1 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 13300               | 15400 | 24700 | 29700 | 8540  | 280   |     |
| 22.8                                | 2870                  | 1.5            | 63.1 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 292   |     |

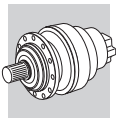


$P_1 = 7.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 22.8                                | 2869                  | 1.2            | 63.1 | 7.5                  | 304 L3 | —      | BN132MA4 | M4LA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 278 |
| 22.8                                | 2869                  | 1.6            | 63.1 | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 13300               | 15400 | 24700 | 29700 | 8540  | 290 |
| 24.8                                | 2643                  | 2.9            | 58.1 | 14.0                 | —      | 306 R3 | BN132MA4 | M4LA4 | 16100               | 18300 | 39400 | 45900 | 12100 | 304 |
| 25.6                                | 2644                  | 2.0            | 56.3 | 13.0                 | 306 L2 | —      | BN132MA4 | M4LA4 | 16000               | 18100 | 39100 | 45500 | 12000 | 302 |
| 25.8                                | 2623                  | 1.3            | 55.8 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 12800               | 14800 | 23800 | 28700 | 8200  | 290 |
| 26.6                                | 2465                  | 1.4            | 54.2 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 12700               | 14600 | 23600 | 28400 | 8120  | 292 |
| 27.0                                | 2430                  | 1.3            | 53.4 | 7.5                  | 304 L3 | —      | BN132MA4 | M4LA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 278 |
| 27.0                                | 2430                  | 1.6            | 53.4 | 7.5                  | 305 L3 | —      | BN132MA4 | M4LA4 | 12600               | 14500 | 23500 | 28300 | 8080  | 290 |
| 27.0                                | 2423                  | 2.9            | 53.2 | 7.5                  | 306 L3 | —      | BN132MA4 | M4LA4 | 15700               | 17800 | 38400 | 44700 | 11800 | 302 |
| 28.6                                | 2287                  | 1.0            | 50.3 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 12300               | 14200 | 23100 | 27800 | 7920  | 268 |
| 28.6                                | 2287                  | 1.5            | 50.3 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 12300               | 14200 | 23100 | 27800 | 7920  | 280 |
| 28.6                                | 2287                  | 1.9            | 50.3 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 12300               | 14200 | 23100 | 27800 | 7920  | 292 |
| 30                                  | 2224                  | 1.1            | 47.3 | 9.0                  | 304 L2 | —      | BN132MA4 | M4LA4 | 12100               | 14000 | 22700 | 27300 | 7760  | 278 |
| 31                                  | 2121                  | 1.0            | 46.6 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 12000               | 13900 | 22600 | 27200 | 7720  | 268 |
| 31                                  | 2121                  | 1.3            | 46.6 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 12000               | 13900 | 22600 | 27200 | 7720  | 280 |
| 31                                  | 2121                  | 2.0            | 46.6 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 12000               | 13900 | 22600 | 27200 | 7720  | 292 |
| 31                                  | 2185                  | 3.0            | 46.5 | 13.0                 | 306 L2 | —      | BN132MA4 | M4LA4 | 15000               | 17000 | 36900 | 43000 | 11300 | 302 |
| 32                                  | 2098                  | 1.7            | 44.6 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 11900               | 13700 | 22300 | 26800 | 7610  | 290 |
| 33                                  | 1984                  | 1.6            | 43.6 | 7.5                  | 304 L3 | —      | BN132MA4 | M4LA4 | 11800               | 13600 | 22100 | 26600 | 7550  | 278 |
| 34                                  | 1937                  | 1.1            | 42.6 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 11700               | 13500 | 22000 | 26400 | 7490  | 268 |
| 34                                  | 1937                  | 1.6            | 42.6 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 11700               | 13500 | 22000 | 26400 | 7490  | 280 |
| 34                                  | 1937                  | 2.0            | 42.6 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 11700               | 13500 | 22000 | 26400 | 7490  | 292 |
| 38                                  | 1805                  | 1.2            | 38.4 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 11300               | 13000 | 21300 | 25600 | 7240  | 266 |
| 38                                  | 1805                  | 1.6            | 38.4 | 9.0                  | 304 L2 | —      | BN132MA4 | M4LA4 | 11300               | 13000 | 21300 | 25600 | 7240  | 278 |
| 38                                  | 1805                  | 2.4            | 38.4 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 11300               | 13000 | 21300 | 25600 | 7240  | 290 |
| 39                                  | 1695                  | 0.9            | 37.3 | 10.0                 | —      | 301 R3 | BN132MA4 | —     | 3550                | 3550  | 10100 | 11600 | 2330  | 258 |
| 39                                  | 1690                  | 1.4            | 37.1 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 268 |
| 39                                  | 1690                  | 2.0            | 37.1 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 280 |
| 39                                  | 1690                  | 2.6            | 37.1 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 11200               | 12900 | 21100 | 25400 | 7160  | 292 |
| 40                                  | 1681                  | 1.1            | 35.8 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 11000               | 12700 | 20800 | 25100 | 7070  | 266 |
| 40                                  | 1681                  | 2.1            | 35.8 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 11000               | 12700 | 20800 | 25100 | 7070  | 290 |
| 46                                  | 1432                  | 1.5            | 31.5 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 268 |
| 46                                  | 1432                  | 2.2            | 31.5 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 280 |
| 46                                  | 1432                  | 2.6            | 31.5 | 14.0                 | —      | 305 R3 | BN132MA4 | M4LA4 | 10600               | 12200 | 20100 | 24100 | 6770  | 292 |
| 47                                  | 1446                  | 1.5            | 30.8 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 10500               | 12100 | 19900 | 24000 | 6720  | 266 |
| 47                                  | 1446                  | 2.0            | 30.8 | 9.0                  | 304 L2 | —      | BN132MA4 | M4LA4 | 10500               | 12100 | 19900 | 24000 | 6720  | 278 |
| 47                                  | 1446                  | 3.0            | 30.8 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 10500               | 12100 | 19900 | 24000 | 6720  | 290 |
| 47                                  | 1443                  | 1.1            | 30.7 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 3410                | 3410  | 9750  | 11200 | 2240  | 256 |
| 47                                  | 1384                  | 1.1            | 30.4 | 12.0                 | —      | 301 R3 | BN132MA4 | —     | 3400                | 3400  | 9730  | 11200 | 2230  | 258 |
| 54                                  | 1242                  | 1.5            | 26.4 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 9960                | 11500 | 19000 | 22900 | 6390  | 266 |
| 54                                  | 1242                  | 2.8            | 26.4 | 9.0                  | 305 L2 | —      | BN132MA4 | M4LA4 | 9960                | 11500 | 19000 | 22900 | 6390  | 290 |
| 56                                  | 1169                  | 1.7            | 25.7 | 14.0                 | —      | 303 R3 | BN132MA4 | —     | 9870                | 11400 | 18900 | 22700 | 6330  | 268 |
| 56                                  | 1169                  | 2.6            | 25.7 | 14.0                 | —      | 304 R3 | BN132MA4 | —     | 9870                | 11400 | 18900 | 22700 | 6330  | 280 |
| 58                                  | 1130                  | 1.2            | 24.8 | 12.0                 | —      | 301 R3 | BN132MA4 | —     | 3170                | 3170  | 9150  | 10500 | 2090  | 258 |
| 59                                  | 1156                  | 1.3            | 24.6 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 3160                | 3160  | 9130  | 10500 | 2080  | 256 |
| 59                                  | 1152                  | 1.9            | 24.5 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 9720                | 11200 | 18600 | 22400 | 6230  | 266 |
| 59                                  | 1152                  | 2.8            | 24.5 | 9.0                  | 304 L2 | —      | BN132MA4 | M4LA4 | 9720                | 11200 | 18600 | 22400 | 6230  | 278 |
| 63                                  | 1069                  | 2.0            | 22.7 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 9470                | 10900 | 18200 | 21900 | 6080  | 266 |
| 63                                  | 1069                  | 2.6            | 22.7 | 9.0                  | 304 L2 | —      | BN132MA4 | M4LA4 | 9470                | 10900 | 18200 | 21900 | 6080  | 278 |
| 69                                  | 976                   | 1.9            | 20.8 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 9190                | 10600 | 17700 | 21300 | 5900  | 266 |
| 72                                  | 944                   | 1.3            | 20.1 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 2960                | 2960  | 8590  | 9870  | 1940  | 256 |
| 75                                  | 903                   | 1.7            | 19.2 | 18.0                 | —      | 303 R2 | BN132MA4 | M4LA4 | 8960                | 10300 | 17300 | 20800 | 5750  | 268 |
| 79                                  | 854                   | 1.6            | 18.2 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 2860                | 2860  | 8330  | 9580  | 1880  | 256 |
| 79                                  | 852                   | 2.4            | 18.1 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 8780                | 10100 | 17000 | 20400 | 5630  | 266 |
| 91                                  | 747                   | 2.4            | 15.9 | 18.0                 | —      | 303 R2 | BN132MA4 | M4LA4 | 8410                | 9710  | 16300 | 19700 | 5390  | 268 |
| 94                                  | 721                   | 2.4            | 15.3 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 8310                | 9590  | 16200 | 19500 | 5330  | 266 |
| 97                                  | 697                   | 1.0            | 14.8 | 7.5                  | 300 L2 | —      | BN132MA4 | M4LA4 | 2610                | 2610  | 7680  | 8820  | 1720  | 246 |
| 97                                  | 697                   | 1.8            | 14.8 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 2670                | 2670  | 7840  | 9010  | 1760  | 256 |
| 98                                  | 694                   | 1.4            | 14.8 | 12.0                 | —      | 301 R2 | BN132MA4 | M4LA4 | 2670                | 2670  | 7830  | 9000  | 1750  | 258 |
| 115                                 | 589                   | 2.8            | 12.5 | 9.0                  | 303 L2 | —      | BN132MA4 | M4LA4 | 7770                | 8970  | 15200 | 18300 | 4980  | 266 |
| 119                                 | 569                   | 1.2            | 12.1 | 7.5                  | 300 L2 | —      | BN132MA4 | M4LA4 | 2500                | 2500  | 7380  | 8480  | 1640  | 246 |
| 119                                 | 569                   | 2.1            | 12.1 | 7.5                  | 301 L2 | —      | BN132MA4 | M4LA4 | 2500                | 2500  | 7380  | 8480  | 1640  | 256 |
| 122                                 | 556                   | 1.1            | 11.8 | 12.0                 | —      | 300 R2 | BN132MA4 | M4LA4 | 2480                | 2480  | 7330  | 8420  | 1630  | 248 |
| 122                                 | 556                   | 2.1            | 11.8 | 12.0                 | —      | 301 R2 | BN132MA4 | M4LA4 | 2480                | 2480  | 7330  | 8420  | 1630  | 258 |
| 149                                 | 469                   | 1.6            | 9.67 | 11.0                 | 303 L1 | —      | BN132MA4 | M4LA4 | 7120                | 8220  | 14100 | 16900 | 4570  | 266 |

A



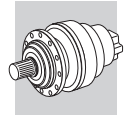


$P_1 = 7.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |       | $R_{n2}$ [N] |      |       |       |      |      |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|-------|--------------|------|-------|-------|------|------|-----|
|                            |                |       |      |             |        |        |          |       | MC           | MZ   | HC/PC | HZ/PZ | FZ   |      |     |
| 160                        | 437            | 1.4   | 9.00 | 7.5         | 301 L1 | —      | BN132MA4 | M4LA4 | —            | 2260 | 2260  | 6750  | 7750 | 1490 | 256 |
| 165                        | 411            | 1.5   | 8.74 | 12.0        | —      | 300 R2 | BN132MA4 | M4LA4 | —            | 2240 | 2240  | 6690  | 7690 | 1470 | 248 |
| 165                        | 411            | 2.7   | 8.74 | 12.0        | —      | 301 R2 | BN132MA4 | M4LA4 | —            | 2240 | 2240  | 6690  | 7690 | 1470 | 258 |
| 200                        | 349            | 1.2   | 7.20 | 7.5         | 300 L1 | —      | BN132MA4 | M4LA4 | —            | 2100 | 2100  | 6310  | 7250 | 1380 | 246 |
| 200                        | 349            | 2.1   | 7.20 | 7.5         | 301 L1 | —      | BN132MA4 | M4LA4 | —            | 2100 | 2100  | 6310  | 7250 | 1380 | 256 |
| 202                        | 335            | 1.7   | 7.13 | 12.0        | —      | 300 R2 | BN132MA4 | M4LA4 | —            | 2090 | 2090  | 6300  | 7230 | 1380 | 248 |
| 250                        | 280            | 1.7   | 5.77 | 7.5         | 300 L1 | —      | BN132MA4 | M4LA4 | —            | 1950 | 1950  | 5910  | 6790 | 1280 | 246 |
| 338                        | 207            | 2.4   | 4.26 | 7.5         | 300 L1 | —      | BN132MA4 | M4LA4 | —            | 1760 | 1760  | 5390  | 6200 | 1160 | 246 |
| 414                        | 169            | 2.8   | 3.48 | 7.5         | 300 L1 | —      | BN132MA4 | M4LA4 | —            | 1610 | 1610  | 4970  | 5710 | 1060 | 246 |

$P_1 = 9.2 \text{ kW}$

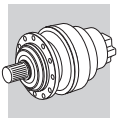
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |        |          |   | $R_{n2}$ [N] |    |        |        |        |     |
|----------------------------|----------------|-------|------|-------------|--------|--------|----------|---|--------------|----|--------|--------|--------|-----|
|                            |                |       |      |             |        |        |          |   | MC           | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.76                       | 101595         | 1.5   | 1893 | 18.0        | 317 L4 | —      | BN132MB4 | — | —            | —  | 442000 | 470000 | 150000 | 408 |
| 0.90                       | 85603          | 2.0   | 1595 | 18.0        | 317 L4 | —      | BN132MB4 | — | —            | —  | 442000 | 470000 | 150000 | 408 |
| 0.96                       | 80109          | 1.0   | 1492 | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 206000 | 243000 | 90000  | 386 |
| 1.1                        | 70765          | 2.4   | 1318 | 18.0        | 317 L4 | —      | BN132MB4 | — | —            | —  | 434300 | 462400 | 147000 | 408 |
| 1.1                        | 68911          | 1.4   | 1284 | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 201500 | 236600 | 87400  | 386 |
| 1.1                        | 68570          | 1.1   | 1277 | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 201200 | 236300 | 87300  | 374 |
| 1.2                        | 66427          | 1.8   | 1237 | 18.0        | 316 L4 | —      | BN132MB4 | — | —            | —  | 331400 | 368600 | 144000 | 398 |
| 1.3                        | 60873          | 2.8   | 1134 | 18.0        | 317 L4 | —      | BN132MB4 | — | —            | —  | 415100 | 442000 | 139800 | 408 |
| 1.3                        | 59278          | 1.6   | 1104 | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 192600 | 226200 | 83200  | 386 |
| 1.3                        | 58985          | 1.3   | 1099 | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 192400 | 225800 | 83000  | 374 |
| 1.4                        | 55971          | 1.8   | 1043 | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 189400 | 222300 | 81600  | 386 |
| 1.4                        | 55971          | 2.4   | 1043 | 18.0        | 316 L4 | —      | BN132MB4 | — | —            | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                        | 55695          | 1.5   | 1038 | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 189100 | 222000 | 81400  | 374 |
| 1.4                        | 54435          | 1.0   | 1014 | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 175900 | 208200 | 71800  | 362 |
| 1.5                        | 51174          | 2.8   | 953  | 50.0        | —      | 317 R4 | BN132MB4 | — | —            | —  | 394100 | 419600 | 132000 | 410 |
| 1.5                        | 49916          | 1.9   | 930  | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 183000 | 214800 | 78500  | 386 |
| 1.6                        | 49701          | 1.5   | 926  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 182700 | 214500 | 78400  | 374 |
| 1.6                        | 48812          | 1.6   | 909  | 40.0        | —      | 315 R4 | BN132MB4 | — | —            | —  | 181700 | 213400 | 77900  | 388 |
| 1.6                        | 48512          | 1.0   | 904  | 11.0        | 311 L4 | —      | BN132MB4 | — | —            | —  | 137500 | 171300 | 56200  | 350 |
| 1.6                        | 47739          | 1.1   | 889  | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 169100 | 200100 | 68800  | 362 |
| 1.7                        | 46269          | 2.2   | 862  | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                        | 46269          | 2.8   | 862  | 18.0        | 316 L4 | —      | BN132MB4 | — | —            | —  | 297400 | 330700 | 127600 | 398 |
| 1.7                        | 46041          | 1.8   | 858  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 178600 | 209700 | 76400  | 374 |
| 1.7                        | 44271          | 1.0   | 825  | 11.0        | 311 L4 | —      | BN132MB4 | — | —            | —  | 133800 | 166600 | 54500  | 350 |
| 1.8                        | 43614          | 3.0   | 812  | 18.0        | 316 L4 | —      | BN132MB4 | — | —            | —  | 292100 | 324900 | 125100 | 398 |
| 1.8                        | 42401          | 1.2   | 790  | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 163200 | 193100 | 66100  | 362 |
| 1.8                        | 41989          | 2.2   | 782  | 40.0        | —      | 315 R4 | BN132MB4 | — | —            | —  | 173700 | 203900 | 74100  | 388 |
| 1.9                        | 41782          | 1.1   | 778  | 22.0        | —      | 313 R4 | BN132MB4 | — | —            | —  | 162500 | 192300 | 65800  | 364 |
| 1.9                        | 39777          | 2.5   | 741  | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 170900 | 200700 | 72800  | 386 |
| 2.0                        | 39605          | 2.0   | 738  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 170700 | 200400 | 72700  | 374 |
| 2.0                        | 38872          | 1.2   | 724  | 11.0        | 311 L4 | —      | BN132MB4 | — | —            | —  | 128700 | 160300 | 52200  | 350 |
| 2.1                        | 37314          | 1.4   | 695  | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 157000 | 185900 | 63300  | 362 |
| 2.1                        | 36054          | 2.8   | 672  | 18.0        | 315 L4 | —      | BN132MB4 | — | —            | —  | 165900 | 194800 | 70500  | 386 |
| 2.2                        | 35876          | 2.2   | 668  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 165700 | 194500 | 70300  | 374 |
| 2.2                        | 35379          | 2.5   | 659  | 40.0        | —      | 315 R4 | BN132MB4 | — | —            | —  | 165000 | 193700 | 70000  | 388 |
| 2.2                        | 34711          | 1.5   | 647  | 22.0        | —      | 313 R4 | BN132MB4 | — | —            | —  | 153700 | 181900 | 61800  | 364 |
| 2.3                        | 33975          | 1.5   | 633  | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 152700 | 180700 | 61400  | 362 |
| 2.3                        | 33747          | 1.2   | 629  | 22.0        | —      | 311 R4 | BN132MB4 | — | —            | —  | 123300 | 153600 | 49800  | 352 |
| 2.3                        | 33640          | 1.2   | 627  | 11.0        | 311 L4 | —      | BN132MB4 | — | —            | —  | 123200 | 153500 | 49700  | 350 |
| 2.3                        | 33460          | 3.0   | 623  | 40.0        | —      | 315 R4 | BN132MB4 | — | —            | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                        | 32946          | 1.7   | 614  | 22.0        | —      | 314 R4 | BN132MB4 | — | —            | —  | 161500 | 189600 | 68400  | 376 |
| 2.4                        | 31560          | 2.5   | 588  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 159500 | 187200 | 67400  | 374 |
| 2.5                        | 30473          | 1.4   | 568  | 11.0        | 311 L4 | —      | BN132MB4 | — | —            | —  | 119600 | 149000 | 48100  | 350 |
| 2.6                        | 30263          | 1.8   | 564  | 11.0        | 313 L4 | —      | BN132MB4 | — | —            | —  | 147500 | 174500 | 59100  | 362 |
| 2.6                        | 29841          | 1.1   | 556  | 11.0        | 310 L4 | —      | BN132MB4 | — | —            | —  | 100600 | 126500 | 47800  | 338 |
| 2.6                        | 29749          | 2.7   | 554  | 15.0        | 314 L4 | —      | BN132MB4 | — | —            | —  | 156600 | 183900 | 66100  | 374 |
| 2.7                        | 28695          | 1.7   | 535  | 22.0        | —      | 313 R4 | BN132MB4 | — | —            | —  | 145100 | 171800 | 58000  | 364 |
| 2.7                        | 28341          | 2.4   | 528  | 22.0        | —      | 314 R4 | BN132MB4 | — | —            | —  | 154400 | 181300 | 65000  | 376 |



$P_1 = 9.2 \text{ kW}$

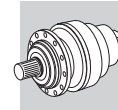
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|----------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |          |       | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 2.8                                 | 27898                 | 1.4            | 520 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 116500 | 145100 | 46700 | 352 |
| 2.8                                 | 27760                 | 0.9            | 517 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 98400  | 123800 | 46600 | 340 |
| 2.8                                 | 27573                 | 1.8            | 514 | 11.0                 | 313 L4 | —      | BN132MB4 | —     | —                   | —     | 143400 | 169700 | 57300 | 362 |
| 2.8                                 | 27490                 | 1.6            | 512 | 11.0                 | 311 L4 | —      | BN132MB4 | —     | —                   | —     | 116000 | 144500 | 46500 | 350 |
| 2.8                                 | 27233                 | 0.9            | 507 | 11.0                 | 310 L4 | —      | BN132MB4 | —     | —                   | —     | 97900  | 123000 | 46300 | 338 |
| 2.9                                 | 26630                 | 2.0            | 496 | 22.0                 | —      | 313 R4 | BN132MB4 | —     | —                   | —     | 141900 | 168000 | 56600 | 364 |
| 2.9                                 | 26547                 | 3.0            | 495 | 15.0                 | 314 L4 | —      | BN132MB4 | —     | —                   | —     | 151400 | 177700 | 63600 | 374 |
| 2.9                                 | 26297                 | 1.3            | 490 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 114400 | 142500 | 45800 | 352 |
| 3.2                                 | 24249                 | 2.2            | 452 | 11.0                 | 313 L4 | —      | BN132MB4 | —     | —                   | —     | 138000 | 163300 | 54900 | 362 |
| 3.2                                 | 24191                 | 1.2            | 451 | 11.0                 | 310 L4 | —      | BN132MB4 | —     | —                   | —     | 94400  | 118700 | 44500 | 338 |
| 3.2                                 | 24178                 | 2.0            | 450 | 22.0                 | —      | 313 R4 | BN132MB4 | —     | —                   | —     | 137900 | 163200 | 54800 | 364 |
| 3.2                                 | 23880                 | 2.8            | 445 | 22.0                 | —      | 314 R4 | BN132MB4 | —     | —                   | —     | 146700 | 172200 | 61400 | 376 |
| 3.3                                 | 23506                 | 1.6            | 438 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 110600 | 137800 | 44100 | 352 |
| 3.4                                 | 22509                 | 1.3            | 419 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 92400  | 116200 | 43500 | 340 |
| 3.5                                 | 22157                 | 1.8            | 413 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 108700 | 135400 | 43300 | 352 |
| 3.5                                 | 22027                 | 1.9            | 410 | 11.0                 | 311 L4 | —      | BN132MB4 | —     | —                   | —     | 108500 | 135200 | 43200 | 350 |
| 3.7                                 | 21154                 | 2.6            | 394 | 11.0                 | 313 L4 | —      | BN132MB4 | —     | —                   | —     | 132500 | 156800 | 52400 | 362 |
| 3.7                                 | 21024                 | 0.9            | 392 | 11.0                 | 310 L4 | —      | BN132MB4 | —     | —                   | —     | 90500  | 113900 | 42500 | 338 |
| 3.7                                 | 20798                 | 2.2            | 387 | 22.0                 | —      | 313 R4 | BN132MB4 | —     | —                   | —     | 131800 | 156000 | 52100 | 364 |
| 4.0                                 | 19498                 | 1.2            | 363 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 88500  | 111300 | 41500 | 340 |
| 4.1                                 | 18895                 | 2.8            | 352 | 11.0                 | 313 L4 | —      | BN132MB4 | —     | —                   | —     | 128000 | 151500 | 50500 | 362 |
| 4.1                                 | 19455                 | 1.0            | 350 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 87600  | 110100 | 41000 | 338 |
| 4.1                                 | 18738                 | 1.1            | 349 | 7.5                  | 309 L4 | —      | BN132MB4 | —     | —                   | —     | 73800  | 95200  | 22700 | 326 |
| 4.1                                 | 18658                 | 2.1            | 348 | 11.0                 | 311 L4 | —      | BN132MB4 | —     | —                   | —     | 103200 | 128600 | 40900 | 350 |
| 4.2                                 | 18549                 | 2.9            | 346 | 22.0                 | —      | 313 R4 | BN132MB4 | —     | —                   | —     | 127300 | 150700 | 50200 | 364 |
| 4.2                                 | 18317                 | 2.1            | 341 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 102700 | 127900 | 40600 | 352 |
| 4.3                                 | 17937                 | 1.5            | 334 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 86300  | 108600 | 40300 | 340 |
| 4.3                                 | 17776                 | 1.0            | 331 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 72700  | 93700  | 22300 | 328 |
| 4.5                                 | 17265                 | 2.3            | 322 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 100900 | 125600 | 39800 | 352 |
| 4.7                                 | 16574                 | 2.7            | 309 | 22.0                 | —      | 313 R4 | BN132MB4 | —     | —                   | —     | 123100 | 145700 | 48300 | 364 |
| 4.7                                 | 16369                 | 1.4            | 305 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 84000  | 105600 | 39100 | 340 |
| 4.7                                 | 16861                 | 2.3            | 304 | 18.0                 | 313 L3 | —      | BN132MB4 | —     | —                   | —     | 122500 | 145000 | 48100 | 362 |
| 4.9                                 | 16393                 | 1.4            | 295 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 83200  | 104600 | 38700 | 338 |
| 4.9                                 | 15756                 | 2.4            | 294 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 98100  | 122200 | 38600 | 352 |
| 4.9                                 | 16163                 | 1.7            | 291 | 18.0                 | 311 L3 | —      | BN132MB4 | —     | —                   | —     | 97900  | 121900 | 38500 | 350 |
| 5.1                                 | 15270                 | 1.1            | 284 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 69400  | 89500  | 21200 | 328 |
| 5.1                                 | 15737                 | 1.0            | 284 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 69400  | 89400  | 21100 | 326 |
| 5.1                                 | 15194                 | 1.7            | 283 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 82100  | 103300 | 38100 | 340 |
| 5.4                                 | 14273                 | 2.6            | 266 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 95300  | 118700 | 37400 | 352 |
| 5.6                                 | 13866                 | 1.6            | 258 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 79900  | 100500 | 37000 | 340 |
| 5.6                                 | 13852                 | 1.1            | 258 | 15.0                 | —      | 307 R4 | BN132MB4 | M4LB4 | 29500               | 37000 | 66400  | 87000  | 25600 | 316 |
| 5.6                                 | 13852                 | 1.3            | 258 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 67400  | 87000  | 20500 | 328 |
| 5.8                                 | 13835                 | 1.3            | 249 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 79100  | 99400  | 36600 | 338 |
| 5.9                                 | 13619                 | 2.5            | 245 | 18.0                 | 311 L3 | —      | BN132MB4 | —     | —                   | —     | 93000  | 115800 | 36400 | 350 |
| 6.0                                 | 13281                 | 1.0            | 239 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 65900  | 85000  | 20000 | 326 |
| 6.2                                 | 12560                 | 2.0            | 234 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 77600  | 97600  | 35800 | 340 |
| 6.2                                 | 12465                 | 1.3            | 232 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 65300  | 84200  | 19800 | 328 |
| 6.3                                 | 12774                 | 1.7            | 230 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 77200  | 97100  | 35600 | 338 |
| 6.3                                 | 12278                 | 2.9            | 229 | 22.0                 | —      | 311 R4 | BN132MB4 | —     | —                   | —     | 91100  | 113400 | 35500 | 352 |
| 6.5                                 | 12372                 | 1.1            | 223 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 64500  | 83200  | 19500 | 326 |
| 6.5                                 | 12263                 | 1.0            | 221 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 28000               | 35100 | 63300  | 83000  | 24300 | 314 |
| 7.0                                 | 11049                 | 2.0            | 206 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 74700  | 93900  | 34300 | 340 |
| 7.0                                 | 11038                 | 1.3            | 206 | 15.0                 | —      | 307 R4 | BN132MB4 | M4LB4 | 27300               | 34300 | 62000  | 81200  | 23700 | 316 |
| 7.0                                 | 11038                 | 1.8            | 206 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 63000  | 81200  | 19000 | 328 |
| 7.1                                 | 11258                 | 3.0            | 203 | 18.0                 | 311 L3 | —      | BN132MB4 | —     | —                   | —     | 87800  | 109400 | 34100 | 350 |
| 7.1                                 | 11202                 | 2.0            | 202 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 74200  | 93300  | 34100 | 338 |
| 7.1                                 | 11191                 | 1.0            | 202 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 27100               | 34000 | 61600  | 80700  | 23600 | 314 |
| 7.1                                 | 11191                 | 1.5            | 202 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 62600  | 80700  | 18900 | 326 |
| 7.6                                 | 10236                 | 1.4            | 191 | 15.0                 | —      | 307 R4 | BN132MB4 | M4LB4 | 26600               | 33400 | 60600  | 79400  | 23200 | 316 |
| 7.6                                 | 10236                 | 1.7            | 191 | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 61600  | 79400  | 18500 | 328 |
| 7.6                                 | 10164                 | 2.3            | 189 | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 72800  | 91500  | 33400 | 340 |
| 7.9                                 | 10137                 | 1.4            | 183 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 60800  | 78400  | 18300 | 326 |
| 8.0                                 | 9713                  | 1.0            | 181 | 12.0                 | —      | 306 R4 | BN132MB4 | M4LB4 | 23000               | 26100 | 54300  | 63200  | 17300 | 304 |
| 8.1                                 | 9838                  | 1.9            | 177 | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 71400  | 89800  | 32600 | 338 |
| 8.1                                 | 9826                  | 1.3            | 177 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 26000               | 32600 | 59300  | 77700  | 22600 | 314 |

A



$P_1 = 9.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 8.7                                 | 8867                  | 1.8            | 165  | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 59000 | 76100 | 17700 | 328 |
| 8.8                                 | 9083                  | 2.4            | 164  | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 69700 | 87600 | 31800 | 338 |
| 8.9                                 | 8967                  | 1.2            | 162  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 25200               | 31600 | 57700 | 75600 | 21900 | 314 |
| 8.9                                 | 8967                  | 1.8            | 162  | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 58600 | 75600 | 17500 | 326 |
| 9.0                                 | 8610                  | 2.6            | 160  | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 69300 | 87100 | 31600 | 340 |
| 9.1                                 | 8474                  | 1.1            | 158  | 12.0                 | —      | 306 R4 | BN132MB4 | M4LB4 | 22500               | 25500 | 53200 | 62000 | 16900 | 304 |
| 9.5                                 | 8157                  | 2.3            | 152  | 15.0                 | —      | 309 R4 | BN132MB4 | —     | —                   | —     | 57500 | 74200 | 17200 | 328 |
| 9.8                                 | 8123                  | 1.6            | 146  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 24400               | 30600 | 56000 | 73300 | 21200 | 314 |
| 10.2                                | 7869                  | 2.6            | 142  | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 66700 | 83900 | 30300 | 338 |
| 10.2                                | 7825                  | 1.0            | 141  | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 21700               | 24600 | 51500 | 59900 | 16300 | 302 |
| 10.4                                | 7703                  | 1.4            | 139  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 24000               | 30100 | 55100 | 72200 | 20800 | 314 |
| 10.4                                | 7703                  | 2.1            | 139  | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 56000 | 72200 | 16700 | 326 |
| 10.6                                | 7293                  | 2.9            | 136  | 15.0                 | —      | 310 R4 | BN132MB4 | —     | —                   | —     | 65900 | 82900 | 29900 | 340 |
| 11.0                                | 7238                  | 2.9            | 130  | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 65100 | 81900 | 29500 | 338 |
| 11.4                                | 6987                  | 1.9            | 126  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 23200               | 29100 | 53500 | 70100 | 20200 | 314 |
| 11.4                                | 6987                  | 2.3            | 126  | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 54400 | 70100 | 16100 | 326 |
| 11.6                                | 6658                  | 1.6            | 124  | 15.0                 | —      | 307 R4 | BN132MB4 | M4LB4 | 24800               | 31100 | 56900 | 74500 | 21600 | 316 |
| 11.9                                | 6731                  | 1.2            | 121  | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 20600               | 23400 | 49200 | 57300 | 15500 | 302 |
| 12.0                                | 6647                  | 1.3            | 120  | 22.0                 | —      | 307 R3 | BN132MB4 | M4LB4 | 22800               | 28600 | 52700 | 69100 | 19800 | 316 |
| 12.0                                | 6647                  | 1.9            | 120  | 22.0                 | —      | 309 R3 | BN132MB4 | —     | —                   | —     | 53600 | 69100 | 15900 | 328 |
| 12.0                                | 6647                  | 2.6            | 120  | 22.0                 | —      | 310 R3 | BN132MB4 | —     | —                   | —     | 63500 | 79800 | 28600 | 340 |
| 12.1                                | 6615                  | 1.0            | 119  | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 20500               | 23200 | 48900 | 57000 | 15400 | 304 |
| 12.1                                | 6606                  | 3.0            | 119  | 18.0                 | 310 L3 | —      | BN132MB4 | —     | —                   | —     | 63300 | 79600 | 28600 | 338 |
| 12.7                                | 6288                  | 1.7            | 113  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 22400               | 28100 | 51800 | 67900 | 19500 | 314 |
| 12.7                                | 6288                  | 2.5            | 113  | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 52700 | 67900 | 15600 | 326 |
| 12.8                                | 6236                  | 1.2            | 112  | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 20100               | 22800 | 48100 | 56000 | 15100 | 302 |
| 13.7                                | 5640                  | 2.4            | 105  | 15.0                 | —      | 307 R4 | BN132MB4 | M4LB4 | 24100               | 30300 | 55400 | 72700 | 21000 | 316 |
| 13.8                                | 5785                  | 1.5            | 104  | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 19600               | 22200 | 47000 | 54700 | 14700 | 302 |
| 14.4                                | 5568                  | 2.2            | 100  | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 21500               | 27000 | 50000 | 65500 | 18700 | 314 |
| 14.4                                | 5568                  | 3.0            | 100  | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 50800 | 65500 | 15000 | 326 |
| 14.5                                | 5495                  | 1.6            | 99.0 | 22.0                 | —      | 307 R3 | BN132MB4 | M4LB4 | 21400               | 26900 | 49800 | 65200 | 18600 | 316 |
| 14.5                                | 5495                  | 2.3            | 99.0 | 22.0                 | —      | 309 R3 | BN132MB4 | —     | —                   | —     | 50600 | 65200 | 14900 | 328 |
| 14.5                                | 5495                  | 3.0            | 99.0 | 22.0                 | —      | 310 R3 | BN132MB4 | —     | —                   | —     | 59900 | 75400 | 26900 | 340 |
| 14.6                                | 5468                  | 1.2            | 98.5 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 19200               | 21800 | 46200 | 53800 | 14400 | 304 |
| 15.5                                | 5163                  | 2.4            | 93.0 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 21000               | 26300 | 48900 | 64000 | 18200 | 314 |
| 15.5                                | 5163                  | 2.9            | 93.0 | 11.0                 | 309 L3 | —      | BN132MB4 | —     | —                   | —     | 49600 | 64000 | 14600 | 326 |
| 16.3                                | 4900                  | 1.7            | 88.3 | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 18500               | 21000 | 44700 | 52100 | 13900 | 302 |
| 17.0                                | 4704                  | 1.6            | 84.7 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 18300               | 20700 | 44200 | 51400 | 13700 | 304 |
| 17.3                                | 4630                  | 2.2            | 83.4 | 22.0                 | —      | 307 R3 | BN132MB4 | M4LB4 | 20200               | 25400 | 47300 | 62000 | 17600 | 316 |
| 17.6                                | 4544                  | 1.5            | 81.9 | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 18100               | 20500 | 43700 | 50900 | 13600 | 302 |
| 17.9                                | 4473                  | 2.3            | 80.6 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 20000               | 25100 | 46800 | 61300 | 17400 | 314 |
| 18.3                                | 4370                  | 1.0            | 78.7 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 14300               | 16500 | 26400 | 31800 | 9190  | 292 |
| 18.3                                | 4364                  | 2.5            | 78.6 | 22.0                 | —      | 307 R3 | BN132MB4 | M4LB4 | 19800               | 24900 | 46500 | 60900 | 17200 | 316 |
| 18.6                                | 4288                  | 1.1            | 77.2 | 7.5                  | 305 L3 | —      | BN132MB4 | M4LB4 | 14200               | 16400 | 26300 | 31600 | 9140  | 290 |
| 18.7                                | 4274                  | 2.0            | 77.0 | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 17700               | 20100 | 42900 | 50000 | 13300 | 302 |
| 19.4                                | 4114                  | 2.8            | 74.1 | 11.0                 | 307 L3 | —      | BN132MB4 | M4LB4 | 19400               | 24400 | 45600 | 59800 | 16900 | 314 |
| 19.8                                | 4046                  | 1.8            | 72.9 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 17400               | 19700 | 42200 | 49200 | 13100 | 304 |
| 19.9                                | 4157                  | 1.3            | 72.5 | 13.0                 | 306 L2 | —      | BN132MB4 | M4LB4 | 17400               | 19700 | 42100 | 49100 | 13000 | 302 |
| 19.9                                | 4012                  | 1.0            | 72.3 | 7.5                  | 305 L3 | —      | BN132MB4 | M4LB4 | 13900               | 16100 | 25700 | 31000 | 8940  | 290 |
| 20.1                                | 3983                  | 2.5            | 71.8 | 22.0                 | —      | 307 R3 | BN132MB4 | M4LB4 | 19200               | 24100 | 45200 | 59200 | 16700 | 316 |
| 21.3                                | 3748                  | 1.9            | 67.5 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 17000               | 19200 | 41300 | 48000 | 12700 | 304 |
| 22.1                                | 3621                  | 2.1            | 65.2 | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 16800               | 19000 | 40800 | 47500 | 12600 | 302 |
| 22.8                                | 3501                  | 1.2            | 63.1 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 292 |
| 22.8                                | 3500                  | 1.0            | 63.1 | 7.5                  | 304 L3 | —      | BN132MB4 | M4LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 278 |
| 22.8                                | 3500                  | 1.3            | 63.1 | 7.5                  | 305 L3 | —      | BN132MB4 | M4LB4 | 13300               | 15400 | 24700 | 29700 | 8540  | 290 |
| 24.8                                | 3224                  | 2.4            | 58.1 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 16100               | 18300 | 39400 | 45900 | 12100 | 304 |
| 25.6                                | 3225                  | 1.6            | 56.3 | 13.0                 | 306 L2 | —      | BN132MB4 | M4LB4 | 16000               | 18100 | 39100 | 45500 | 12000 | 302 |
| 25.8                                | 3200                  | 1.1            | 55.8 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 12800               | 14800 | 23800 | 28700 | 8200  | 290 |
| 26.6                                | 3008                  | 1.2            | 54.2 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 12700               | 14600 | 23600 | 28400 | 8120  | 292 |
| 27.0                                | 2965                  | 1.1            | 53.4 | 7.5                  | 304 L3 | —      | BN132MB4 | M4LB4 | 12600               | 14500 | 23500 | 28300 | 8080  | 278 |
| 27.0                                | 2965                  | 1.3            | 53.4 | 7.5                  | 305 L3 | —      | BN132MB4 | M4LB4 | 12600               | 14500 | 23500 | 28300 | 8080  | 290 |
| 27.0                                | 2956                  | 2.4            | 53.2 | 7.5                  | 306 L3 | —      | BN132MB4 | M4LB4 | 15700               | 17800 | 38400 | 44700 | 11800 | 302 |
| 28.6                                | 2790                  | 1.2            | 50.3 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 12300               | 14200 | 23100 | 27800 | 7920  | 280 |
| 28.6                                | 2790                  | 1.6            | 50.3 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 12300               | 14200 | 23100 | 27800 | 7920  | 292 |
| 31                                  | 2587                  | 1.1            | 46.6 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 12000               | 13900 | 22600 | 27200 | 7720  | 280 |

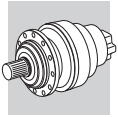


$P_1 = 9.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 31                                  | 2587                  | 1.7            | 46.6 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 12000               | 13900 | 22600 | 27200 | 7720  | 292 |
| 31                                  | 2666                  | 2.4            | 46.5 | 13.0                 | 306 L2 | —      | BN132MB4 | M4LB4 | 15000               | 17000 | 36900 | 43000 | 11300 | 302 |
| 31                                  | 2569                  | 2.9            | 46.3 | 14.0                 | —      | 306 R3 | BN132MB4 | M4LB4 | 15000               | 16900 | 36800 | 42900 | 11200 | 304 |
| 32                                  | 2560                  | 1.4            | 44.6 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 11900               | 13700 | 22300 | 26800 | 7610  | 290 |
| 33                                  | 2420                  | 1.3            | 43.6 | 7.5                  | 304 L3 | —      | BN132MB4 | M4LB4 | 11800               | 13600 | 22100 | 26600 | 7550  | 278 |
| 34                                  | 2363                  | 1.3            | 42.6 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 11700               | 13500 | 22000 | 26400 | 7490  | 280 |
| 34                                  | 2363                  | 1.6            | 42.6 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 11700               | 13500 | 22000 | 26400 | 7490  | 292 |
| 37                                  | 2204                  | 2.9            | 38.4 | 13.0                 | 306 L2 | —      | BN132MB4 | M4LB4 | 14100               | 15900 | 34800 | 40600 | 10600 | 302 |
| 38                                  | 2202                  | 1.0            | 38.4 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 11300               | 13000 | 21300 | 25600 | 7240  | 266 |
| 38                                  | 2202                  | 1.3            | 38.4 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 11300               | 13000 | 21300 | 25600 | 7240  | 278 |
| 38                                  | 2202                  | 2.0            | 38.4 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 11300               | 13000 | 21300 | 25600 | 7240  | 290 |
| 39                                  | 2062                  | 1.2            | 37.1 | 14.0                 | —      | 303 R3 | BN132MB4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 268 |
| 39                                  | 2062                  | 1.7            | 37.1 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 11200               | 12900 | 21100 | 25400 | 7160  | 280 |
| 39                                  | 2062                  | 2.1            | 37.1 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 11200               | 12900 | 21100 | 25400 | 7160  | 292 |
| 40                                  | 2051                  | 1.7            | 35.8 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 11000               | 12700 | 20800 | 25100 | 7070  | 290 |
| 46                                  | 1746                  | 1.2            | 31.5 | 14.0                 | —      | 303 R3 | BN132MB4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 268 |
| 46                                  | 1746                  | 1.8            | 31.5 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 10600               | 12200 | 20100 | 24100 | 6770  | 280 |
| 46                                  | 1746                  | 2.2            | 31.5 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 10600               | 12200 | 20100 | 24100 | 6770  | 292 |
| 47                                  | 1764                  | 1.2            | 30.8 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 10500               | 12100 | 19900 | 24000 | 6720  | 266 |
| 47                                  | 1764                  | 1.6            | 30.8 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 10500               | 12100 | 19900 | 24000 | 6720  | 278 |
| 47                                  | 1764                  | 2.4            | 30.8 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 10500               | 12100 | 19900 | 24000 | 6720  | 290 |
| 47                                  | 1688                  | 0.9            | 30.4 | 10.0                 | —      | 301 R3 | BN132MB4 | —     | 3320                | 3320  | 9530  | 10900 | 2180  | 258 |
| 54                                  | 1516                  | 1.2            | 26.4 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 9960                | 11500 | 19000 | 22900 | 6390  | 266 |
| 54                                  | 1516                  | 2.3            | 26.4 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 9960                | 11500 | 19000 | 22900 | 6390  | 290 |
| 56                                  | 1426                  | 1.4            | 25.7 | 14.0                 | —      | 303 R3 | BN132MB4 | —     | 9870                | 11400 | 18900 | 22700 | 6330  | 268 |
| 56                                  | 1426                  | 2.1            | 25.7 | 14.0                 | —      | 304 R3 | BN132MB4 | —     | 9870                | 11400 | 18900 | 22700 | 6330  | 280 |
| 56                                  | 1426                  | 2.5            | 25.7 | 14.0                 | —      | 305 R3 | BN132MB4 | M4LB4 | 9870                | 11400 | 18900 | 22700 | 6330  | 292 |
| 58                                  | 1378                  | 1.0            | 24.8 | 12.0                 | —      | 301 R3 | BN132MB4 | —     | 3170                | 3170  | 9150  | 10500 | 2090  | 258 |
| 59                                  | 1410                  | 1.1            | 24.6 | 7.5                  | 301 L2 | —      | BN132MB4 | M4LB4 | 3160                | 3160  | 9130  | 10500 | 2080  | 256 |
| 59                                  | 1406                  | 1.5            | 24.5 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 9720                | 11200 | 18600 | 22400 | 6230  | 266 |
| 59                                  | 1406                  | 2.3            | 24.5 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 9720                | 11200 | 18600 | 22400 | 6230  | 278 |
| 59                                  | 1406                  | 2.7            | 24.5 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 9720                | 11200 | 18600 | 22400 | 6230  | 290 |
| 63                                  | 1304                  | 1.6            | 22.7 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 9470                | 10900 | 18200 | 21900 | 6080  | 266 |
| 63                                  | 1304                  | 2.1            | 22.7 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 9470                | 10900 | 18200 | 21900 | 6080  | 278 |
| 69                                  | 1191                  | 1.5            | 20.8 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 9470                | 10900 | 18200 | 21900 | 6080  | 266 |
| 69                                  | 1191                  | 2.5            | 20.8 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 9190                | 10600 | 17700 | 21300 | 5900  | 278 |
| 69                                  | 1191                  | 2.7            | 20.8 | 9.0                  | 305 L2 | —      | BN132MB4 | M4LB4 | 9190                | 10600 | 17700 | 21300 | 5900  | 290 |
| 72                                  | 1151                  | 1.1            | 20.1 | 7.5                  | 301 L2 | —      | BN132MB4 | M4LB4 | 2960                | 2960  | 8590  | 9870  | 1940  | 256 |
| 75                                  | 1102                  | 1.4            | 19.2 | 18.0                 | —      | 303 R2 | BN132MB4 | M4LB4 | 8960                | 10300 | 17300 | 20800 | 5750  | 268 |
| 75                                  | 1102                  | 2.6            | 19.2 | 18.0                 | —      | 305 R2 | BN132MB4 | M4LB4 | 8960                | 10300 | 17300 | 20800 | 5750  | 292 |
| 79                                  | 1042                  | 1.3            | 18.2 | 7.5                  | 301 L2 | —      | BN132MB4 | M4LB4 | 2860                | 2860  | 8330  | 9580  | 1880  | 256 |
| 79                                  | 1039                  | 1.9            | 18.1 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 8780                | 10100 | 17000 | 20400 | 5630  | 266 |
| 79                                  | 1039                  | 2.8            | 18.1 | 9.0                  | 304 L2 | —      | BN132MB4 | M4LB4 | 8780                | 10100 | 17000 | 20400 | 5630  | 278 |
| 86                                  | 966                   | 2.5            | 16.8 | 18.0                 | —      | 304 R2 | BN132MB4 | M4LB4 | 8570                | 9900  | 16600 | 20000 | 5500  | 280 |
| 91                                  | 911                   | 2.0            | 15.9 | 18.0                 | —      | 303 R2 | BN132MB4 | M4LB4 | 8410                | 9710  | 16300 | 19700 | 5390  | 268 |
| 94                                  | 880                   | 1.9            | 15.3 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 8310                | 9590  | 16200 | 19500 | 5330  | 266 |
| 97                                  | 851                   | 1.5            | 14.8 | 7.5                  | 301 L2 | —      | BN132MB4 | M4LB4 | 2670                | 2670  | 7840  | 9010  | 1760  | 256 |
| 98                                  | 846                   | 1.1            | 14.8 | 12.0                 | —      | 301 R2 | BN132MB4 | M4LB4 | 2670                | 2670  | 7830  | 9000  | 1750  | 258 |
| 105                                 | 784                   | 2.5            | 13.7 | 18.0                 | —      | 303 R2 | BN132MB4 | M4LB4 | 8000                | 9230  | 15600 | 18800 | 5130  | 268 |
| 115                                 | 718                   | 2.3            | 12.5 | 9.0                  | 303 L2 | —      | BN132MB4 | M4LB4 | 7770                | 8970  | 15200 | 18300 | 4980  | 266 |
| 119                                 | 694                   | 1.0            | 12.1 | 7.5                  | 300 L2 | —      | BN132MB4 | M4LB4 | 2440                | 2440  | 7230  | 8300  | 1600  | 246 |
| 119                                 | 694                   | 1.8            | 12.1 | 7.5                  | 301 L2 | —      | BN132MB4 | M4LB4 | 2500                | 2500  | 7380  | 8480  | 1640  | 256 |
| 122                                 | 678                   | 1.7            | 11.8 | 12.0                 | —      | 301 R2 | BN132MB4 | M4LB4 | 2480                | 2480  | 7330  | 8420  | 1630  | 258 |
| 149                                 | 572                   | 1.3            | 9.67 | 11.0                 | 303 L1 | —      | BN132MB4 | M4LB4 | 7120                | 8220  | 14100 | 16900 | 4570  | 266 |
| 160                                 | 533                   | 1.2            | 9.00 | 7.5                  | 301 L1 | —      | BN132MB4 | M4LB4 | 2260                | 2260  | 6750  | 7750  | 1490  | 256 |
| 165                                 | 501                   | 1.2            | 8.74 | 12.0                 | —      | 300 R2 | BN132MB4 | M4LB4 | 2240                | 2240  | 6690  | 7690  | 1470  | 248 |
| 165                                 | 501                   | 2.2            | 8.74 | 12.0                 | —      | 301 R2 | BN132MB4 | M4LB4 | 2240                | 2240  | 6690  | 7690  | 1470  | 258 |
| 192                                 | 444                   | 2.7            | 7.50 | 11.0                 | 303 L1 | —      | BN132MB4 | M4LB4 | 6550                | 7560  | 13000 | 15700 | 4200  | 266 |
| 200                                 | 426                   | 1.0            | 7.20 | 7.5                  | 300 L1 | —      | BN132MB4 | M4LB4 | 2100                | 2100  | 6310  | 7250  | 1380  | 246 |
| 200                                 | 426                   | 1.8            | 7.20 | 7.5                  | 301 L1 | —      | BN132MB4 | M4LB4 | 2100                | 2100  | 6310  | 7250  | 1380  | 256 |
| 202                                 | 409                   | 1.4            | 7.13 | 12.0                 | —      | 300 R2 | BN132MB4 | M4LB4 | 2090                | 2090  | 6300  | 7230  | 1380  | 248 |
| 202                                 | 409                   | 2.5            | 7.13 | 12.0                 | —      | 301 R2 | BN132MB4 | M4LB4 | 2090                | 2090  | 6300  | 7230  | 1380  | 258 |
| 250                                 | 341                   | 1.4            | 5.77 | 7.5                  | 300 L1 | —      | BN132MB4 | M4LB4 | 1950                | 1950  | 5910  | 6790  | 1280  | 246 |
| 250                                 | 341                   | 2.7            | 5.77 | 7.5                  | 301 L1 | —      | BN132MB4 | M4LB4 | 1950                | 1950  | 5910  | 6790  | 1280  | 256 |
| 338                                 | 252                   | 1.9            | 4.26 | 7.5                  | 300 L1 | —      | BN132MB4 | M4LB4 | 1760                | 1760  | 5390  | 6200  | 1160  | 246 |
| 414                                 | 206                   | 2.3            | 3.48 | 7.5                  | 300 L1 | —      | BN132MB4 | M4LB4 | 1610                | 1610  | 4970  | 5710  | 1060  | 246 |

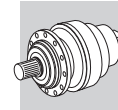
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$P_1 = 11 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |      |                      |        |        |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.76                                | 121580                | 1.3            | 1893 | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 442000 | 470000 | 150000 | 408 |
| 0.90                                | 102443                | 1.7            | 1595 | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 442000 | 470000 | 150000 | 408 |
| 1.1                                 | 84686                 | 2.0            | 1318 | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 434300 | 462400 | 147000 | 408 |
| 1.1                                 | 82467                 | 1.2            | 1284 | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 201500 | 236600 | 87400  | 386 |
| 1.1                                 | 82060                 | 0.9            | 1277 | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 201200 | 236300 | 87300  | 374 |
| 1.2                                 | 79495                 | 1.5            | 1237 | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 331400 | 368600 | 144000 | 398 |
| 1.3                                 | 72848                 | 2.3            | 1134 | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 415100 | 442000 | 139800 | 408 |
| 1.3                                 | 70939                 | 1.3            | 1104 | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 192600 | 226200 | 83200  | 386 |
| 1.3                                 | 70589                 | 1.1            | 1099 | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 192400 | 225800 | 83000  | 374 |
| 1.4                                 | 66982                 | 1.5            | 1043 | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 189400 | 222300 | 81600  | 386 |
| 1.4                                 | 66982                 | 2.0            | 1043 | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                                 | 66651                 | 1.2            | 1038 | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 189100 | 222000 | 81400  | 374 |
| 1.4                                 | 66317                 | 2.7            | 1032 | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 403600 | 429700 | 135500 | 408 |
| 1.5                                 | 61240                 | 2.4            | 953  | 50.0                 | —      | 317 R4 | BN160MR4 | — | —                   | —  | 394100 | 419600 | 132000 | 410 |
| 1.5                                 | 59735                 | 1.6            | 930  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 183000 | 214800 | 78500  | 386 |
| 1.6                                 | 59478                 | 1.2            | 926  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 182700 | 214500 | 78400  | 374 |
| 1.6                                 | 58414                 | 1.3            | 909  | 40.0                 | —      | 315 R4 | BN160MR4 | — | —                   | —  | 181700 | 213400 | 77900  | 388 |
| 1.6                                 | 58051                 | 2.9            | 904  | 18.0                 | 317 L4 | —      | BN160MR4 | — | —                   | —  | 387800 | 412900 | 129600 | 408 |
| 1.6                                 | 57130                 | 0.9            | 889  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 169100 | 200100 | 68800  | 362 |
| 1.7                                 | 55372                 | 1.8            | 862  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                                 | 55372                 | 2.3            | 862  | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 297400 | 330700 | 127600 | 398 |
| 1.7                                 | 55098                 | 1.5            | 858  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 178600 | 209700 | 76400  | 374 |
| 1.8                                 | 52194                 | 2.5            | 812  | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 292100 | 324900 | 125100 | 398 |
| 1.8                                 | 50742                 | 1.0            | 790  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 163200 | 193100 | 66100  | 362 |
| 1.8                                 | 50249                 | 1.8            | 782  | 40.0                 | —      | 315 R4 | BN160MR4 | — | —                   | —  | 173700 | 203900 | 74100  | 388 |
| 1.9                                 | 47602                 | 2.1            | 741  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 170900 | 200700 | 72800  | 386 |
| 1.9                                 | 47602                 | 2.7            | 741  | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 284200 | 316100 | 121400 | 398 |
| 2.0                                 | 47396                 | 1.7            | 738  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 170700 | 200400 | 72700  | 374 |
| 2.0                                 | 46656                 | 2.8            | 726  | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 282500 | 314100 | 120500 | 398 |
| 2.0                                 | 46518                 | 1.0            | 724  | 11.0                 | 311 L4 | —      | BN160MR4 | — | —                   | —  | 128700 | 160300 | 52200  | 350 |
| 2.1                                 | 44655                 | 1.1            | 695  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 157000 | 185900 | 63300  | 362 |
| 2.1                                 | 43978                 | 2.9            | 685  | 18.0                 | 316 L4 | —      | BN160MR4 | — | —                   | —  | 277500 | 308600 | 118200 | 398 |
| 2.1                                 | 43147                 | 2.3            | 672  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 165900 | 194800 | 70500  | 386 |
| 2.2                                 | 42934                 | 1.9            | 668  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 165700 | 194500 | 70300  | 374 |
| 2.2                                 | 42339                 | 2.1            | 659  | 40.0                 | —      | 315 R4 | BN160MR4 | — | —                   | —  | 165000 | 193700 | 70000  | 388 |
| 2.2                                 | 41540                 | 1.2            | 647  | 22.0                 | —      | 313 R4 | BN160MR4 | — | —                   | —  | 153700 | 181900 | 61800  | 364 |
| 2.3                                 | 40659                 | 1.3            | 633  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 152700 | 180700 | 61400  | 362 |
| 2.3                                 | 40386                 | 1.0            | 629  | 22.0                 | —      | 311 R4 | BN160MR4 | — | —                   | —  | 123300 | 153600 | 49800  | 352 |
| 2.3                                 | 40258                 | 1.0            | 627  | 11.0                 | 311 L4 | —      | BN160MR4 | — | —                   | —  | 123200 | 153500 | 49700  | 350 |
| 2.3                                 | 40042                 | 2.5            | 623  | 40.0                 | —      | 315 R4 | BN160MR4 | — | —                   | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                                 | 40042                 | 2.9            | 623  | 45.0                 | —      | 316 R4 | BN160MR4 | — | —                   | —  | 269800 | 300100 | 114500 | 400 |
| 2.3                                 | 39427                 | 1.5            | 614  | 22.0                 | —      | 314 R4 | BN160MR4 | — | —                   | —  | 161500 | 189600 | 68400  | 376 |
| 2.4                                 | 37956                 | 2.6            | 591  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 159700 | 187500 | 67500  | 386 |
| 2.4                                 | 37769                 | 2.1            | 588  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 159500 | 187200 | 67400  | 374 |
| 2.5                                 | 36468                 | 1.2            | 568  | 11.0                 | 311 L4 | —      | BN160MR4 | — | —                   | —  | 119600 | 149000 | 48100  | 350 |
| 2.6                                 | 36216                 | 1.5            | 564  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 147500 | 174500 | 59100  | 362 |
| 2.6                                 | 35601                 | 2.2            | 554  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 156600 | 183900 | 66100  | 374 |
| 2.7                                 | 34340                 | 1.4            | 535  | 22.0                 | —      | 313 R4 | BN160MR4 | — | —                   | —  | 145100 | 171800 | 58000  | 364 |
| 2.7                                 | 34269                 | 2.9            | 533  | 18.0                 | 315 L4 | —      | BN160MR4 | — | —                   | —  | 154900 | 181800 | 65200  | 386 |
| 2.7                                 | 33916                 | 2.0            | 528  | 22.0                 | —      | 314 R4 | BN160MR4 | — | —                   | —  | 154400 | 181300 | 65000  | 376 |
| 2.7                                 | 33739                 | 2.9            | 525  | 40.0                 | —      | 315 R4 | BN160MR4 | — | —                   | —  | 154100 | 181000 | 64900  | 388 |
| 2.8                                 | 33386                 | 1.2            | 520  | 22.0                 | —      | 311 R4 | BN160MR4 | — | —                   | —  | 116500 | 145100 | 46700  | 352 |
| 2.8                                 | 32997                 | 1.5            | 514  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 143400 | 169700 | 57300  | 362 |
| 2.8                                 | 32898                 | 1.3            | 512  | 11.0                 | 311 L4 | —      | BN160MR4 | — | —                   | —  | 116000 | 144500 | 46500  | 350 |
| 2.9                                 | 31869                 | 1.6            | 496  | 22.0                 | —      | 313 R4 | BN160MR4 | — | —                   | —  | 141900 | 168000 | 56600  | 364 |
| 2.9                                 | 31770                 | 2.5            | 495  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 151400 | 177700 | 63600  | 374 |
| 2.9                                 | 31470                 | 1.1            | 490  | 22.0                 | —      | 311 R4 | BN160MR4 | — | —                   | —  | 114400 | 142500 | 45800  | 352 |
| 3.1                                 | 29430                 | 2.7            | 458  | 15.0                 | 314 L4 | —      | BN160MR4 | — | —                   | —  | 148000 | 173700 | 62000  | 374 |
| 3.2                                 | 29019                 | 1.9            | 452  | 11.0                 | 313 L4 | —      | BN160MR4 | — | —                   | —  | 138000 | 163300 | 54900  | 362 |
| 3.2                                 | 28950                 | 1.0            | 451  | 11.0                 | 310 L4 | —      | BN160MR4 | — | —                   | —  | 92500  | 116300 | 43500  | 338 |
| 3.2                                 | 28934                 | 1.6            | 450  | 22.0                 | —      | 313 R4 | BN160MR4 | — | —                   | —  | 137900 | 163200 | 54800  | 364 |
| 3.2                                 | 28577                 | 2.4            | 445  | 22.0                 | —      | 314 R4 | BN160MR4 | — | —                   | —  | 146700 | 172200 | 61400  | 376 |
| 3.3                                 | 28131                 | 1.3            | 438  | 22.0                 | —      | 311 R4 | BN160MR4 | — | —                   | —  | 110600 | 137800 | 44100  | 352 |
| 3.4                                 | 27027                 | 2.9            | 421  | 22.0                 | —      | 314 R4 | BN160MR4 | — | —                   | —  | 144200 | 169300 | 60300  | 376 |
| 3.4                                 | 26937                 | 1.1            | 419  | 15.0                 | —      | 310 R4 | BN160MR4 | — | —                   | —  | 92400  | 116200 | 43500  | 340 |

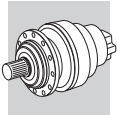


$P_1 = 11 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|----------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |     |                      |        |        |          |       | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 3.5                                 | 26516                 | 1.5            | 413 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 108700 | 135400 | 43300 | 352 |
| 3.5                                 | 26360                 | 1.6            | 410 | 11.0                 | 311 L4 | —      | BN160MR4 | —     | —                   | —     | 108500 | 135200 | 43200 | 350 |
| 3.7                                 | 25315                 | 2.2            | 394 | 11.0                 | 313 L4 | —      | BN160MR4 | —     | —                   | —     | 132500 | 156800 | 52400 | 362 |
| 3.7                                 | 24890                 | 1.9            | 387 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 131800 | 156000 | 52100 | 364 |
| 4.0                                 | 23334                 | 1.0            | 363 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 88500  | 111300 | 41500 | 340 |
| 4.1                                 | 22612                 | 2.3            | 352 | 11.0                 | 313 L4 | —      | BN160MR4 | —     | —                   | —     | 128000 | 151500 | 50500 | 362 |
| 4.1                                 | 22424                 | 0.9            | 349 | 7.5                  | 309 L4 | —      | BN160MR4 | —     | —                   | —     | 72300  | 93300  | 22100 | 326 |
| 4.1                                 | 22329                 | 1.8            | 348 | 11.0                 | 311 L4 | —      | BN160MR4 | —     | —                   | —     | 103200 | 128600 | 40900 | 350 |
| 4.2                                 | 22198                 | 2.4            | 346 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 127300 | 150700 | 50200 | 364 |
| 4.2                                 | 21920                 | 1.8            | 341 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 102700 | 127900 | 40600 | 352 |
| 4.3                                 | 21465                 | 1.3            | 334 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 86300  | 108600 | 40300 | 340 |
| 4.5                                 | 20662                 | 1.9            | 322 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 100900 | 125600 | 39800 | 352 |
| 4.7                                 | 19834                 | 2.2            | 309 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 123100 | 145700 | 48300 | 364 |
| 4.7                                 | 19589                 | 1.2            | 305 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 84000  | 105600 | 39100 | 340 |
| 4.7                                 | 20178                 | 1.9            | 304 | 18.0                 | 313 L3 | —      | BN160MR4 | —     | —                   | —     | 122500 | 145000 | 48100 | 362 |
| 4.9                                 | 19618                 | 1.2            | 295 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 83200  | 104600 | 38700 | 338 |
| 4.9                                 | 18856                 | 2.0            | 294 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 98100  | 122200 | 38600 | 352 |
| 4.9                                 | 19342                 | 1.4            | 291 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 97900  | 121900 | 38500 | 350 |
| 5.1                                 | 18274                 | 0.9            | 284 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 68000  | 87700  | 20700 | 328 |
| 5.1                                 | 18182                 | 1.4            | 283 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 82100  | 103300 | 38100 | 340 |
| 5.1                                 | 18059                 | 2.7            | 281 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 119700 | 141700 | 46800 | 364 |
| 5.4                                 | 17081                 | 2.2            | 266 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 95300  | 118700 | 37400 | 352 |
| 5.6                                 | 16593                 | 1.4            | 258 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 79900  | 100500 | 37000 | 340 |
| 5.6                                 | 16577                 | 1.0            | 258 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 67400  | 87000  | 20500 | 328 |
| 5.7                                 | 16763                 | 2.7            | 252 | 18.0                 | 313 L3 | —      | BN160MR4 | —     | —                   | —     | 115900 | 137100 | 45200 | 362 |
| 5.8                                 | 16556                 | 1.1            | 249 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 79100  | 99400  | 36600 | 338 |
| 5.9                                 | 16298                 | 2.1            | 245 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 93000  | 115800 | 36400 | 350 |
| 6.1                                 | 15217                 | 2.7            | 237 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 113700 | 134600 | 44200 | 364 |
| 6.2                                 | 15031                 | 1.6            | 234 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 77600  | 97600  | 35800 | 340 |
| 6.2                                 | 14917                 | 1.1            | 232 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 65300  | 84200  | 19800 | 328 |
| 6.3                                 | 15286                 | 1.4            | 230 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 77200  | 97100  | 35600 | 338 |
| 6.3                                 | 14693                 | 2.4            | 229 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 91100  | 113400 | 35500 | 352 |
| 7.0                                 | 13223                 | 1.7            | 206 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 74700  | 93900  | 34300 | 340 |
| 7.0                                 | 13209                 | 1.1            | 206 | 15.0                 | —      | 307 R4 | BN160MR4 | M4LC4 | 27300               | 34300 | 62000  | 81200  | 23700 | 316 |
| 7.0                                 | 13209                 | 1.5            | 206 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 63000  | 81200  | 19000 | 328 |
| 7.1                                 | 13473                 | 2.5            | 203 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 87800  | 109400 | 34100 | 350 |
| 7.1                                 | 13406                 | 1.6            | 202 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 74200  | 93300  | 34100 | 338 |
| 7.1                                 | 13392                 | 1.2            | 202 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 62600  | 80700  | 18900 | 326 |
| 7.2                                 | 12889                 | 2.7            | 201 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 108200 | 128000 | 41900 | 364 |
| 7.3                                 | 12728                 | 2.7            | 198 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 87200  | 108600 | 33900 | 352 |
| 7.5                                 | 12700                 | 2.5            | 191 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 86300  | 107500 | 33500 | 350 |
| 7.6                                 | 12249                 | 1.1            | 191 | 15.0                 | —      | 307 R4 | BN160MR4 | M4LC4 | 26600               | 33400 | 60600  | 79400  | 23200 | 316 |
| 7.6                                 | 12249                 | 1.4            | 191 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 61600  | 79400  | 18500 | 328 |
| 7.6                                 | 12164                 | 1.9            | 189 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 72800  | 91500  | 33400 | 340 |
| 7.8                                 | 11857                 | 2.7            | 185 | 22.0                 | —      | 313 R4 | BN160MR4 | —     | —                   | —     | 105500 | 124900 | 40700 | 364 |
| 7.9                                 | 12131                 | 1.2            | 183 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 60800  | 78400  | 18300 | 326 |
| 7.9                                 | 11708                 | 2.7            | 182 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 85100  | 106000 | 32900 | 352 |
| 8.1                                 | 11773                 | 1.6            | 177 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 71400  | 89800  | 32600 | 338 |
| 8.1                                 | 11759                 | 1.0            | 177 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 26000               | 32600 | 59300  | 77700  | 22600 | 314 |
| 8.4                                 | 11352                 | 2.9            | 171 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 83400  | 103900 | 32200 | 350 |
| 8.7                                 | 10611                 | 1.5            | 165 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 59000  | 76100  | 17700 | 328 |
| 8.8                                 | 10870                 | 2.0            | 164 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 69700  | 87600  | 31800 | 338 |
| 8.9                                 | 10731                 | 1.0            | 162 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 25200               | 31600 | 57700  | 75600  | 21900 | 314 |
| 8.9                                 | 10731                 | 1.5            | 162 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 58600  | 75600  | 17500 | 326 |
| 8.9                                 | 10701                 | 3.0            | 161 | 18.0                 | 311 L3 | —      | BN160MR4 | —     | —                   | —     | 82000  | 102100 | 31600 | 350 |
| 9.0                                 | 10303                 | 2.1            | 160 | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 69300  | 87100  | 31600 | 340 |
| 9.1                                 | 10141                 | 0.9            | 158 | 12.0                 | —      | 306 R4 | BN160MR4 | M4LC4 | 22000               | 24900 | 52100  | 60700  | 16500 | 304 |
| 9.3                                 | 9918                  | 2.7            | 154 | 22.0                 | —      | 311 R4 | BN160MR4 | —     | —                   | —     | 80900  | 100800 | 31200 | 352 |
| 9.5                                 | 9761                  | 1.9            | 152 | 15.0                 | —      | 309 R4 | BN160MR4 | —     | —                   | —     | 57500  | 74200  | 17200 | 328 |
| 9.5                                 | 9761                  | 1.4            | 152 | 15.0                 | —      | 307 R4 | BN160MR4 | M4LC4 | 24100               | 30300 | 55400  | 72700  | 21000 | 316 |
| 9.8                                 | 9743                  | 2.8            | 147 | 40.0                 | —      | 311 R3 | BN160MR4 | —     | —                   | —     | 79700  | 99300  | 30600 | 352 |
| 9.8                                 | 9721                  | 1.4            | 146 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 24400               | 30600 | 56000  | 73300  | 21200 | 314 |
| 10.2                                | 9416                  | 2.2            | 142 | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 66700  | 83900  | 30300 | 338 |
| 10.4                                | 9218                  | 1.2            | 139 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 24000               | 30100 | 55100  | 72200  | 20800 | 314 |
| 10.4                                | 9218                  | 1.7            | 139 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 56000  | 72200  | 16700 | 326 |

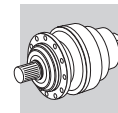
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$P_1 = 11 \text{ kW}$

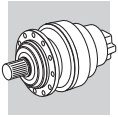
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 10.6                                | 8728                  | 2.4            | 136  | 15.0                 | —      | 310 R4 | BN160MR4 | —     | —                   | —     | 65900 | 82900 | 29900 | 340 |
| 11.0                                | 8662                  | 2.4            | 130  | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 65100 | 81900 | 29500 | 338 |
| 11.4                                | 8362                  | 1.6            | 126  | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 23200               | 29100 | 53500 | 70100 | 20200 | 314 |
| 11.4                                | 8362                  | 2.0            | 126  | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 54400 | 70100 | 16100 | 326 |
| 11.6                                | 7968                  | 1.4            | 124  | 15.0                 | —      | 307 R4 | BN160MR4 | M4LC4 | 24800               | 31100 | 56900 | 74500 | 21600 | 316 |
| 11.9                                | 8056                  | 1.0            | 121  | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 20600               | 23400 | 49200 | 57300 | 15500 | 302 |
| 12.0                                | 7955                  | 1.1            | 120  | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 22800               | 28600 | 52700 | 69100 | 19800 | 316 |
| 12.0                                | 7955                  | 1.6            | 120  | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 53600 | 69100 | 15900 | 328 |
| 12.0                                | 7955                  | 2.2            | 120  | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 63500 | 79800 | 28600 | 340 |
| 12.1                                | 7905                  | 2.5            | 119  | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 63300 | 79600 | 28600 | 338 |
| 12.7                                | 7525                  | 1.4            | 113  | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 22400               | 28100 | 51800 | 67900 | 19500 | 314 |
| 12.7                                | 7525                  | 2.1            | 113  | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 52700 | 67900 | 15600 | 326 |
| 12.8                                | 7462                  | 1.0            | 112  | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 20100               | 22800 | 48100 | 56000 | 15100 | 302 |
| 13.0                                | 7337                  | 2.7            | 110  | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 61900 | 77900 | 27900 | 338 |
| 13.8                                | 6922                  | 1.3            | 104  | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 19600               | 22200 | 47000 | 54700 | 14700 | 302 |
| 14.3                                | 6696                  | 2.8            | 101  | 18.0                 | 310 L3 | —      | BN160MR4 | —     | —                   | —     | 60300 | 75800 | 27000 | 338 |
| 14.4                                | 6663                  | 1.9            | 100  | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 21500               | 27000 | 50000 | 65500 | 18700 | 314 |
| 14.4                                | 6663                  | 2.5            | 100  | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 50800 | 65500 | 15000 | 326 |
| 14.5                                | 6576                  | 1.3            | 99.0 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 21400               | 26900 | 49800 | 65200 | 18600 | 316 |
| 14.5                                | 6576                  | 1.9            | 99.0 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 50600 | 65200 | 14900 | 328 |
| 14.5                                | 6576                  | 2.5            | 99.0 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 59900 | 75400 | 26900 | 340 |
| 14.6                                | 6544                  | 1.0            | 98.5 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 19200               | 21800 | 46200 | 53800 | 14400 | 304 |
| 15.5                                | 6179                  | 2.0            | 93.0 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 21000               | 26300 | 48900 | 64000 | 18200 | 314 |
| 15.5                                | 6179                  | 2.4            | 93.0 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 49600 | 64000 | 14600 | 326 |
| 16.3                                | 5864                  | 1.5            | 88.3 | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 18500               | 21000 | 44700 | 52100 | 13900 | 302 |
| 17.0                                | 5629                  | 1.3            | 84.7 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 18300               | 20700 | 44200 | 51400 | 13700 | 304 |
| 17.3                                | 5541                  | 1.8            | 83.4 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 20200               | 25400 | 47300 | 62000 | 17600 | 316 |
| 17.3                                | 5541                  | 2.5            | 83.4 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 48000 | 62000 | 14100 | 328 |
| 17.3                                | 5541                  | 2.7            | 83.4 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 56900 | 71600 | 25400 | 340 |
| 17.6                                | 5437                  | 1.3            | 81.9 | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 18100               | 20500 | 43700 | 50900 | 13600 | 302 |
| 17.9                                | 5353                  | 1.9            | 80.6 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 20000               | 25100 | 46800 | 61300 | 17400 | 314 |
| 17.9                                | 5353                  | 2.8            | 80.6 | 11.0                 | 309 L3 | —      | BN160MR4 | —     | —                   | —     | 47600 | 61300 | 13900 | 326 |
| 18.3                                | 5223                  | 2.7            | 78.6 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 55900 | 70300 | 24900 | 340 |
| 18.3                                | 5223                  | 2.1            | 78.6 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 19800               | 24900 | 46500 | 60900 | 17200 | 316 |
| 18.6                                | 5131                  | 0.9            | 77.2 | 7.5                  | 305 L3 | —      | BN160MR4 | M4LC4 | 13900               | 16100 | 25700 | 30900 | 8930  | 290 |
| 18.7                                | 5115                  | 1.6            | 77.0 | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 17700               | 20100 | 42900 | 50000 | 13300 | 302 |
| 19.4                                | 4924                  | 2.4            | 74.1 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 19400               | 24400 | 45600 | 59800 | 16900 | 314 |
| 19.8                                | 4842                  | 1.5            | 72.9 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 17400               | 19700 | 42200 | 49200 | 13100 | 304 |
| 19.9                                | 4975                  | 1.1            | 72.5 | 13.0                 | 306 L2 | —      | BN160MR4 | M4LC4 | 17400               | 19700 | 42100 | 49100 | 13000 | 302 |
| 20.1                                | 4766                  | 2.1            | 71.8 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 19200               | 24100 | 45200 | 59200 | 16700 | 316 |
| 20.1                                | 4766                  | 2.7            | 71.8 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 45900 | 59200 | 13400 | 328 |
| 20.1                                | 4766                  | 2.7            | 71.8 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 54400 | 68400 | 24100 | 340 |
| 21.3                                | 4486                  | 1.6            | 67.5 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 17000               | 19200 | 41300 | 48000 | 12700 | 304 |
| 22.1                                | 4333                  | 1.7            | 65.2 | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 16800               | 19000 | 40800 | 47500 | 12600 | 302 |
| 22.2                                | 4318                  | 2.7            | 65.0 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 52800 | 66400 | 23400 | 340 |
| 22.2                                | 4318                  | 2.5            | 65.0 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 18600               | 23300 | 43900 | 57500 | 16200 | 316 |
| 22.2                                | 4318                  | 2.6            | 65.0 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 44600 | 57500 | 12900 | 328 |
| 22.8                                | 4190                  | 1.0            | 63.1 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 292 |
| 22.8                                | 4189                  | 1.1            | 63.1 | 7.5                  | 305 L3 | —      | BN160MR4 | M4LC4 | 13300               | 15400 | 24700 | 29700 | 8540  | 290 |
| 23.8                                | 4019                  | 2.8            | 60.5 | 11.0                 | 307 L3 | —      | BN160MR4 | M4LC4 | 18200               | 22800 | 42900 | 56300 | 15800 | 314 |
| 24.8                                | 3859                  | 2.0            | 58.1 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 16100               | 18300 | 39400 | 45900 | 12100 | 304 |
| 25.6                                | 3860                  | 1.3            | 56.3 | 13.0                 | 306 L2 | —      | BN160MR4 | M4LC4 | 16000               | 18100 | 39100 | 45500 | 12000 | 302 |
| 25.8                                | 3714                  | 2.7            | 55.9 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 50500 | 63500 | 22200 | 340 |
| 25.8                                | 3714                  | 2.7            | 55.9 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 17700               | 22200 | 41900 | 55000 | 15400 | 316 |
| 25.8                                | 3714                  | 2.7            | 55.9 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 42600 | 55000 | 12300 | 328 |
| 25.8                                | 3829                  | 0.9            | 55.8 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 12500               | 14400 | 23300 | 28100 | 8010  | 290 |
| 26.6                                | 3599                  | 1.0            | 54.2 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 12700               | 14600 | 23600 | 28400 | 8120  | 292 |
| 27.0                                | 3548                  | 0.9            | 53.4 | 7.5                  | 304 L3 | —      | BN160MR4 | M4LC4 | 12600               | 14500 | 23500 | 28300 | 8080  | 278 |
| 27.0                                | 3548                  | 1.1            | 53.4 | 7.5                  | 305 L3 | —      | BN160MR4 | M4LC4 | 12600               | 14500 | 23500 | 28300 | 8080  | 290 |
| 27.0                                | 3537                  | 2.0            | 53.2 | 7.5                  | 306 L3 | —      | BN160MR4 | M4LC4 | 15700               | 17800 | 38400 | 44700 | 11800 | 302 |
| 28.6                                | 3339                  | 1.3            | 50.3 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 12300               | 14200 | 23100 | 27800 | 7920  | 292 |
| 31                                  | 3207                  | 2.6            | 46.7 | 18.0                 | 307 L2 | —      | BN160MR4 | M4LC4 | 16700               | 20900 | 39700 | 52100 | 14500 | 314 |
| 31                                  | 3096                  | 1.4            | 46.6 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 12000               | 13900 | 22600 | 27200 | 7720  | 292 |
| 31                                  | 3191                  | 2.0            | 46.5 | 13.0                 | 306 L2 | —      | BN160MR4 | M4LC4 | 15000               | 17000 | 36900 | 43000 | 11300 | 302 |
| 31                                  | 3075                  | 2.4            | 46.3 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 15000               | 16900 | 36800 | 42900 | 11200 | 304 |



$P_1 = 11 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 32                                  | 3063                  | 1.2            | 44.6 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 11900               | 13700 | 22300 | 26800 | 7610  | 290 |
| 32                                  | 2960                  | 2.7            | 44.6 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 47200 | 59300 | 20600 | 340 |
| 32                                  | 2960                  | 2.7            | 44.6 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 16400               | 20600 | 39200 | 51300 | 14300 | 316 |
| 32                                  | 2960                  | 2.7            | 44.6 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 39800 | 51300 | 11400 | 328 |
| 33                                  | 2896                  | 1.1            | 43.6 | 7.5                  | 304 L3 | —      | BN160MR4 | M4LC4 | 11800               | 13600 | 22100 | 26600 | 7550  | 278 |
| 34                                  | 2828                  | 1.3            | 42.6 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 11700               | 13500 | 22000 | 26400 | 7490  | 292 |
| 37                                  | 2605                  | 2.5            | 39.2 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 14100               | 16000 | 35000 | 40800 | 10600 | 304 |
| 37                                  | 2638                  | 2.5            | 38.4 | 13.0                 | 306 L2 | —      | BN160MR4 | M4LC4 | 14100               | 15900 | 34800 | 40600 | 10600 | 302 |
| 38                                  | 2635                  | 1.1            | 38.4 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 11300               | 13000 | 21300 | 25600 | 7240  | 278 |
| 38                                  | 2635                  | 1.6            | 38.4 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 11300               | 13000 | 21300 | 25600 | 7240  | 290 |
| 38                                  | 2507                  | 2.7            | 37.7 | 22.0                 | —      | 310 R3 | BN160MR4 | —     | —                   | —     | 44900 | 56400 | 19500 | 340 |
| 38                                  | 2507                  | 2.7            | 37.7 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 15500               | 19500 | 37300 | 48800 | 13500 | 316 |
| 38                                  | 2507                  | 2.7            | 37.7 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 37900 | 48800 | 10800 | 328 |
| 39                                  | 2467                  | 1.8            | 37.1 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 11200               | 12900 | 21100 | 25400 | 7160  | 292 |
| 40                                  | 2454                  | 1.5            | 35.8 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 11000               | 12700 | 20800 | 25100 | 7070  | 290 |
| 43                                  | 2206                  | 2.6            | 33.2 | 14.0                 | —      | 306 R3 | BN160MR4 | M4LC4 | 13400               | 15200 | 33300 | 38800 | 10100 | 304 |
| 46                                  | 2101                  | 2.7            | 31.6 | 22.0                 | —      | 307 R3 | BN160MR4 | M4LC4 | 14600               | 18400 | 35400 | 46300 | 12700 | 316 |
| 46                                  | 2101                  | 2.7            | 31.6 | 22.0                 | —      | 309 R3 | BN160MR4 | —     | —                   | —     | 35900 | 46300 | 10200 | 328 |
| 46                                  | 2090                  | 1.8            | 31.5 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 10600               | 12200 | 20100 | 24100 | 6770  | 292 |
| 47                                  | 2111                  | 1.0            | 30.8 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 10500               | 12100 | 19900 | 24000 | 6720  | 266 |
| 47                                  | 2111                  | 1.3            | 30.8 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 10500               | 12100 | 19900 | 24000 | 6720  | 278 |
| 47                                  | 2111                  | 2.0            | 30.8 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 10500               | 12100 | 19900 | 24000 | 6720  | 290 |
| 54                                  | 1814                  | 1.0            | 26.4 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 9960                | 11500 | 19000 | 22900 | 6390  | 266 |
| 54                                  | 1814                  | 1.9            | 26.4 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 9960                | 11500 | 19000 | 22900 | 6390  | 290 |
| 56                                  | 1706                  | 2.1            | 25.7 | 14.0                 | —      | 305 R3 | —        | M4LC4 | 9870                | 11400 | 18900 | 22700 | 6330  | 292 |
| 59                                  | 1683                  | 1.3            | 24.5 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 9720                | 11200 | 18600 | 22400 | 6230  | 266 |
| 59                                  | 1683                  | 1.9            | 24.5 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 9720                | 11200 | 18600 | 22400 | 6230  | 278 |
| 59                                  | 1683                  | 2.3            | 24.5 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 9720                | 11200 | 18600 | 22400 | 6230  | 290 |
| 63                                  | 1560                  | 1.3            | 22.7 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 9470                | 10900 | 18200 | 21900 | 6080  | 266 |
| 63                                  | 1560                  | 1.8            | 22.7 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 9470                | 10900 | 18200 | 21900 | 6080  | 278 |
| 63                                  | 1560                  | 2.5            | 22.7 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 9470                | 10900 | 18200 | 21900 | 6080  | 290 |
| 69                                  | 1425                  | 1.3            | 20.8 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 9190                | 10600 | 17700 | 21300 | 5900  | 266 |
| 69                                  | 1425                  | 2.1            | 20.8 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 9190                | 10600 | 17700 | 21300 | 5900  | 278 |
| 69                                  | 1425                  | 2.3            | 20.8 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 9190                | 10600 | 17700 | 21300 | 5900  | 290 |
| 72                                  | 1378                  | 0.9            | 20.1 | 7.5                  | 301 L2 | —      | —        | M4LC4 | 2890                | 2890  | 8410  | 9660  | 1900  | 256 |
| 75                                  | 1319                  | 2.6            | 19.2 | 18.0                 | —      | 306 R2 | BN160MR4 | M4LC4 | 11200               | 12600 | 28300 | 33000 | 8380  | 304 |
| 75                                  | 1319                  | 1.2            | 19.2 | 18.0                 | —      | 303 R2 | —        | M4LC4 | 8960                | 10300 | 17300 | 20800 | 5750  | 268 |
| 75                                  | 1319                  | 2.2            | 19.2 | 18.0                 | —      | 305 R2 | —        | M4LC4 | 8960                | 10300 | 17300 | 20800 | 5750  | 292 |
| 79                                  | 1247                  | 1.1            | 18.2 | 7.5                  | 301 L2 | —      | —        | M4LC4 | 2860                | 2860  | 8330  | 9580  | 1880  | 256 |
| 79                                  | 1243                  | 1.6            | 18.1 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 8780                | 10100 | 17000 | 20400 | 5630  | 266 |
| 79                                  | 1243                  | 2.4            | 18.1 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 8780                | 10100 | 17000 | 20400 | 5630  | 278 |
| 79                                  | 1243                  | 2.9            | 18.1 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 8780                | 10100 | 17000 | 20400 | 5630  | 290 |
| 86                                  | 1156                  | 2.1            | 16.8 | 18.0                 | —      | 304 R2 | —        | M4LC4 | 8570                | 9900  | 16600 | 20000 | 5500  | 280 |
| 91                                  | 1090                  | 2.7            | 15.9 | 18.0                 | —      | 306 R2 | BN160MR4 | M4LC4 | 10500               | 11900 | 26700 | 31100 | 7870  | 304 |
| 91                                  | 1090                  | 1.7            | 15.9 | 18.0                 | —      | 303 R2 | —        | M4LC4 | 8410                | 9710  | 16300 | 19700 | 5390  | 268 |
| 91                                  | 1090                  | 2.7            | 15.9 | 18.0                 | —      | 305 R2 | —        | M4LC4 | 8410                | 9710  | 16300 | 19700 | 5390  | 292 |
| 94                                  | 1053                  | 1.6            | 15.3 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 8310                | 9590  | 16200 | 19500 | 5330  | 266 |
| 94                                  | 1053                  | 2.7            | 15.3 | 9.0                  | 304 L2 | —      | BN160MR4 | M4LC4 | 8310                | 9590  | 16200 | 19500 | 5330  | 278 |
| 94                                  | 1053                  | 2.9            | 15.3 | 9.0                  | 305 L2 | —      | BN160MR4 | M4LC4 | 8310                | 9590  | 16200 | 19500 | 5330  | 290 |
| 97                                  | 1018                  | 1.3            | 14.8 | 7.5                  | 301 L2 | —      | —        | M4LC4 | 2670                | 2670  | 7840  | 9010  | 1760  | 256 |
| 98                                  | 1013                  | 0.9            | 14.8 | 12.0                 | —      | 301 R2 | —        | M4LC4 | 2610                | 2610  | 7670  | 8810  | 1710  | 258 |
| 105                                 | 938                   | 2.7            | 13.7 | 18.0                 | —      | 306 R2 | BN160MR4 | M4LC4 | 9960                | 11300 | 25500 | 29700 | 7480  | 304 |
| 105                                 | 938                   | 2.1            | 13.7 | 18.0                 | —      | 303 R2 | —        | M4LC4 | 8000                | 9230  | 15600 | 18800 | 5130  | 268 |
| 105                                 | 938                   | 2.7            | 13.7 | 18.0                 | —      | 304 R2 | —        | M4LC4 | 8000                | 9230  | 15600 | 18800 | 5130  | 280 |
| 105                                 | 938                   | 2.7            | 13.7 | 18.0                 | —      | 305 R2 | —        | M4LC4 | 8000                | 9230  | 15600 | 18800 | 5130  | 292 |
| 115                                 | 860                   | 1.9            | 12.5 | 9.0                  | 303 L2 | —      | BN160MR4 | M4LC4 | 7770                | 8970  | 15200 | 18300 | 4980  | 266 |
| 119                                 | 831                   | 1.5            | 12.1 | 7.5                  | 301 L2 | —      | —        | M4LC4 | 2500                | 2500  | 7380  | 8480  | 1640  | 256 |
| 122                                 | 812                   | 1.4            | 11.8 | 12.0                 | —      | 301 R2 | —        | M4LC4 | 2420                | 2420  | 7180  | 8240  | 1590  | 258 |
| 132                                 | 747                   | 2.6            | 10.9 | 18.0                 | —      | 306 R2 | BN160MR4 | M4LC4 | 9230                | 10500 | 23900 | 27800 | 6930  | 304 |
| 132                                 | 747                   | 2.5            | 10.9 | 18.0                 | —      | 303 R2 | —        | M4LC4 | 7410                | 8560  | 14600 | 17600 | 4760  | 268 |
| 132                                 | 747                   | 2.6            | 10.9 | 18.0                 | —      | 304 R2 | —        | M4LC4 | 7410                | 8560  | 14600 | 17600 | 4760  | 280 |
| 132                                 | 747                   | 2.6            | 10.9 | 18.0                 | —      | 305 R2 | —        | M4LC4 | 7410                | 8560  | 14600 | 17600 | 4760  | 292 |
| 149                                 | 684                   | 1.1            | 9.67 | 11.0                 | 303 L1 | —      | BN160MR4 | M4LC4 | 7120                | 8220  | 14100 | 16900 | 4570  | 266 |
| 156                                 | 633                   | 2.7            | 9.23 | 18.0                 | —      | 306 R2 | BN160MR4 | M4LC4 | 8730                | 9900  | 22700 | 26400 | 6560  | 304 |
| 156                                 | 633                   | 2.7            | 9.23 | 18.0                 | —      | 303 R2 | —        | M4LC4 | 7010                | 8100  | 13900 | 16700 | 4500  | 268 |

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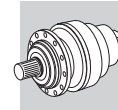


**P<sub>1</sub> = 11 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |          |       | Rn <sub>2</sub> [N] |      |       |       |      |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|----------|-------|---------------------|------|-------|-------|------|-----|
|                                     |                       |                |      |                      |        |        |          |       | MC                  | MZ   | HC/PC | HZ/PZ | FZ   |     |
| 156                                 | 633                   | 2.7            | 9.23 | 18.0                 | —      | 304 R2 | —        | M4LC4 | 7010                | 8100 | 13900 | 16700 | 4500 | 280 |
| 156                                 | 633                   | 2.7            | 9.23 | 18.0                 | —      | 305 R2 | —        | M4LC4 | 7010                | 8100 | 13900 | 16700 | 4500 | 292 |
| 160                                 | 637                   | 1.0            | 9.00 | 7.5                  | 301 L1 | —      | —        | M4LC4 | 2260                | 2260 | 6750  | 7750  | 1490 | 256 |
| 165                                 | 600                   | 1.0            | 8.74 | 11.0                 | —      | 300 R2 | —        | M4LC4 | 6550                | 7560 | 13000 | 15700 | 4200 | 248 |
| 165                                 | 600                   | 1.8            | 8.74 | 7.5                  | —      | 301 R2 | —        | M4LC4 | 2100                | 2100 | 6310  | 7250  | 1380 | 258 |
| 192                                 | 531                   | 2.3            | 7.50 | 11.0                 | 303 L1 | —      | BN160MR4 | M4LC4 | 6400                | 7390 | 12800 | 15400 | 4100 | 266 |
| 200                                 | 510                   | 1.5            | 7.20 | 7.5                  | 301 L1 | —      | —        | M4LC4 | 2050                | 2050 | 6180  | 7100  | 1350 | 256 |
| 202                                 | 490                   | 1.2            | 7.13 | 12.0                 | —      | 300 R2 | —        | M4LC4 | 2090                | 2090 | 6300  | 7230  | 1380 | 248 |
| 202                                 | 490                   | 2.1            | 7.13 | 12.0                 | —      | 301 R2 | —        | M4LC4 | 2050                | 2050 | 6170  | 7080  | 1350 | 258 |
| 250                                 | 409                   | 1.2            | 5.77 | 7.5                  | 300 L1 | —      | —        | M4LC4 | 1950                | 1950 | 5910  | 6790  | 1280 | 246 |
| 250                                 | 409                   | 2.3            | 5.77 | 7.5                  | 301 L1 | —      | —        | M4LC4 | 1950                | 1950 | 5910  | 6790  | 1280 | 256 |
| 338                                 | 302                   | 1.6            | 4.26 | 7.5                  | 300 L1 | —      | —        | M4LC4 | 1760                | 1760 | 5390  | 6200  | 1160 | 246 |
| 338                                 | 302                   | 2.9            | 4.26 | 7.5                  | 301 L1 | —      | —        | M4LC4 | 1760                | 1760 | 5390  | 6200  | 1160 | 256 |
| 414                                 | 246                   | 1.9            | 3.48 | 7.5                  | 300 L1 | —      | —        | M4LC4 | 1610                | 1610 | 4970  | 5710  | 1060 | 246 |

**P<sub>1</sub> = 15 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |      |                      |        |        |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.77                                | 163217                | 1.0            | 1893 | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 442000 | 470000 | 150000 | 408 |
| 0.92                                | 137526                | 1.2            | 1595 | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 442000 | 470000 | 150000 | 408 |
| 1.1                                 | 113688                | 1.5            | 1318 | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 434300 | 462400 | 147000 | 408 |
| 1.2                                 | 106719                | 1.1            | 1237 | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 331400 | 368600 | 144000 | 398 |
| 1.3                                 | 97796                 | 1.7            | 1134 | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 415100 | 442000 | 139800 | 408 |
| 1.3                                 | 95233                 | 1.0            | 1104 | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 192600 | 226200 | 83200  | 386 |
| 1.4                                 | 89921                 | 1.1            | 1043 | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 189400 | 222300 | 81600  | 386 |
| 1.4                                 | 89921                 | 1.5            | 1043 | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                                 | 89477                 | 0.9            | 1038 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 189100 | 222000 | 81400  | 374 |
| 1.4                                 | 89028                 | 2.0            | 1032 | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 403600 | 429700 | 135500 | 408 |
| 1.5                                 | 82213                 | 1.8            | 953  | 50.0                 | —      | 317 R4 | BN160L4 | — | —                   | —  | 394100 | 419600 | 132000 | 410 |
| 1.6                                 | 80193                 | 1.2            | 930  | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 183000 | 214800 | 78500  | 386 |
| 1.6                                 | 79847                 | 0.9            | 926  | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 182700 | 214500 | 78400  | 374 |
| 1.6                                 | 78419                 | 1.0            | 909  | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 181700 | 213400 | 77900  | 388 |
| 1.6                                 | 77931                 | 2.1            | 904  | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 387800 | 412900 | 129600 | 408 |
| 1.7                                 | 74334                 | 1.4            | 862  | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                                 | 74334                 | 1.7            | 862  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 297400 | 330700 | 127600 | 398 |
| 1.7                                 | 73967                 | 1.1            | 858  | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 178600 | 209700 | 76400  | 374 |
| 1.8                                 | 70068                 | 1.9            | 812  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 292100 | 324900 | 125100 | 398 |
| 1.8                                 | 69272                 | 2.4            | 803  | 50.0                 | —      | 317 R4 | BN160L4 | — | —                   | —  | 374300 | 398500 | 124600 | 410 |
| 1.8                                 | 68302                 | 2.7            | 792  | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 372700 | 396900 | 124100 | 408 |
| 1.9                                 | 67457                 | 1.3            | 782  | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 173700 | 203900 | 74100  | 388 |
| 2.0                                 | 63904                 | 1.6            | 741  | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 170900 | 200700 | 72800  | 386 |
| 2.0                                 | 63904                 | 2.0            | 741  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 284200 | 316100 | 121400 | 398 |
| 2.0                                 | 63628                 | 1.3            | 738  | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 170700 | 200400 | 72700  | 374 |
| 2.0                                 | 62634                 | 2.1            | 726  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 282500 | 314100 | 120500 | 398 |
| 2.0                                 | 62012                 | 2.9            | 719  | 18.0                 | 317 L4 | —      | BN160L4 | — | —                   | —  | 362100 | 385500 | 120100 | 408 |
| 2.1                                 | 59039                 | 2.2            | 685  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 277500 | 308600 | 118200 | 398 |
| 2.2                                 | 58368                 | 2.8            | 677  | 50.0                 | —      | 317 R4 | BN160L4 | — | —                   | —  | 355600 | 378600 | 117700 | 410 |
| 2.2                                 | 57923                 | 1.7            | 672  | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 165900 | 194800 | 70500  | 386 |
| 2.2                                 | 57637                 | 1.4            | 668  | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 165700 | 194500 | 70300  | 374 |
| 2.2                                 | 56839                 | 1.6            | 659  | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 165000 | 193700 | 70000  | 388 |
| 2.3                                 | 55766                 | 0.9            | 647  | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 150500 | 178100 | 60400  | 364 |
| 2.3                                 | 54583                 | 1.0            | 633  | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 152700 | 180700 | 61400  | 362 |
| 2.3                                 | 53978                 | 2.9            | 626  | 50.0                 | —      | 317 R4 | BN160L4 | — | —                   | —  | 347300 | 369800 | 114700 | 410 |
| 2.3                                 | 53845                 | 2.3            | 624  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 270000 | 300300 | 114600 | 398 |
| 2.3                                 | 53755                 | 1.9            | 623  | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                                 | 53755                 | 2.1            | 623  | 45.0                 | —      | 316 R4 | BN160L4 | — | —                   | —  | 269800 | 300100 | 114500 | 400 |
| 2.4                                 | 52929                 | 1.1            | 614  | 22.0                 | —      | 314 R4 | BN160L4 | — | —                   | —  | 161500 | 189600 | 68400  | 376 |
| 2.5                                 | 50955                 | 2.0            | 591  | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 159700 | 187500 | 67500  | 386 |
| 2.5                                 | 50955                 | 2.4            | 591  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 265500 | 295300 | 112500 | 398 |
| 2.5                                 | 50703                 | 1.6            | 588  | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 159500 | 187200 | 67400  | 374 |
| 2.6                                 | 48805                 | 2.5            | 566  | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 262100 | 291500 | 110900 | 398 |

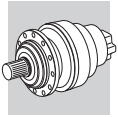


$P_1 = 15 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|--------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |     |                      |        |        |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 2.6                                 | 48619                 | 1.1            | 564 | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 147500 | 174500 | 59100  | 362 |
| 2.6                                 | 47793                 | 1.7            | 554 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 156600 | 183900 | 66100  | 374 |
| 2.7                                 | 46100                 | 1.1            | 535 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 145100 | 171800 | 58000  | 364 |
| 2.7                                 | 46004                 | 2.2            | 533 | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 154900 | 181800 | 65200  | 386 |
| 2.7                                 | 46004                 | 2.6            | 533 | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 257500 | 286400 | 108700 | 398 |
| 2.8                                 | 45531                 | 1.5            | 528 | 22.0                 | —      | 314 R4 | BN160L4 | — | —                   | —  | 154400 | 181300 | 65000  | 376 |
| 2.8                                 | 45293                 | 2.2            | 525 | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 154100 | 181000 | 64900  | 388 |
| 2.8                                 | 45293                 | 2.6            | 525 | 45.0                 | —      | 316 R4 | BN160L4 | — | —                   | —  | 256300 | 285000 | 108200 | 400 |
| 2.8                                 | 44298                 | 1.1            | 514 | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 143400 | 169700 | 57300  | 362 |
| 2.9                                 | 44164                 | 1.0            | 512 | 11.0                 | 311 L4 | —      | BN160L4 | — | —                   | —  | 116000 | 144500 | 46500  | 350 |
| 2.9                                 | 42783                 | 1.2            | 496 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 141900 | 168000 | 56600  | 364 |
| 3.0                                 | 42650                 | 1.9            | 495 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 151400 | 177700 | 63600  | 374 |
| 3.0                                 | 41983                 | 2.4            | 487 | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 150700 | 176900 | 63300  | 386 |
| 3.0                                 | 41983                 | 2.8            | 487 | 18.0                 | 316 L4 | —      | BN160L4 | — | —                   | —  | 250500 | 278600 | 105500 | 398 |
| 3.2                                 | 39509                 | 2.0            | 458 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 148000 | 173700 | 62000  | 374 |
| 3.2                                 | 38957                 | 1.4            | 452 | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 138000 | 163300 | 54900  | 362 |
| 3.2                                 | 38843                 | 1.2            | 450 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 137900 | 163200 | 54800  | 364 |
| 3.3                                 | 38364                 | 1.8            | 445 | 22.0                 | —      | 314 R4 | BN160L4 | — | —                   | —  | 146700 | 172200 | 61400  | 376 |
| 3.3                                 | 38030                 | 2.6            | 441 | 18.0                 | 315 L4 | —      | BN160L4 | — | —                   | —  | 146300 | 171700 | 61200  | 386 |
| 3.3                                 | 37764                 | 1.0            | 438 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 110600 | 137800 | 44100  | 352 |
| 3.5                                 | 36282                 | 2.2            | 421 | 22.0                 | —      | 314 R4 | BN160L4 | — | —                   | —  | 144200 | 169300 | 60300  | 376 |
| 3.5                                 | 35597                 | 1.1            | 413 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 108700 | 135400 | 43300  | 352 |
| 3.6                                 | 35388                 | 1.2            | 410 | 11.0                 | 311 L4 | —      | BN160L4 | — | —                   | —  | 108500 | 135200 | 43200  | 350 |
| 3.6                                 | 35294                 | 2.8            | 409 | 40.0                 | —      | 315 R4 | BN160L4 | — | —                   | —  | 143000 | 167900 | 59700  | 388 |
| 3.7                                 | 33985                 | 1.6            | 394 | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 132500 | 156800 | 52400  | 362 |
| 3.8                                 | 33467                 | 2.3            | 388 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 140800 | 165300 | 58700  | 374 |
| 3.8                                 | 33414                 | 1.4            | 387 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 131800 | 156000 | 52100  | 364 |
| 4.1                                 | 30571                 | 2.6            | 354 | 22.0                 | —      | 314 R4 | BN160L4 | — | —                   | —  | 137000 | 160800 | 56900  | 376 |
| 4.1                                 | 30356                 | 1.7            | 352 | 11.0                 | 313 L4 | —      | BN160L4 | — | —                   | —  | 128000 | 151500 | 50500  | 362 |
| 4.2                                 | 29976                 | 1.3            | 348 | 11.0                 | 311 L4 | —      | BN160L4 | — | —                   | —  | 103200 | 128600 | 40900  | 350 |
| 4.2                                 | 29801                 | 1.8            | 346 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 127300 | 150700 | 50200  | 364 |
| 4.3                                 | 29427                 | 1.3            | 341 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 102700 | 127900 | 40600  | 352 |
| 4.4                                 | 28817                 | 1.0            | 334 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 84600  | 106300 | 39400  | 340 |
| 4.5                                 | 27738                 | 1.4            | 322 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 100900 | 125600 | 39800  | 352 |
| 4.6                                 | 27083                 | 2.9            | 314 | 15.0                 | 314 L4 | —      | BN160L4 | — | —                   | —  | 132100 | 155100 | 54700  | 374 |
| 4.7                                 | 26627                 | 1.7            | 309 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 123100 | 145700 | 48300  | 364 |
| 4.8                                 | 27088                 | 1.4            | 304 | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —  | 122500 | 145000 | 48100  | 362 |
| 5.0                                 | 25313                 | 1.5            | 294 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 98100  | 122200 | 38600  | 352 |
| 5.0                                 | 25966                 | 1.0            | 291 | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —  | 97900  | 121900 | 38500  | 350 |
| 5.2                                 | 24409                 | 1.1            | 283 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 82100  | 103300 | 38100  | 340 |
| 5.2                                 | 24244                 | 2.0            | 281 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 119700 | 141700 | 46800  | 364 |
| 5.5                                 | 22930                 | 1.6            | 266 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 95300  | 118700 | 37400  | 352 |
| 5.7                                 | 22276                 | 1.0            | 258 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 79900  | 100500 | 37000  | 340 |
| 5.8                                 | 22504                 | 2.0            | 252 | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —  | 115900 | 137100 | 45200  | 362 |
| 6.0                                 | 21879                 | 1.6            | 245 | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —  | 93000  | 115800 | 36400  | 350 |
| 6.1                                 | 21360                 | 2.4            | 240 | 25.0                 | 314 L3 | —      | BN160L4 | — | —                   | —  | 119300 | 140100 | 48800  | 374 |
| 6.2                                 | 20428                 | 2.0            | 237 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 113700 | 134600 | 44200  | 364 |
| 6.2                                 | 20178                 | 1.2            | 234 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 77600  | 97600  | 35800  | 340 |
| 6.3                                 | 20522                 | 1.0            | 230 | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —  | 77200  | 97100  | 35600  | 338 |
| 6.4                                 | 19725                 | 1.8            | 229 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 91100  | 113400 | 35500  | 352 |
| 7.0                                 | 18603                 | 2.4            | 209 | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —  | 109400 | 129500 | 42400  | 362 |
| 7.1                                 | 17751                 | 1.2            | 206 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 74700  | 93900  | 34300  | 340 |
| 7.1                                 | 17733                 | 1.1            | 206 | 15.0                 | —      | 309 R4 | BN160L4 | — | —                   | —  | 63000  | 81200  | 19000  | 328 |
| 7.2                                 | 18087                 | 1.8            | 203 | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —  | 87800  | 109400 | 34100  | 350 |
| 7.2                                 | 17997                 | 1.2            | 202 | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —  | 74200  | 93300  | 34100  | 338 |
| 7.2                                 | 17979                 | 0.9            | 202 | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —  | 61300  | 79100  | 18400  | 326 |
| 7.3                                 | 17304                 | 2.0            | 201 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 108200 | 128000 | 41900  | 364 |
| 7.4                                 | 17087                 | 2.0            | 198 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 87200  | 108600 | 33900  | 352 |
| 7.5                                 | 17265                 | 2.8            | 194 | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —  | 107000 | 126700 | 41400  | 362 |
| 7.6                                 | 17049                 | 1.9            | 191 | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —  | 86300  | 107500 | 33500  | 350 |
| 7.7                                 | 16444                 | 1.1            | 191 | 15.0                 | —      | 309 R4 | BN160L4 | — | —                   | —  | 61600  | 79400  | 18500  | 328 |
| 7.7                                 | 16329                 | 1.4            | 189 | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —  | 72800  | 91500  | 33400  | 340 |
| 7.9                                 | 15918                 | 2.0            | 185 | 22.0                 | —      | 313 R4 | BN160L4 | — | —                   | —  | 105500 | 124900 | 40700  | 364 |
| 8.0                                 | 15718                 | 2.0            | 182 | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —  | 85100  | 106000 | 32900  | 352 |
| 8.0                                 | 16231                 | 2.4            | 182 | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —  | 105100 | 124300 | 40500  | 362 |

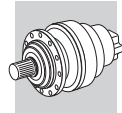
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$P_1 = 15 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|---|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 8.2                                 | 15805                 | 1.2            | 177  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 71400  | 89800  | 32600 | 338 |
| 8.3                                 | 15675                 | 2.9            | 176  | 18.0                 | 313 L3 | —      | BN160L4 | — | —                   | —     | 104000 | 123000 | 40100 | 362 |
| 8.5                                 | 15240                 | 2.1            | 171  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 83400  | 103900 | 32200 | 350 |
| 8.8                                 | 14245                 | 1.1            | 165  | 15.0                 | —      | 309 R4 | BN160L4 | — | —                   | —     | 59000  | 76100  | 17700 | 328 |
| 8.9                                 | 14593                 | 1.5            | 164  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 69700  | 87600  | 31800 | 338 |
| 9.0                                 | 14406                 | 1.1            | 162  | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 58600  | 75600  | 17500 | 326 |
| 9.1                                 | 14365                 | 2.2            | 161  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 82000  | 102100 | 31600 | 350 |
| 9.1                                 | 13832                 | 1.6            | 160  | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —     | 69300  | 87100  | 31600 | 340 |
| 9.5                                 | 13314                 | 2.0            | 154  | 22.0                 | —      | 311 R4 | BN160L4 | — | —                   | —     | 80900  | 100800 | 31200 | 352 |
| 9.5                                 | 13645                 | 2.9            | 153  | 40.0                 | —      | 313 R3 | BN160L4 | — | —                   | —     | 99700  | 118000 | 38200 | 364 |
| 9.6                                 | 13104                 | 1.4            | 152  | 15.0                 | —      | 309 R4 | BN160L4 | — | —                   | —     | 57500  | 74200  | 17200 | 328 |
| 9.9                                 | 13109                 | 2.4            | 147  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 79700  | 99300  | 30700 | 350 |
| 10.0                                | 13079                 | 2.1            | 147  | 40.0                 | —      | 311 R3 | BN160L4 | — | —                   | —     | 79700  | 99300  | 30600 | 352 |
| 10.0                                | 13050                 | 1.0            | 146  | 11.0                 | 307 L3 | —      | BN160L4 | — | 24400               | 30600 | 56000  | 73300  | 21200 | 314 |
| 10.3                                | 12641                 | 1.6            | 142  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 66700  | 83900  | 30300 | 338 |
| 10.5                                | 12375                 | 1.3            | 139  | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 56000  | 72200  | 16700 | 326 |
| 10.7                                | 11716                 | 1.8            | 136  | 15.0                 | —      | 310 R4 | BN160L4 | — | —                   | —     | 65900  | 82900  | 29900 | 340 |
| 11.0                                | 11875                 | 2.5            | 133  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 77400  | 96400  | 29700 | 350 |
| 11.2                                | 11629                 | 1.8            | 130  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 65100  | 81900  | 29500 | 338 |
| 11.6                                | 11225                 | 1.2            | 126  | 11.0                 | 307 L3 | —      | BN160L4 | — | 23200               | 29100 | 53500  | 70100  | 20200 | 314 |
| 11.6                                | 11225                 | 1.5            | 126  | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 54400  | 70100  | 16100 | 326 |
| 11.6                                | 11194                 | 2.6            | 126  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 76100  | 94700  | 29100 | 350 |
| 11.8                                | 10697                 | 1.0            | 124  | 15.0                 | —      | 307 R4 | BN160L4 | — | 24800               | 31100 | 56900  | 74500  | 21600 | 316 |
| 11.8                                | 11021                 | 2.7            | 124  | 40.0                 | —      | 311 R3 | BN160L4 | — | —                   | —     | 75700  | 94300  | 28900 | 352 |
| 12.2                                | 10679                 | 1.2            | 120  | 22.0                 | —      | 309 R3 | BN160L4 | — | —                   | —     | 53600  | 69100  | 15900 | 328 |
| 12.2                                | 10679                 | 1.6            | 120  | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 63500  | 79800  | 28600 | 340 |
| 12.3                                | 10612                 | 1.9            | 119  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 63300  | 79600  | 28600 | 338 |
| 12.7                                | 10215                 | 2.8            | 115  | 18.0                 | 311 L3 | —      | BN160L4 | — | —                   | —     | 74000  | 92200  | 28200 | 350 |
| 12.9                                | 10102                 | 1.0            | 113  | 11.0                 | 307 L3 | —      | BN160L4 | — | 22400               | 28100 | 51800  | 67900  | 19500 | 314 |
| 12.9                                | 10102                 | 1.5            | 113  | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 52700  | 67900  | 15600 | 326 |
| 13.2                                | 9850                  | 2.0            | 110  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 61900  | 77900  | 27900 | 338 |
| 13.9                                | 9061                  | 1.5            | 105  | 15.0                 | —      | 307 R4 | BN160L4 | — | 24100               | 30300 | 55400  | 72700  | 21000 | 316 |
| 14.0                                | 9293                  | 1.0            | 104  | 7.5                  | 306 L3 | —      | BN160L4 | — | 19200               | 21700 | 46000  | 53600  | 14400 | 302 |
| 14.5                                | 8989                  | 2.1            | 101  | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 60300  | 75800  | 27000 | 338 |
| 14.6                                | 8945                  | 1.4            | 100  | 11.0                 | 307 L3 | —      | BN160L4 | — | 21500               | 27000 | 50000  | 65500  | 18700 | 314 |
| 14.6                                | 8945                  | 1.8            | 100  | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 50800  | 65500  | 15000 | 326 |
| 14.7                                | 8828                  | 1.0            | 99.0 | 22.0                 | —      | 307 R3 | BN160L4 | — | 21400               | 26900 | 49800  | 65200  | 18600 | 316 |
| 14.7                                | 8828                  | 1.4            | 99.0 | 22.0                 | —      | 309 R3 | BN160L4 | — | —                   | —     | 50600  | 65200  | 14900 | 328 |
| 14.7                                | 8828                  | 1.9            | 99.0 | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 59900  | 75400  | 26900 | 340 |
| 15.7                                | 8295                  | 1.5            | 93.0 | 11.0                 | 307 L3 | —      | BN160L4 | — | 21000               | 26300 | 48900  | 64000  | 18200 | 314 |
| 15.7                                | 8295                  | 1.8            | 93.0 | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 49600  | 64000  | 14600 | 326 |
| 16.0                                | 8143                  | 2.3            | 91.3 | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 58500  | 73600  | 26200 | 338 |
| 16.5                                | 7872                  | 1.1            | 88.3 | 7.5                  | 306 L3 | —      | BN160L4 | — | 18100               | 20500 | 43800  | 51000  | 13600 | 302 |
| 17.2                                | 7557                  | 1.0            | 84.7 | 14.0                 | —      | 306 R3 | BN160L4 | — | 18300               | 20700 | 44200  | 51400  | 13700 | 304 |
| 17.5                                | 7438                  | 1.4            | 83.4 | 22.0                 | —      | 307 R3 | BN160L4 | — | 20200               | 25400 | 47300  | 62000  | 17600 | 316 |
| 17.5                                | 7438                  | 1.9            | 83.4 | 22.0                 | —      | 309 R3 | BN160L4 | — | —                   | —     | 48000  | 62000  | 14100 | 328 |
| 17.5                                | 7438                  | 2.0            | 83.4 | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 56900  | 71600  | 25400 | 340 |
| 17.8                                | 7300                  | 0.9            | 81.9 | 7.5                  | 306 L3 | —      | BN160L4 | — | 17700               | 20000 | 42800  | 49900  | 13300 | 302 |
| 18.1                                | 7186                  | 1.4            | 80.6 | 11.0                 | 307 L3 | —      | BN160L4 | — | 20000               | 25100 | 46800  | 61300  | 17400 | 314 |
| 18.1                                | 7186                  | 2.1            | 80.6 | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 47600  | 61300  | 13900 | 326 |
| 18.2                                | 7163                  | 2.4            | 80.3 | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 56300  | 70800  | 25100 | 338 |
| 18.6                                | 7012                  | 2.0            | 78.6 | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 55900  | 70300  | 24900 | 340 |
| 18.6                                | 7012                  | 1.6            | 78.6 | 22.0                 | —      | 307 R3 | BN160L4 | — | 19800               | 24900 | 46500  | 60900  | 17200 | 316 |
| 19.0                                | 6867                  | 1.2            | 77.0 | 7.5                  | 306 L3 | —      | BN160L4 | — | 17700               | 20100 | 42900  | 50000  | 13300 | 302 |
| 19.7                                | 6610                  | 1.8            | 74.1 | 11.0                 | 307 L3 | —      | BN160L4 | — | 19400               | 24400 | 45600  | 59800  | 16900 | 314 |
| 19.7                                | 6610                  | 2.3            | 74.1 | 11.0                 | 309 L3 | —      | BN160L4 | — | —                   | —     | 46400  | 59800  | 13500 | 326 |
| 19.8                                | 6590                  | 2.7            | 73.9 | 18.0                 | 310 L3 | —      | BN160L4 | — | —                   | —     | 54900  | 69000  | 24400 | 338 |
| 20.0                                | 6500                  | 1.1            | 72.9 | 14.0                 | —      | 306 R3 | BN160L4 | — | 17400               | 19700 | 42200  | 49200  | 13100 | 304 |
| 20.3                                | 6399                  | 1.6            | 71.8 | 22.0                 | —      | 307 R3 | BN160L4 | — | 19200               | 24100 | 45200  | 59200  | 16700 | 316 |
| 20.3                                | 6399                  | 2.0            | 71.8 | 22.0                 | —      | 309 R3 | BN160L4 | — | —                   | —     | 45900  | 59200  | 13400 | 328 |
| 20.3                                | 6399                  | 2.0            | 71.8 | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 54400  | 68400  | 24100 | 340 |
| 21.6                                | 6022                  | 1.2            | 67.5 | 14.0                 | —      | 306 R3 | BN160L4 | — | 17000               | 19200 | 41300  | 48000  | 12700 | 304 |
| 22.4                                | 5817                  | 1.3            | 65.2 | 7.5                  | 306 L3 | —      | BN160L4 | — | 16800               | 19000 | 40800  | 47500  | 12600 | 302 |
| 22.5                                | 5796                  | 2.0            | 65.0 | 22.0                 | —      | 310 R3 | BN160L4 | — | —                   | —     | 52800  | 66400  | 23400 | 340 |
| 22.5                                | 5796                  | 1.9            | 65.0 | 22.0                 | —      | 307 R3 | BN160L4 | — | 18600               | 23300 | 43900  | 57500  | 16200 | 316 |

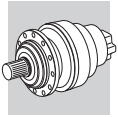


$P_1 = 15 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |       | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|-------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |       | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 22.5                                | 5796                  | 1.9            | 65.0 | 22.0                 | —      | 309 R3 | BN160L4 | —     | —                   | —     | 44600 | 57500 | 12900 | 328 |
| 23.3                                | 5582                  | 3.0            | 62.6 | 18.0                 | 310 L3 | —      | BN160L4 | —     | —                   | —     | 52200 | 65700 | 23100 | 338 |
| 24.1                                | 5396                  | 2.1            | 60.5 | 11.0                 | 307 L3 | —      | BN160L4 | —     | 18200               | 22800 | 42900 | 56300 | 15800 | 314 |
| 24.1                                | 5396                  | 2.6            | 60.5 | 11.0                 | 309 L3 | —      | BN160L4 | —     | —                   | —     | 43600 | 56300 | 12600 | 326 |
| 25.1                                | 5180                  | 1.5            | 58.1 | 14.0                 | —      | 306 R3 | BN160L4 | —     | 16100               | 18300 | 39400 | 45900 | 12100 | 304 |
| 26.0                                | 5182                  | 1.0            | 56.3 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 16000               | 18100 | 39100 | 45500 | 12000 | 302 |
| 26.1                                | 4986                  | 2.0            | 55.9 | 22.0                 | —      | 310 R3 | BN160L4 | —     | —                   | —     | 50500 | 63500 | 22200 | 340 |
| 26.1                                | 4986                  | 2.0            | 55.9 | 22.0                 | —      | 307 R3 | BN160L4 | —     | 17700               | 22200 | 41900 | 55000 | 15400 | 316 |
| 26.1                                | 4986                  | 2.0            | 55.9 | 22.0                 | —      | 309 R3 | BN160L4 | —     | —                   | —     | 42600 | 55000 | 12300 | 328 |
| 27.4                                | 4748                  | 1.5            | 53.2 | 7.5                  | 306 L3 | —      | BN160L4 | —     | 15700               | 17800 | 38400 | 44700 | 11800 | 302 |
| 28.5                                | 4571                  | 2.3            | 51.3 | 11.0                 | 307 L3 | —      | BN160L4 | —     | 17200               | 21600 | 40900 | 53500 | 14900 | 314 |
| 28.5                                | 4571                  | 2.9            | 51.3 | 11.0                 | 309 L3 | —      | BN160L4 | —     | —                   | —     | 41500 | 53500 | 12000 | 326 |
| 31                                  | 4305                  | 1.9            | 46.7 | 18.0                 | 307 L2 | —      | BN160L4 | M5SB4 | 16700               | 20900 | 39700 | 52100 | 14500 | 314 |
| 31                                  | 4305                  | 2.9            | 46.7 | 18.0                 | 309 L2 | —      | BN160L4 | —     | —                   | —     | 40400 | 52100 | 11600 | 326 |
| 31                                  | 4284                  | 1.5            | 46.5 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 15000               | 17000 | 36900 | 43000 | 11300 | 302 |
| 32                                  | 4128                  | 1.8            | 46.3 | 14.0                 | —      | 306 R3 | BN160L4 | —     | 15000               | 16900 | 36800 | 42900 | 11200 | 304 |
| 33                                  | 3973                  | 2.0            | 44.6 | 22.0                 | —      | 310 R3 | BN160L4 | —     | —                   | —     | 47200 | 59300 | 20600 | 340 |
| 33                                  | 3973                  | 2.0            | 44.6 | 22.0                 | —      | 307 R3 | BN160L4 | —     | 16400               | 20600 | 39200 | 51300 | 14300 | 316 |
| 33                                  | 3973                  | 2.0            | 44.6 | 22.0                 | —      | 309 R3 | BN160L4 | —     | —                   | —     | 39800 | 51300 | 11400 | 328 |
| 37                                  | 3497                  | 1.9            | 39.2 | 14.0                 | —      | 306 R3 | BN160L4 | —     | 14100               | 16000 | 35000 | 40800 | 10600 | 304 |
| 38                                  | 3559                  | 2.3            | 38.6 | 18.0                 | 307 L2 | —      | BN160L4 | M5SB4 | 15600               | 19600 | 37500 | 49200 | 13600 | 314 |
| 38                                  | 3541                  | 1.8            | 38.4 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 14100               | 15900 | 34800 | 40600 | 10600 | 302 |
| 38                                  | 3537                  | 1.2            | 38.4 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 11300               | 13000 | 21300 | 25600 | 7240  | 290 |
| 39                                  | 3366                  | 2.0            | 37.7 | 22.0                 | —      | 310 R3 | BN160L4 | —     | —                   | —     | 44900 | 56400 | 19500 | 340 |
| 39                                  | 3366                  | 2.0            | 37.7 | 22.0                 | —      | 307 R3 | BN160L4 | —     | —                   | —     | 37900 | 48800 | 10800 | 316 |
| 39                                  | 3366                  | 2.0            | 37.7 | 22.0                 | —      | 309 R3 | BN160L4 | —     | 15500               | 19500 | 37300 | 48800 | 13500 | 328 |
| 41                                  | 3295                  | 1.1            | 35.8 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 11000               | 12700 | 20800 | 25100 | 7070  | 290 |
| 44                                  | 2962                  | 2.0            | 33.2 | 14.0                 | —      | 306 R3 | BN160L4 | —     | 13400               | 15200 | 33300 | 38800 | 10100 | 304 |
| 44                                  | 3046                  | 2.3            | 33.1 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 13400               | 15100 | 33300 | 38800 | 10000 | 302 |
| 46                                  | 2821                  | 2.0            | 31.6 | 22.0                 | —      | 307 R3 | BN160L4 | —     | 14600               | 18400 | 35400 | 46300 | 12700 | 316 |
| 46                                  | 2821                  | 2.0            | 31.6 | 22.0                 | —      | 309 R3 | BN160L4 | —     | —                   | —     | 35900 | 46300 | 10200 | 328 |
| 47                                  | 2834                  | 1.0            | 30.8 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 10500               | 12100 | 19900 | 24000 | 6720  | 278 |
| 47                                  | 2834                  | 1.5            | 30.8 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 10500               | 12100 | 19900 | 24000 | 6720  | 290 |
| 51                                  | 2620                  | 2.6            | 28.4 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 12700               | 14400 | 31800 | 37100 | 9550  | 302 |
| 55                                  | 2435                  | 1.4            | 26.4 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 9960                | 11500 | 19000 | 22900 | 6390  | 290 |
| 55                                  | 2427                  | 2.6            | 26.4 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 12400               | 14000 | 31100 | 36200 | 9310  | 302 |
| 60                                  | 2259                  | 1.0            | 24.5 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 9490                | 11000 | 18200 | 21900 | 6090  | 266 |
| 60                                  | 2259                  | 1.4            | 24.5 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 9720                | 11200 | 18600 | 22400 | 6230  | 278 |
| 60                                  | 2259                  | 1.7            | 24.5 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 9720                | 11200 | 18600 | 22400 | 6230  | 290 |
| 64                                  | 2095                  | 1.0            | 22.7 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 9470                | 10900 | 18200 | 21900 | 6080  | 266 |
| 64                                  | 2095                  | 1.3            | 22.7 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 9470                | 10900 | 18200 | 21900 | 6080  | 278 |
| 64                                  | 2095                  | 1.9            | 22.7 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 9470                | 10900 | 18200 | 21900 | 6080  | 290 |
| 64                                  | 2088                  | 2.9            | 22.7 | 13.0                 | 306 L2 | —      | BN160L4 | M5SB4 | 11800               | 13400 | 29700 | 34600 | 8850  | 302 |
| 70                                  | 1913                  | 1.0            | 20.8 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 8980                | 10400 | 17300 | 20900 | 5760  | 266 |
| 70                                  | 1913                  | 1.5            | 20.8 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 9190                | 10600 | 17700 | 21300 | 5900  | 278 |
| 70                                  | 1913                  | 1.7            | 20.8 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 9190                | 10600 | 17700 | 21300 | 5900  | 290 |
| 76                                  | 1771                  | 2.0            | 19.2 | 18.0                 | —      | 306 R2 | BN160L4 | —     | 11200               | 12600 | 28300 | 33000 | 8380  | 304 |
| 81                                  | 1669                  | 1.2            | 18.1 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 8780                | 10100 | 17000 | 20400 | 5630  | 266 |
| 81                                  | 1669                  | 1.8            | 18.1 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 8780                | 10100 | 17000 | 20400 | 5630  | 278 |
| 81                                  | 1669                  | 2.2            | 18.1 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 8780                | 10100 | 17000 | 20400 | 5630  | 290 |
| 92                                  | 1464                  | 2.0            | 15.9 | 18.0                 | —      | 306 R2 | BN160L4 | —     | 10500               | 11900 | 26700 | 31100 | 7870  | 304 |
| 95                                  | 1414                  | 1.2            | 15.3 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 8310                | 9590  | 16200 | 19500 | 5330  | 266 |
| 95                                  | 1414                  | 2.0            | 15.3 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 8310                | 9590  | 16200 | 19500 | 5330  | 278 |
| 95                                  | 1414                  | 2.2            | 15.3 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 8310                | 9590  | 16200 | 19500 | 5330  | 290 |
| 107                                 | 1259                  | 2.0            | 13.7 | 18.0                 | —      | 306 R2 | BN160L4 | —     | 9960                | 11300 | 25500 | 29700 | 7480  | 304 |
| 117                                 | 1154                  | 1.4            | 12.5 | 9.0                  | 303 L2 | —      | BN160L4 | —     | 7770                | 8970  | 15200 | 18300 | 4980  | 266 |
| 117                                 | 1154                  | 2.3            | 12.5 | 9.0                  | 304 L2 | —      | BN160L4 | —     | 7770                | 8970  | 15200 | 18300 | 4980  | 278 |
| 117                                 | 1154                  | 2.5            | 12.5 | 9.0                  | 305 L2 | —      | BN160L4 | —     | 7770                | 8970  | 15200 | 18300 | 4980  | 290 |
| 134                                 | 1003                  | 2.0            | 10.9 | 18.0                 | —      | 306 R2 | BN160L4 | —     | 9230                | 10500 | 23900 | 27800 | 6930  | 304 |
| 158                                 | 850                   | 2.0            | 9.23 | 18.0                 | —      | 306 R2 | BN160L4 | —     | 8730                | 9900  | 22700 | 26400 | 6560  | 304 |
| 195                                 | 713                   | 1.7            | 7.50 | 11.0                 | 303 L1 | —      | BN160L4 | M5SB4 | 6550                | 7560  | 13000 | 15700 | 4200  | 266 |
| 222                                 | 625                   | 3.0            | 6.57 | 12.0                 | 304 L1 | —      | BN160L4 | M5SB4 | 6260                | 7230  | 12500 | 15100 | 4020  | 278 |
| 235                                 | 589                   | 2.4            | 6.20 | 11.0                 | 303 L1 | —      | BN160L4 | M5SB4 | 6140                | 7090  | 12300 | 14800 | 3940  | 266 |
| 274                                 | 507                   | 2.9            | 5.33 | 11.0                 | 303 L1 | —      | BN160L4 | M5SB4 | 5840                | 6750  | 11800 | 14200 | 3750  | 266 |

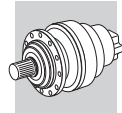
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$P_1 = 18.5 \text{ kW}$

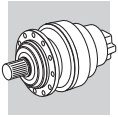
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |      |                      |        |        |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 0.92                                | 169802                | 1.0            | 1595 | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 442000 | 470000 | 150000 | 408 |
| 1.1                                 | 147863                | 2.4            | 1389 | 30.0                 | 319 L4 | —      | BN180M4 | — | —                   | —  | 636100 | 700800 | 199500 | 428 |
| 1.1                                 | 140370                | 1.2            | 1318 | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 434300 | 462400 | 147000 | 408 |
| 1.2                                 | 131765                | 0.9            | 1237 | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 331400 | 368600 | 144000 | 398 |
| 1.2                                 | 127194                | 2.8            | 1195 | 30.0                 | 319 L4 | —      | BN180M4 | — | —                   | —  | 608000 | 669900 | 189700 | 428 |
| 1.3                                 | 120748                | 1.4            | 1134 | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 415100 | 442000 | 139800 | 408 |
| 1.4                                 | 112771                | 2.4            | 1059 | 22.0                 | 318 L4 | —      | BN180M4 | — | —                   | —  | 503000 | 520700 | 182200 | 418 |
| 1.4                                 | 111025                | 0.9            | 1043 | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 189400 | 222300 | 81600  | 386 |
| 1.4                                 | 111025                | 1.2            | 1043 | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                                 | 109922                | 1.6            | 1032 | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 403600 | 429700 | 135500 | 408 |
| 1.5                                 | 101508                | 1.4            | 953  | 50.0                 | —      | 317 R4 | BN180M4 | — | —                   | —  | 394100 | 419600 | 132000 | 410 |
| 1.6                                 | 99014                 | 0.9            | 930  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 183000 | 214800 | 78500  | 386 |
| 1.6                                 | 97007                 | 2.8            | 911  | 22.0                 | 318 L4 | —      | BN180M4 | — | —                   | —  | 487700 | 497700 | 173300 | 418 |
| 1.6                                 | 96221                 | 1.7            | 904  | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 387800 | 412900 | 129600 | 408 |
| 1.7                                 | 91780                 | 1.1            | 862  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                                 | 91780                 | 1.4            | 862  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 297400 | 330700 | 127600 | 398 |
| 1.8                                 | 86513                 | 1.5            | 812  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 292100 | 324900 | 125100 | 398 |
| 1.8                                 | 85530                 | 1.9            | 803  | 50.0                 | —      | 317 R4 | BN180M4 | — | —                   | —  | 374300 | 398500 | 124600 | 410 |
| 1.8                                 | 84332                 | 2.2            | 792  | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 372700 | 396900 | 124100 | 408 |
| 1.9                                 | 83289                 | 1.1            | 782  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 173700 | 203900 | 74100  | 388 |
| 2.0                                 | 78901                 | 1.3            | 741  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 170900 | 200700 | 72800  | 386 |
| 2.0                                 | 78901                 | 1.6            | 741  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 284200 | 316100 | 121400 | 398 |
| 2.0                                 | 78561                 | 1.0            | 738  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 170700 | 200400 | 72700  | 374 |
| 2.0                                 | 77333                 | 1.7            | 726  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 282500 | 314100 | 120500 | 398 |
| 2.0                                 | 76565                 | 2.3            | 719  | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 362100 | 385500 | 120100 | 408 |
| 2.1                                 | 72895                 | 1.8            | 685  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 277500 | 308600 | 118200 | 398 |
| 2.2                                 | 72067                 | 2.3            | 677  | 50.0                 | —      | 317 R4 | BN180M4 | — | —                   | —  | 355600 | 378600 | 117700 | 410 |
| 2.2                                 | 71517                 | 1.4            | 672  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 165900 | 194800 | 70500  | 386 |
| 2.2                                 | 71164                 | 1.1            | 668  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 165700 | 194500 | 70300  | 374 |
| 2.2                                 | 70179                 | 1.3            | 659  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 165000 | 193700 | 70000  | 388 |
| 2.3                                 | 66647                 | 2.3            | 626  | 50.0                 | —      | 317 R4 | BN180M4 | — | —                   | —  | 347300 | 369800 | 114700 | 410 |
| 2.3                                 | 66482                 | 1.9            | 624  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 270000 | 300300 | 114600 | 398 |
| 2.3                                 | 66371                 | 1.5            | 623  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                                 | 66371                 | 1.7            | 623  | 45.0                 | —      | 316 R4 | BN180M4 | — | —                   | —  | 269800 | 300100 | 114500 | 400 |
| 2.4                                 | 65863                 | 2.7            | 619  | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 346100 | 368500 | 114200 | 408 |
| 2.5                                 | 62914                 | 1.6            | 591  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 159700 | 187500 | 67500  | 386 |
| 2.5                                 | 62914                 | 1.9            | 591  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 265500 | 295300 | 112500 | 398 |
| 2.5                                 | 62603                 | 1.3            | 588  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 159500 | 187200 | 67400  | 374 |
| 2.6                                 | 60260                 | 2.1            | 566  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 262100 | 291500 | 110900 | 398 |
| 2.6                                 | 59010                 | 1.4            | 554  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 156600 | 183900 | 66100  | 374 |
| 2.6                                 | 58741                 | 3.0            | 552  | 18.0                 | 317 L4 | —      | BN180M4 | — | —                   | —  | 334400 | 356100 | 110000 | 408 |
| 2.7                                 | 56801                 | 1.8            | 533  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 154900 | 181800 | 65200  | 386 |
| 2.7                                 | 56801                 | 2.1            | 533  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 257500 | 286400 | 108700 | 398 |
| 2.8                                 | 55924                 | 1.8            | 525  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 154100 | 181000 | 64900  | 388 |
| 2.8                                 | 55924                 | 2.1            | 525  | 45.0                 | —      | 316 R4 | BN180M4 | — | —                   | —  | 256300 | 285000 | 108200 | 400 |
| 2.8                                 | 55368                 | 3.0            | 520  | 50.0                 | —      | 317 R4 | BN180M4 | — | —                   | —  | 328500 | 349800 | 107800 | 410 |
| 3.0                                 | 52659                 | 1.5            | 495  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 151400 | 177700 | 63600  | 374 |
| 3.0                                 | 51836                 | 1.9            | 487  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 150700 | 176900 | 63300  | 386 |
| 3.0                                 | 51836                 | 2.3            | 487  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 250500 | 278600 | 105500 | 398 |
| 3.2                                 | 48782                 | 1.6            | 458  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 148000 | 173700 | 62000  | 374 |
| 3.3                                 | 47121                 | 2.5            | 443  | 45.0                 | —      | 316 R4 | BN180M4 | — | —                   | —  | 243500 | 270800 | 102200 | 400 |
| 3.3                                 | 46956                 | 2.1            | 441  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 146300 | 171700 | 61200  | 386 |
| 3.3                                 | 46956                 | 2.5            | 441  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 243200 | 270500 | 102100 | 398 |
| 3.6                                 | 43577                 | 2.3            | 409  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 143000 | 167900 | 59700  | 388 |
| 3.6                                 | 43577                 | 2.6            | 409  | 45.0                 | —      | 316 R4 | BN180M4 | — | —                   | —  | 237800 | 264500 | 99600  | 400 |
| 3.8                                 | 41321                 | 1.9            | 388  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 140800 | 165300 | 58700  | 374 |
| 4.0                                 | 39353                 | 2.5            | 370  | 18.0                 | 315 L4 | —      | BN180M4 | — | —                   | —  | 138700 | 162900 | 57700  | 386 |
| 4.0                                 | 39353                 | 2.8            | 370  | 18.0                 | 316 L4 | —      | BN180M4 | — | —                   | —  | 230600 | 256500 | 96200  | 398 |
| 4.2                                 | 36717                 | 2.6            | 345  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 135900 | 159500 | 56400  | 388 |
| 4.2                                 | 36717                 | 2.9            | 345  | 45.0                 | —      | 316 R4 | BN180M4 | — | —                   | —  | 225900 | 251200 | 94000  | 400 |
| 4.6                                 | 33439                 | 2.3            | 314  | 15.0                 | 314 L4 | —      | BN180M4 | — | —                   | —  | 132100 | 155100 | 54700  | 374 |
| 4.8                                 | 33446                 | 1.2            | 304  | 18.0                 | 313 L3 | —      | BN180M4 | — | —                   | —  | 122500 | 145000 | 48100  | 362 |
| 5.4                                 | 28611                 | 2.9            | 269  | 40.0                 | —      | 315 R4 | BN180M4 | — | —                   | —  | 126100 | 148000 | 51900  | 388 |
| 5.8                                 | 27786                 | 1.6            | 252  | 50.0                 | 313 L3 | —      | BN180M4 | — | —                   | —  | 267500 | 284800 | 85800  | 362 |
| 6.0                                 | 27014                 | 1.3            | 245  | 18.0                 | 311 L3 | —      | BN180M4 | — | —                   | —  | 93000  | 115800 | 36400  | 350 |



$P_1 = 18.5 \text{ kW}$

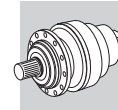
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |  |  |  |  | $R_{n2}$ [N] |       |        |        |       |  |
|----------------------------|----------------|-------|------|-------------|---|---|---|---|--------------|-------|--------|--------|-------|---|
|                            |                |       |      |             |   |   |   |   | MC           | MZ    | HC/PC  | HZ/PZ  | FZ    |   |
| 6.1                        | 26503          | 2.5   | 241  | 30.0        | 315 L3  | —   | BN180M4   | —   | —            | —     | 122000 | 143200 | 50000 | 386   |
| 6.1                        | 26373          | 2.0   | 240  | 25.0        | 314 L3  | —   | BN180M4   | —   | —            | —     | 121800 | 143000 | 50000 | 374   |
| 7.0                        | 22970          | 2.0   | 209  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 109400 | 129500 | 42400 | 362   |
| 7.1                        | 22686          | 2.8   | 206  | 25.0        | 314 L3  | —   | BN180M4   | —   | —            | —     | 116400 | 136700 | 47500 | 374   |
| 7.2                        | 22332          | 1.5   | 203  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 87800  | 109400 | 34100 | 350   |
| 7.2                        | 22221          | 1.0   | 202  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 74200  | 93300  | 34100 | 338   |
| 7.5                        | 21317          | 2.2   | 194  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 107000 | 126700 | 41400 | 362   |
| 7.6                        | 21050          | 1.5   | 191  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 86300  | 107500 | 33500 | 350   |
| 8.0                        | 20040          | 1.9   | 182  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 105100 | 124300 | 40500 | 362   |
| 8.2                        | 19515          | 0.9   | 177  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 71400  | 89800  | 32600 | 338   |
| 8.3                        | 19354          | 2.3   | 176  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 104000 | 123000 | 40100 | 362   |
| 8.5                        | 18816          | 1.7   | 171  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 83400  | 103900 | 32200 | 350   |
| 8.9                        | 18018          | 1.2   | 164  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 69700  | 87600  | 31800 | 338   |
| 9.0                        | 17962          | 2.6   | 163  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 101700 | 120300 | 39100 | 362   |
| 9.1                        | 17736          | 1.8   | 161  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 82000  | 102100 | 31600 | 350   |
| 9.5                        | 16847          | 2.3   | 153  | 40.0        | —   | 313 R3  | BN180M4   | —   | —            | —     | 99700  | 118000 | 38200 | 364   |
| 9.7                        | 16649          | 2.7   | 151  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 99400  | 117600 | 38100 | 362   |
| 9.9                        | 16186          | 2.0   | 147  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 79700  | 99300  | 30700 | 350   |
| 10.0                       | 16149          | 1.7   | 147  | 40.0        | —   | 311 R3  | BN180M4   | —   | —            | —     | 79700  | 99300  | 30600 | 352   |
| 10.2                       | 15745          | 2.8   | 143  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 97700  | 115700 | 37400 | 362   |
| 10.3                       | 15608          | 1.3   | 142  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 66700  | 83900  | 30300 | 338   |
| 10.8                       | 14848          | 3.0   | 135  | 18.0        | 313 L3  | —   | BN180M4   | —   | —            | —     | 96000  | 113600 | 36700 | 362   |
| 11.0                       | 14662          | 2.0   | 133  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 77400  | 96400  | 29700 | 350   |
| 11.2                       | 14358          | 1.4   | 130  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 65100  | 81900  | 29500 | 338   |
| 11.5                       | 13996          | 2.9   | 127  | 40.0        | —   | 313 R3  | BN180M4   | —   | —            | —     | 94300  | 111600 | 36000 | 364   |
| 11.6                       | 13821          | 2.1   | 126  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 76100  | 94700  | 29100 | 350   |
| 11.8                       | 13607          | 2.2   | 124  | 40.0        | —   | 311 R3  | BN180M4   | —   | —            | —     | 75700  | 94300  | 28900 | 352   |
| 12.3                       | 13103          | 1.5   | 119  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 63300  | 79600  | 28600 | 338   |
| 12.7                       | 12613          | 2.3   | 115  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 74000  | 92200  | 28200 | 350   |
| 13.2                       | 12162          | 1.6   | 110  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 61900  | 77900  | 27900 | 338   |
| 14.0                       | 11465          | 2.5   | 104  | 40.0        | —   | 311 R3  | BN180M4   | —   | —            | —     | 71900  | 89600  | 27300 | 352   |
| 14.1                       | 11425          | 2.4   | 104  | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 71800  | 89500  | 27300 | 350   |
| 14.5                       | 11099          | 1.7   | 101  | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 60300  | 75800  | 27000 | 338   |
| 15.2                       | 10603          | 2.6   | 96.3 | 40.0        | —   | 311 R3  | BN180M4   | —   | —            | —     | 70200  | 87500  | 26600 | 352   |
| 16.0                       | 10054          | 1.9   | 91.3 | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 58500  | 73600  | 26200 | 338   |
| 16.4                       | 9828           | 2.7   | 89.3 | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 68100  | 84900  | 25700 | 350   |
| 18.0                       | 8934           | 2.9   | 81.1 | 40.0        | —   | 311 R3  | BN180M4   | —   | —            | —     | 66700  | 83100  | 25200 | 352   |
| 18.2                       | 8845           | 2.0   | 80.3 | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 56300  | 70800  | 25100 | 338   |
| 18.9                       | 8514           | 3.0   | 77.3 | 18.0        | 311 L3  | —   | BN180M4   | —   | —            | —     | 65800  | 81900  | 24800 | 350   |
| 19.8                       | 8136           | 2.2   | 73.9 | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 54900  | 69000  | 24400 | 338   |
| 23.3                       | 6892           | 2.4   | 62.6 | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 52200  | 65700  | 23100 | 338   |
| 27.5                       | 5838           | 2.7   | 53.0 | 18.0        | 310 L3  | —   | BN180M4   | —   | —            | —     | 49700  | 62500  | 21800 | 338   |
| 31                         | 5315           | 1.6   | 46.7 | 18.0        | 307 L2  | —   | BN180M4   | M5LA4   | 16700        | 20900 | 39700  | 52100  | 14500 | 314   |
| 31                         | 5315           | 2.4   | 46.7 | 18.0        | 309 L2  | —   | BN180M4   | —   | —            | —     | 40400  | 52100  | 11600 | 326   |
| 31                         | 5315           | 2.7   | 46.7 | 22.0        | 310 L2  | —   | BN180M4   | —   | —            | —     | 47800  | 60200  | 20900 | 338   |
| 31                         | 5289           | 1.2   | 46.5 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 15000        | 17000 | 36900  | 43000  | 11300 | 302   |
| 38                         | 4394           | 1.9   | 38.6 | 18.0        | 307 L2  | —   | BN180M4   | M5LA4   | 15600        | 19600 | 37500  | 49200  | 13600 | 314   |
| 38                         | 4394           | 2.8   | 38.6 | 18.0        | 309 L2  | —   | BN180M4   | —   | —            | —     | 38100  | 49200  | 10900 | 326   |
| 38                         | 4372           | 1.5   | 38.4 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 14100        | 15900 | 34800  | 40600  | 10600 | 302   |
| 44                         | 3761           | 1.8   | 33.1 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 13400        | 15100 | 33300  | 38800  | 10000 | 302   |
| 45                         | 3702           | 2.5   | 32.6 | 18.0        | 307 L2  | —   | BN180M4   | M5LA4   | 14800        | 18500 | 35700  | 46700  | 12800 | 314   |
| 48                         | 3490           | 2.7   | 30.7 | 18.0        | 307 L2  | —   | BN180M4   | M5LA4   | 14500        | 18200 | 35000  | 45900  | 12600 | 314   |
| 51                         | 3235           | 2.1   | 28.4 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 12700        | 14400 | 31800  | 37100  | 9550  | 302   |
| 52                         | 3185           | 2.9   | 28.0 | 18.0        | 307 L2  | —   | BN180M4   | M5LA4   | 14100        | 17600 | 34100  | 44700  | 12200 | 314   |
| 55                         | 2997           | 2.1   | 26.4 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 12400        | 14000 | 31100  | 36200  | 9310  | 302   |
| 62                         | 2677           | 3.0   | 23.5 | 35.0        | —   | 307 R2  | BN180M4   | M5LA4   | 13300        | 16600 | 32400  | 42400  | 11500 | 316   |
| 64                         | 2578           | 2.4   | 22.7 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 11800        | 13400 | 29700  | 34600  | 8850  | 302   |
| 81                         | 2054           | 2.9   | 18.1 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 10700        | 12100 | 27200  | 31700  | 8020  | 302   |
| 95                         | 1740           | 2.9   | 15.3 | 13.0        | 306 L2  | —   | BN180M4   | M5LA4   | 10300        | 11700 | 26400  | 30800  | 7770  | 302   |
| 195                        | 880            | 1.4   | 7.50 | 11.0        | 303 L1  | —   | BN180M4   | M5LA4   | 6550         | 7560  | 13000  | 15700  | 4200  | 266   |
| 195                        | 880            | 2.6   | 7.50 | 13.0        | 305 L1  | —   | BN180M4   | M5LA4   | 6550         | 7560  | 13000  | 15700  | 4200  | 290   |
| 222                        | 771            | 2.4   | 6.57 | 12.0        | 304 L1  | —   | BN180M4   | M5LA4   | 6260         | 7230  | 12500  | 15100  | 4020  | 278   |
| 235                        | 728            | 1.9   | 6.20 | 11.0        | 303 L1  | —   | BN180M4   | M5LA4   | 6140         | 7090  | 12300  | 14800  | 3940  | 266   |
| 274                        | 626            | 2.4   | 5.33 | 11.0        | 303 L1  | —   | BN180M4   | M5LA4   | 5840         | 6750  | 11800  | 14200  | 3750  | 266   |
| 344                        | 499            | 2.9   | 4.25 | 11.0        | 303 L1  | —   | BN180M4   | M5LA4   | 5420         | 6250  | 11000  | 13200  | 3480  | 266   |

A



$P_1 = 22 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 1.1                                 | 175970                | 2.0            | 1389 | 30.0                 | 319 L4 | —          | BN180L4 | — | —                   | —  | 636100 | 700800 | 199500 | 428 |
| 1.1                                 | 167052                | 1.0            | 1318 | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 425400 | 452900 | 143700 | 408 |
| 1.2                                 | 151372                | 2.3            | 1195 | 30.0                 | 319 L4 | —          | BN180L4 | — | —                   | —  | 608000 | 669900 | 189700 | 428 |
| 1.3                                 | 143700                | 1.2            | 1134 | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 415100 | 442000 | 139800 | 408 |
| 1.4                                 | 134206                | 2.0            | 1059 | 22.0                 | 318 L4 | —          | BN180L4 | — | —                   | —  | 503000 | 520700 | 182200 | 418 |
| 1.4                                 | 132128                | 1.0            | 1043 | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 314800 | 350100 | 136000 | 398 |
| 1.4                                 | 130816                | 1.4            | 1032 | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 403600 | 429700 | 135500 | 408 |
| 1.5                                 | 127545                | 2.7            | 1007 | 30.0                 | 319 L4 | —          | BN180L4 | — | —                   | —  | 577600 | 636300 | 179200 | 428 |
| 1.5                                 | 120803                | 1.2            | 953  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 394100 | 419600 | 132000 | 410 |
| 1.6                                 | 115536                | 2.9            | 912  | 30.0                 | 319 L4 | —          | BN180L4 | — | —                   | —  | 560700 | 617700 | 173400 | 428 |
| 1.6                                 | 115446                | 2.3            | 911  | 22.0                 | 318 L4 | —          | BN180L4 | — | —                   | —  | 487700 | 497700 | 173300 | 418 |
| 1.6                                 | 114851                | 2.9            | 906  | 115.0                | —      | 319 R4 (C) | BN180L4 | — | —                   | —  | 559700 | 616600 | 173000 | 430 |
| 1.6                                 | 114511                | 1.5            | 904  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 387800 | 412900 | 129600 | 408 |
| 1.7                                 | 109226                | 0.9            | 862  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 178800 | 210000 | 76600  | 386 |
| 1.7                                 | 109226                | 1.2            | 862  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 297400 | 330700 | 127600 | 398 |
| 1.8                                 | 102957                | 1.3            | 812  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 292100 | 324900 | 125100 | 398 |
| 1.8                                 | 101788                | 1.6            | 803  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 374300 | 398500 | 124600 | 410 |
| 1.8                                 | 100362                | 1.9            | 792  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 372700 | 396900 | 124100 | 408 |
| 1.9                                 | 99121                 | 0.9            | 782  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 173700 | 203900 | 74100  | 388 |
| 1.9                                 | 97274                 | 2.8            | 768  | 22.0                 | 318 L4 | —          | BN180L4 | — | —                   | —  | 463300 | 472800 | 163700 | 418 |
| 2.0                                 | 93899                 | 1.1            | 741  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 170900 | 200700 | 72800  | 386 |
| 2.0                                 | 93899                 | 1.3            | 741  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 284200 | 316100 | 121400 | 398 |
| 2.0                                 | 92033                 | 1.4            | 726  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 282500 | 314100 | 120500 | 398 |
| 2.0                                 | 91996                 | 2.9            | 726  | 22.0                 | 318 L4 | —          | BN180L4 | — | —                   | —  | 455600 | 464900 | 160700 | 418 |
| 2.0                                 | 91119                 | 2.0            | 719  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 362100 | 385500 | 120100 | 408 |
| 2.1                                 | 86751                 | 1.5            | 685  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 277500 | 308600 | 118200 | 398 |
| 2.2                                 | 85766                 | 1.9            | 677  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 355600 | 378600 | 117700 | 410 |
| 2.2                                 | 85111                 | 1.2            | 672  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 165900 | 194800 | 70500  | 386 |
| 2.2                                 | 84691                 | 1.0            | 668  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 165700 | 194500 | 70300  | 374 |
| 2.2                                 | 83518                 | 1.1            | 659  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 165000 | 193700 | 70000  | 388 |
| 2.3                                 | 79315                 | 2.0            | 626  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 347300 | 369800 | 114700 | 410 |
| 2.3                                 | 79119                 | 1.6            | 624  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 270000 | 300300 | 114600 | 398 |
| 2.3                                 | 78987                 | 1.3            | 623  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                                 | 78987                 | 1.5            | 623  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 269800 | 300100 | 114500 | 400 |
| 2.4                                 | 78382                 | 2.3            | 619  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 346100 | 368500 | 114200 | 408 |
| 2.5                                 | 74873                 | 1.3            | 591  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 159700 | 187500 | 67500  | 386 |
| 2.5                                 | 74873                 | 1.6            | 591  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 265500 | 295300 | 112500 | 398 |
| 2.5                                 | 74503                 | 1.1            | 588  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 159500 | 187200 | 67400  | 374 |
| 2.6                                 | 71714                 | 1.7            | 566  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 262100 | 291500 | 110900 | 398 |
| 2.6                                 | 70227                 | 1.1            | 554  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 156600 | 183900 | 66100  | 374 |
| 2.6                                 | 69906                 | 2.5            | 552  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 334400 | 356100 | 110000 | 408 |
| 2.7                                 | 67598                 | 1.5            | 533  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 154900 | 181800 | 65200  | 386 |
| 2.7                                 | 67598                 | 1.8            | 533  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 257500 | 286400 | 108700 | 398 |
| 2.8                                 | 66554                 | 1.5            | 525  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 154100 | 181000 | 64900  | 388 |
| 2.8                                 | 66554                 | 1.8            | 525  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 256300 | 285000 | 108200 | 400 |
| 2.8                                 | 65893                 | 2.5            | 520  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 328500 | 349800 | 107800 | 410 |
| 3.0                                 | 62669                 | 1.3            | 495  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 151400 | 177700 | 63600  | 374 |
| 3.0                                 | 62461                 | 2.7            | 493  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 323300 | 344200 | 105900 | 408 |
| 3.0                                 | 61690                 | 1.6            | 487  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 150700 | 176900 | 63300  | 386 |
| 3.0                                 | 61690                 | 1.9            | 487  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 250500 | 278600 | 105500 | 398 |
| 3.2                                 | 58054                 | 1.4            | 458  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 148000 | 173700 | 62000  | 374 |
| 3.3                                 | 56872                 | 2.9            | 449  | 18.0                 | 317 L4 | —          | BN180L4 | — | —                   | —  | 314300 | 334700 | 102700 | 408 |
| 3.3                                 | 56078                 | 2.1            | 443  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 243500 | 270800 | 102200 | 400 |
| 3.3                                 | 55881                 | 1.8            | 441  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 146300 | 171700 | 61200  | 386 |
| 3.3                                 | 55881                 | 2.1            | 441  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 243200 | 270500 | 102100 | 398 |
| 3.3                                 | 55521                 | 2.8            | 438  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 312100 | 332300 | 101800 | 410 |
| 3.6                                 | 51860                 | 1.9            | 409  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 143000 | 167900 | 59700  | 388 |
| 3.6                                 | 51860                 | 2.2            | 409  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 237800 | 264500 | 99600  | 400 |
| 3.7                                 | 50553                 | 2.9            | 399  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 303400 | 323100 | 98700  | 410 |
| 3.8                                 | 49175                 | 1.6            | 388  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 140800 | 165300 | 58700  | 374 |
| 4.0                                 | 46834                 | 2.1            | 370  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 138700 | 162900 | 57700  | 386 |
| 4.0                                 | 46834                 | 2.3            | 370  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 230600 | 256500 | 96200  | 398 |
| 4.2                                 | 43697                 | 2.2            | 345  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 135900 | 159500 | 56400  | 388 |
| 4.2                                 | 43697                 | 2.5            | 345  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 225900 | 251200 | 94000  | 400 |
| 4.3                                 | 42595                 | 2.9            | 336  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 288200 | 306900 | 93200  | 410 |

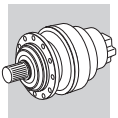


$P_1 = 22 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |     |
| 4.4                                 | 41640                 | 2.5            | 329  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 222700 | 247600 | 92500 | 398 |
| 4.6                                 | 39795                 | 2.0            | 314  | 15.0                 | 314 L4 | —          | BN180L4 | — | —                   | —  | 132100 | 155100 | 54700 | 374 |
| 4.8                                 | 39803                 | 1.0            | 304  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 122500 | 145000 | 48100 | 362 |
| 4.8                                 | 38306                 | 2.5            | 302  | 18.0                 | 315 L4 | —          | BN180L4 | — | —                   | —  | 130600 | 153300 | 54000 | 386 |
| 4.8                                 | 38306                 | 2.7            | 302  | 18.0                 | 316 L4 | —          | BN180L4 | — | —                   | —  | 217100 | 241500 | 90000 | 398 |
| 5.1                                 | 36622                 | 2.9            | 289  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 214200 | 238300 | 88700 | 400 |
| 5.4                                 | 34049                 | 2.4            | 269  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 126100 | 148000 | 51900 | 388 |
| 5.4                                 | 34049                 | 2.9            | 269  | 45.0                 | —      | 316 R4     | BN180L4 | — | —                   | —  | 209600 | 233100 | 86500 | 400 |
| 5.6                                 | 33191                 | 2.9            | 262  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 267500 | 284800 | 85800 | 410 |
| 5.8                                 | 33067                 | 1.4            | 252  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 115900 | 137100 | 45200 | 362 |
| 6.0                                 | 32149                 | 1.1            | 245  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 93000  | 115800 | 36400 | 350 |
| 6.1                                 | 31541                 | 2.1            | 241  | 30.0                 | 315 L3 | —          | BN180L4 | — | —                   | —  | 122000 | 143200 | 50000 | 386 |
| 6.1                                 | 31385                 | 1.7            | 240  | 25.0                 | 314 L3 | —          | BN180L4 | — | —                   | —  | 121800 | 143000 | 50000 | 374 |
| 6.5                                 | 28537                 | 2.7            | 225  | 40.0                 | —      | 315 R4     | BN180L4 | — | —                   | —  | 119600 | 140400 | 48900 | 388 |
| 6.7                                 | 27817                 | 2.9            | 220  | 50.0                 | —      | 317 R4     | BN180L4 | — | —                   | —  | 253600 | 270100 | 80900 | 410 |
| 7.0                                 | 27336                 | 1.6            | 209  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 109400 | 129500 | 42400 | 362 |
| 7.1                                 | 27132                 | 2.9            | 207  | 30.0                 | 315 L3 | —          | BN180L4 | — | —                   | —  | 116600 | 136900 | 47600 | 386 |
| 7.1                                 | 26998                 | 2.4            | 206  | 25.0                 | 314 L3 | —          | BN180L4 | — | —                   | —  | 116400 | 136700 | 47500 | 374 |
| 7.2                                 | 26576                 | 1.3            | 203  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 87800  | 109400 | 34100 | 350 |
| 7.5                                 | 25369                 | 1.9            | 194  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 107000 | 126700 | 41400 | 362 |
| 7.6                                 | 25051                 | 1.3            | 191  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 86300  | 107500 | 33500 | 350 |
| 8.0                                 | 23849                 | 1.6            | 182  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 105100 | 124300 | 40500 | 362 |
| 8.3                                 | 23033                 | 2.0            | 176  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 104000 | 123000 | 40100 | 362 |
| 8.4                                 | 22749                 | 2.8            | 174  | 25.0                 | 314 L3 | —          | BN180L4 | — | —                   | —  | 110600 | 129800 | 44900 | 374 |
| 8.5                                 | 22393                 | 1.5            | 171  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 83400  | 103900 | 32200 | 350 |
| 8.9                                 | 21514                 | 3.0            | 164  | 25.0                 | 314 L3 | —          | BN180L4 | — | —                   | —  | 108700 | 127700 | 44100 | 374 |
| 8.9                                 | 21443                 | 1.0            | 164  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 69700  | 87600  | 31800 | 338 |
| 9.0                                 | 21376                 | 2.2            | 163  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 101700 | 120300 | 39100 | 362 |
| 9.1                                 | 21108                 | 1.5            | 161  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 82000  | 102100 | 31600 | 350 |
| 9.3                                 | 20586                 | 2.5            | 157  | 55.0                 | —      | 314 R3 (C) | BN180L4 | — | —                   | —  | 107300 | 126000 | 43400 | 376 |
| 9.5                                 | 20049                 | 1.9            | 153  | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 99700  | 118000 | 38200 | 364 |
| 9.7                                 | 19813                 | 2.3            | 151  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 99400  | 117600 | 38100 | 362 |
| 9.9                                 | 19263                 | 1.7            | 147  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 79700  | 99300  | 30700 | 350 |
| 10.0                                | 19219                 | 1.4            | 147  | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 79700  | 99300  | 30600 | 352 |
| 10.2                                | 18738                 | 2.4            | 143  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 97700  | 115700 | 37400 | 362 |
| 10.3                                | 18575                 | 1.1            | 142  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 66700  | 83900  | 30300 | 338 |
| 10.8                                | 17671                 | 2.5            | 135  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 96000  | 113600 | 36700 | 362 |
| 11.0                                | 17449                 | 1.7            | 133  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 77400  | 96400  | 29700 | 350 |
| 11.2                                | 17087                 | 1.2            | 130  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 65100  | 81900  | 29500 | 338 |
| 11.5                                | 16656                 | 2.4            | 127  | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 94300  | 111600 | 36000 | 364 |
| 11.6                                | 16448                 | 1.8            | 126  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 76100  | 94700  | 29100 | 350 |
| 11.8                                | 16194                 | 1.9            | 124  | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 75700  | 94300  | 28900 | 352 |
| 12.1                                | 15789                 | 2.7            | 120  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 92800  | 109900 | 35300 | 362 |
| 12.3                                | 15594                 | 1.3            | 119  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 63300  | 79600  | 28600 | 338 |
| 12.7                                | 15010                 | 1.9            | 115  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 74000  | 92200  | 28200 | 350 |
| 13.2                                | 14474                 | 1.4            | 110  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 61900  | 77900  | 27900 | 338 |
| 13.3                                | 14376                 | 2.9            | 110  | 18.0                 | 313 L3 | —          | BN180L4 | — | —                   | —  | 90300  | 106800 | 34200 | 362 |
| 13.6                                | 14034                 | 2.8            | 107  | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 89600  | 106000 | 34000 | 364 |
| 14.0                                | 13645                 | 2.1            | 104  | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 71900  | 89600  | 27300 | 352 |
| 14.1                                | 13597                 | 2.0            | 104  | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 71800  | 89500  | 27300 | 350 |
| 14.5                                | 13209                 | 1.4            | 101  | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 60300  | 75800  | 27000 | 338 |
| 15.0                                | 12779                 | 2.9            | 97.5 | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 87100  | 103100 | 32900 | 364 |
| 15.2                                | 12618                 | 2.2            | 96.3 | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 70200  | 87500  | 26600 | 352 |
| 16.0                                | 11965                 | 1.6            | 91.3 | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 58500  | 73600  | 26200 | 338 |
| 16.4                                | 11696                 | 2.3            | 89.3 | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 68100  | 84900  | 25700 | 350 |
| 17.8                                | 10767                 | 2.9            | 82.2 | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 82800  | 97900  | 31100 | 364 |
| 18.0                                | 10632                 | 2.4            | 81.1 | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 66700  | 83100  | 25200 | 352 |
| 18.2                                | 10526                 | 1.7            | 80.3 | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 56300  | 70800  | 25100 | 338 |
| 18.9                                | 10132                 | 2.5            | 77.3 | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 65800  | 81900  | 24800 | 350 |
| 19.8                                | 9683                  | 1.8            | 73.9 | 18.0                 | 310 L3 | —          | BN180L4 | — | —                   | —  | 54900  | 69000  | 24400 | 338 |
| 20.5                                | 9320                  | 2.7            | 71.1 | 18.0                 | 311 L3 | —          | BN180L4 | — | —                   | —  | 64100  | 79900  | 24100 | 350 |
| 20.9                                | 9165                  | 2.9            | 69.9 | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 78900  | 93300  | 29500 | 364 |
| 21.5                                | 8911                  | 2.7            | 68.0 | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 63300  | 78800  | 23700 | 352 |
| 22.8                                | 8390                  | 2.9            | 64.0 | 40.0                 | —      | 313 R3     | BN180L4 | — | —                   | —  | 76800  | 90900  | 28600 | 364 |
| 23.1                                | 8285                  | 2.9            | 63.2 | 40.0                 | —      | 311 R3     | BN180L4 | — | —                   | —  | 61900  | 77100  | 23100 | 352 |

A





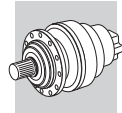
**P<sub>1</sub> = 22 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |        |         |   | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|--------|---------|---|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |        |         |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 23.3                                | 8202                  | 2.0            | 62.6 | 18.0                 | 310 L3 | —      | BN180L4 | — | —                   | 52200 | 65700 | 23100 | 338   |     |
| 27.2                                | 7032                  | 2.9            | 53.7 | 40.0                 | —      | 313 R3 | BN180L4 | — | —                   | 72800 | 86200 | 27000 | 364   |     |
| 27.4                                | 6977                  | 1.0            | 53.2 | 7.5                  | 306 L3 | —      | BN180L4 | — | 15300               | 17300 | 37600 | 43800 | 11500 | 302 |
| 27.5                                | 6948                  | 2.3            | 53.0 | 18.0                 | 310 L3 | —      | BN180L4 | — | —                   | —     | 49700 | 62500 | 21800 | 338 |
| 27.6                                | 6943                  | 2.9            | 53.0 | 40.0                 | —      | 311 R3 | BN180L4 | — | —                   | —     | 58700 | 73100 | 21800 | 352 |
| 31                                  | 6325                  | 1.3            | 46.7 | 18.0                 | 307 L2 | —      | BN180L4 | — | 16700               | 20900 | 39700 | 52100 | 14500 | 314 |
| 31                                  | 6325                  | 2.0            | 46.7 | 18.0                 | 309 L2 | —      | BN180L4 | — | —                   | —     | 40400 | 52100 | 11600 | 326 |
| 31                                  | 6325                  | 2.2            | 46.7 | 22.0                 | 310 L2 | —      | BN180L4 | — | —                   | —     | 47800 | 60200 | 20900 | 338 |
| 31                                  | 6294                  | 1.0            | 46.5 | 13.0                 | 306 L2 | —      | BN180L4 | — | 15000               | 17000 | 36900 | 43000 | 11300 | 302 |
| 38                                  | 5229                  | 1.6            | 38.6 | 18.0                 | 307 L2 | —      | BN180L4 | — | 15600               | 19600 | 37500 | 49200 | 13600 | 314 |
| 38                                  | 5229                  | 2.4            | 38.6 | 18.0                 | 309 L2 | —      | BN180L4 | — | —                   | —     | 38100 | 49200 | 10900 | 326 |
| 38                                  | 5229                  | 2.6            | 38.6 | 22.0                 | 310 L2 | —      | BN180L4 | — | —                   | —     | 45200 | 56800 | 19600 | 338 |
| 38                                  | 5203                  | 1.2            | 38.4 | 13.0                 | 306 L2 | —      | BN180L4 | — | 14100               | 15900 | 34800 | 40600 | 10600 | 302 |
| 44                                  | 4476                  | 1.5            | 33.1 | 13.0                 | 306 L2 | —      | BN180L4 | — | 13400               | 15100 | 33300 | 38800 | 10000 | 302 |
| 45                                  | 4406                  | 2.1            | 32.6 | 18.0                 | 307 L2 | —      | BN180L4 | — | 14800               | 18500 | 35700 | 46700 | 12800 | 314 |
| 45                                  | 4406                  | 3.0            | 32.6 | 18.0                 | 309 L2 | —      | BN180L4 | — | —                   | —     | 36200 | 46700 | 10300 | 326 |
| 48                                  | 4153                  | 2.3            | 30.7 | 18.0                 | 307 L2 | —      | BN180L4 | — | 14500               | 18200 | 35000 | 45900 | 12600 | 314 |
| 51                                  | 3850                  | 1.7            | 28.4 | 22.0                 | 306 L2 | —      | BN180L4 | — | —                   | —     | 42200 | 53000 | 18200 | 302 |
| 52                                  | 3790                  | 2.4            | 28.0 | 13.0                 | 307 L2 | —      | BN180L4 | — | 12700               | 14400 | 31800 | 37100 | 9550  | 314 |
| 55                                  | 3567                  | 1.8            | 26.4 | 13.0                 | 306 L2 | —      | BN180L4 | — | 12400               | 14000 | 31100 | 36200 | 9310  | 302 |
| 58                                  | 3433                  | 2.6            | 25.4 | 18.0                 | 307 L2 | —      | BN180L4 | — | 13600               | 17100 | 33100 | 43400 | 11800 | 314 |
| 62                                  | 3186                  | 2.9            | 23.5 | 35.0                 | —      | 309 R2 | BN180L4 | — | —                   | —     | 32900 | 42400 | 9220  | 328 |
| 62                                  | 3186                  | 2.5            | 23.5 | 35.0                 | —      | 307 R2 | BN180L4 | — | 13300               | 16600 | 32400 | 42400 | 11500 | 316 |
| 64                                  | 3068                  | 2.0            | 22.7 | 13.0                 | 306 L2 | —      | BN180L4 | — | 11800               | 13400 | 29700 | 34600 | 8850  | 302 |
| 67                                  | 2953                  | 2.9            | 21.8 | 18.0                 | 307 L2 | —      | BN180L4 | — | 12900               | 16200 | 31600 | 41400 | 11200 | 314 |
| 74                                  | 2685                  | 2.9            | 19.8 | 35.0                 | —      | 309 R2 | BN180L4 | — | —                   | —     | 31200 | 40300 | 8710  | 328 |
| 74                                  | 2685                  | 2.9            | 19.8 | 35.0                 | —      | 307 R2 | BN180L4 | — | 12500               | 15700 | 30700 | 40300 | 10900 | 316 |
| 81                                  | 2445                  | 2.4            | 18.1 | 13.0                 | 306 L2 | —      | BN180L4 | — | 10900               | 12400 | 27800 | 32300 | 8210  | 302 |
| 94                                  | 2092                  | 2.9            | 15.5 | 35.0                 | —      | 309 R2 | BN180L4 | — | —                   | —     | 29000 | 37400 | 8020  | 328 |
| 94                                  | 2092                  | 2.9            | 15.5 | 35.0                 | —      | 307 R2 | BN180L4 | — | 11500               | 14500 | 28500 | 37400 | 10000 | 316 |
| 95                                  | 2071                  | 2.4            | 15.3 | 13.0                 | 306 L2 | —      | BN180L4 | — | 10300               | 11700 | 26400 | 30800 | 7770  | 302 |
| 113                                 | 1754                  | 2.7            | 13.0 | 13.0                 | 306 L2 | —      | BN180L4 | — | 9780                | 11100 | 25100 | 29300 | 7350  | 302 |
| 113                                 | 1753                  | 2.9            | 13.0 | 35.0                 | —      | 309 R2 | BN180L4 | — | —                   | —     | 27500 | 35400 | 7560  | 328 |
| 113                                 | 1753                  | 2.9            | 13.0 | 35.0                 | —      | 307 R2 | BN180L4 | — | 10900               | 13600 | 27000 | 35400 | 9450  | 316 |
| 195                                 | 1048                  | 1.2            | 7.50 | 11.0                 | 303 L1 | —      | BN180L4 | — | 6550                | 7560  | 13000 | 15700 | 4200  | 266 |
| 195                                 | 1048                  | 2.2            | 7.50 | 13.0                 | 305 L1 | —      | BN180L4 | — | 6550                | 7560  | 13000 | 15700 | 4200  | 290 |
| 222                                 | 918                   | 2.0            | 6.57 | 12.0                 | 304 L1 | —      | BN180L4 | — | 6260                | 7230  | 12500 | 15100 | 4020  | 278 |
| 235                                 | 866                   | 1.6            | 6.20 | 11.0                 | 303 L1 | —      | BN180L4 | — | 6140                | 7090  | 12300 | 14800 | 3940  | 266 |
| 274                                 | 745                   | 2.0            | 5.33 | 11.0                 | 303 L1 | —      | BN180L4 | — | 5840                | 6750  | 11800 | 14200 | 3750  | 266 |
| 274                                 | 745                   | 2.7            | 5.33 | 12.0                 | 304 L1 | —      | BN180L4 | — | 5840                | 6750  | 11800 | 14200 | 3750  | 278 |
| 344                                 | 594                   | 2.4            | 4.25 | 11.0                 | 303 L1 | —      | BN180L4 | — | 5420                | 6250  | 11000 | 13200 | 3480  | 266 |
| 406                                 | 503                   | 2.7            | 3.60 | 11.0                 | 303 L1 | —      | BN180L4 | — | 5010                | 5780  | 10300 | 12300 | 3210  | 266 |

**P<sub>1</sub> = 30 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |         |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|---------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ      |     |
| 1.1                                 | 239514                | 1.5            | 1389 | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 636100 | 700800 | 199500  | 428 |
| 1.2                                 | 206034                | 1.7            | 1195 | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 608000 | 669900 | 189700  | 428 |
| 1.3                                 | 193443                | 2.7            | 1122 | 35.0                 | 321 L4 | —          | BN200L4 | — | —                   | —  | 731900 | 867900 | 1114500 | 438 |
| 1.4                                 | 182670                | 1.5            | 1059 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 503000 | 520700 | 182200  | 418 |
| 1.4                                 | 178055                | 1.0            | 1032 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 403600 | 429700 | 135500  | 408 |
| 1.5                                 | 173603                | 2.0            | 1007 | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 577600 | 636300 | 179200  | 428 |
| 1.6                                 | 157257                | 2.1            | 912  | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 560700 | 617700 | 173400  | 428 |
| 1.6                                 | 157135                | 1.7            | 911  | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 487700 | 497700 | 173300  | 418 |
| 1.6                                 | 156325                | 2.1            | 906  | 115.0                | —      | 319 R4 (C) | BN200L4 | — | —                   | —  | 559700 | 616600 | 173000  | 430 |
| 1.6                                 | 155863                | 1.1            | 904  | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 387800 | 412900 | 129600  | 408 |
| 1.7                                 | 146694                | 2.5            | 850  | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 549100 | 605000 | 169400  | 428 |
| 1.8                                 | 140136                | 0.9            | 812  | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 286100 | 318200 | 122300  | 398 |
| 1.8                                 | 138545                | 1.2            | 803  | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 374300 | 398500 | 124600  | 410 |
| 1.8                                 | 136603                | 1.4            | 792  | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 372700 | 396900 | 124100  | 408 |
| 1.9                                 | 134473                | 2.5            | 780  | 115.0                | —      | 319 R4 (C) | BN200L4 | — | —                   | —  | 535000 | 589400 | 164500  | 430 |





$P_1 = 30 \text{ kW}$

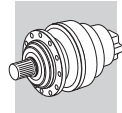
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i   | P <sub>t</sub><br>kW |        |            |         |   | R <sub>n2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|-----|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |     |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 1.9                                 | 132401                | 2.0            | 768 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 463300 | 472800 | 163700 | 418 |
| 2.0                                 | 127807                | 1.0            | 741 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 284200 | 316100 | 121400 | 398 |
| 2.0                                 | 125267                | 1.0            | 726 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 282500 | 314100 | 120500 | 398 |
| 2.0                                 | 125217                | 2.1            | 726 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 455600 | 464900 | 160700 | 418 |
| 2.0                                 | 124023                | 1.4            | 719 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 362100 | 385500 | 120100 | 408 |
| 2.0                                 | 123603                | 2.9            | 717 | 30.0                 | 319 L4 | —          | BN200L4 | — | —                   | —  | 521600 | 574700 | 160000 | 428 |
| 2.1                                 | 119224                | 2.2            | 691 | 110.0                | —      | 318 R4 (C) | BN200L4 | — | —                   | —  | 448900 | 458100 | 158100 | 420 |
| 2.1                                 | 118078                | 1.1            | 685 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 277500 | 308600 | 118200 | 398 |
| 2.2                                 | 116737                | 1.4            | 677 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 355600 | 378600 | 117700 | 410 |
| 2.2                                 | 113306                | 2.8            | 657 | 115.0                | —      | 319 R4 (C) | BN200L4 | — | —                   | —  | 508200 | 559900 | 155400 | 430 |
| 2.2                                 | 112919                | 2.8            | 655 | 95.0                 | —      | 319 R4 (B) | BN200L4 | — | —                   | —  | 507700 | 559300 | 155200 | 430 |
| 2.3                                 | 111560                | 2.4            | 647 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 440100 | 449100 | 154600 | 418 |
| 2.3                                 | 107957                | 1.4            | 626 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 347300 | 369800 | 114700 | 410 |
| 2.3                                 | 107690                | 1.2            | 624 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 270000 | 300300 | 114600 | 398 |
| 2.3                                 | 107510                | 0.9            | 623 | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 162300 | 190500 | 68700  | 388 |
| 2.3                                 | 107510                | 1.1            | 623 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 269800 | 300100 | 114500 | 400 |
| 2.4                                 | 106687                | 1.7            | 619 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 346100 | 368500 | 114200 | 408 |
| 2.4                                 | 105507                | 2.5            | 612 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 432800 | 441700 | 151800 | 418 |
| 2.5                                 | 102558                | 2.6            | 595 | 110.0                | —      | 318 R4 (C) | BN200L4 | — | —                   | —  | 429100 | 437900 | 150300 | 420 |
| 2.5                                 | 101910                | 1.0            | 591 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 159700 | 187500 | 67500  | 386 |
| 2.5                                 | 101910                | 1.2            | 591 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 265500 | 295300 | 112500 | 398 |
| 2.6                                 | 97611                 | 1.3            | 566 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 262100 | 291500 | 110900 | 398 |
| 2.6                                 | 95150                 | 1.8            | 552 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 334400 | 356100 | 110000 | 408 |
| 2.7                                 | 92009                 | 1.1            | 533 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 154900 | 181800 | 65200  | 386 |
| 2.7                                 | 92009                 | 1.3            | 533 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 257500 | 286400 | 108700 | 398 |
| 2.8                                 | 90587                 | 1.1            | 525 | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 154100 | 181000 | 64900  | 388 |
| 2.8                                 | 90587                 | 1.3            | 525 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 256300 | 285000 | 108200 | 400 |
| 2.8                                 | 89687                 | 1.8            | 520 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 328500 | 349800 | 107800 | 410 |
| 2.8                                 | 88899                 | 2.8            | 515 | 22.0                 | 318 L4 | —          | BN200L4 | — | —                   | —  | 411100 | 419500 | 143300 | 418 |
| 2.9                                 | 86415                 | 2.9            | 501 | 110.0                | —      | 318 R4 (C) | BN200L4 | — | —                   | —  | 407600 | 416000 | 142000 | 420 |
| 2.9                                 | 86120                 | 2.9            | 499 | 90.0                 | —      | 318 R4 (B) | BN200L4 | — | —                   | —  | 407200 | 415600 | 141800 | 420 |
| 3.0                                 | 85299                 | 0.9            | 495 | 15.0                 | 314 L4 | —          | BN200L4 | — | —                   | —  | 151400 | 177700 | 63600  | 374 |
| 3.0                                 | 85016                 | 2.0            | 493 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 323300 | 344200 | 105900 | 408 |
| 3.0                                 | 83966                 | 1.2            | 487 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 150700 | 176900 | 63300  | 386 |
| 3.0                                 | 83966                 | 1.4            | 487 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 250500 | 278600 | 105500 | 398 |
| 3.2                                 | 79018                 | 1.0            | 458 | 15.0                 | 314 L4 | —          | BN200L4 | — | —                   | —  | 148000 | 173700 | 62000  | 374 |
| 3.3                                 | 77409                 | 2.1            | 449 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 314300 | 334700 | 102700 | 408 |
| 3.3                                 | 76328                 | 1.5            | 443 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 243500 | 270800 | 102200 | 400 |
| 3.3                                 | 76060                 | 1.3            | 441 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 146300 | 171700 | 61200  | 386 |
| 3.3                                 | 76060                 | 1.5            | 441 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 243200 | 270500 | 102100 | 398 |
| 3.3                                 | 75570                 | 2.1            | 438 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 312100 | 332300 | 101800 | 410 |
| 3.6                                 | 70587                 | 1.4            | 409 | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 143000 | 167900 | 59700  | 388 |
| 3.6                                 | 70587                 | 1.6            | 409 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 237800 | 264500 | 99600  | 400 |
| 3.7                                 | 68808                 | 2.2            | 399 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 303400 | 323100 | 98700  | 410 |
| 3.8                                 | 66933                 | 1.2            | 388 | 15.0                 | 314 L4 | —          | BN200L4 | — | —                   | —  | 140800 | 165300 | 58700  | 374 |
| 4.0                                 | 63746                 | 1.5            | 370 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 138700 | 162900 | 57700  | 386 |
| 4.0                                 | 63746                 | 1.7            | 370 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 230600 | 256500 | 96200  | 398 |
| 4.1                                 | 62139                 | 2.5            | 360 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 294300 | 313300 | 95400  | 408 |
| 4.2                                 | 59476                 | 1.6            | 345 | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 135900 | 159500 | 56400  | 388 |
| 4.2                                 | 59476                 | 1.8            | 345 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 225900 | 251200 | 94000  | 400 |
| 4.3                                 | 57977                 | 2.2            | 336 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 288200 | 306900 | 93200  | 410 |
| 4.4                                 | 56677                 | 1.9            | 329 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 222700 | 247600 | 92500  | 398 |
| 4.6                                 | 54166                 | 1.4            | 314 | 15.0                 | 314 L4 | —          | BN200L4 | — | —                   | —  | 132100 | 155100 | 54700  | 374 |
| 4.7                                 | 53453                 | 2.7            | 310 | 18.0                 | 317 L4 | —          | BN200L4 | — | —                   | —  | 281300 | 299500 | 90700  | 408 |
| 4.8                                 | 52138                 | 1.9            | 302 | 18.0                 | 315 L4 | —          | BN200L4 | — | —                   | —  | 130600 | 153300 | 54000  | 386 |
| 4.8                                 | 52138                 | 2.0            | 302 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 217100 | 241500 | 90000  | 398 |
| 5.1                                 | 49847                 | 2.1            | 289 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 214200 | 238300 | 88700  | 400 |
| 5.4                                 | 46345                 | 1.8            | 269 | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 126100 | 148000 | 51900  | 388 |
| 5.4                                 | 46345                 | 2.2            | 269 | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 209600 | 233100 | 86500  | 400 |
| 5.6                                 | 45177                 | 2.2            | 262 | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 267500 | 284800 | 85800  | 410 |
| 5.7                                 | 44164                 | 2.2            | 256 | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 206600 | 229800 | 85100  | 398 |
| 5.8                                 | 45008                 | 1.0            | 252 | 18.0                 | 317 L3 | —          | BN200L4 | — | —                   | —  | 115900 | 137100 | 45200  | 408 |
| 5.8                                 | 45008                 | 2.7            | 252 | 35.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 264500 | 281600 | 84700  | 362 |
| 6.1                                 | 42931                 | 1.5            | 241 | 30.0                 | 315 L3 | —          | BN200L4 | — | —                   | —  | 122000 | 143200 | 50000  | 386 |
| 6.1                                 | 42719                 | 1.2            | 240 | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 121800 | 143000 | 50000  | 374 |

A



$P_1 = 30 \text{ kW}$

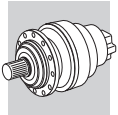
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |     |
| 6.5                                 | 38842                 | 2.0            | 225  | 40.0                 | —      | 315 R4     | BN200L4 | — | —                   | —  | 119600 | 140400 | 48900 | 388 |
| 6.5                                 | 38842                 | 2.4            | 225  | 45.0                 | —      | 316 R4     | BN200L4 | — | —                   | —  | 198800 | 221100 | 81600 | 400 |
| 6.7                                 | 37862                 | 2.1            | 220  | 50.0                 | —      | 317 R4     | BN200L4 | — | —                   | —  | 253600 | 270100 | 80900 | 410 |
| 6.8                                 | 37014                 | 2.5            | 215  | 18.0                 | 316 L4 | —          | BN200L4 | — | —                   | —  | 195900 | 217900 | 80300 | 398 |
| 7.0                                 | 37207                 | 1.2            | 209  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 109400 | 129500 | 42400 | 362 |
| 7.1                                 | 36930                 | 2.2            | 207  | 30.0                 | 315 L3 | —          | BN200L4 | — | —                   | —  | 116600 | 136900 | 47600 | 386 |
| 7.1                                 | 36748                 | 1.7            | 206  | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 116400 | 136700 | 47500 | 374 |
| 7.2                                 | 36173                 | 0.9            | 203  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 86000  | 107200 | 33400 | 350 |
| 7.5                                 | 34530                 | 1.4            | 194  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 107000 | 126700 | 41400 | 362 |
| 7.6                                 | 34097                 | 0.9            | 191  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 86300  | 107500 | 33500 | 350 |
| 8.0                                 | 32462                 | 1.2            | 182  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 105100 | 124300 | 40500 | 362 |
| 8.3                                 | 31350                 | 1.4            | 176  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 104000 | 123000 | 40100 | 362 |
| 8.4                                 | 31117                 | 2.5            | 174  | 30.0                 | 315 L3 | —          | BN200L4 | — | —                   | —  | 110700 | 130000 | 45000 | 386 |
| 8.4                                 | 30963                 | 2.0            | 174  | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 110600 | 129800 | 44900 | 374 |
| 8.5                                 | 30479                 | 1.1            | 171  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 83400  | 103900 | 32200 | 350 |
| 8.8                                 | 29429                 | 2.7            | 165  | 30.0                 | 315 L3 | —          | BN200L4 | — | —                   | —  | 108900 | 127900 | 44100 | 386 |
| 8.8                                 | 29429                 | 2.8            | 165  | 35.0                 | 316 L3 | —          | BN200L4 | — | —                   | —  | 181100 | 201400 | 73500 | 398 |
| 8.9                                 | 29283                 | 2.2            | 164  | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 108700 | 127700 | 44100 | 374 |
| 9.0                                 | 29095                 | 1.6            | 163  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 101700 | 120300 | 39100 | 362 |
| 9.1                                 | 28730                 | 1.1            | 161  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 82000  | 102100 | 31600 | 350 |
| 9.3                                 | 28020                 | 1.9            | 157  | 55.0                 | —      | 314 R3 (C) | BN200L4 | — | —                   | —  | 107300 | 126000 | 43400 | 376 |
| 9.3                                 | 28020                 | 2.3            | 157  | 90.0                 | —      | 315 R3 (C) | BN200L4 | — | —                   | —  | 107300 | 126000 | 43400 | 388 |
| 9.5                                 | 27289                 | 1.4            | 153  | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 99700  | 118000 | 38200 | 364 |
| 9.7                                 | 26968                 | 1.7            | 151  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 99400  | 117600 | 38100 | 362 |
| 9.9                                 | 26219                 | 1.2            | 147  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 79700  | 99300  | 30700 | 350 |
| 10.0                                | 26159                 | 1.0            | 147  | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 79700  | 99300  | 30600 | 352 |
| 10.2                                | 25505                 | 1.7            | 143  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 97700  | 115700 | 37400 | 362 |
| 10.6                                | 24674                 | 2.6            | 138  | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 103300 | 121300 | 41600 | 374 |
| 10.8                                | 24103                 | 2.5            | 135  | 55.0                 | —      | 314 R3 (C) | BN200L4 | — | —                   | —  | 102600 | 120400 | 41300 | 376 |
| 10.8                                | 24052                 | 1.8            | 135  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 96000  | 113600 | 36700 | 362 |
| 11.0                                | 23750                 | 1.3            | 133  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 77400  | 96400  | 29700 | 350 |
| 11.5                                | 22671                 | 1.8            | 127  | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 94300  | 111600 | 36000 | 364 |
| 11.6                                | 22387                 | 1.3            | 126  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 76100  | 94700  | 29100 | 350 |
| 11.8                                | 22041                 | 1.4            | 124  | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 75700  | 94300  | 28900 | 352 |
| 12.1                                | 21490                 | 2.0            | 120  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 92800  | 109900 | 35300 | 362 |
| 12.3                                | 21225                 | 0.9            | 119  | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 63300  | 79600  | 28600 | 338 |
| 12.7                                | 20430                 | 1.4            | 115  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 74000  | 92200  | 28200 | 350 |
| 12.8                                | 20309                 | 2.5            | 114  | 55.0                 | —      | 314 R3 (C) | BN200L4 | — | —                   | —  | 97400  | 114400 | 39000 | 376 |
| 12.9                                | 20240                 | 2.4            | 113  | 55.0                 | —      | 314 R3 (B) | BN200L4 | — | —                   | —  | 97300  | 114300 | 38900 | 376 |
| 12.9                                | 20240                 | 3.0            | 113  | 75.0                 | —      | 315 R3 (B) | BN200L4 | — | —                   | —  | 97300  | 114300 | 38900 | 388 |
| 13.2                                | 19701                 | 1.0            | 110  | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 60700  | 76300  | 27200 | 338 |
| 13.3                                | 19567                 | 2.1            | 110  | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 90300  | 106800 | 34200 | 362 |
| 13.5                                | 19226                 | 3.0            | 108  | 25.0                 | 314 L3 | —          | BN200L4 | — | —                   | —  | 95900  | 112500 | 38300 | 374 |
| 13.6                                | 19207                 | 2.6            | 108  | 55.0                 | —      | 314 R3 (C) | BN200L4 | — | —                   | —  | 95800  | 112500 | 38300 | 376 |
| 13.6                                | 19102                 | 2.0            | 107  | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 89600  | 106000 | 34000 | 364 |
| 14.0                                | 18572                 | 1.5            | 104  | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 71900  | 89600  | 27300 | 352 |
| 14.1                                | 18507                 | 1.5            | 104  | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 71800  | 89500  | 27300 | 350 |
| 14.5                                | 17979                 | 1.0            | 101  | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 60300  | 75800  | 27000 | 338 |
| 15.0                                | 17393                 | 2.1            | 97.5 | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 87100  | 103100 | 32900 | 364 |
| 15.2                                | 17175                 | 1.6            | 96.3 | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 70200  | 87500  | 26600 | 352 |
| 15.8                                | 16487                 | 2.4            | 92.4 | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 85700  | 101500 | 32300 | 362 |
| 16.0                                | 16286                 | 1.1            | 91.3 | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 58500  | 73600  | 26200 | 338 |
| 16.1                                | 16184                 | 2.9            | 90.7 | 55.0                 | —      | 314 R3 (C) | BN200L4 | — | —                   | —  | 91000  | 106900 | 36200 | 376 |
| 16.4                                | 15920                 | 1.7            | 89.3 | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 68100  | 84900  | 25700 | 350 |
| 17.8                                | 14655                 | 2.1            | 82.2 | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 82800  | 97900  | 31100 | 364 |
| 18.0                                | 14471                 | 1.8            | 81.1 | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 66700  | 83100  | 25200 | 352 |
| 18.2                                | 14327                 | 1.2            | 80.3 | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 56300  | 70800  | 25100 | 338 |
| 18.6                                | 13966                 | 2.7            | 78.3 | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 81600  | 96500  | 30600 | 362 |
| 18.9                                | 13790                 | 1.8            | 77.3 | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 65800  | 81900  | 24800 | 350 |
| 19.8                                | 13179                 | 1.3            | 73.9 | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —  | 54900  | 69000  | 24400 | 338 |
| 20.3                                | 12847                 | 2.8            | 72.0 | 18.0                 | 313 L3 | —          | BN200L4 | — | —                   | —  | 79600  | 94100  | 29800 | 362 |
| 20.5                                | 12686                 | 2.0            | 71.1 | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —  | 64100  | 79900  | 24100 | 350 |
| 20.9                                | 12475                 | 2.1            | 69.9 | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 78900  | 93300  | 29500 | 364 |
| 21.5                                | 12128                 | 2.0            | 68.0 | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —  | 63300  | 78800  | 23700 | 352 |
| 22.8                                | 11420                 | 2.1            | 64.0 | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —  | 76800  | 90900  | 28600 | 364 |



$P_1 = 30 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |     |
| 23.1                                | 11276                 | 2.1            | 63.2 | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —     | 61900 | 77100 | 23100 | 352 |
| 23.3                                | 11164                 | 1.5            | 62.6 | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —     | 52200 | 65700 | 23100 | 338 |
| 24.2                                | 10746                 | 2.2            | 60.2 | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —     | 61000 | 76000 | 22800 | 350 |
| 27.2                                | 9571                  | 2.1            | 53.7 | 40.0                 | —      | 313 R3     | BN200L4 | — | —                   | —     | 72800 | 86200 | 27000 | 364 |
| 27.5                                | 9456                  | 1.7            | 53.0 | 18.0                 | 310 L3 | —          | BN200L4 | — | —                   | —     | 49700 | 62500 | 21800 | 338 |
| 27.6                                | 9451                  | 2.1            | 53.0 | 40.0                 | —      | 311 R3     | BN200L4 | — | —                   | —     | 58700 | 73100 | 21800 | 352 |
| 28.9                                | 9006                  | 2.5            | 50.5 | 18.0                 | 311 L3 | —          | BN200L4 | — | —                   | —     | 57900 | 72100 | 21500 | 350 |
| 31                                  | 8610                  | 1.0            | 46.7 | 18.0                 | 307 L2 | —          | BN200L4 | — | 16700               | 20900 | 39700 | 52100 | 14500 | 314 |
| 31                                  | 8610                  | 1.5            | 46.7 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 40400 | 52100 | 11600 | 326 |
| 31                                  | 8610                  | 1.6            | 46.7 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 47800 | 60200 | 20900 | 338 |
| 38                                  | 7153                  | 2.8            | 38.8 | 26.0                 | 311 L2 | —          | BN200L4 | — | —                   | —     | 53500 | 66600 | 19700 | 350 |
| 38                                  | 7117                  | 1.2            | 38.6 | 18.0                 | 307 L2 | —          | BN200L4 | — | 15600               | 19600 | 37500 | 49200 | 13600 | 314 |
| 38                                  | 7117                  | 1.8            | 38.6 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 38100 | 49200 | 10900 | 326 |
| 38                                  | 7117                  | 1.9            | 38.6 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 45200 | 56800 | 19600 | 338 |
| 38                                  | 7082                  | 0.9            | 38.4 | 13.0                 | 306 L2 | —          | BN200L4 | — | 13700               | 15600 | 34100 | 39700 | 10300 | 302 |
| 44                                  | 6092                  | 1.1            | 33.1 | 13.0                 | 306 L2 | —          | BN200L4 | — | 13400               | 15100 | 33300 | 38800 | 10000 | 302 |
| 45                                  | 5997                  | 1.6            | 32.6 | 18.0                 | 307 L2 | —          | BN200L4 | — | 14800               | 18500 | 35700 | 46700 | 12800 | 314 |
| 45                                  | 5997                  | 2.2            | 32.6 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 36200 | 46700 | 10300 | 326 |
| 45                                  | 5997                  | 2.2            | 32.6 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 42900 | 54000 | 18600 | 338 |
| 48                                  | 5653                  | 2.4            | 30.7 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 42200 | 53000 | 18200 | 338 |
| 48                                  | 5653                  | 1.7            | 30.7 | 18.0                 | 307 L2 | —          | BN200L4 | — | 14500               | 18200 | 35000 | 45900 | 12600 | 314 |
| 51                                  | 5241                  | 1.3            | 28.4 | 13.0                 | 306 L2 | —          | BN200L4 | — | 12700               | 14400 | 31800 | 37100 | 9550  | 302 |
| 52                                  | 5159                  | 1.8            | 28.0 | 18.0                 | 307 L2 | —          | BN200L4 | — | 14100               | 17600 | 34100 | 44700 | 12200 | 314 |
| 52                                  | 5159                  | 2.4            | 28.0 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 34600 | 44700 | 9770  | 326 |
| 52                                  | 5159                  | 2.5            | 28.0 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 41000 | 51600 | 17600 | 338 |
| 55                                  | 4855                  | 1.3            | 26.4 | 13.0                 | 306 L2 | —          | BN200L4 | — | 12400               | 14000 | 31100 | 36200 | 9310  | 302 |
| 58                                  | 4673                  | 2.7            | 25.4 | 22.0                 | 310 L2 | —          | BN200L4 | — | —                   | —     | 39800 | 50100 | 17100 | 338 |
| 58                                  | 4673                  | 1.9            | 25.4 | 18.0                 | 307 L2 | —          | BN200L4 | — | 13600               | 17100 | 33100 | 43400 | 11800 | 314 |
| 58                                  | 4673                  | 2.2            | 25.4 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 33600 | 43400 | 9460  | 326 |
| 58                                  | 4668                  | 2.6            | 25.3 | 55.0                 | —      | 310 R2 (C) | BN200L4 | — | —                   | —     | 39800 | 50100 | 17100 | 340 |
| 62                                  | 4337                  | 2.1            | 23.5 | 35.0                 | —      | 309 R2     | BN200L4 | — | —                   | —     | 32900 | 42400 | 9220  | 328 |
| 62                                  | 4337                  | 1.8            | 23.5 | 35.0                 | —      | 307 R2     | BN200L4 | — | 13300               | 16600 | 32400 | 42400 | 11500 | 316 |
| 64                                  | 4176                  | 1.5            | 22.7 | 13.0                 | 306 L2 | —          | BN200L4 | — | 11800               | 13400 | 29700 | 34600 | 8850  | 302 |
| 67                                  | 4020                  | 2.2            | 21.8 | 18.0                 | 307 L2 | —          | BN200L4 | — | 12900               | 16200 | 31600 | 41400 | 11200 | 314 |
| 67                                  | 4020                  | 2.5            | 21.8 | 18.0                 | 309 L2 | —          | BN200L4 | — | —                   | —     | 32100 | 41400 | 8990  | 326 |
| 68                                  | 3934                  | 3.0            | 21.3 | 55.0                 | —      | 310 R2 (C) | BN200L4 | — | —                   | —     | 37800 | 47600 | 16100 | 340 |
| 74                                  | 3654                  | 2.1            | 19.8 | 35.0                 | —      | 309 R2     | BN200L4 | — | —                   | —     | 31200 | 40300 | 8710  | 328 |
| 74                                  | 3654                  | 2.1            | 19.8 | 35.0                 | —      | 307 R2     | BN200L4 | — | 12500               | 15700 | 30700 | 40300 | 10900 | 316 |
| 81                                  | 3328                  | 1.8            | 18.1 | 13.0                 | 306 L2 | —          | BN200L4 | — | 10900               | 12400 | 27800 | 32300 | 8210  | 302 |
| 84                                  | 3203                  | 2.5            | 17.4 | 18.0                 | 307 L2 | —          | BN200L4 | — | 12000               | 15000 | 29500 | 38700 | 10400 | 314 |
| 94                                  | 2847                  | 2.1            | 15.5 | 35.0                 | —      | 309 R2     | BN200L4 | — | —                   | —     | 29000 | 37400 | 8020  | 328 |
| 94                                  | 2847                  | 2.1            | 15.5 | 35.0                 | —      | 307 R2     | BN200L4 | — | 11500               | 14500 | 28500 | 37400 | 10000 | 316 |
| 95                                  | 2819                  | 1.8            | 15.3 | 13.0                 | 306 L2 | —          | BN200L4 | — | 10300               | 11700 | 26400 | 30800 | 7770  | 302 |
| 99                                  | 2713                  | 2.8            | 14.7 | 18.0                 | 307 L2 | —          | BN200L4 | — | 11300               | 14200 | 28100 | 36800 | 9860  | 314 |
| 113                                 | 2388                  | 2.0            | 13.0 | 13.0                 | 306 L2 | —          | BN200L4 | — | 9780                | 11100 | 25100 | 29300 | 7350  | 302 |
| 113                                 | 2386                  | 2.1            | 13.0 | 35.0                 | —      | 309 R2     | BN200L4 | — | —                   | —     | 27500 | 35400 | 7560  | 328 |
| 113                                 | 2386                  | 2.1            | 13.0 | 35.0                 | —      | 307 R2     | BN200L4 | — | 10900               | 13600 | 27000 | 35400 | 9450  | 316 |
| 195                                 | 1426                  | 1.6            | 7.50 | 13.0                 | 305 L1 | —          | BN200L4 | — | 6550                | 7560  | 13000 | 15700 | 4200  | 290 |
| 195                                 | 1426                  | 2.9            | 7.50 | 18.0                 | 306 L1 | —          | BN200L4 | — | 8150                | 9240  | 21300 | 24800 | 6120  | 302 |
| 222                                 | 1249                  | 1.5            | 6.57 | 12.0                 | 304 L1 | —          | BN200L4 | — | 6260                | 7230  | 12500 | 15100 | 4020  | 278 |
| 235                                 | 1179                  | 1.2            | 6.20 | 11.0                 | 303 L1 | —          | BN200L4 | — | 6140                | 7090  | 12300 | 14800 | 3940  | 266 |
| 235                                 | 1179                  | 2.2            | 6.20 | 13.0                 | 305 L1 | —          | BN200L4 | — | 6140                | 7090  | 12300 | 14800 | 3940  | 290 |
| 274                                 | 1014                  | 1.5            | 5.33 | 11.0                 | 303 L1 | —          | BN200L4 | — | 5840                | 6750  | 11800 | 14200 | 3750  | 266 |
| 274                                 | 1014                  | 2.0            | 5.33 | 12.0                 | 304 L1 | —          | BN200L4 | — | 5840                | 6750  | 11800 | 14200 | 3750  | 278 |
| 274                                 | 1014                  | 2.5            | 5.33 | 13.0                 | 305 L1 | —          | BN200L4 | — | 5840                | 6750  | 11800 | 14200 | 3750  | 290 |
| 344                                 | 808                   | 1.8            | 4.25 | 11.0                 | 303 L1 | —          | BN200L4 | — | 5420                | 6250  | 11000 | 13200 | 3480  | 266 |
| 344                                 | 808                   | 2.4            | 4.25 | 12.0                 | 304 L1 | —          | BN200L4 | — | 5420                | 6250  | 11000 | 13200 | 3480  | 278 |
| 406                                 | 684                   | 2.0            | 3.60 | 13.0                 | 303 L1 | —          | BN200L4 | — | 5420                | 6250  | 11000 | 13200 | 3480  | 266 |
| 406                                 | 684                   | 2.7            | 3.60 | 18.0                 | 304 L1 | —          | BN200L4 | — | 6750                | 7640  | 18000 | 21000 | 5070  | 278 |

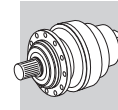
A



$P_1 = 37 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | R <sub>n2</sub> [N] |        |        |         |     |  |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|--------|--------|---------|-----|--|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ     | HC/PC  | HZ/PZ   | FZ  |  |
| 1.1                                 | 292061                | 1.2            | 1389 | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 636100 | 700800 | 199500  | 428 |  |
| 1.2                                 | 251235                | 1.4            | 1195 | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 608000 | 669900 | 189700  | 428 |  |
| 1.3                                 | 235882                | 2.2            | 1122 | 35.0                 | 321 L4 | —          | BN225S4 | — | —                   | 731900 | 867900 | 1114500 | 438 |  |
| 1.4                                 | 222745                | 1.2            | 1059 | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 503000 | 520700 | 182200  | 418 |  |
| 1.5                                 | 211689                | 1.6            | 1007 | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 577600 | 636300 | 179200  | 428 |  |
| 1.6                                 | 198752                | 2.9            | 945  | 35.0                 | 321 L4 | —          | BN225S4 | — | —                   | 695300 | 824500 | 1052600 | 438 |  |
| 1.6                                 | 191757                | 1.8            | 912  | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 560700 | 617700 | 173400  | 428 |  |
| 1.6                                 | 191609                | 1.4            | 911  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 487700 | 497700 | 173300  | 418 |  |
| 1.6                                 | 190621                | 1.8            | 906  | 115.0                | —      | 319 R4 (C) | BN225S4 | — | —                   | 559700 | 616600 | 173000  | 430 |  |
| 1.7                                 | 178877                | 2.0            | 850  | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 549100 | 605000 | 169400  | 428 |  |
| 1.9                                 | 163975                | 2.0            | 780  | 115.0                | —      | 319 R4 (C) | BN225S4 | — | —                   | 535000 | 589400 | 164500  | 430 |  |
| 1.9                                 | 161448                | 1.7            | 768  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 463300 | 472800 | 163700  | 418 |  |
| 2.0                                 | 152688                | 1.7            | 726  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 455600 | 464900 | 160700  | 418 |  |
| 2.1                                 | 150721                | 2.4            | 717  | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 521600 | 574700 | 160000  | 428 |  |
| 2.1                                 | 145380                | 1.8            | 691  | 110.0                | —      | 318 R4 (C) | BN225S4 | — | —                   | 448900 | 458100 | 158100  | 420 |  |
| 2.2                                 | 142543                | 2.5            | 678  | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 513000 | 565100 | 157000  | 428 |  |
| 2.3                                 | 138164                | 2.3            | 657  | 115.0                | —      | 319 R4 (C) | BN225S4 | — | —                   | 508200 | 559900 | 155400  | 430 |  |
| 2.3                                 | 137692                | 2.3            | 655  | 95.0                 | —      | 319 R4 (B) | BN225S4 | — | —                   | 507700 | 559300 | 155200  | 430 |  |
| 2.3                                 | 136035                | 1.9            | 647  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 440100 | 449100 | 154600  | 418 |  |
| 2.4                                 | 128654                | 2.0            | 612  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 432800 | 441700 | 151800  | 418 |  |
| 2.5                                 | 125058                | 2.1            | 595  | 110.0                | —      | 318 R4 (C) | BN225S4 | — | —                   | 429100 | 437900 | 150300  | 420 |  |
| 2.6                                 | 120105                | 2.9            | 571  | 30.0                 | 319 L4 | —          | BN225S4 | — | —                   | 487300 | 536800 | 148300  | 428 |  |
| 2.6                                 | 118445                | 2.6            | 563  | 95.0                 | —      | 319 R4 (B) | BN225S4 | — | —                   | 485200 | 534600 | 147600  | 430 |  |
| 2.7                                 | 116749                | 2.6            | 555  | 115.0                | —      | 319 R4 (C) | BN225S4 | — | —                   | 483100 | 532300 | 146900  | 430 |  |
| 2.8                                 | 110414                | 2.7            | 525  | 115.0                | —      | 319 R4 (C) | BN225S4 | — | —                   | 475100 | 523500 | 144200  | 430 |  |
| 2.9                                 | 108403                | 2.3            | 515  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 411100 | 419500 | 143300  | 418 |  |
| 3.0                                 | 105373                | 2.4            | 501  | 110.0                | —      | 318 R4 (C) | BN225S4 | — | —                   | 407600 | 416000 | 142000  | 420 |  |
| 3.0                                 | 105013                | 2.4            | 499  | 90.0                 | —      | 318 R4 (B) | BN225S4 | — | —                   | 407200 | 415600 | 141800  | 420 |  |
| 3.1                                 | 100250                | 2.5            | 477  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 401600 | 409800 | 139700  | 418 |  |
| 3.1                                 | 99656                 | 2.5            | 474  | 110.0                | —      | 318 R4 (C) | BN225S4 | — | —                   | 400900 | 409100 | 139400  | 420 |  |
| 3.4                                 | 90334                 | 2.7            | 430  | 90.0                 | —      | 318 R4 (B) | BN225S4 | — | —                   | 389200 | 397200 | 134900  | 420 |  |
| 3.5                                 | 88839                 | 2.7            | 422  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 387300 | 395200 | 134100  | 418 |  |
| 3.7                                 | 84470                 | 2.8            | 402  | 22.0                 | 318 L4 | —          | BN225S4 | — | —                   | 381500 | 389300 | 131900  | 418 |  |
| 3.7                                 | 83969                 | 2.8            | 399  | 110.0                | —      | 318 R4 (C) | BN225S4 | — | —                   | 380800 | 388600 | 131600  | 420 |  |
| 5.9                                 | 54883                 | 2.2            | 252  | 35.0                 | 317 L3 | —          | BN225S4 | — | —                   | 264500 | 281600 | 84700   | 408 |  |
| 6.1                                 | 52350                 | 1.2            | 241  | 30.0                 | 315 L3 | —          | BN225S4 | — | —                   | 122000 | 143200 | 50000   | 386 |  |
| 6.2                                 | 52091                 | 1.0            | 240  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 121800 | 143000 | 50000   | 374 |  |
| 7.1                                 | 45032                 | 1.8            | 207  | 30.0                 | 315 L3 | —          | BN225S4 | — | —                   | 116600 | 136900 | 47600   | 386 |  |
| 7.2                                 | 44810                 | 1.4            | 206  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 116400 | 136700 | 47500   | 374 |  |
| 8.5                                 | 37944                 | 2.1            | 174  | 30.0                 | 315 L3 | —          | BN225S4 | — | —                   | 110700 | 130000 | 45000   | 386 |  |
| 8.5                                 | 37756                 | 1.7            | 174  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 110600 | 129800 | 44900   | 374 |  |
| 9.0                                 | 35885                 | 2.2            | 165  | 30.0                 | 315 L3 | —          | BN225S4 | — | —                   | 108900 | 127900 | 44100   | 386 |  |
| 9.0                                 | 35885                 | 2.3            | 165  | 35.0                 | 316 L3 | —          | BN225S4 | — | —                   | 181100 | 201400 | 73500   | 398 |  |
| 9.0                                 | 35708                 | 1.8            | 164  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 108700 | 127700 | 44100   | 374 |  |
| 9.4                                 | 34167                 | 1.5            | 157  | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 107300 | 126000 | 43400   | 376 |  |
| 9.4                                 | 34167                 | 1.9            | 157  | 90.0                 | —      | 315 R3 (C) | BN225S4 | — | —                   | 107300 | 126000 | 43400   | 388 |  |
| 10.6                                | 30236                 | 2.7            | 139  | 30.0                 | 315 L3 | —          | BN225S4 | — | —                   | 103500 | 121500 | 41700   | 386 |  |
| 10.6                                | 30236                 | 2.7            | 139  | 35.0                 | 316 L3 | —          | BN225S4 | — | —                   | 172000 | 191300 | 69500   | 398 |  |
| 10.7                                | 30087                 | 2.2            | 138  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 103300 | 121300 | 41600   | 374 |  |
| 11.0                                | 29391                 | 2.1            | 135  | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 102600 | 120400 | 41300   | 376 |  |
| 11.0                                | 29391                 | 2.6            | 135  | 90.0                 | —      | 315 R3 (C) | BN225S4 | — | —                   | 102600 | 120400 | 41300   | 388 |  |
| 13.0                                | 24765                 | 2.1            | 114  | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 97400  | 114400 | 39000   | 376 |  |
| 13.0                                | 24765                 | 2.6            | 114  | 90.0                 | —      | 315 R3 (C) | BN225S4 | — | —                   | 97400  | 114400 | 39000   | 388 |  |
| 13.0                                | 24680                 | 1.9            | 113  | 55.0                 | —      | 314 R3 (B) | BN225S4 | — | —                   | 97300  | 114300 | 38900   | 376 |  |
| 13.0                                | 24680                 | 2.4            | 113  | 75.0                 | —      | 315 R3 (B) | BN225S4 | — | —                   | 97300  | 114300 | 38900   | 388 |  |
| 13.7                                | 23444                 | 2.4            | 108  | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 95900  | 112500 | 38300   | 374 |  |
| 13.7                                | 23421                 | 2.1            | 108  | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 95800  | 112500 | 38300   | 376 |  |
| 13.7                                | 23421                 | 2.7            | 108  | 90.0                 | —      | 315 R3 (C) | BN225S4 | — | —                   | 95800  | 112500 | 38300   | 388 |  |
| 15.2                                | 21230                 | 2.6            | 97.6 | 55.0                 | —      | 314 R3 (B) | BN225S4 | — | —                   | 93000  | 109200 | 37000   | 376 |  |
| 16.0                                | 20167                 | 2.7            | 92.7 | 25.0                 | 314 L3 | —          | BN225S4 | — | —                   | 91600  | 107600 | 36400   | 374 |  |
| 16.3                                | 19734                 | 2.4            | 90.7 | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 91000  | 106900 | 36200   | 376 |  |
| 16.3                                | 19734                 | 3.0            | 90.7 | 90.0                 | —      | 315 R3 (C) | BN225S4 | — | —                   | 91000  | 106900 | 36200   | 388 |  |
| 18.0                                | 17889                 | 2.9            | 82.3 | 55.0                 | —      | 314 R3 (B) | BN225S4 | — | —                   | 88400  | 103800 | 35000   | 376 |  |
| 20.9                                | 15378                 | 2.9            | 70.7 | 55.0                 | —      | 314 R3 (C) | BN225S4 | — | —                   | 84500  | 99200  | 33300   | 376 |  |
| 32                                  | 10499                 | 1.4            | 46.7 | 22.0                 | 310 L2 | —          | BN225S4 | — | —                   | 47800  | 60200  | 20900   | 338 |  |





$P_1 = 37 \text{ kW}$

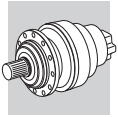
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |            |         |   | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|--------|------------|---------|---|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |        |            |         |   | MC           | MZ    | HC/PC | HZ/PZ | FZ   |     |
| 38                         | 8722           | 2.3   | 38.8 | 26.0        | 311 L2 | —          | BN225S4 | — | —            | 53500 | 66600 | 19700 | 350  |     |
| 38                         | 8679           | 1.6   | 38.6 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 45200 | 56800 | 19600 | 338  |     |
| 45                         | 7349           | 2.7   | 32.7 | 26.0        | 311 L2 | —          | BN225S4 | — | —            | 50800 | 63300 | 18600 | 350  |     |
| 45                         | 7313           | 1.8   | 32.6 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 42900 | 54000 | 18600 | 338  |     |
| 48                         | 6893           | 1.9   | 30.7 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 42200 | 53000 | 18200 | 338  |     |
| 53                         | 6290           | 2.0   | 28.0 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 41000 | 51600 | 17600 | 338  |     |
| 58                         | 5698           | 2.2   | 25.4 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 39800 | 50100 | 17100 | 338  |     |
| 58                         | 5693           | 2.1   | 25.3 | 55.0        | —      | 310 R2 (C) | BN225S4 | — | —            | 39800 | 50100 | 17100 | 340  |     |
| 68                         | 4902           | 2.5   | 21.8 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 38100 | 47900 | 16200 | 338  |     |
| 69                         | 4796           | 2.5   | 21.3 | 55.0        | —      | 310 R2 (C) | BN225S4 | — | —            | 37800 | 47600 | 16100 | 340  |     |
| 81                         | 4112           | 2.7   | 18.3 | 55.0        | —      | 310 R2 (B) | BN225S4 | — | —            | 36100 | 45400 | 15300 | 340  |     |
| 85                         | 3906           | 2.9   | 17.4 | 22.0        | 310 L2 | —          | BN225S4 | — | —            | 35600 | 44700 | 15100 | 338  |     |
| 89                         | 3738           | 3.0   | 16.6 | 55.0        | —      | 310 R2 (C) | BN225S4 | — | —            | 35100 | 44100 | 14800 | 340  |     |
| 197                        | 1739           | 2.4   | 7.50 | 18.0        | 306 L1 | —          | BN225S4 | — | 8150         | 9240  | 21300 | 24800 | 6120 | 302 |
| 239                        | 1437           | 2.9   | 6.20 | 18.0        | 306 L1 | —          | BN225S4 | — | 7650         | 8670  | 20200 | 23500 | 5750 | 302 |

$P_1 = 45 \text{ kW}$






| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |        |            |         |   | $R_{n2}$ [N] |        |        |         |     |  |
|----------------------------|----------------|-------|------|-------------|--------|------------|---------|---|--------------|--------|--------|---------|-----|--|
|                            |                |       |      |             |        |            |         |   | MC           | MZ     | HC/PC  | HZ/PZ   | FZ  |  |
| 1.1                        | 355606         | 1.0   | 1389 | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 636100 | 700800 | 199500  | 428 |  |
| 1.2                        | 327642         | 2.7   | 1279 | 50.0        | 323 L4 | —          | BN225M4 | — | —            | —      | —      | 1043200 | 448 |  |
| 1.2                        | 305897         | 1.2   | 1195 | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 608000 | 669900 | 189700  | 428 |  |
| 1.3                        | 287204         | 1.8   | 1122 | 35.0        | 321 L4 | —          | BN225M4 | — | —            | 731900 | 867900 | 1114500 | 438 |  |
| 1.4                        | 271209         | 1.0   | 1059 | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 499800 | 510000 | 178100  | 418 |  |
| 1.5                        | 257747         | 1.3   | 1007 | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 577600 | 636300 | 179200  | 428 |  |
| 1.6                        | 241996         | 2.4   | 945  | 35.0        | 321 L4 | —          | BN225M4 | — | —            | 695300 | 824500 | 1052600 | 438 |  |
| 1.6                        | 233478         | 1.4   | 912  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 560700 | 617700 | 173400  | 428 |  |
| 1.6                        | 233298         | 1.2   | 911  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 487700 | 497700 | 173300  | 418 |  |
| 1.6                        | 232095         | 1.4   | 906  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 559700 | 616600 | 173000  | 430 |  |
| 1.7                        | 217796         | 1.7   | 850  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 549100 | 605000 | 169400  | 428 |  |
| 1.9                        | 203904         | 2.7   | 796  | 35.0        | 321 L4 | —          | BN225M4 | — | —            | 660400 | 783200 | 994200  | 438 |  |
| 1.9                        | 199651         | 1.7   | 780  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 535000 | 589400 | 164500  | 430 |  |
| 1.9                        | 196575         | 1.4   | 768  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 463300 | 472800 | 163700  | 418 |  |
| 2.0                        | 188568         | 2.9   | 736  | 35.0        | 321 L4 | —          | BN225M4 | — | —            | 645100 | 765000 | 968700  | 438 |  |
| 2.0                        | 187451         | 2.8   | 732  | 125.0       | —      | 321 R4 (C) | BN225M4 | — | —            | 644000 | 763700 | 966700  | 440 |  |
| 2.0                        | 185909         | 1.4   | 726  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 455600 | 464900 | 160700  | 418 |  |
| 2.1                        | 183513         | 1.9   | 717  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 521600 | 574700 | 160000  | 428 |  |
| 2.1                        | 177011         | 1.5   | 691  | 110.0       | —      | 318 R4 (C) | BN225M4 | — | —            | 448900 | 458100 | 158100  | 420 |  |
| 2.2                        | 173556         | 2.0   | 678  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 513000 | 565100 | 157000  | 428 |  |
| 2.3                        | 168225         | 1.9   | 657  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 508200 | 559900 | 155400  | 430 |  |
| 2.3                        | 167650         | 1.9   | 655  | 95.0        | —      | 319 R4 (B) | BN225M4 | — | —            | 507700 | 559300 | 155200  | 430 |  |
| 2.3                        | 165633         | 1.6   | 647  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 440100 | 449100 | 154600  | 418 |  |
| 2.4                        | 156646         | 1.7   | 612  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 432800 | 441700 | 151800  | 418 |  |
| 2.5                        | 152268         | 1.7   | 595  | 110.0       | —      | 318 R4 (C) | BN225M4 | — | —            | 429100 | 437900 | 150300  | 420 |  |
| 2.6                        | 146237         | 2.4   | 571  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 487300 | 536800 | 148300  | 428 |  |
| 2.6                        | 144215         | 2.2   | 563  | 95.0        | —      | 319 R4 (B) | BN225M4 | — | —            | 485200 | 534600 | 147600  | 430 |  |
| 2.7                        | 142150         | 2.2   | 555  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 483100 | 532300 | 146900  | 430 |  |
| 2.8                        | 135239         | 2.5   | 528  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 476000 | 524400 | 144500  | 428 |  |
| 2.8                        | 134437         | 2.2   | 525  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 475100 | 523500 | 144200  | 430 |  |
| 2.9                        | 131988         | 1.9   | 515  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 411100 | 419500 | 143300  | 418 |  |
| 3.0                        | 128299         | 2.0   | 501  | 110.0       | —      | 318 R4 (C) | BN225M4 | — | —            | 407600 | 416000 | 142000  | 420 |  |
| 3.0                        | 127861         | 2.0   | 499  | 90.0        | —      | 318 R4 (B) | BN225M4 | — | —            | 407200 | 415600 | 141800  | 420 |  |
| 3.1                        | 122062         | 2.0   | 477  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 401600 | 409800 | 139700  | 418 |  |
| 3.1                        | 121515         | 2.5   | 475  | 95.0        | —      | 319 R4 (B) | BN225M4 | — | —            | 460900 | 507800 | 139400  | 430 |  |
| 3.1                        | 121338         | 2.0   | 474  | 110.0       | —      | 318 R4 (C) | BN225M4 | — | —            | 400900 | 409100 | 139400  | 420 |  |
| 3.3                        | 113951         | 2.8   | 445  | 30.0        | 319 L4 | —          | BN225M4 | — | —            | 452100 | 498100 | 136500  | 428 |  |
| 3.3                        | 113276         | 2.5   | 442  | 115.0       | —      | 319 R4 (C) | BN225M4 | — | —            | 451300 | 497200 | 136200  | 430 |  |
| 3.4                        | 109988         | 2.2   | 430  | 90.0        | —      | 318 R4 (B) | BN225M4 | — | —            | 389200 | 397200 | 134900  | 420 |  |
| 3.5                        | 108168         | 2.2   | 422  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 387300 | 395200 | 134100  | 418 |  |
| 3.7                        | 102848         | 2.3   | 402  | 22.0        | 318 L4 | —          | BN225M4 | — | —            | 381500 | 389300 | 131900  | 418 |  |
| 3.7                        | 102239         | 2.3   | 399  | 110.0       | —      | 318 R4 (C) | BN225M4 | — | —            | 380800 | 388600 | 131600  | 420 |  |

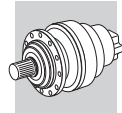
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$P_1 = 45 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |  |  |  |  | $R_{n2}$ [N] |    |        |        |        |  |
|----------------------------|----------------|-------|------|-------------|---|---|---|---|--------------|----|--------|--------|--------|---|
|                            |                |       |      |             |   |   |   |   | MC           | MZ | HC/PC  | HZ/PZ  | FZ     |   |
| 4.1                        | 92675          | 2.5   | 362  | 90.0        | —   | 318 R4 (B)  | BN225M4   | —   | —            | —  | 369700 | 377300 | 127400 | 420   |
| 4.3                        | 88267          | 2.9   | 345  | 115.0       | —   | 319 R4 (C)  | BN225M4   | —   | —            | —  | 418800 | 461400 | 125400 | 430   |
| 4.3                        | 87647          | 2.6   | 342  | 90.0        | —   | 318 R4 (B)  | BN225M4   | —   | —            | —  | 363600 | 371000 | 125100 | 420   |
| 4.4                        | 86197          | 2.6   | 337  | 22.0        | 318 L4  | —   | BN225M4   | —   | —            | —  | 361800 | 369200 | 124400 | 418   |
| 4.7                        | 80141          | 2.8   | 313  | 22.0        | 318 L4  | —   | BN225M4   | —   | —            | —  | 353900 | 361200 | 121400 | 418   |
| 4.8                        | 79666          | 2.8   | 311  | 110.0       | —   | 318 R4 (C)  | BN225M4   | —   | —            | —  | 353300 | 360600 | 121100 | 420   |
| 5.1                        | 73851          | 2.9   | 288  | 90.0        | —   | 318 R4 (B)  | BN225M4   | —   | —            | —  | 345400 | 352500 | 118100 | 420   |
| 5.9                        | 66824          | 1.8   | 252  | 35.0        | 317 L3  | —   | BN225M4   | —   | —            | —  | 264500 | 281600 | 84700  | 408   |
| 6.1                        | 63740          | 1.0   | 241  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 122000 | 143200 | 50000  | 386   |
| 7.0                        | 56305          | 2.5   | 213  | 35.0        | 317 L3  | —   | BN225M4   | —   | —            | —  | 251200 | 267500 | 80000  | 408   |
| 7.1                        | 54830          | 1.5   | 207  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 116600 | 136900 | 47600  | 386   |
| 7.2                        | 54559          | 1.2   | 206  | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 116400 | 136700 | 47500  | 374   |
| 8.3                        | 47442          | 2.9   | 179  | 35.0        | 317 L3  | —   | BN225M4   | —   | —            | —  | 238700 | 254100 | 75600  | 408   |
| 8.5                        | 46199          | 1.7   | 174  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 110700 | 130000 | 45000  | 386   |
| 8.5                        | 45971          | 1.4   | 174  | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 110600 | 129800 | 44900  | 374   |
| 8.9                        | 43874          | 2.7   | 166  | 35.0        | 317 L3  | —   | BN225M4   | —   | —            | —  | 233100 | 248200 | 73600  | 408   |
| 9.0                        | 43692          | 1.8   | 165  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 108900 | 127900 | 44100  | 386   |
| 9.0                        | 43692          | 1.9   | 165  | 35.0        | 316 L3  | —   | BN225M4   | —   | —            | —  | 181100 | 201400 | 73500  | 398   |
| 9.0                        | 43614          | 2.7   | 165  | 100.0       | —   | 317 R3 (C)  | BN225M4   | —   | —            | —  | 232700 | 247800 | 73500  | 410   |
| 9.0                        | 43477          | 1.5   | 164  | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 108700 | 127700 | 44100  | 374   |
| 9.4                        | 41601          | 1.2   | 157  | 55.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 107300 | 126000 | 43400  | 376   |
| 9.4                        | 41601          | 1.6   | 157  | 90.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 107300 | 126000 | 43400  | 388   |
| 10.6                       | 36815          | 2.2   | 139  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 103500 | 121500 | 41700  | 386   |
| 10.6                       | 36815          | 2.2   | 139  | 35.0        | 316 L3  | —   | BN225M4   | —   | —            | —  | 172000 | 191300 | 69500  | 398   |
| 10.7                       | 36633          | 1.8   | 138  | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 103300 | 121300 | 41600  | 374   |
| 11.0                       | 35786          | 1.7   | 135  | 55.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 102600 | 120400 | 41300  | 376   |
| 11.0                       | 35786          | 2.1   | 135  | 90.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 102600 | 120400 | 41300  | 388   |
| 12.6                       | 31020          | 2.6   | 117  | 35.0        | 316 L3  | —   | BN225M4   | —   | —            | —  | 163400 | 181700 | 65600  | 398   |
| 13.0                       | 30153          | 1.7   | 114  | 55.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 97400  | 114400 | 39000  | 376   |
| 13.0                       | 30153          | 2.1   | 114  | 90.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 97400  | 114400 | 39000  | 388   |
| 13.0                       | 30050          | 1.6   | 113  | 55.0        | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 97300  | 114300 | 38900  | 376   |
| 13.0                       | 30050          | 2.0   | 113  | 75.0        | —   | 315 R3 (B)  | BN225M4   | —   | —            | —  | 97300  | 114300 | 38900  | 388   |
| 13.7                       | 28687          | 2.5   | 108  | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 96000  | 112700 | 38400  | 386   |
| 13.7                       | 28687          | 2.6   | 108  | 35.0        | 316 L3  | —   | BN225M4   | —   | —            | —  | 159600 | 177500 | 63900  | 398   |
| 13.7                       | 28545          | 2.0   | 108  | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 95900  | 112500 | 38300  | 374   |
| 13.7                       | 28517          | 1.7   | 108  | 55.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 95800  | 112500 | 38300  | 376   |
| 13.7                       | 28517          | 2.2   | 108  | 90.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 95800  | 112500 | 38300  | 388   |
| 13.7                       | 28517          | 2.5   | 108  | 90.0        | —   | 316 R3 (C)  | BN225M4   | —   | —            | —  | 159300 | 177200 | 63800  | 400   |
| 15.2                       | 25850          | 2.1   | 97.6 | 55.0        | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 93000  | 109200 | 37000  | 376   |
| 15.2                       | 25850          | 2.7   | 97.6 | 75.0        | —   | 315 R3 (B)  | BN225M4   | —   | —            | —  | 93000  | 109200 | 37000  | 388   |
| 16.0                       | 24555          | 2.2   | 92.7 | 25.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 91600  | 107600 | 36400  | 374   |
| 16.2                       | 24171          | 2.8   | 91.3 | 30.0        | 315 L3  | —   | BN225M4   | —   | —            | —  | 91200  | 107100 | 36200  | 386   |
| 16.2                       | 24171          | 3.0   | 91.3 | 35.0        | 316 L3  | —   | BN225M4   | —   | —            | —  | 151600 | 168600 | 60400  | 398   |
| 16.3                       | 24028          | 2.0   | 90.7 | 55.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 91000  | 106900 | 36200  | 376   |
| 16.3                       | 24028          | 2.5   | 90.7 | 90.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 91000  | 106900 | 36200  | 388   |
| 16.3                       | 24028          | 2.9   | 90.7 | 90.0        | —   | 316 R3 (C)  | BN225M4   | —   | —            | —  | 151300 | 168300 | 60300  | 400   |
| 18.0                       | 21781          | 2.4   | 82.3 | 100.0       | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 194000 | 206600 | 60100  | 376   |
| 19.0                       | 20599          | 2.5   | 77.8 | 55.0        | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 88400  | 103800 | 35000  | 376   |
| 20.0                       | 19567          | 2.6   | 73.9 | 55.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 86900  | 102000 | 34300  | 374   |
| 20.9                       | 18723          | 2.3   | 70.7 | 35.0        | —   | 314 R3 (C)  | BN225M4   | —   | —            | —  | 143800 | 159900 | 56900  | 376   |
| 20.9                       | 18723          | 2.9   | 70.7 | 25.0        | —   | 315 R3 (C)  | BN225M4   | —   | —            | —  | 85600  | 100500 | 33800  | 388   |
| 22.6                       | 17356          | 2.9   | 65.5 | 30.0        | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 84600  | 99300  | 33300  | 376   |
| 23.6                       | 16575          | 2.9   | 62.6 | 35.0        | 314 L3  | —   | BN225M4   | —   | —            | —  | 140700 | 156500 | 55600  | 374   |
| 29.0                       | 13524          | 2.8   | 51.1 | 55.0        | —   | 314 R3 (B)  | BN225M4   | —   | —            | —  | 76600  | 89900  | 29800  | 376   |
| 32                         | 12783          | 1.1   | 46.7 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 47800  | 60200  | 20900  | 338   |
| 37                         | 11078          | 2.7   | 40.5 | 30.0        | 313 L2  | —   | BN225M4   | —   | —            | —  | 66900  | 79200  | 24600  | 362   |
| 38                         | 10620          | 1.9   | 38.8 | 26.0        | 311 L2  | —   | BN225M4   | —   | —            | —  | 53500  | 66600  | 19700  | 350   |
| 38                         | 10567          | 1.3   | 38.6 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 45200  | 56800  | 19600  | 338   |
| 45                         | 8948           | 2.3   | 32.7 | 26.0        | 311 L2  | —   | BN225M4   | —   | —            | —  | 50800  | 63300  | 18600  | 350   |
| 45                         | 8904           | 1.5   | 32.6 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 42900  | 54000  | 18600  | 338   |
| 48                         | 8393           | 1.6   | 30.7 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 42200  | 53000  | 18200  | 338   |
| 53                         | 7659           | 1.7   | 28.0 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 41000  | 51600  | 17600  | 338   |
| 54                         | 7539           | 2.5   | 27.6 | 26.0        | 311 L2  | —   | BN225M4   | —   | —            | —  | 48300  | 60100  | 17600  | 350   |
| 58                         | 6972           | 2.6   | 25.5 | 26.0        | 311 L2  | —   | BN225M4   | —   | —            | —  | 47100  | 58700  | 17100  | 350   |
| 58                         | 6938           | 1.8   | 25.4 | 22.0        | 310 L2  | —   | BN225M4   | —   | —            | —  | 39800  | 50100  | 17100  | 338   |



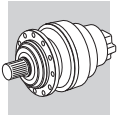
$P_1 = 45 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |      |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|------|-------|-------|-------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ   | HC/PC | HZ/PZ | FZ    |     |
| 58                                  | 6931                  | 1.8            | 25.3 | 55.0                 | —      | 310 R2 (C) | BN225M4 | — | —                   | —    | 39800 | 50100 | 17100 | 340 |
| 58                                  | 6931                  | 2.5            | 25.3 | 90.0                 | —      | 311 R2 (C) | BN225M4 | — | —                   | —    | 47100 | 58600 | 17100 | 352 |
| 68                                  | 5968                  | 2.0            | 21.8 | 22.0                 | 310 L2 | —          | BN225M4 | — | —                   | —    | 38100 | 47900 | 16200 | 338 |
| 69                                  | 5875                  | 3.0            | 21.5 | 26.0                 | 311 L2 | —          | BN225M4 | — | —                   | —    | 44800 | 55800 | 16200 | 350 |
| 69                                  | 5840                  | 2.0            | 21.3 | 55.0                 | —      | 310 R2 (C) | BN225M4 | — | —                   | —    | 37800 | 47600 | 16100 | 340 |
| 69                                  | 5840                  | 2.9            | 21.3 | 90.0                 | —      | 311 R2 (C) | BN225M4 | — | —                   | —    | 44700 | 55700 | 16100 | 352 |
| 81                                  | 5007                  | 2.2            | 18.3 | 55.0                 | —      | 310 R2 (B) | BN225M4 | — | —                   | —    | 36100 | 45400 | 15300 | 340 |
| 85                                  | 4756                  | 2.4            | 17.4 | 22.0                 | 310 L2 | —          | BN225M4 | — | —                   | —    | 35600 | 44700 | 15100 | 338 |
| 89                                  | 4551                  | 2.5            | 16.6 | 55.0                 | —      | 310 R2 (C) | BN225M4 | — | —                   | —    | 35100 | 44100 | 14800 | 340 |
| 96                                  | 4218                  | 2.5            | 15.4 | 55.0                 | —      | 310 R2 (B) | BN225M4 | — | —                   | —    | 34300 | 43100 | 14500 | 340 |
| 100                                 | 4028                  | 2.7            | 14.7 | 22.0                 | 310 L2 | —          | BN225M4 | — | —                   | —    | 33800 | 42600 | 14200 | 338 |
| 197                                 | 2117                  | 1.9            | 7.50 | 18.0                 | 306 L1 | —          | BN225M4 | — | 8150                | 9240 | 21300 | 24800 | 6120  | 302 |
| 239                                 | 1750                  | 2.4            | 6.20 | 18.0                 | 306 L1 | —          | BN225M4 | — | 7650                | 8670 | 20200 | 23500 | 5750  | 302 |
| 278                                 | 1505                  | 2.7            | 5.33 | 18.0                 | 306 L1 | —          | BN225M4 | — | 7280                | 8240 | 19300 | 22400 | 5470  | 302 |

$P_1 = 55 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |         |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|---------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ      |     |
| 1.2                                 | 399701                | 2.2            | 1279 | 50.0                 | 323 L4 | —          | BN250M4 | — | —                   | —  | —      | —      | 1043200 | 448 |
| 1.2                                 | 373174                | 0.9            | 1195 | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 595600 | 656200 | 185400  | 428 |
| 1.3                                 | 350369                | 1.5            | 1122 | 35.0                 | 321 L4 | —          | BN250M4 | — | —                   | —  | 731900 | 867900 | 1114500 | 438 |
| 1.3                                 | 343828                | 2.5            | 1101 | 50.0                 | 323 L4 | —          | BN250M4 | — | —                   | —  | —      | —      | 992100  | 448 |
| 1.4                                 | 320273                | 2.7            | 1025 | 50.0                 | 323 L4 | —          | BN250M4 | — | —                   | —  | —      | —      | 968900  | 448 |
| 1.5                                 | 314433                | 1.1            | 1007 | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 577600 | 636300 | 179200  | 428 |
| 1.6                                 | 295218                | 2.0            | 945  | 35.0                 | 321 L4 | —          | BN250M4 | — | —                   | —  | 695300 | 824500 | 1052600 | 438 |
| 1.6                                 | 284828                | 1.2            | 912  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 560700 | 617700 | 173400  | 428 |
| 1.6                                 | 284607                | 1.0            | 911  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 477700 | 487500 | 169400  | 418 |
| 1.6                                 | 283140                | 1.2            | 906  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 559700 | 616600 | 173000  | 430 |
| 1.7                                 | 265696                | 1.4            | 850  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 549100 | 605000 | 169400  | 428 |
| 1.9                                 | 248748                | 2.2            | 796  | 35.0                 | 321 L4 | —          | BN250M4 | — | —                   | —  | 660400 | 783200 | 994200  | 438 |
| 1.9                                 | 243561                | 1.4            | 780  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 535000 | 589400 | 164500  | 430 |
| 1.9                                 | 239808                | 1.1            | 768  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 463300 | 472800 | 163700  | 418 |
| 2.0                                 | 230040                | 2.4            | 736  | 35.0                 | 321 L4 | —          | BN250M4 | — | —                   | —  | 645100 | 765000 | 968700  | 438 |
| 2.0                                 | 228677                | 2.3            | 732  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 644000 | 763700 | 966700  | 440 |
| 2.0                                 | 226796                | 1.2            | 726  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 455600 | 464900 | 160700  | 418 |
| 2.1                                 | 223874                | 1.6            | 717  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 521600 | 574700 | 160000  | 428 |
| 2.1                                 | 215941                | 1.2            | 691  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 448900 | 458100 | 158100  | 420 |
| 2.2                                 | 211727                | 1.7            | 678  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 513000 | 565100 | 157000  | 428 |
| 2.3                                 | 205223                | 1.6            | 657  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 508200 | 559900 | 155400  | 430 |
| 2.3                                 | 204522                | 1.6            | 655  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 507700 | 559300 | 155200  | 430 |
| 2.3                                 | 202060                | 1.3            | 647  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 440100 | 449100 | 154600  | 418 |
| 2.4                                 | 192681                | 2.6            | 617  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 611700 | 725400 | 913100  | 440 |
| 2.4                                 | 191110                | 2.7            | 612  | 35.0                 | 321 L4 | —          | BN250M4 | — | —                   | —  | 610200 | 723600 | 910600  | 438 |
| 2.4                                 | 191097                | 1.4            | 612  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 432800 | 441700 | 151800  | 418 |
| 2.5                                 | 185756                | 1.4            | 595  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 429100 | 437900 | 150300  | 420 |
| 2.6                                 | 178399                | 1.9            | 571  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 487300 | 536800 | 148300  | 428 |
| 2.6                                 | 175933                | 1.8            | 563  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 485200 | 534600 | 147600  | 430 |
| 2.7                                 | 173413                | 1.8            | 555  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 483100 | 532300 | 146900  | 430 |
| 2.8                                 | 165181                | 2.9            | 529  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 584100 | 692700 | 867400  | 440 |
| 2.8                                 | 164982                | 2.0            | 528  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 476000 | 524400 | 144500  | 428 |
| 2.8                                 | 164004                | 1.8            | 525  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 475100 | 523500 | 144200  | 430 |
| 2.9                                 | 161017                | 1.6            | 515  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 411100 | 419500 | 143300  | 418 |
| 2.9                                 | 160074                | 2.6            | 512  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 578600 | 686200 | 858400  | 440 |
| 3.0                                 | 156517                | 1.6            | 501  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 407600 | 416000 | 142000  | 420 |
| 3.0                                 | 155982                | 1.6            | 499  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 407200 | 415600 | 141800  | 420 |
| 3.1                                 | 150141                | 2.6            | 481  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 567600 | 673100 | 840200  | 440 |
| 3.1                                 | 148907                | 1.7            | 477  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 401600 | 409800 | 139700  | 418 |
| 3.1                                 | 148240                | 2.0            | 475  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 460900 | 507800 | 139400  | 430 |
| 3.1                                 | 148024                | 1.7            | 474  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 400900 | 409100 | 139400  | 420 |
| 3.3                                 | 139181                | 2.9            | 446  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 554800 | 658000 | 819300  | 440 |
| 3.3                                 | 139012                | 2.3            | 445  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 452100 | 498100 | 136500  | 428 |

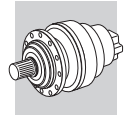
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$P_1 = 55 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |    |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|----|--------|--------|--------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |     |
| 3.3                                 | 138189                | 2.0            | 442  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 451300 | 497200 | 136200 | 430 |
| 3.4                                 | 134178                | 1.8            | 430  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 389200 | 397200 | 134900 | 420 |
| 3.5                                 | 131958                | 1.8            | 422  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 387300 | 395200 | 134100 | 418 |
| 3.7                                 | 125468                | 1.9            | 402  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 381500 | 389300 | 131900 | 418 |
| 3.7                                 | 125263                | 2.5            | 401  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 438200 | 482800 | 131800 | 430 |
| 3.7                                 | 124733                | 2.6            | 399  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 536900 | 636700 | 789900 | 440 |
| 3.7                                 | 124724                | 1.9            | 399  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 380800 | 388600 | 131600 | 420 |
| 3.9                                 | 118466                | 2.6            | 379  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 430900 | 474800 | 129400 | 430 |
| 4.0                                 | 115627                | 3.0            | 370  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 524800 | 622400 | 770200 | 440 |
| 4.1                                 | 113058                | 2.0            | 362  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 369700 | 377300 | 127400 | 420 |
| 4.3                                 | 108452                | 3.0            | 347  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 514800 | 610500 | 753900 | 440 |
| 4.3                                 | 108321                | 2.8            | 347  | 30.0                 | 319 L4 | —          | BN250M4 | — | —                   | —  | 419500 | 462200 | 125600 | 428 |
| 4.3                                 | 107679                | 2.4            | 345  | 115.0                | —      | 319 R4 (C) | BN250M4 | — | —                   | —  | 418800 | 461400 | 125400 | 430 |
| 4.3                                 | 106923                | 2.1            | 342  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 363600 | 371000 | 125100 | 420 |
| 4.4                                 | 105154                | 2.1            | 337  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 361800 | 369200 | 124400 | 418 |
| 4.6                                 | 99819                 | 2.9            | 320  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 409400 | 451000 | 122200 | 430 |
| 4.7                                 | 97767                 | 2.3            | 313  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 353900 | 361200 | 121400 | 418 |
| 4.8                                 | 97188                 | 2.3            | 311  | 110.0                | —      | 318 R4 (C) | BN250M4 | — | —                   | —  | 353300 | 360600 | 121100 | 420 |
| 4.8                                 | 95694                 | 2.6            | 306  | 125.0                | —      | 321 R4 (C) | BN250M4 | — | —                   | —  | 495900 | 588000 | 723100 | 440 |
| 5.1                                 | 90099                 | 2.9            | 288  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 487000 | 577500 | 708700 | 440 |
| 5.1                                 | 90093                 | 2.4            | 288  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 345400 | 352500 | 118100 | 420 |
| 5.6                                 | 81938                 | 2.6            | 262  | 22.0                 | 318 L4 | —          | BN250M4 | — | —                   | —  | 335700 | 342600 | 114400 | 418 |
| 5.9                                 | 81520                 | 1.5            | 252  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 471100 | 558700 | 683100 | 408 |
| 5.9                                 | 77781                 | 2.9            | 249  | 95.0                 | —      | 319 R4 (B) | BN250M4 | — | —                   | —  | 379800 | 418500 | 112500 | 430 |
| 6.6                                 | 70202                 | 2.9            | 225  | 90.0                 | —      | 318 R4 (B) | BN250M4 | — | —                   | —  | 320500 | 327000 | 108700 | 420 |
| 6.7                                 | 69124                 | 3.0            | 221  | 105.0                | —      | 321 R4 (B) | BN250M4 | — | —                   | —  | 449800 | 533400 | 648800 | 440 |
| 7.0                                 | 68689                 | 2.1            | 213  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 251200 | 267500 | 80000  | 408 |
| 7.1                                 | 66889                 | 1.2            | 207  | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —  | 116600 | 136900 | 47600  | 386 |
| 7.2                                 | 66558                 | 1.0            | 206  | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 116400 | 136700 | 47500  | 374 |
| 8.3                                 | 57876                 | 2.4            | 179  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 238700 | 254100 | 75600  | 408 |
| 8.5                                 | 56360                 | 1.4            | 174  | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —  | 110700 | 130000 | 45000  | 386 |
| 8.5                                 | 56081                 | 1.1            | 174  | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 110600 | 129800 | 44900  | 374 |
| 8.9                                 | 53524                 | 2.3            | 166  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 233100 | 248200 | 73600  | 408 |
| 9.0                                 | 53302                 | 1.5            | 165  | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —  | 108900 | 127900 | 44100  | 386 |
| 9.0                                 | 53302                 | 1.5            | 165  | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —  | 181100 | 201400 | 73500  | 398 |
| 9.0                                 | 53206                 | 2.2            | 165  | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —  | 232700 | 247800 | 73500  | 410 |
| 9.0                                 | 53039                 | 1.2            | 164  | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 108700 | 127700 | 44100  | 374 |
| 9.4                                 | 50751                 | 1.0            | 157  | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —  | 107300 | 126000 | 43400  | 376 |
| 9.4                                 | 50751                 | 1.3            | 157  | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —  | 107300 | 126000 | 43400  | 388 |
| 10.6                                | 44912                 | 1.8            | 139  | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —  | 103500 | 121500 | 41700  | 386 |
| 10.6                                | 44912                 | 1.8            | 139  | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —  | 172000 | 191300 | 69500  | 398 |
| 10.7                                | 44831                 | 2.6            | 139  | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —  | 221000 | 235400 | 69400  | 410 |
| 10.7                                | 44690                 | 1.4            | 138  | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 103300 | 121300 | 41600  | 374 |
| 10.8                                | 44466                 | 2.6            | 138  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 220500 | 234800 | 69200  | 408 |
| 11.0                                | 43656                 | 1.4            | 135  | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —  | 102600 | 120400 | 41300  | 376 |
| 11.0                                | 43656                 | 1.7            | 135  | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —  | 102600 | 120400 | 41300  | 388 |
| 12.4                                | 38433                 | 2.9            | 119  | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —  | 211100 | 224700 | 65900  | 410 |
| 12.6                                | 37842                 | 2.1            | 117  | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —  | 163400 | 181700 | 65600  | 398 |
| 12.8                                | 37466                 | 2.9            | 116  | 35.0                 | 317 L3 | —          | BN250M4 | — | —                   | —  | 209500 | 223000 | 65400  | 408 |
| 12.8                                | 37244                 | 2.6            | 115  | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —  | 209100 | 222600 | 65300  | 410 |
| 13.0                                | 36785                 | 1.4            | 114  | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —  | 97400  | 114400 | 39000  | 376 |
| 13.0                                | 36785                 | 1.8            | 114  | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —  | 97400  | 114400 | 39000  | 388 |
| 13.0                                | 36659                 | 1.3            | 113  | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —  | 95300  | 111900 | 38100  | 376 |
| 13.0                                | 36659                 | 1.6            | 113  | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —  | 97300  | 114300 | 38900  | 388 |
| 13.7                                | 34996                 | 2.0            | 108  | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —  | 96000  | 112700 | 38400  | 386 |
| 13.7                                | 34996                 | 2.2            | 108  | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —  | 159600 | 177500 | 63900  | 398 |
| 13.7                                | 34933                 | 2.6            | 108  | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —  | 205100 | 218400 | 63900  | 410 |
| 13.7                                | 34823                 | 1.6            | 108  | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 95900  | 112500 | 38300  | 374 |
| 13.7                                | 34789                 | 1.4            | 108  | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —  | 95800  | 112500 | 38300  | 376 |
| 13.7                                | 34789                 | 1.8            | 108  | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —  | 95800  | 112500 | 38300  | 388 |
| 13.7                                | 34789                 | 2.1            | 108  | 90.0                 | —      | 316 R3 (C) | BN250M4 | — | —                   | —  | 159300 | 177200 | 63800  | 400 |
| 14.8                                | 32383                 | 3.0            | 100  | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —  | 200500 | 213500 | 62300  | 410 |
| 15.2                                | 31535                 | 1.7            | 97.6 | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —  | 91100  | 107000 | 36200  | 376 |
| 15.2                                | 31535                 | 2.2            | 97.6 | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —  | 93000  | 109200 | 37000  | 388 |
| 16.0                                | 29956                 | 1.8            | 92.7 | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —  | 91600  | 107600 | 36400  | 374 |

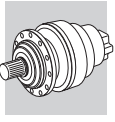




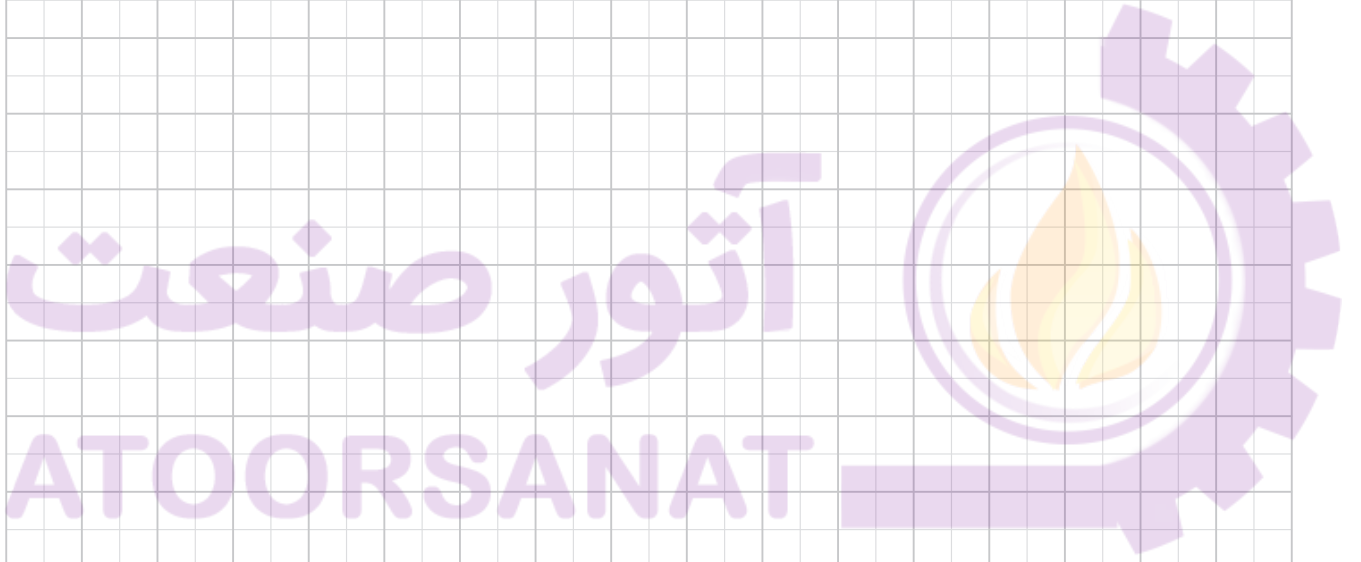
$P_1 = 55 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | P <sub>t</sub><br>kW |        |            |         |   | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------------------|--------|------------|---------|---|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |                      |        |            |         |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |     |
| 16.2                                | 29487                 | 2.3            | 91.3 | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —     | 91200  | 107100 | 36200 | 386 |
| 16.2                                | 29487                 | 2.4            | 91.3 | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —     | 151600 | 168600 | 60400 | 398 |
| 16.3                                | 29313                 | 1.6            | 90.7 | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —     | 91000  | 106900 | 36200 | 376 |
| 16.3                                | 29313                 | 2.0            | 90.7 | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —     | 91000  | 106900 | 36200 | 388 |
| 16.3                                | 29313                 | 2.4            | 90.7 | 90.0                 | —      | 316 R3 (C) | BN250M4 | — | —                   | —     | 151300 | 168300 | 60300 | 400 |
| 16.5                                | 29022                 | 2.6            | 89.8 | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —     | 194000 | 206600 | 60100 | 410 |
| 17.8                                | 26903                 | 3.0            | 83.3 | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —     | 189700 | 201900 | 58600 | 410 |
| 18.0                                | 26571                 | 2.0            | 82.3 | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —     | 86600  | 101600 | 34200 | 376 |
| 18.0                                | 26571                 | 2.5            | 82.3 | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —     | 88400  | 103800 | 35000 | 388 |
| 18.9                                | 25234                 | 3.0            | 78.1 | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —     | 186000 | 198100 | 57300 | 410 |
| 19.0                                | 25129                 | 2.0            | 77.8 | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —     | 85100  | 100000 | 33600 | 376 |
| 19.0                                | 25129                 | 2.6            | 77.8 | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —     | 86900  | 102000 | 34300 | 388 |
| 19.0                                | 25129                 | 2.6            | 77.8 | 75.0                 | —      | 316 R3 (B) | BN250M4 | — | —                   | —     | 144500 | 160700 | 57200 | 398 |
| 19.3                                | 24713                 | 2.8            | 76.5 | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —     | 143800 | 159900 | 56900 | 398 |
| 20.0                                | 23871                 | 2.1            | 73.9 | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —     | 85600  | 100500 | 33800 | 374 |
| 20.8                                | 22977                 | 2.7            | 71.1 | 30.0                 | 315 L3 | —          | BN250M4 | — | —                   | —     | 84600  | 99300  | 33300 | 386 |
| 20.8                                | 22977                 | 2.9            | 71.1 | 35.0                 | 316 L3 | —          | BN250M4 | — | —                   | —     | 140700 | 156500 | 55600 | 398 |
| 20.9                                | 22841                 | 1.9            | 70.7 | 55.0                 | —      | 314 R3 (C) | BN250M4 | — | —                   | —     | 84500  | 99200  | 33300 | 376 |
| 20.9                                | 22841                 | 2.4            | 70.7 | 90.0                 | —      | 315 R3 (C) | BN250M4 | — | —                   | —     | 84500  | 99200  | 33300 | 388 |
| 20.9                                | 22841                 | 2.6            | 70.7 | 90.0                 | —      | 316 R3 (C) | BN250M4 | — | —                   | —     | 140400 | 156200 | 55400 | 400 |
| 21.5                                | 22265                 | 2.6            | 68.9 | 100.0                | —      | 317 R3 (C) | BN250M4 | — | —                   | —     | 179200 | 190800 | 55000 | 410 |
| 22.6                                | 21174                 | 2.3            | 65.5 | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —     | 80900  | 94900  | 31700 | 376 |
| 22.6                                | 21174                 | 2.9            | 65.5 | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —     | 82600  | 96900  | 32400 | 388 |
| 22.8                                | 20963                 | 2.9            | 64.9 | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —     | 176000 | 187400 | 53900 | 410 |
| 23.6                                | 20220                 | 2.4            | 62.6 | 25.0                 | 314 L3 | —          | BN250M4 | — | —                   | —     | 81400  | 95600  | 31900 | 374 |
| 29.0                                | 16499                 | 2.3            | 51.1 | 40.0                 | —      | 314 R3 (B) | BN250M4 | — | —                   | —     | 75000  | 88100  | 29200 | 376 |
| 29.0                                | 16499                 | 2.9            | 51.1 | 75.0                 | —      | 315 R3 (B) | BN250M4 | — | —                   | —     | 76600  | 89900  | 29800 | 388 |
| 29.7                                | 16083                 | 2.9            | 49.8 | 90.0                 | —      | 317 R3 (B) | BN250M4 | — | —                   | —     | 162500 | 173000 | 49300 | 410 |
| 32                                  | 15594                 | 0.9            | 46.7 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 47800  | 60200  | 20900 | 338 |
| 37                                  | 13515                 | 2.2            | 40.5 | 30.0                 | 313 L2 | —          | BN250M4 | — | —                   | —     | 66900  | 79200  | 24600 | 362 |
| 38                                  | 12955                 | 1.5            | 38.8 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 53500  | 66600  | 19700 | 350 |
| 38                                  | 12891                 | 1.1            | 38.6 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 45200  | 56800  | 19600 | 338 |
| 38                                  | 12891                 | 2.7            | 38.6 | 40.0                 | 314 L2 | —          | BN250M4 | — | —                   | —     | 69000  | 81000  | 26600 | 374 |
| 44                                  | 11228                 | 2.6            | 33.6 | 30.0                 | 313 L2 | —          | BN250M4 | — | —                   | —     | 63300  | 74900  | 23100 | 362 |
| 45                                  | 10916                 | 1.9            | 32.7 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 50800  | 63300  | 18600 | 350 |
| 45                                  | 10862                 | 1.2            | 32.6 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 42900  | 54000  | 18600 | 338 |
| 48                                  | 10239                 | 1.3            | 30.7 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 42200  | 53000  | 18200 | 338 |
| 52                                  | 9460                  | 2.9            | 28.4 | 30.0                 | 313 L2 | —          | BN250M4 | — | —                   | —     | 60100  | 71200  | 21800 | 362 |
| 53                                  | 9344                  | 1.4            | 28.0 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 41000  | 51600  | 17600 | 338 |
| 54                                  | 9198                  | 2.1            | 27.6 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 48300  | 60100  | 17600 | 350 |
| 56                                  | 8821                  | 2.6            | 26.4 | 90.0                 | —      | 313 R2 (C) | BN250M4 | — | —                   | —     | 58900  | 69700  | 21300 | 364 |
| 58                                  | 8506                  | 2.2            | 25.5 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 47100  | 58700  | 17100 | 350 |
| 58                                  | 8464                  | 1.5            | 25.4 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 39800  | 50100  | 17100 | 338 |
| 58                                  | 8455                  | 2.1            | 25.3 | 55.0                 | —      | 311 R2 (C) | BN250M4 | — | —                   | —     | 39800  | 50100  | 17100 | 352 |
| 67                                  | 7328                  | 2.6            | 22.0 | 90.0                 | —      | 313 R2 (C) | BN250M4 | — | —                   | —     | 47100  | 58600  | 17100 | 364 |
| 68                                  | 7281                  | 1.7            | 21.8 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 38100  | 47900  | 16200 | 338 |
| 69                                  | 7167                  | 2.4            | 21.5 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 44800  | 55800  | 16200 | 350 |
| 69                                  | 7124                  | 2.4            | 21.3 | 90.0                 | —      | 311 R2 (C) | BN250M4 | — | —                   | —     | 44700  | 55700  | 16100 | 352 |
| 78                                  | 6372                  | 3.0            | 19.1 | 75.0                 | —      | 313 R2 (B) | BN250M4 | — | —                   | —     | 53400  | 63200  | 19100 | 364 |
| 81                                  | 6108                  | 2.6            | 18.3 | 75.0                 | —      | 311 R2 (B) | BN250M4 | — | —                   | —     | 42700  | 53200  | 15300 | 352 |
| 82                                  | 6007                  | 2.8            | 18.0 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 42500  | 52900  | 15200 | 350 |
| 85                                  | 5802                  | 1.9            | 17.4 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 35600  | 44700  | 15100 | 338 |
| 88                                  | 5622                  | 2.6            | 16.8 | 90.0                 | —      | 313 R2 (C) | BN250M4 | — | —                   | —     | 51400  | 60900  | 18300 | 364 |
| 88                                  | 5585                  | 2.9            | 16.7 | 26.0                 | 311 L2 | —          | BN250M4 | — | —                   | —     | 41600  | 51800  | 14900 | 350 |
| 89                                  | 5552                  | 2.6            | 16.6 | 90.0                 | —      | 311 R2 (C) | BN250M4 | — | —                   | —     | 41500  | 51700  | 14800 | 352 |
| 93                                  | 5293                  | 3.0            | 15.9 | 75.0                 | —      | 313 R2 (B) | BN250M4 | — | —                   | —     | 50500  | 59800  | 18000 | 364 |
| 96                                  | 5146                  | 3.0            | 15.4 | 75.0                 | —      | 311 R2 (B) | BN250M4 | — | —                   | —     | 40500  | 50500  | 14500 | 352 |
| 100                                 | 4914                  | 2.2            | 14.7 | 22.0                 | 310 L2 | —          | BN250M4 | — | —                   | —     | 33800  | 42600  | 14200 | 338 |
| 122                                 | 4061                  | 3.0            | 12.2 | 75.0                 | —      | 313 R2 (B) | BN250M4 | — | —                   | —     | 46700  | 55200  | 16400 | 364 |
| 123                                 | 4010                  | 3.0            | 12.0 | 75.0                 | —      | 311 R2 (B) | BN250M4 | — | —                   | —     | 37600  | 46900  | 13300 | 352 |
| 197                                 | 2583                  | 1.6            | 7.50 | 18.0                 | 306 L1 | —          | BN250M4 | — | 8150                | 9240  | 21300  | 24800  | 6120  | 302 |
| 238                                 | 2146                  | 2.7            | 6.23 | 22.0                 | 307 L1 | —          | BN250M4 | — | 8520                | 10700 | 21700  | 28500  | 7400  | 314 |
| 239                                 | 2135                  | 2.0            | 6.20 | 18.0                 | 306 L1 | —          | BN250M4 | — | 7650                | 8670  | 20200  | 23500  | 5750  | 302 |
| 278                                 | 1837                  | 2.2            | 5.33 | 18.0                 | 306 L1 | —          | BN250M4 | — | 7280                | 8240  | 19300  | 22400  | 5470  | 302 |
| 348                                 | 1463                  | 2.7            | 4.25 | 18.0                 | 306 L1 | —          | BN250M4 | — | 6750                | 7640  | 18000  | 21000  | 5070  | 302 |

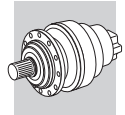
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## 25.2 3/V - 3/A GEARMOTOR RATING CHARTS

Reading the rating chart.

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**$P_1 = 0.12 \text{ kW}$**

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |   |          |   | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|-----------|---|----------|---|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |           |   |          |   | MC/PC        | MZ/PZ | HC    | HZ    | FZ   |     |
| 0.58                       | 1180           | 1.5   | 2337 | -           | 3/V 01 L3 | - | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 258 |
| 0.72                       | 940            | 0.9   | 1869 | -           | 3/V 00 L3 | - | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 248 |
| 0.72                       | 940            | 1.8   | 1869 | -           | 3/V 01 L3 | - | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 258 |
| 0.90                       | 800            | 1.1   | 1495 | -           | 3/V 00 L3 | - | BN 63A 4 | - | 12000        | 12200 | 30700 | 34000 | 7990 | 248 |
| 0.90                       | 800            | 2.1   | 1495 | -           | 3/V 01 L3 | - | BN 63A 4 | - | 12000        | 12200 | 30700 | 34000 | 7990 | 258 |

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1 Power applied at gearbox input shaft

2 Gearbox output speed

Torque delivered at output shaft:

3 - specified service factor  
- 10000 h theoretical lifetime

4 Service factor

5 Gear ratio

6 Gearbox thermal capacity

7 Model and frame size of combined planetary + worm gear unit

8 Model and frame size of combined planetary + helical bevel gear unit

9 IEC motor size and pole number

10 Compact motor size and pole number

Permitted overhung loading on output shaft, based on:

11 - service factor  $f_s=1$   
- 10000 h theoretical lifetime  
- speed of output  $n_2$

For forces not applied at shaft midpoint, see diagrams provided in the specific gearbox overall dimensioning pages

12 Dimensions page. Gearmotor overall dimensions refer to matches with BONFIGLIOLI motors only

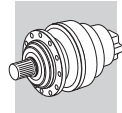


$P_1 = 0.12 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |           |          |   | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|-----------|-----------|----------|---|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |           |           |          |   | MC/PC        | MZ/PZ | HC    | HZ    | FZ   |     |
| 0.58                       | 1180           | 1.5   | 2337 | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 260 |
| 0.72                       | 940            | 0.9   | 1869 | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 250 |
| 0.72                       | 940            | 1.8   | 1869 | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 12000        | 12500 | 31000 | 34000 | 8000 | 260 |
| 0.90                       | 800            | 1.1   | 1495 | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 12000        | 12200 | 30700 | 34000 | 7990 | 250 |
| 0.90                       | 800            | 2.1   | 1495 | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 12000        | 12200 | 30700 | 34000 | 7990 | 260 |
| 0.98                       | 700            | 1.8   | 1381 | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 11800        | 11800 | 29900 | 34000 | 7780 | 250 |
| 0.98                       | 700            | 2.7   | 1381 | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 11800        | 11800 | 29900 | 34000 | 7780 | 260 |
| 1.1                        | 640            | 1.3   | 1198 | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 11300        | 11300 | 28700 | 33000 | 7420 | 250 |
| 1.1                        | 640            | 2.6   | 1198 | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 11300        | 11300 | 28700 | 33000 | 7420 | 260 |
| 1.2                        | 560            | 2.1   | 1107 | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 11000        | 11000 | 28000 | 32200 | 7230 | 250 |
| 1.4                        | 600            | 1.3   | 997  | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 10600        | 10600 | 27100 | 31200 | 6980 | 250 |
| 1.4                        | 600            | 2.7   | 997  | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 10600        | 10600 | 27100 | 31200 | 6980 | 260 |
| 1.5                        | 455            | 1.7   | 903  | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 10300        | 10300 | 26400 | 30300 | 6760 | 250 |
| 1.5                        | 455            | 2.7   | 903  | -           | 3/V 01 L3 | -         | BN 63A 4 | - | 10300        | 10300 | 26400 | 30300 | 6760 | 260 |
| 1.7                        | 410            | 2.7   | 818  | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 9940         | 9940  | 25600 | 29400 | 6540 | 250 |
| 2.0                        | 390            | 2.8   | 689  | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 9390         | 9390  | 24300 | 27900 | 6170 | 250 |
| 2.0                        | 520            | 2.2   | 665  | -           | -         | 3/A 01 L2 | BN 63A 4 | - | 9280         | 9280  | 24000 | 27600 | 6100 | 261 |
| 2.0                        | 510            | 1.2   | 660  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 9250         | 9250  | 24000 | 27500 | 6080 | 251 |
| 2.4                        | 320            | 2.3   | 562  | -           | 3/V 00 L3 | -         | BN 63A 4 | - | 8770         | 8770  | 22900 | 26300 | 5770 | 250 |
| 2.5                        | 425            | 1.4   | 550  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 8710         | 8710  | 22700 | 26100 | 5730 | 251 |
| 2.5                        | 415            | 2.7   | 533  | -           | -         | 3/A 01 L2 | BN 63A 4 | - | 8620         | 8620  | 22500 | 25800 | 5660 | 261 |
| 3.1                        | 340            | 2.0   | 441  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 8090         | 8090  | 21200 | 24400 | 5320 | 251 |
| 3.4                        | 305            | 2.7   | 393  | -           | -         | 3/A 01 L2 | BN 63A 4 | - | 7790         | 7790  | 20500 | 23600 | 5120 | 261 |
| 3.5                        | 305            | 1.8   | 391  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 7770         | 7770  | 20500 | 23500 | 5110 | 251 |
| 3.7                        | 285            | 2.0   | 369  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 7630         | 7630  | 20100 | 23100 | 5010 | 251 |
| 4.2                        | 245            | 1.8   | 319  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 7260         | 7260  | 19300 | 22100 | 4770 | 251 |
| 4.6                        | 230            | 2.8   | 296  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 7080         | 7080  | 18900 | 21700 | 4660 | 251 |
| 5.3                        | 195            | 2.8   | 253  | -           | -         | 3/A 00 L2 | BN 63A 4 | - | 6720         | 6720  | 18000 | 20700 | 4420 | 251 |

$P_1 = 0.18 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |           |          |   | $R_{n2}$ [N] |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|-----------|----------|---|--------------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |           |           |          |   | MC/PC        | MZ/PZ | HC    | HZ    | FZ    |     |
| 0.56                       | 1800           | 1.0   | 2337 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 12000        | 12500 | 31000 | 34000 | 8000  | 260 |
| 0.71                       | 1440           | 1.2   | 1869 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 12000        | 12500 | 31000 | 34000 | 8000  | 260 |
| 0.88                       | 1230           | 1.4   | 1495 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 12000        | 12200 | 30700 | 34000 | 7990  | 260 |
| 0.96                       | 1060           | 1.2   | 1381 | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 11800        | 11800 | 29900 | 34000 | 7780  | 250 |
| 0.96                       | 1060           | 1.8   | 1381 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 11800        | 11800 | 29900 | 34000 | 7780  | 260 |
| 1.1                        | 980            | 1.7   | 1198 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 11300        | 11300 | 28700 | 33000 | 7420  | 260 |
| 1.2                        | 850            | 1.4   | 1107 | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 11000        | 11000 | 28000 | 32200 | 7230  | 250 |
| 1.2                        | 910            | 2.2   | 1105 | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 11000        | 11000 | 28000 | 32200 | 7230  | 260 |
| 1.3                        | 910            | 1.7   | 997  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 10600        | 10600 | 27100 | 31200 | 6980  | 260 |
| 1.5                        | 700            | 1.1   | 903  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 10300        | 10300 | 26400 | 30300 | 6760  | 250 |
| 1.5                        | 700            | 1.8   | 903  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 10300        | 10300 | 26400 | 30300 | 6760  | 260 |
| 1.6                        | 630            | 1.8   | 818  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 9940         | 9940  | 25600 | 29400 | 6540  | 250 |
| 1.7                        | 730            | 2.1   | 799  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 9860         | 9860  | 25400 | 29200 | 6480  | 260 |
| 1.8                        | 870            | 2.1   | 731  | -           | -         | 3/A 03 L2 | BN 63B 4 | - | 29400        | 34000 | 50500 | 60700 | 18900 | 271 |
| 1.9                        | 600            | 1.8   | 689  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 9390         | 9390  | 24300 | 27900 | 6170  | 250 |
| 1.9                        | 600            | 2.9   | 689  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 9390         | 9390  | 24300 | 27900 | 6170  | 260 |
| 2.0                        | 790            | 1.5   | 665  | -           | -         | 3/A 01 L2 | BN 63B 4 | - | 9280         | 9280  | 24000 | 27600 | 6100  | 261 |
| 2.0                        | 540            | 2.0   | 654  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 9230         | 9230  | 23900 | 27500 | 6070  | 250 |
| 2.0                        | 540            | 2.2   | 654  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 9230         | 9230  | 23900 | 27500 | 6070  | 260 |
| 2.2                        | 720            | 2.5   | 605  | -           | -         | 3/A 03 L2 | BN 63B 4 | - | 27600        | 31900 | 47700 | 57400 | 17700 | 271 |
| 2.3                        | 680            | 2.6   | 574  | -           | -         | 3/A 03 L2 | BN 63B 4 | - | 27200        | 31400 | 46900 | 56500 | 17400 | 271 |
| 2.3                        | 490            | 1.5   | 562  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 8770         | 8770  | 22900 | 26300 | 5770  | 250 |
| 2.3                        | 490            | 2.9   | 562  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 8770         | 8770  | 22900 | 26300 | 5770  | 260 |
| 2.4                        | 650            | 0.9   | 550  | -           | -         | 3/A 00 L2 | BN 63B 4 | - | 8710         | 8710  | 22700 | 26100 | 5730  | 251 |
| 2.5                        | 630            | 1.8   | 533  | -           | -         | 3/A 01 L2 | BN 63B 4 | - | 8620         | 8620  | 22500 | 25800 | 5660  | 261 |
| 2.6                        | 440            | 2.4   | 509  | -           | 3/V 00 L3 | -         | BN 63B 4 | - | 8490         | 8490  | 22200 | 25500 | 5580  | 250 |
| 2.6                        | 440            | 2.9   | 509  | -           | 3/V 01 L3 | -         | BN 63B 4 | - | 8490         | 8490  | 22200 | 25500 | 5580  | 260 |
| 2.7                        | 590            | 2.9   | 495  | -           | -         | 3/A 03 L2 | BN 63B 4 | - | 25900        | 29800 | 44900 | 54000 | 16600 | 271 |
| 2.9                        | 540            | 2.1   | 454  | -           | -         | 3/A 01 L2 | BN 63B 4 | - | 8170         | 8170  | 21400 | 24600 | 5370  | 261 |



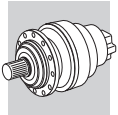
$P_1 = 0.18 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$ | $P_t$<br>kW |           |           |          |   | $R_{n2}$ [N] |       |      |       |       |      |     |
|----------------------------|----------------|-------|-----|-------------|-----------|-----------|----------|---|--------------|-------|------|-------|-------|------|-----|
|                            |                |       |     |             |           |           |          |   | MC/PC        | MZ/PZ | HC   | HZ    | FZ    |      |     |
| 3.0                        | 520            | 1.3   | 441 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 8090  | 8090 | 21200 | 24400 | 5320 | 251 |
| 3.0                        | 355            | 2.0   | 436 | -           | 3/V 00 L3 | -         | BN 63B 4 | - | -            | 8060  | 8060 | 21200 | 24300 | 5300 | 250 |
| 3.2                        | 360            | 2.8   | 415 | -           | 3/V 00 L3 | -         | BN 63B 4 | - | -            | 7930  | 7930 | 20900 | 24000 | 5210 | 250 |
| 3.4                        | 465            | 1.8   | 393 | -           | -         | 3/A 01 L2 | BN 63B 4 | - | -            | 7790  | 7790 | 20500 | 23600 | 5120 | 261 |
| 3.4                        | 465            | 1.2   | 391 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 7770  | 7770 | 20500 | 23500 | 5110 | 251 |
| 3.6                        | 440            | 1.3   | 369 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 7630  | 7630 | 20100 | 23100 | 5010 | 251 |
| 4.1                        | 380            | 1.2   | 319 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 7260  | 7260 | 19300 | 22100 | 4770 | 251 |
| 4.5                        | 350            | 1.9   | 296 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 7080  | 7080 | 18900 | 21700 | 4660 | 251 |
| 5.2                        | 300            | 1.8   | 253 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 6720  | 6720 | 18000 | 20700 | 4420 | 251 |
| 6.0                        | 260            | 2.4   | 219 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 6400  | 6400 | 17200 | 19800 | 4210 | 251 |
| 6.5                        | 240            | 2.7   | 203 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 6240  | 6240 | 16800 | 19300 | 4100 | 251 |
| 7.7                        | 205            | 2.7   | 171 | -           | -         | 3/A 00 L2 | BN 63B 4 | - | -            | 5900  | 5900 | 16000 | 18400 | 3880 | 251 |

$P_1 = 0.25 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |           |          |   | $R_{n2}$ [N] |       |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|-----------|----------|---|--------------|-------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |           |           |          |   | MC/PC        | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 0.90                       | 1680           | 1.0   | 1495 | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 12000 | 12200 | 30700 | 34000 | 7990  | 260 |
| 0.97                       | 1460           | 1.3   | 1381 | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 11800 | 11800 | 29900 | 34000 | 7780  | 260 |
| 1.1                        | 1340           | 1.2   | 1198 | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 11300 | 11300 | 28700 | 33000 | 7420  | 260 |
| 1.2                        | 1170           | 1.0   | 1107 | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 11000 | 11000 | 28000 | 32200 | 7230  | 250 |
| 1.2                        | 1240           | 1.6   | 1105 | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 11000 | 11000 | 28000 | 32200 | 7230  | 260 |
| 1.3                        | 1250           | 1.3   | 997  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 10600 | 10600 | 27100 | 31200 | 6980  | 260 |
| 1.5                        | 950            | 1.3   | 903  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 10300 | 10300 | 26400 | 30300 | 6760  | 260 |
| 1.6                        | 860            | 1.3   | 818  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 9940  | 9940  | 25600 | 29400 | 6540  | 250 |
| 1.7                        | 1000           | 1.5   | 799  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 9860  | 9860  | 25400 | 29200 | 6480  | 260 |
| 1.8                        | 1190           | 1.5   | 731  | -           | -         | 3/A 03 L2 | BN 63C 4 | - | -            | 29400 | 34000 | 50500 | 60700 | 18900 | 271 |
| 1.9                        | 820            | 1.3   | 689  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 9390  | 9390  | 24300 | 27900 | 6170  | 250 |
| 1.9                        | 820            | 2.1   | 689  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 9390  | 9390  | 24300 | 27900 | 6170  | 260 |
| 2.0                        | 1080           | 1.1   | 665  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 9280  | 9280  | 24000 | 27600 | 6100  | 261 |
| 2.0                        | 730            | 1.5   | 654  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 9230  | 9230  | 23900 | 27500 | 6070  | 250 |
| 2.0                        | 730            | 1.6   | 654  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 9230  | 9230  | 23900 | 27500 | 6070  | 260 |
| 2.2                        | 980            | 1.8   | 605  | -           | -         | 3/A 03 L2 | BN 63C 4 | - | -            | 27600 | 31900 | 47700 | 57400 | 17700 | 271 |
| 2.3                        | 930            | 1.9   | 574  | -           | -         | 3/A 03 L2 | BN 63C 4 | - | -            | 27200 | 31400 | 46900 | 56500 | 17400 | 271 |
| 2.4                        | 670            | 1.1   | 562  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 8770  | 8770  | 22900 | 26300 | 5770  | 250 |
| 2.4                        | 670            | 2.1   | 562  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 8770  | 8770  | 22900 | 26300 | 5770  | 260 |
| 2.5                        | 860            | 1.3   | 533  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 8620  | 8620  | 22500 | 25800 | 5660  | 261 |
| 2.6                        | 840            | 3.0   | 520  | -           | -         | 3/A 04 L2 | BN 63C 4 | - | -            | 26300 | 30300 | 45600 | 54800 | 16900 | 283 |
| 2.6                        | 610            | 1.7   | 509  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 8490  | 8490  | 22200 | 25500 | 5580  | 250 |
| 2.6                        | 610            | 2.1   | 509  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 8490  | 8490  | 22200 | 25500 | 5580  | 260 |
| 2.7                        | 800            | 2.1   | 495  | -           | -         | 3/A 03 L2 | BN 63C 4 | - | -            | 25900 | 29800 | 44900 | 54000 | 16600 | 271 |
| 2.9                        | 740            | 1.6   | 454  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 8170  | 8170  | 21400 | 24600 | 5370  | 261 |
| 3.0                        | 580            | 2.4   | 443  | -           | 3/V 01 L3 | -         | BN 63C 4 | - | -            | 8100  | 8100  | 21300 | 24400 | 5330  | 260 |
| 3.0                        | 720            | 1.0   | 441  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 8090  | 8090  | 21200 | 24400 | 5320  | 251 |
| 3.1                        | 490            | 1.5   | 436  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 8060  | 8060  | 21200 | 24300 | 5300  | 250 |
| 3.2                        | 495            | 2.0   | 415  | -           | 3/V 00 L3 | -         | BN 63C 4 | - | -            | 7930  | 7930  | 20900 | 24000 | 5210  | 250 |
| 3.3                        | 660            | 2.9   | 409  | -           | -         | 3/A 03 L2 | BN 63C 4 | - | -            | 24300 | 28000 | 42400 | 51000 | 15600 | 271 |
| 3.4                        | 640            | 1.3   | 393  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 7790  | 7790  | 20500 | 23600 | 5120  | 261 |
| 3.6                        | 600            | 0.9   | 369  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 7630  | 7630  | 20100 | 23100 | 5010  | 251 |
| 3.7                        | 590            | 2.3   | 364  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 7590  | 7590  | 20100 | 23000 | 4990  | 261 |
| 4.3                        | 500            | 2.3   | 311  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 7200  | 7200  | 19100 | 22000 | 4740  | 261 |
| 4.5                        | 480            | 1.4   | 296  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 7080  | 7080  | 18900 | 21700 | 4660  | 251 |
| 5.0                        | 435            | 2.3   | 269  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 6860  | 6860  | 18300 | 21000 | 4510  | 261 |
| 5.3                        | 415            | 2.8   | 255  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 6740  | 6740  | 18000 | 20700 | 4430  | 261 |
| 5.3                        | 410            | 1.3   | 253  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 6720  | 6720  | 18000 | 20700 | 4420  | 251 |
| 6.1                        | 355            | 2.3   | 220  | -           | -         | 3/A 01 L2 | BN 63C 4 | - | -            | 6410  | 6410  | 17200 | 19800 | 4220  | 261 |
| 6.1                        | 355            | 1.7   | 219  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 6400  | 6400  | 17200 | 19800 | 4210  | 251 |
| 6.6                        | 330            | 2.0   | 203  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 6240  | 6240  | 16800 | 19300 | 4100  | 251 |
| 7.8                        | 280            | 2.0   | 171  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 5900  | 5900  | 16000 | 18400 | 3880  | 251 |
| 10.0                       | 215            | 2.5   | 134  | -           | -         | 3/A 00 L2 | BN 63C 4 | - | -            | 5440  | 5440  | 14900 | 17100 | 3580  | 251 |

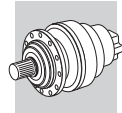




$P_1 = 0.37 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |          |         | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|----------|---------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |          |         | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.53                                | 4620                  | 1.5            | 2588 | -        | 3/V 06 L3 | -         | BN 71B 4 | M 1SD 4 | 45000               | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.61                                | 3930                  | 1.1            | 2232 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 64000  | 74000  | 24000 | 294 |
| 0.64                                | 3820                  | 2.2            | 2139 | -        | 3/V 06 L3 | -         | BN 71B 4 | M 1SD 4 | 45000               | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.77                                | 3150                  | 1.5            | 1786 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 64000  | 74000  | 24000 | 294 |
| 0.77                                | 3160                  | 2.7            | 1768 | -        | 3/V 06 L3 | -         | BN 71B 4 | M 1SD 4 | 45000               | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.79                                | 2830                  | 1.0            | 1728 | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 64000  | 74000  | 24000 | 270 |
| 0.82                                | 3150                  | 1.4            | 1674 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 64000  | 74000  | 24000 | 294 |
| 0.85                                | 2640                  | 0.9            | 1610 | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 64000  | 74000  | 24000 | 270 |
| 0.89                                | 2710                  | 1.4            | 1536 | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 63100  | 74000  | 24000 | 282 |
| 0.96                                | 2520                  | 1.8            | 1431 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 61700  | 74000  | 23600 | 294 |
| 0.97                                | 2670                  | 1.1            | 1419 | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 61600  | 74000  | 23600 | 282 |
| 0.99                                | 2270                  | 1.2            | 1385 | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 36000               | 42000 | 61100  | 73600  | 23400 | 270 |
| 1.1                                 | 2170                  | 1.7            | 1231 | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 35000               | 40400 | 59000  | 71000  | 22500 | 282 |
| 1.1                                 | 2170                  | 2.5            | 1231 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 35000               | 40400 | 59000  | 71000  | 22500 | 294 |
| 1.2                                 | 1950                  | 1.2            | 1189 | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 34600               | 40000 | 58400  | 70300  | 22200 | 270 |
| 1.2                                 | 2170                  | 1.6            | 1152 | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 34300               | 39600 | 57900  | 69600  | 22000 | 282 |
| 1.2                                 | 2180                  | 2.0            | 1116 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 33900               | 39100 | 57300  | 69000  | 21700 | 294 |
| 1.2                                 | 1810                  | 1.1            | 1105 | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 11000               | 11000 | 28000  | 32200  | 7230  | 260 |
| 1.3                                 | 1860                  | 2.4            | 1057 | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 33300               | 38400 | 56400  | 67800  | 21400 | 294 |
| 1.3                                 | 1680                  | 1.6            | 1023 | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 32900               | 38000 | 55800  | 67200  | 21100 | 270 |
| 1.4                                 | 1730                  | 2.2            | 981  | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 32500               | 37500 | 55100  | 66300  | 20800 | 282 |
| 1.5                                 | 1670                  | 1.6            | 923  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 31800               | 36700 | 54100  | 65100  | 20400 | 270 |
| 1.5                                 | 1750                  | 2.5            | 894  | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 31500               | 36300 | 53600  | 64500  | 20200 | 294 |
| 1.5                                 | 1840                  | 1.5            | 887  | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 31400               | 36300 | 53500  | 64400  | 20100 | 282 |
| 1.7                                 | 1470                  | 1.1            | 799  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 9860                | 9860  | 25400  | 29200  | 6480  | 260 |
| 1.7                                 | 1440                  | 1.5            | 793  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 30200               | 34900 | 51700  | 62200  | 19400 | 270 |
| 1.7                                 | 1490                  | 2.8            | 793  | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 30200               | 34900 | 51700  | 62200  | 19400 | 294 |
| 1.8                                 | 1510                  | 2.2            | 769  | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 29900               | 34600 | 51300  | 61700  | 19200 | 282 |
| 1.9                                 | 1330                  | 2.0            | 736  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 29500               | 34100 | 50600  | 60800  | 18900 | 270 |
| 1.9                                 | 1730                  | 1.0            | 731  | -        | -         | 3/A 03 L2 | BN 71B 4 | -       | 29400               | 34000 | 50500  | 60700  | 18900 | 271 |
| 1.9                                 | 1450                  | 2.8            | 715  | -        | 3/V 05 L3 | -         | BN 71B 4 | M 1SD 4 | 29200               | 33700 | 50200  | 60300  | 18800 | 294 |
| 1.9                                 | 1480                  | 1.8            | 710  | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 29200               | 33700 | 50000  | 60200  | 18700 | 282 |
| 2.0                                 | 1200                  | 0.9            | 689  | -        | 3/V 00 L3 | -         | BN 71B 4 | -       | 9390                | 9390  | 24300  | 27900  | 6170  | 250 |
| 2.0                                 | 1200                  | 1.4            | 689  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 9390                | 9390  | 24300  | 27900  | 6170  | 260 |
| 2.1                                 | 1070                  | 1.0            | 654  | -        | 3/V 00 L3 | -         | BN 71B 4 | -       | 9230                | 9230  | 23900  | 27500  | 6070  | 250 |
| 2.1                                 | 1070                  | 1.1            | 654  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 9230                | 9230  | 23900  | 27500  | 6070  | 260 |
| 2.2                                 | 1130                  | 2.0            | 623  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 27900               | 32200 | 48100  | 57900  | 17900 | 270 |
| 2.3                                 | 1430                  | 1.3            | 605  | -        | -         | 3/A 03 L2 | BN 71B 4 | -       | 27600               | 31900 | 47700  | 57400  | 17700 | 271 |
| 2.3                                 | 1410                  | 2.3            | 594  | -        | -         | 3/A 05 L2 | BN 71B 4 | M 1SD 4 | 27500               | 31700 | 47400  | 57100  | 17600 | 295 |
| 2.4                                 | 1360                  | 1.3            | 574  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 27200               | 31400 | 46900  | 56500  | 17400 | 271 |
| 2.4                                 | 1110                  | 2.8            | 568  | -        | 3/V 04 L3 | -         | BN 71B 4 | M 1SD 4 | 27100               | 31300 | 46800  | 56300  | 17400 | 282 |
| 2.4                                 | 980                   | 1.4            | 562  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 8770                | 8770  | 22900  | 26300  | 5770  | 260 |
| 2.5                                 | 980                   | 2.8            | 544  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 26700               | 30800 | 46200  | 55600  | 17100 | 270 |
| 2.6                                 | 1230                  | 2.0            | 520  | -        | -         | 3/A 04 L2 | BN 71B 4 | M 1SD 4 | 26300               | 30300 | 45600  | 54800  | 16900 | 283 |
| 2.7                                 | 880                   | 1.2            | 509  | -        | 3/V 00 L3 | -         | BN 71B 4 | -       | 8490                | 8490  | 22200  | 25500  | 5580  | 250 |
| 2.7                                 | 880                   | 1.4            | 509  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 8490                | 8490  | 22200  | 25500  | 5580  | 260 |
| 2.7                                 | 1000                  | 2.0            | 502  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 26000               | 30000 | 45100  | 54300  | 16700 | 270 |
| 2.8                                 | 1170                  | 1.5            | 495  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 25900               | 29800 | 44900  | 54000  | 16600 | 271 |
| 2.9                                 | 1110                  | 2.3            | 469  | -        | -         | 3/A 04 L2 | BN 71B 4 | M 1SD 4 | 25400               | 29300 | 44200  | 53100  | 16300 | 283 |
| 3.0                                 | 830                   | 2.8            | 460  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 25200               | 29100 | 43900  | 52900  | 16200 | 270 |
| 3.0                                 | 1080                  | 1.1            | 454  | -        | -         | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 8170                | 8170  | 21400  | 24600  | 5370  | 261 |
| 3.1                                 | 840                   | 1.6            | 443  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 8100                | 8100  | 21300  | 24400  | 5330  | 260 |
| 3.1                                 | 710                   | 1.0            | 436  | -        | 3/V 00 L3 | -         | BN 71B 4 | -       | 8060                | 8060  | 21200  | 24300  | 5300  | 250 |
| 3.2                                 | 850                   | 2.2            | 430  | -        | 3/V 01 L3 | -         | BN 71B 4 | -       | 8020                | 8020  | 21100  | 24200  | 5270  | 260 |
| 3.3                                 | 720                   | 1.4            | 415  | -        | 3/V 00 L3 | -         | BN 71B 4 | -       | 7930                | 7930  | 20900  | 24000  | 5210  | 250 |
| 3.3                                 | 970                   | 2.0            | 409  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 24300               | 28000 | 42400  | 51000  | 15600 | 271 |
| 3.5                                 | 780                   | 2.8            | 395  | -        | 3/V 03 L3 | -         | BN 71B 4 | M 1SD 4 | 24000               | 27700 | 42000  | 50500  | 15400 | 270 |
| 3.5                                 | 920                   | 2.7            | 386  | -        | -         | 3/A 04 L2 | BN 71B 4 | M 1SD 4 | 23800               | 27500 | 41700  | 50200  | 15300 | 283 |
| 3.8                                 | 860                   | 1.6            | 364  | -        | -         | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 7590                | 7590  | 20100  | 23000  | 4990  | 261 |
| 3.9                                 | 830                   | 2.4            | 352  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 23100               | 26600 | 40500  | 48800  | 14800 | 271 |
| 3.9                                 | 830                   | 2.9            | 349  | -        | -         | 3/A 04 L2 | BN 71B 4 | M 1SD 4 | 23000               | 26600 | 40400  | 48600  | 14800 | 283 |
| 4.2                                 | 770                   | 2.2            | 326  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 22500               | 26000 | 39600  | 47600  | 14400 | 271 |
| 4.4                                 | 740                   | 1.6            | 311  | -        | -         | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 7200                | 7200  | 19100  | 22000  | 4740  | 261 |
| 4.6                                 | 700                   | 0.9            | 296  | -        | -         | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 7080                | 7080  | 18900  | 21700  | 4660  | 251 |
| 5.1                                 | 640                   | 2.9            | 269  | -        | -         | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 21100               | 24400 | 37400  | 45000  | 13500 | 271 |





$P_1 = 0.37 \text{ kW}$

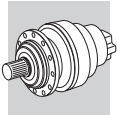
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |   |           |          |         | $R_{n2}$ [N] |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|---|-----------|----------|---------|--------------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |   |           |          |         | MC/PC        | MZ/PZ | HC    | HZ    | FZ    |     |
| 5.1                        | 640            | 2.9   | 269  | -           | - | 3/A 03 L2 | BN 71B 4 | M 1SD 4 | 21100        | 24400 | 37400 | 45000 | 13500 | 271 |
| 5.1                        | 640            | 1.6   | 269  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 6860         | 6860  | 18300 | 21000 | 4510  | 261 |
| 5.4                        | 600            | 1.9   | 255  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 6740         | 6740  | 18000 | 20700 | 4430  | 261 |
| 5.4                        | 600            | 0.9   | 253  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 6720         | 6720  | 18000 | 20700 | 4420  | 251 |
| 6.2                        | 520            | 1.6   | 220  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 6410         | 6410  | 17200 | 19800 | 4220  | 261 |
| 6.3                        | 520            | 1.2   | 219  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 6400         | 6400  | 17200 | 19800 | 4210  | 251 |
| 6.7                        | 485            | 2.7   | 204  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 6260         | 6260  | 16900 | 19400 | 4120  | 261 |
| 6.8                        | 480            | 1.4   | 203  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 6240         | 6240  | 16800 | 19300 | 4100  | 251 |
| 7.4                        | 435            | 2.4   | 184  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 6050         | 6050  | 16400 | 18800 | 3980  | 261 |
| 8.0                        | 405            | 1.4   | 171  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 5900         | 5900  | 16000 | 18400 | 3880  | 251 |
| 8.2                        | 395            | 2.9   | 166  | -           | - | 3/A 01 L2 | BN 71B 4 | M 1SD 4 | 5850         | 5850  | 15900 | 18200 | 3840  | 261 |
| 10.2                       | 315            | 1.7   | 134  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 5440         | 5440  | 14900 | 17100 | 3580  | 251 |
| 12.8                       | 255            | 2.6   | 107  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 5050         | 5050  | 13900 | 16000 | 3320  | 251 |
| 13.7                       | 235            | 2.3   | 100  | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 4940         | 4940  | 13600 | 15600 | 3240  | 251 |
| 15.5                       | 210            | 2.6   | 88.6 | -           | - | 3/A 00 L2 | BN 71B 4 | M 1SD 4 | 4740         | 4740  | 13100 | 15100 | 3120  | 251 |

$P_1 = 0.55 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |           |          |         | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|-----------|----------|---------|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |           |           |          |         | MC/PC        | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.27                       | 12900          | 2.7   | 5081 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.27                       | 12900          | 2.7   | 5081 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.30                       | 11700          | 2.6   | 4637 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.30                       | 11700          | 2.6   | 4637 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.34                       | 11800          | 2.6   | 4036 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.34                       | 11800          | 2.6   | 4036 | -           | 3/V 10 L4 | -         | BN 80A 4 | M 1LA 4 | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.54                       | 6750           | 1.0   | 2588 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 45000        | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.56                       | 6190           | 1.8   | 2472 | -           | 3/V 07 L3 | -         | BN 80A 4 | -       | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.65                       | 5690           | 1.9   | 2150 | -           | 3/V 07 L3 | -         | BN 80A 4 | -       | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.65                       | 5580           | 1.5   | 2139 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 45000        | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.71                       | 4910           | 2.5   | 1964 | -           | 3/V 07 L3 | -         | BN 80A 4 | -       | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.78                       | 4600           | 1.0   | 1786 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 36000        | 42000 | 64000  | 74000  | 24000 | 294 |
| 0.79                       | 4620           | 1.9   | 1768 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 45000        | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.83                       | 4610           | 1.0   | 1674 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 36000        | 42000 | 64000  | 74000  | 24000 | 294 |
| 0.90                       | 4200           | 2.6   | 1545 | -           | 3/V 07 L3 | -         | BN 80A 4 | -       | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.90                       | 3950           | 0.9   | 1536 | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 36000        | 42000 | 63100  | 74000  | 24000 | 282 |
| 0.97                       | 3680           | 1.3   | 1431 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 36000        | 42000 | 61700  | 74000  | 23600 | 294 |
| 1.0                        | 3790           | 2.2   | 1395 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 45000        | 51000 | 100200 | 116700 | 34200 | 306 |
| 1.1                        | 3170           | 1.1   | 1231 | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 35000        | 40400 | 59000  | 71000  | 22500 | 282 |
| 1.1                        | 3170           | 1.7   | 1231 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 35000        | 40400 | 59000  | 71000  | 22500 | 294 |
| 1.1                        | 3160           | 2.5   | 1212 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 43400        | 49200 | 96100  | 111900 | 32600 | 306 |
| 1.2                        | 3130           | 2.6   | 1153 | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 42700        | 48400 | 94700  | 110200 | 32100 | 306 |
| 1.2                        | 3170           | 1.1   | 1152 | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 34300        | 39600 | 57900  | 69600  | 22000 | 282 |
| 1.2                        | 3190           | 1.4   | 1116 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 33900        | 39100 | 57300  | 69000  | 21700 | 294 |
| 1.3                        | 2720           | 1.6   | 1057 | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 33300        | 38400 | 56400  | 67800  | 21400 | 294 |
| 1.4                        | 2450           | 1.1   | 1023 | -           | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4 | 32900        | 38000 | 55800  | 67200  | 21100 | 270 |
| 1.4                        | 2520           | 1.5   | 981  | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 32500        | 37500 | 55100  | 66300  | 20800 | 282 |
| 1.5                        | 2790           | 2.8   | 930  | -           | 3/V 06 L3 | -         | BN 80A 4 | M 1LA 4 | 39700        | 45000 | 88800  | 103400 | 29800 | 306 |
| 1.5                        | 2440           | 1.1   | 923  | -           | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4 | 31800        | 36700 | 54100  | 65100  | 20400 | 270 |
| 1.6                        | 2560           | 1.7   | 894  | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 31500        | 36300 | 53600  | 64500  | 20200 | 294 |
| 1.6                        | 2700           | 1.0   | 887  | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 31400        | 36300 | 53500  | 64400  | 20100 | 282 |
| 1.8                        | 2100           | 1.0   | 793  | -           | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4 | 30200        | 34900 | 51700  | 62200  | 19400 | 270 |
| 1.8                        | 2180           | 1.9   | 793  | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 30200        | 34900 | 51700  | 62200  | 19400 | 294 |
| 1.8                        | 2200           | 1.5   | 769  | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 29900        | 34600 | 51300  | 61700  | 19200 | 282 |
| 1.9                        | 1950           | 1.4   | 736  | -           | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4 | 29500        | 34100 | 50600  | 60800  | 18900 | 270 |
| 1.9                        | 2120           | 1.9   | 715  | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 29200        | 33700 | 50200  | 60300  | 18800 | 294 |
| 2.0                        | 2160           | 1.2   | 710  | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 29200        | 33700 | 50000  | 60200  | 18700 | 282 |
| 2.0                        | 1750           | 1.0   | 689  | -           | 3/V 01 L3 | -         | BN 80A 4 | -       | 9390         | 9390  | 24300  | 27900  | 6170  | 260 |
| 2.1                        | 2250           | 2.7   | 671  | -           | -         | 3/A 06 L2 | BN 80A 4 | M 1LA 4 | 35600        | 40400 | 80500  | 93700  | 26800 | 307 |
| 2.2                        | 1720           | 2.1   | 623  | -           | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4 | 27900        | 32200 | 48100  | 57900  | 17900 | 282 |
| 2.2                        | 1650           | 1.3   | 623  | -           | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4 | 27900        | 32200 | 48100  | 57900  | 17900 | 270 |
| 2.2                        | 1720           | 2.6   | 623  | -           | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4 | 27900        | 32200 | 48100  | 57900  | 17900 | 294 |

A



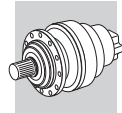


$P_1 = 0.55 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |   |           |           |          | $R_{n2}$ [N] |       |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|---|-----------|-----------|----------|--------------|-------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |   |           |           |          | MC/PC        | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 2.3                        | 2050           | 2.9   | 611  | -           | - | 3/A 06 L2 | BN 80A 4  | M 1LA 4  | -            | 34500 | 39100 | 78300 | 91100 | 25900 | 307 |
| 2.3                        | 2060           | 1.6   | 594  | -           | - | 3/A 05 L2 | BN 80A 4  | M 1LA 4  | -            | 27500 | 31700 | 47400 | 57100 | 17600 | 295 |
| 2.4                        | 1750           | 2.8   | 576  | -           | - | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4      | 27200 | 31400 | 47000 | 56500 | 17400 | 294 |
| 2.4                        | 1630           | 1.9   | 568  | -           | - | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4      | 27100 | 31300 | 46800 | 56300 | 17400 | 282 |
| 2.5                        | 1430           | 1.0   | 562  | -           | - | 3/V 01 L3 | -         | BN 80A 4 | -            | 8770  | 8770  | 22900 | 26300 | 5770  | 260 |
| 2.6                        | 1440           | 1.9   | 544  | -           | - | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4      | 26700 | 30800 | 46200 | 55600 | 17100 | 270 |
| 2.6                        | 1570           | 2.5   | 529  | -           | - | 3/V 05 L3 | -         | BN 80A 4 | M 1LA 4      | 26400 | 30500 | 45800 | 55100 | 17000 | 294 |
| 2.7                        | 1800           | 1.4   | 520  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 26300 | 30300 | 45600 | 54800 | 16900 | 283 |
| 2.7                        | 1290           | 1.0   | 509  | -           | - | 3/V 01 L3 | -         | BN 80A 4 | -            | 8490  | 8490  | 22200 | 25500 | 5580  | 260 |
| 2.8                        | 1450           | 1.4   | 502  | -           | - | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4      | 26000 | 30000 | 45100 | 54300 | 16700 | 270 |
| 2.8                        | 1290           | 2.3   | 501  | -           | - | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4      | 26000 | 30000 | 45100 | 54200 | 16700 | 282 |
| 2.8                        | 1720           | 1.0   | 495  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 25900 | 29800 | 44900 | 54000 | 16600 | 271 |
| 2.8                        | 1700           | 2.3   | 491  | -           | - | -         | 3/A 05 L2 | BN 80A 4 | M 1LA 4      | 25800 | 29800 | 44800 | 53900 | 16500 | 295 |
| 3.0                        | 1620           | 1.5   | 469  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 25400 | 29300 | 44200 | 53100 | 16300 | 283 |
| 3.0                        | 1220           | 1.9   | 460  | -           | - | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4      | 25200 | 29100 | 43900 | 52900 | 16200 | 270 |
| 3.1                        | 1300           | 2.9   | 453  | -           | - | 3/V 04 L3 | -         | BN 80A 4 | M 1LA 4      | 25100 | 29000 | 43700 | 52600 | 16100 | 282 |
| 3.1                        | 1230           | 1.1   | 443  | -           | - | 3/V 01 L3 | -         | BN 80A 4 | -            | 8100  | 8100  | 21300 | 24400 | 5330  | 260 |
| 3.2                        | 1240           | 1.5   | 430  | -           | - | 3/V 01 L3 | -         | BN 80A 4 | -            | 8020  | 8020  | 21100 | 24200 | 5270  | 260 |
| 3.3                        | 1050           | 0.9   | 415  | -           | - | 3/V 00 L3 | -         | BN 80A 4 | -            | 7930  | 7930  | 20900 | 24000 | 5210  | 250 |
| 3.4                        | 1420           | 1.4   | 409  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 24300 | 28000 | 42400 | 51000 | 15600 | 271 |
| 3.5                        | 1380           | 2.3   | 398  | -           | - | -         | 3/A 05 L2 | BN 80A 4 | M 1LA 4      | 24000 | 27800 | 42100 | 50600 | 15400 | 295 |
| 3.5                        | 1140           | 1.9   | 395  | -           | - | 3/V 03 L3 | -         | BN 80A 4 | M 1LA 4      | 24000 | 27700 | 42000 | 50500 | 15400 | 270 |
| 3.6                        | 1340           | 1.8   | 386  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 23800 | 27500 | 41700 | 50200 | 15300 | 283 |
| 3.8                        | 1260           | 1.1   | 364  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 7590  | 7590  | 20100 | 23000 | 4990  | 261 |
| 3.9                        | 1220           | 1.7   | 352  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 23100 | 26600 | 40500 | 48800 | 14800 | 271 |
| 4.0                        | 1210           | 2.0   | 349  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 23000 | 26600 | 40400 | 48600 | 14800 | 283 |
| 4.3                        | 1130           | 1.5   | 326  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 22500 | 26000 | 39600 | 47600 | 14400 | 271 |
| 4.4                        | 1100           | 2.2   | 317  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 22300 | 25700 | 39300 | 47300 | 14300 | 283 |
| 4.5                        | 1080           | 1.1   | 311  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 7200  | 7200  | 19100 | 22000 | 4740  | 261 |
| 4.9                        | 980            | 2.9   | 283  | -           | - | -         | 3/A 04 L2 | BN 80A 4 | M 1LA 4      | 21500 | 24800 | 38000 | 45700 | 13800 | 283 |
| 5.2                        | 930            | 2.0   | 269  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 21100 | 24400 | 37400 | 45000 | 13500 | 271 |
| 5.2                        | 930            | 2.0   | 269  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 21100 | 24400 | 37400 | 45000 | 13500 | 271 |
| 5.2                        | 930            | 1.1   | 269  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 6860  | 6860  | 18300 | 21000 | 4510  | 261 |
| 5.5                        | 880            | 1.3   | 255  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 6740  | 6740  | 18000 | 20700 | 4430  | 261 |
| 6.3                        | 760            | 2.2   | 220  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 19700 | 22800 | 35200 | 42300 | 12700 | 271 |
| 6.3                        | 760            | 1.1   | 220  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 6410  | 6410  | 17200 | 19800 | 4220  | 261 |
| 6.8                        | 710            | 1.8   | 204  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 6260  | 6260  | 16900 | 19400 | 4120  | 261 |
| 6.9                        | 700            | 0.9   | 203  | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 6240  | 6240  | 16800 | 19300 | 4100  | 251 |
| 7.5                        | 640            | 1.6   | 184  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 6050  | 6050  | 16400 | 18800 | 3980  | 261 |
| 7.7                        | 630            | 2.9   | 182  | -           | - | -         | 3/A 03 L2 | BN 80A 4 | M 1LA 4      | 18500 | 21400 | 33200 | 40000 | 11900 | 271 |
| 8.1                        | 590            | 0.9   | 171  | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 5900  | 5900  | 16000 | 18400 | 3880  | 251 |
| 8.4                        | 580            | 2.0   | 166  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 5850  | 5850  | 15900 | 18200 | 3840  | 261 |
| 10.4                       | 465            | 1.2   | 134  | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 5440  | 5440  | 14900 | 17100 | 3580  | 251 |
| 10.4                       | 460            | 2.8   | 133  | -           | - | -         | 3/A 01 L2 | BN 80A 4 | M 1LA 4      | 5430  | 5430  | 14800 | 17100 | 3570  | 261 |
| 13.0                       | 370            | 1.7   | 107  | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 5050  | 5050  | 13900 | 16000 | 3320  | 251 |
| 13.9                       | 345            | 1.6   | 100  | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 4940  | 4940  | 13600 | 15600 | 3240  | 251 |
| 15.7                       | 305            | 1.8   | 88.6 | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 4740  | 4740  | 13100 | 15100 | 3120  | 251 |
| 17.3                       | 280            | 2.3   | 80.2 | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 4580  | 4580  | 12700 | 14600 | 3010  | 251 |
| 19.6                       | 245            | 2.6   | 71.0 | -           | - | -         | 3/A 00 L2 | BN 80A 4 | M 1LA 4      | 4400  | 4400  | 12300 | 14100 | 2890  | 251 |

$P_1 = 0.75 \text{ kW}$

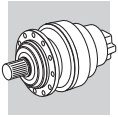
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |   |          |   | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|---|----------|---|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |           |   |          |   | MC/PC        | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.28                       | 17300          | 2.0   | 5081 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.28                       | 17300          | 2.0   | 5081 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.28                       | 17800          | 2.7   | 5021 | -           | 3/V 11 L4 | - | BN 80B 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.30                       | 15800          | 1.9   | 4637 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.30                       | 15800          | 1.9   | 4637 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.32                       | 15800          | 2.9   | 4410 | -           | 3/V 11 L4 | - | BN 80B 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.35                       | 15800          | 1.9   | 4036 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.35                       | 15800          | 1.9   | 4036 | -           | 3/V 10 L4 | - | BN 80B 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |



$P_1 = 0.75 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW | Motor Configurations |           |          |         | Rn <sub>2</sub> [N] |       |        |        |       | Icon |
|-------------------------------------|-----------------------|----------------|------|----------|----------------------|-----------|----------|---------|---------------------|-------|--------|--------|-------|------|
|                                     |                       |                |      |          | MC/PC                | MZ/PZ     | HC       | HZ      | FZ                  |       |        |        |       |      |
| 0.39                                | 12600                 | 2.4            | 3570 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.39                                | 12600                 | 2.4            | 3570 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.43                                | 12800                 | 2.7            | 3273 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.43                                | 12800                 | 2.7            | 3273 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.49                                | 11100                 | 2.8            | 2835 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.49                                | 11100                 | 2.8            | 2835 | -        | 3/V 10 L4            | -         | BN 80B 4 | -       | -                   | -     | 133000 | 166000 | 65000 | 342  |
| 0.57                                | 8300                  | 1.3            | 2472 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 52000               | 65000 | 109000 | 145000 | 45000 | 318  |
| 0.65                                | 7630                  | 1.4            | 2150 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 52000               | 65000 | 109000 | 145000 | 45000 | 318  |
| 0.65                                | 7490                  | 1.1            | 2139 | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 45000               | 51000 | 101000 | 119000 | 35000 | 306  |
| 0.71                                | 6600                  | 1.9            | 1964 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 52000               | 65000 | 109000 | 145000 | 45000 | 318  |
| 0.79                                | 6190                  | 1.4            | 1768 | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 45000               | 51000 | 101000 | 119000 | 35000 | 306  |
| 0.91                                | 5640                  | 2.0            | 1545 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 52000               | 65000 | 109000 | 145000 | 45000 | 318  |
| 0.98                                | 4940                  | 0.9            | 1431 | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 36000               | 42000 | 61700  | 74000  | 23600 | 294  |
| 0.99                                | 5010                  | 2.5            | 1411 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 50700               | 63600 | 108200 | 141800 | 44100 | 318  |
| 1.0                                 | 5090                  | 1.7            | 1395 | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 45000               | 51000 | 100200 | 116700 | 34200 | 306  |
| 1.1                                 | 4250                  | 1.3            | 1231 | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 35000               | 40400 | 59000  | 71000  | 22500 | 294  |
| 1.2                                 | 4250                  | 1.8            | 1212 | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 43400               | 49200 | 96100  | 111900 | 32600 | 306  |
| 1.2                                 | 4280                  | 2.5            | 1159 | -        | 3/V 07 L3            | -         | BN 80B 4 | -       | 47500               | 59600 | 102000 | 133700 | 41300 | 318  |
| 1.2                                 | 4210                  | 2.0            | 1153 | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 42700               | 48400 | 94700  | 110200 | 32100 | 306  |
| 1.3                                 | 4280                  | 1.0            | 1116 | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 33900               | 39100 | 57300  | 69000  | 21700 | 294  |
| 1.3                                 | 3650                  | 1.2            | 1057 | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 33300               | 38400 | 56400  | 67800  | 21400 | 294  |
| 1.4                                 | 3620                  | 2.6            | 992  | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 40600               | 46000 | 90500  | 105400 | 30500 | 306  |
| 1.4                                 | 3390                  | 1.1            | 981  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 32500               | 37500 | 55100  | 66300  | 20800 | 282  |
| 1.5                                 | 3750                  | 2.1            | 930  | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 39700               | 45000 | 88800  | 103400 | 29800 | 306  |
| 1.6                                 | 3430                  | 1.2            | 894  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 31500               | 36300 | 53600  | 64500  | 20200 | 294  |
| 1.8                                 | 2930                  | 1.4            | 793  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 30200               | 34900 | 51700  | 62200  | 19400 | 294  |
| 1.8                                 | 2880                  | 2.7            | 791  | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 37600               | 42600 | 84500  | 98400  | 28300 | 306  |
| 1.8                                 | 2950                  | 1.1            | 769  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 29900               | 34600 | 51300  | 61700  | 19200 | 282  |
| 1.9                                 | 2610                  | 1.0            | 736  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 29500               | 34100 | 50600  | 60800  | 18900 | 270  |
| 2.0                                 | 2850                  | 1.4            | 715  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 29200               | 33700 | 50200  | 60300  | 18800 | 294  |
| 2.0                                 | 2890                  | 0.9            | 710  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 29200               | 33700 | 50000  | 60200  | 18700 | 282  |
| 2.0                                 | 2840                  | 2.7            | 698  | -        | 3/V 06 L3            | -         | BN 80B 4 | -       | 36100               | 40900 | 81400  | 94800  | 27100 | 306  |
| 2.1                                 | 3020                  | 2.0            | 671  | -        | -                    | 3/A 06 L2 | BN 80B 4 | M 2SA 4 | 35600               | 40400 | 80500  | 93700  | 26800 | 307  |
| 2.2                                 | 2300                  | 1.5            | 623  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 27900               | 32200 | 48100  | 57900  | 17900 | 282  |
| 2.2                                 | 2210                  | 1.0            | 623  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 27900               | 32200 | 48100  | 57900  | 17900 | 270  |
| 2.2                                 | 2300                  | 1.9            | 623  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 27900               | 32200 | 48100  | 57900  | 17900 | 294  |
| 2.3                                 | 2750                  | 2.2            | 611  | -        | -                    | 3/A 06 L2 | BN 80B 4 | M 2SA 4 | 34500               | 39100 | 78300  | 91100  | 25900 | 307  |
| 2.4                                 | 2760                  | 1.2            | 594  | -        | -                    | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 27500               | 31700 | 47400  | 57100  | 17600 | 295  |
| 2.4                                 | 2350                  | 2.1            | 576  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 27200               | 31400 | 47000  | 56500  | 17400 | 294  |
| 2.5                                 | 2180                  | 1.4            | 568  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 27100               | 31300 | 46800  | 56300  | 17400 | 282  |
| 2.5                                 | 2500                  | 2.9            | 555  | -        | -                    | 3/A 06 L2 | BN 80B 4 | M 2SA 4 | 33400               | 37900 | 76000  | 88500  | 25100 | 307  |
| 2.6                                 | 1930                  | 1.4            | 544  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 26700               | 30800 | 46200  | 55600  | 17100 | 270  |
| 2.6                                 | 2110                  | 1.9            | 529  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 26400               | 30500 | 45800  | 55100  | 17000 | 294  |
| 2.7                                 | 2420                  | 1.0            | 520  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 26300               | 30300 | 45600  | 54800  | 16900 | 283  |
| 2.8                                 | 1950                  | 1.0            | 502  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 26000               | 30000 | 45100  | 54300  | 16700 | 270  |
| 2.8                                 | 1730                  | 1.7            | 501  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 26000               | 30000 | 45100  | 54200  | 16700 | 282  |
| 2.9                                 | 2280                  | 1.7            | 491  | -        | -                    | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 25800               | 29800 | 44800  | 53900  | 16500 | 295  |
| 3.0                                 | 2180                  | 1.1            | 469  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 25400               | 29300 | 44200  | 53100  | 16300 | 283  |
| 3.0                                 | 1880                  | 2.6            | 462  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 25300               | 29200 | 44000  | 52900  | 16200 | 294  |
| 3.0                                 | 1630                  | 1.4            | 460  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 25200               | 29100 | 43900  | 52900  | 16200 | 270  |
| 3.1                                 | 1740                  | 2.1            | 453  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 25100               | 29000 | 43700  | 52600  | 16100 | 282  |
| 3.3                                 | 1670                  | 1.1            | 430  | -        | 3/V 01 L3            | -         | BN 80B 4 | -       | 8020                | 8020  | 21100  | 24200  | 5270  | 260  |
| 3.3                                 | 1960                  | 2.2            | 422  | -        | -                    | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 24500               | 28300 | 42800  | 51500  | 15700 | 295  |
| 3.4                                 | 1900                  | 1.0            | 409  | -        | -                    | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 24300               | 28000 | 42400  | 51000  | 15600 | 271  |
| 3.5                                 | 1850                  | 1.7            | 398  | -        | -                    | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 24000               | 27800 | 42100  | 50600  | 15400 | 295  |
| 3.5                                 | 1620                  | 2.3            | 396  | -        | 3/V 05 L3            | -         | BN 80B 4 | -       | 24000               | 27700 | 42000  | 50500  | 15400 | 294  |
| 3.5                                 | 1530                  | 1.4            | 395  | -        | 3/V 03 L3            | -         | BN 80B 4 | -       | 24000               | 27700 | 42000  | 50500  | 15400 | 270  |
| 3.6                                 | 1800                  | 1.4            | 386  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 23800               | 27500 | 41700  | 50200  | 15300 | 283  |
| 3.6                                 | 1470                  | 2.4            | 384  | -        | 3/V 04 L3            | -         | BN 80B 4 | -       | 23700               | 27400 | 41600  | 50100  | 15200 | 282  |
| 4.0                                 | 1640                  | 1.2            | 352  | -        | -                    | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 23100               | 26600 | 40500  | 48800  | 14800 | 271  |
| 4.0                                 | 1620                  | 1.5            | 349  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 23000               | 26600 | 40400  | 48600  | 14800 | 283  |
| 4.3                                 | 1530                  | 2.4            | 329  | -        | -                    | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 22600               | 26100 | 39700  | 47800  | 14500 | 295  |
| 4.3                                 | 1510                  | 1.1            | 326  | -        | -                    | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 22500               | 26000 | 39600  | 47600  | 14400 | 271  |
| 4.4                                 | 1480                  | 1.6            | 317  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 22300               | 25700 | 39300  | 47300  | 14300 | 283  |
| 4.9                                 | 1320                  | 2.2            | 283  | -        | -                    | 3/A 04 L2 | BN 80B 4 | M 2SA 4 | 21500               | 24800 | 38000  | 45700  | 13800 | 283  |

A

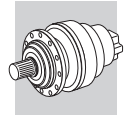


$P_1 = 0.75 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |   |           |          |         | $R_{n2}$ [N] |       |       |       |       |     |
|----------------------------|----------------|-------|------|-------------|---|-----------|----------|---------|--------------|-------|-------|-------|-------|-----|
|                            |                |       |      |             |   |           |          |         | MC/PC        | MZ/PZ | HC    | HZ    | FZ    |     |
| 5.0                        | 1300           | 2.8   | 280  | -           | - | 3/A 05 L2 | BN 80B 4 | M 2SA 4 | 21400        | 24700 | 37800 | 45500 | 13700 | 295 |
| 5.2                        | 1250           | 1.5   | 269  | -           | - | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 21100        | 24400 | 37400 | 45000 | 13500 | 271 |
| 5.2                        | 1250           | 1.5   | 269  | -           | - | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 21100        | 24400 | 37400 | 45000 | 13500 | 271 |
| 5.5                        | 1190           | 1.0   | 255  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 6740         | 6740  | 18000 | 20700 | 4430  | 261 |
| 6.4                        | 1020           | 1.6   | 220  | -           | - | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 19700        | 22800 | 35200 | 42300 | 12700 | 271 |
| 6.9                        | 950            | 1.4   | 204  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 6260         | 6260  | 16900 | 19400 | 4120  | 261 |
| 7.6                        | 860            | 1.2   | 184  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 6050         | 6050  | 16400 | 18800 | 3980  | 261 |
| 7.7                        | 840            | 2.2   | 182  | -           | - | 3/A 03 L2 | BN 80B 4 | M 2SA 4 | 18500        | 21400 | 33200 | 40000 | 11900 | 271 |
| 8.4                        | 770            | 1.5   | 166  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 5850         | 5850  | 15900 | 18200 | 3840  | 261 |
| 10.5                       | 620            | 2.1   | 133  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 5430         | 5430  | 14800 | 17100 | 3570  | 261 |
| 13.0                       | 500            | 1.3   | 107  | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 5050         | 5050  | 13900 | 16000 | 3320  | 251 |
| 13.8                       | 470            | 2.4   | 102  | -           | - | 3/A 01 L2 | BN 80B 4 | M 2SA 4 | 4960         | 4960  | 13700 | 15700 | 3260  | 261 |
| 14.0                       | 465            | 1.2   | 100  | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 4940         | 4940  | 13600 | 15600 | 3240  | 251 |
| 15.8                       | 410            | 1.3   | 88.6 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 4740         | 4740  | 13100 | 15100 | 3120  | 251 |
| 17.5                       | 375            | 1.7   | 80.2 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 4580         | 4580  | 12700 | 14600 | 3010  | 251 |
| 19.7                       | 330            | 2.0   | 71.0 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 4400         | 4400  | 12300 | 14100 | 2890  | 251 |
| 22.9                       | 285            | 2.3   | 61.2 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 4190         | 4190  | 11700 | 13500 | 2750  | 251 |
| 27.0                       | 240            | 2.3   | 51.8 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 3960         | 3960  | 11200 | 12800 | 2610  | 251 |
| 35                         | 185            | 3.0   | 39.6 | -           | - | 3/A 00 L2 | BN 80B 4 | M 2SA 4 | 3620         | 3620  | 10300 | 11800 | 2380  | 251 |

$P_1 = 1.1 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |   |          |   | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|---|----------|---|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |           |   |          |   | MC/PC        | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.28                       | 25400          | 1.3   | 5081 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.28                       | 25400          | 1.3   | 5081 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.28                       | 25600          | 2.1   | 5046 | -           | 3/V 13 L4 | - | BN 90S 4 | - | -            | -     | 192000 | 231000 | 80000 | 366 |
| 0.28                       | 26100          | 1.8   | 5021 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.30                       | 23200          | 1.3   | 4637 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.30                       | 23200          | 1.3   | 4637 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.31                       | 23900          | 2.4   | 4536 | -           | 3/V 13 L4 | - | BN 90S 4 | - | -            | -     | 192000 | 231000 | 80000 | 366 |
| 0.32                       | 23200          | 1.9   | 4410 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.34                       | 20800          | 2.3   | 4106 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.35                       | 21300          | 2.6   | 4046 | -           | 3/V 13 L4 | - | BN 90S 4 | - | -            | -     | 192000 | 231000 | 80000 | 366 |
| 0.35                       | 23200          | 1.3   | 4036 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.35                       | 23200          | 1.3   | 4036 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 18600          | 1.6   | 3570 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 18600          | 1.6   | 3570 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 18000          | 2.3   | 3557 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.40                       | 20200          | 2.9   | 3515 | -           | 3/V 13 L4 | - | BN 90S 4 | - | -            | -     | 192000 | 231000 | 80000 | 366 |
| 0.43                       | 18800          | 1.8   | 3273 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.43                       | 18800          | 1.8   | 3273 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.43                       | 18800          | 3.0   | 3263 | -           | 3/V 13 L4 | - | BN 90S 4 | - | -            | -     | 192000 | 231000 | 80000 | 366 |
| 0.43                       | 18500          | 2.5   | 3222 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.48                       | 16400          | 2.9   | 2887 | -           | 3/V 11 L4 | - | BN 90S 4 | - | -            | -     | 157000 | 195000 | 65000 | 354 |
| 0.49                       | 16300          | 1.9   | 2835 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.49                       | 16300          | 1.9   | 2835 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.57                       | 12200          | 0.9   | 2472 | -           | 3/V 07 L3 | - | BN 90S 4 | - | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.57                       | 14300          | 2.4   | 2455 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.57                       | 14300          | 2.4   | 2455 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                       | 12700          | 2.5   | 2209 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                       | 12700          | 2.5   | 2209 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.65                       | 11200          | 1.0   | 2150 | -           | 3/V 07 L3 | - | BN 90S 4 | - | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.69                       | 11600          | 2.5   | 2016 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.69                       | 11600          | 2.5   | 2016 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.71                       | 9700           | 1.3   | 1964 | -           | 3/V 07 L3 | - | BN 90S 4 | - | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.77                       | 10500          | 2.5   | 1826 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.77                       | 10500          | 2.5   | 1826 | -           | 3/V 10 L4 | - | BN 90S 4 | - | -            | -     | 133000 | 166000 | 65000 | 342 |
| 0.79                       | 9110           | 0.9   | 1768 | -           | 3/V 06 L3 | - | BN 90S 4 | - | 45000        | 51000 | 101000 | 119000 | 35000 | 306 |
| 0.91                       | 8290           | 1.3   | 1545 | -           | 3/V 07 L3 | - | BN 90S 4 | - | 52000        | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.99                       | 7370           | 1.7   | 1411 | -           | 3/V 07 L3 | - | BN 90S 4 | - | 50700        | 63600 | 108200 | 141800 | 44100 | 318 |
| 1.0                        | 7480           | 1.1   | 1395 | -           | 3/V 06 L3 | - | BN 90S 4 | - | 45000        | 51000 | 100200 | 116700 | 34200 | 306 |

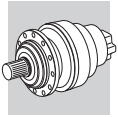


$P_1 = 1.1 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |                  |       | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|------------------|-------|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |                  |       | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 1.1                                 | 6730                  | 2.2            | 1288 | -        | 3/V 07 L3 | -         | BN 90S 4         | -     | 49200               | 61700 | 105300 | 138000 | 42800 | 318 |
| 1.2                                 | 6240                  | 1.3            | 1212 | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 43400               | 49200 | 96100  | 111900 | 32600 | 306 |
| 1.2                                 | 6300                  | 1.7            | 1159 | -        | 3/V 07 L3 | -         | BN 90S 4         | -     | 47500               | 59600 | 102000 | 133700 | 41300 | 318 |
| 1.2                                 | 6180                  | 1.3            | 1153 | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 42700               | 48400 | 94700  | 110200 | 32100 | 306 |
| 1.4                                 | 5440                  | 2.6            | 1015 | -        | 3/V 07 L3 | -         | BN 90S 4         | -     | 45400               | 57000 | 98000  | 128400 | 39500 | 318 |
| 1.4                                 | 5320                  | 1.8            | 992  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 40600               | 46000 | 90500  | 105400 | 30500 | 306 |
| 1.5                                 | 5510                  | 1.4            | 930  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 39700               | 45000 | 88800  | 103400 | 29800 | 306 |
| 1.5                                 | 5000                  | 2.5            | 920  | -        | 3/V 07 L3 | -         | BN 90S 4         | -     | 44000               | 55200 | 95200  | 124700 | 38200 | 318 |
| 1.8                                 | 4310                  | 1.0            | 793  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 30200               | 34900 | 51700  | 62200  | 19400 | 294 |
| 1.8                                 | 4240                  | 1.8            | 791  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 37600               | 42600 | 84500  | 98400  | 28300 | 306 |
| 1.8                                 | 4580                  | 2.2            | 773  | -        | 3/V 07 L3 | -         | BN 90S 4         | -     | 41500               | 52100 | 90300  | 118400 | 36100 | 318 |
| 2.0                                 | 4190                  | 1.0            | 715  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 29200               | 33700 | 50200  | 60300  | 18800 | 294 |
| 2.0                                 | 4180                  | 1.8            | 698  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 36100               | 40900 | 81400  | 94800  | 27100 | 306 |
| 2.1                                 | 4440                  | 1.4            | 671  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 35600 | 40400               | 80500 | 93700  | 26800  | 307   |     |
| 2.1                                 | 3920                  | 2.4            | 661  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 35500               | 40200 | 80100  | 93300  | 26600 | 306 |
| 2.2                                 | 3390                  | 1.0            | 623  | -        | 3/V 04 L3 | -         | BN 90S 4         | -     | 27900               | 32200 | 48100  | 57900  | 17900 | 282 |
| 2.2                                 | 3390                  | 1.3            | 623  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 27900               | 32200 | 48100  | 57900  | 17900 | 294 |
| 2.3                                 | 4050                  | 1.5            | 611  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 34500 | 39100               | 78300 | 91100  | 25900  | 307   |     |
| 2.4                                 | 3450                  | 1.4            | 576  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 27200               | 31400 | 47000  | 56500  | 17400 | 294 |
| 2.5                                 | 3370                  | 2.5            | 569  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 33700               | 38200 | 76600  | 89200  | 25300 | 306 |
| 2.5                                 | 3210                  | 1.0            | 568  | -        | 3/V 04 L3 | -         | BN 90S 4         | -     | 27100               | 31300 | 46800  | 56300  | 17400 | 282 |
| 2.5                                 | 3670                  | 2.0            | 555  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 33400 | 37900               | 76000 | 88500  | 25100  | 307   |     |
| 2.6                                 | 2840                  | 1.0            | 544  | -        | 3/V 03 L3 | -         | BN 90S 4         | -     | 26700               | 30800 | 46200  | 55600  | 17100 | 270 |
| 2.6                                 | 3100                  | 1.3            | 529  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 26400               | 30500 | 45800  | 55100  | 17000 | 294 |
| 2.7                                 | 3120                  | 2.4            | 527  | -        | 3/V 06 L3 | -         | BN 90S 4         | -     | 32900               | 37200 | 74900  | 87200  | 24700 | 306 |
| 2.8                                 | 3350                  | 2.1            | 505  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 32400 | 36700               | 73900 | 86100  | 24400  | 307   |     |
| 2.8                                 | 2550                  | 1.2            | 501  | -        | 3/V 04 L3 | -         | BN 90S 4         | -     | 26000               | 30000 | 45100  | 54200  | 16700 | 282 |
| 2.9                                 | 3360                  | 1.2            | 491  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 25800 | 29800               | 44800 | 53900  | 16500  | 295   |     |
| 3.0                                 | 2770                  | 1.7            | 462  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 25300               | 29200 | 44000  | 52900  | 16200 | 294 |
| 3.0                                 | 2400                  | 1.0            | 460  | -        | 3/V 03 L3 | -         | BN 90S 4         | -     | 25200               | 29100 | 43900  | 52900  | 16200 | 270 |
| 3.1                                 | 2560                  | 1.5            | 453  | -        | 3/V 04 L3 | -         | BN 90S 4         | -     | 25100               | 29000 | 43700  | 52600  | 16100 | 282 |
| 3.2                                 | 2880                  | 2.7            | 435  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 30800 | 34900               | 70600 | 82300  | 23200  | 307   |     |
| 3.3                                 | 2890                  | 1.5            | 422  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 24500 | 28300               | 42800 | 51500  | 15700  | 295   |     |
| 3.5                                 | 2720                  | 1.2            | 398  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 24000 | 27800               | 42100 | 50600  | 15400  | 295   |     |
| 3.5                                 | 2380                  | 1.6            | 396  | -        | 3/V 05 L3 | -         | BN 90S 4         | -     | 24000               | 27700 | 42000  | 50500  | 15400 | 294 |
| 3.5                                 | 2260                  | 1.0            | 395  | -        | 3/V 03 L3 | -         | BN 90S 4         | -     | 24000               | 27700 | 42000  | 50500  | 15400 | 270 |
| 3.6                                 | 2570                  | 2.2            | 388  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 29700 | 33600               | 68300 | 79500  | 22300  | 307   |     |
| 3.6                                 | 2640                  | 0.9            | 386  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 23800 | 27500               | 41700 | 50200  | 15300  | 283   |     |
| 3.6                                 | 2170                  | 1.6            | 384  | -        | 3/V 04 L3 | -         | BN 90S 4         | -     | 23700               | 27400 | 41600  | 50100  | 15200 | 282 |
| 3.7                                 | 2520                  | 2.5            | 380  | -        | -         | 3/A 06 L2 | BN 90S 4 M 2SB 4 | 29500 | 33400               | 67900 | 79000  | 22200  | 307   |     |
| 4.0                                 | 2390                  | 1.0            | 349  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 23000 | 26600               | 40400 | 48600  | 14800  | 283   |     |
| 4.3                                 | 2250                  | 1.6            | 329  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 22600 | 26100               | 39700 | 47800  | 14500  | 295   |     |
| 4.4                                 | 2170                  | 1.1            | 317  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 22300 | 25700               | 39300 | 47300  | 14300  | 283   |     |
| 4.9                                 | 1940                  | 1.5            | 283  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 21500 | 24800               | 38000 | 45700  | 13800  | 283   |     |
| 5.0                                 | 1910                  | 1.9            | 280  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 21400 | 24700               | 37800 | 45500  | 13700  | 295   |     |
| 5.2                                 | 1840                  | 1.0            | 269  | -        | -         | 3/A 03 L2 | BN 90S 4 M 2SB 4 | 21100 | 24400               | 37400 | 45000  | 13500  | 271   |     |
| 5.2                                 | 1840                  | 1.0            | 269  | -        | -         | 3/A 03 L2 | BN 90S 4 M 2SB 4 | 21100 | 24400               | 37400 | 45000  | 13500  | 271   |     |
| 5.6                                 | 1710                  | 2.0            | 250  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 20600 | 23800               | 36600 | 44000  | 13200  | 283   |     |
| 5.8                                 | 1640                  | 2.6            | 241  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 20300 | 23500               | 36200 | 43500  | 13000  | 295   |     |
| 6.2                                 | 1540                  | 2.3            | 226  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 19900 | 23000               | 35500 | 42700  | 12800  | 283   |     |
| 6.4                                 | 1500                  | 1.1            | 220  | -        | -         | 3/A 03 L2 | BN 90S 4 M 2SB 4 | 19700 | 22800               | 35200 | 42300  | 12700  | 271   |     |
| 6.6                                 | 1450                  | 2.1            | 212  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 19500 | 22500               | 34800 | 41900  | 12500  | 295   |     |
| 6.6                                 | 1450                  | 2.1            | 212  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 19500 | 22500               | 34800 | 41900  | 12500  | 295   |     |
| 6.8                                 | 1400                  | 2.5            | 205  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 19300 | 22300               | 34500 | 41500  | 12400  | 283   |     |
| 6.9                                 | 1400                  | 0.9            | 204  | -        | -         | 3/A 01 L2 | BN 90S 4 M 2SB 4 | 6260  | 6260                | 16900 | 19400  | 4120   | 261   |     |
| 7.7                                 | 1240                  | 1.5            | 182  | -        | -         | 3/A 03 L2 | BN 90S 4 M 2SB 4 | 18500 | 21400               | 33200 | 40000  | 11900  | 271   |     |
| 8.1                                 | 1190                  | 2.5            | 174  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 18200 | 21100               | 32800 | 39500  | 11700  | 283   |     |
| 8.4                                 | 1140                  | 1.0            | 166  | -        | -         | 3/A 01 L2 | BN 90S 4 M 2SB 4 | 5850  | 5850                | 15900 | 18200  | 3840   | 261   |     |
| 8.6                                 | 1110                  | 2.6            | 162  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 17800 | 20600               | 32100 | 38700  | 11400  | 283   |     |
| 8.6                                 | 1110                  | 2.6            | 162  | -        | -         | 3/A 05 L2 | BN 90S 4 M 2SB 4 | 17800 | 20600               | 32100 | 38700  | 11400  | 295   |     |
| 9.4                                 | 1020                  | 2.3            | 149  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 17300 | 20000               | 31300 | 37700  | 11100  | 283   |     |
| 10.5                                | 910                   | 1.4            | 133  | -        | -         | 3/A 01 L2 | BN 90S 4 M 2SB 4 | 5430  | 5430                | 14800 | 17100  | 3570   | 261   |     |
| 12.0                                | 800                   | 3.0            | 117  | -        | -         | 3/A 04 L2 | BN 90S 4 M 2SB 4 | 16000 | 18500               | 29100 | 35000  | 10300  | 283   |     |
| 13.8                                | 690                   | 1.7            | 102  | -        | -         | 3/A 01 L2 | BN 90S 4 M 2SB 4 | 4960  | 4960                | 13700 | 15700  | 3260   | 261   |     |
| 14.4                                | 660                   | 2.6            | 96.9 | -        | -         | 3/A 03 L2 | BN 90S 4 M 2SB 4 | 15000 | 17300               | 27500 | 33100  | 9630   | 271   |     |

A





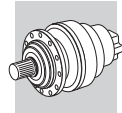
$P_1 = 1.1 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |   |           |          |         | R <sub>n2</sub> [N] |       |       |       |       |      |     |
|----------------------------|----------------|-------|------|----------|---|-----------|----------|---------|---------------------|-------|-------|-------|-------|------|-----|
|                            |                |       |      |          |   |           |          |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |      |     |
| 15.8                       | 610            | 0.9   | 88.6 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 4740  | 4740  | 13100 | 15100 | 3120 | 251 |
| 15.8                       | 610            | 2.7   | 88.5 | -        | - | 3/A 03 L2 | BN 90S 4 | M 2SB 4 | -                   | 14600 | 16800 | 26800 | 32200 | 9340 | 271 |
| 17.2                       | 560            | 2.3   | 81.3 | -        | - | 3/A 01 L2 | BN 90S 4 | M 2SB 4 | -                   | 4610  | 4610  | 12800 | 14700 | 3030 | 261 |
| 17.5                       | 550            | 1.2   | 80.2 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 4580  | 4580  | 12700 | 14600 | 3010 | 251 |
| 18.9                       | 510            | 2.3   | 74.2 | -        | - | 3/A 01 L2 | BN 90S 4 | M 2SB 4 | -                   | 4470  | 4470  | 12400 | 14300 | 2940 | 261 |
| 19.7                       | 485            | 1.3   | 71.0 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 4400  | 4400  | 12300 | 14100 | 2890 | 251 |
| 22.9                       | 420            | 1.6   | 61.2 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 4190  | 4190  | 11700 | 13500 | 2750 | 251 |
| 27.0                       | 355            | 1.6   | 51.8 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 3960  | 3960  | 11200 | 12800 | 2610 | 251 |
| 28.5                       | 335            | 2.5   | 49.1 | -        | - | 3/A 01 L2 | BN 90S 4 | M 2SB 4 | -                   | 3890  | 3890  | 11000 | 12600 | 2560 | 261 |
| 34                         | 285            | 2.3   | 41.5 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 3680  | 3680  | 10500 | 12000 | 2420 | 251 |
| 35                         | 270            | 2.0   | 39.6 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 3620  | 3620  | 10300 | 11800 | 2380 | 251 |
| 44                         | 215            | 3.0   | 31.7 | -        | - | 3/A 00 L2 | BN 90S 4 | M 2SB 4 | -                   | 3370  | 3370  | 9650  | 11100 | 2210 | 251 |

$P_1 = 1.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |   |           |   | R <sub>n2</sub> [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|----------|-----------|---|-----------|---|---------------------|-------|--------|--------|-------|-----|
|                            |                |       |      |          |           |   |           |   | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.27                       | 34900          | 1.0   | 5081 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.27                       | 34900          | 1.0   | 5081 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.28                       | 35100          | 1.5   | 5046 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.28                       | 35900          | 1.3   | 5021 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.30                       | 31800          | 1.0   | 4637 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.30                       | 31800          | 1.0   | 4637 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.31                       | 32800          | 1.8   | 4536 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.32                       | 31900          | 1.4   | 4410 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.34                       | 28600          | 1.7   | 4106 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.34                       | 29300          | 1.9   | 4046 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.34                       | 31900          | 1.0   | 4036 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.34                       | 31900          | 1.0   | 4036 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 25500          | 1.2   | 3570 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 25500          | 1.2   | 3570 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                       | 24700          | 1.7   | 3557 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.40                       | 27800          | 2.1   | 3515 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.42                       | 25800          | 1.3   | 3273 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.42                       | 25800          | 1.3   | 3273 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.43                       | 25800          | 2.2   | 3263 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.43                       | 25400          | 1.8   | 3222 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.48                       | 22500          | 2.1   | 2887 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.49                       | 22400          | 1.4   | 2835 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.49                       | 22400          | 1.4   | 2835 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.50                       | 20100          | 2.8   | 2773 | -        | 3/V 13 L4 | - | BN 90LA 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.55                       | 19800          | 2.4   | 2510 | -        | 3/V 11 L4 | - | BN 90LA 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.57                       | 19600          | 1.7   | 2455 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.57                       | 19600          | 1.7   | 2455 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                       | 17400          | 1.9   | 2209 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                       | 17400          | 1.9   | 2209 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.69                       | 15900          | 1.8   | 2016 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.69                       | 15900          | 1.8   | 2016 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.71                       | 13300          | 0.9   | 1964 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.76                       | 14400          | 1.9   | 1826 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.76                       | 14400          | 1.9   | 1826 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.84                       | 13200          | 2.5   | 1657 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.84                       | 13200          | 2.5   | 1657 | -        | 3/V 10 L4 | - | BN 90LA 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.90                       | 11400          | 1.0   | 1545 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |
| 0.98                       | 10100          | 1.2   | 1411 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 50700               | 63600 | 108200 | 141800 | 44100 | 318 |
| 1.1                        | 9240           | 1.6   | 1288 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 49200               | 61700 | 105300 | 138000 | 42800 | 318 |
| 1.1                        | 8580           | 0.9   | 1212 | -        | 3/V 06 L3 | - | BN 90LA 4 | - | 43400               | 49200 | 96100  | 111900 | 32600 | 306 |
| 1.2                        | 8650           | 1.2   | 1159 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 47500               | 59600 | 102000 | 133700 | 41300 | 318 |
| 1.2                        | 8490           | 1.0   | 1153 | -        | 3/V 06 L3 | - | BN 90LA 4 | - | 42700               | 48400 | 94700  | 110200 | 32100 | 306 |
| 1.4                        | 7470           | 1.9   | 1015 | -        | 3/V 07 L3 | - | BN 90LA 4 | - | 45400               | 57000 | 98000  | 128400 | 39500 | 318 |
| 1.4                        | 7310           | 1.3   | 992  | -        | 3/V 06 L3 | - | BN 90LA 4 | - | 40600               | 46000 | 90500  | 105400 | 30500 | 306 |
| 1.5                        | 7570           | 1.0   | 930  | -        | 3/V 06 L3 | - | BN 90LA 4 | - | 39700               | 45000 | 88800  | 103400 | 29800 | 306 |

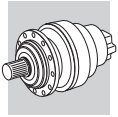




$P_1 = 1.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |           |         | Rn <sub>2</sub> [N] |       |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|-----------|---------|---------------------|-------|-------|-------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |           |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ     |       |     |
| 1.5                                 | 6870                  | 1.8            | 920  | -        | 3/V 07 L3 | -         | BN 90LA 4 | -       | -                   | 44000 | 55200 | 95200 | 124700 | 38200 | 318 |
| 1.8                                 | 5820                  | 1.3            | 791  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 37600 | 42600 | 84500 | 98400  | 28300 | 306 |
| 1.8                                 | 6290                  | 1.6            | 773  | -        | 3/V 07 L3 | -         | BN 90LA 4 | -       | -                   | 41500 | 52100 | 90300 | 118400 | 36100 | 318 |
| 1.8                                 | 5680                  | 2.5            | 761  | -        | 3/V 07 L3 | -         | BN 90LA 4 | -       | -                   | 41300 | 51800 | 89900 | 117800 | 35900 | 318 |
| 2.0                                 | 5750                  | 1.3            | 698  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 36100 | 40900 | 81400 | 94800  | 27100 | 306 |
| 2.1                                 | 6100                  | 1.0            | 671  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 35600 | 40400 | 80500 | 93700  | 26800 | 307 |
| 2.1                                 | 5380                  | 1.7            | 661  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 35500 | 40200 | 80100 | 93300  | 26600 | 306 |
| 2.1                                 | 4880                  | 2.9            | 655  | -        | 3/V 07 L3 | -         | BN 90LA 4 | -       | -                   | 39300 | 49300 | 85900 | 112600 | 34100 | 318 |
| 2.2                                 | 4650                  | 1.0            | 623  | -        | 3/V 05 L3 | -         | BN 90LA 4 | -       | -                   | 27900 | 32200 | 48100 | 57900  | 17900 | 294 |
| 2.3                                 | 5560                  | 1.1            | 611  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 34500 | 39100 | 78300 | 91100  | 25900 | 307 |
| 2.4                                 | 4740                  | 1.0            | 576  | -        | 3/V 05 L3 | -         | BN 90LA 4 | -       | -                   | 27200 | 31400 | 47000 | 56500  | 17400 | 294 |
| 2.4                                 | 4630                  | 1.8            | 569  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 33700 | 38200 | 76600 | 89200  | 25300 | 306 |
| 2.5                                 | 5050                  | 1.4            | 555  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 33400 | 37900 | 76000 | 88500  | 25100 | 307 |
| 2.6                                 | 4250                  | 0.9            | 529  | -        | 3/V 05 L3 | -         | BN 90LA 4 | -       | -                   | 26400 | 30500 | 45800 | 55100  | 17000 | 294 |
| 2.6                                 | 4290                  | 1.8            | 527  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 32900 | 37200 | 74900 | 87200  | 24700 | 306 |
| 2.8                                 | 4590                  | 1.6            | 505  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 32400 | 36700 | 73900 | 86100  | 24400 | 307 |
| 3.0                                 | 3800                  | 1.3            | 462  | -        | 3/V 05 L3 | -         | BN 90LA 4 | -       | -                   | 25300 | 29200 | 44000 | 52900  | 16200 | 294 |
| 3.1                                 | 3510                  | 1.1            | 453  | -        | 3/V 04 L3 | -         | BN 90LA 4 | -       | -                   | 25100 | 29000 | 43700 | 52600  | 16100 | 282 |
| 3.2                                 | 3990                  | 2.3            | 439  | -        | -         | 3/A 07 L2 | BN 90LA 4 | M 3SA 4 | -                   | 34400 | 43100 | 76200 | 99900  | 29900 | 319 |
| 3.2                                 | 3950                  | 2.0            | 435  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 30800 | 34900 | 70600 | 82300  | 23200 | 307 |
| 3.3                                 | 3510                  | 2.5            | 427  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 30600 | 34700 | 70300 | 81800  | 23000 | 306 |
| 3.3                                 | 3970                  | 1.1            | 422  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 24500 | 28300 | 42800 | 51500  | 15700 | 295 |
| 3.4                                 | 3680                  | 2.5            | 405  | -        | -         | 3/A 07 L2 | BN 90LA 4 | M 3SA 4 | -                   | 33500 | 42000 | 74400 | 97500  | 29100 | 319 |
| 3.5                                 | 3270                  | 1.2            | 396  | -        | 3/V 05 L3 | -         | BN 90LA 4 | -       | -                   | 24000 | 27700 | 42000 | 50500  | 15400 | 294 |
| 3.5                                 | 3260                  | 2.3            | 395  | -        | 3/V 06 L3 | -         | BN 90LA 4 | -       | -                   | 29900 | 33800 | 68700 | 80000  | 22400 | 306 |
| 3.6                                 | 3530                  | 1.6            | 388  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 29700 | 33600 | 68300 | 79500  | 22300 | 307 |
| 3.6                                 | 3260                  | 2.8            | 386  | -        | 3/V 07 L3 | -         | BN 90LA 4 | -       | -                   | 32900 | 41300 | 73400 | 96100  | 28600 | 318 |
| 3.6                                 | 2970                  | 1.2            | 384  | -        | 3/V 04 L3 | -         | BN 90LA 4 | -       | -                   | 23700 | 27400 | 41600 | 50100  | 15200 | 282 |
| 3.7                                 | 3460                  | 1.8            | 380  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 29500 | 33400 | 67900 | 79000  | 22200 | 307 |
| 4.2                                 | 3090                  | 1.2            | 329  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 22600 | 26100 | 39700 | 47800  | 14500 | 295 |
| 4.3                                 | 2910                  | 2.3            | 321  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 27900 | 31600 | 64500 | 75100  | 20900 | 307 |
| 4.9                                 | 2660                  | 1.1            | 283  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 21500 | 24800 | 38000 | 45700  | 13800 | 283 |
| 5.0                                 | 2630                  | 1.4            | 280  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 21400 | 24700 | 37800 | 45500  | 13700 | 295 |
| 5.2                                 | 2430                  | 2.3            | 267  | -        | -         | 3/A 06 L2 | BN 90LA 4 | M 3SA 4 | -                   | 26200 | 29700 | 61000 | 71100  | 19700 | 307 |
| 5.6                                 | 2350                  | 1.5            | 250  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 20600 | 23800 | 36600 | 44000  | 13200 | 283 |
| 5.8                                 | 2260                  | 1.9            | 241  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 20300 | 23500 | 36200 | 43500  | 13000 | 295 |
| 6.2                                 | 2120                  | 1.7            | 226  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 19900 | 23000 | 35500 | 42700  | 12800 | 283 |
| 6.5                                 | 1990                  | 1.6            | 212  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 19500 | 22500 | 34800 | 41900  | 12500 | 295 |
| 6.5                                 | 1990                  | 1.6            | 212  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 19500 | 22500 | 34800 | 41900  | 12500 | 295 |
| 6.8                                 | 1930                  | 1.8            | 205  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 19300 | 22300 | 34500 | 41500  | 12400 | 283 |
| 7.7                                 | 1710                  | 1.1            | 182  | -        | -         | 3/A 03 L2 | BN 90LA 4 | M 3SA 4 | -                   | 18500 | 21400 | 33200 | 40000  | 11900 | 271 |
| 7.9                                 | 1650                  | 2.2            | 175  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 18300 | 21100 | 32900 | 39600  | 11700 | 295 |
| 8.0                                 | 1630                  | 1.8            | 174  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 18200 | 21100 | 32800 | 39500  | 11700 | 283 |
| 8.6                                 | 1520                  | 1.9            | 162  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 17800 | 20600 | 32100 | 38700  | 11400 | 283 |
| 8.6                                 | 1520                  | 1.9            | 162  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 17800 | 20600 | 32100 | 38700  | 11400 | 295 |
| 9.3                                 | 1400                  | 1.7            | 149  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 17300 | 20000 | 31300 | 37700  | 11100 | 283 |
| 9.9                                 | 1320                  | 2.7            | 141  | -        | -         | 3/A 05 L2 | BN 90LA 4 | M 3SA 4 | -                   | 17000 | 19600 | 30800 | 37000  | 10900 | 295 |
| 10.4                                | 1250                  | 1.0            | 133  | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 5430  | 5430  | 14800 | 17100  | 3570  | 261 |
| 10.8                                | 1210                  | 2.2            | 129  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 16500 | 19100 | 30000 | 36100  | 10600 | 283 |
| 11.9                                | 1100                  | 2.2            | 117  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 16000 | 18500 | 29100 | 35000  | 10300 | 283 |
| 13.6                                | 960                   | 2.7            | 102  | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 15300 | 17600 | 27900 | 33600  | 9790  | 283 |
| 13.7                                | 950                   | 1.2            | 102  | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4960  | 4960  | 13700 | 15700  | 3260  | 261 |
| 14.3                                | 910                   | 1.9            | 96.9 | -        | -         | 3/A 03 L2 | BN 90LA 4 | M 3SA 4 | -                   | 15000 | 17300 | 27500 | 33100  | 9630  | 271 |
| 15.3                                | 850                   | 2.8            | 90.7 | -        | -         | 3/A 04 L2 | BN 90LA 4 | M 3SA 4 | -                   | 14700 | 17000 | 27000 | 32500  | 9420  | 283 |
| 15.7                                | 830                   | 2.0            | 88.5 | -        | -         | 3/A 03 L2 | BN 90LA 4 | M 3SA 4 | -                   | 14600 | 16800 | 26800 | 32200  | 9340  | 271 |
| 17.1                                | 760                   | 1.7            | 81.3 | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4610  | 4610  | 12800 | 14700  | 3030  | 261 |
| 18.7                                | 700                   | 1.7            | 74.2 | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4470  | 4470  | 12400 | 14300  | 2940  | 261 |
| 19.0                                | 690                   | 2.6            | 73.2 | -        | -         | 3/A 03 L2 | BN 90LA 4 | M 3SA 4 | -                   | 13700 | 15800 | 25300 | 30400  | 8770  | 271 |
| 19.6                                | 670                   | 1.0            | 71.0 | -        | -         | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4400  | 4400  | 12300 | 14100  | 2890  | 251 |
| 22.1                                | 590                   | 2.6            | 62.9 | -        | -         | 3/A 03 L2 | BN 90LA 4 | M 3SA 4 | -                   | 13000 | 15000 | 24200 | 29100  | 8340  | 271 |
| 22.7                                | 570                   | 1.1            | 61.2 | -        | -         | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4190  | 4190  | 11700 | 13500  | 2750  | 251 |
| 23.4                                | 560                   | 2.3            | 59.4 | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4150  | 4150  | 11600 | 13400  | 2730  | 261 |
| 25.6                                | 510                   | 2.3            | 54.2 | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 4020  | 4020  | 11300 | 13000  | 2650  | 261 |
| 26.8                                | 485                   | 1.1            | 51.8 | -        | -         | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | -                   | 3960  | 3960  | 11200 | 12800  | 2610  | 251 |
| 28.3                                | 460                   | 1.8            | 49.1 | -        | -         | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | -                   | 3890  | 3890  | 11000 | 12600  | 2560  | 261 |

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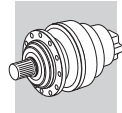


**P<sub>1</sub> = 1.5 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |   |           |           |         | Rn <sub>2</sub> [N] |       |       |       |      |     |
|-------------------------------------|-----------------------|----------------|------|----------|---|-----------|-----------|---------|---------------------|-------|-------|-------|------|-----|
|                                     |                       |                |      |          |   |           |           |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |     |
| 32                                  | 410                   | 2.3            | 43.9 | -        | - | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | 3750                | 3750  | 10600 | 12200 | 2470 | 261 |
| 33                                  | 390                   | 1.7            | 41.5 | -        | - | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | 3680                | 3680  | 10500 | 12000 | 2420 | 251 |
| 35                                  | 375                   | 2.3            | 40.1 | -        | - | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | 3640                | 3640  | 10300 | 11900 | 2390 | 261 |
| 35                                  | 370                   | 1.5            | 39.6 | -        | - | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | 3620                | 3620  | 10300 | 11800 | 2380 | 251 |
| 39                                  | 335                   | 2.3            | 35.8 | -        | - | 3/A 01 L2 | BN 90LA 4 | M 3SA 4 | 3500                | 3500  | 10000 | 11500 | 2300 | 261 |
| 44                                  | 300                   | 2.2            | 31.7 | -        | - | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | 3370                | 3370  | 9650  | 11100 | 2210 | 251 |
| 59                                  | 220                   | 2.6            | 23.4 | -        | - | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | 3040                | 3040  | 8810  | 10100 | 2000 | 251 |
| 73                                  | 180                   | 2.6            | 19.1 | -        | - | 3/A 00 L2 | BN 90LA 4 | M 3SA 4 | 2840                | 2840  | 8290  | 9530  | 1870 | 251 |

**P<sub>1</sub> = 1.85 kW**

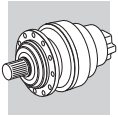
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |           |   | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|-----------|---|---------------------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |           |   | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 0.28                                | 43300                 | 1.2            | 5046 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.28                                | 44200                 | 1.1            | 5021 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.31                                | 40500                 | 1.4            | 4536 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.32                                | 39400                 | 1.1            | 4410 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.34                                | 35200                 | 1.4            | 4106 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.34                                | 36100                 | 1.5            | 4046 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.39                                | 31400                 | 1.0            | 3570 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                                | 31400                 | 1.0            | 3570 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.39                                | 30500                 | 1.4            | 3557 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.40                                | 34200                 | 1.7            | 3515 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.42                                | 31900                 | 1.1            | 3273 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.42                                | 31900                 | 1.1            | 3273 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.43                                | 31800                 | 1.7            | 3263 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.43                                | 31400                 | 1.5            | 3222 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.48                                | 27800                 | 1.7            | 2887 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.49                                | 27600                 | 1.1            | 2835 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.49                                | 27600                 | 1.1            | 2835 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.50                                | 24800                 | 2.2            | 2773 | -        | 3/V 13 L4 | -         | BN 90LB 4 | - | -                   | -     | 192000 | 231000 | 80000 | 366 |
| 0.55                                | 24400                 | 2.0            | 2510 | -        | 3/V 11 L4 | -         | BN 90LB 4 | - | -                   | -     | 157000 | 195000 | 65000 | 354 |
| 0.57                                | 24200                 | 1.4            | 2455 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.57                                | 24200                 | 1.4            | 2455 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                                | 21500                 | 1.5            | 2209 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.63                                | 21500                 | 1.5            | 2209 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.69                                | 19600                 | 1.5            | 2016 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.69                                | 19600                 | 1.5            | 2016 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.76                                | 17800                 | 1.5            | 1826 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.76                                | 17800                 | 1.5            | 1826 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.84                                | 16300                 | 2.0            | 1657 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.84                                | 16300                 | 2.0            | 1657 | -        | 3/V 10 L4 | -         | BN 90LB 4 | - | -                   | -     | 133000 | 166000 | 65000 | 342 |
| 0.98                                | 12500                 | 1.0            | 1411 | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 50700               | 63600 | 108200 | 141800 | 44100 | 318 |
| 1.1                                 | 11400                 | 1.3            | 1288 | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 49200               | 61700 | 105300 | 138000 | 42800 | 318 |
| 1.2                                 | 10700                 | 1.0            | 1159 | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 47500               | 59600 | 102000 | 133700 | 41300 | 318 |
| 1.4                                 | 9210                  | 1.6            | 1015 | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 45400               | 57000 | 98000  | 128400 | 39500 | 318 |
| 1.4                                 | 9010                  | 1.0            | 992  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 40600               | 46000 | 90500  | 105400 | 30500 | 306 |
| 1.5                                 | 8470                  | 1.5            | 920  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 44000               | 55200 | 95200  | 124700 | 38200 | 318 |
| 1.8                                 | 7180                  | 1.1            | 791  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 37600               | 42600 | 84500  | 98400  | 28300 | 306 |
| 1.8                                 | 7760                  | 1.3            | 773  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 41500               | 52100 | 90300  | 118400 | 36100 | 318 |
| 1.8                                 | 7000                  | 2.0            | 761  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 41300               | 51800 | 89900  | 117800 | 35900 | 318 |
| 2.0                                 | 7080                  | 1.1            | 698  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 36100               | 40900 | 81400  | 94800  | 27100 | 306 |
| 2.1                                 | 6640                  | 1.4            | 661  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 35500               | 40200 | 80100  | 93300  | 26600 | 306 |
| 2.1                                 | 6020                  | 2.4            | 655  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 39300               | 49300 | 85900  | 112600 | 34100 | 318 |
| 2.4                                 | 5710                  | 1.5            | 569  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 33700               | 38200 | 76600  | 89200  | 25300 | 306 |
| 2.5                                 | 6220                  | 1.2            | 555  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | 33400               | 37900 | 76000  | 88500  | 25100 | 307 |
| 2.6                                 | 5290                  | 1.4            | 527  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | 32900               | 37200 | 74900  | 87200  | 24700 | 306 |
| 2.7                                 | 5090                  | 2.7            | 507  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 36100               | 45300 | 79600  | 104300 | 31400 | 318 |
| 2.8                                 | 5660                  | 1.3            | 505  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | 32400               | 36700 | 73900  | 86100  | 24400 | 307 |
| 3.0                                 | 4690                  | 1.0            | 462  | -        | 3/V 05 L3 | -         | BN 90LB 4 | - | 25300               | 29200 | 44000  | 52900  | 16200 | 294 |
| 3.0                                 | 4620                  | 2.7            | 460  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | 34900               | 43800 | 77300  | 101300 | 30400 | 318 |
| 3.2                                 | 4920                  | 1.9            | 439  | -        | -         | 3/A 07 L2 | BN 90LB 4 | - | 34400               | 43100 | 76200  | 99900  | 29900 | 319 |



$P_1 = 1.85 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |           |   | Rn <sub>2</sub> [N] |       |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|-----------|---|---------------------|-------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |          |           |           |           |   | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 3.2                                 | 4870                  | 1.6            | 435  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 30800 | 34900 | 70600 | 82300 | 23200 | 307 |
| 3.3                                 | 4330                  | 2.0            | 427  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | -                   | 30600 | 34700 | 70300 | 81800 | 23000 | 306 |
| 3.4                                 | 4540                  | 2.0            | 405  | -        | -         | 3/A 07 L2 | BN 90LB 4 | - | -                   | 33500 | 42000 | 74400 | 97500 | 29100 | 319 |
| 3.5                                 | 4030                  | 0.9            | 396  | -        | 3/V 05 L3 | -         | BN 90LB 4 | - | -                   | 24000 | 27700 | 42000 | 50500 | 15400 | 294 |
| 3.5                                 | 4010                  | 1.9            | 395  | -        | 3/V 06 L3 | -         | BN 90LB 4 | - | -                   | 29900 | 33800 | 68700 | 80000 | 22400 | 306 |
| 3.6                                 | 4350                  | 1.3            | 388  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 29700 | 33600 | 68300 | 79500 | 22300 | 307 |
| 3.6                                 | 4020                  | 2.2            | 386  | -        | 3/V 07 L3 | -         | BN 90LB 4 | - | -                   | 32900 | 41300 | 73400 | 96100 | 28600 | 318 |
| 3.6                                 | 3670                  | 1.0            | 384  | -        | 3/V 04 L3 | -         | BN 90LB 4 | - | -                   | 23700 | 27400 | 41600 | 50100 | 15200 | 282 |
| 3.7                                 | 4260                  | 1.4            | 380  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 29500 | 33400 | 67900 | 79000 | 22200 | 307 |
| 4.2                                 | 3810                  | 1.0            | 329  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 22600 | 26100 | 39700 | 47800 | 14500 | 295 |
| 4.3                                 | 3590                  | 1.8            | 321  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 27900 | 31600 | 64500 | 75100 | 20900 | 307 |
| 4.9                                 | 3160                  | 2.8            | 282  | -        | -         | 3/A 07 L2 | BN 90LB 4 | - | -                   | 29600 | 37200 | 66700 | 87400 | 25800 | 319 |
| 5.0                                 | 3240                  | 1.1            | 280  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 21400 | 24700 | 37800 | 45500 | 13700 | 295 |
| 5.0                                 | 3090                  | 2.5            | 276  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 26500 | 30000 | 61600 | 71800 | 19900 | 307 |
| 5.2                                 | 2990                  | 1.8            | 267  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 26200 | 29700 | 61000 | 71100 | 19700 | 307 |
| 5.6                                 | 2890                  | 1.2            | 250  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 20600 | 23800 | 36600 | 44000 | 13200 | 283 |
| 5.8                                 | 2790                  | 1.5            | 241  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 20300 | 23500 | 36200 | 43500 | 13000 | 295 |
| 6.2                                 | 2610                  | 1.3            | 226  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 19900 | 23000 | 35500 | 42700 | 12800 | 283 |
| 6.3                                 | 2470                  | 2.6            | 221  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 24600 | 27900 | 57700 | 67100 | 18500 | 307 |
| 6.5                                 | 2460                  | 1.3            | 212  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 19500 | 22500 | 34800 | 41900 | 12500 | 295 |
| 6.5                                 | 2460                  | 1.3            | 212  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 19500 | 22500 | 34800 | 41900 | 12500 | 295 |
| 6.8                                 | 2380                  | 1.5            | 205  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 19300 | 22300 | 34500 | 41500 | 12400 | 283 |
| 7.0                                 | 2220                  | 2.5            | 198  | -        | -         | 3/A 06 L2 | BN 90LB 4 | - | -                   | 23700 | 26900 | 55800 | 65000 | 17800 | 307 |
| 7.9                                 | 2030                  | 1.8            | 175  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 18300 | 21100 | 32900 | 39600 | 11700 | 295 |
| 8.0                                 | 2010                  | 1.5            | 174  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 18200 | 21100 | 32800 | 39500 | 11700 | 283 |
| 8.6                                 | 1880                  | 1.5            | 162  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 17800 | 20600 | 32100 | 38700 | 11400 | 283 |
| 8.6                                 | 1880                  | 1.5            | 162  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 17800 | 20600 | 32100 | 38700 | 11400 | 295 |
| 9.3                                 | 1730                  | 1.4            | 149  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 17300 | 20000 | 31300 | 37700 | 11100 | 283 |
| 9.9                                 | 1630                  | 2.2            | 141  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 17000 | 19600 | 30800 | 37000 | 10900 | 295 |
| 10.8                                | 1500                  | 1.8            | 129  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 16500 | 19100 | 30000 | 36100 | 10600 | 283 |
| 11.5                                | 1400                  | 2.5            | 121  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 16200 | 18700 | 29400 | 35400 | 10400 | 295 |
| 11.9                                | 1350                  | 1.8            | 117  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 16000 | 18500 | 29100 | 35000 | 10300 | 283 |
| 13.4                                | 1200                  | 2.6            | 104  | -        | -         | 3/A 05 L2 | BN 90LB 4 | - | -                   | 15300 | 17700 | 28100 | 33800 | 9840  | 295 |
| 13.6                                | 1180                  | 2.2            | 102  | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 15300 | 17600 | 27900 | 33600 | 9790  | 283 |
| 13.7                                | 1180                  | 1.0            | 102  | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 4960  | 4960  | 13700 | 15700 | 3260  | 261 |
| 14.3                                | 1120                  | 1.5            | 96.9 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 15000 | 17300 | 27500 | 33100 | 9630  | 271 |
| 15.3                                | 1050                  | 2.3            | 90.7 | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 14700 | 17000 | 27000 | 32500 | 9420  | 283 |
| 15.7                                | 1020                  | 1.6            | 88.5 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 14600 | 16800 | 26800 | 32200 | 9340  | 271 |
| 17.0                                | 950                   | 2.5            | 81.7 | -        | -         | 3/A 04 L2 | BN 90LB 4 | - | -                   | 14200 | 16400 | 26200 | 31500 | 9100  | 283 |
| 17.1                                | 940                   | 1.4            | 81.3 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 4610  | 4610  | 12800 | 14700 | 3030  | 261 |
| 18.7                                | 860                   | 1.3            | 74.2 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 4470  | 4470  | 12400 | 14300 | 2940  | 261 |
| 19.0                                | 850                   | 2.1            | 73.2 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 13700 | 15800 | 25300 | 30400 | 8770  | 271 |
| 22.1                                | 730                   | 2.1            | 62.9 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 13000 | 15000 | 24200 | 29100 | 8340  | 271 |
| 22.7                                | 710                   | 0.9            | 61.2 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 4190  | 4190  | 11700 | 13500 | 2750  | 251 |
| 23.4                                | 690                   | 1.8            | 59.4 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 4150  | 4150  | 11600 | 13400 | 2730  | 261 |
| 25.6                                | 630                   | 1.9            | 54.2 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 4020  | 4020  | 11300 | 13000 | 2650  | 261 |
| 26.5                                | 610                   | 2.7            | 52.5 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 12200 | 14100 | 22900 | 27600 | 7850  | 271 |
| 26.5                                | 610                   | 2.7            | 52.5 | -        | -         | 3/A 03 L2 | BN 90LB 4 | - | -                   | 12200 | 14100 | 22900 | 27600 | 7850  | 271 |
| 26.8                                | 600                   | 0.9            | 51.8 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 3960  | 3960  | 11200 | 12800 | 2610  | 251 |
| 28.3                                | 570                   | 1.5            | 49.1 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 3890  | 3890  | 11000 | 12600 | 2560  | 261 |
| 32                                  | 510                   | 1.8            | 43.9 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 3750  | 3750  | 10600 | 12200 | 2470  | 261 |
| 33                                  | 480                   | 1.4            | 41.5 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 3680  | 3680  | 10500 | 12000 | 2420  | 251 |
| 35                                  | 465                   | 1.9            | 40.1 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 3640  | 3640  | 10300 | 11900 | 2390  | 261 |
| 35                                  | 460                   | 1.2            | 39.6 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 3620  | 3620  | 10300 | 11800 | 2380  | 251 |
| 39                                  | 415                   | 1.8            | 35.8 | -        | -         | 3/A 01 L2 | BN 90LB 4 | - | -                   | 3500  | 3500  | 10000 | 11500 | 2300  | 261 |
| 44                                  | 365                   | 1.8            | 31.7 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 3370  | 3370  | 9650  | 11100 | 2210  | 251 |
| 59                                  | 270                   | 2.1            | 23.4 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 3040  | 3040  | 8810  | 10100 | 2000  | 251 |
| 73                                  | 220                   | 2.1            | 19.1 | -        | -         | 3/A 00 L2 | BN 90LB 4 | - | -                   | 2840  | 2840  | 8290  | 9530  | 1870  | 251 |

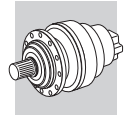
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$P_1 = 2.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |            |   | Rn <sub>2</sub> [N] |        |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|------------|---|---------------------|--------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |   |            |   | MC/PC               | MZ/PZ  | HC     | HZ     | FZ    |     |
| 0.27                                | 56900                 | 1.7            | 5234 | -        | 3/V 15 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.28                                | 50800                 | 1.0            | 5046 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.28                                | 51900                 | 0.9            | 5021 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.28                                | 51900                 | 1.6            | 4959 | -        | 3/V 14 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.28                                | 53800                 | 1.9            | 4950 | -        | 3/V 15 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.28                                | 53800                 | 2.3            | 4950 | -        | 3/V 16 L4 | - | BN 100LA 4 | - | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.31                                | 47500                 | 1.2            | 4536 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.32                                | 46200                 | 1.0            | 4410 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.33                                | 45100                 | 1.8            | 4312 | -        | 3/V 14 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.34                                | 45400                 | 2.3            | 4171 | -        | 3/V 15 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.34                                | 41300                 | 1.2            | 4106 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.35                                | 42400                 | 1.3            | 4046 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.35                                | 45100                 | 1.7            | 3993 | -        | 3/V 14 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.40                                | 35800                 | 1.2            | 3557 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.40                                | 40200                 | 1.4            | 3515 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.43                                | 37400                 | 0.9            | 3273 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.43                                | 37400                 | 0.9            | 3273 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.43                                | 37300                 | 1.5            | 3263 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.44                                | 36800                 | 1.3            | 3222 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.44                                | 35900                 | 2.2            | 3182 | -        | 3/V 14 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.49                                | 32600                 | 1.5            | 2887 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.50                                | 32400                 | 0.9            | 2835 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.50                                | 32400                 | 0.9            | 2835 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.51                                | 30300                 | 2.7            | 2782 | -        | 3/V 14 L4 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.51                                | 29000                 | 1.9            | 2773 | -        | 3/V 13 L4 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.56                                | 28700                 | 1.7            | 2510 | -        | 3/V 11 L4 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.57                                | 28400                 | 1.2            | 2455 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.57                                | 28400                 | 1.2            | 2455 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.58                                | 25200                 | 1.9            | 2430 | -        | 3/V 13 L3 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.61                                | 24200                 | 1.4            | 2329 | -        | 3/V 11 L3 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.61                                | 24000                 | 2.8            | 2318 | -        | 3/V 14 L3 | - | BN 100LA 4 | - | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.64                                | 25200                 | 1.3            | 2209 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.64                                | 25200                 | 1.3            | 2209 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.70                                | 20900                 | 2.8            | 2019 | -        | 3/V 13 L3 | - | BN 100LA 4 | - | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.70                                | 23000                 | 1.3            | 2016 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.70                                | 23000                 | 1.3            | 2016 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.72                                | 20400                 | 2.1            | 1963 | -        | 3/V 11 L3 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.77                                | 20900                 | 1.3            | 1826 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.77                                | 20900                 | 1.3            | 1826 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.79                                | 18100                 | 1.2            | 1792 | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | 110000 | 145000 | 36000  | 354   |     |
| 0.85                                | 19200                 | 1.7            | 1657 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.85                                | 19200                 | 1.7            | 1657 | -        | 3/V 10 L4 | - | BN 100LA 4 | - | -                   | 133000 | 166000 | 65000  | 342   |     |
| 0.86                                | 17400                 | 2.5            | 1636 | -        | 3/V 11 L3 | - | BN 100LA 4 | - | -                   | 157000 | 195000 | 65000  | 354   |     |
| 0.94                                | 16200                 | 1.1            | 1497 | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | 110000 | 144300 | 36000  | 354   |     |
| 1.0                                 | 15200                 | 1.4            | 1411 | -        | 3/V 10 L3 | - | BN 100LA 4 | - | -                   | 130300 | 163800 | 63700  | 342   |     |
| 1.1                                 | 13400                 | 1.1            | 1288 | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 49200               | 61700  | 105300 | 138000 | 42800 | 318 |
| 1.1                                 | 13900                 | 1.5            | 1288 | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 107000 | 138000 | 34200 | 354 |
| 1.1                                 | 13600                 | 2.6            | 1274 | -        | 3/V 11 L3 | - | BN 100LA 4 | - | -                   | -      | 149300 | 186000 | 61600 | 354 |
| 1.1                                 | 13200                 | 1.6            | 1227 | -        | 3/V 10 L3 | - | BN 100LA 4 | - | -                   | -      | 124900 | 157100 | 60800 | 342 |
| 1.2                                 | 13000                 | 1.2            | 1159 | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 103600 | 133700 | 33000 | 354 |
| 1.3                                 | 12100                 | 2.4            | 1120 | -        | 3/V 10 L3 | - | BN 100LA 4 | - | -                   | -      | 121600 | 152800 | 59000 | 342 |
| 1.4                                 | 10800                 | 1.3            | 1015 | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 45400               | 57000  | 98000  | 128400 | 39500 | 318 |
| 1.4                                 | 10800                 | 1.7            | 1004 | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 99300  | 128000 | 31500 | 354 |
| 1.4                                 | 10800                 | 2.9            | 1004 | -        | 3/V 10 L3 | - | BN 100LA 4 | - | -                   | -      | 117600 | 147900 | 56900 | 342 |
| 1.5                                 | 9940                  | 1.2            | 920  | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 44000               | 55200  | 95200  | 124700 | 38200 | 318 |
| 1.5                                 | 10300                 | 2.1            | 920  | -        | 3/V 10 L3 | - | BN 100LA 4 | - | -                   | -      | 114600 | 144100 | 55200 | 342 |
| 1.7                                 | 9420                  | 2.1            | 840  | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 94100  | 121400 | 29700 | 354 |
| 1.8                                 | 8630                  | 2.5            | 800  | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 92700  | 119600 | 29200 | 354 |
| 1.8                                 | 8420                  | 0.9            | 791  | -        | 3/V 06 L3 | - | BN 100LA 4 | - | 37600               | 42600  | 84500  | 98400  | 28300 | 306 |
| 1.8                                 | 9100                  | 1.1            | 773  | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 41500               | 52100  | 90300  | 118400 | 36100 | 318 |
| 1.9                                 | 8210                  | 1.7            | 761  | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 41300               | 51800  | 89900  | 117800 | 35900 | 318 |
| 1.9                                 | 8530                  | 1.7            | 761  | -        | 3/V 09 L3 | - | BN 100LA 4 | - | -                   | -      | 91300  | 117800 | 28700 | 354 |
| 2.0                                 | 8310                  | 0.9            | 698  | -        | 3/V 06 L3 | - | BN 100LA 4 | - | 36100               | 40900  | 81400  | 94800  | 27100 | 306 |
| 2.1                                 | 7790                  | 1.2            | 661  | -        | 3/V 06 L3 | - | BN 100LA 4 | - | 35500               | 40200  | 80100  | 93300  | 26600 | 306 |
| 2.2                                 | 7070                  | 2.0            | 655  | -        | 3/V 07 L3 | - | BN 100LA 4 | - | 39300               | 49300  | 85900  | 112600 | 34100 | 318 |



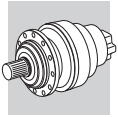


$P_1 = 2.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |            |         | Rn <sub>2</sub> [N] |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|------------|---------|---------------------|-------|-------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |            |         | MC/PC               | MZ/PZ | HC    | HZ     | FZ    |     |
| 2.2                                 | 7340                  | 2.4            | 655  | -        | 3/V 09 L3 | -         | BN 100LA 4 | -       | -                   | -     | 87300 | 112600 | 27300 | 354 |
| 2.5                                 | 6700                  | 1.3            | 569  | -        | 3/V 06 L3 | -         | BN 100LA 4 | -       | 33700               | 38200 | 76600 | 89200  | 25300 | 306 |
| 2.5                                 | 7300                  | 1.0            | 555  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 33400               | 37900 | 76000 | 88500  | 25100 | 307 |
| 2.7                                 | 6210                  | 1.2            | 527  | -        | 3/V 06 L3 | -         | BN 100LA 4 | -       | 32900               | 37200 | 74900 | 87200  | 24700 | 306 |
| 2.8                                 | 5970                  | 2.3            | 507  | -        | 3/V 07 L3 | -         | BN 100LA 4 | -       | 36100               | 45300 | 79600 | 104300 | 31400 | 318 |
| 2.8                                 | 6650                  | 1.1            | 505  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 32400               | 36700 | 73900 | 86100  | 24400 | 307 |
| 3.1                                 | 5420                  | 2.3            | 460  | -        | 3/V 07 L3 | -         | BN 100LA 4 | -       | 34900               | 43800 | 77300 | 101300 | 30400 | 318 |
| 3.2                                 | 5770                  | 1.6            | 439  | -        | -         | 3/A 07 L2 | BN 100LA 4 | M 3LA 4 | 34400               | 43100 | 76200 | 99900  | 29900 | 319 |
| 3.2                                 | 5720                  | 1.4            | 435  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 30800               | 34900 | 70600 | 82300  | 23200 | 307 |
| 3.3                                 | 5080                  | 1.7            | 427  | -        | 3/V 06 L3 | -         | BN 100LA 4 | -       | 30600               | 34700 | 70300 | 81800  | 23000 | 306 |
| 3.5                                 | 5330                  | 1.7            | 405  | -        | -         | 3/A 07 L2 | BN 100LA 4 | M 3LA 4 | 33500               | 42000 | 74400 | 97500  | 29100 | 319 |
| 3.6                                 | 4710                  | 1.6            | 395  | -        | 3/V 06 L3 | -         | BN 100LA 4 | -       | 29900               | 33800 | 68700 | 80000  | 22400 | 306 |
| 3.6                                 | 5100                  | 1.1            | 388  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 29700               | 33600 | 68300 | 79500  | 22300 | 307 |
| 3.6                                 | 4710                  | 1.9            | 386  | -        | 3/V 07 L3 | -         | BN 100LA 4 | -       | 32900               | 41300 | 73400 | 96100  | 28600 | 318 |
| 3.7                                 | 5000                  | 1.2            | 380  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 29500               | 33400 | 67900 | 79000  | 22200 | 307 |
| 4.1                                 | 4490                  | 2.6            | 341  | -        | -         | 3/A 07 L2 | BN 100LA 4 | M 3LA 4 | 31600               | 39700 | 70700 | 92600  | 27500 | 319 |
| 4.4                                 | 4220                  | 1.6            | 321  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 27900               | 31600 | 64500 | 75100  | 20900 | 307 |
| 5.0                                 | 3700                  | 2.3            | 282  | -        | -         | 3/A 07 L2 | BN 100LA 4 | M 3LA 4 | 29600               | 37200 | 66700 | 87400  | 25800 | 319 |
| 5.0                                 | 3800                  | 0.9            | 280  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 21400               | 24700 | 37800 | 45500  | 13700 | 295 |
| 5.1                                 | 3630                  | 2.1            | 276  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 26500               | 30000 | 61600 | 71800  | 19900 | 307 |
| 5.3                                 | 3510                  | 1.6            | 267  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 26200               | 29700 | 61000 | 71100  | 19700 | 307 |
| 5.6                                 | 3400                  | 1.0            | 250  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 20600               | 23800 | 36600 | 44000  | 13200 | 283 |
| 5.8                                 | 3170                  | 2.8            | 241  | -        | -         | 3/A 07 L2 | BN 100LA 4 | M 3LA 4 | 28200               | 35300 | 63700 | 83500  | 24500 | 319 |
| 5.9                                 | 3270                  | 1.3            | 241  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 20300               | 23500 | 36200 | 43500  | 13000 | 295 |
| 6.2                                 | 3070                  | 1.1            | 226  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 19900               | 23000 | 35500 | 42700  | 12800 | 283 |
| 6.4                                 | 2900                  | 2.2            | 221  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 24600               | 27900 | 57700 | 67100  | 18500 | 307 |
| 6.6                                 | 2880                  | 1.1            | 212  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 19500               | 22500 | 34800 | 41900  | 12500 | 295 |
| 6.6                                 | 2880                  | 1.1            | 212  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 19500               | 22500 | 34800 | 41900  | 12500 | 295 |
| 6.9                                 | 2790                  | 1.3            | 205  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 19300               | 22300 | 34500 | 41500  | 12400 | 283 |
| 7.1                                 | 2600                  | 2.1            | 198  | -        | -         | 3/A 06 L2 | BN 100LA 4 | M 3LA 4 | 23700               | 26900 | 55800 | 65000  | 17800 | 307 |
| 8.0                                 | 2380                  | 1.5            | 175  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 18300               | 21100 | 32900 | 39600  | 11700 | 295 |
| 8.1                                 | 2360                  | 1.3            | 174  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 18200               | 21100 | 32800 | 39500  | 11700 | 283 |
| 8.7                                 | 2210                  | 1.3            | 162  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 17800               | 20600 | 32100 | 38700  | 11400 | 283 |
| 8.7                                 | 2210                  | 1.3            | 162  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 17800               | 20600 | 32100 | 38700  | 11400 | 295 |
| 9.5                                 | 2030                  | 1.2            | 149  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 17300               | 20000 | 31300 | 37700  | 11100 | 283 |
| 10.0                                | 1910                  | 1.9            | 141  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 17000               | 19600 | 30800 | 37000  | 10900 | 295 |
| 10.9                                | 1760                  | 1.5            | 129  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 16500               | 19100 | 30000 | 36100  | 10600 | 283 |
| 11.6                                | 1640                  | 2.1            | 121  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 16200               | 18700 | 29400 | 35400  | 10400 | 295 |
| 12.1                                | 1590                  | 1.5            | 117  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 16000               | 18500 | 29100 | 35000  | 10300 | 283 |
| 13.6                                | 1410                  | 2.2            | 104  | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 15300               | 17700 | 28100 | 33800  | 9840  | 295 |
| 13.8                                | 1380                  | 1.8            | 102  | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 15300               | 17600 | 27900 | 33600  | 9790  | 283 |
| 14.6                                | 1320                  | 1.3            | 96.9 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 15000               | 17300 | 27500 | 33100  | 9630  | 271 |
| 15.5                                | 1230                  | 1.9            | 90.7 | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 14700               | 17000 | 27000 | 32500  | 9420  | 283 |
| 15.9                                | 1200                  | 1.4            | 88.5 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 14600               | 16800 | 26800 | 32200  | 9340  | 271 |
| 17.3                                | 1110                  | 2.1            | 81.7 | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 14200               | 16400 | 26200 | 31500  | 9100  | 283 |
| 17.3                                | 1110                  | 1.2            | 81.3 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 4610                | 4610  | 12800 | 14700  | 3030  | 261 |
| 18.6                                | 1030                  | 3.0            | 75.8 | -        | -         | 3/A 05 L2 | BN 100LA 4 | M 3LA 4 | 13800               | 16000 | 25600 | 30800  | 8870  | 295 |
| 19.0                                | 1010                  | 1.1            | 74.2 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 4470                | 4470  | 12400 | 14300  | 2940  | 261 |
| 19.3                                | 990                   | 1.8            | 73.2 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 13700               | 15800 | 25300 | 30400  | 8770  | 271 |
| 20.6                                | 930                   | 2.7            | 68.4 | -        | -         | 3/A 04 L2 | BN 100LA 4 | M 3LA 4 | 13400               | 15400 | 24800 | 29800  | 8580  | 283 |
| 22.4                                | 860                   | 1.8            | 62.9 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 13000               | 15000 | 24200 | 29100  | 8340  | 271 |
| 23.7                                | 810                   | 1.6            | 59.4 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 4150                | 4150  | 11600 | 13400  | 2730  | 261 |
| 26.0                                | 740                   | 1.6            | 54.2 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 4020                | 4020  | 11300 | 13000  | 2650  | 261 |
| 26.9                                | 710                   | 2.3            | 52.5 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 12200               | 14100 | 22900 | 27600  | 7850  | 271 |
| 26.9                                | 710                   | 2.3            | 52.5 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 12200               | 14100 | 22900 | 27600  | 7850  | 271 |
| 28.7                                | 670                   | 1.2            | 49.1 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 3890                | 3890  | 11000 | 12600  | 2560  | 261 |
| 32                                  | 600                   | 1.6            | 43.9 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 3750                | 3750  | 10600 | 12200  | 2470  | 261 |
| 34                                  | 560                   | 1.2            | 41.5 | -        | -         | 3/A 00 L2 | BN 100LA 4 | M 3LA 4 | 3680                | 3680  | 10500 | 12000  | 2420  | 251 |
| 35                                  | 550                   | 3.0            | 40.5 | -        | -         | 3/A 03 L2 | BN 100LA 4 | M 3LA 4 | 11200               | 13000 | 21200 | 25500  | 7200  | 271 |
| 35                                  | 540                   | 1.6            | 40.1 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 3640                | 3640  | 10300 | 11900  | 2390  | 261 |
| 36                                  | 540                   | 1.0            | 39.6 | -        | -         | 3/A 00 L2 | BN 100LA 4 | M 3LA 4 | 3620                | 3620  | 10300 | 11800  | 2380  | 251 |
| 39                                  | 485                   | 1.6            | 35.8 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 3500                | 3500  | 10000 | 11500  | 2300  | 261 |
| 44                                  | 430                   | 1.5            | 31.7 | -        | -         | 3/A 00 L2 | BN 100LA 4 | M 3LA 4 | 3370                | 3370  | 9650  | 11100  | 2210  | 251 |
| 45                                  | 425                   | 2.8            | 31.2 | -        | -         | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | 3340                | 3340  | 9600  | 11000  | 2200  | 261 |
| 60                                  | 320                   | 1.8            | 23.4 | -        | -         | 3/A 00 L2 | BN 100LA 4 | M 3LA 4 | 3040                | 3040  | 8810  | 10100  | 2000  | 251 |

A



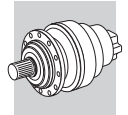


**P<sub>1</sub> = 2.2 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |   |           |            |         | Rn <sub>2</sub> [N] |       |      |      |       |      |     |
|-------------------------------------|-----------------------|----------------|------|----------|---|-----------|------------|---------|---------------------|-------|------|------|-------|------|-----|
|                                     |                       |                |      |          |   |           |            |         | MC/PC               | MZ/PZ | HC   | HZ   | FZ    |      |     |
| 61                                  | 315                   | 2.8            | 23.0 | -        | - | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | -                   | 3020  | 3020 | 8760 | 10100 | 1990 | 261 |
| 74                                  | 260                   | 1.8            | 19.1 | -        | - | 3/A 00 L2 | BN 100LA 4 | M 3LA 4 | -                   | 2840  | 2840 | 8290 | 9530  | 1870 | 251 |
| 75                                  | 255                   | 2.8            | 18.8 | -        | - | 3/A 01 L2 | BN 100LA 4 | M 3LA 4 | -                   | 2830  | 2830 | 8250 | 9470  | 1860 | 261 |

**P<sub>1</sub> = 3 kW**

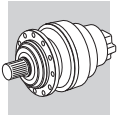
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |            |   | Rn <sub>2</sub> [N] |       |        |        |        |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|------------|---|---------------------|-------|--------|--------|--------|-----|
|                                     |                       |                |      |          |           |   |            |   | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |     |
| 0.27                                | 76400                 | 1.3            | 5234 | -        | 3/V 15 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 390 |
| 0.28                                | 69700                 | 1.2            | 4959 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.28                                | 72300                 | 1.5            | 4950 | -        | 3/V 15 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 390 |
| 0.28                                | 72300                 | 1.7            | 4950 | -        | 3/V 16 L4 | - | BN 100LB 4 | - | -                   | -     | 345000 | 385000 | 150000 | 402 |
| 0.31                                | 63800                 | 0.9            | 4536 | -        | 3/V 13 L4 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.33                                | 60600                 | 1.4            | 4312 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.34                                | 60900                 | 1.7            | 4171 | -        | 3/V 15 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 390 |
| 0.34                                | 60900                 | 2.3            | 4171 | -        | 3/V 16 L4 | - | BN 100LB 4 | - | -                   | -     | 345000 | 385000 | 150000 | 402 |
| 0.35                                | 56900                 | 1.0            | 4046 | -        | 3/V 13 L4 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.35                                | 60500                 | 1.2            | 3993 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.40                                | 53900                 | 1.1            | 3515 | -        | 3/V 13 L4 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.40                                | 51300                 | 2.7            | 3514 | -        | 3/V 16 L4 | - | BN 100LB 4 | - | -                   | -     | 345000 | 385000 | 150000 | 402 |
| 0.43                                | 50000                 | 1.1            | 3263 | -        | 3/V 13 L4 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.43                                | 47500                 | 2.9            | 3250 | -        | 3/V 16 L4 | - | BN 100LB 4 | - | -                   | -     | 345000 | 385000 | 150000 | 402 |
| 0.44                                | 49400                 | 0.9            | 3222 | -        | 3/V 11 L4 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.44                                | 48200                 | 1.7            | 3182 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.49                                | 43700                 | 1.1            | 2887 | -        | 3/V 11 L4 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.51                                | 40600                 | 2.0            | 2782 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.51                                | 39000                 | 1.4            | 2773 | -        | 3/V 13 L4 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.51                                | 40000                 | 2.9            | 2738 | -        | 3/V 16 L4 | - | BN 100LB 4 | - | -                   | -     | 345000 | 385000 | 150000 | 402 |
| 0.56                                | 38500                 | 1.3            | 2510 | -        | 3/V 11 L4 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.56                                | 35200                 | 2.4            | 2504 | -        | 3/V 14 L4 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.58                                | 33800                 | 1.4            | 2430 | -        | 3/V 13 L3 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.61                                | 32400                 | 1.0            | 2329 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.61                                | 32300                 | 2.1            | 2318 | -        | 3/V 14 L3 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.64                                | 33900                 | 1.0            | 2209 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.64                                | 33900                 | 1.0            | 2209 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.70                                | 28100                 | 2.1            | 2019 | -        | 3/V 13 L3 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.70                                | 30900                 | 1.0            | 2016 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.70                                | 30900                 | 1.0            | 2016 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.71                                | 27800                 | 2.6            | 1994 | -        | 3/V 14 L3 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.72                                | 27300                 | 1.6            | 1963 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.77                                | 28000                 | 1.0            | 1826 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.77                                | 28000                 | 1.0            | 1826 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.79                                | 24300                 | 0.9            | 1792 | -        | 3/V 09 L3 | - | BN 100LB 4 | - | -                   | -     | 110000 | 145000 | 36000  | 354 |
| 0.84                                | 24100                 | 2.4            | 1682 | -        | 3/V 13 L3 | - | BN 100LB 4 | - | -                   | -     | 192000 | 231000 | 80000  | 366 |
| 0.85                                | 25700                 | 1.3            | 1657 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.85                                | 25700                 | 1.3            | 1657 | -        | 3/V 10 L4 | - | BN 100LB 4 | - | -                   | -     | 133000 | 166000 | 65000  | 342 |
| 0.86                                | 23400                 | 1.8            | 1636 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 157000 | 195000 | 65000  | 354 |
| 0.89                                | 22100                 | 2.6            | 1589 | -        | 3/V 14 L3 | - | BN 100LB 4 | - | -                   | -     | 206000 | 243000 | 90000  | 380 |
| 0.99                                | 20300                 | 2.8            | 1418 | -        | 3/V 13 L3 | - | BN 100LB 4 | - | -                   | -     | 190500 | 225400 | 78500  | 366 |
| 1.0                                 | 20500                 | 1.1            | 1411 | -        | 3/V 10 L3 | - | BN 100LB 4 | - | -                   | -     | 130300 | 163800 | 63700  | 342 |
| 1.0                                 | 19700                 | 2.3            | 1378 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 152900 | 190400 | 63200  | 354 |
| 1.1                                 | 18600                 | 2.6            | 1339 | -        | 3/V 14 L3 | - | BN 100LB 4 | - | -                   | -     | 199900 | 234700 | 86700  | 380 |
| 1.1                                 | 18500                 | 2.9            | 1291 | -        | 3/V 13 L3 | - | BN 100LB 4 | - | -                   | -     | 185200 | 219200 | 76100  | 366 |
| 1.1                                 | 18700                 | 1.2            | 1288 | -        | 3/V 09 L3 | - | BN 100LB 4 | - | -                   | -     | 107000 | 138000 | 34200  | 354 |
| 1.1                                 | 18200                 | 1.9            | 1274 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 149300 | 186000 | 61600  | 354 |
| 1.1                                 | 17800                 | 1.2            | 1227 | -        | 3/V 10 L3 | - | BN 100LB 4 | - | -                   | -     | 124900 | 157100 | 60800  | 342 |
| 1.2                                 | 17400                 | 0.9            | 1159 | -        | 3/V 09 L3 | - | BN 100LB 4 | - | -                   | -     | 103600 | 133700 | 33000  | 354 |
| 1.3                                 | 16200                 | 1.8            | 1120 | -        | 3/V 10 L3 | - | BN 100LB 4 | - | -                   | -     | 121600 | 152800 | 59000  | 342 |
| 1.4                                 | 14500                 | 1.0            | 1015 | -        | 3/V 07 L3 | - | BN 100LB 4 | - | 45400               | 57000 | 98000  | 128400 | 39500  | 318 |
| 1.4                                 | 14000                 | 2.6            | 1004 | -        | 3/V 11 L3 | - | BN 100LB 4 | - | -                   | -     | 139000 | 173200 | 56900  | 354 |
| 1.4                                 | 14500                 | 1.2            | 1004 | -        | 3/V 09 L3 | - | BN 100LB 4 | - | -                   | -     | 99300  | 128000 | 31500  | 354 |
| 1.4                                 | 14500                 | 2.2            | 1004 | -        | 3/V 10 L3 | - | BN 100LB 4 | - | -                   | -     | 117600 | 147900 | 56900  | 342 |



$P_1 = 3 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |                    |   | Rn <sub>2</sub> [N] |       |       |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|--------------------|---|---------------------|-------|-------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |                    |   | MC/PC               | MZ/PZ | HC    | HZ     | FZ     |       |     |
| 1.5                                 | 13300                 | 0.9            | 920  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | -                   | 44000 | 55200 | 95200  | 124700 | 38200 | 318 |
| 1.5                                 | 13900                 | 1.6            | 920  | -        | 3/V 10 L3 | -         | BN 100LB 4         | - | -                   | -     | -     | 114600 | 144100 | 55200 | 342 |
| 1.7                                 | 12600                 | 1.6            | 840  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | -     | 94100  | 121400 | 29700 | 354 |
| 1.8                                 | 11600                 | 1.8            | 800  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | -     | 92700  | 119600 | 29200 | 354 |
| 1.9                                 | 11000                 | 1.3            | 761  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | 41300               | 51800 | 89900 | 117800 | 35900  | 318   |     |
| 1.9                                 | 11500                 | 1.3            | 761  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | 91300 | 117800 | 28700  | 354   |     |
| 2.2                                 | 9480                  | 1.5            | 655  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | 39300               | 49300 | 85900 | 112600 | 34100  | 318   |     |
| 2.2                                 | 9850                  | 1.8            | 655  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | 87300 | 112600 | 27300  | 354   |     |
| 2.5                                 | 8990                  | 1.0            | 569  | -        | 3/V 06 L3 | -         | BN 100LB 4         | - | 33700               | 38200 | 76600 | 89200  | 25300  | 306   |     |
| 2.7                                 | 8330                  | 0.9            | 527  | -        | 3/V 06 L3 | -         | BN 100LB 4         | - | 32900               | 37200 | 74900 | 87200  | 24700  | 306   |     |
| 2.8                                 | 8020                  | 1.7            | 507  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | 36100               | 45300 | 79600 | 104300 | 31400  | 318   |     |
| 3.1                                 | 7270                  | 1.7            | 460  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | 34900               | 43800 | 77300 | 101300 | 30400  | 318   |     |
| 3.2                                 | 6650                  | 2.7            | 442  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | 77600 | 100100 | 24000  | 354   |     |
| 3.2                                 | 7740                  | 1.2            | 439  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 34400               | 43100 | 76200 | 99900  | 29900  | 319   |     |
| 3.2                                 | 7670                  | 1.0            | 435  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 30800               | 34900 | 70600 | 82300  | 23200  | 307   |     |
| 3.3                                 | 6820                  | 1.3            | 427  | -        | 3/V 06 L3 | -         | BN 100LB 4         | - | 30600               | 34700 | 70300 | 81800  | 23000  | 306   |     |
| 3.5                                 | 7150                  | 1.3            | 405  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 33500               | 42000 | 74400 | 97500  | 29100  | 319   |     |
| 3.6                                 | 6320                  | 1.2            | 395  | -        | 3/V 06 L3 | -         | BN 100LB 4         | - | 29900               | 33800 | 68700 | 80000  | 22400  | 306   |     |
| 3.6                                 | 6320                  | 1.4            | 386  | -        | 3/V 07 L3 | -         | BN 100LB 4         | - | 32900               | 41300 | 73400 | 96100  | 28600  | 318   |     |
| 3.7                                 | 6720                  | 0.9            | 380  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 29500               | 33400 | 67900 | 79000  | 22200  | 307   |     |
| 3.8                                 | 5570                  | 2.3            | 370  | -        | 3/V 09 L3 | -         | BN 100LB 4         | - | -                   | -     | 73600 | 94900  | 22600  | 354   |     |
| 4.1                                 | 6020                  | 1.9            | 341  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 31600               | 39700 | 70700 | 92600  | 27500  | 319   |     |
| 4.4                                 | 5660                  | 1.2            | 321  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 27900               | 31600 | 64500 | 75100  | 20900  | 307   |     |
| 5.0                                 | 4970                  | 1.7            | 282  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 29600               | 37200 | 66700 | 87400  | 25800  | 319   |     |
| 5.1                                 | 4870                  | 1.6            | 276  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 26500               | 30000 | 61600 | 71800  | 19900  | 307   |     |
| 5.3                                 | 4710                  | 1.2            | 267  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 26200               | 29700 | 61000 | 71100  | 19700  | 307   |     |
| 5.8                                 | 4260                  | 2.1            | 241  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 28200               | 35300 | 63700 | 83500  | 24500  | 319   |     |
| 5.9                                 | 4390                  | 1.0            | 241  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 20300               | 23500 | 36200 | 43500  | 13000  | 295   |     |
| 6.3                                 | 3930                  | 2.3            | 223  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 27400               | 34400 | 62200 | 81500  | 23800  | 319   |     |
| 6.4                                 | 3900                  | 1.7            | 221  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 24600               | 27900 | 57700 | 67100  | 18500  | 307   |     |
| 6.9                                 | 3740                  | 0.9            | 205  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 19300               | 22300 | 34500 | 41500  | 12400  | 283   |     |
| 7.1                                 | 3500                  | 1.6            | 198  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 23700               | 26900 | 55800 | 65000  | 17800  | 307   |     |
| 7.1                                 | 3490                  | 2.5            | 198  | -        | -         | 3/A 07 L2 | BN 100LB 4 M 3LB 4 | - | 26300               | 33000 | 60000 | 78600  | 22900  | 319   |     |
| 7.4                                 | 3350                  | 2.3            | 190  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 23400               | 26500 | 55100 | 64200  | 17600  | 307   |     |
| 8.0                                 | 3200                  | 1.1            | 175  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 18300               | 21100 | 32900 | 39600  | 11700  | 295   |     |
| 8.1                                 | 3170                  | 0.9            | 174  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 18200               | 21100 | 32800 | 39500  | 11700  | 283   |     |
| 8.6                                 | 2890                  | 2.2            | 164  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 22300               | 25200 | 52700 | 61400  | 16700  | 307   |     |
| 8.7                                 | 2960                  | 1.0            | 162  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 17800               | 20600 | 32100 | 38700  | 11400  | 283   |     |
| 8.7                                 | 2960                  | 1.0            | 162  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 17800               | 20600 | 32100 | 38700  | 11400  | 295   |     |
| 10.0                                | 2570                  | 1.4            | 141  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 17000               | 19600 | 30800 | 37000  | 10900  | 295   |     |
| 10.9                                | 2360                  | 1.2            | 129  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 16500               | 19100 | 30000 | 36100  | 10600  | 283   |     |
| 11.3                                | 2270                  | 2.4            | 125  | -        | -         | 3/A 06 L2 | BN 100LB 4 M 3LB 4 | - | 20300               | 23000 | 48600 | 56500  | 15300  | 307   |     |
| 11.6                                | 2210                  | 1.6            | 121  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 16200               | 18700 | 29400 | 35400  | 10400  | 295   |     |
| 12.1                                | 2130                  | 1.1            | 117  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 16000               | 18500 | 29100 | 35000  | 10300  | 283   |     |
| 13.6                                | 1890                  | 1.6            | 104  | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 15300               | 17700 | 28100 | 33800  | 9840   | 295   |     |
| 13.8                                | 1860                  | 1.4            | 102  | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 15300               | 17600 | 27900 | 33600  | 9790   | 283   |     |
| 14.6                                | 1770                  | 1.0            | 96.9 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 15000               | 17300 | 27500 | 33100  | 9630   | 271   |     |
| 15.5                                | 1650                  | 1.4            | 90.7 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 14700               | 17000 | 27000 | 32500  | 9420   | 283   |     |
| 15.9                                | 1610                  | 1.0            | 88.5 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 14600               | 16800 | 26800 | 32200  | 9340   | 271   |     |
| 16.5                                | 1560                  | 2.3            | 85.6 | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 14400               | 16600 | 26500 | 31900  | 9240   | 295   |     |
| 17.3                                | 1490                  | 1.6            | 81.7 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 14200               | 16400 | 26200 | 31500  | 9100   | 283   |     |
| 18.6                                | 1380                  | 2.2            | 75.8 | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 13800               | 16000 | 25600 | 30800  | 8870   | 295   |     |
| 19.3                                | 1330                  | 1.3            | 73.2 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 13700               | 15800 | 25300 | 30400  | 8770   | 271   |     |
| 19.4                                | 1320                  | 2.5            | 72.5 | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 13600               | 15700 | 25200 | 30400  | 8740   | 295   |     |
| 20.6                                | 1250                  | 2.0            | 68.4 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 13400               | 15400 | 24800 | 29800  | 8580   | 283   |     |
| 22.4                                | 1150                  | 1.4            | 62.9 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 13000               | 15000 | 24200 | 29100  | 8340   | 271   |     |
| 22.5                                | 1140                  | 2.8            | 62.6 | -        | -         | 3/A 05 L2 | BN 100LB 4 M 3LB 4 | - | 13000               | 15000 | 24200 | 29100  | 8330   | 295   |     |
| 22.6                                | 1140                  | 2.5            | 62.4 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 13000               | 15000 | 24100 | 29000  | 8320   | 283   |     |
| 23.7                                | 1080                  | 1.2            | 59.4 | -        | -         | 3/A 01 L2 | BN 100LB 4 M 3LB 4 | - | 4150                | 4150  | 11600 | 13400  | 2730   | 261   |     |
| 25.9                                | 990                   | 2.4            | 54.5 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 12400               | 14300 | 23200 | 27900  | 7950   | 283   |     |
| 26.0                                | 990                   | 1.2            | 54.2 | -        | -         | 3/A 01 L2 | BN 100LB 4 M 3LB 4 | - | 4020                | 4020  | 11300 | 13000  | 2650   | 261   |     |
| 26.9                                | 960                   | 1.7            | 52.5 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 12200               | 14100 | 22900 | 27600  | 7850   | 271   |     |
| 26.9                                | 960                   | 1.7            | 52.5 | -        | -         | 3/A 03 L2 | BN 100LB 4 M 3LB 4 | - | 12200               | 14100 | 22900 | 27600  | 7850   | 271   |     |
| 28.4                                | 910                   | 2.5            | 49.7 | -        | -         | 3/A 04 L2 | BN 100LB 4 M 3LB 4 | - | 12000               | 13900 | 22500 | 27100  | 7710   | 283   |     |
| 28.7                                | 890                   | 0.9            | 49.1 | -        | -         | 3/A 01 L2 | BN 100LB 4 M 3LB 4 | - | 3890                | 3890  | 11000 | 12600  | 2560   | 261   |     |

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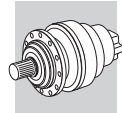


$P_1 = 3 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |   |           |            |         | $R_{n2}$ [N] |       |       |       |      |     |
|----------------------------|----------------|-------|------|-------------|---|-----------|------------|---------|--------------|-------|-------|-------|------|-----|
|                            |                |       |      |             |   |           |            |         | MC/PC        | MZ/PZ | HC    | HZ    | FZ   |     |
| 32                         | 800            | 1.2   | 43.9 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 3750         | 3750  | 10600 | 12200 | 2470 | 261 |
| 32                         | 790            | 2.3   | 43.4 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 11500        | 13300 | 21600 | 26000 | 7370 | 271 |
| 35                         | 740            | 2.2   | 40.5 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 11200        | 13000 | 21200 | 25500 | 7200 | 271 |
| 35                         | 730            | 1.2   | 40.1 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 3640         | 3640  | 10300 | 11900 | 2390 | 261 |
| 39                         | 650            | 1.2   | 35.8 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 3500         | 3500  | 10000 | 11500 | 2300 | 261 |
| 42                         | 610            | 2.9   | 33.5 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 10500        | 12200 | 20000 | 24100 | 6760 | 271 |
| 44                         | 580            | 1.1   | 31.7 | -           | - | 3/A 00 L2 | BN 100LB 4 | M 3LB 4 | 3370         | 3370  | 9650  | 11100 | 2210 | 251 |
| 45                         | 570            | 2.1   | 31.2 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 3340         | 3340  | 9600  | 11000 | 2200 | 261 |
| 49                         | 530            | 3.0   | 28.8 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 10000        | 11600 | 19100 | 23000 | 6430 | 271 |
| 60                         | 430            | 1.4   | 23.4 | -           | - | 3/A 00 L2 | BN 100LB 4 | M 3LB 4 | 3040         | 3040  | 8810  | 10100 | 2000 | 251 |
| 61                         | 420            | 2.1   | 23.0 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 3020         | 3020  | 8760  | 10100 | 1990 | 261 |
| 61                         | 420            | 3.0   | 23.0 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 9290         | 10700 | 17900 | 21500 | 5960 | 271 |
| 73                         | 355            | 3.0   | 19.4 | -           | - | 3/A 03 L2 | BN 100LB 4 | M 3LB 4 | 8790         | 10100 | 17000 | 20500 | 5640 | 271 |
| 74                         | 350            | 1.3   | 19.1 | -           | - | 3/A 00 L2 | BN 100LB 4 | M 3LB 4 | 2840         | 2840  | 8290  | 9530  | 1870 | 251 |
| 75                         | 345            | 2.1   | 18.8 | -           | - | 3/A 01 L2 | BN 100LB 4 | M 3LB 4 | 2830         | 2830  | 8250  | 9470  | 1860 | 261 |

$P_1 = 4 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |   |           |   | $R_{n2}$ [N] |       |        |        |        |     |
|----------------------------|----------------|-------|------|-------------|-----------|---|-----------|---|--------------|-------|--------|--------|--------|-----|
|                            |                |       |      |             |           |   |           |   | MC/PC        | MZ/PZ | HC     | HZ     | FZ     |     |
| 0.27                       | 103200         | 1.0   | 5234 | -           | 3/V 15 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 390 |
| 0.29                       | 97600          | 1.1   | 4950 | -           | 3/V 15 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 390 |
| 0.29                       | 97600          | 1.3   | 4950 | -           | 3/V 16 L4 | - | BN 112M 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.32                       | 83300          | 2.4   | 4449 | -           | 3/V 17 L4 | - | BN 112M 4 | - | -            | -     | 442000 | 470000 | 150000 | 412 |
| 0.33                       | 81800          | 1.0   | 4312 | -           | 3/V 14 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.34                       | 82200          | 1.3   | 4171 | -           | 3/V 15 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 390 |
| 0.34                       | 82200          | 1.7   | 4171 | -           | 3/V 16 L4 | - | BN 112M 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.36                       | 81700          | 0.9   | 3993 | -           | 3/V 14 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.41                       | 69300          | 2.0   | 3514 | -           | 3/V 16 L4 | - | BN 112M 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.44                       | 64100          | 2.1   | 3250 | -           | 3/V 16 L4 | - | BN 112M 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.45                       | 65100          | 1.2   | 3182 | -           | 3/V 14 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.51                       | 54800          | 1.5   | 2782 | -           | 3/V 14 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.52                       | 52600          | 1.1   | 2773 | -           | 3/V 13 L4 | - | BN 112M 4 | - | -            | -     | 192000 | 231000 | 80000  | 366 |
| 0.52                       | 54000          | 2.1   | 2738 | -           | 3/V 16 L4 | - | BN 112M 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.57                       | 52000          | 0.9   | 2510 | -           | 3/V 11 L4 | - | BN 112M 4 | - | -            | -     | 157000 | 195000 | 65000  | 354 |
| 0.57                       | 47500          | 1.8   | 2504 | -           | 3/V 14 L4 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.59                       | 45700          | 1.1   | 2430 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 192000 | 231000 | 80000  | 366 |
| 0.62                       | 43600          | 1.5   | 2318 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.71                       | 38000          | 1.5   | 2019 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 192000 | 231000 | 80000  | 366 |
| 0.72                       | 37500          | 1.9   | 1994 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.73                       | 36900          | 1.2   | 1963 | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 157000 | 195000 | 65000  | 354 |
| 0.85                       | 32500          | 1.8   | 1682 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 192000 | 231000 | 80000  | 366 |
| 0.86                       | 32100          | 2.4   | 1662 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 0.86                       | 34700          | 1.0   | 1657 | -           | 3/V 10 L4 | - | BN 112M 4 | - | -            | -     | 133000 | 166000 | 65000  | 342 |
| 0.86                       | 34700          | 1.0   | 1657 | -           | 3/V 10 L4 | - | BN 112M 4 | - | -            | -     | 133000 | 166000 | 65000  | 342 |
| 0.87                       | 31600          | 1.4   | 1636 | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 157000 | 195000 | 65000  | 354 |
| 0.90                       | 29900          | 1.9   | 1589 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 206000 | 243000 | 90000  | 380 |
| 1.0                        | 27400          | 2.1   | 1418 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 190500 | 225400 | 78500  | 366 |
| 1.0                        | 26600          | 1.7   | 1378 | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 152900 | 190400 | 63200  | 354 |
| 1.1                        | 25200          | 1.9   | 1339 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 199900 | 234700 | 86700  | 380 |
| 1.1                        | 25600          | 2.4   | 1324 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 199300 | 233900 | 86300  | 380 |
| 1.1                        | 24900          | 2.1   | 1291 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 185200 | 219200 | 76100  | 366 |
| 1.1                        | 24600          | 1.4   | 1274 | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 149300 | 186000 | 61600  | 354 |
| 1.2                        | 24000          | 0.9   | 1227 | -           | 3/V 10 L3 | - | BN 112M 4 | - | -            | -     | 124900 | 157100 | 60800  | 342 |
| 1.3                        | 21900          | 1.3   | 1120 | -           | 3/V 10 L3 | - | BN 112M 4 | - | -            | -     | 121600 | 152800 | 59000  | 342 |
| 1.3                        | 21500          | 2.4   | 1116 | -           | 3/V 14 L3 | - | BN 112M 4 | - | -            | -     | 189300 | 222200 | 81500  | 380 |
| 1.3                        | 21000          | 2.4   | 1088 | -           | 3/V 13 L3 | - | BN 112M 4 | - | -            | -     | 175900 | 208200 | 71900  | 366 |
| 1.4                        | 18900          | 1.9   | 1004 | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 139000 | 173200 | 56900  | 354 |
| 1.4                        | 19600          | 0.9   | 1004 | -           | 3/V 09 L3 | - | BN 112M 4 | - | -            | -     | 99300  | 128000 | 31500  | 354 |
| 1.4                        | 19600          | 1.6   | 1004 | -           | 3/V 10 L3 | - | BN 112M 4 | - | -            | -     | 117600 | 147900 | 56900  | 342 |
| 1.6                        | 18700          | 1.2   | 920  | -           | 3/V 10 L3 | - | BN 112M 4 | - | -            | -     | 114600 | 144100 | 55200  | 342 |
| 1.6                        | 17400          | 2.4   | 900  | -           | 3/V 11 L3 | - | BN 112M 4 | - | -            | -     | 134500 | 167600 | 54800  | 354 |

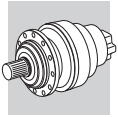


$P_1 = 4 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |           |         | Rn <sub>2</sub> [N] |       |       |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|-----------|---------|---------------------|-------|-------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |           |         | MC/PC               | MZ/PZ | HC    | HZ     | FZ    |     |
| 1.7                                 | 17100                 | 1.2            | 840  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 94100 | 121400 | 29700 | 354 |
| 1.8                                 | 15600                 | 1.4            | 800  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 92700 | 119600 | 29200 | 354 |
| 1.9                                 | 14900                 | 1.0            | 761  | -        | 3/V 07 L3 | -         | BN 112M 4 | -       | 41300               | 51800 | 89900 | 117800 | 35900 | 318 |
| 1.9                                 | 15500                 | 0.9            | 761  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 91300 | 117800 | 28700 | 354 |
| 2.2                                 | 12800                 | 1.1            | 655  | -        | 3/V 07 L3 | -         | BN 112M 4 | -       | 39300               | 49300 | 85900 | 112600 | 34100 | 318 |
| 2.2                                 | 13300                 | 1.3            | 655  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 87300 | 112600 | 27300 | 354 |
| 2.8                                 | 10800                 | 1.3            | 507  | -        | 3/V 07 L3 | -         | BN 112M 4 | -       | 36100               | 45300 | 79600 | 104300 | 31400 | 318 |
| 3.1                                 | 9820                  | 1.3            | 460  | -        | 3/V 07 L3 | -         | BN 112M 4 | -       | 34900               | 43800 | 77300 | 101300 | 30400 | 318 |
| 3.2                                 | 8980                  | 2.0            | 442  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 77600 | 100100 | 24000 | 354 |
| 3.4                                 | 9210                  | 1.0            | 427  | -        | 3/V 06 L3 | -         | BN 112M 4 | -       | 30600               | 34700 | 70300 | 81800  | 23000 | 306 |
| 3.5                                 | 9650                  | 0.9            | 405  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 33500               | 42000 | 74400 | 97500  | 29100 | 319 |
| 3.7                                 | 8540                  | 1.1            | 386  | -        | 3/V 07 L3 | -         | BN 112M 4 | -       | 32900               | 41300 | 73400 | 96100  | 28600 | 318 |
| 3.9                                 | 7530                  | 1.7            | 370  | -        | 3/V 09 L3 | -         | BN 112M 4 | -       | -                   | -     | 73600 | 94900  | 22600 | 354 |
| 4.2                                 | 8130                  | 1.4            | 341  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 31600               | 39700 | 70700 | 92600  | 27500 | 319 |
| 5.1                                 | 6710                  | 1.3            | 282  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 29600               | 37200 | 66700 | 87400  | 25800 | 319 |
| 5.2                                 | 6570                  | 1.2            | 276  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 26500               | 30000 | 61600 | 71800  | 19900 | 307 |
| 5.9                                 | 5750                  | 1.6            | 241  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 28200               | 35300 | 63700 | 83500  | 24500 | 319 |
| 6.4                                 | 5310                  | 1.7            | 223  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 27400               | 34400 | 62200 | 81500  | 23800 | 319 |
| 6.5                                 | 5260                  | 1.2            | 221  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 24600               | 27900 | 57700 | 67100  | 18500 | 307 |
| 7.2                                 | 4720                  | 1.2            | 198  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 23700               | 26900 | 55800 | 65000  | 17800 | 307 |
| 7.2                                 | 4710                  | 1.8            | 198  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 26300               | 33000 | 60000 | 78600  | 22900 | 319 |
| 7.5                                 | 4530                  | 1.7            | 190  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 23400               | 26500 | 55100 | 64200  | 17600 | 307 |
| 7.9                                 | 4290                  | 2.5            | 180  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 25500               | 32000 | 58300 | 76500  | 22200 | 319 |
| 8.7                                 | 3900                  | 1.7            | 164  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 22300               | 25200 | 52700 | 61400  | 16700 | 307 |
| 9.2                                 | 3690                  | 2.4            | 155  | -        | -         | 3/A 07 L2 | BN 112M 4 | M 3LC 4 | 24300               | 30500 | 55800 | 73100  | 21100 | 319 |
| 10.2                                | 3360                  | 2.3            | 141  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 21200               | 24000 | 50400 | 58700  | 15900 | 307 |
| 10.2                                | 3460                  | 1.0            | 141  | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 17000               | 19600 | 30800 | 37000  | 10900 | 295 |
| 11.5                                | 3070                  | 1.8            | 125  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 20300               | 23000 | 48600 | 56500  | 15300 | 307 |
| 11.8                                | 2980                  | 1.2            | 121  | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 16200               | 18700 | 29400 | 35400  | 10400 | 295 |
| 12.7                                | 2670                  | 2.3            | 112  | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 19600               | 22200 | 47100 | 54800  | 14700 | 307 |
| 13.8                                | 2550                  | 1.2            | 104  | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 15300               | 17700 | 28100 | 33800  | 9840  | 295 |
| 14.0                                | 2510                  | 1.0            | 102  | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 15300               | 17600 | 27900 | 33600  | 9790  | 283 |
| 14.6                                | 2420                  | 2.2            | 98.3 | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 18800               | 21300 | 45200 | 52700  | 14100 | 307 |
| 15.8                                | 2230                  | 1.1            | 90.7 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 14700               | 17000 | 27000 | 32500  | 9420  | 283 |
| 16.2                                | 2180                  | 2.8            | 88.5 | -        | -         | 3/A 06 L2 | BN 112M 4 | M 3LC 4 | 18100               | 20600 | 43800 | 51000  | 13600 | 307 |
| 16.7                                | 2110                  | 1.7            | 85.6 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 14400               | 16600 | 26500 | 31900  | 9240  | 295 |
| 17.5                                | 2010                  | 1.2            | 81.7 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 14200               | 16400 | 26200 | 31500  | 9100  | 283 |
| 18.9                                | 1860                  | 1.6            | 75.8 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 13800               | 16000 | 25600 | 30800  | 8870  | 295 |
| 19.5                                | 1800                  | 1.0            | 73.2 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 13700               | 15800 | 25300 | 30400  | 8770  | 271 |
| 19.7                                | 1790                  | 1.9            | 72.5 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 13600               | 15700 | 25200 | 30400  | 8740  | 295 |
| 20.9                                | 1680                  | 1.5            | 68.4 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 13400               | 15400 | 24800 | 29800  | 8580  | 283 |
| 22.7                                | 1550                  | 1.0            | 62.9 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 13000               | 15000 | 24200 | 29100  | 8340  | 271 |
| 22.8                                | 1540                  | 2.1            | 62.6 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 13000               | 15000 | 24200 | 29100  | 8330  | 295 |
| 22.9                                | 1540                  | 1.9            | 62.4 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 13000               | 15000 | 24100 | 29000  | 8320  | 283 |
| 25.1                                | 1400                  | 2.4            | 57.0 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 12600               | 14500 | 23500 | 28300  | 8070  | 295 |
| 26.2                                | 1340                  | 1.8            | 54.5 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 12400               | 14300 | 23200 | 27900  | 7950  | 283 |
| 26.9                                | 1310                  | 2.3            | 53.3 | -        | -         | 3/A 05 L2 | BN 112M 4 | M 3LC 4 | 12300               | 14200 | 23000 | 27700  | 7890  | 295 |
| 27.2                                | 1290                  | 1.3            | 52.5 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 12200               | 14100 | 22900 | 27600  | 7850  | 271 |
| 27.2                                | 1290                  | 1.3            | 52.5 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 12200               | 14100 | 22900 | 27600  | 7850  | 271 |
| 28.8                                | 1220                  | 1.9            | 49.7 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 12000               | 13900 | 22500 | 27100  | 7710  | 283 |
| 32                                  | 1090                  | 2.6            | 44.3 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 11600               | 13300 | 21800 | 26200  | 7420  | 283 |
| 33                                  | 1070                  | 1.7            | 43.4 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 11500               | 13300 | 21600 | 26000  | 7370  | 271 |
| 35                                  | 1000                  | 1.7            | 40.5 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 11200               | 13000 | 21200 | 25500  | 7200  | 271 |
| 37                                  | 960                   | 2.4            | 39.1 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 11100               | 12800 | 21000 | 25200  | 7120  | 283 |
| 41                                  | 870                   | 2.6            | 35.3 | -        | -         | 3/A 04 L2 | BN 112M 4 | M 3LC 4 | 10700               | 12400 | 20300 | 24500  | 6880  | 283 |
| 43                                  | 820                   | 2.2            | 33.5 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 10500               | 12200 | 20000 | 24100  | 6760  | 271 |
| 46                                  | 770                   | 1.5            | 31.2 | -        | -         | 3/A 01 L2 | BN 112M 4 | M 3LC 4 | 3340                | 3340  | 9600  | 11000  | 2200  | 261 |
| 50                                  | 710                   | 2.2            | 28.8 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 10000               | 11600 | 19100 | 23000  | 6430  | 271 |
| 61                                  | 580                   | 1.0            | 23.4 | -        | -         | 3/A 00 L2 | BN 112M 4 | M 3LC 4 | 3040                | 3040  | 8810  | 10100  | 2000  | 251 |
| 62                                  | 570                   | 1.5            | 23.0 | -        | -         | 3/A 01 L2 | BN 112M 4 | M 3LC 4 | 3020                | 3020  | 8760  | 10100  | 1990  | 261 |
| 62                                  | 560                   | 2.2            | 23.0 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 9290                | 10700 | 17900 | 21500  | 5960  | 271 |
| 74                                  | 480                   | 2.2            | 19.4 | -        | -         | 3/A 03 L2 | BN 112M 4 | M 3LC 4 | 8790                | 10100 | 17000 | 20500  | 5640  | 271 |
| 75                                  | 470                   | 1.0            | 19.1 | -        | -         | 3/A 00 L2 | BN 112M 4 | M 3LC 4 | 2840                | 2840  | 8290  | 9530   | 1870  | 251 |
| 76                                  | 465                   | 1.5            | 18.8 | -        | -         | 3/A 01 L2 | BN 112M 4 | M 3LC 4 | 2830                | 2830  | 8250  | 9470   | 1860  | 261 |

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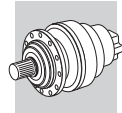




$P_1 = 5.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |           |   | Rn <sub>2</sub> [N] |        |        |        |     |  |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|-----------|---|---------------------|--------|--------|--------|-----|--|
|                                     |                       |                |      |          |           |   |           |   | MC/PC               | MZ/PZ  | HC     | HZ     | FZ  |  |
| 0.28                                | 139100                | 2.0            | 5099 | -        | 3/V 18 L4 | - | BN 132S 4 | - | -                   | 503000 | 565000 | 200000 | 422 |  |
| 0.29                                | 135500                | 1.1            | 4970 | -        | 3/V 17 L4 | - | BN 132S 4 | - | -                   | 442000 | 470000 | 150000 | 412 |  |
| 0.29                                | 130100                | 1.0            | 4950 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.32                                | 124500                | 2.9            | 4457 | -        | 3/V 19 L4 | - | BN 132S 4 | - | -                   | 638000 | 702000 | 200000 | 432 |  |
| 0.32                                | 111100                | 1.8            | 4449 | -        | 3/V 17 L4 | - | BN 132S 4 | - | -                   | 442000 | 470000 | 150000 | 412 |  |
| 0.33                                | 119600                | 2.3            | 4386 | -        | 3/V 18 L4 | - | BN 132S 4 | - | -                   | 503000 | 565000 | 200000 | 422 |  |
| 0.35                                | 109600                | 1.0            | 4171 | -        | 3/V 15 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.35                                | 109600                | 1.3            | 4171 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.35                                | 112600                | 1.6            | 4129 | -        | 3/V 17 L4 | - | BN 132S 4 | - | -                   | 442000 | 470000 | 150000 | 412 |  |
| 0.39                                | 100800                | 2.8            | 3696 | -        | 3/V 18 L4 | - | BN 132S 4 | - | -                   | 503000 | 565000 | 200000 | 422 |  |
| 0.41                                | 92400                 | 1.5            | 3514 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.41                                | 95300                 | 2.9            | 3495 | -        | 3/V 18 L4 | - | BN 132S 4 | - | -                   | 503000 | 565000 | 200000 | 422 |  |
| 0.41                                | 96300                 | 1.0            | 3489 | -        | 3/V 15 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.44                                | 91100                 | 1.2            | 3300 | -        | 3/V 15 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.44                                | 85400                 | 1.6            | 3250 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.45                                | 86800                 | 0.9            | 3182 | -        | 3/V 14 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.45                                | 86400                 | 2.2            | 3168 | -        | 3/V 17 L4 | - | BN 132S 4 | - | -                   | 442000 | 470000 | 150000 | 412 |  |
| 0.52                                | 73100                 | 1.1            | 2782 | -        | 3/V 14 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.52                                | 76700                 | 1.4            | 2780 | -        | 3/V 15 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.52                                | 71100                 | 2.3            | 2773 | -        | 3/V 17 L4 | - | BN 132S 4 | - | -                   | 442000 | 470000 | 150000 | 412 |  |
| 0.53                                | 72000                 | 1.6            | 2738 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.58                                | 63300                 | 1.3            | 2504 | -        | 3/V 14 L4 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.61                                | 64700                 | 2.1            | 2343 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.62                                | 58100                 | 1.1            | 2318 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.62                                | 57300                 | 1.5            | 2318 | -        | 3/V 15 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.66                                | 59800                 | 2.1            | 2167 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.71                                | 50600                 | 1.1            | 2019 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 192000 | 231000 | 80000  | 366 |  |
| 0.72                                | 50000                 | 1.4            | 1994 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.72                                | 49300                 | 1.9            | 1994 | -        | 3/V 15 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.79                                | 50400                 | 2.1            | 1826 | -        | 3/V 16 L4 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 0.86                                | 43300                 | 1.3            | 1682 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 192000 | 231000 | 80000  | 366 |  |
| 0.87                                | 42800                 | 1.8            | 1662 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.87                                | 42800                 | 2.3            | 1662 | -        | 3/V 15 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 390 |  |
| 0.88                                | 42100                 | 1.0            | 1636 | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 157000 | 195000 | 65000  | 354 |  |
| 0.89                                | 42800                 | 1.1            | 1620 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 192000 | 231000 | 80000  | 366 |  |
| 0.91                                | 39800                 | 1.4            | 1589 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 206000 | 243000 | 90000  | 380 |  |
| 0.91                                | 40900                 | 2.7            | 1589 | -        | 3/V 16 L3 | - | BN 132S 4 | - | -                   | 345000 | 385000 | 150000 | 402 |  |
| 1.0                                 | 36500                 | 1.6            | 1418 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 190500 | 225400 | 78500  | 366 |  |
| 1.0                                 | 36000                 | 2.4            | 1400 | -        | 3/V 15 L3 | - | BN 132S 4 | - | -                   | 202600 | 237900 | 88000  | 390 |  |
| 1.0                                 | 35500                 | 1.3            | 1378 | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 152900 | 190400 | 63200  | 354 |  |
| 1.1                                 | 33600                 | 1.4            | 1339 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 199900 | 234700 | 86700  | 380 |  |
| 1.1                                 | 35100                 | 2.8            | 1329 | -        | 3/V 15 L3 | - | BN 132S 4 | - | -                   | 199500 | 234200 | 86400  | 390 |  |
| 1.1                                 | 34100                 | 1.8            | 1324 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 199300 | 233900 | 86300  | 380 |  |
| 1.1                                 | 33200                 | 1.6            | 1291 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 185200 | 219200 | 76100  | 366 |  |
| 1.1                                 | 32800                 | 1.1            | 1274 | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 149300 | 186000 | 61600  | 354 |  |
| 1.3                                 | 29200                 | 1.0            | 1120 | -        | 3/V 10 L3 | - | BN 132S 4 | - | -                   | 121600 | 152800 | 59000  | 342 |  |
| 1.3                                 | 28700                 | 1.8            | 1116 | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 189300 | 222200 | 81500  | 380 |  |
| 1.3                                 | 29100                 | 1.5            | 1103 | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 143000 | 178100 | 58700  | 354 |  |
| 1.3                                 | 28000                 | 1.8            | 1088 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 175900 | 208200 | 71900  | 366 |  |
| 1.4                                 | 28400                 | 1.9            | 1009 | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 172000 | 203600 | 70100  | 366 |  |
| 1.4                                 | 25200                 | 1.4            | 1004 | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 139000 | 173200 | 56900  | 354 |  |
| 1.4                                 | 26200                 | 1.2            | 1004 | -        | 3/V 10 L3 | - | BN 132S 4 | - | -                   | 117600 | 147900 | 56900  | 342 |  |
| 1.4                                 | 28000                 | 2.2            | 997  | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 183000 | 214800 | 78500  | 380 |  |
| 1.6                                 | 23200                 | 1.8            | 900  | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 134500 | 167600 | 54800  | 354 |  |
| 1.6                                 | 23600                 | 2.3            | 893  | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 177000 | 207800 | 75700  | 380 |  |
| 1.7                                 | 23000                 | 2.3            | 870  | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 164500 | 194700 | 66700  | 366 |  |
| 1.7                                 | 23200                 | 1.8            | 827  | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 131100 | 163400 | 53300  | 354 |  |
| 1.8                                 | 20900                 | 1.0            | 800  | -        | 3/V 09 L3 | - | BN 132S 4 | - | -                   | 92700  | 119600 | 29200  | 354 |  |
| 1.8                                 | 22300                 | 2.2            | 794  | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 170900 | 200700 | 72800  | 380 |  |
| 1.9                                 | 22000                 | 1.0            | 773  | -        | 3/V 10 L3 | - | BN 132S 4 | - | -                   | 108700 | 136700 | 52100  | 342 |  |
| 1.9                                 | 19600                 | 2.3            | 741  | -        | 3/V 13 L3 | - | BN 132S 4 | - | -                   | 156800 | 185500 | 63200  | 366 |  |
| 2.0                                 | 19000                 | 2.1            | 720  | -        | 3/V 11 L3 | - | BN 132S 4 | - | -                   | 125800 | 156700 | 50900  | 354 |  |
| 2.1                                 | 20700                 | 1.1            | 701  | -        | 3/V 10 L3 | - | BN 132S 4 | - | -                   | 105600 | 132800 | 50400  | 342 |  |
| 2.1                                 | 18400                 | 2.3            | 695  | -        | 3/V 14 L3 | - | BN 132S 4 | - | -                   | 164300 | 192800 | 69700  | 380 |  |
| 2.2                                 | 17700                 | 1.0            | 655  | -        | 3/V 09 L3 | - | BN 132S 4 | - | -                   | 87300  | 112600 | 27300  | 354 |  |





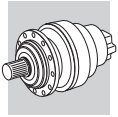
$P_1 = 5.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |           |           |   | $R_{n2}$ [N] |       |        |        |       |     |
|----------------------------|----------------|-------|------|-------------|-----------|-----------|-----------|---|--------------|-------|--------|--------|-------|-----|
|                            |                |       |      |             |           |           |           |   | MC/PC        | MZ/PZ | HC     | HZ     | FZ    |     |
| 2.2                        | 18100          | 2.2   | 644  | -           | 3/V 11 L3 | -         | BN 132S 4 | - | -            | -     | 121700 | 151600 | 49000 | 354 |
| 2.3                        | 17500          | 1.2   | 614  | -           | 3/V 10 L3 | -         | BN 132S 4 | - | -            | -     | 101500 | 127600 | 48300 | 342 |
| 2.6                        | 15900          | 1.6   | 560  | -           | 3/V 10 L3 | -         | BN 132S 4 | - | -            | -     | 98700  | 124100 | 46800 | 342 |
| 2.8                        | 14400          | 0.9   | 507  | -           | 3/V 07 L3 | -         | BN 132S 4 | - | 36100        | 45300 | 79600  | 104300 | 31400 | 318 |
| 2.8                        | 14400          | 1.0   | 507  | -           | 3/V 09 L3 | -         | BN 132S 4 | - | -            | -     | 80900  | 104300 | 25100 | 354 |
| 2.8                        | 14400          | 1.8   | 507  | -           | 3/V 10 L3 | -         | BN 132S 4 | - | -            | -     | 95800  | 120500 | 45300 | 342 |
| 3.1                        | 13100          | 0.9   | 460  | -           | 3/V 07 L3 | -         | BN 132S 4 | - | 34900        | 43800 | 77300  | 101300 | 30400 | 318 |
| 3.3                        | 12000          | 1.5   | 442  | -           | 3/V 09 L3 | -         | BN 132S 4 | - | -            | -     | 77600  | 100100 | 24000 | 354 |
| 3.3                        | 12400          | 2.2   | 436  | -           | 3/V 10 L3 | -         | BN 132S 4 | - | -            | -     | 91600  | 115200 | 43100 | 342 |
| 3.9                        | 10000          | 1.3   | 370  | -           | 3/V 09 L3 | -         | BN 132S 4 | - | -            | -     | 73600  | 94900  | 22600 | 354 |
| 4.2                        | 10800          | 1.1   | 341  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 31600        | 39700 | 70700  | 92600  | 27500 | 319 |
| 5.1                        | 8950           | 1.0   | 282  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 29600        | 37200 | 66700  | 87400  | 25800 | 319 |
| 6.0                        | 7670           | 1.2   | 241  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 28200        | 35300 | 63700  | 83500  | 24500 | 319 |
| 6.5                        | 7080           | 1.3   | 223  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 27400        | 34400 | 62200  | 81500  | 23800 | 319 |
| 6.5                        | 7010           | 0.9   | 221  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 24600        | 27900 | 57700  | 67100  | 18500 | 307 |
| 7.3                        | 6280           | 1.4   | 198  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 26300        | 33000 | 60000  | 78600  | 22900 | 319 |
| 7.6                        | 6030           | 1.3   | 190  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 23400        | 26500 | 55100  | 64200  | 17600 | 307 |
| 8.0                        | 5720           | 1.9   | 180  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 25500        | 32000 | 58300  | 76500  | 22200 | 319 |
| 8.8                        | 5200           | 1.2   | 164  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 22300        | 25200 | 52700  | 61400  | 16700 | 307 |
| 9.3                        | 4920           | 1.8   | 155  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 24300        | 30500 | 55800  | 73100  | 21100 | 319 |
| 10.2                       | 4470           | 1.7   | 141  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 21200        | 24000 | 50400  | 58700  | 15900 | 307 |
| 10.3                       | 4460           | 2.5   | 140  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 23500        | 29500 | 54100  | 70900  | 20400 | 319 |
| 11.1                       | 4120           | 2.7   | 130  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 22900        | 28700 | 52900  | 69300  | 19900 | 319 |
| 11.6                       | 4090           | 1.3   | 125  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 20300        | 23000 | 48600  | 56500  | 15300 | 307 |
| 12.8                       | 3570           | 1.7   | 112  | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 19600        | 22200 | 47100  | 54800  | 14700 | 307 |
| 13.2                       | 3450           | 2.6   | 109  | -           | -         | 3/A 07 L2 | BN 132S 4 | - | 21600        | 27100 | 50100  | 65700  | 18800 | 319 |
| 13.9                       | 3400           | 0.9   | 104  | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 15300        | 17700 | 28100  | 33800  | 9840  | 295 |
| 14.7                       | 3230           | 1.7   | 98.3 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 18800        | 21300 | 45200  | 52700  | 14100 | 307 |
| 16.3                       | 2910           | 2.1   | 88.5 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 18100        | 20600 | 43800  | 51000  | 13600 | 307 |
| 16.8                       | 2810           | 1.3   | 85.6 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 14400        | 16600 | 26500  | 31900  | 9240  | 295 |
| 17.7                       | 2670           | 2.4   | 81.2 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 17600        | 20000 | 42700  | 49700  | 13200 | 307 |
| 19.0                       | 2490           | 1.2   | 75.8 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 13800        | 16000 | 25600  | 30800  | 8870  | 295 |
| 19.9                       | 2380           | 1.4   | 72.5 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 13600        | 15700 | 25200  | 30400  | 8740  | 295 |
| 20.6                       | 2290           | 2.5   | 69.9 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 16800        | 19000 | 40800  | 47500  | 12600 | 307 |
| 21.0                       | 2250           | 1.1   | 68.4 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 13400        | 15400 | 24800  | 29800  | 8580  | 283 |
| 23.0                       | 2060           | 1.6   | 62.6 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 13000        | 15000 | 24200  | 29100  | 8330  | 295 |
| 23.1                       | 2050           | 1.4   | 62.4 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 13000        | 15000 | 24100  | 29000  | 8320  | 283 |
| 25.2                       | 1870           | 1.8   | 57.0 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 12600        | 14500 | 23500  | 28300  | 8070  | 295 |
| 25.9                       | 1830           | 2.5   | 55.7 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 15500        | 17600 | 38100  | 44400  | 11700 | 307 |
| 26.4                       | 1790           | 1.3   | 54.5 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 12400        | 14300 | 23200  | 27900  | 7950  | 283 |
| 27.0                       | 1750           | 1.7   | 53.3 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 12300        | 14200 | 23000  | 27700  | 7890  | 295 |
| 29.0                       | 1630           | 1.4   | 49.7 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 12000        | 13900 | 22500  | 27100  | 7710  | 283 |
| 31                         | 1550           | 2.5   | 47.2 | -           | -         | 3/A 06 L2 | BN 132S 4 | - | 14700        | 16700 | 36300  | 42300  | 11000 | 307 |
| 33                         | 1450           | 2.0   | 44.3 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 11600        | 13300 | 21800  | 26200  | 7420  | 283 |
| 33                         | 1440           | 2.3   | 44.0 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 11500        | 13300 | 21700  | 26100  | 7400  | 295 |
| 37                         | 1280           | 1.8   | 39.1 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 11100        | 12800 | 21000  | 25200  | 7120  | 283 |
| 37                         | 1280           | 2.4   | 39.0 | -           | -         | 3/A 05 L2 | BN 132S 4 | - | 11100        | 12800 | 21000  | 25200  | 7110  | 295 |
| 41                         | 1160           | 2.0   | 35.3 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 10700        | 12400 | 20300  | 24500  | 6880  | 283 |
| 48                         | 990            | 2.3   | 30.2 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 10200        | 11700 | 19400  | 23300  | 6530  | 283 |
| 56                         | 840            | 2.3   | 25.6 | -           | -         | 3/A 04 L2 | BN 132S 4 | - | 9630         | 11100 | 18500  | 22200  | 6180  | 283 |

$P_1 = 7.5 \text{ kW}$

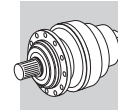
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | $P_t$<br>kW |           |   |            |   | $R_{n2}$ [N] |       |        |        |        |     |
|----------------------------|----------------|-------|------|-------------|-----------|---|------------|---|--------------|-------|--------|--------|--------|-----|
|                            |                |       |      |             |           |   |            |   | MC/PC        | MZ/PZ | HC     | HZ     | FZ     |     |
| 0.28                       | 183800         | 2.2   | 5164 | -           | 3/V 19 L4 | - | BN 132MA 4 | - | -            | -     | 638000 | 702000 | 200000 | 432 |
| 0.28                       | 193100         | 1.5   | 5099 | -           | 3/V 18 L4 | - | BN 132MA 4 | - | -            | -     | 503000 | 565000 | 200000 | 422 |
| 0.32                       | 172900         | 2.1   | 4457 | -           | 3/V 19 L4 | - | BN 132MA 4 | - | -            | -     | 638000 | 702000 | 200000 | 432 |
| 0.32                       | 154300         | 1.3   | 4449 | -           | 3/V 17 L4 | - | BN 132MA 4 | - | -            | -     | 442000 | 470000 | 150000 | 412 |
| 0.33                       | 166100         | 1.7   | 4386 | -           | 3/V 18 L4 | - | BN 132MA 4 | - | -            | -     | 503000 | 565000 | 200000 | 422 |
| 0.35                       | 152300         | 0.9   | 4171 | -           | 3/V 16 L4 | - | BN 132MA 4 | - | -            | -     | 345000 | 385000 | 150000 | 402 |
| 0.35                       | 156400         | 1.2   | 4129 | -           | 3/V 17 L4 | - | BN 132MA 4 | - | -            | -     | 442000 | 470000 | 150000 | 412 |





$P_1 = 7.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |            |         | Rn <sub>2</sub> [N] |        |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|------------|---------|---------------------|--------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |            |         | MC/PC               | MZ/PZ  | HC     | HZ     | FZ    |     |
| 0.35                                | 155100                | 2.5            | 4095 | -        | 3/V 19 L4 | -         | BN 132MA 4 | -       | -                   | 638000 | 702000 | 200000 | 432   |     |
| 0.39                                | 140000                | 2.0            | 3696 | -        | 3/V 18 L4 | -         | BN 132MA 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.41                                | 128300                | 1.1            | 3514 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.41                                | 132400                | 2.1            | 3495 | -        | 3/V 18 L4 | -         | BN 132MA 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.44                                | 118600                | 1.1            | 3250 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.45                                | 125300                | 2.9            | 3231 | -        | 3/V 19 L4 | -         | BN 132MA 4 | -       | -                   | 638000 | 702000 | 200000 | 432   |     |
| 0.45                                | 120000                | 1.6            | 3168 | -        | 3/V 17 L4 | -         | BN 132MA 4 | -       | -                   | 442000 | 470000 | 150000 | 412   |     |
| 0.49                                | 111600                | 2.4            | 2945 | -        | 3/V 18 L4 | -         | BN 132MA 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.52                                | 106600                | 1.0            | 2780 | -        | 3/V 15 L4 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.52                                | 98700                 | 1.7            | 2773 | -        | 3/V 17 L4 | -         | BN 132MA 4 | -       | -                   | 442000 | 470000 | 150000 | 412   |     |
| 0.53                                | 100000                | 1.1            | 2738 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.58                                | 88000                 | 0.9            | 2504 | -        | 3/V 14 L4 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.58                                | 95600                 | 2.9            | 2464 | -        | 3/V 18 L4 | -         | BN 132MA 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.61                                | 89800                 | 1.5            | 2343 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.62                                | 79600                 | 1.0            | 2318 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.63                                | 86900                 | 2.4            | 2295 | -        | 3/V 18 L4 | -         | BN 132MA 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.66                                | 83100                 | 1.5            | 2167 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.72                                | 69400                 | 1.0            | 1994 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.72                                | 68500                 | 1.4            | 1994 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.79                                | 70000                 | 1.5            | 1826 | -        | 3/V 16 L4 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.86                                | 60100                 | 1.0            | 1682 | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 192000 | 231000 | 80000  | 366   |     |
| 0.87                                | 59400                 | 1.3            | 1662 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.87                                | 59400                 | 1.7            | 1662 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.91                                | 55300                 | 1.0            | 1589 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.91                                | 56800                 | 2.0            | 1589 | -        | 3/V 16 L3 | -         | BN 132MA 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 1.0                                 | 50700                 | 1.1            | 1418 | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 190500 | 225400 | 78500  | 366   |     |
| 1.0                                 | 50100                 | 1.7            | 1400 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 202600 | 237900 | 88000  | 390   |     |
| 1.0                                 | 49300                 | 0.9            | 1378 | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 152900 | 190400 | 63200  | 354   |     |
| 1.1                                 | 46600                 | 1.0            | 1339 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 199900 | 234700 | 86700  | 380   |     |
| 1.1                                 | 48800                 | 2.0            | 1329 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 199500 | 234200 | 86400  | 390   |     |
| 1.1                                 | 47300                 | 1.3            | 1324 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 199300 | 233900 | 86300  | 380   |     |
| 1.1                                 | 47300                 | 2.4            | 1324 | -        | 3/V 16 L3 | -         | BN 132MA 4 | -       | -                   | 331300 | 368500 | 143900 | 402   |     |
| 1.1                                 | 46100                 | 1.1            | 1291 | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 185200 | 219200 | 76100  | 366   |     |
| 1.3                                 | 41100                 | 2.2            | 1120 | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 189500 | 222500 | 81600  | 390   |     |
| 1.3                                 | 39900                 | 1.3            | 1116 | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 189300 | 222200 | 81500  | 380   |     |
| 1.3                                 | 40500                 | 1.1            | 1103 | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 143000 | 178100 | 58700  | 354   |     |
| 1.3                                 | 38900                 | 1.3            | 1088 | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 175900 | 208200 | 71900  | 366   |     |
| 1.4                                 | 39400                 | 1.4            | 1009 | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 172000 | 203600 | 70100  | 366   |     |
| 1.4                                 | 35000                 | 1.0            | 1004 | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 139000 | 173200 | 56900  | 354   |     |
| 1.4                                 | 38900                 | 1.6            | 997  | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 183000 | 214800 | 78500  | 380   |     |
| 1.4                                 | 38900                 | 2.4            | 997  | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 183000 | 214800 | 78500  | 390   |     |
| 1.6                                 | 32200                 | 1.3            | 900  | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 134500 | 167600 | 54800  | 354   |     |
| 1.6                                 | 32800                 | 1.7            | 893  | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 177000 | 207800 | 75700  | 380   |     |
| 1.7                                 | 31900                 | 1.7            | 870  | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 164500 | 194700 | 66700  | 366   |     |
| 1.7                                 | 32800                 | 2.5            | 840  | -        | 3/V 15 L3 | -         | BN 132MA 4 | -       | -                   | 173800 | 204100 | 74200  | 390   |     |
| 1.7                                 | 32300                 | 1.3            | 827  | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 131100 | 163400 | 53300  | 354   |     |
| 1.8                                 | 31000                 | 1.6            | 794  | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 170900 | 200700 | 72800  | 380   |     |
| 1.9                                 | 27200                 | 1.7            | 741  | -        | 3/V 13 L3 | -         | BN 132MA 4 | -       | -                   | 156800 | 185500 | 63200  | 366   |     |
| 2.0                                 | 26400                 | 1.5            | 720  | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 125800 | 156700 | 50900  | 354   |     |
| 2.1                                 | 25500                 | 1.7            | 695  | -        | 3/V 14 L3 | -         | BN 132MA 4 | -       | -                   | 164300 | 192800 | 69700  | 380   |     |
| 2.2                                 | 25200                 | 1.6            | 644  | -        | 3/V 11 L3 | -         | BN 132MA 4 | -       | -                   | 121700 | 151600 | 49000  | 354   |     |
| 2.6                                 | 22100                 | 1.2            | 560  | -        | 3/V 10 L3 | -         | BN 132MA 4 | -       | -                   | 98700  | 124100 | 46800  | 342   |     |
| 2.8                                 | 20000                 | 1.3            | 507  | -        | 3/V 10 L3 | -         | BN 132MA 4 | -       | -                   | 95800  | 120500 | 45300  | 342   |     |
| 3.3                                 | 16600                 | 1.1            | 442  | -        | 3/V 09 L3 | -         | BN 132MA 4 | -       | -                   | 77600  | 100100 | 24000  | 354   |     |
| 3.3                                 | 17200                 | 1.5            | 436  | -        | 3/V 10 L3 | -         | BN 132MA 4 | -       | -                   | 91600  | 115200 | 43100  | 342   |     |
| 3.9                                 | 13900                 | 0.9            | 370  | -        | 3/V 09 L3 | -         | BN 132MA 4 | -       | -                   | 73600  | 94900  | 22600  | 354   |     |
| 6.5                                 | 9840                  | 0.9            | 223  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 27400               | 34400  | 62200  | 81500  | 23800 | 319 |
| 7.3                                 | 8720                  | 1.0            | 198  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 26300               | 33000  | 60000  | 78600  | 22900 | 319 |
| 7.6                                 | 8380                  | 0.9            | 190  | -        | -         | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 23400               | 26500  | 55100  | 64200  | 17600 | 307 |
| 8.0                                 | 7950                  | 1.4            | 180  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 25500               | 32000  | 58300  | 76500  | 22200 | 319 |
| 9.3                                 | 6840                  | 1.3            | 155  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 24300               | 30500  | 55800  | 73100  | 21100 | 319 |
| 10.2                                | 6210                  | 1.2            | 141  | -        | -         | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 21200               | 24000  | 50400  | 58700  | 15900 | 307 |
| 10.3                                | 6190                  | 1.8            | 140  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 23500               | 29500  | 54100  | 70900  | 20400 | 319 |
| 11.1                                | 5720                  | 1.9            | 130  | -        | -         | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 22900               | 28700  | 52900  | 69300  | 19900 | 319 |
| 11.6                                | 5680                  | 1.0            | 125  | -        | -         | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 20300               | 23000  | 48600  | 56500  | 15300 | 307 |



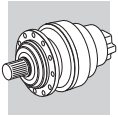
$P_1 = 7.5 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |   |           |            |         | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|---|-----------|------------|---------|---------------------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |          |   |           |            |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |     |
| 12.8                                | 4950                  | 1.2            | 112  | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 19600               | 22200 | 47100 | 54800 | 14700 | 307 |
| 13.2                                | 4800                  | 1.8            | 109  | -        | - | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 21600               | 27100 | 50100 | 65700 | 18800 | 319 |
| 14.7                                | 4480                  | 1.2            | 98.3 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 18800               | 21300 | 45200 | 52700 | 14100 | 307 |
| 16.3                                | 4040                  | 1.5            | 88.5 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 18100               | 20600 | 43800 | 51000 | 13600 | 307 |
| 16.4                                | 4000                  | 2.6            | 87.7 | -        | - | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 20100               | 25200 | 47000 | 61600 | 17500 | 319 |
| 16.8                                | 3900                  | 0.9            | 85.6 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 14400               | 16600 | 26500 | 31900 | 9240  | 295 |
| 17.7                                | 3700                  | 1.8            | 81.2 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 17600               | 20000 | 42700 | 49700 | 13200 | 307 |
| 19.9                                | 3310                  | 1.0            | 72.5 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 13600               | 15700 | 25200 | 30400 | 8740  | 295 |
| 20.6                                | 3190                  | 1.8            | 69.9 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 16800               | 19000 | 40800 | 47500 | 12600 | 307 |
| 21.1                                | 3110                  | 2.5            | 68.3 | -        | - | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 18500               | 23200 | 43600 | 57200 | 16100 | 319 |
| 23.0                                | 2850                  | 1.1            | 62.6 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 13000               | 15000 | 24200 | 29100 | 8330  | 295 |
| 23.1                                | 2840                  | 1.0            | 62.4 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 13000               | 15000 | 24100 | 29000 | 8320  | 283 |
| 23.9                                | 2740                  | 2.2            | 60.1 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 15900               | 18100 | 39000 | 45500 | 12000 | 307 |
| 25.1                                | 2610                  | 2.5            | 57.3 | -        | - | 3/A 07 L2 | BN 132MA 4 | M 4LA 4 | 17400               | 21900 | 41400 | 54200 | 15200 | 319 |
| 25.2                                | 2600                  | 1.3            | 57.0 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 12600               | 14500 | 23500 | 28300 | 8070  | 295 |
| 25.9                                | 2540                  | 1.8            | 55.7 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 15500               | 17600 | 38100 | 44400 | 11700 | 307 |
| 26.4                                | 2490                  | 1.0            | 54.5 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 12400               | 14300 | 23200 | 27900 | 7950  | 283 |
| 27.0                                | 2430                  | 1.3            | 53.3 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 12300               | 14200 | 23000 | 27700 | 7890  | 295 |
| 27.8                                | 2360                  | 2.2            | 51.7 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 15200               | 17200 | 37300 | 43400 | 11400 | 307 |
| 29.0                                | 2270                  | 1.0            | 49.7 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 12000               | 13900 | 22500 | 27100 | 7710  | 283 |
| 31                                  | 2150                  | 1.8            | 47.2 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 14700               | 16700 | 36300 | 42300 | 11000 | 307 |
| 33                                  | 2020                  | 1.4            | 44.3 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 11600               | 13300 | 21800 | 26200 | 7420  | 283 |
| 33                                  | 2010                  | 1.6            | 44.0 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 11500               | 13300 | 21700 | 26100 | 7400  | 295 |
| 35                                  | 1870                  | 2.6            | 41.1 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 14000               | 15900 | 34800 | 40500 | 10500 | 307 |
| 37                                  | 1780                  | 1.3            | 39.1 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 11100               | 12800 | 21000 | 25200 | 7120  | 283 |
| 37                                  | 1780                  | 1.7            | 39.0 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 11100               | 12800 | 21000 | 25200 | 7110  | 295 |
| 41                                  | 1610                  | 1.4            | 35.3 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 10700               | 12400 | 20300 | 24500 | 6880  | 283 |
| 41                                  | 1590                  | 2.2            | 34.9 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 13300               | 15100 | 33200 | 38600 | 9990  | 307 |
| 44                                  | 1490                  | 2.6            | 32.7 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 13000               | 14700 | 32500 | 37900 | 9780  | 307 |
| 45                                  | 1470                  | 2.3            | 32.2 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 10400               | 12000 | 19800 | 23800 | 6670  | 295 |
| 48                                  | 1380                  | 1.7            | 30.2 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 10200               | 11700 | 19400 | 23300 | 6530  | 283 |
| 52                                  | 1260                  | 2.2            | 27.7 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 9890                | 11400 | 18900 | 22800 | 6350  | 283 |
| 52                                  | 1260                  | 2.3            | 27.7 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 9890                | 11400 | 18900 | 22800 | 6350  | 295 |
| 52                                  | 1260                  | 2.6            | 27.7 | -        | - | 3/A 06 L2 | BN 132MA 4 | M 4LA 4 | 12300               | 14000 | 30900 | 36000 | 9250  | 307 |
| 56                                  | 1170                  | 1.6            | 25.6 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 9630                | 11100 | 18500 | 22200 | 6180  | 283 |
| 65                                  | 1010                  | 2.3            | 22.1 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 9170                | 10600 | 17700 | 21300 | 5880  | 283 |
| 65                                  | 1010                  | 2.3            | 22.1 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 9170                | 10600 | 17700 | 21300 | 5880  | 295 |
| 77                                  | 850                   | 2.2            | 18.7 | -        | - | 3/A 04 L2 | BN 132MA 4 | M 4LA 4 | 8680                | 10000 | 16800 | 20200 | 5570  | 283 |
| 77                                  | 850                   | 2.2            | 18.7 | -        | - | 3/A 05 L2 | BN 132MA 4 | M 4LA 4 | 8680                | 10000 | 16800 | 20200 | 5570  | 295 |

$P_1 = 9.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |            |   | Rn <sub>2</sub> [N] |       |        |        |         |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|------------|---|---------------------|-------|--------|--------|---------|-----|
|                                     |                       |                |      |          |           |   |            |   | MC/PC               | MZ/PZ | HC     | HZ     | FZ      |     |
| 0.28                                | 224200                | 1.8            | 5164 | -        | 3/V 19 L4 | - | BN 132MB 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.28                                | 235600                | 1.2            | 5099 | -        | 3/V 18 L4 | - | BN 132MB 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.29                                | 221700                | 2.5            | 5040 | -        | 3/V 21 L4 | - | BN 132MB 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.32                                | 212800                | 2.6            | 4550 | -        | 3/V 21 L4 | - | BN 132MB 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.32                                | 210900                | 1.7            | 4457 | -        | 3/V 19 L4 | - | BN 132MB 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.32                                | 188200                | 1.1            | 4449 | -        | 3/V 17 L4 | - | BN 132MB 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.33                                | 202700                | 1.4            | 4386 | -        | 3/V 18 L4 | - | BN 132MB 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.35                                | 190800                | 1.0            | 4129 | -        | 3/V 17 L4 | - | BN 132MB 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.35                                | 189200                | 2.0            | 4095 | -        | 3/V 19 L4 | - | BN 132MB 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.38                                | 176800                | 2.6            | 3780 | -        | 3/V 21 L4 | - | BN 132MB 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.39                                | 170800                | 1.6            | 3696 | -        | 3/V 18 L4 | - | BN 132MB 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.41                                | 161500                | 1.7            | 3495 | -        | 3/V 18 L4 | - | BN 132MB 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.44                                | 144700                | 0.9            | 3250 | -        | 3/V 16 L4 | - | BN 132MB 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |
| 0.45                                | 152900                | 2.4            | 3231 | -        | 3/V 19 L4 | - | BN 132MB 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.45                                | 146400                | 1.3            | 3168 | -        | 3/V 17 L4 | - | BN 132MB 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.49                                | 136100                | 2.0            | 2945 | -        | 3/V 18 L4 | - | BN 132MB 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.52                                | 120400                | 1.4            | 2773 | -        | 3/V 17 L4 | - | BN 132MB 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.53                                | 122000                | 0.9            | 2738 | -        | 3/V 16 L4 | - | BN 132MB 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |

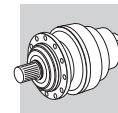
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$P_1 = 9.2 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |            |         | Rn <sub>2</sub> [N] |        |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|------------|---------|---------------------|--------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |            |         | MC/PC               | MZ/PZ  | HC     | HZ     | FZ    |     |
| 0.56                                | 122200                | 3.0            | 2582 | -        | 3/V 19 L4 | -         | BN 132MB 4 | -       | -                   | 638000 | 702000 | 200000 | 432   |     |
| 0.58                                | 116600                | 2.4            | 2464 | -        | 3/V 18 L4 | -         | BN 132MB 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.61                                | 109600                | 1.3            | 2343 | -        | 3/V 16 L4 | -         | BN 132MB 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.63                                | 106000                | 2.0            | 2295 | -        | 3/V 18 L4 | -         | BN 132MB 4 | -       | -                   | 503000 | 565000 | 200000 | 422   |     |
| 0.66                                | 101300                | 1.3            | 2167 | -        | 3/V 16 L4 | -         | BN 132MB 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.72                                | 83500                 | 1.1            | 1994 | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.79                                | 85400                 | 1.3            | 1826 | -        | 3/V 16 L4 | -         | BN 132MB 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 0.87                                | 72500                 | 1.0            | 1662 | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 206000 | 243000 | 90000  | 380   |     |
| 0.87                                | 72500                 | 1.4            | 1662 | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 206000 | 243000 | 90000  | 390   |     |
| 0.91                                | 69300                 | 1.6            | 1589 | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 345000 | 385000 | 150000 | 402   |     |
| 1.0                                 | 61800                 | 0.9            | 1418 | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 190500 | 225400 | 78500  | 366   |     |
| 1.0                                 | 61100                 | 1.4            | 1400 | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 202600 | 237900 | 88000  | 390   |     |
| 1.1                                 | 61900                 | 2.5            | 1365 | -        | 3/V 17 L3 | -         | BN 132MB 4 | -       | -                   | 429900 | 457700 | 145400 | 412   |     |
| 1.1                                 | 59500                 | 1.6            | 1329 | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 199500 | 234200 | 86400  | 390   |     |
| 1.1                                 | 57800                 | 1.1            | 1324 | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 199300 | 233900 | 86300  | 380   |     |
| 1.1                                 | 57800                 | 1.9            | 1324 | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 331300 | 368500 | 143900 | 402   |     |
| 1.1                                 | 56300                 | 0.9            | 1291 | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 185200 | 219200 | 76100  | 366   |     |
| 1.2                                 | 58600                 | 2.6            | 1215 | -        | 3/V 17 L3 | -         | BN 132MB 4 | -       | -                   | 415100 | 442000 | 139800 | 412   |     |
| 1.3                                 | 51400                 | 2.5            | 1134 | -        | 3/V 17 L3 | -         | BN 132MB 4 | -       | -                   | 406600 | 432900 | 136600 | 412   |     |
| 1.3                                 | 50100                 | 1.8            | 1120 | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 189500 | 222500 | 81600  | 390   |     |
| 1.3                                 | 48700                 | 1.1            | 1116 | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 189300 | 222200 | 81500  | 380   |     |
| 1.3                                 | 47400                 | 1.1            | 1088 | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 175900 | 208200 | 71900  | 366   |     |
| 1.4                                 | 48000                 | 2.5            | 1059 | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 309800 | 344600 | 133600 | 402   |     |
| 1.4                                 | 49400                 | 2.6            | 1024 | -        | 3/V 17 L3 | -         | BN 132MB 4 | -       | -                   | 394300 | 419900 | 132100 | 412   |     |
| 1.4                                 | 48100                 | 1.1            | 1009 | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 172000 | 203600 | 70100  | 366   |     |
| 1.4                                 | 47500                 | 1.3            | 997  | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 183000 | 214800 | 78500  | 380   |     |
| 1.4                                 | 47500                 | 2.0            | 997  | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 183000 | 214800 | 78500  | 390   |     |
| 1.6                                 | 39300                 | 1.0            | 900  | -        | 3/V 11 L3 | -         | BN 132MB 4 | -       | -                   | 134500 | 167600 | 54800  | 354   |     |
| 1.6                                 | 40000                 | 1.4            | 893  | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 177000 | 207800 | 75700  | 380   |     |
| 1.6                                 | 40500                 | 2.5            | 893  | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 294300 | 327300 | 126200 | 402   |     |
| 1.7                                 | 38900                 | 1.4            | 870  | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 164500 | 194700 | 66700  | 366   |     |
| 1.7                                 | 41000                 | 2.6            | 851  | -        | 3/V 17 L3 | -         | BN 132MB 4 | -       | -                   | 373000 | 397100 | 124200 | 412   |     |
| 1.7                                 | 40000                 | 2.0            | 840  | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 173800 | 204100 | 74200  | 390   |     |
| 1.7                                 | 39400                 | 1.1            | 827  | -        | 3/V 11 L3 | -         | BN 132MB 4 | -       | -                   | 131100 | 163400 | 53300  | 354   |     |
| 1.8                                 | 37800                 | 1.3            | 794  | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 170900 | 200700 | 72800  | 380   |     |
| 1.8                                 | 38300                 | 2.6            | 794  | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 284200 | 316100 | 121400 | 402   |     |
| 1.9                                 | 33200                 | 1.4            | 741  | -        | 3/V 13 L3 | -         | BN 132MB 4 | -       | -                   | 156800 | 185500 | 63200  | 366   |     |
| 2.0                                 | 32200                 | 1.2            | 720  | -        | 3/V 11 L3 | -         | BN 132MB 4 | -       | -                   | 125800 | 156700 | 50900  | 354   |     |
| 2.1                                 | 31100                 | 1.4            | 695  | -        | 3/V 14 L3 | -         | BN 132MB 4 | -       | -                   | 164300 | 192800 | 69700  | 380   |     |
| 2.2                                 | 32300                 | 2.6            | 669  | -        | 3/V 16 L3 | -         | BN 132MB 4 | -       | -                   | 270000 | 300300 | 114600 | 402   |     |
| 2.2                                 | 32400                 | 2.7            | 665  | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 162000 | 190200 | 68600  | 390   |     |
| 2.2                                 | 30700                 | 1.3            | 644  | -        | 3/V 11 L3 | -         | BN 132MB 4 | -       | -                   | 121700 | 151600 | 49000  | 354   |     |
| 2.6                                 | 27000                 | 1.0            | 560  | -        | 3/V 10 L3 | -         | BN 132MB 4 | -       | -                   | 98700  | 124100 | 46800  | 342   |     |
| 2.6                                 | 27300                 | 3.0            | 560  | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 153900 | 180700 | 64800  | 390   |     |
| 2.8                                 | 24500                 | 1.1            | 507  | -        | 3/V 10 L3 | -         | BN 132MB 4 | -       | -                   | 95800  | 120500 | 45300  | 342   |     |
| 3.2                                 | 21800                 | 3.0            | 446  | -        | 3/V 15 L3 | -         | BN 132MB 4 | -       | -                   | 143800 | 168800 | 60100  | 390   |     |
| 3.3                                 | 21000                 | 1.3            | 436  | -        | 3/V 10 L3 | -         | BN 132MB 4 | -       | -                   | 91600  | 115200 | 43100  | 342   |     |
| 8.0                                 | 9700                  | 1.1            | 180  | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 25500               | 32000  | 58300  | 76500  | 22200 | 319 |
| 9.3                                 | 8340                  | 1.1            | 155  | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 24300               | 30500  | 55800  | 73100  | 21100 | 319 |
| 10.2                                | 7580                  | 1.0            | 141  | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 21200               | 24000  | 50400  | 58700  | 15900 | 307 |
| 10.3                                | 7560                  | 1.5            | 140  | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 23500               | 29500  | 54100  | 70900  | 20400 | 319 |
| 11.1                                | 6980                  | 1.6            | 130  | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 22900               | 28700  | 52900  | 69300  | 19900 | 319 |
| 12.8                                | 6040                  | 1.0            | 112  | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 19600               | 22200  | 47100  | 54800  | 14700 | 307 |
| 13.2                                | 5850                  | 1.5            | 109  | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 21600               | 27100  | 50100  | 65700  | 18800 | 319 |
| 14.7                                | 5460                  | 1.0            | 98.3 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 18800               | 21300  | 45200  | 52700  | 14100 | 307 |
| 16.3                                | 4920                  | 1.3            | 88.5 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 18100               | 20600  | 43800  | 51000  | 13600 | 307 |
| 16.4                                | 4880                  | 2.1            | 87.7 | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 20100               | 25200  | 47000  | 61600  | 17500 | 319 |
| 17.7                                | 4520                  | 1.4            | 81.2 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 17600               | 20000  | 42700  | 49700  | 13200 | 307 |
| 20.6                                | 3890                  | 1.5            | 69.9 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 16800               | 19000  | 40800  | 47500  | 12600 | 307 |
| 21.1                                | 3800                  | 2.1            | 68.3 | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 18500               | 23200  | 43600  | 57200  | 16100 | 319 |
| 23.0                                | 3480                  | 0.9            | 62.6 | -        | -         | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | 13000               | 15000  | 24200  | 29100  | 8330  | 295 |
| 23.9                                | 3340                  | 1.8            | 60.1 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 15900               | 18100  | 39000  | 45500  | 12000 | 307 |
| 25.1                                | 3180                  | 2.1            | 57.3 | -        | -         | 3/A 07 L2 | BN 132MB 4 | M 4LB 4 | 17400               | 21900  | 41400  | 54200  | 15200 | 319 |
| 25.2                                | 3170                  | 1.0            | 57.0 | -        | -         | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | 12600               | 14500  | 23500  | 28300  | 8070  | 295 |
| 25.9                                | 3100                  | 1.5            | 55.7 | -        | -         | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | 15500               | 17600  | 38100  | 44400  | 11700 | 307 |





**P<sub>1</sub> = 9.2 kW**

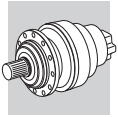
| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |   |           |            |         | Rn <sub>2</sub> [N] |       |       |       |       |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|---|-----------|------------|---------|---------------------|-------|-------|-------|-------|-------|-----|
|                                     |                       |                |      |          |   |           |            |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 27.0                                | 2960                  | 1.0            | 53.3 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 12300 | 14200 | 23000 | 27700 | 7890  | 295 |
| 27.8                                | 2880                  | 1.8            | 51.7 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 15200 | 17200 | 37300 | 43400 | 11400 | 307 |
| 31                                  | 2620                  | 1.5            | 47.2 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 14700 | 16700 | 36300 | 42300 | 11000 | 307 |
| 33                                  | 2460                  | 1.2            | 44.3 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 11600 | 13300 | 21800 | 26200 | 7420  | 283 |
| 33                                  | 2450                  | 1.4            | 44.0 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 11500 | 13300 | 21700 | 26100 | 7400  | 295 |
| 35                                  | 2280                  | 2.1            | 41.1 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 14000 | 15900 | 34800 | 40500 | 10500 | 307 |
| 37                                  | 2170                  | 1.0            | 39.1 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 11100 | 12800 | 21000 | 25200 | 7120  | 283 |
| 37                                  | 2170                  | 1.4            | 39.0 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 11100 | 12800 | 21000 | 25200 | 7110  | 295 |
| 41                                  | 1960                  | 1.2            | 35.3 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 10700 | 12400 | 20300 | 24500 | 6880  | 283 |
| 41                                  | 1940                  | 1.8            | 34.9 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 13300 | 15100 | 33200 | 38600 | 9990  | 307 |
| 44                                  | 1820                  | 2.2            | 32.7 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 13000 | 14700 | 32500 | 37900 | 9780  | 307 |
| 45                                  | 1790                  | 1.8            | 32.2 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 10400 | 12000 | 19800 | 23800 | 6670  | 295 |
| 48                                  | 1680                  | 1.4            | 30.2 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 10200 | 11700 | 19400 | 23300 | 6530  | 283 |
| 52                                  | 1540                  | 1.8            | 27.7 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 9890  | 11400 | 18900 | 22800 | 6350  | 283 |
| 52                                  | 1540                  | 1.8            | 27.7 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 9890  | 11400 | 18900 | 22800 | 6350  | 295 |
| 52                                  | 1540                  | 2.2            | 27.7 | -        | - | 3/A 06 L2 | BN 132MB 4 | M 4LB 4 | -                   | 12300 | 14000 | 30900 | 36000 | 9250  | 307 |
| 56                                  | 1420                  | 1.4            | 25.6 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 9630  | 11100 | 18500 | 22200 | 6180  | 283 |
| 65                                  | 1230                  | 1.8            | 22.1 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 9170  | 10600 | 17700 | 21300 | 5880  | 283 |
| 65                                  | 1230                  | 1.8            | 22.1 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 9170  | 10600 | 17700 | 21300 | 5880  | 295 |
| 77                                  | 1040                  | 1.8            | 18.7 | -        | - | 3/A 04 L2 | BN 132MB 4 | M 4LB 4 | -                   | 8680  | 10000 | 16800 | 20200 | 5570  | 283 |
| 77                                  | 1040                  | 1.8            | 18.7 | -        | - | 3/A 05 L2 | BN 132MB 4 | M 4LB 4 | -                   | 8680  | 10000 | 16800 | 20200 | 5570  | 295 |

**P<sub>1</sub> = 11 kW**

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |            |   | Rn <sub>2</sub> [N] |       |        |        |         |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|------------|---|---------------------|-------|--------|--------|---------|-----|
|                                     |                       |                |      |          |           |   |            |   | MC/PC               | MZ/PZ | HC     | HZ     | FZ      |     |
| 0.28                                | 268300                | 1.5            | 5164 | -        | 3/V 19 L4 | - | BN 160MR 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.28                                | 282000                | 1.0            | 5099 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.29                                | 265300                | 2.1            | 5040 | -        | 3/V 21 L4 | - | BN 160MR 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.32                                | 254600                | 2.2            | 4550 | -        | 3/V 21 L4 | - | BN 160MR 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.32                                | 252400                | 1.4            | 4457 | -        | 3/V 19 L4 | - | BN 160MR 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.33                                | 242600                | 1.2            | 4386 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.35                                | 226400                | 1.7            | 4095 | -        | 3/V 19 L4 | - | BN 160MR 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.38                                | 211500                | 2.2            | 3780 | -        | 3/V 21 L4 | - | BN 160MR 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.39                                | 204400                | 1.4            | 3696 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.40                                | 206300                | 2.6            | 3600 | -        | 3/V 21 L4 | - | BN 160MR 4 | - | -                   | -     | 779000 | 923000 | 1200000 | 442 |
| 0.41                                | 193300                | 1.5            | 3495 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.45                                | 183000                | 2.0            | 3231 | -        | 3/V 19 L4 | - | BN 160MR 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.45                                | 175200                | 1.1            | 3168 | -        | 3/V 17 L4 | - | BN 160MR 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.49                                | 162900                | 1.7            | 2945 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.52                                | 144100                | 1.2            | 2773 | -        | 3/V 17 L4 | - | BN 160MR 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.56                                | 146200                | 2.5            | 2582 | -        | 3/V 19 L4 | - | BN 160MR 4 | - | -                   | -     | 638000 | 702000 | 200000  | 432 |
| 0.58                                | 145700                | 1.1            | 2485 | -        | 3/V 17 L4 | - | BN 160MR 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.58                                | 139500                | 2.0            | 2464 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.61                                | 131100                | 1.1            | 2343 | -        | 3/V 16 L4 | - | BN 160MR 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |
| 0.63                                | 126900                | 1.7            | 2295 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.66                                | 121300                | 1.1            | 2167 | -        | 3/V 16 L4 | - | BN 160MR 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |
| 0.70                                | 121100                | 1.5            | 2065 | -        | 3/V 17 L4 | - | BN 160MR 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.72                                | 100000                | 0.9            | 1994 | -        | 3/V 15 L3 | - | BN 160MR 4 | - | -                   | -     | 206000 | 243000 | 90000   | 390 |
| 0.78                                | 108300                | 2.6            | 1848 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.79                                | 102200                | 1.1            | 1826 | -        | 3/V 16 L4 | - | BN 160MR 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |
| 0.81                                | 100800                | 1.8            | 1780 | -        | 3/V 17 L4 | - | BN 160MR 4 | - | -                   | -     | 442000 | 470000 | 150000  | 412 |
| 0.82                                | 102500                | 2.7            | 1748 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 565000 | 200000  | 422 |
| 0.87                                | 86700                 | 1.1            | 1662 | -        | 3/V 15 L3 | - | BN 160MR 4 | - | -                   | -     | 206000 | 243000 | 90000   | 390 |
| 0.91                                | 82900                 | 1.4            | 1589 | -        | 3/V 16 L3 | - | BN 160MR 4 | - | -                   | -     | 345000 | 385000 | 150000  | 402 |
| 0.98                                | 86300                 | 3.0            | 1473 | -        | 3/V 18 L4 | - | BN 160MR 4 | - | -                   | -     | 503000 | 563100 | 198800  | 422 |
| 1.0                                 | 73100                 | 1.2            | 1400 | -        | 3/V 15 L3 | - | BN 160MR 4 | - | -                   | -     | 202600 | 237900 | 88000   | 390 |
| 1.1                                 | 74100                 | 2.1            | 1365 | -        | 3/V 17 L3 | - | BN 160MR 4 | - | -                   | -     | 429900 | 457700 | 145400  | 412 |
| 1.1                                 | 71200                 | 1.4            | 1329 | -        | 3/V 15 L3 | - | BN 160MR 4 | - | -                   | -     | 199500 | 234200 | 86400   | 390 |
| 1.1                                 | 69100                 | 1.6            | 1324 | -        | 3/V 16 L3 | - | BN 160MR 4 | - | -                   | -     | 331300 | 368500 | 143900  | 402 |
| 1.2                                 | 70100                 | 2.2            | 1215 | -        | 3/V 17 L3 | - | BN 160MR 4 | - | -                   | -     | 415100 | 442000 | 139800  | 412 |
| 1.3                                 | 61500                 | 2.1            | 1134 | -        | 3/V 17 L3 | - | BN 160MR 4 | - | -                   | -     | 406600 | 432900 | 136600  | 412 |

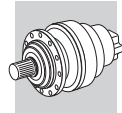






$P_1 = 11 \text{ kW}$

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |           |            |         | Rn <sub>2</sub> [N] |        |        |        |       |     |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|-----------|------------|---------|---------------------|--------|--------|--------|-------|-----|
|                                     |                       |                |      |          |           |           |            |         | MC/PC               | MZ/PZ  | HC     | HZ     | FZ    |     |
| 1.3                                 | 60000                 | 1.5            | 1120 | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 189500 | 222500 | 81600  | 390   |     |
| 1.4                                 | 57500                 | 2.1            | 1059 | -        | 3/V 16 L3 | -         | BN 160MR 4 | -       | -                   | 309800 | 344600 | 133600 | 402   |     |
| 1.4                                 | 59100                 | 2.2            | 1024 | -        | 3/V 17 L3 | -         | BN 160MR 4 | -       | -                   | 394300 | 419900 | 132100 | 412   |     |
| 1.4                                 | 57500                 | 0.9            | 1009 | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 172000 | 203600 | 70100  | 366   |     |
| 1.4                                 | 56800                 | 1.1            | 997  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 183000 | 214800 | 78500  | 380   |     |
| 1.4                                 | 56800                 | 1.6            | 997  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 183000 | 214800 | 78500  | 390   |     |
| 1.6                                 | 47800                 | 1.2            | 893  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 177000 | 207800 | 75700  | 380   |     |
| 1.6                                 | 48400                 | 2.1            | 893  | -        | 3/V 16 L3 | -         | BN 160MR 4 | -       | -                   | 294300 | 327300 | 126200 | 402   |     |
| 1.7                                 | 46600                 | 1.2            | 870  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 164500 | 194700 | 66700  | 366   |     |
| 1.7                                 | 49100                 | 2.2            | 851  | -        | 3/V 17 L3 | -         | BN 160MR 4 | -       | -                   | 373000 | 397100 | 124200 | 412   |     |
| 1.7                                 | 47900                 | 1.7            | 840  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 173800 | 204100 | 74200  | 390   |     |
| 1.8                                 | 47300                 | 0.9            | 810  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 161100 | 190600 | 65100  | 366   |     |
| 1.8                                 | 47800                 | 3.0            | 810  | -        | 3/V 17 L3 | -         | BN 160MR 4 | -       | -                   | 367600 | 391400 | 122100 | 412   |     |
| 1.8                                 | 45300                 | 1.1            | 794  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 170900 | 200700 | 72800  | 380   |     |
| 1.8                                 | 45800                 | 2.2            | 794  | -        | 3/V 16 L3 | -         | BN 160MR 4 | -       | -                   | 284200 | 316100 | 121400 | 402   |     |
| 1.9                                 | 39700                 | 1.2            | 741  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 156800 | 185500 | 63200  | 366   |     |
| 2.0                                 | 38600                 | 1.0            | 720  | -        | 3/V 11 L3 | -         | BN 160MR 4 | -       | -                   | 125800 | 156700 | 50900  | 354   |     |
| 2.1                                 | 37300                 | 1.2            | 695  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 164300 | 192800 | 69700  | 380   |     |
| 2.1                                 | 39300                 | 1.3            | 673  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 152300 | 180300 | 61200  | 366   |     |
| 2.2                                 | 38600                 | 2.2            | 669  | -        | 3/V 16 L3 | -         | BN 160MR 4 | -       | -                   | 270000 | 300300 | 114600 | 402   |     |
| 2.2                                 | 38800                 | 1.8            | 665  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 162000 | 190200 | 68600  | 380   |     |
| 2.2                                 | 38800                 | 2.3            | 665  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 162000 | 190200 | 68600  | 390   |     |
| 2.2                                 | 36700                 | 1.1            | 644  | -        | 3/V 11 L3 | -         | BN 160MR 4 | -       | -                   | 121700 | 151600 | 49000  | 354   |     |
| 2.5                                 | 35000                 | 1.6            | 579  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 155500 | 182600 | 65500  | 380   |     |
| 2.5                                 | 33100                 | 1.5            | 567  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 144700 | 171300 | 57800  | 366   |     |
| 2.6                                 | 32700                 | 2.5            | 560  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 153900 | 180700 | 64800  | 390   |     |
| 2.6                                 | 32200                 | 1.2            | 551  | -        | 3/V 11 L3 | -         | BN 160MR 4 | -       | -                   | 116100 | 144600 | 46600  | 354   |     |
| 2.8                                 | 30100                 | 1.7            | 516  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 140700 | 166500 | 56100  | 366   |     |
| 2.8                                 | 29800                 | 1.2            | 510  | -        | 3/V 11 L3 | -         | BN 160MR 4 | -       | -                   | 113400 | 141300 | 45400  | 354   |     |
| 2.9                                 | 30100                 | 1.9            | 498  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 148600 | 174500 | 62300  | 380   |     |
| 2.9                                 | 30100                 | 2.8            | 498  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 148600 | 174500 | 62300  | 390   |     |
| 3.2                                 | 26100                 | 1.8            | 446  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 143800 | 168800 | 60100  | 380   |     |
| 3.2                                 | 26100                 | 2.5            | 446  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 143800 | 168800 | 60100  | 390   |     |
| 3.3                                 | 25200                 | 1.1            | 436  | -        | 3/V 10 L3 | -         | BN 160MR 4 | -       | -                   | 91600  | 115200 | 43100  | 342   |     |
| 3.4                                 | 25100                 | 1.6            | 430  | -        | 3/V 11 L3 | -         | BN 160MR 4 | -       | -                   | 107800 | 134200 | 42800  | 354   |     |
| 3.4                                 | 25700                 | 1.8            | 425  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 132700 | 157100 | 52600  | 366   |     |
| 3.6                                 | 24000                 | 1.9            | 397  | -        | 3/V 14 L3 | -         | BN 160MR 4 | -       | -                   | 138800 | 163000 | 57800  | 380   |     |
| 3.7                                 | 23600                 | 2.9            | 386  | -        | 3/V 15 L3 | -         | BN 160MR 4 | -       | -                   | 137700 | 161700 | 57300  | 390   |     |
| 3.9                                 | 21600                 | 1.8            | 370  | -        | 3/V 13 L3 | -         | BN 160MR 4 | -       | -                   | 127300 | 150700 | 50200  | 366   |     |
| 8.0                                 | 11600                 | 0.9            | 180  | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 25500               | 32000  | 58300  | 76500  | 22200 | 319 |
| 9.3                                 | 9990                  | 0.9            | 155  | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 24300               | 30500  | 55800  | 73100  | 21100 | 319 |
| 10.3                                | 9040                  | 1.2            | 140  | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 23500               | 29500  | 54100  | 70900  | 20400 | 319 |
| 11.1                                | 8360                  | 1.3            | 130  | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 22900               | 28700  | 52900  | 69300  | 19900 | 319 |
| 13.2                                | 7000                  | 1.3            | 109  | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 21600               | 27100  | 50100  | 65700  | 18800 | 319 |
| 16.3                                | 5890                  | 1.1            | 88.5 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 18100               | 20600  | 43800  | 51000  | 13600 | 307 |
| 16.4                                | 5840                  | 1.7            | 87.7 | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 20100               | 25200  | 47000  | 61600  | 17500 | 319 |
| 17.7                                | 5410                  | 1.2            | 81.2 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 17600               | 20000  | 42700  | 49700  | 13200 | 307 |
| 20.6                                | 4650                  | 1.2            | 69.9 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 16800               | 19000  | 40800  | 47500  | 12600 | 307 |
| 21.1                                | 4550                  | 1.7            | 68.3 | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 18500               | 23200  | 43600  | 57200  | 16100 | 319 |
| 23.9                                | 4000                  | 1.5            | 60.1 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 15900               | 18100  | 39000  | 45500  | 12000 | 307 |
| 25.1                                | 3810                  | 1.7            | 57.3 | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 17400               | 21900  | 41400  | 54200  | 15200 | 319 |
| 25.9                                | 3710                  | 1.2            | 55.7 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 15500               | 17600  | 38100  | 44400  | 11700 | 307 |
| 27.8                                | 3440                  | 1.5            | 51.7 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 15200               | 17200  | 37300  | 43400  | 11400 | 307 |
| 29.3                                | 3280                  | 2.6            | 49.2 | -        | -         | 3/A 07 L2 | BN 160MR 4 | M 4LC 4 | 16600               | 20800  | 39500  | 51800  | 14400 | 319 |
| 31                                  | 3140                  | 1.2            | 47.2 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 14700               | 16700  | 36300  | 42300  | 11000 | 307 |
| 33                                  | 2950                  | 1.0            | 44.3 | -        | -         | 3/A 04 L2 | -          | M 4LC 4 | 11600               | 13300  | 21800  | 26200  | 7420  | 283 |
| 33                                  | 2930                  | 1.1            | 44.0 | -        | -         | 3/A 05 L2 | -          | M 4LC 4 | 11500               | 13300  | 21700  | 26100  | 7400  | 295 |
| 35                                  | 2730                  | 1.8            | 41.1 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 14000               | 15900  | 34800  | 40500  | 10500 | 307 |
| 37                                  | 2600                  | 1.2            | 39.0 | -        | -         | 3/A 05 L2 | -          | M 4LC 4 | 11100               | 12800  | 21000  | 25200  | 7110  | 295 |
| 41                                  | 2350                  | 1.0            | 35.3 | -        | -         | 3/A 04 L2 | -          | M 4LC 4 | 10700               | 12400  | 20300  | 24500  | 6880  | 283 |
| 41                                  | 2320                  | 1.5            | 34.9 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 13300               | 15100  | 33200  | 38600  | 9990  | 307 |
| 44                                  | 2180                  | 1.8            | 32.7 | -        | -         | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 13000               | 14700  | 32500  | 37900  | 9780  | 307 |
| 45                                  | 2150                  | 1.5            | 32.2 | -        | -         | 3/A 05 L2 | -          | M 4LC 4 | 10400               | 12000  | 19800  | 23800  | 6670  | 295 |
| 48                                  | 2010                  | 1.1            | 30.2 | -        | -         | 3/A 04 L2 | -          | M 4LC 4 | 10200               | 11700  | 19400  | 23300  | 6530  | 283 |
| 52                                  | 1850                  | 1.5            | 27.7 | -        | -         | 3/A 04 L2 | -          | M 4LC 4 | 9890                | 11400  | 18900  | 22800  | 6350  | 283 |



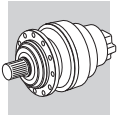
### P<sub>1</sub> = 11 kW

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |   |           |            |         | Rn <sub>2</sub> [N] |       |       |       |      |     |
|-------------------------------------|-----------------------|----------------|------|----------|---|-----------|------------|---------|---------------------|-------|-------|-------|------|-----|
|                                     |                       |                |      |          |   |           |            |         | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |     |
| 52                                  | 1850                  | 1.5            | 27.7 | -        | - | 3/A 05 L2 | -          | M 4LC 4 | 9890                | 11400 | 18900 | 22800 | 6350 | 295 |
| 52                                  | 1850                  | 1.8            | 27.7 | -        | - | 3/A 06 L2 | BN 160MR 4 | M 4LC 4 | 12300               | 14000 | 30900 | 36000 | 9250 | 307 |
| 56                                  | 1700                  | 1.1            | 25.6 | -        | - | 3/A 04 L2 | -          | M 4LC 4 | 9630                | 11100 | 18500 | 22200 | 6180 | 283 |
| 65                                  | 1470                  | 1.5            | 22.1 | -        | - | 3/A 04 L2 | -          | M 4LC 4 | 9170                | 10600 | 17700 | 21300 | 5880 | 283 |
| 65                                  | 1470                  | 1.5            | 22.1 | -        | - | 3/A 05 L2 | -          | M 4LC 4 | 9170                | 10600 | 17700 | 21300 | 5880 | 295 |
| 77                                  | 1250                  | 1.5            | 18.7 | -        | - | 3/A 04 L2 | -          | M 4LC 4 | 8680                | 10000 | 16800 | 20200 | 5570 | 283 |
| 77                                  | 1250                  | 1.5            | 18.7 | -        | - | 3/A 05 L2 | -          | M 4LC 4 | 8680                | 10000 | 16800 | 20200 | 5570 | 295 |

### P<sub>1</sub> = 15 kW

| n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | f <sub>s</sub> | i    | Pt<br>kW |           |   |           |   | Rn <sub>2</sub> [N] |        |        |         |     |  |
|-------------------------------------|-----------------------|----------------|------|----------|-----------|---|-----------|---|---------------------|--------|--------|---------|-----|--|
|                                     |                       |                |      |          |           |   |           |   | MC/PC               | MZ/PZ  | HC     | HZ      | FZ  |  |
| 0.28                                | 360200                | 1.1            | 5164 | -        | 3/V 19 L4 | - | BN 160L 4 | - | -                   | 638000 | 702000 | 200000  | 432 |  |
| 0.29                                | 356100                | 1.6            | 5040 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.32                                | 341800                | 1.6            | 4550 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.33                                | 338900                | 1.1            | 4457 | -        | 3/V 19 L4 | - | BN 160L 4 | - | -                   | 638000 | 702000 | 200000  | 432 |  |
| 0.36                                | 304000                | 1.3            | 4095 | -        | 3/V 19 L4 | - | BN 160L 4 | - | -                   | 638000 | 702000 | 200000  | 432 |  |
| 0.39                                | 284000                | 1.6            | 3780 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.40                                | 274400                | 1.0            | 3696 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.41                                | 276900                | 1.9            | 3600 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.42                                | 259500                | 1.1            | 3495 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.45                                | 245600                | 1.5            | 3231 | -        | 3/V 19 L4 | - | BN 160L 4 | - | -                   | 638000 | 702000 | 200000  | 432 |  |
| 0.50                                | 218600                | 1.2            | 2945 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.54                                | 212500                | 2.5            | 2700 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.57                                | 196300                | 1.9            | 2582 | -        | 3/V 19 L4 | - | BN 160L 4 | - | -                   | 638000 | 702000 | 200000  | 432 |  |
| 0.58                                | 193800                | 2.6            | 2520 | -        | 3/V 21 L4 | - | BN 160L 4 | - | -                   | 779000 | 923000 | 1200000 | 442 |  |
| 0.59                                | 187300                | 1.5            | 2464 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.64                                | 170400                | 1.2            | 2295 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.71                                | 162500                | 1.1            | 2065 | -        | 3/V 17 L4 | - | BN 160L 4 | - | -                   | 442000 | 470000 | 150000  | 412 |  |
| 0.79                                | 145500                | 1.9            | 1848 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.82                                | 135300                | 1.4            | 1780 | -        | 3/V 17 L4 | - | BN 160L 4 | - | -                   | 442000 | 470000 | 150000  | 412 |  |
| 0.84                                | 137600                | 2.0            | 1748 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 565000 | 200000  | 422 |  |
| 0.92                                | 111300                | 1.0            | 1589 | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 345000 | 385000 | 150000  | 402 |  |
| 0.99                                | 115900                | 2.2            | 1473 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 563100 | 198800  | 422 |  |
| 1.1                                 | 99400                 | 1.5            | 1365 | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 429900 | 457700 | 145400  | 412 |  |
| 1.1                                 | 95600                 | 1.0            | 1329 | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 199500 | 234200 | 86400   | 390 |  |
| 1.1                                 | 92800                 | 1.2            | 1324 | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 331300 | 368500 | 143900  | 402 |  |
| 1.2                                 | 98100                 | 2.8            | 1232 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 533700 | 187300  | 422 |  |
| 1.2                                 | 94100                 | 1.6            | 1215 | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 415100 | 442000 | 139800  | 412 |  |
| 1.3                                 | 92800                 | 3.0            | 1165 | -        | 3/V 18 L4 | - | BN 160L 4 | - | -                   | 503000 | 524900 | 183800  | 422 |  |
| 1.3                                 | 82600                 | 1.5            | 1134 | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 406600 | 432900 | 136600  | 412 |  |
| 1.3                                 | 80600                 | 1.1            | 1120 | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 189500 | 222500 | 81600   | 390 |  |
| 1.4                                 | 77200                 | 1.6            | 1059 | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 309800 | 344600 | 133600  | 402 |  |
| 1.4                                 | 79300                 | 1.6            | 1024 | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 394300 | 419900 | 132100  | 412 |  |
| 1.5                                 | 76300                 | 1.2            | 997  | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 183000 | 214800 | 78500   | 390 |  |
| 1.6                                 | 65000                 | 1.6            | 893  | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 294300 | 327300 | 126200  | 402 |  |
| 1.7                                 | 65900                 | 1.6            | 851  | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 373000 | 397100 | 124200  | 412 |  |
| 1.7                                 | 64300                 | 1.3            | 840  | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 173800 | 204100 | 74200   | 390 |  |
| 1.8                                 | 64200                 | 2.2            | 810  | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 367600 | 391400 | 122100  | 412 |  |
| 1.8                                 | 61500                 | 1.6            | 794  | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 284200 | 316100 | 121400  | 402 |  |
| 2.1                                 | 54100                 | 2.6            | 683  | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 349200 | 371800 | 115400  | 412 |  |
| 2.2                                 | 52700                 | 1.0            | 673  | -        | 3/V 13 L3 | - | BN 160L 4 | - | -                   | 152300 | 180300 | 61200   | 366 |  |
| 2.2                                 | 51800                 | 1.6            | 669  | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 270000 | 300300 | 114600  | 402 |  |
| 2.2                                 | 52100                 | 1.3            | 665  | -        | 3/V 14 L3 | - | BN 160L 4 | - | -                   | 162000 | 190200 | 68600   | 380 |  |
| 2.2                                 | 52100                 | 1.7            | 665  | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 162000 | 190200 | 68600   | 390 |  |
| 2.4                                 | 49300                 | 2.7            | 608  | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 337200 | 359000 | 111000  | 412 |  |
| 2.5                                 | 47000                 | 1.2            | 579  | -        | 3/V 14 L3 | - | BN 160L 4 | - | -                   | 155500 | 182600 | 65500   | 380 |  |
| 2.6                                 | 44400                 | 1.1            | 567  | -        | 3/V 13 L3 | - | BN 160L 4 | - | -                   | 144700 | 171300 | 57800   | 366 |  |
| 2.6                                 | 45000                 | 2.6            | 567  | -        | 3/V 17 L3 | - | BN 160L 4 | - | -                   | 330300 | 351700 | 108500  | 412 |  |
| 2.6                                 | 43900                 | 1.9            | 560  | -        | 3/V 15 L3 | - | BN 160L 4 | - | -                   | 153900 | 180700 | 64800   | 390 |  |
| 2.6                                 | 43200                 | 0.9            | 551  | -        | 3/V 11 L3 | - | BN 160L 4 | - | -                   | 116100 | 144600 | 46600   | 354 |  |
| 2.8                                 | 42000                 | 2.6            | 530  | -        | 3/V 16 L3 | - | BN 160L 4 | - | -                   | 251700 | 279900 | 106000  | 402 |  |

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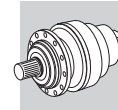


$P_1 = 15 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |           |           |         | $R_{n2}$ [N] |        |        |        |       |     |
|----------------------------|----------------|-------|------|----------|-----------|-----------|-----------|---------|--------------|--------|--------|--------|-------|-----|
|                            |                |       |      |          |           |           |           |         | MC/PC        | MZ/PZ  | HC     | HZ     | FZ    |     |
| 2.8                        | 40500          | 1.3   | 516  | -        | 3/V 13 L3 | -         | BN 160L 4 | -       | -            | 140700 | 166500 | 56100  | 366   |     |
| 2.9                        | 40400          | 1.4   | 498  | -        | 3/V 14 L3 | -         | BN 160L 4 | -       | -            | 148600 | 174500 | 62300  | 380   |     |
| 2.9                        | 40400          | 2.1   | 498  | -        | 3/V 15 L3 | -         | BN 160L 4 | -       | -            | 148600 | 174500 | 62300  | 390   |     |
| 3.3                        | 35000          | 1.4   | 446  | -        | 3/V 14 L3 | -         | BN 160L 4 | -       | -            | 143800 | 168800 | 60100  | 380   |     |
| 3.3                        | 35000          | 1.9   | 446  | -        | 3/V 15 L3 | -         | BN 160L 4 | -       | -            | 143800 | 168800 | 60100  | 390   |     |
| 3.3                        | 35400          | 2.6   | 446  | -        | 3/V 16 L3 | -         | BN 160L 4 | -       | -            | 239100 | 265900 | 100100 | 402   |     |
| 3.4                        | 33700          | 1.2   | 430  | -        | 3/V 11 L3 | -         | BN 160L 4 | -       | -            | 107800 | 134200 | 42800  | 354   |     |
| 3.4                        | 34500          | 1.4   | 425  | -        | 3/V 13 L3 | -         | BN 160L 4 | -       | -            | 132700 | 157100 | 52600  | 366   |     |
| 3.7                        | 32200          | 1.4   | 397  | -        | 3/V 14 L3 | -         | BN 160L 4 | -       | -            | 138800 | 163000 | 57800  | 380   |     |
| 3.8                        | 31700          | 2.1   | 386  | -        | 3/V 15 L3 | -         | BN 160L 4 | -       | -            | 137700 | 161700 | 57300  | 390   |     |
| 3.9                        | 29000          | 1.4   | 370  | -        | 3/V 13 L3 | -         | BN 160L 4 | -       | -            | 127300 | 150700 | 50200  | 366   |     |
| 10.4                       | 12100          | 0.9   | 140  | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 23500        | 29500  | 54100  | 70900  | 20400 | 319 |
| 11.3                       | 11200          | 1.0   | 130  | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 22900        | 28700  | 52900  | 69300  | 19900 | 319 |
| 13.4                       | 9400           | 0.9   | 109  | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 21600        | 27100  | 50100  | 65700  | 18800 | 319 |
| 16.7                       | 7830           | 1.3   | 87.7 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 20100        | 25200  | 47000  | 61600  | 17500 | 319 |
| 20.9                       | 6240           | 0.9   | 69.9 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 16800        | 19000  | 40800  | 47500  | 12600 | 307 |
| 21.4                       | 6100           | 1.3   | 68.3 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 18500        | 23200  | 43600  | 57200  | 16100 | 319 |
| 24.3                       | 5370           | 1.1   | 60.1 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 15900        | 18100  | 39000  | 45500  | 12000 | 307 |
| 25.5                       | 5120           | 1.3   | 57.3 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 17400        | 21900  | 41400  | 54200  | 15200 | 319 |
| 26.2                       | 4970           | 0.9   | 55.7 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 15500        | 17600  | 38100  | 44400  | 11700 | 307 |
| 28.2                       | 4620           | 1.1   | 51.7 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 15200        | 17200  | 37300  | 43400  | 11400 | 307 |
| 29.7                       | 4400           | 1.9   | 49.2 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 16600        | 20800  | 39500  | 51800  | 14400 | 319 |
| 31                         | 4210           | 0.9   | 47.2 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 14700        | 16700  | 36300  | 42300  | 11000 | 307 |
| 35                         | 3710           | 2.6   | 41.5 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 15700        | 19600  | 37600  | 49200  | 13600 | 319 |
| 36                         | 3670           | 1.3   | 41.1 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 14000        | 15900  | 34800  | 40500  | 10500 | 307 |
| 42                         | 3120           | 1.1   | 34.9 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 13300        | 15100  | 33200  | 38600  | 9990  | 307 |
| 45                         | 2920           | 1.3   | 32.7 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 13000        | 14700  | 32500  | 37900  | 9780  | 307 |
| 45                         | 2890           | 2.7   | 32.3 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 14400        | 18100  | 34900  | 45700  | 12500 | 319 |
| 53                         | 2480           | 1.3   | 27.7 | -        | -         | 3/A 06 L2 | BN 160L 4 | M 5SB 4 | 12300        | 14000  | 30900  | 36000  | 9250  | 307 |
| 54                         | 2420           | 2.7   | 27.1 | -        | -         | 3/A 07 L2 | BN 160L 4 | M 5SB 4 | 13600        | 17000  | 33100  | 43300  | 11800 | 319 |

$P_1 = 18.5 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |   |           |   | $R_{n2}$ [N] |        |        |         |     |  |
|----------------------------|----------------|-------|------|----------|-----------|---|-----------|---|--------------|--------|--------|---------|-----|--|
|                            |                |       |      |          |           |   |           |   | MC/PC        | MZ/PZ  | HC     | HZ      | FZ  |  |
| 0.28                       | 444800         | 0.9   | 5164 | -        | 3/V 19 L4 | - | BN 180M 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.29                       | 439700         | 1.3   | 5040 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.32                       | 422100         | 1.3   | 4550 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.36                       | 375300         | 1.0   | 4095 | -        | 3/V 19 L4 | - | BN 180M 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.39                       | 350600         | 1.3   | 3780 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.41                       | 341900         | 1.6   | 3600 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.45                       | 303300         | 1.2   | 3231 | -        | 3/V 19 L4 | - | BN 180M 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.50                       | 270000         | 1.0   | 2945 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.54                       | 262400         | 2.0   | 2700 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.57                       | 242400         | 1.5   | 2582 | -        | 3/V 19 L4 | - | BN 180M 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.58                       | 239300         | 2.1   | 2520 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.59                       | 231300         | 1.2   | 2464 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.64                       | 210400         | 1.0   | 2295 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.64                       | 221100         | 2.5   | 2275 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.71                       | 200600         | 0.9   | 2065 | -        | 3/V 17 L4 | - | BN 180M 4 | - | -            | 442000 | 470000 | 150000  | 412 |  |
| 0.77                       | 183700         | 2.5   | 1890 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.79                       | 179600         | 1.6   | 1848 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.81                       | 178900         | 3.0   | 1800 | -        | 3/V 21 L4 | - | BN 180M 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.82                       | 167000         | 1.1   | 1780 | -        | 3/V 17 L4 | - | BN 180M 4 | - | -            | 442000 | 470000 | 150000  | 412 |  |
| 0.84                       | 169800         | 1.7   | 1748 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.99                       | 143100         | 1.8   | 1473 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 563100 | 198800  | 422 |  |
| 1.1                        | 122800         | 1.3   | 1365 | -        | 3/V 17 L3 | - | BN 180M 4 | - | -            | 429900 | 457700 | 145400  | 412 |  |
| 1.1                        | 114600         | 1.0   | 1324 | -        | 3/V 16 L3 | - | BN 180M 4 | - | -            | 331300 | 368500 | 143900  | 402 |  |
| 1.2                        | 121100         | 2.3   | 1232 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 533700 | 187300  | 422 |  |
| 1.2                        | 116200         | 1.3   | 1215 | -        | 3/V 17 L3 | - | BN 180M 4 | - | -            | 415100 | 442000 | 139800  | 412 |  |
| 1.3                        | 114500         | 2.4   | 1165 | -        | 3/V 18 L4 | - | BN 180M 4 | - | -            | 503000 | 524900 | 183800  | 422 |  |
| 1.3                        | 102000         | 1.3   | 1134 | -        | 3/V 17 L3 | - | BN 180M 4 | - | -            | 406600 | 432900 | 136600  | 412 |  |



$P_1 = 18.5 \text{ kW}$

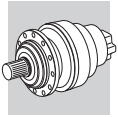
| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |           |           |         | $R_{n2}$ [N] |        |        |        |       |     |
|----------------------------|----------------|-------|------|----------|-----------|-----------|-----------|---------|--------------|--------|--------|--------|-------|-----|
|                            |                |       |      |          |           |           |           |         | MC/PC        | MZ/PZ  | HC     | HZ     | FZ    |     |
| 1.3                        | 99500          | 0.9   | 1120 | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 189500 | 222500 | 81600  | 390   |     |
| 1.4                        | 95300          | 1.3   | 1059 | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 309800 | 344600 | 133600 | 402   |     |
| 1.4                        | 97900          | 1.3   | 1024 | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 394300 | 419900 | 132100 | 412   |     |
| 1.5                        | 94200          | 1.0   | 997  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 183000 | 214800 | 78500  | 390   |     |
| 1.5                        | 96500          | 2.5   | 982  | -        | 3/V 18 L4 | -         | BN 180M 4 | -       | -            | 488500 | 498600 | 173600 | 422   |     |
| 1.6                        | 80300          | 1.3   | 893  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 294300 | 327300 | 126200 | 402   |     |
| 1.7                        | 81300          | 1.3   | 851  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 373000 | 397100 | 124200 | 412   |     |
| 1.7                        | 79400          | 1.0   | 840  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 173800 | 204100 | 74200  | 390   |     |
| 1.8                        | 79300          | 1.8   | 810  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 367600 | 391400 | 122100 | 412   |     |
| 1.8                        | 76000          | 1.3   | 794  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 284200 | 316100 | 121400 | 402   |     |
| 1.9                        | 75200          | 2.5   | 765  | -        | 3/V 18 L4 | -         | BN 180M 4 | -       | -            | 453300 | 462600 | 159800 | 422   |     |
| 2.1                        | 66800          | 2.1   | 683  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 349200 | 371800 | 115400 | 412   |     |
| 2.2                        | 64000          | 1.3   | 669  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 270000 | 300300 | 114600 | 402   |     |
| 2.2                        | 64300          | 1.1   | 665  | -        | 3/V 14 L3 | -         | BN 180M 4 | -       | -            | 162000 | 190200 | 68600  | 380   |     |
| 2.2                        | 64300          | 1.4   | 665  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 162000 | 190200 | 68600  | 390   |     |
| 2.4                        | 60900          | 2.2   | 608  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 337200 | 359000 | 111000 | 412   |     |
| 2.5                        | 58100          | 1.0   | 579  | -        | 3/V 14 L3 | -         | BN 180M 4 | -       | -            | 155500 | 182600 | 65500  | 380   |     |
| 2.6                        | 55500          | 2.1   | 567  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 330300 | 351700 | 108500 | 412   |     |
| 2.6                        | 54200          | 1.5   | 560  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 153900 | 180700 | 64800  | 390   |     |
| 2.8                        | 51900          | 2.1   | 530  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 251700 | 279900 | 106000 | 402   |     |
| 2.8                        | 50000          | 1.0   | 516  | -        | 3/V 13 L3 | -         | BN 180M 4 | -       | -            | 140700 | 166500 | 56100  | 366   |     |
| 2.9                        | 51300          | 2.5   | 512  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 320300 | 341000 | 104800 | 412   |     |
| 2.9                        | 49900          | 1.2   | 498  | -        | 3/V 14 L3 | -         | BN 180M 4 | -       | -            | 148600 | 174500 | 62300  | 380   |     |
| 2.9                        | 49900          | 1.7   | 498  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 148600 | 174500 | 62300  | 390   |     |
| 3.3                        | 43200          | 1.1   | 446  | -        | 3/V 14 L3 | -         | BN 180M 4 | -       | -            | 143800 | 168800 | 60100  | 380   |     |
| 3.3                        | 43200          | 1.5   | 446  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 143800 | 168800 | 60100  | 390   |     |
| 3.3                        | 43700          | 2.1   | 446  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 239100 | 265900 | 100100 | 402   |     |
| 3.4                        | 41600          | 1.0   | 430  | -        | 3/V 11 L3 | -         | BN 180M 4 | -       | -            | 107800 | 134200 | 42800  | 354   |     |
| 3.4                        | 42600          | 1.1   | 425  | -        | 3/V 13 L3 | -         | BN 180M 4 | -       | -            | 132700 | 157100 | 52600  | 366   |     |
| 3.4                        | 42600          | 2.5   | 425  | -        | 3/V 17 L3 | -         | BN 180M 4 | -       | -            | 303000 | 322600 | 98500  | 412   |     |
| 3.7                        | 39800          | 1.2   | 397  | -        | 3/V 14 L3 | -         | BN 180M 4 | -       | -            | 138800 | 163000 | 57800  | 380   |     |
| 3.7                        | 39800          | 2.5   | 397  | -        | 3/V 16 L3 | -         | BN 180M 4 | -       | -            | 230900 | 256800 | 96300  | 402   |     |
| 3.8                        | 39100          | 1.7   | 386  | -        | 3/V 15 L3 | -         | BN 180M 4 | -       | -            | 137700 | 161700 | 57300  | 390   |     |
| 3.9                        | 35800          | 1.1   | 370  | -        | 3/V 13 L3 | -         | BN 180M 4 | -       | -            | 127300 | 150700 | 50200  | 366   |     |
| 16.7                       | 9670           | 1.1   | 87.7 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 20100        | 25200  | 47000  | 61600  | 17500 | 319 |
| 21.4                       | 7540           | 1.1   | 68.3 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 18500        | 23200  | 43600  | 57200  | 16100 | 319 |
| 24.3                       | 6640           | 0.9   | 60.1 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 15900        | 18100  | 39000  | 45500  | 12000 | 307 |
| 25.5                       | 6320           | 1.1   | 57.3 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 17400        | 21900  | 41400  | 54200  | 15200 | 319 |
| 28.2                       | 5710           | 0.9   | 51.7 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 15200        | 17200  | 37300  | 43400  | 11400 | 307 |
| 29.7                       | 5430           | 1.5   | 49.2 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 16600        | 20800  | 39500  | 51800  | 14400 | 319 |
| 35                         | 4580           | 2.1   | 41.5 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 15700        | 19600  | 37600  | 49200  | 13600 | 319 |
| 36                         | 4530           | 1.1   | 41.1 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 14000        | 15900  | 34800  | 40500  | 10500 | 307 |
| 42                         | 3850           | 0.9   | 34.9 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 13300        | 15100  | 33200  | 38600  | 9900  | 307 |
| 45                         | 3610           | 1.1   | 32.7 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 13000        | 14700  | 32500  | 37900  | 9780  | 307 |
| 45                         | 3570           | 2.2   | 32.3 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 14400        | 18100  | 34900  | 45700  | 12500 | 319 |
| 53                         | 3060           | 1.1   | 27.7 | -        | -         | 3/A 06 L2 | BN 180M 4 | M 5LA 4 | 12300        | 14000  | 30900  | 36000  | 9250  | 307 |
| 54                         | 2990           | 2.2   | 27.1 | -        | -         | 3/A 07 L2 | BN 180M 4 | M 5LA 4 | 13600        | 17000  | 33100  | 43300  | 11800 | 319 |

$P_1 = 22 \text{ kW}$

| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |   |           |   | $R_{n2}$ [N] |        |        |         |     |  |
|----------------------------|----------------|-------|------|----------|-----------|---|-----------|---|--------------|--------|--------|---------|-----|--|
|                            |                |       |      |          |           |   |           |   | MC/PC        | MZ/PZ  | HC     | HZ      | FZ  |  |
| 0.29                       | 523300         | 1.1   | 5040 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.32                       | 502300         | 1.1   | 4550 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.39                       | 417300         | 1.1   | 3780 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.41                       | 406900         | 1.3   | 3600 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.45                       | 360900         | 1.0   | 3231 | -        | 3/V 19 L4 | - | BN 180L 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.54                       | 312300         | 1.7   | 2700 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.57                       | 288400         | 1.3   | 2582 | -        | 3/V 19 L4 | - | BN 180L 4 | - | -            | 638000 | 702000 | 200000  | 432 |  |
| 0.58                       | 284800         | 1.8   | 2520 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |
| 0.59                       | 275300         | 1.0   | 2464 | -        | 3/V 18 L4 | - | BN 180L 4 | - | -            | 503000 | 565000 | 200000  | 422 |  |
| 0.64                       | 263100         | 2.1   | 2275 | -        | 3/V 21 L4 | - | BN 180L 4 | - | -            | 779000 | 923000 | 1200000 | 442 |  |

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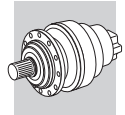




$P_1 = 22 \text{ kW}$



| $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $f_s$ | $i$  | Pt<br>kW |           |           |           |   | $Rn_2$ [N] |        |        |         |       |     |
|----------------------------|----------------|-------|------|----------|-----------|-----------|-----------|---|------------|--------|--------|---------|-------|-----|
|                            |                |       |      |          |           |           |           |   | MC/PC      | MZ/PZ  | HC     | HZ      | FZ    |     |
| 0.77                       | 218600         | 2.1   | 1890 | -        | 3/V 21 L4 | -         | BN 180L 4 | - | -          | 779000 | 923000 | 1200000 | 442   |     |
| 0.79                       | 213700         | 1.3   | 1848 | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 503000 | 565000 | 200000  | 422   |     |
| 0.81                       | 212900         | 2.5   | 1800 | -        | 3/V 21 L4 | -         | BN 180L 4 | - | -          | 779000 | 923000 | 1200000 | 442   |     |
| 0.82                       | 198800         | 0.9   | 1780 | -        | 3/V 17 L4 | -         | BN 180L 4 | - | -          | 442000 | 470000 | 150000  | 412   |     |
| 0.84                       | 202100         | 1.4   | 1748 | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 503000 | 565000 | 200000  | 422   |     |
| 0.96                       | 179400         | 2.9   | 1517 | -        | 3/V 21 L4 | -         | BN 180L 4 | - | -          | 779000 | 923000 | 1200000 | 442   |     |
| 0.99                       | 170300         | 1.5   | 1473 | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 503000 | 563100 | 198800  | 422   |     |
| 1.1                        | 146100         | 1.1   | 1365 | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 429900 | 457700 | 145400  | 412   |     |
| 1.2                        | 149000         | 2.9   | 1260 | -        | 3/V 21 L4 | -         | BN 180L 4 | - | -          | 742400 | 880400 | 1132200 | 442   |     |
| 1.2                        | 144100         | 1.9   | 1232 | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 503000 | 533700 | 187300  | 422   |     |
| 1.2                        | 138300         | 1.1   | 1215 | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 415100 | 442000 | 139800  | 412   |     |
| 1.3                        | 136300         | 2.0   | 1165 | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 503000 | 524900 | 183800  | 422   |     |
| 1.3                        | 121400         | 1.1   | 1134 | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 406600 | 432900 | 136600  | 412   |     |
| 1.4                        | 113400         | 1.1   | 1059 | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 309800 | 344600 | 133600  | 402   |     |
| 1.4                        | 116500         | 1.1   | 1024 | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 394300 | 419900 | 132100  | 412   |     |
| 1.5                        | 114800         | 2.1   | 982  | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 488500 | 498600 | 173600  | 422   |     |
| 1.6                        | 95500          | 1.1   | 893  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 294300 | 327300 | 126200  | 402   |     |
| 1.7                        | 96800          | 1.1   | 851  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 373000 | 397100 | 124200  | 412   |     |
| 1.8                        | 94400          | 1.5   | 810  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 367600 | 391400 | 122100  | 412   |     |
| 1.8                        | 90400          | 1.1   | 794  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 284200 | 316100 | 121400  | 402   |     |
| 1.9                        | 89500          | 2.1   | 765  | -        | 3/V 18 L4 | -         | BN 180L 4 | - | -          | 453300 | 462600 | 159800  | 422   |     |
| 2.1                        | 79500          | 1.8   | 683  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 349200 | 371800 | 115400  | 412   |     |
| 2.2                        | 76200          | 1.1   | 669  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 270000 | 300300 | 114600  | 402   |     |
| 2.2                        | 76500          | 0.9   | 665  | -        | 3/V 14 L3 | -         | BN 180L 4 | - | -          | 162000 | 190200 | 68600   | 380   |     |
| 2.2                        | 76500          | 1.2   | 665  | -        | 3/V 15 L3 | -         | BN 180L 4 | - | -          | 162000 | 190200 | 68600   | 390   |     |
| 2.4                        | 72400          | 1.9   | 608  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 337200 | 359000 | 111000  | 412   |     |
| 2.6                        | 66100          | 1.8   | 567  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 330300 | 351700 | 108500  | 412   |     |
| 2.6                        | 64500          | 1.3   | 560  | -        | 3/V 15 L3 | -         | BN 180L 4 | - | -          | 153900 | 180700 | 64800   | 390   |     |
| 2.8                        | 61700          | 1.8   | 530  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 251700 | 279900 | 106000  | 402   |     |
| 2.9                        | 61000          | 2.1   | 512  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 320300 | 341000 | 104800  | 412   |     |
| 2.9                        | 59400          | 1.0   | 498  | -        | 3/V 14 L3 | -         | BN 180L 4 | - | -          | 148600 | 174500 | 62300   | 380   |     |
| 2.9                        | 59400          | 1.4   | 498  | -        | 3/V 15 L3 | -         | BN 180L 4 | - | -          | 148600 | 174500 | 62300   | 390   |     |
| 3.3                        | 51400          | 0.9   | 446  | -        | 3/V 14 L3 | -         | BN 180L 4 | - | -          | 143800 | 168800 | 60100   | 380   |     |
| 3.3                        | 51400          | 1.3   | 446  | -        | 3/V 15 L3 | -         | BN 180L 4 | - | -          | 143800 | 168800 | 60100   | 390   |     |
| 3.3                        | 52000          | 1.8   | 446  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 239100 | 265900 | 100100  | 402   |     |
| 3.4                        | 50700          | 0.9   | 425  | -        | 3/V 13 L3 | -         | BN 180L 4 | - | -          | 132700 | 157100 | 52600   | 366   |     |
| 3.4                        | 50700          | 2.1   | 425  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 303000 | 322600 | 98500   | 412   |     |
| 3.6                        | 49400          | 2.6   | 405  | -        | 3/V 17 L3 | -         | BN 180L 4 | - | -          | 298600 | 317900 | 96900   | 412   |     |
| 3.7                        | 47400          | 1.0   | 397  | -        | 3/V 14 L3 | -         | BN 180L 4 | - | -          | 138800 | 163000 | 57800   | 380   |     |
| 3.7                        | 47400          | 2.1   | 397  | -        | 3/V 16 L3 | -         | BN 180L 4 | - | -          | 230900 | 256800 | 96300   | 402   |     |
| 3.8                        | 46600          | 1.4   | 386  | -        | 3/V 15 L3 | -         | BN 180L 4 | - | -          | 137700 | 161700 | 57300   | 390   |     |
| 3.9                        | 42600          | 0.9   | 370  | -        | 3/V 13 L3 | -         | BN 180L 4 | - | -          | 127300 | 150700 | 50200   | 366   |     |
| 29.7                       | 6460           | 1.3   | 49.2 | -        | -         | 3/A 07 L2 | BN 180L 4 | - | 16600      | 20800  | 39500  | 51800   | 14400 | 319 |
| 35                         | 5450           | 1.8   | 41.5 | -        | -         | 3/A 07 L2 | BN 180L 4 | - | 15700      | 19600  | 37600  | 49200   | 13600 | 319 |
| 36                         | 5390           | 0.9   | 41.1 | -        | -         | 3/A 06 L2 | BN 180L 4 | - | 14000      | 15900  | 34800  | 40500   | 10500 | 307 |
| 45                         | 4300           | 0.9   | 32.7 | -        | -         | 3/A 06 L2 | BN 180L 4 | - | 13000      | 14700  | 32500  | 37900   | 9780  | 307 |
| 45                         | 4240           | 1.9   | 32.3 | -        | -         | 3/A 07 L2 | BN 180L 4 | - | 14400      | 18100  | 34900  | 45700   | 12500 | 319 |
| 53                         | 3640           | 0.9   | 27.7 | -        | -         | 3/A 06 L2 | BN 180L 4 | - | 12300      | 14000  | 30900  | 36000   | 9250  | 307 |
| 54                         | 3560           | 1.9   | 27.1 | -        | -         | 3/A 07 L2 | BN 180L 4 | - | 13600      | 17000  | 33100  | 43300   | 11800 | 319 |





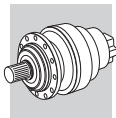
### 25.3 RATING CHARTS FOR INLINE UNITS 300 L

Reading the rating chart.

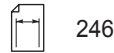
| 301 L                      |   |      |                            |                |                |             |   | 2460 Nm    |      |       |       |      |                   |  |  |
|----------------------------|---|------|----------------------------|----------------|----------------|-------------|---|------------|------|-------|-------|------|-------------------|--|--|
| $n_1$<br>min <sup>-1</sup> |  | $i$  | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW | $P$ (IEC)  | $Rn_2$ [N] |      |       |       |      | $M_{2\max}$<br>Nm |  |  |
|                            |   |      |                            |                |                |             |   | MC         | MZ   | HC/PC | HZ/PZ | FZ   |                   |  |  |
| 1500                       | 301 L1  | 3.48 | 431                        | 840            | 30             | 7.5         | 71-80-90-100-112-132  | 1610       | 1610 | 4970  | 5710  | 1060 | 3400              |  |  |
|                            | 301 L1  | 4.26 | 352                        | 880            | 30             | 7.5         | 71-80-90-100-112-132  | 1720       | 1720 | 5280  | 6070  | 1130 | 3400              |  |  |
|                            | 301 L1  | 5.77 | 260                        | 930            | 26             | 7.5         | 71-80-90-100-112-132  | 1910       | 1910 | 5790  | 6650  | 1250 | 3400              |  |  |
|                            | 301 L1  | 7.20 | 208                        | 750            | 17.0           | 7.5         | 71-80-90-100-112-132  | 2050       | 2050 | 6180  | 7100  | 1350 | 3400              |  |  |
|                            | 301 L1  | 9.00 | 167                        | 630            | 11.3           | 7.5         | 71-80-90-100-112-132  | 2210       | 2210 | 6610  | 7600  | 1450 | 3400              |  |  |
|                            | 301 L2  | 12.1 | 124                        | 1220           | 16.8           | 7.5         | 71-80-90-100-112-132  | 2440       | 2440 | 7230  | 8300  | 1600 | 3400              |  |  |
|                            | 301 L2  | 14.8 | 101                        | 1280           | 14.4           | 7.5         | 71-80-90-100-112-132  | 2610       | 2610 | 7680  | 8820  | 1720 | 3400              |  |  |
|                            | 301 L2  | 18.2 | 83                         | 1360           | 12.5           | 7.5         | 71-80-90-100-112-132  | 2790       | 2790 | 8160  | 9380  | 1840 | 3400              |  |  |

The rated torque of the gearbox, independent of installed mechanical power



|   |   |    |  |
|---|---|----|--|
| 1 | Reference torque  | 8  | Gearbox thermal capacity   |
| 2 | Gearbox drive speed   | 9  | Frame size of available IEC motor  |
| 3 | Frame size of the in-line gear unit   | 10 | Permitted overhung loading on output shaft, based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime<br>- speed of output $n_2$ |
| 4 | Gear ratio  | 11 | For forces not applied at shaft midpoint, see diagrams provided in the specific gearbox overall dimensioning pages<br>Maximum torque           |
| 5 | Gearbox output speed  | 12 | Dimensions page  |
| 6 | Gearbox rated output torque based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime |    |  |
| 7 | Gearbox rated input power, based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime  |    |  |



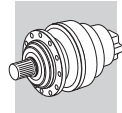
300 L





1250 Nm

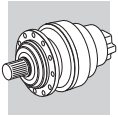
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |                          |
| 1500                                | 300 L1  | 3.48 | 431                                 | 470                   | 20                    | 7.5                  | 71-80-90-100-112-132  | 1610                | 1610  | 4970  | 5710  | 1060 | 2000                     |
|                                     | 300 L1  | 4.26 | 352                                 | 490                   | 18.8                  | 7.5                  | 71-80-90-100-112-132  | 1720                | 1720  | 5280  | 6070  | 1130 | 2400                     |
|                                     | 300 L1  | 5.77 | 260                                 | 470                   | 13.3                  | 7.5                  | 71-80-90-100-112-132  | 1910                | 1910  | 5790  | 6650  | 1250 | 2400                     |
|                                     | 300 L1  | 7.20 | 208                                 | 410                   | 9.2                   | 7.5                  | 71-80-90-100-112-132  | 2050                | 2050  | 6180  | 7100  | 1350 | 2400                     |
|                                     | 300 L1  | 9.00 | 167                                 | 320                   | 5.7                   | 7.5                  | 71-80-90-100-112-132  | 2210                | 2210  | 6610  | 7600  | 1450 | 2400                     |
|                                     | 300 L2  | 12.1 | 124                                 | 680                   | 9.4                   | 7.5                  | 71-80-90-100-112-132  | 2440                | 2440  | 7230  | 8300  | 1600 | 2000                     |
|                                     | 300 L2  | 14.8 | 101                                 | 720                   | 8.1                   | 7.5                  | 71-80-90-100-112-132  | 2610                | 2610  | 7680  | 8820  | 1720 | 2000                     |
|                                     | 300 L2  | 18.2 | 83                                  | 750                   | 6.9                   | 7.5                  | 71-80-90-100-112-132  | 2790                | 2790  | 8160  | 9380  | 1840 | 2400                     |
|                                     | 300 L2  | 20.1 | 75                                  | 640                   | 5.3                   | 7.5                  | 71-80-90-100-112-132  | 2890                | 2890  | 8410  | 9660  | 1900 | 2000                     |
|                                     | 300 L2  | 24.6 | 61                                  | 800                   | 5.5                   | 7.5                  | 71-80-90-100-112-132  | 3090                | 3090  | 8940  | 10300 | 2030 | 2400                     |
|                                     | 300 L2  | 30.7 | 49                                  | 840                   | 4.6                   | 7.5                  | 71-80-90-100-112-132  | 3330                | 3330  | 9550  | 11000 | 2190 | 2400                     |
|                                     | 300 L2  | 33.3 | 45                                  | 650                   | 3.3                   | 7.5                  | 71-80-90-100-112-132  | 3420                | 3420  | 9790  | 11200 | 2250 | 2400                     |
|                                     | 300 L2  | 38.4 | 39                                  | 840                   | 3.7                   | 7.5                  | 71-80-90-100-112-132  | 3590                | 3590  | 10200 | 11700 | 2360 | 2400                     |
|                                     | 300 L2  | 41.5 | 36                                  | 650                   | 2.6                   | 7.5                  | 71-80-90-100-112-132  | 3680                | 3680  | 10500 | 12000 | 2420 | 2400                     |
|                                     | 300 L2  | 51.9 | 28.9                                | 650                   | 2.1                   | 7.5                  | 71-80-90-100-112-132  | 3970                | 3970  | 11200 | 12900 | 2610 | 2400                     |
|                                     | 300 L2  | 64.8 | 23.1                                | 550                   | 1.4                   | 7.5                  | 71-80-90-100-112-132  | 4270                | 4270  | 12000 | 13700 | 2810 | 2400                     |
|                                     | 300 L3  | 51.6 | 29.1                                | 850                   | 2.8                   | 7.5                  | 71-80-90-100-112-132  | 3960                | 3960  | 11200 | 12800 | 2600 | 2000                     |
|                                     | 300 L3  | 63.2 | 23.7                                | 850                   | 2.3                   | 7.5                  | 71-80-90-100-112-132  | 4240                | 4240  | 11900 | 13600 | 2780 | 2400                     |
|                                     | 300 L3  | 69.9 | 21.5                                | 650                   | 1.6                   | 7.5                  | 71-80-90-100-112-132  | 4380                | 4380  | 12200 | 14000 | 2880 | 2000                     |
|                                     | 300 L3  | 77.5 | 19.4                                | 850                   | 1.9                   | 7.5                  | 71-80-90-100-112-132  | 4530                | 4530  | 12600 | 14500 | 2980 | 2400                     |
|                                     | 300 L3  | 85.6 | 17.5                                | 850                   | 1.7                   | 7.5                  | 71-80-90-100-112-132  | 4680                | 4680  | 13000 | 14900 | 3080 | 2400                     |
|                                     | 300 L3  | 105  | 14.3                                | 860                   | 1.4                   | 7.5                  | 71-80-90-100-112-132  | 5010                | 5010  | 13800 | 15900 | 3300 | 2400                     |
|                                     | 300 L3  | 116  | 13.0                                | 650                   | 0.97                  | 7.5                  | 71-80-90-100-112-132  | 5180                | 5180  | 14200 | 16300 | 3410 | 2400                     |
|                                     | 300 L3  | 131  | 11.5                                | 860                   | 1.1                   | 7.5                  | 71-80-90-100-112-132  | 5400                | 5400  | 14800 | 17000 | 3550 | 2400                     |
|                                     | 300 L3  | 142  | 10.6                                | 860                   | 1.0                   | 7.5                  | 71-80-90-100-112-132  | 5540                | 5540  | 15100 | 17400 | 3650 | 2400                     |
|                                     | 300 L3  | 177  | 8.5                                 | 880                   | 0.86                  | 7.5                  | 71-80-90-100-112-132  | 5970                | 5970  | 16200 | 18600 | 3920 | 2400                     |
|                                     | 300 L3  | 192  | 7.8                                 | 650                   | 0.58                  | 7.5                  | 71-80-90-100-112-132  | 6130                | 6130  | 16600 | 19000 | 4030 | 2400                     |
|                                     | 300 L3  | 221  | 6.8                                 | 910                   | 0.71                  | 7.5                  | 71-80-90-100-112-132  | 6430                | 6430  | 17300 | 19800 | 4230 | 2400                     |
|                                     | 300 L3  | 240  | 6.3                                 | 650                   | 0.47                  | 7.5                  | 71-80-90-100-112-132  | 6600                | 6600  | 17700 | 20300 | 4340 | 2400                     |
|                                     | 300 L3  | 299  | 5.0                                 | 650                   | 0.37                  | 7.5                  | 71-80-90-100-112-132  | 7110                | 7110  | 18900 | 21700 | 4670 | 2400                     |
|                                     | 300 L3  | 374  | 4.0                                 | 670                   | 0.31                  | 7.5                  | 71-80-90-100-112-132  | 7660                | 7660  | 20200 | 23200 | 5030 | 2400                     |
|                                     | 300 L4  | 330  | 4.5                                 | 970                   | 0.52                  | 6.0                  | 71-80-90-100-112-132  | 7350                | 7350  | 19500 | 22400 | 4830 | 2400                     |
|                                     | 300 L4  | 403  | 3.7                                 | 680                   | 0.30                  | 6.0                  | 71-80-90-100-112-132  | 7850                | 7850  | 20700 | 23800 | 5160 | 2400                     |
|                                     | 300 L4  | 447  | 3.4                                 | 1020                  | 0.40                  | 6.0                  | 71-80-90-100-112-132  | 8130                | 8130  | 21300 | 24500 | 5340 | 2400                     |
|                                     | 300 L4  | 494  | 3.0                                 | 1030                  | 0.37                  | 6.0                  | 71-80-90-100-112-132  | 8400                | 8400  | 22000 | 25300 | 5520 | 2400                     |
| 300 L4                              | 558   | 2.7  | 1060                                | 0.34                  | 6.0                   | 71-80-90-100-112-132 | 8750  | 8750                | 22800 | 26200 | 5750  | 2400 |                          |
| 300 L4                              | 616   | 2.4  | 1070                                | 0.31                  | 6.0                   | 71-80-90-100-112-132 | 9050  | 9050                | 23500 | 27000 | 5950  | 2400 |                          |
| 300 L4                              | 755   | 2.0  | 1110                                | 0.26                  | 6.0                   | 71-80-90-100-112-132 | 9680  | 9680                | 25000 | 28700 | 6360  | 2400 |                          |
| 300 L4                              | 819   | 1.8  | 1130                                | 0.24                  | 6.0                   | 71-80-90-100-112-132 | 9940  | 9940                | 25600 | 29400 | 6540  | 2400 |                          |
| 300 L4                              | 942   | 1.6  | 1160                                | 0.22                  | 6.0                   | 71-80-90-100-112-132 | 10400   | 10400               | 26700 | 30700 | 6850  | 2400 |                          |
| 300 L4                              | 1022  | 1.5  | 1170                                | 0.20                  | 6.0                   | 71-80-90-100-112-132 | 10700   | 10700               | 27300 | 31400 | 7040  | 2400 |                          |
| 300 L4                              | 1108  | 1.4  | 810                                 | 0.13                  | 6.0                   | 71-80-90-100-112-132 | 11000   | 11000               | 28000 | 32200 | 7230  | 2400 |                          |
| 300 L4                              | 1275  | 1.2  | 1220                                | 0.17                  | 6.0                   | 71-80-90-100-112-132 | 11500   | 11500               | 29200 | 33600 | 7580  | 2400 |                          |
| 300 L4                              | 1383  | 1.1  | 850                                 | 0.11                  | 6.0                   | 71-80-90-100-112-132 | 11800   | 11800               | 29900 | 34000 | 7790  | 2400 |                          |
| 300 L4                              | 1591  | 0.94 | 1250                                | 0.14                  | 6.0                   | 71-80-90-100-112-132 | 12000   | 12400               | 31000 | 34000 | 8000  | 2400 |                          |
| 300 L4                              | 1725  | 0.87 | 860                                 | 0.09                  | 6.0                   | 71-80-90-100-112-132 | 12000   | 12500               | 31000 | 34000 | 8000  | 2400 |                          |
| 300 L4                              | 2153  | 0.70 | 860                                 | 0.07                  | 6.0                   | 71-80-90-100-112-132 | 12000   | 12500               | 31000 | 34000 | 8000  | 2400 |                          |
| 300 L4                              | 2692  | 0.56 | 1000                                | 0.07                  | 6.0                   | 71-80-90-100-112-132 | 12000   | 12500               | 31000 | 34000 | 8000  | 2400 |                          |
| 1000                                | 300 L1  | 3.48 | 287                                 | 530                   | 16.5                  | 9.0                  | 71-80-90-100-112-132  | 1840                | 1840  | 5610  | 6450  | 1210 | 2000                     |
|                                     | 300 L1  | 4.26 | 235                                 | 560                   | 14.1                  | 9.0                  | 71-80-90-100-112-132  | 1970                | 1970  | 5970  | 6860  | 1300 | 2400                     |
|                                     | 300 L1  | 5.77 | 173                                 | 530                   | 10.0                  | 9.0                  | 71-80-90-100-112-132  | 2180                | 2180  | 6530  | 7510  | 1430 | 2400                     |
|                                     | 300 L1  | 7.20 | 139                                 | 460                   | 6.9                   | 9.0                  | 71-80-90-100-112-132  | 2350                | 2350  | 6980  | 8020  | 1540 | 2400                     |
|                                     | 300 L1  | 9.00 | 111                                 | 360                   | 4.3                   | 9.0                  | 71-80-90-100-112-132  | 2530                | 2530  | 7470  | 8580  | 1660 | 2400                     |
|                                     | 300 L2  | 12.1 | 83                                  | 730                   | 6.7                   | 9.0                  | 71-80-90-100-112-132  | 2790                | 2790  | 8160  | 9380  | 1840 | 2000                     |
|                                     | 300 L2  | 14.8 | 67                                  | 790                   | 5.9                   | 9.0                  | 71-80-90-100-112-132  | 2990                | 2990  | 8670  | 9970  | 1970 | 2000                     |
|                                     | 300 L2  | 18.2 | 55                                  | 820                   | 5.0                   | 9.0                  | 71-80-90-100-112-132  | 3200                | 3200  | 9220  | 10600 | 2100 | 2400                     |
|                                     | 300 L2  | 20.1 | 50                                  | 650                   | 3.6                   | 9.0                  | 71-80-90-100-112-132  | 3310                | 3310  | 9500  | 10900 | 2170 | 2000                     |
|                                     | 300 L2  | 24.6 | 41                                  | 840                   | 3.8                   | 9.0                  | 71-80-90-100-112-132  | 3540                | 3540  | 10100 | 11600 | 2330 | 2400                     |
|                                     | 300 L2  | 30.7 | 33                                  | 850                   | 3.1                   | 9.0                  | 71-80-90-100-112-132  | 3810                | 3810  | 10800 | 12400 | 2500 | 2400                     |
|                                     | 300 L2  | 33.3 | 30                                  | 650                   | 2.2                   | 9.0                  | 71-80-90-100-112-132  | 3910                | 3910  | 11100 | 12700 | 2570 | 2400                     |
|                                     | 300 L2  | 38.4 | 26.1                                | 850                   | 2.5                   | 9.0                  | 71-80-90-100-112-132  | 4100                | 4100  | 11500 | 13300 | 2700 | 2400                     |

B



| 300 L                      |   |      |                            |                |                |                      | 1250 Nm   |              |       |       |       |      |                 |
|----------------------------|---|------|----------------------------|----------------|----------------|----------------------|---|--------------|-------|-------|-------|------|-----------------|
| $n_1$<br>min <sup>-1</sup> |  | i    | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW          | P (IEC)  | $R_{n2}$ [N] |       |       |       |      | $M_2$ max<br>Nm |
|                            |   |      |                            |                |                |                      |   | MC/PC        | MZ/PZ | HC    | HZ    | FZ   |                 |
| 1000                       | 300 L2  | 41.5 | 24.1                       | 650            | 1.7            | 9.0                  | 71-80-90-100-112-132  | 4210         | 4210  | 11800 | 13600 | 2770 | 2400            |
|                            | 300 L2  | 51.9 | 19.3                       | 650            | 1.4            | 9.0                  | 71-80-90-100-112-132  | 4540         | 4540  | 12600 | 14500 | 2980 | 2400            |
|                            | 300 L2  | 64.8 | 15.4                       | 550            | 0.94           | 9.0                  | 71-80-90-100-112-132  | 4890         | 4890  | 13500 | 15500 | 3210 | 2400            |
|                            | 300 L3  | 51.6 | 19.4                       | 850            | 1.9            | 9.0                  | 71-80-90-100-112-132  | 4530         | 4530  | 12600 | 14500 | 2980 | 2000            |
|                            | 300 L3  | 63.2 | 15.8                       | 850            | 1.5            | 9.0                  | 71-80-90-100-112-132  | 4850         | 4850  | 13400 | 15400 | 3190 | 2400            |
|                            | 300 L3  | 69.9 | 14.3                       | 650            | 1.1            | 9.0                  | 71-80-90-100-112-132  | 5010         | 5010  | 13800 | 15900 | 3290 | 2000            |
|                            | 300 L3  | 77.5 | 12.9                       | 860            | 1.3            | 9.0                  | 71-80-90-100-112-132  | 5190         | 5190  | 14200 | 16400 | 3410 | 2400            |
|                            | 300 L3  | 85.6 | 11.7                       | 860            | 1.2            | 9.0                  | 71-80-90-100-112-132  | 5360         | 5360  | 14700 | 16900 | 3530 | 2400            |
|                            | 300 L3  | 105  | 9.5                        | 870            | 0.95           | 9.0                  | 71-80-90-100-112-132  | 5740         | 5740  | 15600 | 17900 | 3770 | 2400            |
|                            | 300 L3  | 116  | 8.6                        | 650            | 0.64           | 9.0                  | 71-80-90-100-112-132  | 5930         | 5930  | 16100 | 18500 | 3900 | 2400            |
|                            | 300 L3  | 131  | 7.6                        | 890            | 0.78           | 9.0                  | 71-80-90-100-112-132  | 6180         | 6180  | 16700 | 19200 | 4060 | 2400            |
|                            | 300 L3  | 142  | 7.0                        | 900            | 0.73           | 9.0                  | 71-80-90-100-112-132  | 6350         | 6350  | 17100 | 19600 | 4170 | 2400            |
|                            | 300 L3  | 177  | 5.6                        | 930            | 0.60           | 9.0                  | 71-80-90-100-112-132  | 6830         | 6830  | 18300 | 21000 | 4490 | 2400            |
|                            | 300 L3  | 192  | 5.2                        | 650            | 0.39           | 9.0                  | 71-80-90-100-112-132  | 7020         | 7020  | 18700 | 21500 | 4620 | 2400            |
|                            | 300 L3  | 221  | 4.5                        | 970            | 0.50           | 9.0                  | 71-80-90-100-112-132  | 7360         | 7360  | 19500 | 22400 | 4840 | 2400            |
|                            | 300 L3  | 240  | 4.2                        | 670            | 0.32           | 9.0                  | 71-80-90-100-112-132  | 7560         | 7560  | 20000 | 23000 | 4970 | 2400            |
|                            | 300 L3  | 299  | 3.3                        | 700            | 0.27           | 9.0                  | 71-80-90-100-112-132  | 8140         | 8140  | 21400 | 24500 | 5350 | 2400            |
|                            | 300 L3  | 374  | 2.7                        | 720            | 0.22           | 9.0                  | 71-80-90-100-112-132  | 8770         | 8770  | 22800 | 26200 | 5760 | 2400            |
|                            | 300 L4  | 330  | 3.0                        | 1040           | 0.37           | 7.2                  | 71-80-90-100-112-132  | 8410         | 8410  | 22000 | 25300 | 5530 | 2400            |
|                            | 300 L4  | 403  | 2.5                        | 730            | 0.21           | 7.2                  | 71-80-90-100-112-132  | 8990         | 8990  | 23400 | 26800 | 5910 | 2400            |
|                            | 300 L4  | 447  | 2.2                        | 1090           | 0.29           | 7.2                  | 71-80-90-100-112-132  | 9300         | 9300  | 24100 | 27700 | 6120 | 2400            |
|                            | 300 L4  | 494  | 2.0                        | 1110           | 0.27           | 7.2                  | 71-80-90-100-112-132  | 9620         | 9620  | 24800 | 28500 | 6320 | 2400            |
|                            | 300 L4  | 558  | 1.8                        | 1130           | 0.24           | 7.2                  | 71-80-90-100-112-132  | 10000        | 10000 | 25800 | 29600 | 6590 | 2400            |
|                            | 300 L4  | 616  | 1.6                        | 1150           | 0.22           | 7.2                  | 71-80-90-100-112-132  | 10400        | 10400 | 26500 | 30500 | 6810 | 2400            |
|                            | 300 L4  | 755  | 1.3                        | 1190           | 0.19           | 7.2                  | 71-80-90-100-112-132  | 11100        | 11100 | 28200 | 32400 | 7280 | 2400            |
|                            | 300 L4  | 819  | 1.2                        | 1210           | 0.17           | 7.2                  | 71-80-90-100-112-132  | 11400        | 11400 | 28900 | 33200 | 7480 | 2400            |
|                            | 300 L4  | 942  | 1.1                        | 1240           | 0.16           | 7.2                  | 71-80-90-100-112-132  | 11900        | 11900 | 30100 | 34000 | 7840 | 2400            |
|                            | 300 L4  | 1022 | 0.98                       | 1250           | 0.14           | 7.2                  | 71-80-90-100-112-132  | 12000        | 12300 | 30900 | 34000 | 8000 | 2400            |
|                            | 300 L4  | 1108 | 0.90                       | 860            | 0.09           | 7.2                  | 71-80-90-100-112-132  | 12000        | 12500 | 31000 | 34000 | 8000 | 2400            |
|                            | 300 L4  | 1275 | 0.78                       | 1250           | 0.12           | 7.2                  | 71-80-90-100-112-132  | 12000        | 12500 | 31000 | 34000 | 8000 | 2400            |
| 300 L4                     | 1383  | 0.72 | 860                        | 0.07           | 7.2            | 71-80-90-100-112-132 | 12000   | 12500        | 31000 | 34000 | 8000  | 2400 |                 |
| 300 L4                     | 1591  | 0.63 | 1250                       | 0.09           | 7.2            | 71-80-90-100-112-132 | 12000   | 12500        | 31000 | 34000 | 8000  | 2400 |                 |
| 300 L4                     | 1725  | 0.58 | 860                        | 0.06           | 7.2            | 71-80-90-100-112-132 | 12000   | 12500        | 31000 | 34000 | 8000  | 2400 |                 |
| 300 L4                     | 2153  | 0.46 | 860                        | 0.05           | 7.2            | 71-80-90-100-112-132 | 12000   | 12500        | 31000 | 34000 | 8000  | 2400 |                 |
| 300 L4                     | 2692  | 0.37 | 1000                       | 0.04           | 7.2            | 71-80-90-100-112-132 | 12000   | 12500        | 31000 | 34000 | 8000  | 2400 |                 |
| 500                        | 300 L1  | 3.48 | 144                        | 650            | 10.2           | 15.0                 | 71-80-90-100-112-132  | 2320         | 2320  | 6910  | 7940  | 1530 | 2000            |
|                            | 300 L1  | 4.26 | 117                        | 690            | 8.7            | 15.0                 | 71-80-90-100-112-132  | 2490         | 2490  | 7350  | 8440  | 1630 | 2400            |
|                            | 300 L1  | 5.77 | 87                         | 630            | 5.9            | 15.0                 | 71-80-90-100-112-132  | 2750         | 2750  | 8040  | 9240  | 1810 | 2400            |
|                            | 300 L1  | 7.20 | 69                         | 530            | 4.0            | 15.0                 | 71-80-90-100-112-132  | 2960         | 2960  | 8600  | 9880  | 1950 | 2400            |
|                            | 300 L1  | 9.00 | 56                         | 370            | 2.2            | 15.0                 | 71-80-90-100-112-132  | 3190         | 3190  | 9190  | 10600 | 2100 | 2400            |
|                            | 300 L2  | 12.1 | 41                         | 730            | 3.4            | 15.0                 | 71-80-90-100-112-132  | 3520         | 3520  | 10000 | 11500 | 2310 | 2000            |
|                            | 300 L2  | 14.8 | 34                         | 840            | 3.2            | 15.0                 | 71-80-90-100-112-132  | 3770         | 3770  | 10700 | 12300 | 2480 | 2000            |
|                            | 300 L2  | 18.2 | 27.5                       | 850            | 2.6            | 15.0                 | 71-80-90-100-112-132  | 4030         | 4030  | 11300 | 13000 | 2650 | 2400            |
|                            | 300 L2  | 20.1 | 24.9                       | 650            | 1.8            | 15.0                 | 71-80-90-100-112-132  | 4170         | 4170  | 11700 | 13400 | 2740 | 2000            |
|                            | 300 L2  | 24.6 | 20.3                       | 850            | 1.9            | 15.0                 | 71-80-90-100-112-132  | 4460         | 4460  | 12400 | 14300 | 2930 | 2400            |
|                            | 300 L2  | 30.7 | 16.3                       | 850            | 1.5            | 15.0                 | 71-80-90-100-112-132  | 4800         | 4800  | 13300 | 15300 | 3160 | 2400            |
|                            | 300 L2  | 33.3 | 15.0                       | 650            | 1.1            | 15.0                 | 71-80-90-100-112-132  | 4930         | 4930  | 13600 | 15600 | 3240 | 2400            |
|                            | 300 L2  | 38.4 | 13.0                       | 860            | 1.2            | 15.0                 | 71-80-90-100-112-132  | 5170         | 5170  | 14200 | 16300 | 3400 | 2400            |
|                            | 300 L2  | 41.5 | 12.0                       | 650            | 0.87           | 15.0                 | 71-80-90-100-112-132  | 5310         | 5310  | 14500 | 16700 | 3490 | 2400            |
|                            | 300 L2  | 51.9 | 9.6                        | 650            | 0.70           | 15.0                 | 71-80-90-100-112-132  | 5720         | 5720  | 15600 | 17900 | 3760 | 2400            |
|                            | 300 L2  | 64.8 | 7.7                        | 550            | 0.47           | 15.0                 | 71-80-90-100-112-132  | 6160         | 6160  | 16600 | 19100 | 4050 | 2400            |
|                            | 300 L3  | 51.6 | 9.7                        | 860            | 0.96           | 15.0                 | 71-80-90-100-112-132  | 5710         | 5710  | 15500 | 17800 | 3750 | 2000            |
|                            | 300 L3  | 63.2 | 7.9                        | 890            | 0.81           | 15.0                 | 71-80-90-100-112-132  | 6110         | 6110  | 16500 | 19000 | 4020 | 2400            |
|                            | 300 L3  | 69.9 | 7.2                        | 650            | 0.53           | 15.0                 | 71-80-90-100-112-132  | 6310         | 6310  | 17000 | 19500 | 4150 | 2000            |
|                            | 300 L3  | 77.5 | 6.5                        | 920            | 0.68           | 15.0                 | 71-80-90-100-112-132  | 6540         | 6540  | 17500 | 20100 | 4300 | 2400            |
|                            | 300 L3  | 85.6 | 5.8                        | 930            | 0.62           | 15.0                 | 71-80-90-100-112-132  | 6760         | 6760  | 18100 | 20800 | 4440 | 2400            |
|                            | 300 L3  | 105  | 4.8                        | 960            | 0.52           | 15.0                 | 71-80-90-100-112-132  | 7230         | 7230  | 19200 | 22100 | 4750 | 2400            |
|                            | 300 L3  | 116  | 4.3                        | 670            | 0.33           | 15.0                 | 71-80-90-100-112-132  | 7470         | 7470  | 19800 | 22700 | 4910 | 2400            |
|                            | 300 L3  | 131  | 3.8                        | 990            | 0.44           | 15.0                 | 71-80-90-100-112-132  | 7780         | 7780  | 20500 | 23600 | 5120 | 2400            |
|                            | 300 L3  | 142  | 3.5                        | 1010           | 0.41           | 15.0                 | 71-80-90-100-112-132  | 8000         | 8000  | 21000 | 24200 | 5260 | 2400            |



B



### 300 L

246



### 1250 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |                          |
| 500                                 | 300 L3  | 177  | 2.8                                 | 1050                  | 0.34                  | 15.0                 | 71-80-90-100-112-132  | 8610                | 8610  | 22500 | 25800 | 5660 | 2400                     |
|                                     | 300 L3  | 192  | 2.6                                 | 730                   | 0.22                  | 15.0                 | 71-80-90-100-112-132  | 8850                | 8850  | 23000 | 26500 | 5820 | 2400                     |
|                                     | 300 L3  | 221  | 2.3                                 | 1090                  | 0.28                  | 15.0                 | 71-80-90-100-112-132  | 9270                | 9270  | 24000 | 27600 | 6090 | 2400                     |
|                                     | 300 L3  | 240  | 2.1                                 | 750                   | 0.18                  | 15.0                 | 71-80-90-100-112-132  | 9520                | 9520  | 24600 | 28300 | 6260 | 2400                     |
|                                     | 300 L3  | 299  | 1.7                                 | 780                   | 0.15                  | 15.0                 | 71-80-90-100-112-132  | 10300               | 10300 | 26300 | 30200 | 6740 | 2400                     |
|                                     | 300 L3  | 374  | 1.3                                 | 820                   | 0.13                  | 15.0                 | 71-80-90-100-112-132  | 11000               | 11000 | 28100 | 32300 | 7260 | 2400                     |
|                                     | 300 L4  | 330  | 1.5                                 | 1170                  | 0.21                  | 12.0                 | 71-80-90-100-112-132  | 10600               | 10600 | 27100 | 31100 | 6970 | 2400                     |
|                                     | 300 L4  | 403  | 1.2                                 | 830                   | 0.12                  | 12.0                 | 71-80-90-100-112-132  | 11300               | 11300 | 28800 | 33000 | 7450 | 2400                     |
|                                     | 300 L4  | 447  | 1.1                                 | 1230                  | 0.16                  | 12.0                 | 71-80-90-100-112-132  | 11700               | 11700 | 29700 | 34000 | 7710 | 2400                     |
|                                     | 300 L4  | 494  | 1.0                                 | 1250                  | 0.15                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12100 | 30600 | 34000 | 7970 | 2400                     |
|                                     | 300 L4  | 558  | 0.90                                | 1250                  | 0.13                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 616  | 0.81                                | 1250                  | 0.12                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 755  | 0.66                                | 1250                  | 0.10                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 819  | 0.61                                | 1250                  | 0.09                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 942  | 0.53                                | 1250                  | 0.08                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1022 | 0.49                                | 1250                  | 0.07                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1108 | 0.45                                | 860                   | 0.05                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1275 | 0.39                                | 1250                  | 0.06                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1383 | 0.36                                | 860                   | 0.04                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1591 | 0.31                                | 1250                  | 0.05                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 1725 | 0.29                                | 860                   | 0.03                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 2153 | 0.23                                | 860                   | 0.02                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | 300 L4  | 2692 | 0.19                                | 1000                  | 0.02                  | 12.0                 | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |

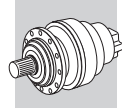
### 301 L



256

### 2460 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| 1500                                | 301 L1  | 3.48 | 431                                 | 840                   | 30                    | 7.5                  | 71-80-90-100-112-132  | 1610                | 1610  | 4970  | 5710  | 1060 | 3400                     |
|                                     | 301 L1  | 4.26 | 352                                 | 880                   | 30                    | 7.5                  | 71-80-90-100-112-132  | 1720                | 1720  | 5280  | 6070  | 1130 | 3400                     |
|                                     | 301 L1  | 5.77 | 260                                 | 930                   | 26                    | 7.5                  | 71-80-90-100-112-132  | 1910                | 1910  | 5790  | 6650  | 1250 | 3400                     |
|                                     | 301 L1  | 7.20 | 208                                 | 750                   | 17.0                  | 7.5                  | 71-80-90-100-112-132  | 2050                | 2050  | 6180  | 7100  | 1350 | 3400                     |
|                                     | 301 L1  | 9.00 | 167                                 | 630                   | 11.3                  | 7.5                  | 71-80-90-100-112-132  | 2210                | 2210  | 6610  | 7600  | 1450 | 3400                     |
|                                     | 301 L2  | 12.1 | 124                                 | 1220                  | 16.8                  | 7.5                  | 71-80-90-100-112-132  | 2440                | 2440  | 7230  | 8300  | 1600 | 3400                     |
|                                     | 301 L2  | 14.8 | 101                                 | 1280                  | 14.4                  | 7.5                  | 71-80-90-100-112-132  | 2610                | 2610  | 7680  | 8820  | 1720 | 3400                     |
|                                     | 301 L2  | 18.2 | 83                                  | 1360                  | 12.5                  | 7.5                  | 71-80-90-100-112-132  | 2790                | 2790  | 8160  | 9380  | 1840 | 3400                     |
|                                     | 301 L2  | 20.1 | 75                                  | 1260                  | 10.5                  | 7.5                  | 71-80-90-100-112-132  | 2890                | 2890  | 8410  | 9660  | 1900 | 3400                     |
|                                     | 301 L2  | 24.6 | 61                                  | 1490                  | 10.1                  | 7.5                  | 71-80-90-100-112-132  | 3090                | 3090  | 8940  | 10300 | 2030 | 3400                     |
|                                     | 301 L2  | 30.7 | 49                                  | 1580                  | 8.6                   | 7.5                  | 71-80-90-100-112-132  | 3330                | 3330  | 9550  | 11000 | 2190 | 3400                     |
|                                     | 301 L2  | 33.3 | 45                                  | 1300                  | 6.5                   | 7.5                  | 71-80-90-100-112-132  | 3420                | 3420  | 9790  | 11200 | 2250 | 3400                     |
|                                     | 301 L2  | 38.4 | 39                                  | 1540                  | 6.7                   | 7.5                  | 71-80-90-100-112-132  | 3590                | 3590  | 10200 | 11700 | 2360 | 3400                     |
|                                     | 301 L2  | 41.5 | 36                                  | 1300                  | 5.2                   | 7.5                  | 71-80-90-100-112-132  | 3680                | 3680  | 10500 | 12000 | 2420 | 3400                     |
|                                     | 301 L2  | 51.9 | 28.9                                | 1300                  | 4.2                   | 7.5                  | 71-80-90-100-112-132  | 3970                | 3970  | 11200 | 12900 | 2610 | 3400                     |
|                                     | 301 L2  | 64.8 | 23.1                                | 1150                  | 3.0                   | 7.5                  | 71-80-90-100-112-132  | 4270                | 4270  | 12000 | 13700 | 2810 | 3400                     |
|                                     | 301 L3  | 51.6 | 29.1                                | 1630                  | 5.4                   | 7.5                  | 71-80-90-100-112-132  | 3960                | 3960  | 11200 | 12800 | 2600 | 3400                     |
|                                     | 301 L3  | 63.2 | 23.7                                | 1650                  | 4.5                   | 7.5                  | 71-80-90-100-112-132  | 4240                | 4240  | 11900 | 13600 | 2780 | 3400                     |
|                                     | 301 L3  | 69.9 | 21.5                                | 1300                  | 3.2                   | 7.5                  | 71-80-90-100-112-132  | 4380                | 4380  | 12200 | 14000 | 2880 | 3400                     |
|                                     | 301 L3  | 77.5 | 19.4                                | 1670                  | 3.7                   | 7.5                  | 71-80-90-100-112-132  | 4530                | 4530  | 12600 | 14500 | 2980 | 3400                     |
|                                     | 301 L3  | 85.6 | 17.5                                | 1680                  | 3.4                   | 7.5                  | 71-80-90-100-112-132  | 4680                | 4680  | 13000 | 14900 | 3080 | 3400                     |
|                                     | 301 L3  | 105  | 14.3                                | 1700                  | 2.8                   | 7.5                  | 71-80-90-100-112-132  | 5010                | 5010  | 13800 | 15900 | 3300 | 3400                     |
|                                     | 301 L3  | 116  | 13.0                                | 1300                  | 1.9                   | 7.5                  | 71-80-90-100-112-132  | 5180                | 5180  | 14200 | 16300 | 3410 | 3400                     |
|                                     | 301 L3  | 131  | 11.5                                | 1720                  | 2.3                   | 7.5                  | 71-80-90-100-112-132  | 5400                | 5400  | 14800 | 17000 | 3550 | 3400                     |
|                                     | 301 L3  | 142  | 10.6                                | 1720                  | 2.1                   | 7.5                  | 71-80-90-100-112-132  | 5540                | 5540  | 15100 | 17400 | 3650 | 3400                     |
|                                     | 301 L3  | 177  | 8.5                                 | 1770                  | 1.7                   | 7.5                  | 71-80-90-100-112-132  | 5970                | 5970  | 16200 | 18600 | 3920 | 3400                     |
|                                     | 301 L3  | 192  | 7.8                                 | 1300                  | 1.2                   | 7.5                  | 71-80-90-100-112-132  | 6130                | 6130  | 16600 | 19000 | 4030 | 3400                     |
|                                     | 301 L3  | 221  | 6.8                                 | 1790                  | 1.4                   | 7.5                  | 71-80-90-100-112-132  | 6430                | 6430  | 17300 | 19800 | 4230 | 3400                     |
|                                     | 301 L3  | 240  | 6.3                                 | 1300                  | 0.93                  | 7.5                  | 71-80-90-100-112-132  | 6600                | 6600  | 17700 | 20300 | 4340 | 3400                     |
|                                     | 301 L3  | 299  | 5.0                                 | 1300                  | 0.75                  | 7.5                  | 71-80-90-100-112-132  | 7110                | 7110  | 18900 | 21700 | 4670 | 3400                     |
| 301 L3                              | 374   | 4.0  | 1350                                | 0.62                  | 7.5                   | 71-80-90-100-112-132 | 7660  | 7660                | 20200 | 23200 | 5030  | 3400 |                          |

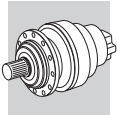




| 301 L                               |   |        |                                     |                       |                       |                      | 2460 Nm   |                      |       |       |       |      |                          |
|-------------------------------------|---|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---|----------------------|-------|-------|-------|------|--------------------------|
|                                     |   |        |                                     |                       |                       |                      | 256   |                      |       |       |       |      |                          |
| n <sub>1</sub><br>min <sup>-1</sup> |  | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N]  |       |       |       |      | M <sub>2 max</sub><br>Nm |
|                                     |   |        |                                     |                       |                       |                      |   | MC                   | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| 1500                                | 301 L4  | 330    | 4.5                                 | 1920                  | 1.0                   | 6.0                  | 71-80-90-100-112-132  | 7350                 | 7350  | 19500 | 22400 | 4830 | 3400                     |
|                                     | 301 L4  | 403    | 3.7                                 | 1370                  | 0.60                  | 6.0                  | 71-80-90-100-112-132  | 7850                 | 7850  | 20700 | 23800 | 5160 | 3400                     |
|                                     | 301 L4  | 447    | 3.4                                 | 2030                  | 0.81                  | 6.0                  | 71-80-90-100-112-132  | 8130                 | 8130  | 21300 | 24500 | 5340 | 3400                     |
|                                     | 301 L4  | 494    | 3.0                                 | 2070                  | 0.74                  | 6.0                  | 71-80-90-100-112-132  | 8400                 | 8400  | 22000 | 25300 | 5520 | 3400                     |
|                                     | 301 L4  | 558    | 2.7                                 | 2110                  | 0.67                  | 6.0                  | 71-80-90-100-112-132  | 8750                 | 8750  | 22800 | 26200 | 5750 | 3400                     |
|                                     | 301 L4  | 616    | 2.4                                 | 2150                  | 0.62                  | 6.0                  | 71-80-90-100-112-132  | 9050                 | 9050  | 23500 | 27000 | 5950 | 3400                     |
|                                     | 301 L4  | 755    | 2.0                                 | 2220                  | 0.52                  | 6.0                  | 71-80-90-100-112-132  | 9680                 | 9680  | 25000 | 28700 | 6360 | 3400                     |
|                                     | 301 L4  | 819    | 1.8                                 | 2240                  | 0.49                  | 6.0                  | 71-80-90-100-112-132  | 9940                 | 9940  | 25600 | 29400 | 6540 | 3400                     |
|                                     | 301 L4  | 942    | 1.6                                 | 2290                  | 0.43                  | 6.0                  | 71-80-90-100-112-132  | 10400                | 10400 | 26700 | 30700 | 6850 | 3400                     |
|                                     | 301 L4  | 1022   | 1.5                                 | 2320                  | 0.40                  | 6.0                  | 71-80-90-100-112-132  | 10700                | 10700 | 27300 | 31400 | 7040 | 3400                     |
|                                     | 301 L4  | 1108   | 1.4                                 | 1630                  | 0.26                  | 6.0                  | 71-80-90-100-112-132  | 11000                | 11000 | 28000 | 32200 | 7230 | 3400                     |
|                                     | 301 L4  | 1275   | 1.2                                 | 2400                  | 0.33                  | 6.0                  | 71-80-90-100-112-132  | 11500                | 11500 | 29200 | 33600 | 7580 | 3400                     |
|                                     | 301 L4  | 1383   | 1.1                                 | 1700                  | 0.22                  | 6.0                  | 71-80-90-100-112-132  | 11800                | 11800 | 29900 | 34000 | 7790 | 3400                     |
|                                     | 301 L4  | 1591   | 0.94                                | 2000                  | 0.22                  | 6.0                  | 71-80-90-100-112-132  | 12000                | 12400 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4  | 1725   | 0.87                                | 1720                  | 0.18                  | 6.0                  | 71-80-90-100-112-132  | 12000                | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4  | 2153   | 0.70                                | 1720                  | 0.14                  | 6.0                  | 71-80-90-100-112-132  | 12000                | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4  | 2692   | 0.56                                | 1720                  | 0.11                  | 6.0                  | 71-80-90-100-112-132  | 12000                | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 1000  | 301 L1 | 3.48                                | 287                   | 950                   | 29                   | 9.0   | 71-80-90-100-112-132 | 1840  | 1840  | 5610  | 6450 | 1210                     |
| 301 L1                              |   | 4.26   | 235                                 | 990                   | 25                    | 9.0                  | 71-80-90-100-112-132  | 1970                 | 1970  | 5970  | 6860  | 1300 | 3400                     |
| 301 L1                              |   | 5.77   | 173                                 | 1050                  | 19.7                  | 9.0                  | 71-80-90-100-112-132  | 2180                 | 2180  | 6530  | 7510  | 1430 | 3400                     |
| 301 L1                              |   | 7.20   | 139                                 | 850                   | 12.8                  | 9.0                  | 71-80-90-100-112-132  | 2350                 | 2350  | 6980  | 8020  | 1540 | 3400                     |
| 301 L1                              |   | 9.00   | 111                                 | 710                   | 8.5                   | 9.0                  | 71-80-90-100-112-132  | 2530                 | 2530  | 7470  | 8580  | 1660 | 3400                     |
| 301 L2                              |   | 12.1   | 83                                  | 1330                  | 12.3                  | 9.0                  | 71-80-90-100-112-132  | 2790                 | 2790  | 8160  | 9380  | 1840 | 3400                     |
| 301 L2                              |   | 14.8   | 67                                  | 1440                  | 10.8                  | 9.0                  | 71-80-90-100-112-132  | 2990                 | 2990  | 8670  | 9970  | 1970 | 3400                     |
| 301 L2                              |   | 18.2   | 55                                  | 1530                  | 9.4                   | 9.0                  | 71-80-90-100-112-132  | 3200                 | 3200  | 9220  | 10600 | 2100 | 3400                     |
| 301 L2                              |   | 20.1   | 50                                  | 1300                  | 7.2                   | 9.0                  | 71-80-90-100-112-132  | 3310                 | 3310  | 9500  | 10900 | 2170 | 3400                     |
| 301 L2                              |   | 24.6   | 41                                  | 1600                  | 7.2                   | 9.0                  | 71-80-90-100-112-132  | 3540                 | 3540  | 10100 | 11600 | 2330 | 3400                     |
| 301 L2                              |   | 30.7   | 33                                  | 1620                  | 5.9                   | 9.0                  | 71-80-90-100-112-132  | 3810                 | 3810  | 10800 | 12400 | 2500 | 3400                     |
| 301 L2                              |   | 33.3   | 30                                  | 1300                  | 4.3                   | 9.0                  | 71-80-90-100-112-132  | 3910                 | 3910  | 11100 | 12700 | 2570 | 3400                     |
| 301 L2                              |   | 38.4   | 26.1                                | 1550                  | 4.5                   | 9.0                  | 71-80-90-100-112-132  | 4100                 | 4100  | 11500 | 13300 | 2700 | 3400                     |
| 301 L2                              |   | 41.5   | 24.1                                | 1300                  | 3.5                   | 9.0                  | 71-80-90-100-112-132  | 4210                 | 4210  | 11800 | 13600 | 2770 | 3400                     |
| 301 L2                              |   | 51.9   | 19.3                                | 1300                  | 2.8                   | 9.0                  | 71-80-90-100-112-132  | 4540                 | 4540  | 12600 | 14500 | 2980 | 3400                     |
| 301 L2                              |   | 64.8   | 15.4                                | 1150                  | 2.0                   | 9.0                  | 71-80-90-100-112-132  | 4890                 | 4890  | 13500 | 15500 | 3210 | 3400                     |
| 301 L3                              |   | 51.6   | 19.4                                | 1670                  | 3.7                   | 9.0                  | 71-80-90-100-112-132  | 4530                 | 4530  | 12600 | 14500 | 2980 | 3400                     |
| 301 L3                              |   | 63.2   | 15.8                                | 1690                  | 3.1                   | 9.0                  | 71-80-90-100-112-132  | 4850                 | 4850  | 13400 | 15400 | 3190 | 3400                     |
| 301 L3                              |   | 69.9   | 14.3                                | 1300                  | 2.1                   | 9.0                  | 71-80-90-100-112-132  | 5010                 | 5010  | 13800 | 15900 | 3290 | 3400                     |
| 301 L3                              |   | 77.5   | 12.9                                | 1710                  | 2.5                   | 9.0                  | 71-80-90-100-112-132  | 5190                 | 5190  | 14200 | 16400 | 3410 | 3400                     |
| 301 L3                              |   | 85.6   | 11.7                                | 1710                  | 2.3                   | 9.0                  | 71-80-90-100-112-132  | 5360                 | 5360  | 14700 | 16900 | 3530 | 3400                     |
| 301 L3                              |   | 105    | 9.5                                 | 1740                  | 1.9                   | 9.0                  | 71-80-90-100-112-132  | 5740                 | 5740  | 15600 | 17900 | 3770 | 3400                     |
| 301 L3                              |   | 116    | 8.6                                 | 1300                  | 1.3                   | 9.0                  | 71-80-90-100-112-132  | 5930                 | 5930  | 16100 | 18500 | 3900 | 3400                     |
| 301 L3                              |   | 131    | 7.6                                 | 1790                  | 1.6                   | 9.0                  | 71-80-90-100-112-132  | 6180                 | 6180  | 16700 | 19200 | 4060 | 3400                     |
| 301 L3                              |   | 142    | 7.0                                 | 1810                  | 1.5                   | 9.0                  | 71-80-90-100-112-132  | 6350                 | 6350  | 17100 | 19600 | 4170 | 3400                     |
| 301 L3                              |   | 177    | 5.6                                 | 1860                  | 1.2                   | 9.0                  | 71-80-90-100-112-132  | 6830                 | 6830  | 18300 | 21000 | 4490 | 3400                     |
| 301 L3                              |   | 192    | 5.2                                 | 1300                  | 0.78                  | 9.0                  | 71-80-90-100-112-132  | 7020                 | 7020  | 18700 | 21500 | 4620 | 3400                     |
| 301 L3                              |   | 221    | 4.5                                 | 1850                  | 0.96                  | 9.0                  | 71-80-90-100-112-132  | 7360                 | 7360  | 19500 | 22400 | 4840 | 3400                     |
| 301 L3                              |   | 240    | 4.2                                 | 1340                  | 0.64                  | 9.0                  | 71-80-90-100-112-132  | 7560                 | 7560  | 20000 | 23000 | 4970 | 3400                     |
| 301 L3                              |   | 299    | 3.3                                 | 1390                  | 0.53                  | 9.0                  | 71-80-90-100-112-132  | 8140                 | 8140  | 21400 | 24500 | 5350 | 3400                     |
| 301 L3                              |   | 374    | 2.7                                 | 1440                  | 0.44                  | 9.0                  | 71-80-90-100-112-132  | 8770                 | 8770  | 22800 | 26200 | 5760 | 3400                     |
| 301 L4                              |   | 330    | 3.0                                 | 2070                  | 0.74                  | 7.2                  | 71-80-90-100-112-132  | 8410                 | 8410  | 22000 | 25300 | 5530 | 3400                     |
| 301 L4                              |   | 403    | 2.5                                 | 1460                  | 0.43                  | 7.2                  | 71-80-90-100-112-132  | 8990                 | 8990  | 23400 | 26800 | 5910 | 3400                     |
| 301 L4                              |   | 447    | 2.2                                 | 2180                  | 0.58                  | 7.2                  | 71-80-90-100-112-132  | 9300                 | 9300  | 24100 | 27700 | 6120 | 3400                     |
| 301 L4                              |   | 494    | 2.0                                 | 2210                  | 0.53                  | 7.2                  | 71-80-90-100-112-132  | 9620                 | 9620  | 24800 | 28500 | 6320 | 3400                     |
| 301 L4                              |   | 558    | 1.8                                 | 2250                  | 0.48                  | 7.2                  | 71-80-90-100-112-132  | 10000                | 10000 | 25800 | 29600 | 6590 | 3400                     |
| 301 L4                              |   | 616    | 1.6                                 | 2290                  | 0.44                  | 7.2                  | 71-80-90-100-112-132  | 10400                | 10400 | 26500 | 30500 | 6810 | 3400                     |
| 301 L4                              |   | 755    | 1.3                                 | 2360                  | 0.37                  | 7.2                  | 71-80-90-100-112-132  | 11100                | 11100 | 28200 | 32400 | 7280 | 3400                     |
| 301 L4                              |   | 819    | 1.2                                 | 2390                  | 0.34                  | 7.2                  | 71-80-90-100-112-132  | 11400                | 11400 | 28900 | 33200 | 7480 | 3400                     |
| 301 L4                              |   | 942    | 1.1                                 | 2440                  | 0.31                  | 7.2                  | 71-80-90-100-112-132  | 11900                | 11900 | 30100 | 34000 | 7840 | 3400                     |
| 301 L4                              |   | 1022   | 0.98                                | 2460                  | 0.28                  | 7.2                  | 71-80-90-100-112-132  | 12000                | 12300 | 30900 | 34000 | 8000 | 3400                     |
| 301 L4                              |   | 1108   | 0.90                                | 1720                  | 0.18                  | 7.2                  | 71-80-90-100-112-132  | 12000                | 12500 | 31000 | 34000 | 8000 | 3400                     |
| 301 L4                              | 1275  | 0.78   | 2460                                | 0.23                  | 7.2                   | 71-80-90-100-112-132 | 12000   | 12500                | 31000 | 34000 | 8000  | 3400 |                          |
| 301 L4                              | 1383  | 0.72   | 1720                                | 0.15                  | 7.2                   | 71-80-90-100-112-132 | 12000   | 12500                | 31000 | 34000 | 8000  | 3400 |                          |

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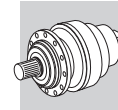
### 301 L



256

### 2460 Nm

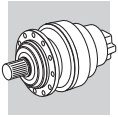
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|----------------------|---------------------|-------|-------|-------|------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                      | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| <b>1000</b>                         | 301 L4 | 1591 | 0.63                                | 2000                  | 0.15                  | 7.2                  | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1725 | 0.58                                | 1720                  | 0.12                  | 7.2                  | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 2153 | 0.46                                | 1720                  | 0.09                  | 7.2                  | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 2692 | 0.37                                | 1720                  | 0.08                  | 7.2                  | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
| <b>500</b>                          | 301 L1 | 3.48 | 144                                 | 1170                  | 18.1                  | 15.0                 | 71-80-90-100-112-132 | 2320                | 2320  | 6910  | 7940  | 1530 | 3400                     |
|                                     | 301 L1 | 4.26 | 117                                 | 1220                  | 15.4                  | 15.0                 | 71-80-90-100-112-132 | 2490                | 2490  | 7350  | 8440  | 1630 | 3400                     |
|                                     | 301 L1 | 5.77 | 87                                  | 1250                  | 11.7                  | 15.0                 | 71-80-90-100-112-132 | 2750                | 2750  | 8040  | 9240  | 1810 | 3400                     |
|                                     | 301 L1 | 7.20 | 69                                  | 1050                  | 7.8                   | 15.0                 | 71-80-90-100-112-132 | 2960                | 2960  | 8600  | 9880  | 1950 | 3400                     |
|                                     | 301 L1 | 9.00 | 56                                  | 730                   | 4.4                   | 15.0                 | 71-80-90-100-112-132 | 3190                | 3190  | 9190  | 10600 | 2100 | 3400                     |
|                                     | 301 L2 | 12.1 | 41                                  | 1430                  | 6.6                   | 15.0                 | 71-80-90-100-112-132 | 3520                | 3520  | 10000 | 11500 | 2310 | 3400                     |
|                                     | 301 L2 | 14.8 | 34                                  | 1620                  | 6.1                   | 15.0                 | 71-80-90-100-112-132 | 3770                | 3770  | 10700 | 12300 | 2480 | 3400                     |
|                                     | 301 L2 | 18.2 | 27.5                                | 1630                  | 5.0                   | 15.0                 | 71-80-90-100-112-132 | 4030                | 4030  | 11300 | 13000 | 2650 | 3400                     |
|                                     | 301 L2 | 20.1 | 24.9                                | 1300                  | 3.6                   | 15.0                 | 71-80-90-100-112-132 | 4170                | 4170  | 11700 | 13400 | 2740 | 3400                     |
|                                     | 301 L2 | 24.6 | 20.3                                | 1660                  | 3.8                   | 15.0                 | 71-80-90-100-112-132 | 4460                | 4460  | 12400 | 14300 | 2930 | 3400                     |
|                                     | 301 L2 | 30.7 | 16.3                                | 1680                  | 3.1                   | 15.0                 | 71-80-90-100-112-132 | 4800                | 4800  | 13300 | 15300 | 3160 | 3400                     |
|                                     | 301 L2 | 33.3 | 15.0                                | 1300                  | 2.2                   | 15.0                 | 71-80-90-100-112-132 | 4930                | 4930  | 13600 | 15600 | 3240 | 3400                     |
|                                     | 301 L2 | 38.4 | 13.0                                | 1560                  | 2.3                   | 15.0                 | 71-80-90-100-112-132 | 5170                | 5170  | 14200 | 16300 | 3400 | 3400                     |
|                                     | 301 L2 | 41.5 | 12.0                                | 1300                  | 1.7                   | 15.0                 | 71-80-90-100-112-132 | 5310                | 5310  | 14500 | 16700 | 3490 | 3400                     |
|                                     | 301 L2 | 51.9 | 9.6                                 | 1300                  | 1.4                   | 15.0                 | 71-80-90-100-112-132 | 5720                | 5720  | 15600 | 17900 | 3760 | 3400                     |
|                                     | 301 L2 | 64.8 | 7.7                                 | 1150                  | 0.99                  | 15.0                 | 71-80-90-100-112-132 | 6160                | 6160  | 16600 | 19100 | 4050 | 3400                     |
|                                     | 301 L3 | 51.6 | 9.7                                 | 1740                  | 1.9                   | 15.0                 | 71-80-90-100-112-132 | 5710                | 5710  | 15500 | 17800 | 3750 | 3400                     |
|                                     | 301 L3 | 63.2 | 7.9                                 | 1780                  | 1.6                   | 15.0                 | 71-80-90-100-112-132 | 6110                | 6110  | 16500 | 19000 | 4020 | 3400                     |
|                                     | 301 L3 | 69.9 | 7.2                                 | 1300                  | 1.1                   | 15.0                 | 71-80-90-100-112-132 | 6310                | 6310  | 17000 | 19500 | 4150 | 3400                     |
|                                     | 301 L3 | 77.5 | 6.5                                 | 1830                  | 1.4                   | 15.0                 | 71-80-90-100-112-132 | 6540                | 6540  | 17500 | 20100 | 4300 | 3400                     |
|                                     | 301 L3 | 85.6 | 5.8                                 | 1850                  | 1.2                   | 15.0                 | 71-80-90-100-112-132 | 6760                | 6760  | 18100 | 20800 | 4440 | 3400                     |
|                                     | 301 L3 | 105  | 4.8                                 | 1910                  | 1.0                   | 15.0                 | 71-80-90-100-112-132 | 7230                | 7230  | 19200 | 22100 | 4750 | 3400                     |
|                                     | 301 L3 | 116  | 4.3                                 | 1330                  | 0.66                  | 15.0                 | 71-80-90-100-112-132 | 7470                | 7470  | 19800 | 22700 | 4910 | 3400                     |
|                                     | 301 L3 | 131  | 3.8                                 | 1980                  | 0.87                  | 15.0                 | 71-80-90-100-112-132 | 7780                | 7780  | 20500 | 23600 | 5120 | 3400                     |
|                                     | 301 L3 | 142  | 3.5                                 | 2010                  | 0.81                  | 15.0                 | 71-80-90-100-112-132 | 8000                | 8000  | 21000 | 24200 | 5260 | 3400                     |
|                                     | 301 L3 | 177  | 2.8                                 | 2090                  | 0.68                  | 15.0                 | 71-80-90-100-112-132 | 8610                | 8610  | 22500 | 25800 | 5660 | 3400                     |
|                                     | 301 L3 | 192  | 2.6                                 | 1450                  | 0.43                  | 15.0                 | 71-80-90-100-112-132 | 8850                | 8850  | 23000 | 26500 | 5820 | 3400                     |
|                                     | 301 L3 | 221  | 2.3                                 | 2000                  | 0.52                  | 15.0                 | 71-80-90-100-112-132 | 9270                | 9270  | 24000 | 27600 | 6090 | 3400                     |
|                                     | 301 L3 | 240  | 2.1                                 | 1510                  | 0.36                  | 15.0                 | 71-80-90-100-112-132 | 9520                | 9520  | 24600 | 28300 | 6260 | 3400                     |
|                                     | 301 L3 | 299  | 1.7                                 | 1570                  | 0.30                  | 15.0                 | 71-80-90-100-112-132 | 10300               | 10300 | 26300 | 30200 | 6740 | 3400                     |
|                                     | 301 L3 | 374  | 1.3                                 | 1630                  | 0.25                  | 15.0                 | 71-80-90-100-112-132 | 11000               | 11000 | 28100 | 32300 | 7260 | 3400                     |
|                                     | 301 L4 | 330  | 1.5                                 | 2310                  | 0.41                  | 12.0                 | 71-80-90-100-112-132 | 10600               | 10600 | 27100 | 31100 | 6970 | 3400                     |
|                                     | 301 L4 | 403  | 1.2                                 | 1650                  | 0.24                  | 12.0                 | 71-80-90-100-112-132 | 11300               | 11300 | 28800 | 33000 | 7450 | 3400                     |
|                                     | 301 L4 | 447  | 1.1                                 | 2420                  | 0.32                  | 12.0                 | 71-80-90-100-112-132 | 11700               | 11700 | 29700 | 34000 | 7710 | 3400                     |
|                                     | 301 L4 | 494  | 1.0                                 | 2460                  | 0.29                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12100 | 30600 | 34000 | 7970 | 3400                     |
|                                     | 301 L4 | 558  | 0.90                                | 2460                  | 0.26                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 616  | 0.81                                | 2460                  | 0.24                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 755  | 0.66                                | 2460                  | 0.19                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 819  | 0.61                                | 2460                  | 0.18                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 942  | 0.53                                | 2460                  | 0.15                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1022 | 0.49                                | 2460                  | 0.14                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1108 | 0.45                                | 1720                  | 0.09                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1275 | 0.39                                | 2460                  | 0.11                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1383 | 0.36                                | 1720                  | 0.07                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1591 | 0.31                                | 2000                  | 0.07                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 1725 | 0.29                                | 1720                  | 0.06                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 2153 | 0.23                                | 1720                  | 0.05                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 L4 | 2692 | 0.19                                | 1720                  | 0.04                  | 12.0                 | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |

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| 303 L                      |   |      |                            |                |                |                          | 2970 Nm   |       |       |       |       |      |                  |
|----------------------------|---|------|----------------------------|----------------|----------------|--------------------------|---|-------|-------|-------|-------|------|------------------|
| $n_1$<br>min <sup>-1</sup> |  | i    | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW              | P (IEC)  | MC    | MZ    | HC/PC | HZ/PZ | FZ   | $M_{2max}$<br>Nm |
| 1500                       | 303 L1  | 3.60 | 417                        | 1380           | 40             | 11.0                     | 132-160-180-200   | 5010  | 5780  | 10300 | 12300 | 3210 | 5200             |
|                            | 303 L1  | 4.25 | 353                        | 1430           | 40             | 11.0                     | 132-160-180-200   | 5290  | 6110  | 10800 | 13000 | 3400 | 5200             |
|                            | 303 L1  | 5.33 | 281                        | 1490           | 40             | 11.0                     | 132-160-180-200   | 5710  | 6590  | 11500 | 13900 | 3660 | 5200             |
|                            | 303 L1  | 6.20 | 242                        | 1400           | 36             | 11.0                     | 132-160-180-200   | 6000  | 6930  | 12100 | 14500 | 3850 | 5200             |
|                            | 303 L1  | 7.50 | 200                        | 1220           | 26             | 11.0                     | 132-160-180-200   | 6400  | 7390  | 12800 | 15400 | 4100 | 5200             |
|                            | 303 L1  | 9.67 | 155                        | 750            | 12.6           | 11.0                     | 132-160-180-200   | 6960  | 8040  | 13800 | 16600 | 4470 | 5200             |
|                            | 303 L2  | 12.5 | 120                        | 1640           | 20.0           | 9.0                      | 71-80-90-100-112-132-160  | 7590  | 8760  | 14900 | 17900 | 4870 | 5200             |
|                            | 303 L2  | 15.3 | 98                         | 1710           | 18.6           | 9.0                      | 71-80-90-100-112-132-160  | 8120  | 9380  | 15800 | 19100 | 5210 | 5200             |
|                            | 303 L2  | 18.1 | 83                         | 2020           | 18.6           | 9.0                      | 71-80-90-100-112-132-160  | 8580  | 9910  | 16600 | 20000 | 5510 | 5200             |
|                            | 303 L2  | 20.8 | 72                         | 1820           | 14.6           | 9.0                      | 71-80-90-100-112-132-160  | 8980  | 10400 | 17300 | 20900 | 5760 | 5200             |
|                            | 303 L2  | 22.7 | 66                         | 2100           | 15.4           | 9.0                      | 71-80-90-100-112-132-160  | 9260  | 10700 | 17800 | 21400 | 5940 | 5200             |
|                            | 303 L2  | 24.5 | 61                         | 2150           | 14.6           | 9.0                      | 71-80-90-100-112-132-160  | 9490  | 11000 | 18200 | 21900 | 6090 | 5200             |
|                            | 303 L2  | 26.4 | 57                         | 1820           | 11.5           | 9.0                      | 71-80-90-100-112-132-160  | 9740  | 11200 | 18600 | 22400 | 6250 | 5200             |
|                            | 303 L2  | 30.8 | 49                         | 2140           | 11.6           | 9.0                      | 71-80-90-100-112-132-160  | 10200 | 11800 | 19500 | 23500 | 6570 | 5200             |
|                            | 303 L2  | 35.8 | 42                         | 1820           | 8.5            | 9.0                      | 71-80-90-100-112-132-160  | 10800 | 12400 | 20400 | 24600 | 6910 | 5200             |
| 303 L2                     | 38.4  | 39   | 2150                       | 9.3            | 9.0            | 71-80-90-100-112-132-160 | 11000   | 12700 | 20900 | 25100 | 7070  | 5200 |                  |
| 303 L2                     | 44.6  | 34   | 1820                       | 6.8            | 9.0            | 71-80-90-100-112-132-160 | 11600   | 13400 | 21800 | 26300 | 7440  | 5200 |                  |
| 303 L2                     | 55.8  | 26.9 | 1820                       | 5.4            | 9.0            | 71-80-90-100-112-132-160 | 12500   | 14400 | 23300 | 28100 | 8010  | 5200 |                  |
| 303 L3                     | 53.4  | 28.1 | 2170                       | 7.0            | 7.5            | 71-80-90-100-112-132-160 | 12300   | 14200 | 23000 | 27700 | 7900  | 5200 |                  |
| 303 L3                     | 63.1  | 23.8 | 2510                       | 6.8            | 7.5            | 71-80-90-100-112-132-160 | 13000   | 15000 | 24200 | 29100 | 8340  | 5200 |                  |
| 303 L3                     | 72.3  | 20.8 | 2230                       | 5.3            | 7.5            | 71-80-90-100-112-132-160 | 13600   | 15700 | 25200 | 30300 | 8730  | 5200 |                  |
| 303 L3                     | 77.2  | 19.4 | 2520                       | 5.6            | 7.5            | 71-80-90-100-112-132-160 | 13900   | 16100 | 25700 | 30900 | 8930  | 5200 |                  |
| 303 L3                     | 90.2  | 16.6 | 2250                       | 4.3            | 7.5            | 71-80-90-100-112-132-160 | 14700   | 16900 | 26900 | 32400 | 9400  | 5200 |                  |
| 303 L3                     | 105   | 14.4 | 2580                       | 4.2            | 7.5            | 71-80-90-100-112-132-160 | 15400   | 17800 | 28200 | 33900 | 9880  | 5200 |                  |
| 303 L3                     | 113   | 13.3 | 1820                       | 2.8            | 7.5            | 71-80-90-100-112-132-160 | 15800   | 18200 | 28800 | 34700 | 10100 | 5200 |                  |
| 303 L3                     | 124   | 12.1 | 1820                       | 2.5            | 7.5            | 71-80-90-100-112-132-160 | 16300   | 18800 | 29700 | 35700 | 10500 | 5200 |                  |
| 303 L3                     | 141   | 10.6 | 2610                       | 3.2            | 7.5            | 71-80-90-100-112-132-160 | 17000   | 19700 | 30800 | 37100 | 10900 | 5200 |                  |
| 303 L3                     | 152   | 9.8  | 1820                       | 2.1            | 7.5            | 71-80-90-100-112-132-160 | 17500   | 20200 | 31500 | 37900 | 11200 | 5200 |                  |
| 303 L3                     | 164   | 9.2  | 2200                       | 2.3            | 7.5            | 71-80-90-100-112-132-160 | 17900   | 20600 | 32200 | 38800 | 11500 | 5200 |                  |
| 303 L3                     | 178   | 8.5  | 2210                       | 2.1            | 7.5            | 71-80-90-100-112-132-160 | 18400   | 21200 | 33000 | 39700 | 11800 | 5200 |                  |
| 303 L3                     | 190   | 7.9  | 1830                       | 1.7            | 7.5            | 71-80-90-100-112-132-160 | 18800   | 21700 | 33700 | 40600 | 12100 | 5200 |                  |
| 303 L3                     | 220   | 6.8  | 2250                       | 1.8            | 7.5            | 71-80-90-100-112-132-160 | 19700   | 22800 | 35200 | 42400 | 12700 | 5200 |                  |
| 303 L3                     | 258   | 5.8  | 1840                       | 1.2            | 7.5            | 71-80-90-100-112-132-160 | 20800   | 24000 | 36900 | 44400 | 13300 | 5200 |                  |
| 303 L3                     | 276   | 5.4  | 2230                       | 1.4            | 7.5            | 71-80-90-100-112-132-160 | 21300   | 24600 | 37700 | 45400 | 13700 | 5200 |                  |
| 303 L3                     | 321   | 4.7  | 1860                       | 1.00           | 7.5            | 71-80-90-100-112-132-160 | 22400   | 25800 | 39400 | 47500 | 14400 | 5200 |                  |
| 303 L3                     | 389   | 3.9  | 1690                       | 0.75           | 7.5            | 71-80-90-100-112-132-160 | 23900   | 27500 | 41800 | 50300 | 15300 | 5200 |                  |
| 303 L3                     | 402   | 3.7  | 1940                       | 0.83           | 7.5            | 71-80-90-100-112-132-160 | 24100   | 27800 | 42200 | 50700 | 15500 | 5200 |                  |
| 303 L4                     | 413   | 3.6  | 2360                       | 1.0            | 6.0            | 71-80-90-100-112-132-160 | 24300   | 28100 | 42500 | 51200 | 15600 | 5200 |                  |
| 303 L4                     | 446   | 3.4  | 2810                       | 1.1            | 6.0            | 71-80-90-100-112-132-160 | 25000   | 28800 | 43500 | 52400 | 16000 | 5200 |                  |
| 303 L4                     | 492   | 3.0  | 2690                       | 0.97           | 6.0            | 71-80-90-100-112-132-160 | 25800   | 29800 | 44800 | 53900 | 16600 | 5200 |                  |
| 303 L4                     | 556   | 2.7  | 2810                       | 0.90           | 6.0            | 71-80-90-100-112-132-160 | 26900   | 31000 | 46500 | 55900 | 17200 | 5200 |                  |
| 303 L4                     | 649   | 2.3  | 2320                       | 0.63           | 6.0            | 71-80-90-100-112-132-160 | 28300   | 32700 | 48700 | 58600 | 18200 | 5200 |                  |
| 303 L4                     | 718   | 2.1  | 2150                       | 0.53           | 6.0            | 71-80-90-100-112-132-160 | 29300   | 33800 | 50200 | 60400 | 18800 | 5200 |                  |
| 303 L4                     | 816   | 1.8  | 2720                       | 0.59           | 6.0            | 71-80-90-100-112-132-160 | 30500   | 35300 | 52200 | 62800 | 19600 | 5200 |                  |
| 303 L4                     | 896   | 1.7  | 2230                       | 0.44           | 6.0            | 71-80-90-100-112-132-160 | 31500   | 36400 | 53700 | 64600 | 20200 | 5200 |                  |
| 303 L4                     | 1018  | 1.5  | 2740                       | 0.48           | 6.0            | 71-80-90-100-112-132-160 | 32900   | 38000 | 55800 | 67100 | 21100 | 5200 |                  |
| 303 L4                     | 1098  | 1.4  | 2310                       | 0.37           | 6.0            | 71-80-90-100-112-132-160 | 33700   | 38900 | 57000 | 68600 | 21600 | 5200 |                  |
| 303 L4                     | 1278  | 1.2  | 2790                       | 0.39           | 6.0            | 71-80-90-100-112-132-160 | 35500   | 40900 | 59700 | 71800 | 22800 | 5200 |                  |
| 303 L4                     | 1370  | 1.1  | 2400                       | 0.31           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 41900 | 60900 | 73300 | 23300 | 5200 |                  |
| 303 L4                     | 1586  | 0.95 | 2250                       | 0.25           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 42000 | 63700 | 74000 | 24000 | 5200 |                  |
| 303 L4                     | 1854  | 0.81 | 2440                       | 0.23           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000 | 74000 | 24000 | 5200 |                  |
| 303 L4                     | 1991  | 0.75 | 2850                       | 0.25           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000 | 74000 | 24000 | 5200 |                  |
| 303 L4                     | 2243  | 0.67 | 2000                       | 0.16           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000 | 74000 | 24000 | 5200 |                  |
| 303 L4                     | 2799  | 0.54 | 2000                       | 0.13           | 6.0            | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000 | 74000 | 24000 | 5200 |                  |
| 1000                       | 303 L1  | 3.60 | 278                        | 1560           | 40             | 13.2                     | 132-160-180-200   | 5730  | 6620  | 11600 | 13900 | 3680 | 5200             |
|                            | 303 L1  | 4.25 | 235                        | 1620           | 40             | 13.2                     | 132-160-180-200   | 6060  | 7000  | 12200 | 14600 | 3890 | 5200             |
|                            | 303 L1  | 5.33 | 188                        | 1680           | 34             | 13.2                     | 132-160-180-200   | 6540  | 7550  | 13000 | 15700 | 4190 | 5200             |
|                            | 303 L1  | 6.20 | 161                        | 1580           | 27             | 13.2                     | 132-160-180-200   | 6870  | 7930  | 13600 | 16400 | 4410 | 5200             |
|                            | 303 L1  | 7.50 | 133                        | 1380           | 19.8           | 13.2                     | 132-160-180-200   | 7320  | 8450  | 14400 | 17400 | 4700 | 5200             |
|                            | 303 L1  | 9.67 | 103                        | 850            | 9.5            | 13.2                     | 132-160-180-200   | 7970  | 9200  | 15600 | 18700 | 5110 | 5200             |



B



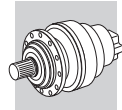
### 303 L

266

### 2970 Nm



| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| <b>1000</b>                         | 303 L2  | 12.5 | 80                                  | 1850                  | 16.4                  | 10.8                     | 71-80-90-100-112-132-160  | 8690                | 10000 | 16800 | 20300 | 5570  | 5200                     |
|                                     | 303 L2  | 15.3 | 65                                  | 1940                  | 14.0                  | 10.8                     | 71-80-90-100-112-132-160  | 9300                | 10700 | 17900 | 21500 | 5960  | 5200                     |
|                                     | 303 L2  | 18.1 | 55                                  | 2280                  | 14.0                  | 10.8                     | 71-80-90-100-112-132-160  | 9830                | 11300 | 18800 | 22600 | 6300  | 5200                     |
|                                     | 303 L2  | 20.8 | 48                                  | 2030                  | 10.9                  | 10.8                     | 71-80-90-100-112-132-160  | 10300               | 11900 | 19600 | 23600 | 6600  | 5200                     |
|                                     | 303 L2  | 22.7 | 44                                  | 2140                  | 10.5                  | 10.8                     | 71-80-90-100-112-132-160  | 10600               | 12200 | 20100 | 24200 | 6800  | 5200                     |
|                                     | 303 L2  | 24.5 | 41                                  | 2320                  | 10.5                  | 10.8                     | 71-80-90-100-112-132-160  | 10900               | 12500 | 20600 | 24800 | 6970  | 5200                     |
|                                     | 303 L2  | 26.4 | 38                                  | 1820                  | 7.7                   | 10.8                     | 71-80-90-100-112-132-160  | 11100               | 12900 | 21100 | 25300 | 7150  | 5200                     |
|                                     | 303 L2  | 30.8 | 33                                  | 2160                  | 7.8                   | 10.8                     | 71-80-90-100-112-132-160  | 11700               | 13500 | 22000 | 26500 | 7520  | 5200                     |
|                                     | 303 L2  | 35.8 | 28.0                                | 1820                  | 5.7                   | 10.8                     | 71-80-90-100-112-132-160  | 12300               | 14200 | 23100 | 27700 | 7910  | 5200                     |
|                                     | 303 L2  | 38.4 | 26.0                                | 2160                  | 6.3                   | 10.8                     | 71-80-90-100-112-132-160  | 12600               | 14600 | 23600 | 28300 | 8100  | 5200                     |
|                                     | 303 L2  | 44.6 | 22.4                                | 1820                  | 4.5                   | 10.8                     | 71-80-90-100-112-132-160  | 13300               | 15300 | 24600 | 29600 | 8510  | 5200                     |
|                                     | 303 L2  | 55.8 | 17.9                                | 1820                  | 3.6                   | 10.8                     | 71-80-90-100-112-132-160  | 14300               | 16500 | 26300 | 31700 | 9170  | 5200                     |
|                                     | 303 L3  | 53.4 | 18.7                                | 2230                  | 4.8                   | 9.0                      | 71-80-90-100-112-132-160  | 14100               | 16300 | 26000 | 31300 | 9040  | 5200                     |
|                                     | 303 L3  | 63.1 | 15.9                                | 2570                  | 4.7                   | 9.0                      | 71-80-90-100-112-132-160  | 14900               | 17200 | 27300 | 32900 | 9550  | 5200                     |
|                                     | 303 L3  | 72.3 | 13.8                                | 2270                  | 3.6                   | 9.0                      | 71-80-90-100-112-132-160  | 15600               | 18000 | 28500 | 34300 | 10000 | 5200                     |
|                                     | 303 L3  | 77.2 | 12.9                                | 2600                  | 3.9                   | 9.0                      | 71-80-90-100-112-132-160  | 15900               | 18400 | 29000 | 34900 | 10200 | 5200                     |
|                                     | 303 L3  | 90.2 | 11.1                                | 2300                  | 2.9                   | 9.0                      | 71-80-90-100-112-132-160  | 16800               | 19400 | 30400 | 36600 | 10800 | 5200                     |
|                                     | 303 L3  | 105  | 9.6                                 | 2660                  | 2.9                   | 9.0                      | 71-80-90-100-112-132-160  | 17600               | 20300 | 31800 | 38300 | 11300 | 5200                     |
|                                     | 303 L3  | 113  | 8.9                                 | 1820                  | 1.9                   | 9.0                      | 71-80-90-100-112-132-160  | 18100               | 20900 | 32500 | 39100 | 11600 | 5200                     |
|                                     | 303 L3  | 124  | 8.0                                 | 1830                  | 1.7                   | 9.0                      | 71-80-90-100-112-132-160  | 18700               | 21600 | 33500 | 40300 | 12000 | 5200                     |
|                                     | 303 L3  | 141  | 7.1                                 | 2630                  | 2.1                   | 9.0                      | 71-80-90-100-112-132-160  | 19500               | 22500 | 34800 | 41900 | 12500 | 5200                     |
|                                     | 303 L3  | 152  | 6.6                                 | 1830                  | 1.4                   | 9.0                      | 71-80-90-100-112-132-160  | 20000               | 23100 | 35600 | 42900 | 12800 | 5200                     |
|                                     | 303 L3  | 164  | 6.1                                 | 2220                  | 1.6                   | 9.0                      | 71-80-90-100-112-132-160  | 20500               | 23600 | 36400 | 43800 | 13100 | 5200                     |
|                                     | 303 L3  | 178  | 5.6                                 | 2220                  | 1.4                   | 9.0                      | 71-80-90-100-112-132-160  | 21000               | 24300 | 37300 | 44900 | 13500 | 5200                     |
|                                     | 303 L3  | 190  | 5.3                                 | 1840                  | 1.1                   | 9.0                      | 71-80-90-100-112-132-160  | 21500               | 24800 | 38100 | 45800 | 13800 | 5200                     |
|                                     | 303 L3  | 220  | 4.5                                 | 2240                  | 1.2                   | 9.0                      | 71-80-90-100-112-132-160  | 22600               | 26100 | 39800 | 47900 | 14500 | 5200                     |
|                                     | 303 L3  | 258  | 3.9                                 | 1920                  | 0.86                  | 9.0                      | 71-80-90-100-112-132-160  | 23800               | 27500 | 41700 | 50200 | 15300 | 5200                     |
|                                     | 303 L3  | 276  | 3.6                                 | 2330                  | 0.97                  | 9.0                      | 71-80-90-100-112-132-160  | 24400               | 28100 | 42600 | 51200 | 15600 | 5200                     |
|                                     | 303 L3  | 321  | 3.1                                 | 2000                  | 0.71                  | 9.0                      | 71-80-90-100-112-132-160  | 25600               | 29600 | 44600 | 53600 | 16400 | 5200                     |
|                                     | 303 L3  | 389  | 2.6                                 | 1750                  | 0.52                  | 9.0                      | 71-80-90-100-112-132-160  | 27300               | 31500 | 47200 | 56800 | 17500 | 5200                     |
|                                     | 303 L3  | 402  | 2.5                                 | 2080                  | 0.59                  | 9.0                      | 71-80-90-100-112-132-160  | 27600               | 31900 | 47600 | 57300 | 17700 | 5200                     |
|                                     | 303 L4  | 413  | 2.4                                 | 2530                  | 0.72                  | 7.2                      | 71-80-90-100-112-132-160  | 27900               | 32200 | 48000 | 57800 | 17900 | 5200                     |
|                                     | 303 L4  | 446  | 2.2                                 | 2830                  | 0.75                  | 7.2                      | 71-80-90-100-112-132-160  | 28600               | 33000 | 49100 | 59100 | 18300 | 5200                     |
|                                     | 303 L4  | 492  | 2.0                                 | 2720                  | 0.65                  | 7.2                      | 71-80-90-100-112-132-160  | 29500               | 34100 | 50600 | 60900 | 19000 | 5200                     |
|                                     | 303 L4  | 556  | 1.8                                 | 2870                  | 0.61                  | 7.2                      | 71-80-90-100-112-132-160  | 30800               | 35500 | 52500 | 63200 | 19700 | 5200                     |
|                                     | 303 L4  | 649  | 1.5                                 | 2360                  | 0.43                  | 7.2                      | 71-80-90-100-112-132-160  | 32400               | 37400 | 55000 | 66200 | 20800 | 5200                     |
|                                     | 303 L4  | 718  | 1.4                                 | 2300                  | 0.38                  | 7.2                      | 71-80-90-100-112-132-160  | 33500               | 38700 | 56700 | 68200 | 21500 | 5200                     |
|                                     | 303 L4  | 816  | 1.2                                 | 2750                  | 0.40                  | 7.2                      | 71-80-90-100-112-132-160  | 35000               | 40400 | 58900 | 70900 | 22400 | 5200                     |
|                                     | 303 L4  | 896  | 1.1                                 | 2390                  | 0.32                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 41600 | 60600 | 72900 | 23100 | 5200                     |
|                                     | 303 L4  | 1018 | 0.98                                | 2770                  | 0.32                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 63000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1098 | 0.91                                | 2440                  | 0.26                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1278 | 0.78                                | 2850                  | 0.26                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1370 | 0.73                                | 2440                  | 0.21                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1586 | 0.63                                | 2250                  | 0.17                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1854 | 0.54                                | 2440                  | 0.16                  | 7.2                      | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
| 303 L4                              | 1991  | 0.50 | 2850                                | 0.17                  | 7.2                   | 71-80-90-100-112-132-160 | 36000   | 42000               | 64000 | 74000 | 24000 | 5200  |                          |
| 303 L4                              | 2243  | 0.45 | 2000                                | 0.11                  | 7.2                   | 71-80-90-100-112-132-160 | 36000   | 42000               | 64000 | 74000 | 24000 | 5200  |                          |
| 303 L4                              | 2799  | 0.36 | 2000                                | 0.08                  | 7.2                   | 71-80-90-100-112-132-160 | 36000   | 42000               | 64000 | 74000 | 24000 | 5200  |                          |
| <b>500</b>                          | 303 L1  | 3.60 | 139                                 | 1920                  | 29                    | 22                       | 132-160-180-200   | 7220                | 8340  | 14300 | 17200 | 4630  | 5200                     |
|                                     | 303 L1  | 4.25 | 118                                 | 1990                  | 25                    | 22                       | 132-160-180-200   | 7630                | 8810  | 15000 | 18000 | 4900  | 5200                     |
|                                     | 303 L1  | 5.33 | 94                                  | 2040                  | 21                    | 22                       | 132-160-180-200   | 8240                | 9510  | 16000 | 19300 | 5280  | 5200                     |
|                                     | 303 L1  | 6.20 | 81                                  | 1820                  | 15.8                  | 22                       | 132-160-180-200   | 8660                | 10000 | 16800 | 20200 | 5560  | 5200                     |
|                                     | 303 L1  | 7.50 | 67                                  | 1590                  | 11.4                  | 22                       | 132-160-180-200   | 9230                | 10700 | 17800 | 21400 | 5920  | 5200                     |
|                                     | 303 L1  | 9.67 | 52                                  | 860                   | 4.8                   | 22                       | 132-160-180-200   | 10000               | 11600 | 19200 | 23100 | 6440  | 5200                     |
|                                     | 303 L2  | 12.5 | 40                                  | 2150                  | 9.6                   | 18.0                     | 71-80-90-100-112-132-160  | 10900               | 12600 | 20700 | 24900 | 7020  | 5200                     |
|                                     | 303 L2  | 15.3 | 33                                  | 2150                  | 7.8                   | 18.0                     | 71-80-90-100-112-132-160  | 11700               | 13500 | 22000 | 26500 | 7510  | 5200                     |
|                                     | 303 L2  | 18.1 | 27.6                                | 2460                  | 7.5                   | 18.0                     | 71-80-90-100-112-132-160  | 12400               | 14300 | 23100 | 27800 | 7940  | 5200                     |
|                                     | 303 L2  | 20.8 | 24.1                                | 2110                  | 5.7                   | 18.0                     | 71-80-90-100-112-132-160  | 13000               | 15000 | 24100 | 29000 | 8310  | 5200                     |
|                                     | 303 L2  | 22.7 | 22.0                                | 2170                  | 5.3                   | 18.0                     | 71-80-90-100-112-132-160  | 13400               | 15400 | 24800 | 29800 | 8570  | 5200                     |
|                                     | 303 L2  | 24.5 | 20.4                                | 2460                  | 5.6                   | 18.0                     | 71-80-90-100-112-132-160  | 13700               | 15800 | 25300 | 30500 | 8780  | 5200                     |
|                                     | 303 L2  | 26.4 | 18.9                                | 1820                  | 3.8                   | 18.0                     | 71-80-90-100-112-132-160  | 14000               | 16200 | 25900 | 31200 | 9010  | 5200                     |

B





**303 L**  266

**2970 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 500                                 | 303 L2  | 30.8 | 16.3                                | 2180                  | 3.9                   | 18.0                     | 71-80-90-100-112-132-160  | 14800               | 17100 | 27100 | 32600 | 9480  | 5200                     |
|                                     | 303 L2  | 35.8 | 14.0                                | 1820                  | 2.8                   | 18.0                     | 71-80-90-100-112-132-160  | 15500               | 17900 | 28400 | 34200 | 9960  | 5200                     |
|                                     | 303 L2  | 38.4 | 13.0                                | 2190                  | 3.2                   | 18.0                     | 71-80-90-100-112-132-160  | 15900               | 18400 | 29000 | 34900 | 10200 | 5200                     |
|                                     | 303 L2  | 44.6 | 11.2                                | 1820                  | 2.3                   | 18.0                     | 71-80-90-100-112-132-160  | 16700               | 19300 | 30300 | 36500 | 10700 | 5200                     |
|                                     | 303 L2  | 55.8 | 9.0                                 | 1820                  | 1.8                   | 18.0                     | 71-80-90-100-112-132-160  | 18000               | 20800 | 32400 | 39000 | 11600 | 5200                     |
|                                     | 303 L3  | 53.4 | 9.4                                 | 2310                  | 2.5                   | 15.0                     | 71-80-90-100-112-132-160  | 17800               | 20500 | 32000 | 38500 | 11400 | 5200                     |
|                                     | 303 L3  | 63.1 | 7.9                                 | 2700                  | 2.5                   | 15.0                     | 71-80-90-100-112-132-160  | 18800               | 21700 | 33600 | 40500 | 12000 | 5200                     |
|                                     | 303 L3  | 72.3 | 6.9                                 | 2310                  | 1.8                   | 15.0                     | 71-80-90-100-112-132-160  | 19600               | 22700 | 35100 | 42200 | 12600 | 5200                     |
|                                     | 303 L3  | 77.2 | 6.5                                 | 2750                  | 2.0                   | 15.0                     | 71-80-90-100-112-132-160  | 20100               | 23200 | 35800 | 43000 | 12900 | 5200                     |
|                                     | 303 L3  | 90.2 | 5.5                                 | 2310                  | 1.5                   | 15.0                     | 71-80-90-100-112-132-160  | 21100               | 24400 | 37500 | 45100 | 13600 | 5200                     |
|                                     | 303 L3  | 105  | 4.8                                 | 2810                  | 1.5                   | 15.0                     | 71-80-90-100-112-132-160  | 22200               | 25600 | 39200 | 47100 | 14200 | 5200                     |
|                                     | 303 L3  | 113  | 4.4                                 | 1880                  | 0.96                  | 15.0                     | 71-80-90-100-112-132-160  | 22800               | 26300 | 40100 | 48200 | 14600 | 5200                     |
|                                     | 303 L3  | 124  | 4.0                                 | 1910                  | 0.88                  | 15.0                     | 71-80-90-100-112-132-160  | 23500               | 27200 | 41300 | 49600 | 15100 | 5200                     |
|                                     | 303 L3  | 141  | 3.5                                 | 2670                  | 1.1                   | 15.0                     | 71-80-90-100-112-132-160  | 24600               | 28400 | 42900 | 51600 | 15800 | 5200                     |
|                                     | 303 L3  | 152  | 3.3                                 | 1980                  | 0.75                  | 15.0                     | 71-80-90-100-112-132-160  | 25200               | 29100 | 43900 | 52800 | 16200 | 5200                     |
|                                     | 303 L3  | 164  | 3.1                                 | 2430                  | 0.85                  | 15.0                     | 71-80-90-100-112-132-160  | 25800               | 29800 | 44800 | 53900 | 16500 | 5200                     |
|                                     | 303 L3  | 178  | 2.8                                 | 2470                  | 0.80                  | 15.0                     | 71-80-90-100-112-132-160  | 26500               | 30600 | 45900 | 55200 | 17000 | 5200                     |
|                                     | 303 L3  | 190  | 2.6                                 | 2060                  | 0.62                  | 15.0                     | 71-80-90-100-112-132-160  | 27100               | 31300 | 46900 | 56400 | 17400 | 5200                     |
|                                     | 303 L3  | 220  | 2.3                                 | 2210                  | 0.57                  | 15.0                     | 71-80-90-100-112-132-160  | 28500               | 32900 | 49000 | 58900 | 18300 | 5200                     |
|                                     | 303 L3  | 258  | 1.9                                 | 2170                  | 0.48                  | 15.0                     | 71-80-90-100-112-132-160  | 30000               | 34600 | 51300 | 61700 | 19200 | 5200                     |
|                                     | 303 L3  | 276  | 1.8                                 | 2580                  | 0.54                  | 15.0                     | 71-80-90-100-112-132-160  | 30700               | 35400 | 52400 | 63100 | 19700 | 5200                     |
|                                     | 303 L3  | 321  | 1.6                                 | 2260                  | 0.40                  | 15.0                     | 71-80-90-100-112-132-160  | 32300               | 37300 | 54900 | 66000 | 20700 | 5200                     |
|                                     | 303 L3  | 389  | 1.3                                 | 1930                  | 0.28                  | 15.0                     | 71-80-90-100-112-132-160  | 34400               | 39700 | 58100 | 69900 | 22100 | 5200                     |
|                                     | 303 L3  | 402  | 1.2                                 | 2350                  | 0.34                  | 15.0                     | 71-80-90-100-112-132-160  | 34800               | 40200 | 58600 | 70600 | 22300 | 5200                     |
|                                     | 303 L4  | 413  | 1.2                                 | 2780                  | 0.40                  | 12.0                     | 71-80-90-100-112-132-160  | 35100               | 40500 | 59100 | 71200 | 22500 | 5200                     |
|                                     | 303 L4  | 446  | 1.1                                 | 2950                  | 0.39                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 41600 | 60500 | 72800 | 23100 | 5200                     |
|                                     | 303 L4  | 492  | 1.0                                 | 2770                  | 0.33                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 62300 | 74000 | 23900 | 5200                     |
|                                     | 303 L4  | 556  | 0.90                                | 2970                  | 0.32                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 649  | 0.77                                | 2410                  | 0.22                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 718  | 0.70                                | 2440                  | 0.20                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 816  | 0.61                                | 2770                  | 0.20                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 896  | 0.56                                | 2440                  | 0.16                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1018 | 0.49                                | 2770                  | 0.16                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1098 | 0.46                                | 2440                  | 0.13                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1278 | 0.39                                | 2850                  | 0.13                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1370 | 0.36                                | 2440                  | 0.11                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1586 | 0.32                                | 2250                  | 0.08                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1854 | 0.27                                | 2440                  | 0.08                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 1991 | 0.25                                | 2850                  | 0.08                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 L4  | 2243 | 0.22                                | 2000                  | 0.05                  | 12.0                     | 71-80-90-100-112-132-160  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
| 303 L4                              | 2799  | 0.18 | 2000                                | 0.04                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000               | 64000 | 74000 | 24000 | 5200  |                          |

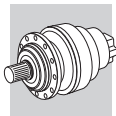
**304 L**  278



**3960 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| 1500                                | 304 L1  | 3.60 | 417                                 | 1840                  | 50                    | 12.0                     | 132-160-180-200   | 5010                | 5780  | 10300 | 12300 | 3210 | 7300                     |
|                                     | 304 L1  | 4.25 | 353                                 | 1900                  | 50                    | 12.0                     | 132-160-180-200   | 5290                | 6110  | 10800 | 13000 | 3400 | 7300                     |
|                                     | 304 L1  | 5.33 | 281                                 | 1990                  | 50                    | 12.0                     | 132-160-180-200   | 5710                | 6590  | 11500 | 13900 | 3660 | 7300                     |
|                                     | 304 L1  | 6.57 | 228                                 | 1870                  | 46                    | 12.0                     | 132-160-180-200   | 6120                | 7070  | 12300 | 14800 | 3930 | 7300                     |
| 304 L2                              | 12.5  | 120  | 2680                                | 30                    | 9.0                   | 71-80-90-100-112-132-160 | 7590  | 8760                | 14900 | 17900 | 4870  | 7300 |                          |
| 304 L2                              | 15.3  | 98   | 2840                                | 30                    | 9.0                   | 71-80-90-100-112-132-160 | 8120  | 9380                | 15800 | 19100 | 5210  | 7300 |                          |
| 304 L2                              | 18.1  | 83   | 2940                                | 27                    | 9.0                   | 71-80-90-100-112-132-160 | 8580  | 9910                | 16600 | 20000 | 5510  | 7300 |                          |
| 304 L2                              | 20.8  | 72   | 2960                                | 24                    | 9.0                   | 71-80-90-100-112-132-160 | 8980  | 10400               | 17300 | 20900 | 5760  | 7300 |                          |
| 304 L2                              | 22.7  | 66   | 2790                                | 21                    | 9.0                   | 71-80-90-100-112-132-160 | 9260  | 10700               | 17800 | 21400 | 5940  | 7300 |                          |
| 304 L2                              | 24.5  | 61   | 3230                                | 22                    | 9.0                   | 71-80-90-100-112-132-160 | 9490  | 11000               | 18200 | 21900 | 6090  | 7300 |                          |
| 304 L2                              | 30.8  | 49   | 2850                                | 15.5                  | 9.0                   | 71-80-90-100-112-132-160 | 10200   | 11800               | 19500 | 23500 | 6570  | 7300 |                          |
| 304 L2                              | 38.4  | 39   | 2850                                | 12.4                  | 9.0                   | 71-80-90-100-112-132-160 | 11000   | 12700               | 20900 | 25100 | 7070  | 7300 |                          |
| 304 L2                              | 47.3  | 32   | 2390                                | 8.4                   | 9.0                   | 71-80-90-100-112-132-160 | 11800   | 13600               | 22200 | 26700 | 7580  | 7300 |                          |

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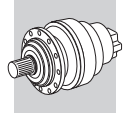




| 304 L                               |   |             |                                     |                       |                       |                      | 278                      |   | 3960 Nm |       |                     |       |       |                          |  |
|-------------------------------------|---|-------------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|---|---------|-------|---------------------|-------|-------|--------------------------|--|
| n <sub>1</sub><br>min <sup>-1</sup> |  | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  |  | MC      | MZ    | Rn <sub>2</sub> [N] |       | FZ    | M <sub>2 max</sub><br>Nm |  |
|                                     |   |             |                                     |                       |                       |                      |                          |   |         | HC/PC | HZ/PZ               |       |       |                          |  |
| <b>1500</b>                         | <b>304 L2</b>   | <b>59.1</b> | 25.4                                | 2390                  | 6.7                   | 9.0                  | 71-80-90-100-112-132-160 |   | 12700   | 14700 | 23700               | 28600 | 8170  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>43.6</b> | 34                                  | 3190                  | 12.6                  | 7.5                  | 71-80-90-100-112-132-160 |   | 11500   | 13300 | 21700               | 26100 | 7380  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>53.4</b> | 28.1                                | 3230                  | 10.4                  | 7.5                  | 71-80-90-100-112-132-160 |   | 12300   | 14200 | 23000               | 27700 | 7900  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>63.1</b> | 23.8                                | 3480                  | 9.5                   | 7.5                  | 71-80-90-100-112-132-160 |   | 13000   | 15000 | 24200               | 29100 | 8340  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>72.3</b> | 20.8                                | 3290                  | 7.8                   | 7.5                  | 71-80-90-100-112-132-160 |   | 13600   | 15700 | 25200               | 30300 | 8730  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>77.2</b> | 19.4                                | 3490                  | 7.8                   | 7.5                  | 71-80-90-100-112-132-160 |   | 13900   | 16100 | 25700               | 30900 | 8930  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>90.2</b> | 16.6                                | 3320                  | 6.3                   | 7.5                  | 71-80-90-100-112-132-160 |   | 14700   | 16900 | 26900               | 32400 | 9400  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>105</b>  | 14.4                                | 3520                  | 5.8                   | 7.5                  | 71-80-90-100-112-132-160 |   | 15400   | 17800 | 28200               | 33900 | 9880  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>111</b>  | 13.6                                | 3380                  | 5.3                   | 7.5                  | 71-80-90-100-112-132-160 |   | 15700   | 18100 | 28600               | 34500 | 10100 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>130</b>  | 11.5                                | 3530                  | 4.7                   | 7.5                  | 71-80-90-100-112-132-160 |   | 16600   | 19100 | 30100               | 36200 | 10600 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>141</b>  | 10.6                                | 3540                  | 4.3                   | 7.5                  | 71-80-90-100-112-132-160 |   | 17000   | 19700 | 30800               | 37100 | 10900 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>150</b>  | 10.0                                | 3440                  | 4.0                   | 7.5                  | 71-80-90-100-112-132-160 |   | 17300   | 20000 | 31400               | 37700 | 11100 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>165</b>  | 9.1                                 | 2390                  | 2.5                   | 7.5                  | 71-80-90-100-112-132-160 |   | 17900   | 20700 | 32300               | 38800 | 11500 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>178</b>  | 8.5                                 | 2850                  | 2.8                   | 7.5                  | 71-80-90-100-112-132-160 |   | 18400   | 21200 | 33000               | 39700 | 11800 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>202</b>  | 7.4                                 | 2390                  | 2.0                   | 7.5                  | 71-80-90-100-112-132-160 |   | 19200   | 22100 | 34300               | 41300 | 12300 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>220</b>  | 6.8                                 | 3610                  | 2.8                   | 7.5                  | 71-80-90-100-112-132-160 |   | 19700   | 22800 | 35200               | 42400 | 12700 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>273</b>  | 5.5                                 | 2390                  | 1.5                   | 7.5                  | 71-80-90-100-112-132-160 |   | 21200   | 24500 | 37600               | 45200 | 13600 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>341</b>  | 4.4                                 | 2420                  | 1.2                   | 7.5                  | 71-80-90-100-112-132-160 |   | 22800   | 26400 | 40200               | 48300 | 14700 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>426</b>  | 3.5                                 | 2470                  | 1.0                   | 7.5                  | 71-80-90-100-112-132-160 |   | 24600   | 28400 | 42900               | 51600 | 15800 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>413</b>  | 3.6                                 | 3000                  | 1.3                   | 6.0                  | 71-80-90-100-112-132-160 |   | 24300   | 28100 | 42500               | 51200 | 15600 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>446</b>  | 3.4                                 | 3720                  | 1.5                   | 6.0                  | 71-80-90-100-112-132-160 |   | 25000   | 28800 | 43500               | 52400 | 16000 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>492</b>  | 3.0                                 | 3730                  | 1.3                   | 6.0                  | 71-80-90-100-112-132-160 |   | 25800   | 29800 | 44800               | 53900 | 16600 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>556</b>  | 2.7                                 | 3740                  | 1.2                   | 6.0                  | 71-80-90-100-112-132-160 |   | 26900   | 31000 | 46500               | 55900 | 17200 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>649</b>  | 2.3                                 | 3540                  | 0.97                  | 6.0                  | 71-80-90-100-112-132-160 |   | 28300   | 32700 | 48700               | 58600 | 18200 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>702</b>  | 2.1                                 | 2630                  | 0.66                  | 6.0                  | 71-80-90-100-112-132-160 |   | 29000   | 33500 | 49900               | 60000 | 18600 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>816</b>  | 1.8                                 | 3820                  | 0.83                  | 6.0                  | 71-80-90-100-112-132-160 |   | 30500   | 35300 | 52200               | 62800 | 19600 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1018</b> | 1.5                                 | 3870                  | 0.67                  | 6.0                  | 71-80-90-100-112-132-160 |   | 32900   | 38000 | 55800               | 67100 | 21100 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1164</b> | 1.3                                 | 2870                  | 0.44                  | 6.0                  | 71-80-90-100-112-132-160 |   | 34400   | 39700 | 58000               | 69800 | 22100 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1271</b> | 1.2                                 | 3920                  | 0.55                  | 6.0                  | 71-80-90-100-112-132-160 |   | 35400   | 40900 | 59600               | 71700 | 22700 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1344</b> | 1.1                                 | 3690                  | 0.49                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 41600 | 60600               | 72900 | 23100 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1586</b> | 0.95                                | 3960                  | 0.44                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 42000 | 63700               | 74000 | 24000 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1815</b> | 0.83                                | 3000                  | 0.29                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 42000 | 64000               | 74000 | 24000 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>1991</b> | 0.75                                | 3740                  | 0.33                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 42000 | 64000               | 74000 | 24000 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>2269</b> | 0.66                                | 3000                  | 0.23                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 42000 | 64000               | 74000 | 24000 | 7300                     |  |
|                                     | <b>304 L4</b>   | <b>2453</b> | 0.61                                | 3000                  | 0.22                  | 6.0                  | 71-80-90-100-112-132-160 |   | 36000   | 42000 | 64000               | 74000 | 24000 | 7300                     |  |
| <b>1000</b>                         | <b>304 L1</b>   | <b>3.60</b> | 278                                 | 2080                  | 50                    | 14.4                 | 132-160-180-200          |   | 5730    | 6620  | 11600               | 13900 | 3680  | 7300                     |  |
|                                     | <b>304 L1</b>   | <b>4.25</b> | 235                                 | 2150                  | 50                    | 14.4                 | 132-160-180-200          |   | 6060    | 7000  | 12200               | 14600 | 3890  | 7300                     |  |
|                                     | <b>304 L1</b>   | <b>5.33</b> | 188                                 | 2240                  | 45                    | 14.4                 | 132-160-180-200          |   | 6540    | 7550  | 13000               | 15700 | 4190  | 7300                     |  |
|                                     | <b>304 L1</b>   | <b>6.57</b> | 152                                 | 2110                  | 35                    | 14.4                 | 132-160-180-200          |   | 7010    | 8090  | 13900               | 16700 | 4500  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>12.5</b> | 80                                  | 2920                  | 26                    | 10.8                 | 71-80-90-100-112-132-160 |   | 8690    | 10000 | 16800               | 20300 | 5570  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>15.3</b> | 65                                  | 3010                  | 22                    | 10.8                 | 71-80-90-100-112-132-160 |   | 9300    | 10700 | 17900               | 21500 | 5960  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>18.1</b> | 55                                  | 3330                  | 20                    | 10.8                 | 71-80-90-100-112-132-160 |   | 9830    | 11300 | 18800               | 22600 | 6300  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>20.8</b> | 48                                  | 3130                  | 16.8                  | 10.8                 | 71-80-90-100-112-132-160 |   | 10300   | 11900 | 19600               | 23600 | 6600  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>22.7</b> | 44                                  | 2850                  | 13.9                  | 10.8                 | 71-80-90-100-112-132-160 |   | 10600   | 12200 | 20100               | 24200 | 6800  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>24.5</b> | 41                                  | 3440                  | 15.6                  | 10.8                 | 71-80-90-100-112-132-160 |   | 10900   | 12500 | 20600               | 24800 | 6970  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>30.8</b> | 33                                  | 2850                  | 10.3                  | 10.8                 | 71-80-90-100-112-132-160 |   | 11700   | 13500 | 22000               | 26500 | 7520  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>38.4</b> | 26.0                                | 2850                  | 8.3                   | 10.8                 | 71-80-90-100-112-132-160 |   | 12600   | 14600 | 23600               | 28300 | 8100  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>47.3</b> | 21.1                                | 2390                  | 5.6                   | 10.8                 | 71-80-90-100-112-132-160 |   | 13500   | 15600 | 25100               | 30200 | 8680  | 7300                     |  |
|                                     | <b>304 L2</b>   | <b>59.1</b> | 16.9                                | 2390                  | 4.5                   | 10.8                 | 71-80-90-100-112-132-160 |   | 14600   | 16800 | 26800               | 32300 | 9350  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>43.6</b> | 22.9                                | 3270                  | 8.6                   | 9.0                  | 71-80-90-100-112-132-160 |   | 13200   | 15200 | 24500               | 29400 | 8450  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>53.4</b> | 18.7                                | 3310                  | 7.1                   | 9.0                  | 71-80-90-100-112-132-160 |   | 14100   | 16300 | 26000               | 31300 | 9040  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>63.1</b> | 15.9                                | 3510                  | 6.4                   | 9.0                  | 71-80-90-100-112-132-160 |   | 14900   | 17200 | 27300               | 32900 | 9550  | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>72.3</b> | 13.8                                | 3370                  | 5.4                   | 9.0                  | 71-80-90-100-112-132-160 |   | 15600   | 18000 | 28500               | 34300 | 10000 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>77.2</b> | 12.9                                | 3520                  | 5.2                   | 9.0                  | 71-80-90-100-112-132-160 |   | 15900   | 18400 | 29000               | 34900 | 10200 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>90.2</b> | 11.1                                | 3420                  | 4.3                   | 9.0                  | 71-80-90-100-112-132-160 |   | 16800   | 19400 | 30400               | 36600 | 10800 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>105</b>  | 9.6                                 | 3550                  | 3.9                   | 9.0                  | 71-80-90-100-112-132-160 |   | 17600   | 20300 | 31800               | 38300 | 11300 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>111</b>  | 9.0                                 | 3450                  | 3.6                   | 9.0                  | 71-80-90-100-112-132-160 |   | 18000   | 20700 | 32300               | 38900 | 11500 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>130</b>  | 7.7                                 | 3600                  | 3.2                   | 9.0                  | 71-80-90-100-112-132-160 |   | 19000   | 21900 | 34000               | 40900 | 12200 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>141</b>  | 7.1                                 | 3610                  | 2.9                   | 9.0                  | 71-80-90-100-112-132-160 |   | 19500   | 22500 | 34800               | 41900 | 12500 | 7300                     |  |
|                                     | <b>304 L3</b>   | <b>150</b>  | 6.7                                 | 3470                  | 2.7                   | 9.0                  | 71-80-90-100-112-132-160 |   | 19900   | 22900 | 35400               | 42600 | 12700 | 7300                     |  |

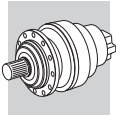
B





| 304 L                               |        |                                     |                       |                       |                      |                          | 3960 Nm                  |       |                              |       |       |                          |      |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|--------------------------|-------|------------------------------|-------|-------|--------------------------|------|
| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | MC                       | MZ    | Rn <sub>2</sub> [N]<br>HC/PC | HZ/PZ | FZ    | M <sub>2 max</sub><br>Nm |      |
| <b>1000</b>                         | 304 L3 | 165                                 | 6.1                   | 2390                  | 1.7                  | 9.0                      | 71-80-90-100-112-132-160 | 20500 | 23700                        | 36500 | 43900 | 13200                    | 7300 |
|                                     | 304 L3 | 178                                 | 5.6                   | 2850                  | 1.8                  | 9.0                      | 71-80-90-100-112-132-160 | 21000 | 24300                        | 37300 | 44900 | 13500                    | 7300 |
|                                     | 304 L3 | 202                                 | 5.0                   | 2390                  | 1.4                  | 9.0                      | 71-80-90-100-112-132-160 | 21900 | 25300                        | 38700 | 46600 | 14100                    | 7300 |
|                                     | 304 L3 | 220                                 | 4.5                   | 3670                  | 1.9                  | 9.0                      | 71-80-90-100-112-132-160 | 22600 | 26100                        | 39800 | 47900 | 14500                    | 7300 |
|                                     | 304 L3 | 273                                 | 3.7                   | 2460                  | 1.0                  | 9.0                      | 71-80-90-100-112-132-160 | 24300 | 28000                        | 42400 | 51000 | 15600                    | 7300 |
|                                     | 304 L3 | 341                                 | 2.9                   | 2520                  | 0.85                 | 9.0                      | 71-80-90-100-112-132-160 | 26100 | 30200                        | 45400 | 54600 | 16800                    | 7300 |
|                                     | 304 L3 | 426                                 | 2.3                   | 2590                  | 0.70                 | 9.0                      | 71-80-90-100-112-132-160 | 28100 | 32500                        | 48500 | 58300 | 18100                    | 7300 |
|                                     | 304 L4 | 413                                 | 2.4                   | 3210                  | 0.92                 | 7.2                      | 71-80-90-100-112-132-160 | 27900 | 32200                        | 48000 | 57800 | 17900                    | 7300 |
|                                     | 304 L4 | 446                                 | 2.2                   | 3770                  | 1.0                  | 7.2                      | 71-80-90-100-112-132-160 | 28600 | 33000                        | 49100 | 59100 | 18300                    | 7300 |
|                                     | 304 L4 | 492                                 | 2.0                   | 3800                  | 0.91                 | 7.2                      | 71-80-90-100-112-132-160 | 29500 | 34100                        | 50600 | 60900 | 19000                    | 7300 |
|                                     | 304 L4 | 556                                 | 1.8                   | 3820                  | 0.81                 | 7.2                      | 71-80-90-100-112-132-160 | 30800 | 35500                        | 52500 | 63200 | 19700                    | 7300 |
|                                     | 304 L4 | 649                                 | 1.5                   | 3620                  | 0.66                 | 7.2                      | 71-80-90-100-112-132-160 | 32400 | 37400                        | 55000 | 66200 | 20800                    | 7300 |
|                                     | 304 L4 | 702                                 | 1.4                   | 2820                  | 0.48                 | 7.2                      | 71-80-90-100-112-132-160 | 33200 | 38400                        | 56300 | 67800 | 21300                    | 7300 |
|                                     | 304 L4 | 816                                 | 1.2                   | 3910                  | 0.57                 | 7.2                      | 71-80-90-100-112-132-160 | 35000 | 40400                        | 58900 | 70900 | 22400                    | 7300 |
|                                     | 304 L4 | 1018                                | 0.98                  | 3960                  | 0.46                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 63000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 1164                                | 0.86                  | 3000                  | 0.30                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 1271                                | 0.79                  | 3960                  | 0.37                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 1344                                | 0.74                  | 3710                  | 0.33                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 1586                                | 0.63                  | 3960                  | 0.30                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 1815                                | 0.55                  | 3000                  | 0.20                 | 7.2                      | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
| 304 L4                              | 1991   | 0.50                                | 3740                  | 0.22                  | 7.2                  | 71-80-90-100-112-132-160 | 36000                    | 42000 | 64000                        | 74000 | 24000 | 7300                     |      |
| 304 L4                              | 2269   | 0.44                                | 3000                  | 0.16                  | 7.2                  | 71-80-90-100-112-132-160 | 36000                    | 42000 | 64000                        | 74000 | 24000 | 7300                     |      |
| 304 L4                              | 2453   | 0.41                                | 3000                  | 0.14                  | 7.2                  | 71-80-90-100-112-132-160 | 36000                    | 42000 | 64000                        | 74000 | 24000 | 7300                     |      |
| <b>500</b>                          | 304 L1 | 3.60                                | 139                   | 2560                  | 38                   | 24                       | 132-160-180-200          | 7220  | 8340                         | 14300 | 17200 | 4630                     | 7300 |
|                                     | 304 L1 | 4.25                                | 118                   | 2650                  | 34                   | 24                       | 132-160-180-200          | 7630  | 8810                         | 15000 | 18000 | 4900                     | 7300 |
|                                     | 304 L1 | 5.33                                | 94                    | 2720                  | 28                   | 24                       | 132-160-180-200          | 8240  | 9510                         | 16000 | 19300 | 5280                     | 7300 |
|                                     | 304 L1 | 6.57                                | 76                    | 2390                  | 19.6                 | 24                       | 132-160-180-200          | 8830  | 10200                        | 17100 | 20500 | 5660                     | 7300 |
|                                     | 304 L2 | 12.5                                | 40                    | 3160                  | 14.0                 | 18.0                     | 71-80-90-100-112-132-160 | 10900 | 12600                        | 20700 | 24900 | 7020                     | 7300 |
|                                     | 304 L2 | 15.3                                | 33                    | 3200                  | 11.6                 | 18.0                     | 71-80-90-100-112-132-160 | 11700 | 13500                        | 22000 | 26500 | 7510                     | 7300 |
|                                     | 304 L2 | 18.1                                | 27.6                  | 3470                  | 10.7                 | 18.0                     | 71-80-90-100-112-132-160 | 12400 | 14300                        | 23100 | 27800 | 7940                     | 7300 |
|                                     | 304 L2 | 20.8                                | 24.1                  | 3260                  | 8.7                  | 18.0                     | 71-80-90-100-112-132-160 | 13000 | 15000                        | 24100 | 29000 | 8310                     | 7300 |
|                                     | 304 L2 | 22.7                                | 22.0                  | 2850                  | 7.0                  | 18.0                     | 71-80-90-100-112-132-160 | 13400 | 15400                        | 24800 | 29800 | 8570                     | 7300 |
|                                     | 304 L2 | 24.5                                | 20.4                  | 3490                  | 7.9                  | 18.0                     | 71-80-90-100-112-132-160 | 13700 | 15800                        | 25300 | 30500 | 8780                     | 7300 |
|                                     | 304 L2 | 30.8                                | 16.3                  | 2850                  | 5.2                  | 18.0                     | 71-80-90-100-112-132-160 | 14800 | 17100                        | 27100 | 32600 | 9480                     | 7300 |
|                                     | 304 L2 | 38.4                                | 13.0                  | 2850                  | 4.1                  | 18.0                     | 71-80-90-100-112-132-160 | 15900 | 18400                        | 29000 | 34900 | 10200                    | 7300 |
|                                     | 304 L2 | 47.3                                | 10.6                  | 2390                  | 2.8                  | 18.0                     | 71-80-90-100-112-132-160 | 17000 | 19700                        | 30900 | 37100 | 10900                    | 7300 |
|                                     | 304 L2 | 59.1                                | 8.5                   | 2390                  | 2.2                  | 18.0                     | 71-80-90-100-112-132-160 | 18400 | 21200                        | 33000 | 39700 | 11800                    | 7300 |
|                                     | 304 L3 | 43.6                                | 11.5                  | 3410                  | 4.5                  | 15.0                     | 71-80-90-100-112-132-160 | 16600 | 19200                        | 30100 | 36200 | 10600                    | 7300 |
|                                     | 304 L3 | 53.4                                | 9.4                   | 3450                  | 3.7                  | 15.0                     | 71-80-90-100-112-132-160 | 17800 | 20500                        | 32000 | 38500 | 11400                    | 7300 |
|                                     | 304 L3 | 63.1                                | 7.9                   | 3590                  | 3.3                  | 15.0                     | 71-80-90-100-112-132-160 | 18800 | 21700                        | 33600 | 40500 | 12000                    | 7300 |
|                                     | 304 L3 | 72.3                                | 6.9                   | 3470                  | 2.8                  | 15.0                     | 71-80-90-100-112-132-160 | 19600 | 22700                        | 35100 | 42200 | 12600                    | 7300 |
|                                     | 304 L3 | 77.2                                | 6.5                   | 3630                  | 2.7                  | 15.0                     | 71-80-90-100-112-132-160 | 20100 | 23200                        | 35800 | 43000 | 12900                    | 7300 |
|                                     | 304 L3 | 90.2                                | 5.5                   | 3490                  | 2.2                  | 15.0                     | 71-80-90-100-112-132-160 | 21100 | 24400                        | 37500 | 45100 | 13600                    | 7300 |
|                                     | 304 L3 | 105                                 | 4.8                   | 3690                  | 2.0                  | 15.0                     | 71-80-90-100-112-132-160 | 22200 | 25600                        | 39200 | 47100 | 14200                    | 7300 |
|                                     | 304 L3 | 111                                 | 4.5                   | 3500                  | 1.8                  | 15.0                     | 71-80-90-100-112-132-160 | 22600 | 26100                        | 39800 | 47900 | 14500                    | 7300 |
|                                     | 304 L3 | 130                                 | 3.8                   | 3710                  | 1.6                  | 15.0                     | 71-80-90-100-112-132-160 | 23900 | 27600                        | 41900 | 50400 | 15300                    | 7300 |
|                                     | 304 L3 | 141                                 | 3.5                   | 3720                  | 1.5                  | 15.0                     | 71-80-90-100-112-132-160 | 24600 | 28400                        | 42900 | 51600 | 15800                    | 7300 |
|                                     | 304 L3 | 150                                 | 3.3                   | 3510                  | 1.3                  | 15.0                     | 71-80-90-100-112-132-160 | 25000 | 28900                        | 43600 | 52500 | 16000                    | 7300 |
|                                     | 304 L3 | 165                                 | 3.0                   | 2510                  | 0.87                 | 15.0                     | 71-80-90-100-112-132-160 | 25800 | 29800                        | 44900 | 54000 | 16600                    | 7300 |
|                                     | 304 L3 | 178                                 | 2.8                   | 3130                  | 1.0                  | 15.0                     | 71-80-90-100-112-132-160 | 26500 | 30600                        | 45900 | 55200 | 17000                    | 7300 |
|                                     | 304 L3 | 202                                 | 2.5                   | 2560                  | 0.73                 | 15.0                     | 71-80-90-100-112-132-160 | 27600 | 31900                        | 47700 | 57400 | 17700                    | 7300 |
|                                     | 304 L3 | 220                                 | 2.3                   | 3740                  | 0.97                 | 15.0                     | 71-80-90-100-112-132-160 | 28500 | 32900                        | 49000 | 58900 | 18300                    | 7300 |
|                                     | 304 L3 | 273                                 | 1.8                   | 2700                  | 0.57                 | 15.0                     | 71-80-90-100-112-132-160 | 30600 | 35300                        | 52200 | 62800 | 19600                    | 7300 |
|                                     | 304 L3 | 341                                 | 1.5                   | 2810                  | 0.47                 | 15.0                     | 71-80-90-100-112-132-160 | 32900 | 38000                        | 55800 | 67200 | 21100                    | 7300 |
|                                     | 304 L3 | 426                                 | 1.2                   | 2920                  | 0.39                 | 15.0                     | 71-80-90-100-112-132-160 | 35500 | 40900                        | 59700 | 71800 | 22700                    | 7300 |
|                                     | 304 L4 | 413                                 | 1.2                   | 3620                  | 0.52                 | 12.0                     | 71-80-90-100-112-132-160 | 35100 | 40500                        | 59100 | 71200 | 22500                    | 7300 |
|                                     | 304 L4 | 446                                 | 1.1                   | 3930                  | 0.52                 | 12.0                     | 71-80-90-100-112-132-160 | 36000 | 41600                        | 60500 | 72800 | 23100                    | 7300 |
|                                     | 304 L4 | 492                                 | 1.0                   | 3960                  | 0.48                 | 12.0                     | 71-80-90-100-112-132-160 | 36000 | 42000                        | 62300 | 74000 | 23900                    | 7300 |
|                                     | 304 L4 | 556                                 | 0.90                  | 3960                  | 0.42                 | 12.0                     | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |
|                                     | 304 L4 | 649                                 | 0.77                  | 3710                  | 0.34                 | 12.0                     | 71-80-90-100-112-132-160 | 36000 | 42000                        | 64000 | 74000 | 24000                    | 7300 |

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### 304 L

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### 3960 Nm

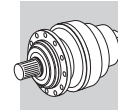
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                          | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 500                                 | 304 L4 | 702  | 0.71                                | 3000                  | 0.25                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 816  | 0.61                                | 3960                  | 0.29                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1018 | 0.49                                | 3960                  | 0.23                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1164 | 0.43                                | 3000                  | 0.15                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1271 | 0.39                                | 3960                  | 0.18                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1344 | 0.37                                | 3710                  | 0.16                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1586 | 0.32                                | 3960                  | 0.15                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1815 | 0.28                                | 3000                  | 0.10                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 1991 | 0.25                                | 3740                  | 0.11                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 2269 | 0.22                                | 3000                  | 0.08                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 L4 | 2453 | 0.20                                | 3000                  | 0.07                  | 12.0                 | 71-80-90-100-112-132-160 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |



### 305 L

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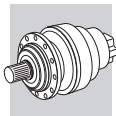
### 5800 Nm



| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                          | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 305 L1 | 3.60 | 417                                 | 2370                  | 60                    | 13.0                 | 132-160-180-200          | 5010                | 5780  | 10300 | 12300 | 3210  | 8800                     |
|                                     | 305 L1 | 4.25 | 353                                 | 2450                  | 60                    | 13.0                 | 132-160-180-200          | 5290                | 6110  | 10800 | 13000 | 3400  | 8800                     |
|                                     | 305 L1 | 5.33 | 281                                 | 2560                  | 60                    | 13.0                 | 132-160-180-200          | 5710                | 6590  | 11500 | 13900 | 3660  | 8800                     |
|                                     | 305 L1 | 6.20 | 242                                 | 2650                  | 60                    | 13.0                 | 132-160-180-200          | 6000                | 6930  | 12100 | 14500 | 3850  | 8800                     |
|                                     | 305 L1 | 7.50 | 200                                 | 2270                  | 49                    | 13.0                 | 132-160-180-200          | 6400                | 7390  | 12800 | 15400 | 4100  | 8800                     |
|                                     | 305 L2 | 12.5 | 120                                 | 2930                  | 30                    | 9.0                  | 71-80-90-100-112-132-160 | 7590                | 8760  | 14900 | 17900 | 4870  | 8800                     |
|                                     | 305 L2 | 15.3 | 98                                  | 3060                  | 30                    | 9.0                  | 71-80-90-100-112-132-160 | 8120                | 9380  | 15800 | 19100 | 5210  | 8800                     |
|                                     | 305 L2 | 18.1 | 83                                  | 3620                  | 30                    | 9.0                  | 71-80-90-100-112-132-160 | 8580                | 9910  | 16600 | 20000 | 5510  | 8800                     |
|                                     | 305 L2 | 20.8 | 72                                  | 3250                  | 26                    | 9.0                  | 71-80-90-100-112-132-160 | 8980                | 10400 | 17300 | 20900 | 5760  | 8800                     |
|                                     | 305 L2 | 22.7 | 66                                  | 3940                  | 29                    | 9.0                  | 71-80-90-100-112-132-160 | 9260                | 10700 | 17800 | 21400 | 5940  | 8800                     |
|                                     | 305 L2 | 24.5 | 61                                  | 3830                  | 26                    | 9.0                  | 71-80-90-100-112-132-160 | 9490                | 11000 | 18200 | 21900 | 6090  | 8800                     |
|                                     | 305 L2 | 26.4 | 57                                  | 3530                  | 22                    | 9.0                  | 71-80-90-100-112-132-160 | 9740                | 11200 | 18600 | 22400 | 6250  | 8800                     |
|                                     | 305 L2 | 30.8 | 49                                  | 4280                  | 23                    | 9.0                  | 71-80-90-100-112-132-160 | 10200               | 11800 | 19500 | 23500 | 6570  | 8800                     |
|                                     | 305 L2 | 35.8 | 42                                  | 3560                  | 16.6                  | 9.0                  | 71-80-90-100-112-132-160 | 10800               | 12400 | 20400 | 24600 | 6910  | 8800                     |
|                                     | 305 L2 | 38.4 | 39                                  | 4300                  | 18.7                  | 9.0                  | 71-80-90-100-112-132-160 | 11000               | 12700 | 20900 | 25100 | 7070  | 8800                     |
|                                     | 305 L2 | 44.6 | 34                                  | 3560                  | 13.3                  | 9.0                  | 71-80-90-100-112-132-160 | 11600               | 13400 | 21800 | 26300 | 7440  | 8800                     |
|                                     | 305 L2 | 55.8 | 26.9                                | 3540                  | 10.6                  | 9.0                  | 71-80-90-100-112-132-160 | 12500               | 14400 | 23300 | 28100 | 8010  | 8800                     |
|                                     | 305 L3 | 53.4 | 28.1                                | 4000                  | 12.9                  | 7.5                  | 71-80-90-100-112-132-160 | 12300               | 14200 | 23000 | 27700 | 7900  | 8800                     |
|                                     | 305 L3 | 63.1 | 23.8                                | 4720                  | 12.9                  | 7.5                  | 71-80-90-100-112-132-160 | 13000               | 15000 | 24200 | 29100 | 8340  | 8800                     |
|                                     | 305 L3 | 72.3 | 20.8                                | 4160                  | 9.9                   | 7.5                  | 71-80-90-100-112-132-160 | 13600               | 15700 | 25200 | 30300 | 8730  | 8800                     |
|                                     | 305 L3 | 77.2 | 19.4                                | 4820                  | 10.7                  | 7.5                  | 71-80-90-100-112-132-160 | 13900               | 16100 | 25700 | 30900 | 8930  | 8800                     |
|                                     | 305 L3 | 90.2 | 16.6                                | 4260                  | 8.1                   | 7.5                  | 71-80-90-100-112-132-160 | 14700               | 16900 | 26900 | 32400 | 9400  | 8800                     |
|                                     | 305 L3 | 105  | 14.4                                | 5030                  | 8.3                   | 7.5                  | 71-80-90-100-112-132-160 | 15400               | 17800 | 28200 | 33900 | 9880  | 8800                     |
|                                     | 305 L3 | 113  | 13.3                                | 3590                  | 5.5                   | 7.5                  | 71-80-90-100-112-132-160 | 15800               | 18200 | 28800 | 34700 | 10100 | 8800                     |
|                                     | 305 L3 | 124  | 12.1                                | 3590                  | 5.0                   | 7.5                  | 71-80-90-100-112-132-160 | 16300               | 18800 | 29700 | 35700 | 10500 | 8800                     |
|                                     | 305 L3 | 141  | 10.6                                | 5180                  | 6.3                   | 7.5                  | 71-80-90-100-112-132-160 | 17000               | 19700 | 30800 | 37100 | 10900 | 8800                     |
|                                     | 305 L3 | 152  | 9.8                                 | 3600                  | 4.1                   | 7.5                  | 71-80-90-100-112-132-160 | 17500               | 20200 | 31500 | 37900 | 11200 | 8800                     |
|                                     | 305 L3 | 164  | 9.2                                 | 4410                  | 4.6                   | 7.5                  | 71-80-90-100-112-132-160 | 17900               | 20600 | 32200 | 38800 | 11500 | 8800                     |
|                                     | 305 L3 | 178  | 8.5                                 | 4420                  | 4.3                   | 7.5                  | 71-80-90-100-112-132-160 | 18400               | 21200 | 33000 | 39700 | 11800 | 8800                     |
|                                     | 305 L3 | 190  | 7.9                                 | 3600                  | 3.3                   | 7.5                  | 71-80-90-100-112-132-160 | 18800               | 21700 | 33700 | 40600 | 12100 | 8800                     |
|                                     | 305 L3 | 220  | 6.8                                 | 4750                  | 3.7                   | 7.5                  | 71-80-90-100-112-132-160 | 19700               | 22800 | 35200 | 42400 | 12700 | 8800                     |
|                                     | 305 L3 | 258  | 5.8                                 | 3600                  | 2.4                   | 7.5                  | 71-80-90-100-112-132-160 | 20800               | 24000 | 36900 | 44400 | 13300 | 8800                     |
|                                     | 305 L3 | 276  | 5.4                                 | 4460                  | 2.8                   | 7.5                  | 71-80-90-100-112-132-160 | 21300               | 24600 | 37700 | 45400 | 13700 | 8800                     |
|                                     | 305 L3 | 321  | 4.7                                 | 3640                  | 1.9                   | 7.5                  | 71-80-90-100-112-132-160 | 22400               | 25800 | 39400 | 47500 | 14400 | 8800                     |
|                                     | 305 L3 | 389  | 3.9                                 | 3170                  | 1.4                   | 7.5                  | 71-80-90-100-112-132-160 | 23900               | 27500 | 41800 | 50300 | 15300 | 8800                     |
|                                     | 305 L3 | 402  | 3.7                                 | 3760                  | 1.6                   | 7.5                  | 71-80-90-100-112-132-160 | 24100               | 27800 | 42200 | 50700 | 15500 | 8800                     |
|                                     | 305 L4 | 413  | 3.6                                 | 4720                  | 2.0                   | 6.0                  | 71-80-90-100-112-132-160 | 24300               | 28100 | 42500 | 51200 | 15600 | 8800                     |
|                                     | 305 L4 | 446  | 3.4                                 | 5490                  | 2.2                   | 6.0                  | 71-80-90-100-112-132-160 | 25000               | 28800 | 43500 | 52400 | 16000 | 8800                     |
|                                     | 305 L4 | 492  | 3.0                                 | 5340                  | 1.9                   | 6.0                  | 71-80-90-100-112-132-160 | 25800               | 29800 | 44800 | 53900 | 16600 | 8800                     |
|                                     | 305 L4 | 556  | 2.7                                 | 5500                  | 1.8                   | 6.0                  | 71-80-90-100-112-132-160 | 26900               | 31000 | 46500 | 55900 | 17200 | 8800                     |
|                                     | 305 L4 | 649  | 2.3                                 | 4510                  | 1.2                   | 6.0                  | 71-80-90-100-112-132-160 | 28300               | 32700 | 48700 | 58600 | 18200 | 8800                     |
|                                     | 305 L4 | 718  | 2.1                                 | 4130                  | 1.0                   | 6.0                  | 71-80-90-100-112-132-160 | 29300               | 33800 | 50200 | 60400 | 18800 | 8800                     |
|                                     | 305 L4 | 816  | 1.8                                 | 5410                  | 1.2                   | 6.0                  | 71-80-90-100-112-132-160 | 30500               | 35300 | 52200 | 62800 | 19600 | 8800                     |



| 305 L                      |   |      |                            |                |                |                          | 5800 Nm   |              |       |       |       |       |                 |
|----------------------------|---|------|----------------------------|----------------|----------------|--------------------------|---|--------------|-------|-------|-------|-------|-----------------|
| $n_1$<br>min <sup>-1</sup> |  | i    | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW              | P (IEC)  | $R_{n2}$ [N] |       |       |       |       | $M_2$ max<br>Nm |
|                            |   |      |                            |                |                |                          | MC  | MZ           | HC/PC | HZ/PZ | FZ    |       |                 |
| 1500                       | 305 L4  | 896  | 1.7                        | 4290           | 0.85           | 6.0                      | 71-80-90-100-112-132-160  | 31500        | 36400 | 53700 | 64600 | 20200 | 8800            |
|                            | 305 L4  | 1018 | 1.5                        | 5450           | 0.95           | 6.0                      | 71-80-90-100-112-132-160  | 32900        | 38000 | 55800 | 67100 | 21100 | 8800            |
|                            | 305 L4  | 1098 | 1.4                        | 4440           | 0.72           | 6.0                      | 71-80-90-100-112-132-160  | 33700        | 38900 | 57000 | 68600 | 21600 | 8800            |
|                            | 305 L4  | 1278 | 1.2                        | 5500           | 0.76           | 6.0                      | 71-80-90-100-112-132-160  | 35500        | 40900 | 59700 | 71800 | 22800 | 8800            |
|                            | 305 L4  | 1370 | 1.1                        | 4620           | 0.60           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 41900 | 60900 | 73300 | 23300 | 8800            |
|                            | 305 L4  | 1586 | 0.95                       | 4750           | 0.53           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 42000 | 63700 | 74000 | 24000 | 8800            |
|                            | 305 L4  | 1854 | 0.81                       | 4690           | 0.45           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 42000 | 64000 | 74000 | 24000 | 8800            |
|                            | 305 L4  | 1991 | 0.75                       | 5600           | 0.50           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 42000 | 64000 | 74000 | 24000 | 8800            |
|                            | 305 L4  | 2243 | 0.67                       | 3800           | 0.30           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 42000 | 64000 | 74000 | 24000 | 8800            |
|                            | 305 L4  | 2799 | 0.54                       | 3800           | 0.24           | 6.0                      | 71-80-90-100-112-132-160  | 36000        | 42000 | 64000 | 74000 | 24000 | 8800            |
| 1000                       | 305 L1  | 3.60 | 278                        | 2680           | 60             | 15.6                     | 132-160-180-200   | 5730         | 6620  | 11600 | 13900 | 3680  | 8800            |
|                            | 305 L1  | 4.25 | 235                        | 2770           | 60             | 15.6                     | 132-160-180-200   | 6060         | 7000  | 12200 | 14600 | 3890  | 8800            |
|                            | 305 L1  | 5.33 | 188                        | 2890           | 58             | 15.6                     | 132-160-180-200   | 6540         | 7550  | 13000 | 15700 | 4190  | 8800            |
|                            | 305 L1  | 6.20 | 161                        | 3000           | 52             | 15.6                     | 132-160-180-200   | 6870         | 7930  | 13600 | 16400 | 4410  | 8800            |
|                            | 305 L1  | 7.50 | 133                        | 2560           | 37             | 15.6                     | 132-160-180-200   | 7320         | 8450  | 14400 | 17400 | 4700  | 8800            |
|                            | 305 L2  | 12.5 | 80                         | 3300           | 29             | 10.8                     | 71-80-90-100-112-132-160  | 8690         | 10000 | 16800 | 20300 | 5570  | 8800            |
|                            | 305 L2  | 15.3 | 65                         | 3460           | 25             | 10.8                     | 71-80-90-100-112-132-160  | 9300         | 10700 | 17900 | 21500 | 5960  | 8800            |
|                            | 305 L2  | 18.1 | 55                         | 4090           | 25             | 10.8                     | 71-80-90-100-112-132-160  | 9830         | 11300 | 18800 | 22600 | 6300  | 8800            |
|                            | 305 L2  | 20.8 | 48                         | 3650           | 19.5           | 10.8                     | 71-80-90-100-112-132-160  | 10300        | 11900 | 19600 | 23600 | 6600  | 8800            |
|                            | 305 L2  | 22.7 | 44                         | 4290           | 21             | 10.8                     | 71-80-90-100-112-132-160  | 10600        | 12200 | 20100 | 24200 | 6800  | 8800            |
|                            | 305 L2  | 24.5 | 41                         | 4200           | 19.1           | 10.8                     | 71-80-90-100-112-132-160  | 10900        | 12500 | 20600 | 24800 | 6970  | 8800            |
|                            | 305 L2  | 26.4 | 38                         | 3560           | 15.0           | 10.8                     | 71-80-90-100-112-132-160  | 11100        | 12900 | 21100 | 25300 | 7150  | 8800            |
|                            | 305 L2  | 30.8 | 33                         | 4310           | 15.6           | 10.8                     | 71-80-90-100-112-132-160  | 11700        | 13500 | 22000 | 26500 | 7520  | 8800            |
|                            | 305 L2  | 35.8 | 28.0                       | 3570           | 11.1           | 10.8                     | 71-80-90-100-112-132-160  | 12300        | 14200 | 23100 | 27700 | 7910  | 8800            |
|                            | 305 L2  | 38.4 | 26.0                       | 4330           | 12.5           | 10.8                     | 71-80-90-100-112-132-160  | 12600        | 14600 | 23600 | 28300 | 8100  | 8800            |
|                            | 305 L2  | 44.6 | 22.4                       | 3570           | 8.9            | 10.8                     | 71-80-90-100-112-132-160  | 13300        | 15300 | 24600 | 29600 | 8510  | 8800            |
|                            | 305 L2  | 55.8 | 17.9                       | 3560           | 7.1            | 10.8                     | 71-80-90-100-112-132-160  | 14300        | 16500 | 26300 | 31700 | 9170  | 8800            |
|                            | 305 L3  | 53.4 | 18.7                       | 4190           | 9.0            | 9.0                      | 71-80-90-100-112-132-160  | 14100        | 16300 | 26000 | 31300 | 9040  | 8800            |
|                            | 305 L3  | 63.1 | 15.9                       | 4980           | 9.1            | 9.0                      | 71-80-90-100-112-132-160  | 14900        | 17200 | 27300 | 32900 | 9550  | 8800            |
|                            | 305 L3  | 72.3 | 13.8                       | 4340           | 6.9            | 9.0                      | 71-80-90-100-112-132-160  | 15600        | 18000 | 28500 | 34300 | 10000 | 8800            |
|                            | 305 L3  | 77.2 | 12.9                       | 5110           | 7.6            | 9.0                      | 71-80-90-100-112-132-160  | 15900        | 18400 | 29000 | 34900 | 10200 | 8800            |
|                            | 305 L3  | 90.2 | 11.1                       | 4440           | 5.7            | 9.0                      | 71-80-90-100-112-132-160  | 16800        | 19400 | 30400 | 36600 | 10800 | 8800            |
|                            | 305 L3  | 105  | 9.6                        | 5310           | 5.8            | 9.0                      | 71-80-90-100-112-132-160  | 17600        | 20300 | 31800 | 38300 | 11300 | 8800            |
|                            | 305 L3  | 113  | 8.9                        | 3600           | 3.7            | 9.0                      | 71-80-90-100-112-132-160  | 18100        | 20900 | 32500 | 39100 | 11600 | 8800            |
|                            | 305 L3  | 124  | 8.0                        | 3600           | 3.3            | 9.0                      | 71-80-90-100-112-132-160  | 18700        | 21600 | 33500 | 40300 | 12000 | 8800            |
|                            | 305 L3  | 141  | 7.1                        | 5260           | 4.3            | 9.0                      | 71-80-90-100-112-132-160  | 19500        | 22500 | 34800 | 41900 | 12500 | 8800            |
|                            | 305 L3  | 152  | 6.6                        | 3600           | 2.7            | 9.0                      | 71-80-90-100-112-132-160  | 20000        | 23100 | 35600 | 42900 | 12800 | 8800            |
|                            | 305 L3  | 164  | 6.1                        | 4450           | 3.1            | 9.0                      | 71-80-90-100-112-132-160  | 20500        | 23600 | 36400 | 43800 | 13100 | 8800            |
|                            | 305 L3  | 178  | 5.6                        | 4460           | 2.9            | 9.0                      | 71-80-90-100-112-132-160  | 21000        | 24300 | 37300 | 44900 | 13500 | 8800            |
|                            | 305 L3  | 190  | 5.3                        | 3600           | 2.2            | 9.0                      | 71-80-90-100-112-132-160  | 21500        | 24800 | 38100 | 45800 | 13800 | 8800            |
|                            | 305 L3  | 220  | 4.5                        | 4750           | 2.5            | 9.0                      | 71-80-90-100-112-132-160  | 22600        | 26100 | 39800 | 47900 | 14500 | 8800            |
|                            | 305 L3  | 258  | 3.9                        | 3740           | 1.7            | 9.0                      | 71-80-90-100-112-132-160  | 23800        | 27500 | 41700 | 50200 | 15300 | 8800            |
|                            | 305 L3  | 276  | 3.6                        | 4670           | 1.9            | 9.0                      | 71-80-90-100-112-132-160  | 24400        | 28100 | 42600 | 51200 | 15600 | 8800            |
|                            | 305 L3  | 321  | 3.1                        | 3870           | 1.4            | 9.0                      | 71-80-90-100-112-132-160  | 25600        | 29600 | 44600 | 53600 | 16400 | 8800            |
|                            | 305 L3  | 389  | 2.6                        | 3290           | 0.97           | 9.0                      | 71-80-90-100-112-132-160  | 27300        | 31500 | 47200 | 56800 | 17500 | 8800            |
|                            | 305 L3  | 402  | 2.5                        | 4000           | 1.1            | 9.0                      | 71-80-90-100-112-132-160  | 27600        | 31900 | 47600 | 57300 | 17700 | 8800            |
|                            | 305 L4  | 413  | 2.4                        | 5060           | 1.4            | 7.2                      | 71-80-90-100-112-132-160  | 27900        | 32200 | 48000 | 57800 | 17900 | 8800            |
|                            | 305 L4  | 446  | 2.2                        | 5530           | 1.5            | 7.2                      | 71-80-90-100-112-132-160  | 28600        | 33000 | 49100 | 59100 | 18300 | 8800            |
|                            | 305 L4  | 492  | 2.0                        | 5390           | 1.3            | 7.2                      | 71-80-90-100-112-132-160  | 29500        | 34100 | 50600 | 60900 | 19000 | 8800            |
|                            | 305 L4  | 556  | 1.8                        | 5610           | 1.2            | 7.2                      | 71-80-90-100-112-132-160  | 30800        | 35500 | 52500 | 63200 | 19700 | 8800            |
| 305 L4                     | 649   | 1.5  | 4600                       | 0.84           | 7.2            | 71-80-90-100-112-132-160 | 32400   | 37400        | 55000 | 66200 | 20800 | 8800  |                 |
| 305 L4                     | 718   | 1.4  | 4430                       | 0.73           | 7.2            | 71-80-90-100-112-132-160 | 33500   | 38700        | 56700 | 68200 | 21500 | 8800  |                 |
| 305 L4                     | 816   | 1.2  | 5490                       | 0.80           | 7.2            | 71-80-90-100-112-132-160 | 35000   | 40400        | 58900 | 70900 | 22400 | 8800  |                 |
| 305 L4                     | 896   | 1.1  | 4600                       | 0.61           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 41600        | 60600 | 72900 | 23100 | 8800  |                 |
| 305 L4                     | 1018  | 0.98 | 5530                       | 0.64           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 63000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1098  | 0.91 | 4690                       | 0.51           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1278  | 0.78 | 5600                       | 0.52           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1370  | 0.73 | 4690                       | 0.40           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1586  | 0.63 | 4750                       | 0.35           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1854  | 0.54 | 4690                       | 0.30           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |
| 305 L4                     | 1991  | 0.50 | 5600                       | 0.33           | 7.2            | 71-80-90-100-112-132-160 | 36000   | 42000        | 64000 | 74000 | 24000 | 8800  |                 |

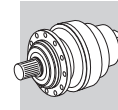
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| 305 L                               |   |      |                                     |                       |                       |                          | 290   |       | 5800 Nm |                     |       |       |                          |    |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|-------|---------|---------------------|-------|-------|--------------------------|----|--|
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | MC    | MZ      | Rn <sub>2</sub> [N] |       |       | M <sub>2 max</sub><br>Nm |    |  |
|                                     |   |      |                                     |                       |                       |                          |   |       |         |                     |       | HC/PC | HZ/PZ                    | FZ |  |
| 1000                                | 305 L4  | 2243 | 0.45                                | 3800                  | 0.20                  | 7.2                      | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 2799 | 0.36                                | 3800                  | 0.16                  | 7.2                      | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
| 500                                 | 305 L1  | 3.60 | 139                                 | 3300                  | 49                    | 26                       | 132-160-180-200   | 7220  | 8340    | 14300               | 17200 | 4630  | 8800                     |    |  |
|                                     | 305 L1  | 4.25 | 118                                 | 3410                  | 43                    | 26                       | 132-160-180-200   | 7630  | 8810    | 15000               | 18000 | 4900  | 8800                     |    |  |
|                                     | 305 L1  | 5.33 | 94                                  | 3560                  | 36                    | 26                       | 132-160-180-200   | 8240  | 9510    | 16000               | 19300 | 5280  | 8800                     |    |  |
|                                     | 305 L1  | 6.20 | 81                                  | 3490                  | 30                    | 26                       | 132-160-180-200   | 8660  | 10000   | 16800               | 20200 | 5560  | 8800                     |    |  |
|                                     | 305 L1  | 7.50 | 67                                  | 2910                  | 21                    | 26                       | 132-160-180-200   | 9230  | 10700   | 17800               | 21400 | 5920  | 8800                     |    |  |
|                                     | 305 L2  | 12.5 | 40                                  | 3890                  | 17.3                  | 18.0                     | 71-80-90-100-112-132-160  | 10900 | 12600   | 20700               | 24900 | 7020  | 8800                     |    |  |
|                                     | 305 L2  | 15.3 | 33                                  | 3930                  | 14.3                  | 18.0                     | 71-80-90-100-112-132-160  | 11700 | 13500   | 22000               | 26500 | 7510  | 8800                     |    |  |
|                                     | 305 L2  | 18.1 | 27.6                                | 4580                  | 14.1                  | 18.0                     | 71-80-90-100-112-132-160  | 12400 | 14300   | 23100               | 27800 | 7940  | 8800                     |    |  |
|                                     | 305 L2  | 20.8 | 24.1                                | 3970                  | 10.6                  | 18.0                     | 71-80-90-100-112-132-160  | 13000 | 15000   | 24100               | 29000 | 8310  | 8800                     |    |  |
|                                     | 305 L2  | 22.7 | 22.0                                | 4340                  | 10.6                  | 18.0                     | 71-80-90-100-112-132-160  | 13400 | 15400   | 24800               | 29800 | 8570  | 8800                     |    |  |
|                                     | 305 L2  | 24.5 | 20.4                                | 4680                  | 10.6                  | 18.0                     | 71-80-90-100-112-132-160  | 13700 | 15800   | 25300               | 30500 | 8780  | 8800                     |    |  |
|                                     | 305 L2  | 26.4 | 18.9                                | 3580                  | 7.5                   | 18.0                     | 71-80-90-100-112-132-160  | 14000 | 16200   | 25900               | 31200 | 9010  | 8800                     |    |  |
|                                     | 305 L2  | 30.8 | 16.3                                | 4360                  | 7.9                   | 18.0                     | 71-80-90-100-112-132-160  | 14800 | 17100   | 27100               | 32600 | 9480  | 8800                     |    |  |
|                                     | 305 L2  | 35.8 | 14.0                                | 3590                  | 5.6                   | 18.0                     | 71-80-90-100-112-132-160  | 15500 | 17900   | 28400               | 34200 | 9960  | 8800                     |    |  |
|                                     | 305 L2  | 38.4 | 13.0                                | 4380                  | 6.3                   | 18.0                     | 71-80-90-100-112-132-160  | 15900 | 18400   | 29000               | 34900 | 10200 | 8800                     |    |  |
|                                     | 305 L2  | 44.6 | 11.2                                | 3600                  | 4.5                   | 18.0                     | 71-80-90-100-112-132-160  | 16700 | 19300   | 30300               | 36500 | 10700 | 8800                     |    |  |
|                                     | 305 L2  | 55.8 | 9.0                                 | 3600                  | 3.6                   | 18.0                     | 71-80-90-100-112-132-160  | 18000 | 20800   | 32400               | 39000 | 11600 | 8800                     |    |  |
|                                     | 305 L3  | 53.4 | 9.4                                 | 4490                  | 4.8                   | 15.0                     | 71-80-90-100-112-132-160  | 17800 | 20500   | 32000               | 38500 | 11400 | 8800                     |    |  |
|                                     | 305 L3  | 63.1 | 7.9                                 | 5360                  | 4.9                   | 15.0                     | 71-80-90-100-112-132-160  | 18800 | 21700   | 33600               | 40500 | 12000 | 8800                     |    |  |
|                                     | 305 L3  | 72.3 | 6.9                                 | 4490                  | 3.6                   | 15.0                     | 71-80-90-100-112-132-160  | 19600 | 22700   | 35100               | 42200 | 12600 | 8800                     |    |  |
|                                     | 305 L3  | 77.2 | 6.5                                 | 5410                  | 4.0                   | 15.0                     | 71-80-90-100-112-132-160  | 20100 | 23200   | 35800               | 43000 | 12900 | 8800                     |    |  |
|                                     | 305 L3  | 90.2 | 5.5                                 | 4490                  | 2.9                   | 15.0                     | 71-80-90-100-112-132-160  | 21100 | 24400   | 37500               | 45100 | 13600 | 8800                     |    |  |
|                                     | 305 L3  | 105  | 4.8                                 | 5480                  | 3.0                   | 15.0                     | 71-80-90-100-112-132-160  | 22200 | 25600   | 39200               | 47100 | 14200 | 8800                     |    |  |
|                                     | 305 L3  | 113  | 4.4                                 | 3670                  | 1.9                   | 15.0                     | 71-80-90-100-112-132-160  | 22800 | 26300   | 40100               | 48200 | 14600 | 8800                     |    |  |
|                                     | 305 L3  | 124  | 4.0                                 | 3720                  | 1.7                   | 15.0                     | 71-80-90-100-112-132-160  | 23500 | 27200   | 41300               | 49600 | 15100 | 8800                     |    |  |
|                                     | 305 L3  | 141  | 3.5                                 | 5320                  | 2.2                   | 15.0                     | 71-80-90-100-112-132-160  | 24600 | 28400   | 42900               | 51600 | 15800 | 8800                     |    |  |
|                                     | 305 L3  | 152  | 3.3                                 | 3840                  | 1.4                   | 15.0                     | 71-80-90-100-112-132-160  | 25200 | 29100   | 43900               | 52800 | 16200 | 8800                     |    |  |
|                                     | 305 L3  | 164  | 3.1                                 | 4870                  | 1.7                   | 15.0                     | 71-80-90-100-112-132-160  | 25800 | 29800   | 44800               | 53900 | 16500 | 8800                     |    |  |
|                                     | 305 L3  | 178  | 2.8                                 | 4940                  | 1.6                   | 15.0                     | 71-80-90-100-112-132-160  | 26500 | 30600   | 45900               | 55200 | 17000 | 8800                     |    |  |
|                                     | 305 L3  | 190  | 2.6                                 | 3970                  | 1.2                   | 15.0                     | 71-80-90-100-112-132-160  | 27100 | 31300   | 46900               | 56400 | 17400 | 8800                     |    |  |
|                                     | 305 L3  | 220  | 2.3                                 | 4750                  | 1.2                   | 15.0                     | 71-80-90-100-112-132-160  | 28500 | 32900   | 49000               | 58900 | 18300 | 8800                     |    |  |
|                                     | 305 L3  | 258  | 1.9                                 | 4180                  | 0.93                  | 15.0                     | 71-80-90-100-112-132-160  | 30000 | 34600   | 51300               | 61700 | 19200 | 8800                     |    |  |
|                                     | 305 L3  | 276  | 1.8                                 | 5140                  | 1.1                   | 15.0                     | 71-80-90-100-112-132-160  | 30700 | 35400   | 52400               | 63100 | 19700 | 8800                     |    |  |
|                                     | 305 L3  | 321  | 1.6                                 | 4340                  | 0.78                  | 15.0                     | 71-80-90-100-112-132-160  | 32300 | 37300   | 54900               | 66000 | 20700 | 8800                     |    |  |
|                                     | 305 L3  | 389  | 1.3                                 | 3660                  | 0.54                  | 15.0                     | 71-80-90-100-112-132-160  | 34400 | 39700   | 58100               | 69900 | 22100 | 8800                     |    |  |
|                                     | 305 L3  | 402  | 1.2                                 | 4520                  | 0.64                  | 15.0                     | 71-80-90-100-112-132-160  | 34800 | 40200   | 58600               | 70600 | 22300 | 8800                     |    |  |
|                                     | 305 L4  | 413  | 1.2                                 | 5480                  | 0.78                  | 12.0                     | 71-80-90-100-112-132-160  | 35100 | 40500   | 59100               | 71200 | 22500 | 8800                     |    |  |
|                                     | 305 L4  | 446  | 1.1                                 | 5760                  | 0.76                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 41600   | 60500               | 72800 | 23100 | 8800                     |    |  |
|                                     | 305 L4  | 492  | 1.0                                 | 5530                  | 0.66                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 62300               | 74000 | 23900 | 8800                     |    |  |
|                                     | 305 L4  | 556  | 0.90                                | 5800                  | 0.62                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 649  | 0.77                                | 4700                  | 0.43                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 718  | 0.70                                | 4690                  | 0.39                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 816  | 0.61                                | 5530                  | 0.40                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 896  | 0.56                                | 4690                  | 0.31                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 1018 | 0.49                                | 5530                  | 0.32                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
|                                     | 305 L4  | 1098 | 0.46                                | 4690                  | 0.25                  | 12.0                     | 71-80-90-100-112-132-160  | 36000 | 42000   | 64000               | 74000 | 24000 | 8800                     |    |  |
| 305 L4                              | 1278  | 0.39 | 5600                                | 0.26                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 1370  | 0.36 | 4690                                | 0.20                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 1586  | 0.32 | 4750                                | 0.18                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 1854  | 0.27 | 4690                                | 0.15                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 1991  | 0.25 | 5600                                | 0.17                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 2243  | 0.22 | 3800                                | 0.10                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |
| 305 L4                              | 2799  | 0.18 | 3800                                | 0.08                  | 12.0                  | 71-80-90-100-112-132-160 | 36000   | 42000 | 64000   | 74000               | 24000 | 8800  |                          |    |  |

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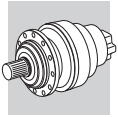




| 306 L                               |        |                                     |                       |                       |                      |                          | 302                      | 10840 Nm |        |        |        |                          |       |  |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|--------------------------|----------|--------|--------|--------|--------------------------|-------|--|
| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | MC                       | MZ       | HC/PC  | HZ/PZ  | FZ     | M <sub>2 max</sub><br>Nm |       |  |
| 1500                                | 306 L1 | 3.60                                | 417                   | 3760                  | 75                   | 18.0                     | 160-180-200-225-250      | 6240     | 7070   | 16800  | 19500  | 4690                     | 14900 |  |
|                                     | 306 L1 | 4.25                                | 353                   | 3890                  | 75                   | 18.0                     | 160-180-200-225-250      | 6590     | 7470   | 17600  | 20500  | 4950                     | 14900 |  |
|                                     | 306 L1 | 5.33                                | 281                   | 4060                  | 75                   | 18.0                     | 160-180-200-225-250      | 7110     | 8060   | 18900  | 22000  | 5340                     | 14900 |  |
|                                     | 306 L1 | 6.20                                | 242                   | 4200                  | 75                   | 18.0                     | 160-180-200-225-250      | 7480     | 8470   | 19700  | 23000  | 5620                     | 14900 |  |
|                                     | 306 L1 | 7.50                                | 200                   | 4090                  | 75                   | 18.0                     | 160-180-200-225-250      | 7970     | 9030   | 20900  | 24300  | 5980                     | 14900 |  |
|                                     | 306 L2 | 13.0                                | 116                   | 4820                  | 40                   | 13.0                     | 132-160-180-200          | 9560     | 10800  | 24600  | 28700  | 7180                     | 14900 |  |
|                                     | 306 L2 | 15.3                                | 98                    | 4990                  | 40                   | 13.0                     | 132-160-180-200          | 10100    | 11400  | 25900  | 30100  | 7590                     | 14900 |  |
|                                     | 306 L2 | 18.1                                | 83                    | 5890                  | 40                   | 13.0                     | 132-160-180-200          | 10700    | 12100  | 27200  | 31700  | 8020                     | 14900 |  |
|                                     | 306 L2 | 22.7                                | 66                    | 6140                  | 40                   | 13.0                     | 132-160-180-200          | 11500    | 13000  | 29100  | 33900  | 8650                     | 14900 |  |
|                                     | 306 L2 | 26.4                                | 57                    | 6370                  | 40                   | 13.0                     | 132-160-180-200          | 12100    | 13700  | 30500  | 35500  | 9100                     | 14900 |  |
|                                     | 306 L2 | 28.4                                | 53                    | 6700                  | 39                   | 13.0                     | 132-160-180-200          | 12400    | 14100  | 31200  | 36300  | 9330                     | 14900 |  |
|                                     | 306 L2 | 33.1                                | 45                    | 6870                  | 35                   | 13.0                     | 132-160-180-200          | 13100    | 14800  | 32600  | 38000  | 9810                     | 14900 |  |
|                                     | 306 L2 | 38.4                                | 39                    | 6470                  | 28                   | 13.0                     | 132-160-180-200          | 13700    | 15600  | 34100  | 39700  | 10300                    | 14900 |  |
|                                     | 306 L2 | 46.5                                | 32                    | 6470                  | 23                   | 13.0                     | 132-160-180-200          | 14600    | 16600  | 36100  | 42100  | 11000                    | 14900 |  |
|                                     | 306 L2 | 56.3                                | 26.7                  | 5210                  | 15.5                 | 13.0                     | 132-160-180-200          | 15600    | 17700  | 38300  | 44500  | 11700                    | 14900 |  |
|                                     | 306 L2 | 72.5                                | 20.7                  | 5290                  | 12.2                 | 13.0                     | 132-160-180-200          | 17000    | 19200  | 41300  | 48100  | 12700                    | 14900 |  |
|                                     | 306 L3 | 53.2                                | 28.2                  | 7100                  | 20.0                 | 7.5                      | 71-80-90-100-112-132-160 | 15300    | 17300  | 37600  | 43800  | 11500                    | 14900 |  |
|                                     | 306 L3 | 65.2                                | 23.0                  | 7480                  | 19.7                 | 7.5                      | 71-80-90-100-112-132-160 | 16400    | 18600  | 40000  | 46600  | 12300                    | 14900 |  |
|                                     | 306 L3 | 77.0                                | 19.5                  | 8350                  | 18.7                 | 7.5                      | 71-80-90-100-112-132-160 | 17300    | 19600  | 42000  | 48900  | 13000                    | 14900 |  |
|                                     | 306 L3 | 81.9                                | 18.3                  | 6890                  | 14.5                 | 7.5                      | 71-80-90-100-112-132-160 | 17700    | 20000  | 42800  | 49900  | 13300                    | 14900 |  |
|                                     | 306 L3 | 88.3                                | 17.0                  | 8550                  | 16.7                 | 7.5                      | 71-80-90-100-112-132-160 | 18100    | 20500  | 43800  | 51000  | 13600                    | 14900 |  |
|                                     | 306 L3 | 104                                 | 14.4                  | 8900                  | 14.7                 | 7.5                      | 71-80-90-100-112-132-160 | 19200    | 21700  | 46000  | 53600  | 14400                    | 14900 |  |
|                                     | 306 L3 | 112                                 | 13.4                  | 7410                  | 11.3                 | 7.5                      | 71-80-90-100-112-132-160 | 19600    | 22200  | 47100  | 54800  | 14800                    | 14900 |  |
|                                     | 306 L3 | 121                                 | 12.4                  | 7790                  | 11.1                 | 7.5                      | 71-80-90-100-112-132-160 | 20100    | 22800  | 48200  | 56100  | 15100                    | 14900 |  |
|                                     | 306 L3 | 141                                 | 10.6                  | 7900                  | 9.6                  | 7.5                      | 71-80-90-100-112-132-160 | 21200    | 24000  | 50400  | 58700  | 15900                    | 14900 |  |
|                                     | 306 L3 | 152                                 | 9.9                   | 7590                  | 8.6                  | 7.5                      | 71-80-90-100-112-132-160 | 21700    | 24600  | 51600  | 60000  | 16300                    | 14900 |  |
|                                     | 306 L3 | 190                                 | 7.9                   | 6510                  | 5.9                  | 7.5                      | 71-80-90-100-112-132-160 | 23400    | 26500  | 55100  | 64200  | 17600                    | 14900 |  |
|                                     | 306 L3 | 205                                 | 7.3                   | 8110                  | 6.8                  | 7.5                      | 71-80-90-100-112-132-160 | 24000    | 27200  | 56400  | 65600  | 18000                    | 14900 |  |
|                                     | 306 L3 | 222                                 | 6.8                   | 6520                  | 5.1                  | 7.5                      | 71-80-90-100-112-132-160 | 24600    | 27900  | 57700  | 67200  | 18500                    | 14900 |  |
|                                     | 306 L3 | 238                                 | 6.3                   | 8180                  | 5.9                  | 7.5                      | 71-80-90-100-112-132-160 | 25200    | 28600  | 59000  | 68700  | 19000                    | 14900 |  |
|                                     | 306 L3 | 268                                 | 5.6                   | 5500                  | 3.5                  | 7.5                      | 71-80-90-100-112-132-160 | 26200    | 29700  | 61100  | 71200  | 19700                    | 14900 |  |
|                                     | 306 L3 | 288                                 | 5.2                   | 5500                  | 3.3                  | 7.5                      | 71-80-90-100-112-132-160 | 26900    | 30500  | 62400  | 72700  | 20200                    | 14900 |  |
|                                     | 306 L3 | 325                                 | 4.6                   | 5540                  | 2.9                  | 7.5                      | 71-80-90-100-112-132-160 | 28000    | 31700  | 64700  | 75400  | 21000                    | 14900 |  |
|                                     | 306 L3 | 405                                 | 3.7                   | 5670                  | 2.4                  | 7.5                      | 71-80-90-100-112-132-160 | 30100    | 34100  | 69200  | 80500  | 22600                    | 14900 |  |
|                                     | 306 L4 | 391                                 | 3.8                   | 6840                  | 3.1                  | 6.0                      | 71-80-90-100-112-132-160 | 29800    | 33700  | 68400  | 79700  | 22400                    | 14900 |  |
|                                     | 306 L4 | 444                                 | 3.4                   | 9850                  | 3.9                  | 6.0                      | 71-80-90-100-112-132-160 | 31100    | 35200  | 71100  | 82800  | 23300                    | 14900 |  |
|                                     | 306 L4 | 509                                 | 2.9                   | 9450                  | 3.3                  | 6.0                      | 71-80-90-100-112-132-160 | 32500    | 36800  | 74100  | 86300  | 24400                    | 14900 |  |
|                                     | 306 L4 | 589                                 | 2.5                   | 9320                  | 2.8                  | 6.0                      | 71-80-90-100-112-132-160 | 34100    | 38700  | 77400  | 90100  | 25600                    | 14900 |  |
|                                     | 306 L4 | 636                                 | 2.4                   | 9450                  | 2.6                  | 6.0                      | 71-80-90-100-112-132-160 | 35000    | 39600  | 79200  | 92200  | 26300                    | 14900 |  |
|                                     | 306 L4 | 700                                 | 2.1                   | 9470                  | 2.4                  | 6.0                      | 71-80-90-100-112-132-160 | 36100    | 40900  | 81500  | 94900  | 27100                    | 14900 |  |
|                                     | 306 L4 | 809                                 | 1.9                   | 7690                  | 1.7                  | 6.0                      | 71-80-90-100-112-132-160 | 37900    | 43000  | 85100  | 99100  | 28500                    | 14900 |  |
|                                     | 306 L4 | 877                                 | 1.7                   | 7710                  | 1.6                  | 6.0                      | 71-80-90-100-112-132-160 | 39000    | 44100  | 87200  | 101600 | 29300                    | 14900 |  |
|                                     | 306 L4 | 1015                                | 1.5                   | 9460                  | 1.7                  | 6.0                      | 71-80-90-100-112-132-160 | 40900    | 46300  | 91100  | 106100 | 30700                    | 14900 |  |
|                                     | 306 L4 | 1095                                | 1.4                   | 7790                  | 1.3                  | 6.0                      | 71-80-90-100-112-132-160 | 41900    | 47500  | 93200  | 108500 | 31500                    | 14900 |  |
|                                     | 306 L4 | 1279                                | 1.2                   | 8400                  | 1.2                  | 6.0                      | 71-80-90-100-112-132-160 | 44200    | 50100  | 97700  | 113700 | 33200                    | 14900 |  |
| 306 L4                              | 1475   | 1.0                                 | 10100                 | 1.2                   | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 118700 | 34800  | 14900                    |       |  |
| 306 L4                              | 1597   | 0.94                                | 8630                  | 0.96                  | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 119000 | 35000  | 14900                    |       |  |
| 306 L4                              | 1843   | 0.81                                | 10100                 | 0.97                  | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 119000 | 35000  | 14900                    |       |  |
| 306 L4                              | 2074   | 0.72                                | 7000                  | 0.60                  | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 119000 | 35000  | 14900                    |       |  |
| 306 L4                              | 2337   | 0.64                                | 7000                  | 0.53                  | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 119000 | 35000  | 14900                    |       |  |
| 306 L4                              | 2916   | 0.51                                | 7000                  | 0.43                  | 6.0                  | 71-80-90-100-112-132-160 | 45000                    | 51000    | 101000 | 119000 | 35000  | 14900                    |       |  |
| 1000                                | 306 L1 | 3.60                                | 278                   | 4250                  | 75                   | 22                       | 160-180-200-225-250      | 7140     | 8090   | 18900  | 22100  | 5360                     | 14900 |  |
|                                     | 306 L1 | 4.25                                | 235                   | 4390                  | 75                   | 22                       | 160-180-200-225-250      | 7550     | 8550   | 19900  | 23200  | 5670                     | 14900 |  |
|                                     | 306 L1 | 5.33                                | 188                   | 4580                  | 75                   | 22                       | 160-180-200-225-250      | 8140     | 9220   | 21300  | 24800  | 6120                     | 14900 |  |
|                                     | 306 L1 | 6.20                                | 161                   | 4750                  | 75                   | 22                       | 160-180-200-225-250      | 8560     | 9700   | 22300  | 26000  | 6430                     | 14900 |  |
|                                     | 306 L1 | 7.50                                | 133                   | 4620                  | 67                   | 22                       | 160-180-200-225-250      | 9120     | 10300  | 23600  | 27500  | 6850                     | 14900 |  |
|                                     | 306 L2 | 13.0                                | 77                    | 5450                  | 40                   | 15.6                     | 132-160-180-200          | 10900    | 12400  | 27800  | 32400  | 8220                     | 14900 |  |
|                                     | 306 L2 | 15.3                                | 65                    | 5640                  | 40                   | 15.6                     | 132-160-180-200          | 11600    | 13100  | 29200  | 34000  | 8690                     | 14900 |  |
|                                     | 306 L2 | 18.1                                | 55                    | 6650                  | 40                   | 15.6                     | 132-160-180-200          | 12200    | 13800  | 30700  | 35800  | 9180                     | 14900 |  |
|                                     | 306 L2 | 22.7                                | 44                    | 6840                  | 34                   | 15.6                     | 132-160-180-200          | 13200    | 14900  | 32900  | 38300  | 9910                     | 14900 |  |

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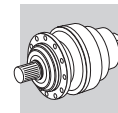
### 306 L

302

### 10840 Nm



| n <sub>1</sub><br>min <sup>-1</sup> |  | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |        |        |       | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|---|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|--------|--------|-------|--------------------------|-------|
|                                     |   |        |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |                          |       |
| <b>1000</b>                         | 306 L2  | 26.4   | 38                                  | 6780                  | 29                    | 15.6                 | 132-160-180-200   | 13900               | 15700 | 34400  | 40100  | 10400 | 14900                    |       |
|                                     | 306 L2  | 28.4   | 35                                  | 7040                  | 28                    | 15.6                 | 132-160-180-200   | 14200               | 16100 | 35200  | 41000  | 10700 | 14900                    |       |
|                                     | 306 L2  | 33.1   | 30                                  | 7150                  | 24                    | 15.6                 | 132-160-180-200   | 15000               | 16900 | 36800  | 42900  | 11200 | 14900                    |       |
|                                     | 306 L2  | 38.4   | 26                                  | 6480                  | 18.7                  | 15.6                 | 132-160-180-200   | 15700               | 17800 | 38500  | 44900  | 11800 | 14900                    |       |
|                                     | 306 L2  | 46.5   | 21.5                                | 6480                  | 15.5                  | 15.6                 | 132-160-180-200   | 16800               | 19000 | 40800  | 47500  | 12600 | 14900                    |       |
|                                     | 306 L2  | 56.3   | 17.8                                | 5330                  | 10.5                  | 15.6                 | 132-160-180-200   | 17800               | 20200 | 43200  | 50300  | 13400 | 14900                    |       |
|                                     | 306 L2  | 72.5   | 13.8                                | 5400                  | 8.3                   | 15.6                 | 132-160-180-200   | 19400               | 22000 | 46600  | 54300  | 14600 | 14900                    |       |
|                                     | 306 L3  | 53.2   | 18.8                                | 7890                  | 17.0                  | 9.0                  | 71-80-90-100-112-132-160  | 17500               | 19900 | 42500  | 49500  | 13200 | 14900                    |       |
|                                     | 306 L3  | 65.2   | 15.3                                | 8320                  | 14.6                  | 9.0                  | 71-80-90-100-112-132-160  | 18800               | 21200 | 45200  | 52600  | 14100 | 14900                    |       |
|                                     | 306 L3  | 77.0   | 13.0                                | 9090                  | 13.5                  | 9.0                  | 71-80-90-100-112-132-160  | 19800               | 22500 | 47500  | 55300  | 14900 | 14900                    |       |
|                                     | 306 L3  | 81.9   | 12.2                                | 7310                  | 10.2                  | 9.0                  | 71-80-90-100-112-132-160  | 20200               | 22900 | 48400  | 56300  | 15200 | 14900                    |       |
|                                     | 306 L3  | 88.3   | 11.3                                | 9230                  | 12.0                  | 9.0                  | 71-80-90-100-112-132-160  | 20700               | 23500 | 49500  | 57600  | 15600 | 14900                    |       |
|                                     | 306 L3  | 104    | 9.6                                 | 9610                  | 10.6                  | 9.0                  | 71-80-90-100-112-132-160  | 21900               | 24800 | 52000  | 60500  | 16500 | 14900                    |       |
|                                     | 306 L3  | 112    | 8.9                                 | 7590                  | 7.8                   | 9.0                  | 71-80-90-100-112-132-160  | 22500               | 25500 | 53200  | 61900  | 16900 | 14900                    |       |
|                                     | 306 L3  | 121    | 8.2                                 | 8050                  | 7.6                   | 9.0                  | 71-80-90-100-112-132-160  | 23100               | 26100 | 54400  | 63300  | 17300 | 14900                    |       |
|                                     | 306 L3  | 141    | 7.1                                 | 8120                  | 6.6                   | 9.0                  | 71-80-90-100-112-132-160  | 24200               | 27500 | 56900  | 66300  | 18200 | 14900                    |       |
|                                     | 306 L3  | 152    | 6.6                                 | 7590                  | 5.7                   | 9.0                  | 71-80-90-100-112-132-160  | 24900               | 28200 | 58200  | 67800  | 18700 | 14900                    |       |
|                                     | 306 L3  | 190    | 5.3                                 | 6530                  | 3.9                   | 9.0                  | 71-80-90-100-112-132-160  | 26800               | 30300 | 62200  | 72500  | 20100 | 14900                    |       |
|                                     | 306 L3  | 205    | 4.9                                 | 8330                  | 4.7                   | 9.0                  | 71-80-90-100-112-132-160  | 27500               | 31100 | 63700  | 74100  | 20600 | 14900                    |       |
|                                     | 306 L3  | 222    | 4.5                                 | 6650                  | 3.4                   | 9.0                  | 71-80-90-100-112-132-160  | 28200               | 31900 | 65200  | 75900  | 21200 | 14900                    |       |
|                                     | 306 L3  | 238    | 4.2                                 | 8550                  | 4.1                   | 9.0                  | 71-80-90-100-112-132-160  | 28900               | 32700 | 66600  | 77600  | 21700 | 14900                    |       |
|                                     | 306 L3  | 268    | 3.7                                 | 5670                  | 2.4                   | 9.0                  | 71-80-90-100-112-132-160  | 30000               | 34000 | 69000  | 80400  | 22600 | 14900                    |       |
|                                     | 306 L3  | 288    | 3.5                                 | 5710                  | 2.3                   | 9.0                  | 71-80-90-100-112-132-160  | 30800               | 34900 | 70500  | 82100  | 23100 | 14900                    |       |
|                                     | 306 L3  | 325    | 3.1                                 | 5780                  | 2.0                   | 9.0                  | 71-80-90-100-112-132-160  | 32000               | 36300 | 73100  | 85100  | 24100 | 14900                    |       |
|                                     | 306 L3  | 405    | 2.5                                 | 5910                  | 1.7                   | 9.0                  | 71-80-90-100-112-132-160  | 34500               | 39100 | 78100  | 91000  | 25900 | 14900                    |       |
|                                     | 306 L4  | 391    | 2.6                                 | 7340                  | 2.2                   | 7.2                  | 71-80-90-100-112-132-160  | 34100               | 38600 | 77300  | 90000  | 25600 | 14900                    |       |
|                                     | 306 L4  | 444    | 2.3                                 | 9910                  | 2.6                   | 7.2                  | 71-80-90-100-112-132-160  | 35500               | 40300 | 80300  | 93500  | 26700 | 14900                    |       |
|                                     | 306 L4  | 509    | 2.0                                 | 9450                  | 2.2                   | 7.2                  | 71-80-90-100-112-132-160  | 37200               | 42200 | 83700  | 97400  | 27900 | 14900                    |       |
|                                     | 306 L4  | 589    | 1.7                                 | 9650                  | 1.9                   | 7.2                  | 71-80-90-100-112-132-160  | 39100               | 44300 | 87400  | 101800 | 29300 | 14900                    |       |
|                                     | 306 L4  | 636    | 1.6                                 | 9450                  | 1.8                   | 7.2                  | 71-80-90-100-112-132-160  | 40100               | 45400 | 89400  | 104100 | 30100 | 14900                    |       |
|                                     | 306 L4  | 700    | 1.4                                 | 9790                  | 1.7                   | 7.2                  | 71-80-90-100-112-132-160  | 41400               | 46900 | 92000  | 107200 | 31100 | 14900                    |       |
|                                     | 306 L4  | 809    | 1.2                                 | 7820                  | 1.1                   | 7.2                  | 71-80-90-100-112-132-160  | 43400               | 49200 | 96100  | 111900 | 32600 | 14900                    |       |
|                                     | 306 L4  | 877    | 1.1                                 | 7850                  | 1.1                   | 7.2                  | 71-80-90-100-112-132-160  | 44600               | 50500 | 98500  | 114700 | 33500 | 14900                    |       |
|                                     | 306 L4  | 1015   | 0.99                                | 9540                  | 1.1                   | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 1095   | 0.91                                | 7890                  | 0.85                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 1279   | 0.78                                | 8630                  | 0.80                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 1475   | 0.68                                | 10100                 | 0.81                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 1597   | 0.63                                | 8630                  | 0.64                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 1843   | 0.54                                | 10100                 | 0.65                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 2074   | 0.48                                | 7000                  | 0.40                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 2337   | 0.43                                | 7000                  | 0.35                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | 306 L4  | 2916   | 0.34                                | 7000                  | 0.28                  | 7.2                  | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |       |
|                                     | <b>500</b>  | 306 L1 | 3.60                                | 139                   | 5230                  | 75                   | 36  | 160-180-200-225-250 | 9000  | 10200  | 23300  | 27200 | 6760                     | 14900 |
|                                     |   | 306 L1 | 4.25                                | 118                   | 5410                  | 69                   | 36  | 160-180-200-225-250 | 9510  | 10800  | 24500  | 28500 | 7140                     | 14900 |
|                                     |   | 306 L1 | 5.33                                | 94                    | 5640                  | 57                   | 36  | 160-180-200-225-250 | 10300 | 11600  | 26200  | 30600 | 7700                     | 14900 |
| 306 L1                              |   | 6.20   | 81                                  | 5770                  | 50                    | 36                   | 160-180-200-225-250   | 10800               | 12200 | 27400  | 32000  | 8100  | 14900                    |       |
| 306 L1                              |   | 7.50   | 67                                  | 5040                  | 36                    | 36                   | 160-180-200-225-250   | 11500               | 13000 | 29100  | 33800  | 8630  | 14900                    |       |
| 306 L2                              |   | 13.0   | 39                                  | 6470                  | 28                    | 26                   | 132-160-180-200   | 13800               | 15600 | 34200  | 39900  | 10400 | 14900                    |       |
| 306 L2                              |   | 15.3   | 33                                  | 6830                  | 25                    | 26                   | 132-160-180-200   | 14600               | 16500 | 36000  | 41900  | 10900 | 14900                    |       |
| 306 L2                              |   | 18.1   | 27.7                                | 7760                  | 24                    | 26                   | 132-160-180-200   | 15400               | 17400 | 37800  | 44100  | 11600 | 14900                    |       |
| 306 L2                              |   | 22.7   | 22.1                                | 7820                  | 19.2                  | 26                   | 132-160-180-200   | 16600               | 18800 | 40500  | 47200  | 12500 | 14900                    |       |
| 306 L2                              |   | 26.4   | 19.0                                | 7190                  | 15.2                  | 26                   | 132-160-180-200   | 17500               | 19800 | 42400  | 49300  | 13100 | 14900                    |       |
| 306 L2                              |   | 28.4   | 17.6                                | 7530                  | 14.7                  | 26                   | 132-160-180-200   | 17900               | 20300 | 43400  | 50500  | 13500 | 14900                    |       |
| 306 L2                              |   | 33.1   | 15.1                                | 7640                  | 12.9                  | 26                   | 132-160-180-200   | 18800               | 21300 | 45400  | 52800  | 14200 | 14900                    |       |
| 306 L2                              |   | 38.4   | 13.0                                | 6490                  | 9.4                   | 26                   | 132-160-180-200   | 19800               | 22400 | 47500  | 55300  | 14900 | 14900                    |       |
| 306 L2                              |   | 46.5   | 10.8                                | 6500                  | 7.8                   | 26                   | 132-160-180-200   | 21100               | 23900 | 50200  | 58500  | 15900 | 14900                    |       |
| 306 L2                              |   | 56.3   | 8.9                                 | 5500                  | 5.4                   | 26                   | 132-160-180-200   | 22500               | 25500 | 53200  | 61900  | 16900 | 14900                    |       |
| 306 L2                              |   | 72.5   | 6.9                                 | 5500                  | 4.2                   | 26                   | 132-160-180-200   | 24500               | 27700 | 57400  | 66800  | 18400 | 14900                    |       |
| 306 L3                              |   | 53.2   | 9.4                                 | 9300                  | 10.0                  | 15.0                 | 71-80-90-100-112-132-160  | 22100               | 25000 | 52300  | 60900  | 16600 | 14900                    |       |
| 306 L3                              |   | 65.2   | 7.7                                 | 9320                  | 8.2                   | 15.0                 | 71-80-90-100-112-132-160  | 23600               | 26800 | 55600  | 64800  | 17800 | 14900                    |       |

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**306 L**  302

**10840 Nm**

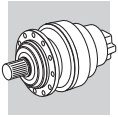
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 306 L3  | 77.0 | 6.5                                 | 9750                  | 7.3                   | 15.0                 | 71-80-90-100-112-132-160  | 25000               | 28300 | 58400  | 68100  | 18800 | 14900                    |
|                                     | 306 L3  | 81.9 | 6.1                                 | 7650                  | 5.4                   | 15.0                 | 71-80-90-100-112-132-160  | 25500               | 28900 | 59500  | 69300  | 19100 | 14900                    |
|                                     | 306 L3  | 88.3 | 5.7                                 | 9450                  | 6.1                   | 15.0                 | 71-80-90-100-112-132-160  | 26100               | 29600 | 60900  | 70900  | 19600 | 14900                    |
|                                     | 306 L3  | 104  | 4.8                                 | 9850                  | 5.4                   | 15.0                 | 71-80-90-100-112-132-160  | 27600               | 31300 | 64000  | 74500  | 20800 | 14900                    |
|                                     | 306 L3  | 112  | 4.5                                 | 7590                  | 3.9                   | 15.0                 | 71-80-90-100-112-132-160  | 28300               | 32100 | 65500  | 76200  | 21300 | 14900                    |
|                                     | 306 L3  | 121  | 4.1                                 | 8580                  | 4.1                   | 15.0                 | 71-80-90-100-112-132-160  | 29100               | 32900 | 67000  | 78000  | 21800 | 14900                    |
|                                     | 306 L3  | 141  | 3.5                                 | 8800                  | 3.6                   | 15.0                 | 71-80-90-100-112-132-160  | 30500               | 34600 | 70100  | 81600  | 23000 | 14900                    |
|                                     | 306 L3  | 152  | 3.3                                 | 7590                  | 2.9                   | 15.0                 | 71-80-90-100-112-132-160  | 31300               | 35500 | 71700  | 83500  | 23500 | 14900                    |
|                                     | 306 L3  | 190  | 2.6                                 | 7300                  | 2.2                   | 15.0                 | 71-80-90-100-112-132-160  | 33700               | 38200 | 76600  | 89200  | 25300 | 14900                    |
|                                     | 306 L3  | 205  | 2.4                                 | 9370                  | 2.6                   | 15.0                 | 71-80-90-100-112-132-160  | 34600               | 39200 | 78400  | 91300  | 26000 | 14900                    |
|                                     | 306 L3  | 222  | 2.3                                 | 7500                  | 1.9                   | 15.0                 | 71-80-90-100-112-132-160  | 35500               | 40300 | 80300  | 93500  | 26700 | 14900                    |
|                                     | 306 L3  | 238  | 2.1                                 | 9390                  | 2.3                   | 15.0                 | 71-80-90-100-112-132-160  | 36400               | 41200 | 82000  | 95500  | 27300 | 14900                    |
|                                     | 306 L3  | 268  | 1.9                                 | 6230                  | 1.3                   | 15.0                 | 71-80-90-100-112-132-160  | 37900               | 42900 | 85000  | 99000  | 28400 | 14900                    |
|                                     | 306 L3  | 288  | 1.7                                 | 6320                  | 1.3                   | 15.0                 | 71-80-90-100-112-132-160  | 38800               | 43900 | 86800  | 101100 | 29100 | 14900                    |
|                                     | 306 L3  | 325  | 1.5                                 | 6460                  | 1.1                   | 15.0                 | 71-80-90-100-112-132-160  | 40300               | 45700 | 90000  | 104800 | 30300 | 14900                    |
|                                     | 306 L3  | 405  | 1.2                                 | 6730                  | 0.95                  | 15.0                 | 71-80-90-100-112-132-160  | 43400               | 49200 | 96200  | 112000 | 32600 | 14900                    |
|                                     | 306 L4  | 391  | 1.3                                 | 8270                  | 1.3                   | 12.0                 | 71-80-90-100-112-132-160  | 42900               | 48600 | 95200  | 110800 | 32200 | 14900                    |
|                                     | 306 L4  | 444  | 1.1                                 | 10300                 | 1.4                   | 12.0                 | 71-80-90-100-112-132-160  | 44800               | 50700 | 98900  | 115100 | 33600 | 14900                    |
|                                     | 306 L4  | 509  | 0.98                                | 9450                  | 1.1                   | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 589  | 0.85                                | 10100                 | 1.0                   | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 636  | 0.79                                | 9450                  | 0.88                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 700  | 0.71                                | 10100                 | 0.85                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 809  | 0.62                                | 7890                  | 0.58                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 877  | 0.57                                | 7890                  | 0.53                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1015 | 0.49                                | 9540                  | 0.56                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1095 | 0.46                                | 7890                  | 0.43                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1279 | 0.39                                | 8630                  | 0.40                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1475 | 0.34                                | 10100                 | 0.40                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1597 | 0.31                                | 8630                  | 0.32                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 1843 | 0.27                                | 10100                 | 0.32                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 2074 | 0.24                                | 7000                  | 0.20                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 2337 | 0.21                                | 7000                  | 0.18                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |
|                                     | 306 L4  | 2916 | 0.17                                | 7000                  | 0.14                  | 12.0                 | 71-80-90-100-112-132-160  | 45000               | 51000 | 101000 | 119000 | 35000 | 14900                    |

**307 L**  314

**15680 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 307 L1  | 3.43 | 438                                 | 5110                  | 115                   | 22                       | 180-200-225-250   | 6820                | 8560  | 17800 | 23300 | 5930  | 18600                    |
|                                     | 307 L1  | 4.09 | 367                                 | 5260                  | 115                   | 22                       | 180-200-225-250   | 7230                | 9070  | 18700 | 24600 | 6290  | 21000                    |
|                                     | 307 L1  | 5.25 | 286                                 | 5540                  | 115                   | 22                       | 180-200-225-250   | 7860                | 9860  | 20200 | 26500 | 6830  | 21000                    |
|                                     | 307 L1  | 6.23 | 241                                 | 5750                  | 115                   | 22                       | 180-200-225-250   | 8320                | 10400 | 21300 | 27900 | 7230  | 21000                    |
|                                     | 307 L2  | 12.3 | 122                                 | 7510                  | 60                    | 18.0                     | 132-160-180-200   | 10500               | 13100 | 26100 | 34200 | 9080  | 18600                    |
|                                     | 307 L2  | 14.7 | 102                                 | 7730                  | 60                    | 18.0                     | 132-160-180-200   | 11100               | 13900 | 27500 | 36100 | 9640  | 21000                    |
|                                     | 307 L2  | 17.4 | 86                                  | 8120                  | 60                    | 18.0                     | 132-160-180-200   | 11700               | 14700 | 28900 | 37900 | 10200 | 21000                    |
|                                     | 307 L2  | 21.8 | 69                                  | 8690                  | 60                    | 18.0                     | 132-160-180-200   | 12600               | 15900 | 31000 | 40600 | 11000 | 21000                    |
|                                     | 307 L2  | 25.4 | 59                                  | 9090                  | 60                    | 18.0                     | 132-160-180-200   | 13300               | 16700 | 32400 | 42500 | 11600 | 21000                    |
|                                     | 307 L2  | 28.0 | 54                                  | 9150                  | 55                    | 18.0                     | 132-160-180-200   | 13700               | 17200 | 33400 | 43700 | 11900 | 21000                    |
|                                     | 307 L2  | 30.7 | 49                                  | 9590                  | 52                    | 18.0                     | 132-160-180-200   | 14200               | 17800 | 34300 | 45000 | 12300 | 21000                    |
|                                     | 307 L2  | 32.6 | 46                                  | 9410                  | 48                    | 18.0                     | 132-160-180-200   | 14400               | 18100 | 34900 | 45800 | 12600 | 21000                    |
| 307 L2                              | 38.6  | 39   | 8310                                | 36                    | 18.0                  | 132-160-180-200          | 15300   | 19200               | 36800 | 48200 | 13300 | 21000 |                          |
| 307 L2                              | 46.7  | 32   | 8360                                | 30                    | 18.0                  | 132-160-180-200          | 16300   | 20400               | 38900 | 51000 | 14200 | 21000 |                          |
| 307 L3                              | 51.3  | 29.3 | 10700                               | 30                    | 11.0                  | 71-80-90-100-112-132-160 | 16800   | 21100               | 40000 | 52400 | 14600 | 21000 |                          |
| 307 L3                              | 60.5  | 24.8 | 11100                               | 30                    | 11.0                  | 71-80-90-100-112-132-160 | 17800   | 22300               | 42100 | 55100 | 15400 | 21000 |                          |
| 307 L3                              | 74.1  | 20.2 | 11600                               | 27                    | 11.0                  | 71-80-90-100-112-132-160 | 19000   | 23800               | 44700 | 58600 | 16500 | 21000 |                          |
| 307 L3                              | 80.6  | 18.6 | 10200                               | 22                    | 11.0                  | 71-80-90-100-112-132-160 | 19500   | 24500               | 45800 | 60100 | 17000 | 21000 |                          |
| 307 L3                              | 93.0  | 16.1 | 12200                               | 23                    | 11.0                  | 71-80-90-100-112-132-160 | 20500   | 25700               | 47900 | 62700 | 17800 | 21000 |                          |
| 307 L3                              | 100   | 15.0 | 12400                               | 21                    | 11.0                  | 71-80-90-100-112-132-160 | 21000   | 26400               | 49000 | 64100 | 18300 | 21000 |                          |
| 307 L3                              | 113   | 13.2 | 10500                               | 16.0                  | 11.0                  | 71-80-90-100-112-132-160 | 21900   | 27500               | 50800 | 66500 | 19000 | 21000 |                          |

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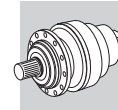


### 307 L

314



### 15680 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC) | Rn <sub>2</sub> [N]      |       |       |        |        | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---------|--------------------------|-------|-------|--------|--------|--------------------------|-------|
|                                     |        |                                     |                       |                       |                      |         | MC                       | MZ    | HC/PC | HZ/PZ  | FZ     |                          |       |
| <b>1500</b>                         | 307 L3 | 126                                 | 11.9                  | 13000                 | 17.8                 | 11.0    | 71-80-90-100-112-132-160 | 22700 | 28400 | 52400  | 68700  | 19700                    | 21000 |
|                                     | 307 L3 | 139                                 | 10.8                  | 10700                 | 13.3                 | 11.0    | 71-80-90-100-112-132-160 | 23400 | 29400 | 54000  | 70700  | 20400                    | 21000 |
|                                     | 307 L3 | 146                                 | 10.3                  | 13400                 | 15.8                 | 11.0    | 71-80-90-100-112-132-160 | 23800 | 29900 | 54800  | 71800  | 20700                    | 21000 |
|                                     | 307 L3 | 162                                 | 9.3                   | 10800                 | 11.6                 | 11.0    | 71-80-90-100-112-132-160 | 24600 | 30900 | 56500  | 74000  | 21400                    | 21000 |
|                                     | 307 L3 | 177                                 | 8.5                   | 12300                 | 12.0                 | 11.0    | 71-80-90-100-112-132-160 | 25400 | 31900 | 58000  | 76100  | 22100                    | 21000 |
|                                     | 307 L3 | 202                                 | 7.4                   | 11000                 | 9.4                  | 11.0    | 71-80-90-100-112-132-160 | 26500 | 33300 | 60400  | 79100  | 23100                    | 21000 |
|                                     | 307 L3 | 221                                 | 6.8                   | 12700                 | 9.9                  | 11.0    | 71-80-90-100-112-132-160 | 27300 | 34300 | 62000  | 81300  | 23800                    | 21000 |
|                                     | 307 L3 | 239                                 | 6.3                   | 8700                  | 6.3                  | 11.0    | 71-80-90-100-112-132-160 | 28100 | 35200 | 63500  | 83300  | 24400                    | 21000 |
|                                     | 307 L3 | 284                                 | 5.3                   | 11300                 | 6.8                  | 11.0    | 71-80-90-100-112-132-160 | 29700 | 37300 | 66900  | 87600  | 25800                    | 21000 |
|                                     | 307 L3 | 336                                 | 4.5                   | 8840                  | 4.5                  | 11.0    | 71-80-90-100-112-132-160 | 31500 | 39500 | 70400  | 92200  | 27300                    | 21000 |
|                                     | 307 L4 | 349                                 | 4.3                   | 14900                 | 7.6                  | 7.5     | 71-80-90-100-112-132-160 | 31800 | 40000 | 71200  | 93300  | 27700                    | 21000 |
|                                     | 307 L4 | 406                                 | 3.7                   | 11900                 | 5.2                  | 7.5     | 71-80-90-100-112-132-160 | 33500 | 42000 | 74400  | 97500  | 29100                    | 21000 |
|                                     | 307 L4 | 465                                 | 3.2                   | 12200                 | 4.6                  | 7.5     | 71-80-90-100-112-132-160 | 35000 | 44000 | 77500  | 101600 | 30500                    | 21000 |
|                                     | 307 L4 | 509                                 | 2.9                   | 14000                 | 4.9                  | 7.5     | 71-80-90-100-112-132-160 | 36100 | 45300 | 79700  | 104400 | 31400                    | 21000 |
|                                     | 307 L4 | 579                                 | 2.6                   | 14900                 | 4.6                  | 7.5     | 71-80-90-100-112-132-160 | 37700 | 47300 | 82800  | 108500 | 32800                    | 21000 |
|                                     | 307 L4 | 654                                 | 2.3                   | 12900                 | 3.5                  | 7.5     | 71-80-90-100-112-132-160 | 39200 | 49200 | 85900  | 112600 | 34100                    | 21000 |
|                                     | 307 L4 | 722                                 | 2.1                   | 15000                 | 3.7                  | 7.5     | 71-80-90-100-112-132-160 | 40600 | 50900 | 88500  | 116000 | 35300                    | 21000 |
|                                     | 307 L4 | 801                                 | 1.9                   | 13300                 | 3.0                  | 7.5     | 71-80-90-100-112-132-160 | 42000 | 52700 | 91300  | 119600 | 36500                    | 21000 |
|                                     | 307 L4 | 906                                 | 1.7                   | 15200                 | 3.0                  | 7.5     | 71-80-90-100-112-132-160 | 43800 | 54900 | 94700  | 124200 | 38000                    | 21000 |
|                                     | 307 L4 | 999                                 | 1.5                   | 13800                 | 2.5                  | 7.5     | 71-80-90-100-112-132-160 | 45200 | 56700 | 97600  | 127800 | 39300                    | 21000 |
|                                     | 307 L4 | 1157                                | 1.3                   | 14200                 | 2.2                  | 7.5     | 71-80-90-100-112-132-160 | 47500 | 59600 | 101900 | 133600 | 41300                    | 21000 |
|                                     | 307 L4 | 1274                                | 1.2                   | 12300                 | 1.7                  | 7.5     | 71-80-90-100-112-132-160 | 49000 | 61500 | 104900 | 137500 | 42600                    | 21000 |
|                                     | 307 L4 | 1408                                | 1.1                   | 15600                 | 2.0                  | 7.5     | 71-80-90-100-112-132-160 | 50700 | 63600 | 108100 | 141700 | 44100                    | 21000 |
|                                     | 307 L4 | 1591                                | 0.94                  | 15000                 | 1.7                  | 7.5     | 71-80-90-100-112-132-160 | 52000 | 65000 | 109000 | 145000 | 45000                    | 21000 |
|                                     | 307 L4 | 1767                                | 0.85                  | 15700                 | 1.6                  | 7.5     | 71-80-90-100-112-132-160 | 52000 | 65000 | 109000 | 145000 | 45000                    | 21000 |
|                                     | 307 L4 | 2041                                | 0.73                  | 14300                 | 1.2                  | 7.5     | 71-80-90-100-112-132-160 | 52000 | 65000 | 109000 | 145000 | 45000                    | 21000 |
|                                     | 307 L4 | 2423                                | 0.62                  | 11000                 | 0.81                 | 7.5     | 71-80-90-100-112-132-160 | 52000 | 65000 | 109000 | 145000 | 45000                    | 21000 |
| <b>1000</b>                         | 307 L1 | 3.43                                | 292                   | 5770                  | 115                  | 26      | 180-200-225-250          | 7810  | 9790  | 20100  | 26300  | 6790                     | 18600 |
|                                     | 307 L1 | 4.09                                | 244                   | 5940                  | 115                  | 26      | 180-200-225-250          | 8280  | 10400 | 21200  | 27700  | 7200                     | 21000 |
|                                     | 307 L1 | 5.25                                | 190                   | 6260                  | 115                  | 26      | 180-200-225-250          | 9000  | 11300 | 22800  | 29900  | 7820                     | 21000 |
|                                     | 307 L1 | 6.23                                | 160                   | 6500                  | 113                  | 26      | 180-200-225-250          | 9530  | 12000 | 24000  | 31500  | 8280                     | 21000 |
|                                     | 307 L2 | 12.3                                | 81                    | 8060                  | 60                   | 22      | 132-160-180-200          | 12000 | 15000 | 29500  | 38600  | 10400                    | 18600 |
|                                     | 307 L2 | 14.7                                | 68                    | 8720                  | 60                   | 22      | 132-160-180-200          | 12700 | 15900 | 31100  | 40700  | 11000                    | 21000 |
|                                     | 307 L2 | 17.4                                | 58                    | 9170                  | 59                   | 22      | 132-160-180-200          | 13400 | 16800 | 32700  | 42800  | 11700                    | 21000 |
|                                     | 307 L2 | 21.8                                | 46                    | 9740                  | 50                   | 22      | 132-160-180-200          | 14500 | 18100 | 35000  | 45800  | 12600                    | 21000 |
|                                     | 307 L2 | 25.4                                | 39                    | 10100                 | 44                   | 22      | 132-160-180-200          | 15200 | 19100 | 36600  | 48000  | 13200                    | 21000 |
|                                     | 307 L2 | 28.0                                | 36                    | 9630                  | 38                   | 22      | 132-160-180-200          | 15700 | 19700 | 37700  | 49400  | 13700                    | 21000 |
|                                     | 307 L2 | 30.7                                | 33                    | 10200                 | 37                   | 22      | 132-160-180-200          | 16200 | 20300 | 38800  | 50800  | 14100                    | 21000 |
|                                     | 307 L2 | 32.6                                | 31                    | 9760                  | 33                   | 22      | 132-160-180-200          | 16500 | 20700 | 39400  | 51700  | 14400                    | 21000 |
|                                     | 307 L2 | 38.6                                | 25.9                  | 8430                  | 24                   | 22      | 132-160-180-200          | 17500 | 22000 | 41500  | 54400  | 15200                    | 21000 |
|                                     | 307 L2 | 46.7                                | 21.4                  | 8480                  | 20                   | 22      | 132-160-180-200          | 18600 | 23400 | 44000  | 57600  | 16200                    | 21000 |
|                                     | 307 L3 | 51.3                                | 19.5                  | 11700                 | 26                   | 13.2    | 71-80-90-100-112-132-160 | 19200 | 24100 | 45200  | 59200  | 16700                    | 21000 |
|                                     | 307 L3 | 60.5                                | 16.5                  | 12100                 | 23                   | 13.2    | 71-80-90-100-112-132-160 | 20300 | 25500 | 47500  | 62300  | 17700                    | 21000 |
|                                     | 307 L3 | 74.1                                | 13.5                  | 12700                 | 19.6                 | 13.2    | 71-80-90-100-112-132-160 | 21700 | 27300 | 50500  | 66200  | 18900                    | 21000 |
|                                     | 307 L3 | 80.6                                | 12.4                  | 10600                 | 15.1                 | 13.2    | 71-80-90-100-112-132-160 | 22400 | 28100 | 51800  | 67800  | 19400                    | 21000 |
|                                     | 307 L3 | 93.0                                | 10.8                  | 13300                 | 16.4                 | 13.2    | 71-80-90-100-112-132-160 | 23500 | 29400 | 54000  | 70800  | 20400                    | 21000 |
|                                     | 307 L3 | 100                                 | 10.0                  | 13500                 | 15.5                 | 13.2    | 71-80-90-100-112-132-160 | 24100 | 30200 | 55300  | 72400  | 20900                    | 21000 |
|                                     | 307 L3 | 113                                 | 8.8                   | 10900                 | 11.0                 | 13.2    | 71-80-90-100-112-132-160 | 25000 | 31400 | 57300  | 75100  | 21800                    | 21000 |
|                                     | 307 L3 | 126                                 | 7.9                   | 14000                 | 12.7                 | 13.2    | 71-80-90-100-112-132-160 | 25900 | 32600 | 59200  | 77600  | 22600                    | 21000 |
|                                     | 307 L3 | 139                                 | 7.2                   | 11000                 | 9.1                  | 13.2    | 71-80-90-100-112-132-160 | 26800 | 33600 | 60900  | 79900  | 23300                    | 21000 |
|                                     | 307 L3 | 146                                 | 6.8                   | 13800                 | 10.8                 | 13.2    | 71-80-90-100-112-132-160 | 27300 | 34200 | 61900  | 81100  | 23700                    | 21000 |
|                                     | 307 L3 | 162                                 | 6.2                   | 11100                 | 7.9                  | 13.2    | 71-80-90-100-112-132-160 | 28200 | 35400 | 63800  | 83600  | 24500                    | 21000 |
|                                     | 307 L3 | 177                                 | 5.6                   | 12300                 | 8.0                  | 13.2    | 71-80-90-100-112-132-160 | 29100 | 36500 | 65600  | 85900  | 25300                    | 21000 |
|                                     | 307 L3 | 202                                 | 5.0                   | 11300                 | 6.4                  | 13.2    | 71-80-90-100-112-132-160 | 30400 | 38100 | 68200  | 89300  | 26400                    | 21000 |
|                                     | 307 L3 | 221                                 | 4.5                   | 13000                 | 6.8                  | 13.2    | 71-80-90-100-112-132-160 | 31300 | 39300 | 70100  | 91800  | 27200                    | 21000 |
|                                     | 307 L3 | 239                                 | 4.2                   | 8920                  | 4.3                  | 13.2    | 71-80-90-100-112-132-160 | 32100 | 40300 | 71800  | 94000  | 27900                    | 21000 |
|                                     | 307 L3 | 284                                 | 3.5                   | 12000                 | 4.8                  | 13.2    | 71-80-90-100-112-132-160 | 34000 | 42700 | 75500  | 98900  | 29600                    | 21000 |
|                                     | 307 L3 | 336                                 | 3.0                   | 9370                  | 3.2                  | 13.2    | 71-80-90-100-112-132-160 | 36000 | 45200 | 79500  | 104200 | 31300                    | 21000 |
|                                     | 307 L4 | 349                                 | 2.9                   | 14900                 | 5.0                  | 9.0     | 71-80-90-100-112-132-160 | 36500 | 45700 | 80400  | 105300 | 31700                    | 21000 |
|                                     | 307 L4 | 406                                 | 2.5                   | 12700                 | 3.7                  | 9.0     | 71-80-90-100-112-132-160 | 38300 | 48100 | 84100  | 110200 | 33300                    | 21000 |
|                                     | 307 L4 | 465                                 | 2.2                   | 13000                 | 3.3                  | 9.0     | 71-80-90-100-112-132-160 | 40100 | 50300 | 87600  | 114800 | 34900                    | 21000 |



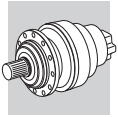
**307 L**  314

**15680 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|--------|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>1000</b>                         | 307 L4  | 509  | 2.0                                 | 14300                 | 3.3                   | 9.0                      | 71-80-90-100-112-132-160  | 41300               | 51900  | 90000  | 117900 | 35900 | 21000                    |
|                                     | 307 L4  | 579  | 1.7                                 | 15200                 | 3.1                   | 9.0                      | 71-80-90-100-112-132-160  | 43100               | 54100  | 93500  | 122600 | 37500 | 21000                    |
|                                     | 307 L4  | 654  | 1.5                                 | 13800                 | 2.5                   | 9.0                      | 71-80-90-100-112-132-160  | 44900               | 56400  | 97000  | 127100 | 39100 | 21000                    |
|                                     | 307 L4  | 722  | 1.4                                 | 15400                 | 2.5                   | 9.0                      | 71-80-90-100-112-132-160  | 46400               | 58300  | 100000 | 131000 | 40400 | 21000                    |
|                                     | 307 L4  | 801  | 1.2                                 | 14300                 | 2.1                   | 9.0                      | 71-80-90-100-112-132-160  | 48100               | 60300  | 103100 | 135100 | 41800 | 21000                    |
|                                     | 307 L4  | 906  | 1.1                                 | 15600                 | 2.0                   | 9.0                      | 71-80-90-100-112-132-160  | 50100               | 62900  | 107000 | 140200 | 43500 | 21000                    |
|                                     | 307 L4  | 999  | 1.0                                 | 14800                 | 1.8                   | 9.0                      | 71-80-90-100-112-132-160  | 51800               | 64900  | 109000 | 144400 | 45000 | 21000                    |
|                                     | 307 L4  | 1157 | 0.86                                | 14800                 | 1.5                   | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 1274 | 0.78                                | 12300                 | 1.1                   | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 1408 | 0.71                                | 15700                 | 1.3                   | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 1591 | 0.63                                | 15000                 | 1.1                   | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 1767 | 0.57                                | 15700                 | 1.0                   | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 2041 | 0.49                                | 14300                 | 0.83                  | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
|                                     | 307 L4  | 2423 | 0.41                                | 11000                 | 0.54                  | 9.0                      | 71-80-90-100-112-132-160  | 52000               | 65000  | 109000 | 145000 | 45000 | 21000                    |
| <b>500</b>                          | 307 L1  | 3.43 | 146                                 | 7110                  | 112                   | 44                       | 180-200-225-250   | 9840                | 12300  | 24700  | 32400  | 8550  | 18600                    |
|                                     | 307 L1  | 4.09 | 122                                 | 7320                  | 97                    | 44                       | 180-200-225-250   | 10400               | 13100  | 26100  | 34200  | 9070  | 21000                    |
|                                     | 307 L1  | 5.25 | 95                                  | 7700                  | 79                    | 44                       | 180-200-225-250   | 11300               | 14200  | 28100  | 36800  | 9850  | 21000                    |
|                                     | 307 L1  | 6.23 | 80                                  | 7720                  | 67                    | 44                       | 180-200-225-250   | 12000               | 15100  | 29600  | 38800  | 10400 | 21000                    |
| 307 L2                              | 12.3  | 41   | 8390                                | 38                    | 36                    | 132-160-180-200          | 15100   | 18900               | 36300  | 47600  | 13100  | 18600 |                          |
| 307 L2                              | 14.7  | 34   | 10400                               | 39                    | 36                    | 132-160-180-200          | 16000   | 20100               | 38300  | 50200  | 13900  | 21000 |                          |
| 307 L2                              | 17.4  | 28.8 | 10800                               | 34                    | 36                    | 132-160-180-200          | 16900   | 21200               | 40200  | 52700  | 14700  | 21000 |                          |
| 307 L2                              | 21.8  | 22.9 | 11300                               | 29                    | 36                    | 132-160-180-200          | 18200   | 22900               | 43100  | 56400  | 15800  | 21000 |                          |
| 307 L2                              | 25.4  | 19.7 | 11700                               | 26                    | 36                    | 132-160-180-200          | 19200   | 24000               | 45100  | 59000  | 16700  | 21000 |                          |
| 307 L2                              | 28.0  | 17.9 | 10200                               | 20                    | 36                    | 132-160-180-200          | 19800   | 24900               | 46400  | 60800  | 17200  | 21000 |                          |
| 307 L2                              | 30.7  | 16.3 | 11400                               | 21                    | 36                    | 132-160-180-200          | 20400   | 25600               | 47700  | 62500  | 17700  | 21000 |                          |
| 307 L2                              | 32.6  | 15.4 | 10400                               | 17.7                  | 36                    | 132-160-180-200          | 20800   | 26100               | 48600  | 63600  | 18100  | 21000 |                          |
| 307 L2                              | 38.6  | 12.9 | 8620                                | 12.4                  | 36                    | 132-160-180-200          | 22000   | 27700               | 51100  | 67000  | 19200  | 21000 |                          |
| 307 L2                              | 46.7  | 10.7 | 8680                                | 10.3                  | 36                    | 132-160-180-200          | 23500   | 29500               | 54100  | 70900  | 20400  | 21000 |                          |
| 307 L3                              | 51.3  | 9.8  | 13600                               | 15.2                  | 22                    | 71-80-90-100-112-132-160 | 24200   | 30400               | 55600  | 72900  | 21100  | 21000 |                          |
| 307 L3                              | 60.5  | 8.3  | 13900                               | 13.2                  | 22                    | 71-80-90-100-112-132-160 | 25600   | 32100               | 58500  | 76600  | 22300  | 21000 |                          |
| 307 L3                              | 74.1  | 6.7  | 14300                               | 11.0                  | 22                    | 71-80-90-100-112-132-160 | 27400   | 34400               | 62200  | 81500  | 23800  | 21000 |                          |
| 307 L3                              | 80.6  | 6.2  | 11100                               | 7.9                   | 22                    | 71-80-90-100-112-132-160 | 28200   | 35300               | 63700  | 83500  | 24500  | 21000 |                          |
| 307 L3                              | 93.0  | 5.4  | 14700                               | 9.1                   | 22                    | 71-80-90-100-112-132-160 | 29600   | 37100               | 66500  | 87200  | 25700  | 21000 |                          |
| 307 L3                              | 100   | 5.0  | 14900                               | 8.5                   | 22                    | 71-80-90-100-112-132-160 | 30300   | 38000               | 68100  | 89200  | 26300  | 21000 |                          |
| 307 L3                              | 113   | 4.4  | 11500                               | 5.8                   | 22                    | 71-80-90-100-112-132-160 | 31600   | 39600               | 70600  | 92500  | 27400  | 21000 |                          |
| 307 L3                              | 126   | 4.0  | 14900                               | 6.8                   | 22                    | 71-80-90-100-112-132-160 | 32700   | 41000               | 72900  | 95500  | 28400  | 21000 |                          |
| 307 L3                              | 139   | 3.6  | 11900                               | 4.9                   | 22                    | 71-80-90-100-112-132-160 | 33800   | 42400               | 75000  | 98300  | 29400  | 21000 |                          |
| 307 L3                              | 146   | 3.4  | 14000                               | 5.5                   | 22                    | 71-80-90-100-112-132-160 | 34400   | 43100               | 76200  | 99900  | 29900  | 21000 |                          |
| 307 L3                              | 162   | 3.1  | 12300                               | 4.4                   | 22                    | 71-80-90-100-112-132-160 | 35500   | 44600               | 78500  | 102900 | 30900  | 21000 |                          |
| 307 L3                              | 177   | 2.8  | 12300                               | 4.0                   | 22                    | 71-80-90-100-112-132-160 | 36600   | 45900               | 80700  | 105800 | 31800  | 21000 |                          |
| 307 L3                              | 202   | 2.5  | 12700                               | 3.6                   | 22                    | 71-80-90-100-112-132-160 | 38200   | 48000               | 83900  | 110000 | 33200  | 21000 |                          |
| 307 L3                              | 221   | 2.3  | 13900                               | 3.6                   | 22                    | 71-80-90-100-112-132-160 | 39400   | 49500               | 86300  | 113000 | 34300  | 21000 |                          |
| 307 L3                              | 239   | 2.1  | 9860                                | 2.4                   | 22                    | 71-80-90-100-112-132-160 | 40500   | 50800               | 88300  | 115800 | 35200  | 21000 |                          |
| 307 L3                              | 284   | 1.8  | 13300                               | 2.7                   | 22                    | 71-80-90-100-112-132-160 | 42800   | 53800               | 93000  | 121800 | 37200  | 21000 |                          |
| 307 L3                              | 336   | 1.5  | 10400                               | 1.8                   | 22                    | 71-80-90-100-112-132-160 | 45400   | 56900               | 97900  | 128200 | 39400  | 21000 |                          |
| 307 L4                              | 349   | 1.4  | 15400                               | 2.6                   | 15.0                  | 71-80-90-100-112-132-160 | 45900   | 57600               | 98900  | 129700 | 39900  | 21000 |                          |
| 307 L4                              | 406   | 1.2  | 14300                               | 2.1                   | 15.0                  | 71-80-90-100-112-132-160 | 48300   | 60600               | 103500 | 135600 | 42000  | 21000 |                          |
| 307 L4                              | 465   | 1.1  | 14700                               | 1.9                   | 15.0                  | 71-80-90-100-112-132-160 | 50500   | 63400               | 107800 | 141300 | 43900  | 21000 |                          |
| 307 L4                              | 509   | 0.98 | 15000                               | 1.7                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 579   | 0.86 | 15700                               | 1.6                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 654   | 0.77 | 14800                               | 1.3                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 722   | 0.69 | 15700                               | 1.3                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 801   | 0.62 | 14800                               | 1.1                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 906   | 0.55 | 15700                               | 1.0                   | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 999   | 0.50 | 14800                               | 0.88                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 1157  | 0.43 | 14800                               | 0.76                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 1274  | 0.39 | 12300                               | 0.57                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 1408  | 0.36 | 15700                               | 0.66                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 1591  | 0.31 | 15000                               | 0.56                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 1767  | 0.28 | 15700                               | 0.52                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 2041  | 0.24 | 14300                               | 0.42                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 L4                              | 2423  | 0.21 | 11000                               | 0.27                  | 15.0                  | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |

**B**



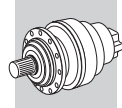


### 309 L

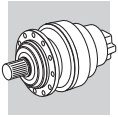
326

### 23240 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N]      |    |        |        |        | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|--------------------------|----|--------|--------|--------|--------------------------|-------|
|                                     |        |                                     |                       |                       |                      |                          | MC                       | MZ | HC/PC  | HZ/PZ  | FZ     |                          |       |
| <b>1500</b>                         | 309 L1 | 3.43                                | 438                   | 7010                  | 150                  | 25                       | 180-200-225-250          | —  | —      | 18100  | 23300  | 4740                     | 27900 |
|                                     | 309 L1 | 4.09                                | 367                   | 7220                  | 150                  | 25                       | 180-200-225-250          | —  | —      | 19000  | 24600  | 5030                     | 29000 |
|                                     | 309 L1 | 5.25                                | 286                   | 7600                  | 150                  | 25                       | 180-200-225-250          | —  | —      | 20500  | 26500  | 5470                     | 29000 |
|                                     | 309 L1 | 6.23                                | 241                   | 7900                  | 150                  | 25                       | 180-200-225-250          | —  | —      | 21600  | 27900  | 5790                     | 29000 |
|                                     | 309 L2 | 12.3                                | 122                   | 7890                  | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 26500  | 34200  | 7270                     | 27900 |
|                                     | 309 L2 | 14.7                                | 102                   | 9410                  | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 28000  | 36100  | 7710                     | 29000 |
|                                     | 309 L2 | 17.4                                | 86                    | 9730                  | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 29400  | 37900  | 8150                     | 29000 |
|                                     | 309 L2 | 21.8                                | 69                    | 10100                 | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 31500  | 40600  | 8790                     | 29000 |
|                                     | 309 L2 | 25.4                                | 59                    | 10500                 | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 32900  | 42500  | 9240                     | 29000 |
|                                     | 309 L2 | 28.0                                | 54                    | 12500                 | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 33900  | 43700  | 9550                     | 29000 |
|                                     | 309 L2 | 32.6                                | 46                    | 13000                 | 60                   | 18.0                     | 132-160-180-200          | —  | —      | 35500  | 45800  | 10000                    | 29000 |
|                                     | 309 L2 | 38.6                                | 39                    | 12500                 | 54                   | 18.0                     | 132-160-180-200          | —  | —      | 37400  | 48200  | 10600                    | 29000 |
|                                     | 309 L2 | 46.7                                | 32                    | 12500                 | 45                   | 18.0                     | 132-160-180-200          | —  | —      | 39600  | 51000  | 11300                    | 29000 |
|                                     | 309 L3 | 51.3                                | 29.3                  | 13400                 | 30                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 40700  | 52400  | 11700                    | 29000 |
|                                     | 309 L3 | 60.5                                | 24.8                  | 14100                 | 30                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 42700  | 55100  | 12300                    | 29000 |
|                                     | 309 L3 | 74.1                                | 20.2                  | 15000                 | 30                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 45400  | 58600  | 13200                    | 29000 |
|                                     | 309 L3 | 80.6                                | 18.6                  | 14800                 | 30                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 46600  | 60100  | 13600                    | 29000 |
|                                     | 309 L3 | 93.0                                | 16.1                  | 15100                 | 28                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 48600  | 62700  | 14200                    | 29000 |
|                                     | 309 L3 | 100                                 | 15                    | 16500                 | 28                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 49700  | 64100  | 14600                    | 29000 |
|                                     | 309 L3 | 113                                 | 13.2                  | 15500                 | 24                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 51600  | 66500  | 15200                    | 29000 |
|                                     | 309 L3 | 126                                 | 11.9                  | 16400                 | 22                   | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 53200  | 68700  | 15800                    | 29000 |
|                                     | 309 L3 | 139                                 | 10.8                  | 16000                 | 19.9                 | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 54800  | 70700  | 16300                    | 29000 |
|                                     | 309 L3 | 162                                 | 9.3                   | 16300                 | 17.3                 | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 57400  | 74000  | 17100                    | 29000 |
|                                     | 309 L3 | 183                                 | 8.2                   | 14300                 | 13.5                 | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 59500  | 76800  | 17800                    | 29000 |
|                                     | 309 L3 | 202                                 | 7.4                   | 16500                 | 14.1                 | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 61300  | 79100  | 18400                    | 29000 |
|                                     | 309 L3 | 223                                 | 6.7                   | 13000                 | 10.0                 | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 63200  | 81500  | 19100                    | 29000 |
|                                     | 309 L3 | 239                                 | 6.3                   | 13000                 | 9.4                  | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 64600  | 83300  | 19500                    | 29000 |
|                                     | 309 L3 | 284                                 | 5.3                   | 15700                 | 9.6                  | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 67900  | 87600  | 20700                    | 29000 |
|                                     | 309 L3 | 336                                 | 4.5                   | 13200                 | 6.8                  | 11.0                     | 71-80-90-100-112-132-160 | —  | —      | 71500  | 92200  | 21900                    | 29000 |
|                                     | 309 L4 | 349                                 | 4.3                   | 21300                 | 10.8                 | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 72300  | 93300  | 22100                    | 29000 |
|                                     | 309 L4 | 406                                 | 3.7                   | 17800                 | 7.8                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 75600  | 97500  | 23300                    | 29000 |
|                                     | 309 L4 | 465                                 | 3.2                   | 18300                 | 7.0                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 78800  | 101600 | 24400                    | 29000 |
|                                     | 309 L4 | 509                                 | 2.9                   | 14300                 | 5.0                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 81000  | 104400 | 25100                    | 29000 |
|                                     | 309 L4 | 579                                 | 2.6                   | 21300                 | 6.5                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 84100  | 108500 | 26200                    | 29000 |
|                                     | 309 L4 | 654                                 | 2.3                   | 18100                 | 4.9                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 87300  | 112600 | 27300                    | 29000 |
|                                     | 309 L4 | 722                                 | 2.1                   | 21300                 | 5.2                  | 7.5                      | 71-80-90-100-112-132-160 | —  | —      | 89900  | 116000 | 28200                    | 29000 |
| 309 L4                              | 801    | 1.9                                 | 18200                 | 4.0                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 92800  | 119600 | 29200  | 29000                    |       |
| 309 L4                              | 906    | 1.7                                 | 17900                 | 3.5                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 96300  | 124200 | 30400  | 29000                    |       |
| 309 L4                              | 999    | 1.5                                 | 18200                 | 3.2                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 99100  | 127800 | 31400  | 29000                    |       |
| 309 L4                              | 1149   | 1.3                                 | 16200                 | 2.5                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 103400 | 133300 | 32900  | 29000                    |       |
| 309 L4                              | 1286   | 1.2                                 | 16500                 | 2.3                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 106900 | 137900 | 34200  | 29000                    |       |
| 309 L4                              | 1380   | 1.1                                 | 16700                 | 2.2                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 109200 | 140900 | 35000  | 29000                    |       |
| 309 L4                              | 1605   | 0.93                                | 17000                 | 1.9                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 110000 | 145000 | 36000  | 29000                    |       |
| 309 L4                              | 1723   | 0.87                                | 17000                 | 1.8                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 110000 | 145000 | 36000  | 29000                    |       |
| 309 L4                              | 2003   | 0.75                                | 17000                 | 1.5                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 110000 | 145000 | 36000  | 29000                    |       |
| 309 L4                              | 2423   | 0.62                                | 17000                 | 1.2                   | 7.5                  | 71-80-90-100-112-132-160 | —                        | —  | 110000 | 145000 | 36000  | 29000                    |       |
| <b>1000</b>                         | 309 L1 | 3.43                                | 292                   | 7920                  | 150                  | 30                       | 180-200-225-250          | —  | —      | 20400  | 26300  | 5430                     | 27900 |
|                                     | 309 L1 | 4.09                                | 244                   | 8150                  | 150                  | 30                       | 180-200-225-250          | —  | —      | 21500  | 27700  | 5760                     | 29000 |
|                                     | 309 L1 | 5.25                                | 190                   | 8580                  | 150                  | 30                       | 180-200-225-250          | —  | —      | 23200  | 29900  | 6260                     | 29000 |
|                                     | 309 L1 | 6.23                                | 160                   | 8920                  | 150                  | 30                       | 180-200-225-250          | —  | —      | 24400  | 31500  | 6620                     | 29000 |
|                                     | 309 L2 | 12.3                                | 81                    | 8900                  | 60                   | 22                       | 132-160-180-200          | —  | —      | 30000  | 38600  | 8320                     | 27900 |
|                                     | 309 L2 | 14.7                                | 68                    | 10600                 | 60                   | 22                       | 132-160-180-200          | —  | —      | 31600  | 40700  | 8820                     | 29000 |
|                                     | 309 L2 | 17.4                                | 58                    | 11000                 | 60                   | 22                       | 132-160-180-200          | —  | —      | 33200  | 42800  | 9330                     | 29000 |
|                                     | 309 L2 | 21.8                                | 46                    | 11400                 | 58                   | 22                       | 132-160-180-200          | —  | —      | 35500  | 45800  | 10100                    | 29000 |
|                                     | 309 L2 | 25.4                                | 39                    | 11500                 | 50                   | 22                       | 132-160-180-200          | —  | —      | 37200  | 48000  | 10600                    | 29000 |
|                                     | 309 L2 | 28.0                                | 36                    | 13500                 | 53                   | 22                       | 132-160-180-200          | —  | —      | 38300  | 49400  | 10900                    | 29000 |
|                                     | 309 L2 | 32.6                                | 31                    | 13800                 | 47                   | 22                       | 132-160-180-200          | —  | —      | 40100  | 51700  | 11500                    | 29000 |
|                                     | 309 L2 | 38.6                                | 25.9                  | 12600                 | 36                   | 22                       | 132-160-180-200          | —  | —      | 42200  | 54400  | 12200                    | 29000 |
|                                     | 309 L2 | 46.7                                | 21.4                  | 12700                 | 30                   | 22                       | 132-160-180-200          | —  | —      | 44700  | 57600  | 13000                    | 29000 |





| 309 L                               |        |                                     |                       |                       |                      |         | 23240 Nm                 |    |                     |        |                          |       |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---------|--------------------------|----|---------------------|--------|--------------------------|-------|-------|
| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC) | MC                       | MZ | Rn <sub>2</sub> [N] |        | M <sub>2 max</sub><br>Nm |       |       |
|                                     |        |                                     |                       |                       |                      |         |                          |    | HC/PC               | HZ/PZ  | FZ                       |       |       |
| 1000                                | 309 L3 | 51.3                                | 19.5                  | 14900                 | 30                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 45900  | 59200                    | 13400 | 29000 |
|                                     | 309 L3 | 60.5                                | 16.5                  | 16000                 | 30                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 48300  | 62300                    | 14100 | 29000 |
|                                     | 309 L3 | 74.1                                | 13.5                  | 17000                 | 26                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 51300  | 66200                    | 15100 | 29000 |
|                                     | 309 L3 | 80.6                                | 12.4                  | 15700                 | 22                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 52600  | 67800                    | 15500 | 29000 |
|                                     | 309 L3 | 93.0                                | 10.8                  | 16800                 | 21                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 54900  | 70800                    | 16300 | 29000 |
|                                     | 309 L3 | 100                                 | 10.0                  | 18600                 | 21                   | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 56200  | 72400                    | 16700 | 29000 |
|                                     | 309 L3 | 113                                 | 8.8                   | 16300                 | 16.5                 | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 58300  | 75100                    | 17400 | 29000 |
|                                     | 309 L3 | 126                                 | 7.9                   | 17300                 | 15.7                 | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 60100  | 77600                    | 18000 | 29000 |
|                                     | 309 L3 | 139                                 | 7.2                   | 16500                 | 13.7                 | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 61900  | 79900                    | 18600 | 29000 |
|                                     | 309 L3 | 162                                 | 6.2                   | 16700                 | 11.9                 | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 64800  | 83600                    | 19600 | 29000 |
|                                     | 309 L3 | 183                                 | 5.5                   | 14300                 | 9.0                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 67200  | 86700                    | 20400 | 29000 |
|                                     | 309 L3 | 202                                 | 5.0                   | 17000                 | 9.7                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 69300  | 89300                    | 21100 | 29000 |
|                                     | 309 L3 | 223                                 | 4.5                   | 13200                 | 6.8                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 71400  | 92100                    | 21800 | 29000 |
|                                     | 309 L3 | 239                                 | 4.2                   | 13300                 | 6.4                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 72900  | 94000                    | 22300 | 29000 |
|                                     | 309 L3 | 284                                 | 3.5                   | 15800                 | 6.4                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 76700  | 98900                    | 23600 | 29000 |
|                                     | 309 L3 | 336                                 | 3.0                   | 14000                 | 4.8                  | 13.2    | 71-80-90-100-112-132-160 | —  | —                   | 80800  | 104200                   | 25000 | 29000 |
|                                     | 309 L4 | 349                                 | 2.9                   | 21300                 | 7.2                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 81700  | 105300                   | 25300 | 29000 |
|                                     | 309 L4 | 406                                 | 2.5                   | 19100                 | 5.6                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 85400  | 110200                   | 26600 | 29000 |
|                                     | 309 L4 | 465                                 | 2.2                   | 19500                 | 5.0                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 89000  | 114800                   | 27900 | 29000 |
|                                     | 309 L4 | 509                                 | 2.0                   | 14400                 | 3.3                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 91500  | 117900                   | 28700 | 29000 |
|                                     | 309 L4 | 579                                 | 1.7                   | 21400                 | 4.4                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 95000  | 122600                   | 30000 | 29000 |
|                                     | 309 L4 | 654                                 | 1.5                   | 18200                 | 3.3                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 98600  | 127100                   | 31200 | 29000 |
|                                     | 309 L4 | 722                                 | 1.4                   | 21500                 | 3.5                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 101600 | 131000                   | 32300 | 29000 |
|                                     | 309 L4 | 801                                 | 1.2                   | 18300                 | 2.7                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 104700 | 135100                   | 33400 | 29000 |
|                                     | 309 L4 | 906                                 | 1.1                   | 18400                 | 2.4                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 108700 | 140200                   | 34800 | 29000 |
|                                     | 309 L4 | 999                                 | 1.0                   | 18300                 | 2.2                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 144400                   | 36000 | 29000 |
|                                     | 309 L4 | 1149                                | 0.87                  | 17000                 | 1.7                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 1286                                | 0.78                  | 17000                 | 1.6                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 1380                                | 0.72                  | 17000                 | 1.5                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 1605                                | 0.62                  | 17000                 | 1.3                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 1723                                | 0.58                  | 17000                 | 1.2                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 2003                                | 0.50                  | 17000                 | 1.0                  | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
|                                     | 309 L4 | 2423                                | 0.41                  | 17000                 | 0.83                 | 9.0     | 71-80-90-100-112-132-160 | —  | —                   | 110000 | 145000                   | 36000 | 29000 |
| 500                                 | 309 L1 | 3.43                                | 146                   | 9750                  | 150                  | 50      | 180-200-225-250          | —  | —                   | 25100  | 32400                    | 6840  | 27900 |
|                                     | 309 L1 | 4.09                                | 122                   | 10000                 | 132                  | 50      | 180-200-225-250          | —  | —                   | 26500  | 34200                    | 7250  | 29000 |
|                                     | 309 L1 | 5.25                                | 95                    | 10600                 | 109                  | 50      | 180-200-225-250          | —  | —                   | 28500  | 36800                    | 7880  | 29000 |
|                                     | 309 L1 | 6.23                                | 80                    | 10900                 | 94                   | 50      | 180-200-225-250          | —  | —                   | 30000  | 38800                    | 8350  | 29000 |
|                                     | 309 L2 | 12.3                                | 41                    | 10600                 | 48                   | 36      | 132-160-180-200          | —  | —                   | 36900  | 47600                    | 10500 | 27900 |
|                                     | 309 L2 | 14.7                                | 34                    | 12900                 | 49                   | 36      | 132-160-180-200          | —  | —                   | 38900  | 50200                    | 11100 | 29000 |
|                                     | 309 L2 | 17.4                                | 28.8                  | 13500                 | 43                   | 36      | 132-160-180-200          | —  | —                   | 40900  | 52700                    | 11800 | 29000 |
|                                     | 309 L2 | 21.8                                | 22.9                  | 13700                 | 35                   | 36      | 132-160-180-200          | —  | —                   | 43800  | 56400                    | 12700 | 29000 |
|                                     | 309 L2 | 25.4                                | 19.7                  | 12800                 | 28                   | 36      | 132-160-180-200          | —  | —                   | 45800  | 59000                    | 13300 | 29000 |
|                                     | 309 L2 | 28.0                                | 17.9                  | 14900                 | 30                   | 36      | 132-160-180-200          | —  | —                   | 47200  | 60800                    | 13800 | 29000 |
|                                     | 309 L2 | 32.6                                | 15.4                  | 15200                 | 26                   | 36      | 132-160-180-200          | —  | —                   | 49300  | 63600                    | 14500 | 29000 |
|                                     | 309 L2 | 38.6                                | 12.9                  | 12900                 | 18.6                 | 36      | 132-160-180-200          | —  | —                   | 51900  | 67000                    | 15300 | 29000 |
|                                     | 309 L2 | 46.7                                | 10.7                  | 13000                 | 15.4                 | 36      | 132-160-180-200          | —  | —                   | 55000  | 70900                    | 16300 | 29000 |
|                                     | 309 L3 | 51.3                                | 9.8                   | 17700                 | 19.8                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 56500  | 72900                    | 16800 | 29000 |
|                                     | 309 L3 | 60.5                                | 8.3                   | 19300                 | 18.3                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 59400  | 76600                    | 17800 | 29000 |
|                                     | 309 L3 | 74.1                                | 6.7                   | 20100                 | 15.5                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 63200  | 81500                    | 19100 | 29000 |
|                                     | 309 L3 | 80.6                                | 6.2                   | 16700                 | 11.9                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 64800  | 83500                    | 19600 | 29000 |
|                                     | 309 L3 | 93.0                                | 5.4                   | 17500                 | 10.8                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 67600  | 87200                    | 20600 | 29000 |
|                                     | 309 L3 | 100                                 | 5.0                   | 21300                 | 12.2                 | 22      | 71-80-90-100-112-132-160 | —  | —                   | 69200  | 89200                    | 21100 | 29000 |
|                                     | 309 L3 | 113                                 | 4.4                   | 17100                 | 8.7                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 71700  | 92500                    | 21900 | 29000 |
|                                     | 309 L3 | 126                                 | 4.0                   | 17500                 | 8.0                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 74000  | 95500                    | 22700 | 29000 |
|                                     | 309 L3 | 139                                 | 3.6                   | 17500                 | 7.2                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 76200  | 98300                    | 23500 | 29000 |
|                                     | 309 L3 | 162                                 | 3.1                   | 18400                 | 6.5                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 79800  | 102900                   | 24700 | 29000 |
|                                     | 309 L3 | 183                                 | 2.7                   | 14300                 | 4.5                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 82800  | 106800                   | 25700 | 29000 |
|                                     | 309 L3 | 202                                 | 2.5                   | 19100                 | 5.4                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 85300  | 110000                   | 26600 | 29000 |
|                                     | 309 L3 | 223                                 | 2.2                   | 14700                 | 3.8                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 87900  | 113300                   | 27500 | 29000 |
|                                     | 309 L3 | 239                                 | 2.1                   | 14900                 | 3.6                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 89800  | 115800                   | 28200 | 29000 |
|                                     | 309 L3 | 284                                 | 1.8                   | 15800                 | 3.2                  | 22      | 71-80-90-100-112-132-160 | —  | —                   | 94500  | 121800                   | 29800 | 29000 |





**309 L**  326

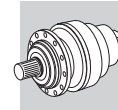
**23240 Nm**



| n <sub>1</sub><br>min <sup>-1</sup> |  | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-------------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |             |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>500</b>                          | <b>309 L3</b>   | <b>336</b>  | 1.5                                 | 15800                 | 2.7                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 99400  | 128200 | 31500 | 29000                    |
|                                     | <b>309 L4</b>   | <b>349</b>  | 1.4                                 | 21500                 | 3.6                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 100500 | 129700 | 31900 | 29000                    |
|                                     | <b>309 L4</b>   | <b>406</b>  | 1.2                                 | 21300                 | 3.1                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 105200 | 135600 | 33600 | 29000                    |
|                                     | <b>309 L4</b>   | <b>465</b>  | 1.1                                 | 21700                 | 2.8                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 109600 | 141300 | 35100 | 29000                    |
|                                     | <b>309 L4</b>   | <b>509</b>  | 0.98                                | 14700                 | 1.7                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>579</b>  | 0.86                                | 21600                 | 2.2                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>654</b>  | 0.77                                | 18300                 | 1.7                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>722</b>  | 0.69                                | 21600                 | 1.8                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>801</b>  | 0.62                                | 18300                 | 1.4                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>906</b>  | 0.55                                | 18500                 | 1.2                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>999</b>  | 0.50                                | 18300                 | 1.1                   | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>1149</b> | 0.44                                | 17000                 | 0.87                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>1286</b> | 0.39                                | 17000                 | 0.78                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>1380</b> | 0.36                                | 17000                 | 0.73                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>1605</b> | 0.31                                | 17000                 | 0.63                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>1723</b> | 0.29                                | 17000                 | 0.58                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>2003</b> | 0.25                                | 17000                 | 0.50                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | <b>309 L4</b>   | <b>2423</b> | 0.21                                | 17000                 | 0.42                  | 15.0                 | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |

**310 L**  338

**34120 Nm**

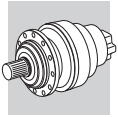
| n <sub>1</sub><br>min <sup>-1</sup> |  | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-------------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |             |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>1500</b>                         | <b>310 L1</b>   | <b>4.09</b> | 367                                 | 7330                  | 175                   | 35                   | 200-225-250   | —                   | —  | 22600  | 28400  | 9080  | 47600                    |
|                                     | <b>310 L1</b>   | <b>5.25</b> | 286                                 | 7710                  | 175                   | 35                   | 200-225-250   | —                   | —  | 24300  | 30600  | 9870  | 47600                    |
|                                     | <b>310 L1</b>   | <b>6.23</b> | 241                                 | 8020                  | 175                   | 35                   | 200-225-250   | —                   | —  | 25600  | 32200  | 10400 | 47600                    |
|                                     | <b>310 L2</b>   | <b>14.7</b> | 102                                 | 10800                 | 75                    | 22                   | 160-180-200-225-250   | —                   | —  | 33100  | 41700  | 13900 | 47600                    |
|                                     | <b>310 L2</b>   | <b>17.4</b> | 86                                  | 11300                 | 75                    | 22                   | 160-180-200-225-250   | —                   | —  | 34800  | 43800  | 14700 | 47600                    |
|                                     | <b>310 L2</b>   | <b>21.8</b> | 69                                  | 12100                 | 75                    | 22                   | 160-180-200-225-250   | —                   | —  | 37300  | 46900  | 15900 | 47600                    |
|                                     | <b>310 L2</b>   | <b>25.4</b> | 59                                  | 12700                 | 75                    | 22                   | 160-180-200-225-250   | —                   | —  | 39000  | 49100  | 16700 | 47600                    |
|                                     | <b>310 L2</b>   | <b>28.0</b> | 54                                  | 12800                 | 75                    | 22                   | 160-180-200-225-250   | —                   | —  | 40200  | 50500  | 17200 | 47600                    |
|                                     | <b>310 L2</b>   | <b>30.7</b> | 49                                  | 13400                 | 73                    | 22                   | 160-180-200-225-250   | —                   | —  | 41300  | 51900  | 17800 | 47600                    |
|                                     | <b>310 L2</b>   | <b>32.6</b> | 46                                  | 13300                 | 68                    | 22                   | 160-180-200-225-250   | —                   | —  | 42000  | 52900  | 18100 | 47600                    |
|                                     | <b>310 L2</b>   | <b>38.6</b> | 39                                  | 13600                 | 59                    | 22                   | 160-180-200-225-250   | —                   | —  | 44300  | 55700  | 19200 | 47600                    |
|                                     | <b>310 L2</b>   | <b>46.7</b> | 32                                  | 14200                 | 51                    | 22                   | 160-180-200-225-250   | —                   | —  | 46900  | 58900  | 20500 | 47600                    |
|                                     | <b>310 L3</b>   | <b>53.0</b> | 28.3                                | 15800                 | 40                    | 18.0                 | 132-160-180-200   | —                   | —  | 48700  | 61200  | 21300 | 47600                    |
|                                     | <b>310 L3</b>   | <b>62.6</b> | 24.0                                | 16600                 | 40                    | 18.0                 | 132-160-180-200   | —                   | —  | 51200  | 64300  | 22500 | 47600                    |
|                                     | <b>310 L3</b>   | <b>73.9</b> | 20.3                                | 17500                 | 40                    | 18.0                 | 132-160-180-200   | —                   | —  | 53800  | 67600  | 23800 | 47600                    |
|                                     | <b>310 L3</b>   | <b>80.3</b> | 18.7                                | 17500                 | 37                    | 18.0                 | 132-160-180-200   | —                   | —  | 55100  | 69300  | 24500 | 47600                    |
|                                     | <b>310 L3</b>   | <b>91.3</b> | 16.4                                | 18600                 | 35                    | 18.0                 | 132-160-180-200   | —                   | —  | 57300  | 72100  | 25600 | 47600                    |
|                                     | <b>310 L3</b>   | <b>101</b>  | 14.9                                | 18700                 | 32                    | 18.0                 | 132-160-180-200   | —                   | —  | 59000  | 74200  | 26400 | 47600                    |
|                                     | <b>310 L3</b>   | <b>110</b>  | 13.6                                | 19700                 | 31                    | 18.0                 | 132-160-180-200   | —                   | —  | 60700  | 76300  | 27200 | 47600                    |
|                                     | <b>310 L3</b>   | <b>119</b>  | 12.6                                | 19700                 | 28                    | 18.0                 | 132-160-180-200   | —                   | —  | 62000  | 78000  | 27900 | 47600                    |
|                                     | <b>310 L3</b>   | <b>130</b>  | 11.5                                | 20700                 | 27                    | 18.0                 | 132-160-180-200   | —                   | —  | 63800  | 80200  | 28800 | 47600                    |
|                                     | <b>310 L3</b>   | <b>142</b>  | 10.6                                | 20700                 | 25                    | 18.0                 | 132-160-180-200   | —                   | —  | 65400  | 82200  | 29600 | 47600                    |
|                                     | <b>310 L3</b>   | <b>164</b>  | 9.2                                 | 22200                 | 23                    | 18.0                 | 132-160-180-200   | —                   | —  | 68300  | 85800  | 31100 | 47600                    |
|                                     | <b>310 L3</b>   | <b>177</b>  | 8.5                                 | 18300                 | 17.7                  | 18.0                 | 132-160-180-200   | —                   | —  | 69900  | 87900  | 31900 | 47600                    |
|                                     | <b>310 L3</b>   | <b>202</b>  | 7.4                                 | 22000                 | 18.8                  | 18.0                 | 132-160-180-200   | —                   | —  | 72700  | 91400  | 33300 | 47600                    |
|                                     | <b>310 L3</b>   | <b>230</b>  | 6.5                                 | 21200                 | 15.8                  | 18.0                 | 132-160-180-200   | —                   | —  | 75600  | 95100  | 34800 | 47600                    |
|                                     | <b>310 L3</b>   | <b>249</b>  | 6.0                                 | 18400                 | 12.7                  | 18.0                 | 132-160-180-200   | —                   | —  | 77400  | 97400  | 35700 | 47600                    |
|                                     | <b>310 L3</b>   | <b>295</b>  | 5.1                                 | 23300                 | 13.6                  | 18.0                 | 132-160-180-200   | —                   | —  | 81500  | 102500 | 37800 | 47600                    |
|                                     | <b>310 L3</b>   | <b>350</b>  | 4.3                                 | 19000                 | 9.3                   | 18.0                 | 132-160-180-200   | —                   | —  | 85800  | 107900 | 40000 | 47600                    |
|                                     | <b>310 L4</b>   | <b>392</b>  | 3.8                                 | 19400                 | 8.8                   | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 88700  | 111500 | 41500 | 47600                    |
|                                     | <b>310 L4</b>   | <b>451</b>  | 3.3                                 | 29800                 | 11.7                  | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 92500  | 116300 | 43500 | 47600                    |
|                                     | <b>310 L4</b>   | <b>507</b>  | 3.0                                 | 25500                 | 8.9                   | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 95800  | 120500 | 45300 | 47600                    |
|                                     | <b>310 L4</b>   | <b>556</b>  | 2.7                                 | 31600                 | 10.1                  | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 98500  | 123900 | 46700 | 47600                    |
|                                     | <b>310 L4</b>   | <b>637</b>  | 2.4                                 | 26500                 | 7.4                   | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 102600 | 129000 | 48800 | 47600                    |
|                                     | <b>310 L4</b>   | <b>726</b>  | 2.1                                 | 27100                 | 6.6                   | 11.0                 | 71-80-90-100-112-132-160  | —                   | —  | 106700 | 134200 | 51000 | 47600                    |



| 310 L                      |   |        |                            |                |                |             | 34120 Nm  |                          |       |              |        |        |                 |       |
|----------------------------|---|--------|----------------------------|----------------|----------------|-------------|---|--------------------------|-------|--------------|--------|--------|-----------------|-------|
| $n_1$<br>min <sup>-1</sup> |  | i      | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW | P (IEC)  | MC                       | MZ    | $R_{n2}$ [N] |        |        | $M_2$ max<br>Nm |       |
|                            |   |        |                            |                |                |             |   | HC/PC                    | HZ/PZ | FZ           |        |        |                 |       |
| 1500                       | 310 L4  | 818    | 1.8                        | 27600          | 6.0            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 110600       | 139100 | 53100  | 47600           |       |
|                            | 310 L4  | 939    | 1.6                        | 33200          | 6.3            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 115300       | 145000 | 55600  | 47600           |       |
|                            | 310 L4  | 1021   | 1.5                        | 28700          | 5.0            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 118200       | 148600 | 57200  | 47600           |       |
|                            | 310 L4  | 1164   | 1.3                        | 29300          | 4.5            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 123000       | 154600 | 59700  | 47600           |       |
|                            | 310 L4  | 1259   | 1.2                        | 27600          | 3.9            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 125900       | 158300 | 61300  | 47600           |       |
|                            | 310 L4  | 1438   | 1.0                        | 25800          | 3.2            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 131000       | 164700 | 64100  | 47600           |       |
|                            | 310 L4  | 1672   | 0.90                       | 26000          | 2.8            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 1794   | 0.84                       | 26000          | 2.6            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 2022   | 0.74                       | 26000          | 2.3            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 2523   | 0.59                       | 26000          | 1.8            | 11.0        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
| 1000                       | 310 L1  | 4.09   | 244                        | 8280           | 175            | 42          | 200-225-250   | —                        | —     | 25500        | 32100  | 10400  | 47600           |       |
|                            | 310 L1  | 5.25   | 190                        | 8710           | 175            | 42          | 200-225-250   | —                        | —     | 27500        | 34500  | 11300  | 47600           |       |
|                            | 310 L1  | 6.23   | 160                        | 9060           | 157            | 42          | 200-225-250   | —                        | —     | 28900        | 36400  | 12000  | 47600           |       |
| 310 L2                     | 310 L2  | 14.7   | 68                         | 12200          | 75             | 26          | 160-180-200-225-250   | —                        | —     | 37400        | 47100  | 15900  | 47600           |       |
|                            | 310 L2  | 17.4   | 58                         | 12800          | 75             | 26          | 160-180-200-225-250   | —                        | —     | 39300        | 49500  | 16800  | 47600           |       |
|                            | 310 L2  | 21.8   | 46                         | 13700          | 70             | 26          | 160-180-200-225-250   | —                        | —     | 42100        | 53000  | 18200  | 47600           |       |
|                            | 310 L2  | 25.4   | 39                         | 14300          | 63             | 26          | 160-180-200-225-250   | —                        | —     | 44100        | 55400  | 19100  | 47600           |       |
|                            | 310 L2  | 28.0   | 36                         | 14400          | 57             | 26          | 160-180-200-225-250   | —                        | —     | 45400        | 57100  | 19700  | 47600           |       |
|                            | 310 L2  | 30.7   | 33                         | 14900          | 54             | 26          | 160-180-200-225-250   | —                        | —     | 46700        | 58700  | 20300  | 47600           |       |
|                            | 310 L2  | 32.6   | 31                         | 15100          | 52             | 26          | 160-180-200-225-250   | —                        | —     | 47500        | 59700  | 20800  | 47600           |       |
|                            | 310 L2  | 38.6   | 25.9                       | 14800          | 43             | 26          | 160-180-200-225-250   | —                        | —     | 50000        | 62900  | 22000  | 47600           |       |
|                            | 310 L2  | 46.7   | 21.4                       | 15500          | 37             | 26          | 160-180-200-225-250   | —                        | —     | 52900        | 66600  | 23400  | 47600           |       |
|                            | 310 L3  | 310 L3 | 53.0                       | 18.9           | 17800          | 39          | 22  | 132-160-180-200          | —     | —            | 55000  | 69100  | 24400           | 47600 |
| 310 L3                     |   | 62.6   | 16.0                       | 18800          | 34             | 22          | 132-160-180-200   | —                        | —     | 57800        | 72700  | 25800  | 47600           |       |
| 310 L3                     |   | 73.9   | 13.5                       | 19700          | 31             | 22          | 132-160-180-200   | —                        | —     | 60700        | 76400  | 27300  | 47600           |       |
| 310 L3                     |   | 80.3   | 12.4                       | 19800          | 28             | 22          | 132-160-180-200   | —                        | —     | 62300        | 78300  | 28000  | 47600           |       |
| 310 L3                     |   | 91.3   | 11.0                       | 21000          | 26             | 22          | 132-160-180-200   | —                        | —     | 64700        | 81400  | 29300  | 47600           |       |
| 310 L3                     |   | 101    | 9.9                        | 21100          | 24             | 22          | 132-160-180-200   | —                        | —     | 66700        | 83800  | 30300  | 47600           |       |
| 310 L3                     |   | 110    | 9.1                        | 22200          | 23             | 22          | 132-160-180-200   | —                        | —     | 68500        | 86200  | 31200  | 47600           |       |
| 310 L3                     |   | 119    | 8.4                        | 21600          | 21             | 22          | 132-160-180-200   | —                        | —     | 70100        | 88100  | 32000  | 47600           |       |
| 310 L3                     |   | 130    | 7.7                        | 23400          | 21             | 22          | 132-160-180-200   | —                        | —     | 72000        | 90600  | 33000  | 47600           |       |
| 310 L3                     |   | 142    | 7.1                        | 22200          | 18.0           | 22          | 132-160-180-200   | —                        | —     | 73800        | 92800  | 33900  | 47600           |       |
| 310 L3                     | 310 L3  | 164    | 6.1                        | 25000          | 17.5           | 22          | 132-160-180-200   | —                        | —     | 77100        | 96900  | 35600  | 47600           |       |
|                            | 310 L3  | 177    | 5.6                        | 18400          | 11.9           | 22          | 132-160-180-200   | —                        | —     | 79000        | 99300  | 36500  | 47600           |       |
|                            | 310 L3  | 202    | 5.0                        | 23400          | 13.3           | 22          | 132-160-180-200   | —                        | —     | 82100        | 103200 | 38100  | 47600           |       |
|                            | 310 L3  | 230    | 4.3                        | 21800          | 10.9           | 22          | 132-160-180-200   | —                        | —     | 85400        | 107400 | 39800  | 47600           |       |
|                            | 310 L3  | 249    | 4.0                        | 19300          | 8.9            | 22          | 132-160-180-200   | —                        | —     | 87500        | 110000 | 40900  | 47600           |       |
|                            | 310 L3  | 295    | 3.4                        | 24700          | 9.6            | 22          | 132-160-180-200   | —                        | —     | 92000        | 115700 | 43300  | 47600           |       |
|                            | 310 L3  | 350    | 2.9                        | 20600          | 6.8            | 22          | 132-160-180-200   | —                        | —     | 96900        | 121800 | 45800  | 47600           |       |
|                            | 310 L4  | 310 L4 | 392                        | 2.6            | 21100          | 6.4         | 13.2  | 71-80-90-100-112-132-160 | —     | —            | 100200 | 125900 | 47600           | 47600 |
|                            |   | 310 L4 | 451                        | 2.2            | 32600          | 8.5         | 13.2  | 71-80-90-100-112-132-160 | —     | —            | 104500 | 131400 | 49800           | 47600 |
|                            |   | 310 L4 | 507                        | 2.0            | 27300          | 6.4         | 13.2  | 71-80-90-100-112-132-160 | —     | —            | 108200 | 136100 | 51800           | 47600 |
| 310 L4                     |   | 556    | 1.8                        | 33000          | 7.0            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 111300       | 139900 | 53400  | 47600           |       |
| 310 L4                     |   | 637    | 1.6                        | 28400          | 5.3            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 115900       | 145700 | 55900  | 47600           |       |
| 310 L4                     |   | 726    | 1.4                        | 29000          | 4.7            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 120500       | 151500 | 58400  | 47600           |       |
| 310 L4                     |   | 818    | 1.2                        | 29600          | 4.3            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 124900       | 157100 | 60800  | 47600           |       |
| 310 L4                     |   | 939    | 1.1                        | 34000          | 4.3            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 130200       | 163700 | 63600  | 47600           |       |
| 310 L4                     |   | 1021   | 0.98                       | 30600          | 3.5            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
| 310 L4                     |   | 1164   | 0.86                       | 30600          | 3.1            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
| 310 L4                     | 310 L4  | 1259   | 0.79                       | 28000          | 2.6            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 1438   | 0.70                       | 26000          | 2.1            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 1672   | 0.60                       | 26000          | 1.8            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 1794   | 0.56                       | 26000          | 1.7            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 2022   | 0.49                       | 26000          | 1.5            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 310 L4  | 2523   | 0.40                       | 26000          | 1.2            | 13.2        | 71-80-90-100-112-132-160  | —                        | —     | 133000       | 166000 | 65000  | 47600           |       |
|                            | 500   | 310 L1 | 4.09                       | 122            | 10200          | 134         | 70  | 200-225-250              | —     | —            | 31400  | 39500  | 13100           | 47600 |
|                            |   | 310 L1 | 5.25                       | 95             | 10700          | 110         | 70  | 200-225-250              | —     | —            | 33800  | 42500  | 14200           | 47600 |
|                            |   | 310 L1 | 6.23                       | 80             | 11200          | 97          | 70  | 200-225-250              | —     | —            | 35600  | 44800  | 15100           | 47600 |
|                            |   | 310 L2 | 14.7                       | 34             | 15000          | 57          | 44  | 160-180-200-225-250      | —     | —            | 46100  | 58000  | 20100           | 47600 |

B





### 310 L



338

### 34120 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|---------------------|----|--------|--------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                          | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 310 L2 | 17.4 | 28.8                                | 15700                 | 50                    | 44                   | 160-180-200-225-250      | —                   | —  | 48400  | 60900  | 21200 | 47600                    |
|                                     | 310 L2 | 21.8 | 22.9                                | 16800                 | 43                    | 44                   | 160-180-200-225-250      | —                   | —  | 51900  | 65200  | 22900 | 47600                    |
|                                     | 310 L2 | 25.4 | 19.7                                | 17600                 | 39                    | 44                   | 160-180-200-225-250      | —                   | —  | 54200  | 68200  | 24100 | 47600                    |
|                                     | 310 L2 | 28.0 | 17.9                                | 17700                 | 35                    | 44                   | 160-180-200-225-250      | —                   | —  | 55900  | 70300  | 24900 | 47600                    |
|                                     | 310 L2 | 30.7 | 16.3                                | 17800                 | 32                    | 44                   | 160-180-200-225-250      | —                   | —  | 57400  | 72200  | 25600 | 47600                    |
|                                     | 310 L2 | 32.6 | 15.4                                | 18600                 | 32                    | 44                   | 160-180-200-225-250      | —                   | —  | 58500  | 73500  | 26100 | 47600                    |
|                                     | 310 L2 | 38.6 | 12.9                                | 17200                 | 25                    | 44                   | 160-180-200-225-250      | —                   | —  | 61500  | 77400  | 27700 | 47600                    |
|                                     | 310 L2 | 46.7 | 10.7                                | 18000                 | 21                    | 44                   | 160-180-200-225-250      | —                   | —  | 65200  | 81900  | 29500 | 47600                    |
|                                     | 310 L3 | 53.0 | 9.4                                 | 22000                 | 24                    | 36                   | 132-160-180-200          | —                   | —  | 67700  | 85100  | 30800 | 47600                    |
|                                     | 310 L3 | 62.6 | 8.0                                 | 23100                 | 21                    | 36                   | 132-160-180-200          | —                   | —  | 71100  | 89400  | 32500 | 47600                    |
|                                     | 310 L3 | 73.9 | 6.8                                 | 24300                 | 18.8                  | 36                   | 132-160-180-200          | —                   | —  | 74800  | 94000  | 34400 | 47600                    |
|                                     | 310 L3 | 80.3 | 6.2                                 | 22600                 | 16.2                  | 36                   | 132-160-180-200          | —                   | —  | 76700  | 96400  | 35300 | 47600                    |
|                                     | 310 L3 | 91.3 | 5.5                                 | 25900                 | 16.2                  | 36                   | 132-160-180-200          | —                   | —  | 79700  | 100200 | 36900 | 47600                    |
|                                     | 310 L3 | 101  | 5.0                                 | 23400                 | 13.3                  | 36                   | 132-160-180-200          | —                   | —  | 82100  | 103200 | 38100 | 47600                    |
|                                     | 310 L3 | 110  | 4.5                                 | 27300                 | 14.2                  | 36                   | 132-160-180-200          | —                   | —  | 84400  | 106100 | 39300 | 47600                    |
|                                     | 310 L3 | 119  | 4.2                                 | 24000                 | 11.6                  | 36                   | 132-160-180-200          | —                   | —  | 86300  | 108500 | 40300 | 47600                    |
|                                     | 310 L3 | 130  | 3.8                                 | 28700                 | 12.6                  | 36                   | 132-160-180-200          | —                   | —  | 88700  | 111500 | 41500 | 47600                    |
|                                     | 310 L3 | 142  | 3.5                                 | 24800                 | 10.0                  | 36                   | 132-160-180-200          | —                   | —  | 90900  | 114300 | 42700 | 47600                    |
|                                     | 310 L3 | 164  | 3.1                                 | 30300                 | 10.6                  | 36                   | 132-160-180-200          | —                   | —  | 94900  | 119300 | 44800 | 47600                    |
|                                     | 310 L3 | 177  | 2.8                                 | 20700                 | 6.7                   | 36                   | 132-160-180-200          | —                   | —  | 97200  | 122200 | 46000 | 47600                    |
|                                     | 310 L3 | 202  | 2.5                                 | 26300                 | 7.5                   | 36                   | 132-160-180-200          | —                   | —  | 101100 | 127100 | 48000 | 47600                    |
|                                     | 310 L3 | 230  | 2.2                                 | 21800                 | 5.4                   | 36                   | 132-160-180-200          | —                   | —  | 105100 | 132200 | 50200 | 47600                    |
|                                     | 310 L3 | 249  | 2.0                                 | 22300                 | 5.1                   | 36                   | 132-160-180-200          | —                   | —  | 107700 | 135400 | 51500 | 47600                    |
|                                     | 310 L3 | 295  | 1.7                                 | 26800                 | 5.2                   | 36                   | 132-160-180-200          | —                   | —  | 113300 | 142500 | 54500 | 47600                    |
|                                     | 310 L3 | 350  | 1.4                                 | 24000                 | 3.9                   | 36                   | 132-160-180-200          | —                   | —  | 119300 | 150000 | 57700 | 47600                    |
|                                     | 310 L4 | 392  | 1.3                                 | 24600                 | 3.7                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 123300 | 155100 | 59900 | 47600                    |
|                                     | 310 L4 | 451  | 1.1                                 | 33900                 | 4.5                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 128600 | 161700 | 62800 | 47600                    |
|                                     | 310 L4 | 507  | 0.99                                | 30600                 | 3.6                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 556  | 0.90                                | 34100                 | 3.6                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 637  | 0.79                                | 30600                 | 2.8                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 726  | 0.69                                | 30600                 | 2.5                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 818  | 0.61                                | 30600                 | 2.2                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 939  | 0.53                                | 34100                 | 2.1                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1021 | 0.49                                | 30600                 | 1.8                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1164 | 0.43                                | 30600                 | 1.6                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1259 | 0.40                                | 28000                 | 1.3                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1438 | 0.35                                | 26000                 | 1.1                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1672 | 0.30                                | 26000                 | 0.92                  | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 1794 | 0.28                                | 26000                 | 0.86                  | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 2022 | 0.25                                | 26000                 | 0.76                  | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 L4 | 2523 | 0.20                                | 26000                 | 0.61                  | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 133000 | 166000 | 65000 | 47600                    |

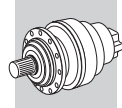
### 311 L





350

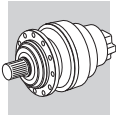
### 48330 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)         | Rn <sub>2</sub> [N] |    |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------|---------------------|----|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                 | MC                  | MZ | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 311 L1 | 4.09 | 367                                 | 10600                 | 200                   | 35                   | —               | —                   | —  | 26700 | 33200 | 9080  | 58300                    |
|                                     | 311 L1 | 5.25 | 286                                 | 11700                 | 200                   | 35                   | —               | —                   | —  | 28700 | 35800 | 9870  | 58300                    |
|                                     | 311 L1 | 6.23 | 241                                 | 11600                 | 200                   | 35                   | —               | —                   | —  | 30300 | 37700 | 10400 | 58300                    |
|                                     | 311 L2 | 14.0 | 107                                 | 15300                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 38600 | 48100 | 13700 | 58300                    |
|                                     | 311 L2 | 16.7 | 90                                  | 16100                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 40700 | 50700 | 14500 | 58300                    |
|                                     | 311 L2 | 18.0 | 83                                  | 16900                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 41600 | 51800 | 14900 | 58300                    |
|                                     | 311 L2 | 21.5 | 70                                  | 17400                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 43900 | 54600 | 15800 | 58300                    |
|                                     | 311 L2 | 25.5 | 59                                  | 18300                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 46200 | 57500 | 16700 | 58300                    |
|                                     | 311 L2 | 27.6 | 54                                  | 19200                 | 115                   | 26                   | 180-200-225-250 | —                   | —  | 47300 | 58900 | 17200 | 58300                    |
|                                     | 311 L2 | 32.7 | 46                                  | 20200                 | 103                   | 26                   | 180-200-225-250 | —                   | —  | 49800 | 62000 | 18200 | 58300                    |
|                                     | 311 L2 | 38.8 | 39                                  | 19700                 | 85                    | 26                   | 180-200-225-250 | —                   | —  | 52400 | 65300 | 19200 | 58300                    |
|                                     | 311 L3 | 50.5 | 29.7                                | 22400                 | 60                    | 18.0                 | 132-160-180-200 | —                   | —  | 56700 | 70600 | 21000 | 58300                    |



| 311 L                               |   |      |                                     |                       |                       |                          | 48330 Nm  |       |        |                     |        |                          |       |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|-------|--------|---------------------|--------|--------------------------|-------|
|                                     |   |      |                                     |                       |                       |                          | 350   |       |        |                     |        |                          |       |
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW     | P (IEC)  | MC    | MZ     | Rn <sub>2</sub> [N] |        | M <sub>2 max</sub><br>Nm |       |
|                                     |   |      |                                     |                       |                       |                          |   | HC/PC | HZ/PZ  | FZ                  |        |                          |       |
| 1500                                | 311 L3  | 60.2 | 24.9                                | 23700                 | 60                    | 18.0                     | 132-160-180-200   | —     | —      | 59800               | 74500  | 22300                    | 58300 |
|                                     | 311 L3  | 71.1 | 21.1                                | 24900                 | 60                    | 18.0                     | 132-160-180-200   | —     | —      | 62800               | 78300  | 23500                    | 58300 |
|                                     | 311 L3  | 77.3 | 19.4                                | 25500                 | 57                    | 18.0                     | 132-160-180-200   | —     | —      | 64400               | 80200  | 24200                    | 58300 |
|                                     | 311 L3  | 89.3 | 16.8                                | 26600                 | 51                    | 18.0                     | 132-160-180-200   | —     | —      | 67300               | 83800  | 25400                    | 58300 |
|                                     | 311 L3  | 104  | 14.5                                | 27800                 | 46                    | 18.0                     | 132-160-180-200   | —     | —      | 70400               | 87600  | 26700                    | 58300 |
|                                     | 311 L3  | 115  | 13.1                                | 28700                 | 43                    | 18.0                     | 132-160-180-200   | —     | —      | 72500               | 90300  | 27600                    | 58300 |
|                                     | 311 L3  | 126  | 12.0                                | 29500                 | 40                    | 18.0                     | 132-160-180-200   | —     | —      | 74500               | 92800  | 28400                    | 58300 |
|                                     | 311 L3  | 133  | 11.3                                | 30000                 | 39                    | 18.0                     | 132-160-180-200   | —     | —      | 75800               | 94500  | 29000                    | 58300 |
|                                     | 311 L3  | 147  | 10.2                                | 31800                 | 37                    | 18.0                     | 132-160-180-200   | —     | —      | 78100               | 97300  | 30000                    | 58300 |
|                                     | 311 L3  | 161  | 9.3                                 | 31800                 | 34                    | 18.0                     | 132-160-180-200   | —     | —      | 80300               | 100000 | 30900                    | 58300 |
|                                     | 311 L3  | 171  | 8.8                                 | 32600                 | 33                    | 18.0                     | 132-160-180-200   | —     | —      | 81700               | 101800 | 31500                    | 58300 |
|                                     | 311 L3  | 191  | 7.8                                 | 32200                 | 29                    | 18.0                     | 132-160-180-200   | —     | —      | 84500               | 105300 | 32700                    | 58300 |
|                                     | 311 L3  | 203  | 7.4                                 | 33400                 | 28                    | 18.0                     | 132-160-180-200   | —     | —      | 86000               | 107200 | 33400                    | 58300 |
|                                     | 311 L3  | 245  | 6.1                                 | 34300                 | 24                    | 18.0                     | 132-160-180-200   | —     | —      | 91100               | 113500 | 35500                    | 58300 |
|                                     | 311 L3  | 291  | 5.2                                 | 27000                 | 16.0                  | 18.0                     | 132-160-180-200   | —     | —      | 95900               | 119400 | 37600                    | 58300 |
|                                     | 311 L4  | 348  | 4.3                                 | 39800                 | 20                    | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 101100              | 126000 | 39900                    | 58300 |
|                                     | 311 L4  | 410  | 3.7                                 | 41500                 | 18.0                  | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 106300              | 132400 | 42200                    | 58300 |
|                                     | 311 L4  | 512  | 2.9                                 | 44000                 | 15.2                  | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 113600              | 141500 | 45400                    | 58300 |
|                                     | 311 L4  | 568  | 2.6                                 | 43000                 | 13.4                  | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 117200              | 145900 | 47000                    | 58300 |
|                                     | 311 L4  | 627  | 2.4                                 | 39800                 | 11.3                  | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 120700              | 150300 | 48600                    | 58300 |
|                                     | 311 L4  | 724  | 2.1                                 | 46300                 | 11.4                  | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 126000              | 157000 | 51000                    | 58300 |
|                                     | 311 L4  | 825  | 1.8                                 | 44600                 | 9.6                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 131000              | 163200 | 53300                    | 58300 |
|                                     | 311 L4  | 904  | 1.7                                 | 46900                 | 9.2                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 134700              | 167800 | 54900                    | 58300 |
|                                     | 311 L4  | 986  | 1.5                                 | 42500                 | 7.7                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 138300              | 172200 | 56500                    | 58300 |
|                                     | 311 L4  | 1058 | 1.4                                 | 43000                 | 7.2                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 141200              | 175900 | 57900                    | 58300 |
|                                     | 311 L4  | 1230 | 1.2                                 | 43900                 | 6.3                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 147800              | 184000 | 60800                    | 58300 |
|                                     | 311 L4  | 1415 | 1.1                                 | 42800                 | 5.4                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 154100              | 191900 | 63800                    | 58300 |
|                                     | 311 L4  | 1680 | 0.89                                | 34000                 | 3.6                   | 11.0                     | 71-80-90-100-112-132-160  | —     | —      | 157000              | 195000 | 65000                    | 58300 |
| 311 L4                              | 1766  | 0.85 | 43000                               | 4.3                   | 11.0                  | 71-80-90-100-112-132-160 | —   | —     | 157000 | 195000              | 65000  | 58300                    |       |
| 311 L4                              | 2096  | 0.72 | 34000                               | 2.9                   | 11.0                  | 71-80-90-100-112-132-160 | —   | —     | 157000 | 195000              | 65000  | 58300                    |       |
| 1000                                | 311 L1  | 4.09 | 244                                 | 11900                 | 200                   | 42                       | —   | —     | —      | 30100               | 37500  | 10400                    | 58300 |
|                                     | 311 L1  | 5.25 | 190                                 | 13200                 | 200                   | 42                       | —   | —     | —      | 32500               | 40400  | 11300                    | 58300 |
|                                     | 311 L1  | 6.23 | 160                                 | 13100                 | 200                   | 42                       | —   | —     | —      | 34200               | 42600  | 12000                    | 58300 |
|                                     | 311 L2  | 14.0 | 71                                  | 17300                 | 115                   | 31                       | 180-200-225-250   | —     | —      | 43600               | 54300  | 15700                    | 58300 |
|                                     | 311 L2  | 16.7 | 60                                  | 18200                 | 115                   | 31                       | 180-200-225-250   | —     | —      | 46000               | 57300  | 16600                    | 58300 |
|                                     | 311 L2  | 18.0 | 56                                  | 19100                 | 115                   | 31                       | 180-200-225-250   | —     | —      | 47000               | 58500  | 17000                    | 58300 |
|                                     | 311 L2  | 21.5 | 47                                  | 19600                 | 102                   | 31                       | 180-200-225-250   | —     | —      | 49500               | 61700  | 18100                    | 58300 |
|                                     | 311 L2  | 25.5 | 39                                  | 20600                 | 90                    | 31                       | 180-200-225-250   | —     | —      | 52200               | 65000  | 19100                    | 58300 |
|                                     | 311 L2  | 27.6 | 36                                  | 21700                 | 88                    | 31                       | 180-200-225-250   | —     | —      | 53400               | 66500  | 19600                    | 58300 |
|                                     | 311 L2  | 32.7 | 31                                  | 22800                 | 78                    | 31                       | 180-200-225-250   | —     | —      | 56200               | 70000  | 20800                    | 58300 |
|                                     | 311 L2  | 38.8 | 25.8                                | 21700                 | 62                    | 31                       | 180-200-225-250   | —     | —      | 59200               | 73700  | 22000                    | 58300 |
|                                     | 311 L3  | 50.5 | 19.8                                | 25300                 | 58                    | 22                       | 132-160-180-200   | —     | —      | 64000               | 79700  | 24000                    | 58300 |
|                                     | 311 L3  | 60.2 | 16.6                                | 26700                 | 51                    | 22                       | 132-160-180-200   | —     | —      | 67500               | 84100  | 25500                    | 58300 |
|                                     | 311 L3  | 71.1 | 14.1                                | 28100                 | 45                    | 22                       | 132-160-180-200   | —     | —      | 71000               | 88400  | 26900                    | 58300 |
|                                     | 311 L3  | 77.3 | 12.9                                | 28800                 | 43                    | 22                       | 132-160-180-200   | —     | —      | 72800               | 90600  | 27700                    | 58300 |
|                                     | 311 L3  | 89.3 | 11.2                                | 30100                 | 39                    | 22                       | 132-160-180-200   | —     | —      | 76000               | 94600  | 29000                    | 58300 |
|                                     | 311 L3  | 104  | 9.6                                 | 31400                 | 35                    | 22                       | 132-160-180-200   | —     | —      | 79500               | 99000  | 30500                    | 58300 |
|                                     | 311 L3  | 115  | 8.7                                 | 32400                 | 32                    | 22                       | 132-160-180-200   | —     | —      | 81900               | 102000 | 31600                    | 58300 |
|                                     | 311 L3  | 126  | 8.0                                 | 33300                 | 30                    | 22                       | 132-160-180-200   | —     | —      | 84100               | 104800 | 32500                    | 58300 |
|                                     | 311 L3  | 133  | 7.5                                 | 33900                 | 29                    | 22                       | 132-160-180-200   | —     | —      | 85600               | 106700 | 33200                    | 58300 |
|                                     | 311 L3  | 147  | 6.8                                 | 33800                 | 26                    | 22                       | 132-160-180-200   | —     | —      | 88200               | 109900 | 34300                    | 58300 |
|                                     | 311 L3  | 161  | 6.2                                 | 35900                 | 26                    | 22                       | 132-160-180-200   | —     | —      | 90700               | 112900 | 35400                    | 58300 |
|                                     | 311 L3  | 171  | 5.9                                 | 34500                 | 23                    | 22                       | 132-160-180-200   | —     | —      | 92300               | 115000 | 36100                    | 58300 |
|                                     | 311 L3  | 191  | 5.2                                 | 34300                 | 21                    | 22                       | 132-160-180-200   | —     | —      | 95500               | 118900 | 37400                    | 58300 |
|                                     | 311 L3  | 203  | 4.9                                 | 35300                 | 20.0                  | 22                       | 132-160-180-200   | —     | —      | 97200               | 121000 | 38200                    | 58300 |
|                                     | 311 L3  | 245  | 4.1                                 | 36400                 | 17.0                  | 22                       | 132-160-180-200   | —     | —      | 102900              | 128100 | 40700                    | 58300 |
|                                     | 311 L3  | 291  | 3.4                                 | 28300                 | 11.2                  | 22                       | 132-160-180-200   | —     | —      | 108300              | 134900 | 43100                    | 58300 |
|                                     | 311 L4  | 348  | 2.9                                 | 44200                 | 15.0                  | 13.2                     | 71-80-90-100-112-132-160  | —     | —      | 114200              | 142300 | 45700                    | 58300 |
|                                     | 311 L4  | 410  | 2.4                                 | 45900                 | 13.2                  | 13.2                     | 71-80-90-100-112-132-160  | —     | —      | 120000              | 149500 | 48300                    | 58300 |
|                                     | 311 L4  | 512  | 2.0                                 | 46500                 | 10.7                  | 13.2                     | 71-80-90-100-112-132-160  | —     | —      | 128300              | 159800 | 52000                    | 58300 |

B



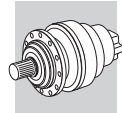
### 311 L

350

### 48330 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N]      |    |        |        |        | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|--------------------------|----|--------|--------|--------|--------------------------|-------|
|                                     |        |                                     |                       |                       |                      |                          | MC                       | MZ | HC/PC  | HZ/PZ  | FZ     |                          |       |
| <b>1000</b>                         | 311 L4 | 568                                 | 1.8                   | 44700                 | 9.3                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 132300 | 164800 | 53800                    | 58300 |
|                                     | 311 L4 | 627                                 | 1.6                   | 42200                 | 8.0                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 136300 | 169800 | 55600                    | 58300 |
|                                     | 311 L4 | 724                                 | 1.4                   | 47400                 | 7.7                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 142300 | 177300 | 58400                    | 58300 |
|                                     | 311 L4 | 825                                 | 1.2                   | 46200                 | 6.6                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 148000 | 184300 | 61000                    | 58300 |
|                                     | 311 L4 | 904                                 | 1.1                   | 48000                 | 6.3                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 152100 | 189500 | 62800                    | 58300 |
|                                     | 311 L4 | 986                                 | 1.0                   | 45100                 | 5.4                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 156100 | 194500 | 64700                    | 58300 |
|                                     | 311 L4 | 1058                                | 0.94                  | 45200                 | 5.1                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 1230                                | 0.81                  | 45200                 | 4.3                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 1415                                | 0.71                  | 43000                 | 3.6                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 1680                                | 0.60                  | 34000                 | 2.4                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 1766                                | 0.57                  | 43000                 | 2.9                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 2096                                | 0.48                  | 34000                 | 1.9                  | 13.2                     | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
| <b>500</b>                          | 311 L1 | 4.09                                | 122                   | 14700                 | 194                  | 70                       | —                        | —  | —      | 37100  | 46200  | 13100                    | 58300 |
|                                     | 311 L1 | 5.25                                | 95                    | 16200                 | 167                  | 70                       | —                        | —  | —      | 40000  | 49800  | 14200                    | 58300 |
|                                     | 311 L1 | 6.23                                | 80                    | 16100                 | 140                  | 70                       | —                        | —  | —      | 42100  | 52400  | 15100                    | 58300 |
|                                     | 311 L2 | 14.0                                | 36                    | 21200                 | 84                   | 52                       | 180-200-225-250          | —  | —      | 53700  | 66900  | 19800                    | 58300 |
|                                     | 311 L2 | 16.7                                | 29.9                  | 22400                 | 74                   | 52                       | 180-200-225-250          | —  | —      | 56600  | 70500  | 20900                    | 58300 |
|                                     | 311 L2 | 18.0                                | 27.8                  | 23500                 | 73                   | 52                       | 180-200-225-250          | —  | —      | 57800  | 72100  | 21500                    | 58300 |
|                                     | 311 L2 | 21.5                                | 23.3                  | 24100                 | 63                   | 52                       | 180-200-225-250          | —  | —      | 61000  | 76000  | 22800                    | 58300 |
|                                     | 311 L2 | 25.5                                | 19.6                  | 25400                 | 55                   | 52                       | 180-200-225-250          | —  | —      | 64200  | 80000  | 24100                    | 58300 |
|                                     | 311 L2 | 27.6                                | 18.1                  | 26700                 | 54                   | 52                       | 180-200-225-250          | —  | —      | 65700  | 81900  | 24700                    | 58300 |
|                                     | 311 L2 | 32.7                                | 15.3                  | 28200                 | 48                   | 52                       | 180-200-225-250          | —  | —      | 69200  | 86200  | 26200                    | 58300 |
|                                     | 311 L2 | 38.8                                | 12.9                  | 25500                 | 36                   | 52                       | 180-200-225-250          | —  | —      | 72800  | 90700  | 27700                    | 58300 |
|                                     | 311 L3 | 50.5                                | 9.9                   | 31200                 | 35                   | 36                       | 132-160-180-200          | —  | —      | 78800  | 98200  | 30300                    | 58300 |
|                                     | 311 L3 | 60.2                                | 8.3                   | 32900                 | 31                   | 36                       | 132-160-180-200          | —  | —      | 83100  | 103500 | 32100                    | 58300 |
|                                     | 311 L3 | 71.1                                | 7.0                   | 34600                 | 28                   | 36                       | 132-160-180-200          | —  | —      | 87400  | 108800 | 33900                    | 58300 |
|                                     | 311 L3 | 77.3                                | 6.5                   | 35400                 | 26                   | 36                       | 132-160-180-200          | —  | —      | 89600  | 111600 | 34900                    | 58300 |
|                                     | 311 L3 | 89.3                                | 5.6                   | 37000                 | 24                   | 36                       | 132-160-180-200          | —  | —      | 93500  | 116500 | 36600                    | 58300 |
|                                     | 311 L3 | 104                                 | 4.8                   | 38700                 | 21                   | 36                       | 132-160-180-200          | —  | —      | 97800  | 121900 | 38500                    | 58300 |
|                                     | 311 L3 | 115                                 | 4.4                   | 39200                 | 19.7                 | 36                       | 132-160-180-200          | —  | —      | 100800 | 125500 | 39800                    | 58300 |
|                                     | 311 L3 | 126                                 | 4.0                   | 40600                 | 18.6                 | 36                       | 132-160-180-200          | —  | —      | 103600 | 129000 | 41000                    | 58300 |
|                                     | 311 L3 | 133                                 | 3.8                   | 40300                 | 17.4                 | 36                       | 132-160-180-200          | —  | —      | 105400 | 131300 | 41800                    | 58300 |
|                                     | 311 L3 | 147                                 | 3.4                   | 37600                 | 14.7                 | 36                       | 132-160-180-200          | —  | —      | 108600 | 135300 | 43200                    | 58300 |
|                                     | 311 L3 | 161                                 | 3.1                   | 41700                 | 14.9                 | 36                       | 132-160-180-200          | —  | —      | 111600 | 139000 | 44600                    | 58300 |
|                                     | 311 L3 | 171                                 | 2.9                   | 38500                 | 12.9                 | 36                       | 132-160-180-200          | —  | —      | 113600 | 141500 | 45400                    | 58300 |
|                                     | 311 L3 | 191                                 | 2.6                   | 34500                 | 10.4                 | 36                       | 132-160-180-200          | —  | —      | 117500 | 146400 | 47200                    | 58300 |
|                                     | 311 L3 | 203                                 | 2.5                   | 39600                 | 11.2                 | 36                       | 132-160-180-200          | —  | —      | 119600 | 149000 | 48100                    | 58300 |
|                                     | 311 L3 | 245                                 | 2.0                   | 40300                 | 9.4                  | 36                       | 132-160-180-200          | —  | —      | 126600 | 157800 | 51300                    | 58300 |
|                                     | 311 L3 | 291                                 | 1.7                   | 31300                 | 6.2                  | 36                       | 132-160-180-200          | —  | —      | 133300 | 166100 | 54300                    | 58300 |
|                                     | 311 L4 | 348                                 | 1.4                   | 47300                 | 8.1                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 140600 | 175100 | 57600                    | 58300 |
|                                     | 311 L4 | 410                                 | 1.2                   | 47800                 | 6.9                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 147800 | 184100 | 60900                    | 58300 |
|                                     | 311 L4 | 512                                 | 0.98                  | 48300                 | 5.6                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 568                                 | 0.88                  | 46900                 | 4.9                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 627                                 | 0.80                  | 45200                 | 4.3                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 724                                 | 0.69                  | 48300                 | 3.9                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 825                                 | 0.61                  | 46900                 | 3.4                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 904                                 | 0.55                  | 48300                 | 3.2                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
|                                     | 311 L4 | 986                                 | 0.51                  | 45200                 | 2.7                  | 22                       | 71-80-90-100-112-132-160 | —  | —      | 157000 | 195000 | 65000                    | 58300 |
| 311 L4                              | 1058   | 0.47                                | 45200                 | 2.5                   | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |
| 311 L4                              | 1230   | 0.41                                | 45200                 | 2.2                   | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |
| 311 L4                              | 1415   | 0.35                                | 43000                 | 1.8                   | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |
| 311 L4                              | 1680   | 0.30                                | 34000                 | 1.2                   | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |
| 311 L4                              | 1766   | 0.28                                | 43000                 | 1.4                   | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |
| 311 L4                              | 2096   | 0.24                                | 34000                 | 0.96                  | 22                   | 71-80-90-100-112-132-160 | —                        | —  | 157000 | 195000 | 65000  | 58300                    |       |

B



### 313 L

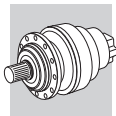
362

### 57970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC) | Rn <sub>2</sub> [N]      |                 |       |        |        | M <sub>2 max</sub><br>Nm |        |        |
|-------------------------------------|-------------|-------------------------------------|-----------------------|-----------------------|----------------------|---------|--------------------------|-----------------|-------|--------|--------|--------------------------|--------|--------|
|                                     |             |                                     |                       |                       |                      |         | MC                       | MZ              | HC/PC | HZ/PZ  | FZ     |                          |        |        |
| <b>1500</b>                         | 313 L2      | 14.2                                | 106                   | 22600                 | 150                  | 30      | 180-200-225-250          | —               | —     | 47900  | 56700  | 16900                    | 105000 |        |
|                                     | 313 L2      | 16.9                                | 89                    | 23500                 | 150                  | 30      | 180-200-225-250          | —               | —     | 50500  | 59700  | 18000                    | 105000 |        |
|                                     | 313 L2      | 18.5                                | 81                    | 24100                 | 150                  | 30      | 180-200-225-250          | —               | —     | 51800  | 61400  | 18500                    | 105000 |        |
|                                     | 313 L2      | 21.8                                | 69                    | 25500                 | 150                  | 30      | 180-200-225-250          | —               | —     | 54400  | 64400  | 19500                    | 105000 |        |
|                                     | 313 L2      | 25.8                                | 58                    | 26700                 | 150                  | 30      | 180-200-225-250          | —               | —     | 57300  | 67800  | 20700                    | 105000 |        |
|                                     | 313 L2      | 28.4                                | 53                    | 27300                 | 150                  | 30      | 180-200-225-250          | —               | —     | 58900  | 69700  | 21300                    | 105000 |        |
|                                     | 313 L2      | 33.6                                | 45                    | 28800                 | 143                  | 30      | 180-200-225-250          | —               | —     | 62000  | 73400  | 22600                    | 105000 |        |
|                                     | 313 L2      | 40.5                                | 37                    | 29500                 | 122                  | 30      | 180-200-225-250          | —               | —     | 65600  | 77600  | 24000                    | 105000 |        |
|                                     | 313 L3      | 51.1                                | 29.3                  | 32700                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 70300  | 83200  | 25900                    | 105000 |        |
|                                     | 313 L3      | 61.0                                | 24.6                  | 34500                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 74100  | 87700  | 27500                    | 105000 |        |
|                                     | 313 L3      | 72.0                                | 20.8                  | 36300                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 77900  | 92200  | 29100                    | 105000 |        |
|                                     | 313 L3      | 78.3                                | 19.2                  | 37300                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 79900  | 94600  | 29900                    | 105000 |        |
|                                     | 313 L3      | 92.4                                | 16.2                  | 39300                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 84000  | 99400  | 31600                    | 105000 |        |
|                                     | 313 L3      | 110                                 | 13.7                  | 41200                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 88400  | 104600 | 33500                    | 105000 |        |
|                                     | 313 L3      | 120                                 | 12.4                  | 42100                 | 60                   | 18.0    | 132-160-180-200          | —               | —     | 90900  | 107600 | 34500                    | 105000 |        |
|                                     | 313 L3      | 135                                 | 11.1                  | 44000                 | 56                   | 18.0    | 132-160-180-200          | —               | —     | 94100  | 111300 | 35800                    | 105000 |        |
|                                     | 313 L3      | 143                                 | 10.5                  | 44400                 | 53                   | 18.0    | 132-160-180-200          | —               | —     | 95700  | 113300 | 36500                    | 105000 |        |
|                                     | 313 L3      | 151                                 | 9.9                   | 45000                 | 51                   | 18.0    | 132-160-180-200          | —               | —     | 97300  | 115200 | 37200                    | 105000 |        |
|                                     | 313 L3      | 163                                 | 9.2                   | 46000                 | 49                   | 18.0    | 132-160-180-200          | —               | —     | 99600  | 117800 | 38200                    | 105000 |        |
|                                     | 313 L3      | 176                                 | 8.5                   | 45000                 | 44                   | 18.0    | 132-160-180-200          | —               | —     | 101800 | 120500 | 39100                    | 105000 |        |
|                                     | 313 L3      | 182                                 | 8.2                   | 39000                 | 37                   | 18.0    | 132-160-180-200          | —               | —     | 102900 | 121800 | 39600                    | 105000 |        |
|                                     | 313 L3      | 194                                 | 7.7                   | 47600                 | 42                   | 18.0    | 132-160-180-200          | —               | —     | 104800 | 124100 | 40400                    | 105000 |        |
|                                     | 313 L3      | 209                                 | 7.2                   | 45000                 | 37                   | 18.0    | 132-160-180-200          | —               | —     | 107200 | 126900 | 41400                    | 105000 |        |
|                                     | 313 L3      | 252                                 | 5.9                   | 45000                 | 31                   | 18.0    | 132-160-180-200          | —               | —     | 113500 | 134300 | 44200                    | 105000 |        |
|                                     | 313 L3      | 304                                 | 4.9                   | 39100                 | 22                   | 18.0    | 132-160-180-200          | —               | —     | 120000 | 142000 | 47000                    | 105000 |        |
|                                     | 313 L4      | 352                                 | 4.3                   | 52500                 | 26                   | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 125400 | 148400 | 49300                    | 105000 |        |
|                                     | 313 L4      | 394                                 | 3.8                   | 55000                 | 25                   | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 129700 | 153500 | 51200                    | 105000 |        |
|                                     | 313 L4      | 452                                 | 3.3                   | 54000                 | 21                   | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 135200 | 160000 | 53600                    | 105000 |        |
|                                     | 313 L4      | 514                                 | 2.9                   | 48600                 | 16.8                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 140500 | 166300 | 56000                    | 105000 |        |
|                                     | 313 L4      | 564                                 | 2.7                   | 54800                 | 17.2                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 144500 | 171000 | 57700                    | 105000 |        |
|                                     | 313 L4      | 633                                 | 2.4                   | 52000                 | 14.6                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 149600 | 177000 | 60000                    | 105000 |        |
|                                     | 313 L4      | 695                                 | 2.2                   | 51000                 | 13.0                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 153800 | 182100 | 61900                    | 105000 |        |
|                                     | 313 L4      | 790                                 | 1.9                   | 52200                 | 11.7                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 159800 | 189200 | 64600                    | 105000 |        |
|                                     | 313 L4      | 889                                 | 1.7                   | 53100                 | 10.6                 | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 165600 | 196000 | 67200                    | 105000 |        |
|                                     | 313 L4      | 1014                                | 1.5                   | 54300                 | 9.5                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 172300 | 203900 | 70200                    | 105000 |        |
|                                     | 313 L4      | 1117                                | 1.3                   | 52500                 | 8.3                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 177300 | 209900 | 72500                    | 105000 |        |
|                                     | 313 L4      | 1266                                | 1.2                   | 56300                 | 7.9                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 184100 | 217900 | 75600                    | 105000 |        |
|                                     | 313 L4      | 1394                                | 1.1                   | 52700                 | 6.7                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 189500 | 224300 | 78100                    | 105000 |        |
|                                     | 313 L4      | 1502                                | 1.00                  | 58000                 | 6.8                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 192000 | 229400 | 80000                    | 105000 |        |
|                                     | 313 L4      | 1817                                | 0.83                  | 58000                 | 5.7                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 192000 | 231000 | 80000                    | 105000 |        |
|                                     | 313 L4      | 2187                                | 0.69                  | 49000                 | 4.0                  | 11.0    | 71-80-90-100-112-132-160 | —               | —     | 192000 | 231000 | 80000                    | 105000 |        |
|                                     | <b>1000</b> | 313 L2                              | 14.2                  | 70                    | 25600                | 150     | 36                       | 180-200-225-250 | —     | —      | 54100  | 64000                    | 19400  | 105000 |
|                                     |             | 313 L2                              | 16.9                  | 59                    | 26500                | 150     | 36                       | 180-200-225-250 | —     | —      | 57000  | 67500                    | 20500  | 105000 |
|                                     |             | 313 L2                              | 18.5                  | 54                    | 27200                | 150     | 36                       | 180-200-225-250 | —     | —      | 58500  | 69300                    | 21200  | 105000 |
|                                     |             | 313 L2                              | 21.8                  | 46                    | 28700                | 147     | 36                       | 180-200-225-250 | —     | —      | 61400  | 72700                    | 22300  | 105000 |
| 313 L2                              |             | 25.8                                | 39                    | 30100                 | 130                  | 36      | 180-200-225-250          | —               | —     | 64700  | 76600  | 23600                    | 105000 |        |
| 313 L2                              |             | 28.4                                | 35                    | 30900                 | 121                  | 36      | 180-200-225-250          | —               | —     | 66500  | 78700  | 24400                    | 105000 |        |
| 313 L2                              |             | 33.6                                | 29.7                  | 32500                 | 107                  | 36      | 180-200-225-250          | —               | —     | 70000  | 82900  | 25800                    | 105000 |        |
| 313 L2                              |             | 40.5                                | 24.7                  | 32200                 | 88                   | 36      | 180-200-225-250          | —               | —     | 74000  | 87600  | 27500                    | 105000 |        |
| 313 L3                              |             | 51.1                                | 19.6                  | 37000                 | 60                   | 22      | 132-160-180-200          | —               | —     | 79400  | 94000  | 29700                    | 105000 |        |
| 313 L3                              |             | 61.0                                | 16.4                  | 39000                 | 60                   | 22      | 132-160-180-200          | —               | —     | 83700  | 99100  | 31500                    | 105000 |        |
| 313 L3                              |             | 72.0                                | 13.9                  | 41000                 | 60                   | 22      | 132-160-180-200          | —               | —     | 88000  | 104100 | 33300                    | 105000 |        |
| 313 L3                              |             | 78.3                                | 12.8                  | 42200                 | 60                   | 22      | 132-160-180-200          | —               | —     | 90200  | 106800 | 34200                    | 105000 |        |
| 313 L3                              |             | 92.4                                | 10.8                  | 44300                 | 55                   | 22      | 132-160-180-200          | —               | —     | 94800  | 112200 | 36200                    | 105000 |        |
| 313 L3                              |             | 110                                 | 9.1                   | 46100                 | 48                   | 22      | 132-160-180-200          | —               | —     | 99800  | 118200 | 38300                    | 105000 |        |
| 313 L3                              |             | 120                                 | 8.3                   | 45000                 | 43                   | 22      | 132-160-180-200          | —               | —     | 102700 | 121500 | 39500                    | 105000 |        |
| 313 L3                              |             | 135                                 | 7.4                   | 49300                 | 42                   | 22      | 132-160-180-200          | —               | —     | 106200 | 125700 | 41000                    | 105000 |        |
| 313 L3                              |             | 143                                 | 7.0                   | 45000                 | 36                   | 22      | 132-160-180-200          | —               | —     | 108100 | 127900 | 41800                    | 105000 |        |
| 313 L3                              |             | 151                                 | 6.6                   | 45000                 | 34                   | 22      | 132-160-180-200          | —               | —     | 109900 | 130100 | 42600                    | 105000 |        |
| 313 L3                              |             | 163                                 | 6.1                   | 50200                 | 35                   | 22      | 132-160-180-200          | —               | —     | 112500 | 133100 | 43700                    | 105000 |        |
| 313 L3                              |             | 176                                 | 5.7                   | 45000                 | 29                   | 22      | 132-160-180-200          | —               | —     | 115000 | 136100 | 44800                    | 105000 |        |

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# 313 L

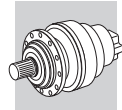


362

# 57970 Nm



| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)                  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|--------------------------|---------------------|----|--------|--------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                          | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>1000</b>                         | 313 L3 | 182  | 5.5                                 | 39000                 | 25                    | 22                   | 132-160-180-200          | —                   | —  | 116200 | 137500 | 45300 | 105000                   |
|                                     | 313 L3 | 194  | 5.2                                 | 51700                 | 31                    | 22                   | 132-160-180-200          | —                   | —  | 118400 | 140100 | 46300 | 105000                   |
|                                     | 313 L3 | 209  | 4.8                                 | 45300                 | 25                    | 22                   | 132-160-180-200          | —                   | —  | 121100 | 143300 | 47400 | 105000                   |
|                                     | 313 L3 | 252  | 4.0                                 | 46500                 | 21                    | 22                   | 132-160-180-200          | —                   | —  | 128200 | 151700 | 50600 | 105000                   |
|                                     | 313 L3 | 304  | 3.3                                 | 41000                 | 15.5                  | 22                   | 132-160-180-200          | —                   | —  | 135500 | 160400 | 53800 | 105000                   |
|                                     | 313 L4 | 352  | 2.8                                 | 52500                 | 17.6                  | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 141600 | 167600 | 56500 | 105000                   |
|                                     | 313 L4 | 394  | 2.5                                 | 55000                 | 16.5                  | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 146500 | 173400 | 58700 | 105000                   |
|                                     | 313 L4 | 452  | 2.2                                 | 55100                 | 14.4                  | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 152700 | 180700 | 61400 | 105000                   |
|                                     | 313 L4 | 514  | 1.9                                 | 51900                 | 11.9                  | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 158700 | 187800 | 64100 | 105000                   |
|                                     | 313 L4 | 564  | 1.8                                 | 55200                 | 11.6                  | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 163100 | 193100 | 66100 | 105000                   |
|                                     | 313 L4 | 633  | 1.6                                 | 52400                 | 9.8                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 168900 | 199900 | 68700 | 105000                   |
|                                     | 313 L4 | 695  | 1.4                                 | 54500                 | 9.3                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 173700 | 205600 | 70900 | 105000                   |
|                                     | 313 L4 | 790  | 1.3                                 | 52600                 | 7.9                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 180500 | 213600 | 74000 | 105000                   |
|                                     | 313 L4 | 889  | 1.1                                 | 56800                 | 7.6                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 187100 | 221400 | 76900 | 105000                   |
|                                     | 313 L4 | 1014 | 0.99                                | 58000                 | 6.8                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 230300 | 80000 | 105000                   |
|                                     | 313 L4 | 1117 | 0.90                                | 52800                 | 5.6                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1266 | 0.79                                | 58000                 | 5.4                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1394 | 0.72                                | 52800                 | 4.5                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1502 | 0.67                                | 58000                 | 4.6                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1817 | 0.55                                | 58000                 | 3.8                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 2187 | 0.46                                | 49000                 | 2.7                   | 13.2                 | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
| <b>500</b>                          | 313 L1 | 4.14 | 121                                 | 21700                 | 250                   | 95                   | —                        | —                   | —  | 46000  | 54400  | 16200 | 105000                   |
|                                     | 313 L1 | 5.40 | 93                                  | 23100                 | 231                   | 95                   | —                        | —                   | —  | 49800  | 58900  | 17700 | 105000                   |
|                                     | 313 L1 | 6.50 | 77                                  | 24400                 | 202                   | 95                   | —                        | —                   | —  | 52700  | 62300  | 18800 | 105000                   |
|                                     | 313 L2 | 14.2 | 35                                  | 31500                 | 124                   | 60                   | 180-200-225-250          | —                   | —  | 66600  | 78800  | 24400 | 105000                   |
|                                     | 313 L2 | 16.9 | 29.5                                | 32700                 | 107                   | 60                   | 180-200-225-250          | —                   | —  | 70200  | 83100  | 25900 | 105000                   |
|                                     | 313 L2 | 18.5 | 27.0                                | 33400                 | 100                   | 60                   | 180-200-225-250          | —                   | —  | 72100  | 85300  | 26700 | 105000                   |
|                                     | 313 L2 | 21.8 | 23.0                                | 35400                 | 90                    | 60                   | 180-200-225-250          | —                   | —  | 75600  | 89500  | 28100 | 105000                   |
|                                     | 313 L2 | 25.8 | 19.4                                | 37100                 | 80                    | 60                   | 180-200-225-250          | —                   | —  | 79600  | 94200  | 29800 | 105000                   |
|                                     | 313 L2 | 28.4 | 17.6                                | 38000                 | 75                    | 60                   | 180-200-225-250          | —                   | —  | 81900  | 96900  | 30700 | 105000                   |
|                                     | 313 L2 | 33.6 | 14.9                                | 40000                 | 66                    | 60                   | 180-200-225-250          | —                   | —  | 86200  | 102000 | 32500 | 105000                   |
|                                     | 313 L2 | 40.5 | 12.3                                | 37300                 | 51                    | 60                   | 180-200-225-250          | —                   | —  | 91200  | 107900 | 34600 | 105000                   |
|                                     | 313 L3 | 51.1 | 9.8                                 | 45300                 | 51                    | 36                   | 132-160-180-200          | —                   | —  | 97800  | 115700 | 37400 | 105000                   |
|                                     | 313 L3 | 61.0 | 8.2                                 | 47200                 | 44                    | 36                   | 132-160-180-200          | —                   | —  | 103100 | 122000 | 39700 | 105000                   |
|                                     | 313 L3 | 72.0 | 6.9                                 | 48900                 | 39                    | 36                   | 132-160-180-200          | —                   | —  | 108300 | 128200 | 41900 | 105000                   |
|                                     | 313 L3 | 78.3 | 6.4                                 | 51400                 | 38                    | 36                   | 132-160-180-200          | —                   | —  | 111100 | 131500 | 43100 | 105000                   |
|                                     | 313 L3 | 92.4 | 5.4                                 | 53800                 | 33                    | 36                   | 132-160-180-200          | —                   | —  | 116800 | 138200 | 45600 | 105000                   |
|                                     | 313 L3 | 110  | 4.6                                 | 52000                 | 27                    | 36                   | 132-160-180-200          | —                   | —  | 122900 | 145500 | 48300 | 105000                   |
|                                     | 313 L3 | 120  | 4.1                                 | 46200                 | 22                    | 36                   | 132-160-180-200          | —                   | —  | 126400 | 149600 | 49800 | 105000                   |
|                                     | 313 L3 | 135  | 3.7                                 | 55000                 | 23                    | 36                   | 132-160-180-200          | —                   | —  | 130800 | 154800 | 51700 | 105000                   |
|                                     | 313 L3 | 143  | 3.5                                 | 47400                 | 19.0                  | 36                   | 132-160-180-200          | —                   | —  | 133100 | 157500 | 52700 | 105000                   |
|                                     | 313 L3 | 151  | 3.3                                 | 47800                 | 18.1                  | 36                   | 132-160-180-200          | —                   | —  | 135300 | 160200 | 53700 | 105000                   |
|                                     | 313 L3 | 163  | 3.1                                 | 54300                 | 19.1                  | 36                   | 132-160-180-200          | —                   | —  | 138500 | 163900 | 55100 | 105000                   |
|                                     | 313 L3 | 176  | 2.8                                 | 48800                 | 15.9                  | 36                   | 132-160-180-200          | —                   | —  | 141600 | 167600 | 56500 | 105000                   |
|                                     | 313 L3 | 182  | 2.7                                 | 41900                 | 13.2                  | 36                   | 132-160-180-200          | —                   | —  | 143100 | 169300 | 57100 | 105000                   |
|                                     | 313 L3 | 194  | 2.6                                 | 52000                 | 15.4                  | 36                   | 132-160-180-200          | —                   | —  | 145800 | 172500 | 58300 | 105000                   |
|                                     | 313 L3 | 209  | 2.4                                 | 50100                 | 13.8                  | 36                   | 132-160-180-200          | —                   | —  | 149100 | 176400 | 59800 | 105000                   |
|                                     | 313 L3 | 252  | 2.0                                 | 51700                 | 11.8                  | 36                   | 132-160-180-200          | —                   | —  | 157800 | 186800 | 63700 | 105000                   |
|                                     | 313 L3 | 304  | 1.6                                 | 45300                 | 8.6                   | 36                   | 132-160-180-200          | —                   | —  | 166800 | 197500 | 67800 | 105000                   |
|                                     | 313 L4 | 352  | 1.4                                 | 54300                 | 9.1                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 174400 | 206400 | 71200 | 105000                   |
|                                     | 313 L4 | 394  | 1.3                                 | 55300                 | 8.3                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 180400 | 213500 | 73900 | 105000                   |
|                                     | 313 L4 | 452  | 1.1                                 | 55400                 | 7.2                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 187900 | 222400 | 77300 | 105000                   |
|                                     | 313 L4 | 514  | 0.97                                | 58000                 | 6.7                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 564  | 0.89                                | 55400                 | 5.8                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 633  | 0.79                                | 52800                 | 4.9                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 695  | 0.72                                | 58000                 | 4.9                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 790  | 0.63                                | 52800                 | 4.0                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 889  | 0.56                                | 58000                 | 3.9                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1014 | 0.49                                | 58000                 | 3.4                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4 | 1117 | 0.45                                | 52800                 | 2.8                   | 22                   | 71-80-90-100-112-132-160 | —                   | —  | 192000 | 231000 | 80000 | 105000                   |

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**313 L**  362

**57970 Nm**

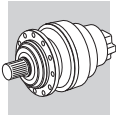
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 313 L4  | 1266 | 0.40                                | 58000                 | 2.7                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4  | 1394 | 0.36                                | 52800                 | 2.2                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4  | 1502 | 0.33                                | 58000                 | 2.3                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4  | 1817 | 0.28                                | 58000                 | 1.9                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 L4  | 2187 | 0.23                                | 49000                 | 1.3                   | 22                   | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |



**314 L**  374



**84000 Nm**

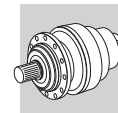
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 314 L2  | 17.4 | 86                                  | 33100                 | 175                   | 40                   | 200-225-250   | —                   | —      | 54300  | 63800  | 20400  | 115000                   |
|                                     | 314 L2  | 22.3 | 67                                  | 37400                 | 175                   | 40                   | 200-225-250   | —                   | —      | 58500  | 68700  | 22100  | 115000                   |
|                                     | 314 L2  | 26.5 | 57                                  | 37300                 | 175                   | 40                   | 200-225-250   | —                   | —      | 61600  | 72300  | 23400  | 115000                   |
|                                     | 314 L2  | 28.0 | 54                                  | 38200                 | 175                   | 40                   | 200-225-250   | —                   | —      | 62700  | 73600  | 23900  | 115000                   |
|                                     | 314 L2  | 33.2 | 45                                  | 40200                 | 175                   | 40                   | 200-225-250   | —                   | —      | 66000  | 77400  | 25300  | 115000                   |
|                                     | 314 L2  | 38.6 | 39                                  | 35300                 | 152                   | 40                   | 200-225-250   | —                   | —      | 69000  | 81000  | 26600  | 115000                   |
|                                     | 314 L3  | 62.6 | 24.0                                | 48600                 | 75                    | 25                   | 160-180-200-225-250   | —                   | —      | 79800  | 93600  | 31200  | 115000                   |
|                                     | 314 L3  | 73.9 | 20.3                                | 51100                 | 75                    | 25                   | 160-180-200-225-250   | —                   | —      | 83800  | 98400  | 33000  | 115000                   |
|                                     | 314 L3  | 92.7 | 16.2                                | 54700                 | 75                    | 25                   | 160-180-200-225-250   | —                   | —      | 89700  | 105400 | 35600  | 115000                   |
|                                     | 314 L3  | 108  | 13.9                                | 57200                 | 75                    | 25                   | 160-180-200-225-250   | —                   | —      | 93900  | 110200 | 37400  | 115000                   |
|                                     | 314 L3  | 138  | 10.8                                | 64800                 | 75                    | 25                   | 160-180-200-225-250   | —                   | —      | 101200 | 118800 | 40700  | 115000                   |
|                                     | 314 L3  | 164  | 9.1                                 | 64200                 | 67                    | 25                   | 160-180-200-225-250   | —                   | —      | 106500 | 125100 | 43100  | 115000                   |
|                                     | 314 L3  | 174  | 8.6                                 | 63000                 | 62                    | 25                   | 160-180-200-225-250   | —                   | —      | 108300 | 127200 | 43900  | 115000                   |
|                                     | 314 L3  | 206  | 7.3                                 | 63800                 | 53                    | 25                   | 160-180-200-225-250   | —                   | —      | 114000 | 133900 | 46400  | 115000                   |
|                                     | 314 L3  | 240  | 6.3                                 | 52000                 | 37                    | 25                   | 160-180-200-225-250   | —                   | —      | 119300 | 140100 | 48800  | 115000                   |
|                                     | 314 L4  | 314  | 4.8                                 | 77800                 | 40                    | 15.0                 | 132-160-180-200   | —                   | —      | 129400 | 151900 | 53400  | 115000                   |
|                                     | 314 L4  | 388  | 3.9                                 | 78500                 | 36                    | 15.0                 | 132-160-180-200   | —                   | —      | 137900 | 161900 | 57300  | 115000                   |
|                                     | 314 L4  | 458  | 3.3                                 | 79100                 | 31                    | 15.0                 | 132-160-180-200   | —                   | —      | 144900 | 170100 | 60600  | 115000                   |
|                                     | 314 L4  | 495  | 3.0                                 | 79300                 | 28                    | 15.0                 | 132-160-180-200   | —                   | —      | 148300 | 174100 | 62200  | 115000                   |
|                                     | 314 L4  | 554  | 2.7                                 | 79700                 | 26                    | 15.0                 | 132-160-180-200   | —                   | —      | 153400 | 180100 | 64600  | 115000                   |
|                                     | 314 L4  | 588  | 2.6                                 | 79900                 | 24                    | 15.0                 | 132-160-180-200   | —                   | —      | 156200 | 183400 | 65900  | 115000                   |
|                                     | 314 L4  | 668  | 2.2                                 | 80500                 | 21                    | 15.0                 | 132-160-180-200   | —                   | —      | 162300 | 190600 | 68700  | 115000                   |
|                                     | 314 L4  | 738  | 2.0                                 | 80900                 | 19.5                  | 15.0                 | 132-160-180-200   | —                   | —      | 167200 | 196300 | 71000  | 115000                   |
|                                     | 314 L4  | 858  | 1.7                                 | 81500                 | 16.9                  | 15.0                 | 132-160-180-200   | —                   | —      | 174900 | 205400 | 74700  | 115000                   |
|                                     | 314 L4  | 926  | 1.6                                 | 74000                 | 14.2                  | 15.0                 | 132-160-180-200   | —                   | —      | 179000 | 210100 | 76600  | 115000                   |
|                                     | 314 L4  | 1038 | 1.4                                 | 82400                 | 14.1                  | 15.0                 | 132-160-180-200   | —                   | —      | 185200 | 217400 | 79600  | 115000                   |
| 314 L4                              | 1099  | 1.4  | 75800                               | 12.2                  | 15.0                  | 132-160-180-200      | —   | —                   | 188400 | 221200 | 81100  | 115000 |                          |
| 314 L4                              | 1277  | 1.2  | 77400                               | 10.8                  | 15.0                  | 132-160-180-200      | —   | —                   | 197100 | 231400 | 85300  | 115000 |                          |
| 314 L4                              | 1485  | 1.0  | 66700                               | 8.0                   | 15.0                  | 132-160-180-200      | —   | —                   | 206000 | 242100 | 89700  | 115000 |                          |
| 314 L4                              | 1796  | 0.84 | 66800                               | 6.6                   | 15.0                  | 132-160-180-200      | —   | —                   | 206000 | 243000 | 90000  | 115000 |                          |
| 1000                                | 314 L2  | 17.4 | 58                                  | 37400                 | 175                   | 48                   | 200-225-250   | —                   | —      | 61300  | 72000  | 23300  | 115000                   |
|                                     | 314 L2  | 22.3 | 45                                  | 42200                 | 175                   | 48                   | 200-225-250   | —                   | —      | 66100  | 77600  | 25300  | 115000                   |
|                                     | 314 L2  | 26.5 | 38                                  | 42100                 | 175                   | 48                   | 200-225-250   | —                   | —      | 69600  | 81700  | 26800  | 115000                   |
|                                     | 314 L2  | 28.0 | 36                                  | 43100                 | 171                   | 48                   | 200-225-250   | —                   | —      | 70800  | 83100  | 27300  | 115000                   |
|                                     | 314 L2  | 33.2 | 30                                  | 45300                 | 152                   | 48                   | 200-225-250   | —                   | —      | 74500  | 87500  | 28900  | 115000                   |
|                                     | 314 L2  | 38.6 | 25.9                                | 39600                 | 114                   | 48                   | 200-225-250   | —                   | —      | 77900  | 91500  | 30400  | 115000                   |
|                                     | 314 L3  | 62.6 | 16.0                                | 54900                 | 75                    | 30                   | 160-180-200-225-250   | —                   | —      | 90100  | 105800 | 35700  | 115000                   |
|                                     | 314 L3  | 73.9 | 13.5                                | 57700                 | 75                    | 30                   | 160-180-200-225-250   | —                   | —      | 94700  | 111200 | 37800  | 115000                   |
|                                     | 314 L3  | 92.7 | 10.8                                | 61800                 | 75                    | 30                   | 160-180-200-225-250   | —                   | —      | 101400 | 119000 | 40700  | 115000                   |
|                                     | 314 L3  | 108  | 9.3                                 | 64600                 | 69                    | 30                   | 160-180-200-225-250   | —                   | —      | 106000 | 124500 | 42800  | 115000                   |
|                                     | 314 L3  | 138  | 7.2                                 | 71400                 | 59                    | 30                   | 160-180-200-225-250   | —                   | —      | 114300 | 134200 | 46500  | 115000                   |
|                                     | 314 L3  | 164  | 6.1                                 | 72900                 | 51                    | 30                   | 160-180-200-225-250   | —                   | —      | 120300 | 141200 | 49300  | 115000                   |
|                                     | 314 L3  | 174  | 5.8                                 | 64800                 | 43                    | 30                   | 160-180-200-225-250   | —                   | —      | 122300 | 143600 | 50200  | 115000                   |
|                                     | 314 L3  | 206  | 4.9                                 | 65600                 | 37                    | 30                   | 160-180-200-225-250   | —                   | —      | 128800 | 151200 | 53200  | 115000                   |
|                                     | 314 L3  | 240  | 4.2                                 | 53400                 | 26                    | 30                   | 160-180-200-225-250   | —                   | —      | 134700 | 158200 | 55900  | 115000                   |

**B**



| 314 L                               |   |      |                                     |                       |                       |                      | 374   |    | 84000 Nm |                     |        |        |                          |  |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|----|----------|---------------------|--------|--------|--------------------------|--|--|
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | MC | MZ       | Rn <sub>2</sub> [N] |        |        | M <sub>2 max</sub><br>Nm |  |  |
|                                     |   |      |                                     |                       |                       |                      |   |    |          | HC/PC               | HZ/PZ  | FZ     |                          |  |  |
| 1000                                | 314 L4  | 314  | 3.2                                 | 79200                 | 30                    | 18.0                 | 132-160-180-200   | —  | —        | 146100              | 171600 | 61200  | 115000                   |  |  |
|                                     | 314 L4  | 388  | 2.6                                 | 79900                 | 24                    | 18.0                 | 132-160-180-200   | —  | —        | 155700              | 182800 | 65600  | 115000                   |  |  |
|                                     | 314 L4  | 458  | 2.2                                 | 80600                 | 21                    | 18.0                 | 132-160-180-200   | —  | —        | 163700              | 192200 | 69400  | 115000                   |  |  |
|                                     | 314 L4  | 495  | 2.0                                 | 80900                 | 19.4                  | 18.0                 | 132-160-180-200   | —  | —        | 167500              | 196600 | 71200  | 115000                   |  |  |
|                                     | 314 L4  | 554  | 1.8                                 | 81400                 | 17.4                  | 18.0                 | 132-160-180-200   | —  | —        | 173300              | 203500 | 73900  | 115000                   |  |  |
|                                     | 314 L4  | 588  | 1.7                                 | 81700                 | 16.4                  | 18.0                 | 132-160-180-200   | —  | —        | 176400              | 207100 | 75400  | 115000                   |  |  |
|                                     | 314 L4  | 668  | 1.5                                 | 82200                 | 14.6                  | 18.0                 | 132-160-180-200   | —  | —        | 183300              | 215200 | 78700  | 115000                   |  |  |
|                                     | 314 L4  | 738  | 1.4                                 | 82700                 | 13.3                  | 18.0                 | 132-160-180-200   | —  | —        | 188800              | 221700 | 81300  | 115000                   |  |  |
|                                     | 314 L4  | 858  | 1.2                                 | 83300                 | 11.5                  | 18.0                 | 132-160-180-200   | —  | —        | 197500              | 231900 | 85500  | 115000                   |  |  |
|                                     | 314 L4  | 926  | 1.1                                 | 78300                 | 10.0                  | 18.0                 | 132-160-180-200   | —  | —        | 202100              | 237300 | 87700  | 115000                   |  |  |
|                                     | 314 L4  | 1038 | 0.96                                | 84000                 | 9.6                   | 18.0                 | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1099 | 0.91                                | 79200                 | 8.5                   | 18.0                 | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1277 | 0.78                                | 79200                 | 7.3                   | 18.0                 | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1485 | 0.67                                | 66800                 | 5.3                   | 18.0                 | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
| 314 L4                              | 1796  | 0.56 | 66800                               | 4.4                   | 18.0                  | 132-160-180-200      | —   | —  | 206000   | 243000              | 90000  | 115000 |                          |  |  |
| 500                                 | 314 L2  | 17.4 | 28.8                                | 46000                 | 147                   | 80                   | 200-225-250   | —  | —        | 75500               | 88700  | 29400  | 115000                   |  |  |
|                                     | 314 L2  | 22.3 | 22.4                                | 52000                 | 130                   | 80                   | 200-225-250   | —  | —        | 81400               | 95600  | 31900  | 115000                   |  |  |
|                                     | 314 L2  | 26.5 | 18.9                                | 51700                 | 109                   | 80                   | 200-225-250   | —  | —        | 85700               | 100600 | 33800  | 115000                   |  |  |
|                                     | 314 L2  | 28.0 | 17.9                                | 52700                 | 105                   | 80                   | 200-225-250   | —  | —        | 87100               | 102300 | 34400  | 115000                   |  |  |
|                                     | 314 L2  | 33.2 | 15.0                                | 55400                 | 93                    | 80                   | 200-225-250   | —  | —        | 91700               | 107700 | 36500  | 115000                   |  |  |
|                                     | 314 L2  | 38.6 | 12.9                                | 48300                 | 70                    | 80                   | 200-225-250   | —  | —        | 96000               | 112700 | 38300  | 115000                   |  |  |
|                                     | 314 L3  | 62.6 | 8.0                                 | 67500                 | 62                    | 50                   | 160-180-200-225-250   | —  | —        | 110900              | 130200 | 45000  | 115000                   |  |  |
|                                     | 314 L3  | 73.9 | 6.8                                 | 70900                 | 55                    | 50                   | 160-180-200-225-250   | —  | —        | 116600              | 136900 | 47600  | 115000                   |  |  |
|                                     | 314 L3  | 92.7 | 5.4                                 | 75900                 | 47                    | 50                   | 160-180-200-225-250   | —  | —        | 124800              | 146500 | 51300  | 115000                   |  |  |
|                                     | 314 L3  | 108  | 4.6                                 | 77900                 | 41                    | 50                   | 160-180-200-225-250   | —  | —        | 130500              | 153300 | 54000  | 115000                   |  |  |
|                                     | 314 L3  | 138  | 3.6                                 | 78700                 | 33                    | 50                   | 160-180-200-225-250   | —  | —        | 140700              | 165200 | 58600  | 115000                   |  |  |
|                                     | 314 L3  | 164  | 3.0                                 | 79300                 | 28                    | 50                   | 160-180-200-225-250   | —  | —        | 148100              | 173900 | 62100  | 115000                   |  |  |
|                                     | 314 L3  | 174  | 2.9                                 | 68700                 | 23                    | 50                   | 160-180-200-225-250   | —  | —        | 150600              | 176800 | 63300  | 115000                   |  |  |
|                                     | 314 L3  | 206  | 2.4                                 | 69900                 | 19.5                  | 50                   | 160-180-200-225-250   | —  | —        | 158500              | 186100 | 67000  | 115000                   |  |  |
|                                     | 314 L3  | 240  | 2.1                                 | 59200                 | 14.2                  | 50                   | 160-180-200-225-250   | —  | —        | 165900              | 194700 | 70400  | 115000                   |  |  |
|                                     | 314 L4  | 314  | 1.6                                 | 81900                 | 15.4                  | 30                   | 132-160-180-200   | —  | —        | 179900              | 211200 | 77100  | 115000                   |  |  |
|                                     | 314 L4  | 388  | 1.3                                 | 82900                 | 12.6                  | 30                   | 132-160-180-200   | —  | —        | 191700              | 225100 | 82700  | 115000                   |  |  |
|                                     | 314 L4  | 458  | 1.1                                 | 83600                 | 10.8                  | 30                   | 132-160-180-200   | —  | —        | 201500              | 236600 | 87400  | 115000                   |  |  |
|                                     | 314 L4  | 495  | 1.0                                 | 84000                 | 10.0                  | 30                   | 132-160-180-200   | —  | —        | 206000              | 242100 | 89700  | 115000                   |  |  |
|                                     | 314 L4  | 554  | 0.90                                | 84000                 | 9.0                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 588  | 0.85                                | 84000                 | 8.4                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 668  | 0.75                                | 84000                 | 7.4                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 738  | 0.68                                | 84000                 | 6.7                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 858  | 0.58                                | 84000                 | 5.8                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 926  | 0.54                                | 79200                 | 5.1                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1038 | 0.48                                | 84000                 | 4.8                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1099 | 0.46                                | 79200                 | 4.3                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1277 | 0.39                                | 79200                 | 3.7                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1485 | 0.34                                | 66800                 | 2.7                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |
|                                     | 314 L4  | 1796 | 0.28                                | 66800                 | 2.2                   | 30                   | 132-160-180-200   | —  | —        | 206000              | 243000 | 90000  | 115000                   |  |  |

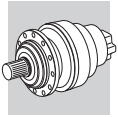
| 315 L                               |   |      |                                     |                       |                       |                      | 386   |    | 105000 Nm |                     |       |       |                          |  |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|----|-----------|---------------------|-------|-------|--------------------------|--|--|
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | MC | MZ        | Rn <sub>2</sub> [N] |       |       | M <sub>2 max</sub><br>Nm |  |  |
|                                     |   |      |                                     |                       |                       |                      |   |    |           | HC/PC               | HZ/PZ | FZ    |                          |  |  |
| 1500                                | 315 L2  | 17.4 | 86                                  | 41400                 | 200                   | 42                   | —   | —  | —         | 54300               | 63800 | 20400 | 135000                   |  |  |
|                                     | 315 L2  | 22.3 | 67                                  | 46800                 | 200                   | 42                   | —   | —  | —         | 58500               | 68700 | 22100 | 135000                   |  |  |
|                                     | 315 L2  | 26.5 | 57                                  | 46600                 | 200                   | 42                   | —   | —  | —         | 61600               | 72300 | 23400 | 135000                   |  |  |
|                                     | 315 L2  | 28.0 | 54                                  | 47800                 | 200                   | 42                   | —   | —  | —         | 62700               | 73600 | 23900 | 135000                   |  |  |
|                                     | 315 L2  | 33.2 | 45                                  | 50300                 | 200                   | 42                   | —   | —  | —         | 66000               | 77400 | 25300 | 135000                   |  |  |
|                                     | 315 L2  | 38.6 | 39                                  | 44100                 | 190                   | 42                   | —   | —  | —         | 69000               | 81000 | 26600 | 135000                   |  |  |



| 315 L                               |        |                                     |                       |                       |                      |                 | 105000 Nm       |       |                     |        |                          |        |        |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------|-----------------|-------|---------------------|--------|--------------------------|--------|--------|
| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)         | MC              | MZ    | Rn <sub>2</sub> [N] |        | M <sub>2 max</sub><br>Nm |        |        |
|                                     |        |                                     |                       |                       |                      |                 |                 | HC/PC | HZ/PZ               | FZ     |                          |        |        |
| 1500                                | 315 L3 | 59.6                                | 25.2                  | 59900                 | 115                  | 30              | 180-200-225-250 | —     | —                   | 78600  | 92300                    | 30700  | 135000 |
|                                     | 315 L3 | 71.1                                | 21.1                  | 63100                 | 115                  | 30              | 180-200-225-250 | —     | —                   | 82900  | 97300                    | 32600  | 135000 |
|                                     | 315 L3 | 91.3                                | 16.4                  | 68000                 | 115                  | 30              | 180-200-225-250 | —     | —                   | 89300  | 104900                   | 35400  | 135000 |
|                                     | 315 L3 | 108                                 | 13.8                  | 71600                 | 114                  | 30              | 180-200-225-250 | —     | —                   | 94000  | 110400                   | 37500  | 135000 |
|                                     | 315 L3 | 139                                 | 10.8                  | 81100                 | 100                  | 30              | 180-200-225-250 | —     | —                   | 101300 | 119000                   | 40700  | 135000 |
|                                     | 315 L3 | 165                                 | 9.1                   | 80400                 | 84                   | 30              | 180-200-225-250 | —     | —                   | 106700 | 125200                   | 43100  | 135000 |
|                                     | 315 L3 | 174                                 | 8.6                   | 78800                 | 78                   | 30              | 180-200-225-250 | —     | —                   | 108500 | 127400                   | 43900  | 135000 |
|                                     | 315 L3 | 207                                 | 7.2                   | 79800                 | 66                   | 30              | 180-200-225-250 | —     | —                   | 114200 | 134100                   | 46500  | 135000 |
|                                     | 315 L3 | 241                                 | 6.2                   | 65000                 | 46                   | 30              | 180-200-225-250 | —     | —                   | 119500 | 140300                   | 48900  | 135000 |
|                                     | 315 L4 | 302                                 | 5.0                   | 97000                 | 57                   | 18.0            | 132-160-180-200 | —     | —                   | 127900 | 150200                   | 52800  | 135000 |
|                                     | 315 L4 | 370                                 | 4.1                   | 97900                 | 47                   | 18.0            | 132-160-180-200 | —     | —                   | 135900 | 159500                   | 56400  | 135000 |
|                                     | 315 L4 | 441                                 | 3.4                   | 98700                 | 40                   | 18.0            | 132-160-180-200 | —     | —                   | 143300 | 168200                   | 59800  | 135000 |
|                                     | 315 L4 | 487                                 | 3.1                   | 99100                 | 36                   | 18.0            | 132-160-180-200 | —     | —                   | 147600 | 173300                   | 61800  | 135000 |
|                                     | 315 L4 | 533                                 | 2.8                   | 99500                 | 33                   | 18.0            | 132-160-180-200 | —     | —                   | 151700 | 178100                   | 63800  | 135000 |
|                                     | 315 L4 | 591                                 | 2.5                   | 99900                 | 30                   | 18.0            | 132-160-180-200 | —     | —                   | 156400 | 183600                   | 66000  | 135000 |
|                                     | 315 L4 | 672                                 | 2.2                   | 100600                | 27                   | 18.0            | 132-160-180-200 | —     | —                   | 162500 | 190800                   | 68900  | 135000 |
|                                     | 315 L4 | 741                                 | 2.0                   | 101100                | 24                   | 18.0            | 132-160-180-200 | —     | —                   | 167400 | 196600                   | 71200  | 135000 |
|                                     | 315 L4 | 862                                 | 1.7                   | 101900                | 21                   | 18.0            | 132-160-180-200 | —     | —                   | 175200 | 205700                   | 74800  | 135000 |
|                                     | 315 L4 | 930                                 | 1.6                   | 92600                 | 17.6                 | 18.0            | 132-160-180-200 | —     | —                   | 179200 | 210400                   | 76800  | 135000 |
|                                     | 315 L4 | 1043                                | 1.4                   | 103000                | 17.5                 | 18.0            | 132-160-180-200 | —     | —                   | 185500 | 217800                   | 79700  | 135000 |
| 315 L4                              | 1104   | 1.4                                 | 94800                 | 15.2                  | 18.0                 | 132-160-180-200 | —               | —     | 188700              | 221500 | 81300                    | 135000 |        |
| 315 L4                              | 1284   | 1.2                                 | 96900                 | 13.4                  | 18.0                 | 132-160-180-200 | —               | —     | 197400              | 231800 | 85400                    | 135000 |        |
| 315 L4                              | 1492   | 1.0                                 | 83400                 | 9.9                   | 18.0                 | 132-160-180-200 | —               | —     | 206000              | 242500 | 89800                    | 135000 |        |
| 315 L4                              | 1805   | 0.83                                | 83500                 | 8.2                   | 18.0                 | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 1000                                | 315 L2 | 17.4                                | 58                    | 46700                 | 200                  | 50              | —               | —     | —                   | 61300  | 72000                    | 23300  | 135000 |
|                                     | 315 L2 | 22.3                                | 45                    | 52700                 | 200                  | 50              | —               | —     | —                   | 66100  | 77600                    | 25300  | 135000 |
|                                     | 315 L2 | 26.5                                | 38                    | 52600                 | 200                  | 50              | —               | —     | —                   | 69600  | 81700                    | 26800  | 135000 |
|                                     | 315 L2 | 28.0                                | 36                    | 53800                 | 200                  | 50              | —               | —     | —                   | 70800  | 83100                    | 27300  | 135000 |
|                                     | 315 L2 | 33.2                                | 30                    | 56600                 | 189                  | 50              | —               | —     | —                   | 74500  | 87500                    | 28900  | 135000 |
|                                     | 315 L2 | 38.6                                | 25.9                  | 49500                 | 143                  | 50              | —               | —     | —                   | 77900  | 91500                    | 30400  | 135000 |
|                                     | 315 L3 | 59.6                                | 16.8                  | 67600                 | 115                  | 36              | 180-200-225-250 | —     | —                   | 88800  | 104200                   | 35200  | 135000 |
|                                     | 315 L3 | 71.1                                | 14.1                  | 71300                 | 115                  | 36              | 180-200-225-250 | —     | —                   | 93600  | 109900                   | 37300  | 135000 |
|                                     | 315 L3 | 91.3                                | 11.0                  | 76900                 | 97                   | 36              | 180-200-225-250 | —     | —                   | 100900 | 118400                   | 40500  | 135000 |
|                                     | 315 L3 | 108                                 | 9.2                   | 80900                 | 86                   | 36              | 180-200-225-250 | —     | —                   | 106200 | 124700                   | 42900  | 135000 |
|                                     | 315 L3 | 139                                 | 7.2                   | 89400                 | 74                   | 36              | 180-200-225-250 | —     | —                   | 114400 | 134400                   | 46600  | 135000 |
|                                     | 315 L3 | 165                                 | 6.1                   | 91300                 | 63                   | 36              | 180-200-225-250 | —     | —                   | 120500 | 141500                   | 49400  | 135000 |
|                                     | 315 L3 | 174                                 | 5.7                   | 81100                 | 53                   | 36              | 180-200-225-250 | —     | —                   | 122500 | 143800                   | 50300  | 135000 |
|                                     | 315 L3 | 207                                 | 4.8                   | 82100                 | 45                   | 36              | 180-200-225-250 | —     | —                   | 129000 | 151400                   | 53200  | 135000 |
|                                     | 315 L3 | 241                                 | 4.2                   | 66700                 | 32                   | 36              | 180-200-225-250 | —     | —                   | 134900 | 158400                   | 56000  | 135000 |
|                                     | 315 L4 | 302                                 | 3.3                   | 98800                 | 39                   | 22              | 132-160-180-200 | —     | —                   | 144500 | 169600                   | 60400  | 135000 |
|                                     | 315 L4 | 370                                 | 2.7                   | 99700                 | 32                   | 22              | 132-160-180-200 | —     | —                   | 153500 | 180200                   | 64600  | 135000 |
|                                     | 315 L4 | 441                                 | 2.3                   | 100500                | 27                   | 22              | 132-160-180-200 | —     | —                   | 161800 | 190000                   | 68500  | 135000 |
|                                     | 315 L4 | 487                                 | 2.1                   | 101100                | 25                   | 22              | 132-160-180-200 | —     | —                   | 166700 | 195700                   | 70800  | 135000 |
|                                     | 315 L4 | 533                                 | 1.9                   | 101500                | 23                   | 22              | 132-160-180-200 | —     | —                   | 171300 | 201100                   | 73000  | 135000 |
| 315 L4                              | 591    | 1.7                                 | 102100                | 20                    | 22                   | 132-160-180-200 | —               | —     | 176600              | 207400 | 75500                    | 135000 |        |
| 315 L4                              | 672    | 1.5                                 | 102800                | 18.1                  | 22                   | 132-160-180-200 | —               | —     | 183600              | 215500 | 78800                    | 135000 |        |
| 315 L4                              | 741    | 1.3                                 | 103300                | 16.5                  | 22                   | 132-160-180-200 | —               | —     | 189100              | 222000 | 81500                    | 135000 |        |
| 315 L4                              | 862    | 1.2                                 | 104200                | 14.3                  | 22                   | 132-160-180-200 | —               | —     | 197800              | 232300 | 85700                    | 135000 |        |
| 315 L4                              | 930    | 1.1                                 | 98000                 | 12.5                  | 22                   | 132-160-180-200 | —               | —     | 202400              | 237700 | 87900                    | 135000 |        |
| 315 L4                              | 1043   | 0.96                                | 105000                | 11.9                  | 22                   | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 315 L4                              | 1104   | 0.91                                | 99000                 | 10.6                  | 22                   | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 315 L4                              | 1284   | 0.78                                | 99000                 | 9.1                   | 22                   | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 315 L4                              | 1492   | 0.67                                | 83500                 | 6.6                   | 22                   | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 315 L4                              | 1805   | 0.55                                | 83500                 | 5.5                   | 22                   | 132-160-180-200 | —               | —     | 206000              | 243000 | 90000                    | 135000 |        |
| 500                                 | 315 L1 | 4.25                                | 118                   | 40800                 | 260                  | 60              | —               | —     | —                   | 49500  | 58100                    | 18400  | 135000 |
|                                     | 315 L1 | 5.33                                | 94                    | 40500                 | 260                  | 60              | —               | —     | —                   | 53000  | 62200                    | 19800  | 135000 |
|                                     | 315 L1 | 6.20                                | 81                    | 35500                 | 260                  | 60              | —               | —     | —                   | 55400  | 65100                    | 20800  | 135000 |

B







### 315 L

386



### 105000 Nm

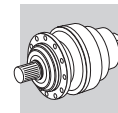
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 315 L2  | 17.4 | 28.8                                | 57500                 | 184                   | 84                   | —   | —                   | —  | 75500  | 88700  | 29400 | 135000                   |
|                                     | 315 L2  | 22.3 | 22.4                                | 65000                 | 162                   | 84                   | —   | —                   | —  | 81400  | 95600  | 31900 | 135000                   |
|                                     | 315 L2  | 26.5 | 18.9                                | 64600                 | 136                   | 84                   | —   | —                   | —  | 85700  | 100600 | 33800 | 135000                   |
|                                     | 315 L2  | 28.0 | 17.9                                | 65900                 | 131                   | 84                   | —   | —                   | —  | 87100  | 102300 | 34400 | 135000                   |
|                                     | 315 L2  | 33.2 | 15.0                                | 69200                 | 116                   | 84                   | —   | —                   | —  | 91700  | 107700 | 36500 | 135000                   |
|                                     | 315 L2  | 38.6 | 12.9                                | 60400                 | 87                    | 84                   | —   | —                   | —  | 96000  | 112700 | 38300 | 135000                   |
|                                     | 315 L3  | 59.6 | 8.4                                 | 83200                 | 80                    | 60                   | 180-200-225-250   | —                   | —  | 109300 | 128300 | 44300 | 135000                   |
|                                     | 315 L3  | 71.1 | 7.0                                 | 87700                 | 71                    | 60                   | 180-200-225-250   | —                   | —  | 115200 | 135300 | 47000 | 135000                   |
|                                     | 315 L3  | 91.3 | 5.5                                 | 94400                 | 59                    | 60                   | 180-200-225-250   | —                   | —  | 124200 | 145800 | 51100 | 135000                   |
|                                     | 315 L3  | 108  | 4.6                                 | 97300                 | 52                    | 60                   | 180-200-225-250   | —                   | —  | 130700 | 153500 | 54100 | 135000                   |
|                                     | 315 L3  | 139  | 3.6                                 | 98400                 | 41                    | 60                   | 180-200-225-250   | —                   | —  | 140900 | 165400 | 58700 | 135000                   |
|                                     | 315 L3  | 165  | 3.0                                 | 99200                 | 34                    | 60                   | 180-200-225-250   | —                   | —  | 148300 | 174100 | 62200 | 135000                   |
|                                     | 315 L3  | 174  | 2.9                                 | 86000                 | 28                    | 60                   | 180-200-225-250   | —                   | —  | 150800 | 177100 | 63400 | 135000                   |
|                                     | 315 L3  | 207  | 2.4                                 | 87400                 | 24                    | 60                   | 180-200-225-250   | —                   | —  | 158800 | 186400 | 67100 | 135000                   |
|                                     | 315 L3  | 241  | 2.1                                 | 74000                 | 17.6                  | 60                   | 180-200-225-250   | —                   | —  | 166100 | 195000 | 70500 | 135000                   |
|                                     | 315 L4  | 302  | 1.7                                 | 102200                | 20.0                  | 36                   | 132-160-180-200   | —                   | —  | 177900 | 208800 | 76100 | 135000                   |
|                                     | 315 L4  | 370  | 1.4                                 | 103300                | 16.5                  | 36                   | 132-160-180-200   | —                   | —  | 188900 | 221800 | 81400 | 135000                   |
|                                     | 315 L4  | 441  | 1.1                                 | 104300                | 14.0                  | 36                   | 132-160-180-200   | —                   | —  | 199200 | 233900 | 86300 | 135000                   |
|                                     | 315 L4  | 487  | 1.0                                 | 104900                | 12.7                  | 36                   | 132-160-180-200   | —                   | —  | 205200 | 240900 | 89200 | 135000                   |
|                                     | 315 L4  | 533  | 0.94                                | 105000                | 11.6                  | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 591  | 0.85                                | 105000                | 10.5                  | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 672  | 0.74                                | 105000                | 9.2                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 741  | 0.67                                | 105000                | 8.4                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 862  | 0.58                                | 105000                | 7.2                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 930  | 0.54                                | 99000                 | 6.3                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 1043 | 0.48                                | 105000                | 6.0                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 1104 | 0.45                                | 99000                 | 5.3                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 1284 | 0.39                                | 99000                 | 4.6                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 1492 | 0.34                                | 83500                 | 3.3                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |
|                                     | 315 L4  | 1805 | 0.28                                | 83500                 | 2.7                   | 36                   | 132-160-180-200   | —                   | —  | 206000 | 243000 | 90000 | 135000                   |

### 316 L

398

### 138820 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 316 L2  | 17.4 | 86                                  | 43900                 | 200                   | 50                   | —   | —                   | —  | 90300  | 100400 | 33900  | 192000                   |
|                                     | 316 L2  | 22.3 | 67                                  | 48500                 | 200                   | 50                   | —   | —                   | —  | 97300  | 108200 | 36900  | 192000                   |
|                                     | 316 L2  | 26.5 | 57                                  | 47700                 | 200                   | 50                   | —   | —                   | —  | 102500 | 113900 | 39100  | 192000                   |
|                                     | 316 L3  | 59.6 | 25.2                                | 63400                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 130700 | 145300 | 51200  | 192000                   |
|                                     | 316 L3  | 71.1 | 21.1                                | 66900                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 137800 | 153300 | 54300  | 192000                   |
|                                     | 316 L3  | 76.5 | 19.6                                | 70100                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 140800 | 156600 | 55600  | 192000                   |
|                                     | 316 L3  | 91.3 | 16.4                                | 72100                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 148500 | 165200 | 59000  | 192000                   |
|                                     | 316 L3  | 108  | 13.8                                | 75900                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 156300 | 173900 | 62500  | 192000                   |
|                                     | 316 L3  | 117  | 12.8                                | 79400                 | 115                   | 35                   | 180-200-225-250   | —                   | —  | 160000 | 178000 | 64100  | 192000                   |
|                                     | 316 L3  | 139  | 10.8                                | 81800                 | 101                   | 35                   | 180-200-225-250   | —                   | —  | 168500 | 187400 | 67900  | 192000                   |
|                                     | 316 L3  | 165  | 9.1                                 | 82500                 | 86                    | 35                   | 180-200-225-250   | —                   | —  | 177400 | 197300 | 71900  | 192000                   |
|                                     | 316 L4  | 215  | 7.0                                 | 93200                 | 60                    | 18.0                 | 132-160-180-200   | —                   | —  | 191900 | 213500 | 78500  | 192000                   |
|                                     | 316 L4  | 256  | 5.9                                 | 98200                 | 60                    | 18.0                 | 132-160-180-200   | —                   | —  | 202400 | 225100 | 83200  | 192000                   |
|                                     | 316 L4  | 302  | 5.0                                 | 103200                | 60                    | 18.0                 | 132-160-180-200   | —                   | —  | 212700 | 236600 | 87900  | 192000                   |
|                                     | 316 L4  | 329  | 4.6                                 | 105800                | 57                    | 18.0                 | 132-160-180-200   | —                   | —  | 218100 | 242600 | 90400  | 192000                   |
|                                     | 316 L4  | 370  | 4.1                                 | 109400                | 53                    | 18.0                 | 132-160-180-200   | —                   | —  | 225900 | 251300 | 94000  | 192000                   |
|                                     | 316 L4  | 441  | 3.4                                 | 115200                | 46                    | 18.0                 | 132-160-180-200   | —                   | —  | 238200 | 264900 | 99700  | 192000                   |
|                                     | 316 L4  | 487  | 3.1                                 | 118600                | 43                    | 18.0                 | 132-160-180-200   | —                   | —  | 245400 | 272900 | 103100 | 192000                   |
|                                     | 316 L4  | 533  | 2.8                                 | 121800                | 40                    | 18.0                 | 132-160-180-200   | —                   | —  | 252200 | 280500 | 106300 | 192000                   |
|                                     | 316 L4  | 566  | 2.7                                 | 123900                | 39                    | 18.0                 | 132-160-180-200   | —                   | —  | 256700 | 285500 | 108400 | 192000                   |
|                                     | 316 L4  | 591  | 2.5                                 | 122500                | 37                    | 18.0                 | 132-160-180-200   | —                   | —  | 260100 | 289200 | 110000 | 192000                   |

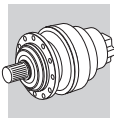


**316 L** 398

**138820 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |            | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)         | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|------------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------|---------------------|----|--------|--------|--------|--------------------------|--------|
|                                     |            |        |                                     |                       |                       |                      |                 | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |        |
| <b>1500</b>                         | 316 L4     | 625    | 2.4                                 | 126500                | 36                    | 18.0                 | 132-160-180-200 | —                   | —  | 264500 | 294100 | 112000 | 192000                   |        |
|                                     | 316 L4     | 685    | 2.2                                 | 127800                | 33                    | 18.0                 | 132-160-180-200 | —                   | —  | 271800 | 302300 | 115500 | 192000                   |        |
|                                     | 316 L4     | 726    | 2.1                                 | 128600                | 31                    | 18.0                 | 132-160-180-200 | —                   | —  | 276700 | 307700 | 117800 | 192000                   |        |
|                                     | 316 L4     | 741    | 2.0                                 | 126500                | 30                    | 18.0                 | 132-160-180-200 | —                   | —  | 278400 | 309600 | 118600 | 192000                   |        |
|                                     | 316 L4     | 812    | 1.8                                 | 130000                | 28                    | 18.0                 | 132-160-180-200 | —                   | —  | 286100 | 318200 | 122300 | 192000                   |        |
|                                     | 316 L4     | 862    | 1.7                                 | 129000                | 27                    | 18.0                 | 132-160-180-200 | —                   | —  | 291300 | 323900 | 124700 | 192000                   |        |
|                                     | 316 L4     | 1043   | 1.4                                 | 132300                | 23                    | 18.0                 | 132-160-180-200 | —                   | —  | 308400 | 343000 | 132900 | 192000                   |        |
|                                     | 316 L4     | 1237   | 1.2                                 | 122100                | 17.5                  | 18.0                 | 132-160-180-200 | —                   | —  | 324600 | 361100 | 140700 | 192000                   |        |
| <b>1000</b>                         | 316 L2     | 17.4   | 58                                  | 49500                 | 200                   | 60                   | —               | —                   | —  | 102000 | 113400 | 38900  | 192000                   |        |
|                                     | 316 L2     | 22.3   | 45                                  | 55000                 | 200                   | 60                   | —               | —                   | —  | 109900 | 122200 | 42200  | 192000                   |        |
|                                     | 316 L2     | 26.5   | 38                                  | 53800                 | 200                   | 60                   | —               | —                   | —  | 115700 | 128700 | 44700  | 192000                   |        |
|                                     | 316 L3     | 59.6   | 16.8                                | 71600                 | 115                   | 42                   | 180-200-225-250 | —                   | —  | 147600 | 164100 | 58600  | 192000                   |        |
|                                     | 316 L3     | 71.1   | 14.1                                | 75600                 | 115                   | 42                   | 180-200-225-250 | —                   | —  | 155600 | 173100 | 62100  | 192000                   |        |
|                                     | 316 L3     | 76.5   | 13.1                                | 78900                 | 115                   | 42                   | 180-200-225-250 | —                   | —  | 159100 | 176900 | 63700  | 192000                   |        |
|                                     | 316 L3     | 91.3   | 11.0                                | 81400                 | 102                   | 42                   | 180-200-225-250 | —                   | —  | 167700 | 186500 | 67500  | 192000                   |        |
|                                     | 316 L3     | 108    | 9.2                                 | 85700                 | 91                    | 42                   | 180-200-225-250 | —                   | —  | 176600 | 196400 | 71500  | 192000                   |        |
|                                     | 316 L3     | 117    | 8.5                                 | 89800                 | 88                    | 42                   | 180-200-225-250 | —                   | —  | 180800 | 201000 | 73400  | 192000                   |        |
|                                     | 316 L3     | 139    | 7.2                                 | 92400                 | 76                    | 42                   | 180-200-225-250 | —                   | —  | 190300 | 211600 | 77700  | 192000                   |        |
|                                     | 316 L3     | 165    | 6.1                                 | 93100                 | 65                    | 42                   | 180-200-225-250 | —                   | —  | 200300 | 222800 | 82300  | 192000                   |        |
|                                     | 316 L4     | 215    | 4.7                                 | 105100                | 58                    | 22                   | 132-160-180-200 | —                   | —  | 216700 | 241100 | 89800  | 192000                   |        |
|                                     | 316 L4     | 256    | 3.9                                 | 110700                | 51                    | 22                   | 132-160-180-200 | —                   | —  | 228500 | 254200 | 95300  | 192000                   |        |
|                                     | 316 L4     | 302    | 3.3                                 | 116100                | 45                    | 22                   | 132-160-180-200 | —                   | —  | 240200 | 267200 | 100700 | 192000                   |        |
|                                     | 316 L4     | 329    | 3.0                                 | 119000                | 43                    | 22                   | 132-160-180-200 | —                   | —  | 246300 | 273900 | 103500 | 192000                   |        |
|                                     | 316 L4     | 370    | 2.7                                 | 123100                | 39                    | 22                   | 132-160-180-200 | —                   | —  | 255100 | 283800 | 107600 | 192000                   |        |
|                                     | 316 L4     | 441    | 2.3                                 | 127300                | 34                    | 22                   | 132-160-180-200 | —                   | —  | 269000 | 299200 | 114200 | 192000                   |        |
|                                     | 316 L4     | 487    | 2.1                                 | 128600                | 31                    | 22                   | 132-160-180-200 | —                   | —  | 277100 | 308200 | 118000 | 192000                   |        |
|                                     | 316 L4     | 533    | 1.9                                 | 129900                | 29                    | 22                   | 132-160-180-200 | —                   | —  | 284800 | 316800 | 121700 | 192000                   |        |
|                                     | 316 L4     | 566    | 1.8                                 | 130700                | 27                    | 22                   | 132-160-180-200 | —                   | —  | 289900 | 322500 | 124100 | 192000                   |        |
|                                     | 316 L4     | 591    | 1.7                                 | 129500                | 26                    | 22                   | 132-160-180-200 | —                   | —  | 293700 | 326600 | 125900 | 192000                   |        |
|                                     | 316 L4     | 625    | 1.6                                 | 132100                | 25                    | 22                   | 132-160-180-200 | —                   | —  | 298700 | 332200 | 128200 | 192000                   |        |
|                                     | 316 L4     | 685    | 1.5                                 | 133400                | 23                    | 22                   | 132-160-180-200 | —                   | —  | 307000 | 341400 | 132200 | 192000                   |        |
|                                     | 316 L4     | 726    | 1.4                                 | 134200                | 22                    | 22                   | 132-160-180-200 | —                   | —  | 312500 | 347500 | 134800 | 192000                   |        |
|                                     | 316 L4     | 741    | 1.3                                 | 133400                | 21                    | 22                   | 132-160-180-200 | —                   | —  | 314400 | 349700 | 135800 | 192000                   |        |
|                                     | 316 L4     | 812    | 1.2                                 | 135800                | 19.8                  | 22                   | 132-160-180-200 | —                   | —  | 323200 | 359400 | 140000 | 192000                   |        |
|                                     | 316 L4     | 862    | 1.2                                 | 136100                | 18.7                  | 22                   | 132-160-180-200 | —                   | —  | 328900 | 365800 | 142800 | 192000                   |        |
|                                     | 316 L4     | 1043   | 0.96                                | 138800                | 15.7                  | 22                   | 132-160-180-200 | —                   | —  | 345000 | 385000 | 150000 | 192000                   |        |
|                                     | 316 L4     | 1237   | 0.81                                | 124000                | 11.9                  | 22                   | 132-160-180-200 | —                   | —  | 345000 | 385000 | 150000 | 192000                   |        |
|                                     | <b>500</b> | 316 L2 | 17.4                                | 28.8                  | 60900                 | 195                  | 100             | —                   | —  | —      | 125600 | 139600 | 49000                    | 192000 |
|                                     |            | 316 L2 | 22.3                                | 22.4                  | 67400                 | 168                  | 100             | —                   | —  | —      | 135300 | 150500 | 53200                    | 192000 |
|                                     |            | 316 L2 | 26.5                                | 18.9                  | 66200                 | 139                  | 100             | —                   | —  | —      | 142400 | 158400 | 56300                    | 192000 |
| 316 L3                              |            | 59.6   | 8.4                                 | 88200                 | 85                    | 70                   | 180-200-225-250 | —                   | —  | 181700 | 202100 | 73800  | 192000                   |        |
| 316 L3                              |            | 71.1   | 7.0                                 | 93000                 | 75                    | 70                   | 180-200-225-250 | —                   | —  | 191600 | 213100 | 78300  | 192000                   |        |
| 316 L3                              |            | 76.5   | 6.5                                 | 98000                 | 74                    | 70                   | 180-200-225-250 | —                   | —  | 195800 | 217800 | 80200  | 192000                   |        |
| 316 L3                              |            | 91.3   | 5.5                                 | 100200                | 63                    | 70                   | 180-200-225-250 | —                   | —  | 206500 | 229600 | 85100  | 192000                   |        |
| 316 L3                              |            | 108    | 4.6                                 | 105400                | 56                    | 70                   | 180-200-225-250 | —                   | —  | 217400 | 241800 | 90100  | 192000                   |        |
| 316 L3                              |            | 117    | 4.3                                 | 111100                | 54                    | 70                   | 180-200-225-250 | —                   | —  | 222500 | 247500 | 92500  | 192000                   |        |
| 316 L3                              |            | 139    | 3.6                                 | 112100                | 46                    | 70                   | 180-200-225-250 | —                   | —  | 234300 | 260500 | 97900  | 192000                   |        |
| 316 L3                              |            | 165    | 3.0                                 | 110200                | 38                    | 70                   | 180-200-225-250 | —                   | —  | 246600 | 274300 | 103700 | 192000                   |        |
| 316 L4                              |            | 215    | 2.3                                 | 126900                | 35                    | 36                   | 132-160-180-200 | —                   | —  | 266800 | 296800 | 113100 | 192000                   |        |
| 316 L4                              |            | 256    | 2.0                                 | 129300                | 30                    | 36                   | 132-160-180-200 | —                   | —  | 281400 | 312900 | 120000 | 192000                   |        |
| 316 L4                              |            | 302    | 1.7                                 | 131600                | 26                    | 36                   | 132-160-180-200 | —                   | —  | 295700 | 328900 | 126800 | 192000                   |        |
| 316 L4                              |            | 329    | 1.5                                 | 132800                | 24                    | 36                   | 132-160-180-200 | —                   | —  | 303200 | 337200 | 130400 | 192000                   |        |
| 316 L4                              |            | 370    | 1.4                                 | 134500                | 22                    | 36                   | 132-160-180-200 | —                   | —  | 314100 | 349300 | 135600 | 192000                   |        |
| 316 L4                              |            | 441    | 1.1                                 | 137000                | 18.4                  | 36                   | 132-160-180-200 | —                   | —  | 331200 | 368400 | 143800 | 192000                   |        |
| 316 L4                              |            | 487    | 1.0                                 | 138400                | 16.8                  | 36                   | 132-160-180-200 | —                   | —  | 341200 | 379500 | 148700 | 192000                   |        |
| 316 L4                              |            | 533    | 0.94                                | 138800                | 15.4                  | 36                   | 132-160-180-200 | —                   | —  | 345000 | 385000 | 150000 | 192000                   |        |
| 316 L4                              |            | 566    | 0.88                                | 138800                | 14.5                  | 36                   | 132-160-180-200 | —                   | —  | 345000 | 385000 | 150000 | 192000                   |        |



**B**



### 316 L

398



### 138820 Nm

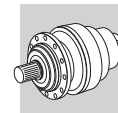
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| 500                                 | 316 L4  | 591  | 0.85                                | 138800                | 13.9                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 625  | 0.80                                | 138800                | 13.1                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 685  | 0.73                                | 138800                | 12.0                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 726  | 0.69                                | 138800                | 11.3                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 741  | 0.67                                | 138800                | 11.1                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 812  | 0.62                                | 138800                | 10.1                  | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 862  | 0.58                                | 138800                | 9.5                   | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 1043 | 0.48                                | 138800                | 7.9                   | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 L4  | 1237 | 0.40                                | 124000                | 5.9                   | 36                   | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |

### 317 L

408



### 208110 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | R <sub>n2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 317 L3  | 58.1 | 25.8                                | 90300                 | 150                   | 35                   | 180-200-225-250   | —                   | —      | 166800 | 177500 | 50800  | 393000                   |
|                                     | 317 L3  | 69.3 | 21.6                                | 93300                 | 150                   | 35                   | 180-200-225-250   | —                   | —      | 175800 | 187200 | 53800  | 393000                   |
|                                     | 317 L3  | 89.0 | 16.9                                | 101000                | 150                   | 35                   | 180-200-225-250   | —                   | —      | 189500 | 201800 | 58500  | 393000                   |
|                                     | 317 L3  | 106  | 14.2                                | 105800                | 150                   | 35                   | 180-200-225-250   | —                   | —      | 199500 | 212400 | 61900  | 393000                   |
|                                     | 317 L3  | 116  | 12.9                                | 108300                | 150                   | 35                   | 180-200-225-250   | —                   | —      | 205200 | 218400 | 63900  | 393000                   |
|                                     | 317 L3  | 138  | 10.9                                | 114000                | 143                   | 35                   | 180-200-225-250   | —                   | —      | 216000 | 230000 | 67700  | 393000                   |
|                                     | 317 L3  | 166  | 9.1                                 | 120500                | 125                   | 35                   | 180-200-225-250   | —                   | —      | 228300 | 243100 | 72000  | 393000                   |
|                                     | 317 L3  | 179  | 8.4                                 | 136600                | 131                   | 35                   | 180-200-225-250   | —                   | —      | 233800 | 248900 | 73900  | 393000                   |
|                                     | 317 L3  | 213  | 7.1                                 | 142200                | 115                   | 35                   | 180-200-225-250   | —                   | —      | 246100 | 262000 | 78200  | 393000                   |
|                                     | 317 L3  | 252  | 5.9                                 | 119700                | 82                    | 35                   | 180-200-225-250   | —                   | —      | 259100 | 275800 | 82800  | 393000                   |
|                                     | 317 L4  | 310  | 4.8                                 | 146200                | 60                    | 18.0                 | 132-160-180-200   | —                   | —      | 275500 | 293400 | 88700  | 393000                   |
|                                     | 317 L4  | 360  | 4.2                                 | 152900                | 60                    | 18.0                 | 132-160-180-200   | —                   | —      | 288300 | 306900 | 93200  | 393000                   |
|                                     | 317 L4  | 449  | 3.3                                 | 163300                | 60                    | 18.0                 | 132-160-180-200   | —                   | —      | 307900 | 327800 | 100300 | 393000                   |
|                                     | 317 L4  | 493  | 3.0                                 | 166900                | 60                    | 18.0                 | 132-160-180-200   | —                   | —      | 316700 | 337200 | 103500 | 393000                   |
|                                     | 317 L4  | 552  | 2.7                                 | 174500                | 56                    | 18.0                 | 132-160-180-200   | —                   | —      | 327600 | 348800 | 107500 | 393000                   |
|                                     | 317 L4  | 619  | 2.4                                 | 177200                | 51                    | 18.0                 | 132-160-180-200   | —                   | —      | 339000 | 361000 | 111600 | 393000                   |
|                                     | 317 L4  | 719  | 2.1                                 | 178400                | 44                    | 18.0                 | 132-160-180-200   | —                   | —      | 354700 | 377600 | 117400 | 393000                   |
|                                     | 317 L4  | 792  | 1.9                                 | 186500                | 42                    | 18.0                 | 132-160-180-200   | —                   | —      | 365100 | 388700 | 121200 | 393000                   |
| 317 L4                              | 904   | 1.7  | 166600                              | 33                    | 18.0                  | 132-160-180-200      | —   | —                   | 379800 | 404400 | 126700 | 393000 |                          |
| 317 L4                              | 1032  | 1.5  | 181300                              | 31                    | 18.0                  | 132-160-180-200      | —   | —                   | 395300 | 420900 | 132400 | 393000 |                          |
| 317 L4                              | 1134  | 1.3  | 168100                              | 26                    | 18.0                  | 132-160-180-200      | —   | —                   | 406600 | 432900 | 136600 | 393000 |                          |
| 317 L4                              | 1318  | 1.1  | 169100                              | 23                    | 18.0                  | 132-160-180-200      | —   | —                   | 425400 | 452900 | 143700 | 393000 |                          |
| 317 L4                              | 1595  | 0.94 | 170000                              | 18.9                  | 18.0                  | 132-160-180-200      | —   | —                   | 442000 | 470000 | 150000 | 393000 |                          |
| 317 L4                              | 1893  | 0.79 | 156200                              | 14.6                  | 18.0                  | 132-160-180-200      | —   | —                   | 442000 | 470000 | 150000 | 393000 |                          |
| 1000                                | 317 L3  | 58.1 | 17.2                                | 101900                | 150                   | 42                   | 180-200-225-250   | —                   | —      | 188300 | 200500 | 58100  | 393000                   |
|                                     | 317 L3  | 69.3 | 14.4                                | 105300                | 150                   | 42                   | 180-200-225-250   | —                   | —      | 198600 | 211400 | 61600  | 393000                   |
|                                     | 317 L3  | 89.0 | 11.2                                | 114000                | 147                   | 42                   | 180-200-225-250   | —                   | —      | 214000 | 227800 | 67000  | 393000                   |
|                                     | 317 L3  | 106  | 9.5                                 | 119500                | 130                   | 42                   | 180-200-225-250   | —                   | —      | 225300 | 239900 | 70900  | 393000                   |
|                                     | 317 L3  | 116  | 8.6                                 | 122300                | 121                   | 42                   | 180-200-225-250   | —                   | —      | 231700 | 246700 | 73200  | 393000                   |
|                                     | 317 L3  | 138  | 7.3                                 | 128800                | 107                   | 42                   | 180-200-225-250   | —                   | —      | 243900 | 259700 | 77400  | 393000                   |
|                                     | 317 L3  | 166  | 6.0                                 | 136100                | 94                    | 42                   | 180-200-225-250   | —                   | —      | 257900 | 274600 | 82400  | 393000                   |
|                                     | 317 L3  | 179  | 5.6                                 | 150100                | 96                    | 42                   | 180-200-225-250   | —                   | —      | 264000 | 281100 | 84600  | 393000                   |
|                                     | 317 L3  | 213  | 4.7                                 | 154900                | 84                    | 42                   | 180-200-225-250   | —                   | —      | 277900 | 295900 | 89500  | 393000                   |
|                                     | 317 L3  | 252  | 4.0                                 | 124600                | 57                    | 42                   | 180-200-225-250   | —                   | —      | 292600 | 311500 | 94800  | 393000                   |
|                                     | 317 L4  | 310  | 3.2                                 | 165100                | 60                    | 22                   | 132-160-180-200   | —                   | —      | 311200 | 331300 | 101500 | 393000                   |
|                                     | 317 L4  | 360  | 2.8                                 | 172700                | 57                    | 22                   | 132-160-180-200   | —                   | —      | 325600 | 346600 | 106700 | 393000                   |
|                                     | 317 L4  | 449  | 2.2                                 | 181600                | 48                    | 22                   | 132-160-180-200   | —                   | —      | 347700 | 370200 | 114800 | 393000                   |
|                                     | 317 L4  | 493  | 2.0                                 | 178600                | 43                    | 22                   | 132-160-180-200   | —                   | —      | 357700 | 380800 | 118500 | 393000                   |
|                                     | 317 L4  | 552  | 1.8                                 | 188400                | 40                    | 22                   | 132-160-180-200   | —                   | —      | 369900 | 393900 | 123000 | 393000                   |
|                                     | 317 L4  | 619  | 1.6                                 | 180400                | 35                    | 22                   | 132-160-180-200   | —                   | —      | 382900 | 407600 | 127800 | 393000                   |
|                                     | 317 L4  | 719  | 1.4                                 | 181600                | 30                    | 22                   | 132-160-180-200   | —                   | —      | 400600 | 426500 | 134400 | 393000                   |
|                                     | 317 L4  | 792  | 1.3                                 | 199300                | 30                    | 22                   | 132-160-180-200   | —                   | —      | 412300 | 439000 | 138800 | 393000                   |
|                                     | 317 L4  | 904  | 1.1                                 | 169300                | 22                    | 22                   | 132-160-180-200   | —                   | —      | 429000 | 456700 | 145000 | 393000                   |
|                                     | 317 L4  | 1032 | 0.97                                | 184300                | 21                    | 22                   | 132-160-180-200   | —                   | —      | 442000 | 470000 | 150000 | 393000                   |



**317 L**  408



**208110 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| <b>1000</b>                         | 317 L4  | 1134 | 0.88                                | 170000                | 17.7                  | 22                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1318 | 0.76                                | 170000                | 15.3                  | 22                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1595 | 0.63                                | 170000                | 12.6                  | 22                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1893 | 0.53                                | 156200                | 9.8                   | 22                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
| <b>500</b>                          | 317 L2  | 16.9 | 29.5                                | 86700                 | 250                   | 116                  | —   | —                   | —  | 160200 | 170600 | 48500  | 393000                   |
|                                     | 317 L2  | 22.1 | 22.6                                | 91400                 | 230                   | 116                  | —   | —                   | —  | 173500 | 184700 | 53000  | 393000                   |
|                                     | 317 L2  | 26.6 | 18.8                                | 96700                 | 202                   | 116                  | —   | —                   | —  | 183400 | 195300 | 56400  | 393000                   |
|                                     | 317 L2  | 28.4 | 17.6                                | 110500                | 217                   | 116                  | —   | —                   | —  | 186900 | 199000 | 57600  | 393000                   |
|                                     | 317 L2  | 34.1 | 14.7                                | 116800                | 191                   | 116                  | —   | —                   | —  | 197600 | 210400 | 61300  | 393000                   |
|                                     | 317 L2  | 40.5 | 12.3                                | 112800                | 155                   | 116                  | —   | —                   | —  | 208100 | 221500 | 64900  | 393000                   |
|                                     | 317 L3  | 58.1 | 8.6                                 | 125400                | 124                   | 70                   | 180-200-225-250   | —                   | —  | 231900 | 246900 | 73200  | 393000                   |
|                                     | 317 L3  | 69.3 | 7.2                                 | 129700                | 107                   | 70                   | 180-200-225-250   | —                   | —  | 244500 | 260300 | 77600  | 393000                   |
|                                     | 317 L3  | 89.0 | 5.6                                 | 140100                | 90                    | 70                   | 180-200-225-250   | —                   | —  | 263500 | 280500 | 84400  | 393000                   |
|                                     | 317 L3  | 106  | 4.7                                 | 147100                | 80                    | 70                   | 180-200-225-250   | —                   | —  | 277400 | 295300 | 89300  | 393000                   |
|                                     | 317 L3  | 116  | 4.3                                 | 150500                | 74                    | 70                   | 180-200-225-250   | —                   | —  | 285300 | 303700 | 92200  | 393000                   |
|                                     | 317 L3  | 138  | 3.6                                 | 158400                | 66                    | 70                   | 180-200-225-250   | —                   | —  | 300300 | 319700 | 97600  | 393000                   |
|                                     | 317 L3  | 166  | 3.0                                 | 151900                | 53                    | 70                   | 180-200-225-250   | —                   | —  | 317500 | 338000 | 103800 | 393000                   |
|                                     | 317 L3  | 179  | 2.8                                 | 162300                | 52                    | 70                   | 180-200-225-250   | —                   | —  | 325000 | 346100 | 106500 | 393000                   |
|                                     | 317 L3  | 213  | 2.4                                 | 164400                | 44                    | 70                   | 180-200-225-250   | —                   | —  | 342200 | 364300 | 112800 | 393000                   |
|                                     | 317 L3  | 252  | 2.0                                 | 139600                | 32                    | 70                   | 180-200-225-250   | —                   | —  | 360200 | 383500 | 119400 | 393000                   |
|                                     | 317 L4  | 310  | 1.6                                 | 191500                | 37                    | 36                   | 132-160-180-200   | —                   | —  | 383100 | 407900 | 127900 | 393000                   |
|                                     | 317 L4  | 360  | 1.4                                 | 196200                | 32                    | 36                   | 132-160-180-200   | —                   | —  | 400800 | 426700 | 134500 | 393000                   |
|                                     | 317 L4  | 449  | 1.1                                 | 203400                | 27                    | 36                   | 132-160-180-200   | —                   | —  | 428100 | 455800 | 144700 | 393000                   |
|                                     | 317 L4  | 493  | 1.0                                 | 184200                | 22                    | 36                   | 132-160-180-200   | —                   | —  | 440300 | 468800 | 149300 | 393000                   |
|                                     | 317 L4  | 552  | 0.91                                | 207100                | 22                    | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 619  | 0.81                                | 184300                | 17.6                  | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 719  | 0.70                                | 184300                | 15.2                  | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 792  | 0.63                                | 207100                | 15.5                  | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 904  | 0.55                                | 170000                | 11.1                  | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1032 | 0.48                                | 184300                | 10.6                  | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1134 | 0.44                                | 170000                | 8.9                   | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1318 | 0.38                                | 170000                | 7.6                   | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1595 | 0.31                                | 170000                | 6.3                   | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |
|                                     | 317 L4  | 1893 | 0.26                                | 156200                | 4.9                   | 36                   | 132-160-180-200   | —                   | —  | 442000 | 470000 | 150000 | 393000                   |

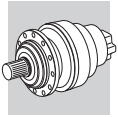
**B**

**318 L**  418

**280580 Nm**



| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| <b>1500</b>                         | 318 L3  | 76.5 | 19.6                                | 144900                | 200                   | 40                   | —   | —                   | —      | 227200 | 231900 | 74200  | 500000                   |
|                                     | 318 L3  | 98.2 | 15.3                                | 156100                | 200                   | 40                   | —   | —                   | —      | 244900 | 249900 | 80600  | 500000                   |
|                                     | 318 L3  | 117  | 12.9                                | 164400                | 200                   | 40                   | —   | —                   | —      | 257800 | 263100 | 85300  | 500000                   |
|                                     | 318 L3  | 123  | 12.2                                | 167200                | 200                   | 40                   | —   | —                   | —      | 262100 | 267500 | 86900  | 500000                   |
|                                     | 318 L3  | 146  | 10.3                                | 176000                | 200                   | 40                   | —   | —                   | —      | 275900 | 281600 | 92000  | 500000                   |
|                                     | 318 L3  | 170  | 8.8                                 | 184100                | 186                   | 40                   | —   | —                   | —      | 288700 | 294600 | 96800  | 500000                   |
| 318 L4                              | 262   | 5.7  | 209700                              | 115                   | 22                    | 180-200-225-250      | —   | —                   | 328800 | 335600 | 111800 | 500000 |                          |
| 318 L4                              | 313   | 4.8  | 220800                              | 115                   | 22                    | 180-200-225-250      | —   | —                   | 346700 | 353800 | 118600 | 500000 |                          |
| 318 L4                              | 337   | 4.5  | 225200                              | 115                   | 22                    | 180-200-225-250      | —   | —                   | 354400 | 361600 | 121500 | 500000 |                          |
| 318 L4                              | 402   | 3.7  | 236100                              | 104                   | 22                    | 180-200-225-250      | —   | —                   | 373600 | 381300 | 128900 | 500000 |                          |
| 318 L4                              | 422   | 3.6  | 239300                              | 101                   | 22                    | 180-200-225-250      | —   | —                   | 379300 | 387100 | 131100 | 500000 |                          |
| 318 L4                              | 477   | 3.1  | 247200                              | 92                    | 22                    | 180-200-225-250      | —   | —                   | 393300 | 401400 | 136500 | 500000 |                          |
| 318 L4                              | 515   | 2.9  | 252500                              | 87                    | 22                    | 180-200-225-250      | —   | —                   | 402700 | 410900 | 140100 | 500000 |                          |
| 318 L4                              | 612   | 2.5  | 263300                              | 76                    | 22                    | 180-200-225-250      | —   | —                   | 423900 | 432600 | 148300 | 500000 |                          |
| 318 L4                              | 647   | 2.3  | 264400                              | 73                    | 22                    | 180-200-225-250      | —   | —                   | 431100 | 439900 | 151100 | 500000 |                          |
| 318 L4                              | 726   | 2.1  | 266600                              | 65                    | 22                    | 180-200-225-250      | —   | —                   | 446300 | 455400 | 157000 | 500000 |                          |
| 318 L4                              | 768   | 2.0  | 267600                              | 62                    | 22                    | 180-200-225-250      | —   | —                   | 453800 | 463100 | 160000 | 500000 |                          |
| 318 L4                              | 911   | 1.6  | 270900                              | 53                    | 22                    | 180-200-225-250      | —   | —                   | 477700 | 487500 | 169400 | 500000 |                          |
| 318 L4                              | 1059  | 1.4  | 273800                              | 46                    | 22                    | 180-200-225-250      | —   | —                   | 499800 | 510000 | 178100 | 500000 |                          |







**318 L**  418

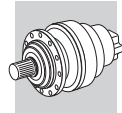
**280580 Nm**



| n <sub>1</sub><br>min <sup>-1</sup> |  | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |        |                                     |                       |                       |                      |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| <b>1000</b>                         | 318 L3  | 76.5   | 13.1                                | 163600                | 200                   | 48                   | —   | —                   | —      | 256600 | 261900 | 84900  | 500000                   |
|                                     | 318 L3  | 98.2   | 10.2                                | 176300                | 200                   | 48                   | —   | —                   | —      | 276500 | 282200 | 92300  | 500000                   |
|                                     | 318 L3  | 117    | 8.6                                 | 185600                | 183                   | 48                   | —   | —                   | —      | 291100 | 297100 | 97700  | 500000                   |
|                                     | 318 L3  | 123    | 8.1                                 | 188800                | 176                   | 48                   | —   | —                   | —      | 296000 | 302100 | 99500  | 500000                   |
|                                     | 318 L3  | 146    | 6.8                                 | 198700                | 156                   | 48                   | —   | —                   | —      | 311600 | 318000 | 105400 | 500000                   |
|                                     | 318 L3  | 170    | 5.9                                 | 207900                | 140                   | 48                   | —   | —                   | —      | 326000 | 332700 | 110800 | 500000                   |
|                                     | 318 L4  | 262    | 3.8                                 | 234800                | 106                   | 26                   | 180-200-225-250   | —                   | —      | 371300 | 379000 | 128000 | 500000                   |
|                                     | 318 L4  | 313    | 3.2                                 | 246200                | 93                    | 26                   | 180-200-225-250   | —                   | —      | 391500 | 399600 | 135800 | 500000                   |
|                                     | 318 L4  | 337    | 3.0                                 | 251100                | 88                    | 26                   | 180-200-225-250   | —                   | —      | 400200 | 408400 | 139100 | 500000                   |
|                                     | 318 L4  | 402    | 2.5                                 | 263100                | 77                    | 26                   | 180-200-225-250   | —                   | —      | 422000 | 430600 | 147600 | 500000                   |
|                                     | 318 L4  | 422    | 2.4                                 | 264000                | 74                    | 26                   | 180-200-225-250   | —                   | —      | 428400 | 437200 | 150100 | 500000                   |
|                                     | 318 L4  | 477    | 2.1                                 | 266300                | 66                    | 26                   | 180-200-225-250   | —                   | —      | 444200 | 453300 | 156200 | 500000                   |
|                                     | 318 L4  | 515    | 1.9                                 | 267700                | 61                    | 26                   | 180-200-225-250   | —                   | —      | 454800 | 464100 | 160400 | 500000                   |
|                                     | 318 L4  | 612    | 1.6                                 | 271000                | 52                    | 26                   | 180-200-225-250   | —                   | —      | 478700 | 488600 | 169800 | 500000                   |
|                                     | 318 L4  | 647    | 1.5                                 | 272100                | 50                    | 26                   | 180-200-225-250   | —                   | —      | 486800 | 496800 | 173000 | 500000                   |
|                                     | 318 L4  | 726    | 1.4                                 | 274300                | 45                    | 26                   | 180-200-225-250   | —                   | —      | 503000 | 514300 | 179800 | 500000                   |
|                                     | 318 L4  | 768    | 1.3                                 | 275400                | 42                    | 26                   | 180-200-225-250   | —                   | —      | 503000 | 523000 | 183100 | 500000                   |
|                                     | 318 L4  | 911    | 1.1                                 | 278700                | 36                    | 26                   | 180-200-225-250   | —                   | —      | 503000 | 550600 | 193900 | 500000                   |
|                                     | 318 L4  | 1059   | 0.94                                | 280600                | 31                    | 26                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
|                                     | <b>500</b>  | 318 L2 | 18.7                                | 26.7                  | 132000                | 260                  | 63  | —                   | —      | —      | 207000 | 211300 | 66900                    |
| 318 L2                              |   | 23.5   | 21.3                                | 141300                | 260                   | 63                   | —   | —                   | —      | 221600 | 226200 | 72100  | 500000                   |
| 318 L2                              |   | 27.3   | 18.3                                | 147800                | 260                   | 63                   | —   | —                   | —      | 231800 | 236600 | 75900  | 500000                   |
| 318 L3                              |   | 76.5   | 6.5                                 | 201500                | 151                   | 80                   | —   | —                   | —      | 315900 | 322400 | 107000 | 500000                   |
| 318 L3                              |   | 98.2   | 5.1                                 | 217100                | 127                   | 80                   | —   | —                   | —      | 340400 | 347400 | 116200 | 500000                   |
| 318 L3                              |   | 117    | 4.3                                 | 227500                | 112                   | 80                   | —   | —                   | —      | 358400 | 365700 | 123100 | 500000                   |
| 318 L3                              |   | 123    | 4.1                                 | 230900                | 108                   | 80                   | —   | —                   | —      | 364400 | 371900 | 125400 | 500000                   |
| 318 L3                              |   | 146    | 3.4                                 | 241800                | 95                    | 80                   | —   | —                   | —      | 383700 | 391500 | 132800 | 500000                   |
| 318 L3                              |   | 170    | 2.9                                 | 251700                | 85                    | 80                   | —   | —                   | —      | 401400 | 409600 | 139600 | 500000                   |
| 318 L4                              |   | 262    | 1.9                                 | 268100                | 60                    | 44                   | 180-200-225-250   | —                   | —      | 457200 | 466600 | 161300 | 500000                   |
| 318 L4                              |   | 313    | 1.6                                 | 271400                | 51                    | 44                   | 180-200-225-250   | —                   | —      | 482000 | 491900 | 171100 | 500000                   |
| 318 L4                              |   | 337    | 1.5                                 | 272800                | 48                    | 44                   | 180-200-225-250   | —                   | —      | 492700 | 502800 | 175300 | 500000                   |
| 318 L4                              |   | 402    | 1.2                                 | 276300                | 41                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 530200 | 185900 | 500000                   |
| 318 L4                              |   | 422    | 1.2                                 | 277300                | 39                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 538200 | 189100 | 500000                   |
| 318 L4                              |   | 477    | 1.0                                 | 279600                | 35                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 558100 | 196800 | 500000                   |
| 318 L4                              |   | 515    | 0.97                                | 280600                | 32                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
| 318 L4                              |   | 612    | 0.82                                | 280600                | 27                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
| 318 L4                              |   | 647    | 0.77                                | 280600                | 26                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
| 318 L4                              |   | 726    | 0.69                                | 280600                | 23                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
| 318 L4                              |   | 768    | 0.65                                | 280600                | 22                    | 44                   | 180-200-225-250   | —                   | —      | 503000 | 565000 | 200000 | 500000                   |
| 318 L4                              | 911   | 0.55   | 280600                              | 18.2                  | 44                    | 180-200-225-250      | —   | —                   | 503000 | 565000 | 200000 | 500000 |                          |
| 318 L4                              | 1059  | 0.47   | 280600                              | 15.7                  | 44                    | 180-200-225-250      | —   | —                   | 503000 | 565000 | 200000 | 500000 |                          |

**319 L**  428

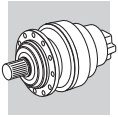
**476410 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| <b>1500</b>                         | 319 L3  | 84.8 | 17.7                                | 195400                | 200                   | 50                   | —   | —                   | —  | 269300 | 296700 | 76700  | 680000                   |
|                                     | 319 L3  | 109  | 13.8                                | 222400                | 200                   | 50                   | —   | —                   | —  | 290200 | 319800 | 83400  | 680000                   |
|                                     | 319 L3  | 129  | 11.6                                | 220800                | 200                   | 50                   | —   | —                   | —  | 305500 | 336600 | 88300  | 680000                   |
|                                     | 319 L3  | 137  | 11.0                                | 226500                | 200                   | 50                   | —   | —                   | —  | 310700 | 342300 | 90000  | 680000                   |
|                                     | 319 L3  | 162  | 9.3                                 | 250300                | 200                   | 50                   | —   | —                   | —  | 326800 | 360000 | 95200  | 680000                   |
|                                     | 319 L3  | 188  | 8.0                                 | 209800                | 192                   | 50                   | —   | —                   | —  | 342200 | 377000 | 100100 | 680000                   |
|                                     | 319 L3  | 223  | 6.7                                 | 246100                | 190                   | 50                   | —   | —                   | —  | 359900 | 396500 | 105900 | 680000                   |



| 319 L                      |   |        |                            |                |                |                 | 476410 Nm   |       |        |              |        |        |                 |
|----------------------------|---|--------|----------------------------|----------------|----------------|-----------------|---|-------|--------|--------------|--------|--------|-----------------|
| $n_1$<br>min <sup>-1</sup> |  | i      | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW     | P (IEC)  | MC    | MZ     | $R_{n2}$ [N] |        |        | $M_2$ max<br>Nm |
|                            |   |        |                            |                |                |                 |   | HC/PC | HZ/PZ  | FZ           |        |        |                 |
| 1500                       | 319 L4  | 347    | 4.3                        | 298000         | 115            | 30              | 180-200-225-250   | —     | —      | 410900       | 452700 | 122700 | 680000          |
|                            | 319 L4  | 445    | 3.4                        | 319800         | 115            | 30              | 180-200-225-250   | —     | —      | 442900       | 487900 | 133400 | 680000          |
|                            | 319 L4  | 528    | 2.8                        | 335700         | 113            | 30              | 180-200-225-250   | —     | —      | 466200       | 513700 | 141200 | 680000          |
|                            | 319 L4  | 571    | 2.6                        | 344400         | 107            | 30              | 180-200-225-250   | —     | —      | 477300       | 525800 | 145000 | 680000          |
|                            | 319 L4  | 678    | 2.2                        | 354900         | 93             | 30              | 180-200-225-250   | —     | —      | 502400       | 553600 | 153500 | 680000          |
|                            | 319 L4  | 717    | 2.1                        | 355800         | 88             | 30              | 180-200-225-250   | —     | —      | 510900       | 562900 | 156300 | 680000          |
|                            | 319 L4  | 850    | 1.8                        | 363400         | 76             | 30              | 180-200-225-250   | —     | —      | 537900       | 592600 | 165500 | 680000          |
|                            | 319 L4  | 912    | 1.6                        | 336100         | 65             | 30              | 180-200-225-250   | —     | —      | 549200       | 605100 | 169400 | 680000          |
|                            | 319 L4  | 1007   | 1.5                        | 344900         | 61             | 30              | 180-200-225-250   | —     | —      | 565700       | 623300 | 175100 | 680000          |
|                            | 319 L4  | 1195   | 1.3                        | 354500         | 53             | 30              | 180-200-225-250   | —     | —      | 595600       | 656200 | 185400 | 680000          |
| 319 L4                     | 1389  | 1.1    | 355900                     | 45             | 30             | 180-200-225-250 | —   | —     | 623100 | 686500       | 194900 | 680000 |                 |
| 1000                       | 319 L3  | 84.8   | 11.8                       | 220700         | 200            | 60              | —   | —     | —      | 304100       | 335100 | 87900  | 680000          |
|                            | 319 L3  | 109    | 9.2                        | 251200         | 200            | 60              | —   | —     | —      | 327800       | 361100 | 95500  | 680000          |
|                            | 319 L3  | 129    | 7.7                        | 249300         | 200            | 60              | —   | —     | —      | 345000       | 380100 | 101100 | 680000          |
|                            | 319 L3  | 137    | 7.3                        | 255500         | 200            | 60              | —   | —     | —      | 350900       | 386600 | 103000 | 680000          |
|                            | 319 L3  | 162    | 6.2                        | 263500         | 187            | 60              | —   | —     | —      | 369000       | 406600 | 108900 | 680000          |
|                            | 319 L3  | 188    | 5.3                        | 236700         | 144            | 60              | —   | —     | —      | 386400       | 425800 | 114600 | 680000          |
|                            | 319 L3  | 223    | 4.5                        | 274900         | 141            | 60              | —   | —     | —      | 406500       | 447800 | 121300 | 680000          |
|                            | 319 L4  | 347    | 2.9                        | 334200         | 114            | 36              | 180-200-225-250   | —     | —      | 464100       | 511300 | 140500 | 680000          |
|                            | 319 L4  | 445    | 2.2                        | 354100         | 94             | 36              | 180-200-225-250   | —     | —      | 500200       | 551000 | 152700 | 680000          |
|                            | 319 L4  | 528    | 1.9                        | 364000         | 82             | 36              | 180-200-225-250   | —     | —      | 526500       | 580100 | 161700 | 680000          |
|                            | 319 L4  | 571    | 1.8                        | 368700         | 76             | 36              | 180-200-225-250   | —     | —      | 539000       | 593900 | 165900 | 680000          |
|                            | 319 L4  | 678    | 1.5                        | 379100         | 66             | 36              | 180-200-225-250   | —     | —      | 567400       | 625200 | 175700 | 680000          |
|                            | 319 L4  | 717    | 1.4                        | 374100         | 62             | 36              | 180-200-225-250   | —     | —      | 577000       | 635700 | 179000 | 680000          |
|                            | 319 L4  | 850    | 1.2                        | 382200         | 53             | 36              | 180-200-225-250   | —     | —      | 607400       | 669200 | 189500 | 680000          |
|                            | 319 L4  | 912    | 1.1                        | 355200         | 46             | 36              | 180-200-225-250   | —     | —      | 620200       | 683400 | 193900 | 680000          |
|                            | 319 L4  | 1007   | 0.99                       | 367600         | 43             | 36              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
|                            | 319 L4  | 1195   | 0.84                       | 367600         | 36             | 36              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
|                            | 319 L4  | 1389   | 0.72                       | 359700         | 31             | 36              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
|                            | 500   | 319 L2 | 20.7                       | 24.1           | 191800         | 260             | 70  | —     | —      | —            | 245400 | 270300 | 69200           |
| 319 L2                     |   | 24.5   | 20.4                       | 200300         | 260            | 70              | —   | —     | —      | 258100       | 284300 | 73200  | 680000          |
| 319 L2                     |   | 26.0   | 19.2                       | 191600         | 260            | 70              | —   | —     | —      | 262700       | 289400 | 74700  | 680000          |
| 319 L2                     |   | 30.2   | 16.5                       | 168600         | 260            | 70              | —   | —     | —      | 274800       | 302800 | 78500  | 680000          |
| 319 L2                     |   | 35.8   | 14.0                       | 199000         | 260            | 70              | —   | —     | —      | 289000       | 318500 | 83000  | 680000          |
| 319 L3                     |   | 84.8   | 5.9                        | 272100         | 184            | 100             | —   | —     | —      | 374400       | 412500 | 110700 | 680000          |
| 319 L3                     |   | 109    | 4.6                        | 306300         | 162            | 100             | —   | —     | —      | 403500       | 444600 | 120300 | 680000          |
| 319 L3                     |   | 129    | 3.9                        | 306100         | 136            | 100             | —   | —     | —      | 424800       | 468000 | 127400 | 680000          |
| 319 L3                     |   | 137    | 3.7                        | 312300         | 131            | 100             | —   | —     | —      | 432000       | 475900 | 129700 | 680000          |
| 319 L3                     |   | 162    | 3.1                        | 302300         | 107            | 100             | —   | —     | —      | 454400       | 500600 | 137200 | 680000          |
| 319 L3                     |   | 188    | 2.7                        | 290800         | 89             | 100             | —   | —     | —      | 475800       | 524200 | 144400 | 680000          |
| 319 L3                     |   | 223    | 2.2                        | 322300         | 83             | 100             | —   | —     | —      | 500400       | 551300 | 152800 | 680000          |
| 319 L4                     |   | 347    | 1.4                        | 380500         | 65             | 60              | 180-200-225-250   | —     | —      | 571400       | 629500 | 177000 | 680000          |
| 319 L4                     |   | 445    | 1.1                        | 396200         | 53             | 60              | 180-200-225-250   | —     | —      | 615800       | 678400 | 192400 | 680000          |
| 319 L4                     |   | 528    | 0.95                       | 403700         | 45             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     |   | 571    | 0.88                       | 403700         | 42             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     |   | 678    | 0.74                       | 403700         | 35             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     |   | 717    | 0.70                       | 389900         | 32             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     |   | 850    | 0.59                       | 389900         | 27             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     |   | 912    | 0.55                       | 359700         | 23             | 60              | 180-200-225-250   | —     | —      | 638000       | 702000 | 200000 | 680000          |
| 319 L4                     | 1007  | 0.50   | 367600                     | 22             | 60             | 180-200-225-250 | —   | —     | 638000 | 702000       | 200000 | 680000 |                 |
| 319 L4                     | 1195  | 0.42   | 367600                     | 18.2           | 60             | 180-200-225-250 | —   | —     | 638000 | 702000       | 200000 | 680000 |                 |
| 319 L4                     | 1389  | 0.36   | 359700                     | 15.3           | 60             | 180-200-225-250 | —   | —     | 638000 | 702000       | 200000 | 680000 |                 |



B



### 321 L

438



### 655740 Nm

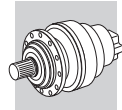
| n <sub>1</sub><br>min <sup>-1</sup> |  | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |         | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|---|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|--------|--------|---------|--------------------------|--------|
|                                     |   |        |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ      |                          |        |
| 1500                                | 321 L4  | 258    | 5.8                                 | 401700                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 461500 | 547200 | 667600  | 934000                   |        |
|                                     | 321 L4  | 308    | 4.9                                 | 423600                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 486600 | 577000 | 708100  | 934000                   |        |
|                                     | 321 L4  | 395    | 3.8                                 | 456500                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 524400 | 621900 | 769500  | 934000                   |        |
|                                     | 321 L4  | 469    | 3.2                                 | 480500                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 552000 | 654600 | 814700  | 934000                   |        |
|                                     | 321 L4  | 515    | 2.9                                 | 494200                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 567800 | 673300 | 840500  | 934000                   |        |
|                                     | 321 L4  | 612    | 2.5                                 | 519900                | 150                   | 35                   | 180-200-225-250   | —                   | —  | 597700 | 708800 | 889900  | 934000                   |        |
|                                     | 321 L4  | 736    | 2.0                                 | 545400                | 131                   | 35                   | 180-200-225-250   | —                   | —  | 631900 | 749400 | 946600  | 934000                   |        |
|                                     | 321 L4  | 796    | 1.9                                 | 556600                | 124                   | 35                   | 180-200-225-250   | —                   | —  | 646900 | 767100 | 971600  | 934000                   |        |
|                                     | 321 L4  | 945    | 1.6                                 | 581800                | 109                   | 35                   | 180-200-225-250   | —                   | —  | 681000 | 807600 | 1028700 | 934000                   |        |
|                                     | 321 L4  | 1122   | 1.3                                 | 530200                | 84                    | 35                   | 180-200-225-250   | —                   | —  | 716900 | 850200 | 1089200 | 934000                   |        |
| 1000                                | 321 L3  | 75.3   | 13.3                                | 313500                | 250                   | 60                   | —   | —                   | —  | 360100 | 427000 | 506800  | 934000                   |        |
|                                     | 321 L3  | 98.2   | 10.2                                | 339400                | 250                   | 60                   | —   | —                   | —  | 389900 | 462400 | 553600  | 934000                   |        |
|                                     | 321 L3  | 118    | 8.5                                 | 358800                | 250                   | 60                   | —   | —                   | —  | 412200 | 488800 | 588900  | 934000                   |        |
|                                     | 321 L3  | 126    | 7.9                                 | 365800                | 250                   | 60                   | —   | —                   | —  | 420200 | 498300 | 601600  | 934000                   |        |
|                                     | 321 L3  | 152    | 6.6                                 | 386700                | 250                   | 60                   | —   | —                   | —  | 444200 | 526800 | 639900  | 934000                   |        |
|                                     | 321 L3  | 180    | 5.6                                 | 407100                | 250                   | 60                   | —   | —                   | —  | 467700 | 554600 | 677500  | 934000                   |        |
|                                     | 321 L4  | 258    | 3.9                                 | 453700                | 150                   | 42                   | 180-200-225-250   | —                   | —  | 521200 | 618000 | 764200  | 934000                   |        |
|                                     | 321 L4  | 308    | 3.2                                 | 478300                | 150                   | 42                   | 180-200-225-250   | —                   | —  | 549500 | 651700 | 810500  | 934000                   |        |
|                                     | 321 L4  | 395    | 2.5                                 | 515500                | 150                   | 42                   | 180-200-225-250   | —                   | —  | 592200 | 702300 | 880800  | 934000                   |        |
|                                     | 321 L4  | 469    | 2.1                                 | 539100                | 136                   | 42                   | 180-200-225-250   | —                   | —  | 623400 | 739300 | 932600  | 934000                   |        |
|                                     | 321 L4  | 515    | 1.9                                 | 552400                | 127                   | 42                   | 180-200-225-250   | —                   | —  | 641200 | 760400 | 962200  | 934000                   |        |
|                                     | 321 L4  | 612    | 1.6                                 | 577400                | 112                   | 42                   | 180-200-225-250   | —                   | —  | 675000 | 800500 | 1018700 | 934000                   |        |
|                                     | 321 L4  | 736    | 1.4                                 | 605800                | 97                    | 42                   | 180-200-225-250   | —                   | —  | 713600 | 846300 | 1083600 | 934000                   |        |
|                                     | 321 L4  | 796    | 1.3                                 | 618200                | 92                    | 42                   | 180-200-225-250   | —                   | —  | 730600 | 866400 | 1112200 | 934000                   |        |
|                                     | 321 L4  | 945    | 1.1                                 | 646200                | 81                    | 42                   | 180-200-225-250   | —                   | —  | 769100 | 912000 | 1177600 | 934000                   |        |
|                                     | 321 L4  | 1122   | 0.89                                | 536400                | 57                    | 42                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
|                                     | 500   | 321 L3 | 75.3                                | 6.6                   | 385900                | 250                  | 127   | —                   | —  | —      | 443300 | 525700  | 638500                   | 934000 |
|                                     |   | 321 L3 | 98.2                                | 5.1                   | 417900                | 244                  | 127   | —                   | —  | —      | 480000 | 569300  | 697500                   | 934000 |
|                                     |   | 321 L3 | 118                                 | 4.2                   | 441800                | 214                  | 127   | —                   | —  | —      | 507500 | 601800  | 742000                   | 934000 |
|                                     |   | 321 L3 | 126                                 | 4.0                   | 450300                | 205                  | 127   | —                   | —  | —      | 517300 | 613500  | 758000                   | 934000 |
| 321 L3                              |   | 152    | 3.3                                 | 476100                | 180                   | 127                  | —   | —                   | —  | 546900 | 648600 | 806300  | 934000                   |        |
| 321 L3                              |   | 180    | 2.8                                 | 501200                | 160                   | 127                  | —   | —                   | —  | 575800 | 682800 | 853700  | 934000                   |        |
| 321 L4                              |   | 258    | 1.9                                 | 552700                | 127                   | 70                   | 180-200-225-250   | —                   | —  | 641600 | 760900 | 962800  | 934000                   |        |
| 321 L4                              |   | 308    | 1.6                                 | 578500                | 111                   | 70                   | 180-200-225-250   | —                   | —  | 676500 | 802300 | 1021200 | 934000                   |        |
| 321 L4                              |   | 395    | 1.3                                 | 617100                | 92                    | 70                   | 180-200-225-250   | —                   | —  | 729100 | 864600 | 1109700 | 934000                   |        |
| 321 L4                              |   | 469    | 1.1                                 | 645100                | 81                    | 70                   | 180-200-225-250   | —                   | —  | 767500 | 910200 | 1174900 | 934000                   |        |
| 321 L4                              |   | 515    | 0.97                                | 655700                | 75                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
| 321 L4                              |   | 612    | 0.82                                | 655700                | 63                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
| 321 L4                              |   | 736    | 0.68                                | 655700                | 53                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
| 321 L4                              |   | 796    | 0.63                                | 655700                | 49                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
| 321 L4                              |   | 945    | 0.53                                | 655700                | 41                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |
| 321 L4                              |   | 1122   | 0.45                                | 536400                | 28                    | 70                   | 180-200-225-250   | —                   | —  | 779000 | 923000 | 1200000 | 934000                   |        |

### 323 L

448

### 890310 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |       |        |         | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|-------|--------|---------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC | HZ/PZ  | FZ      |                          |
| 1500                                | 323 L4  | 341  | 4.4                                 | 757500                | 200                   | 50                   | —   | —                   | —  | —     | 671300 | 1580000 |                          |
|                                     | 323 L4  | 390  | 3.8                                 | 774100                | 200                   | 50                   | —   | —                   | —  | —     | 702000 | 1580000 |                          |
|                                     | 323 L4  | 438  | 3.4                                 | 788700                | 200                   | 50                   | —   | —                   | —  | —     | 729500 | 1580000 |                          |
|                                     | 323 L4  | 500  | 3.0                                 | 806000                | 200                   | 50                   | —   | —                   | —  | —     | 762900 | 1580000 |                          |
|                                     | 323 L4  | 569  | 2.6                                 | 822800                | 200                   | 50                   | —   | —                   | —  | —     | 796200 | 1580000 |                          |
|                                     | 323 L4  | 628  | 2.4                                 | 832800                | 200                   | 50                   | —   | —                   | —  | —     | 822900 | 1580000 |                          |
|                                     | 323 L4  | 703  | 2.1                                 | 840100                | 200                   | 50                   | —   | —                   | —  | —     | 854300 | 1580000 |                          |
|                                     | 323 L4  | 758  | 2.0                                 | 844900                | 198                   | 50                   | —   | —                   | —  | —     | 876000 | 1580000 |                          |
|                                     | 323 L4  | 882  | 1.7                                 | 854800                | 172                   | 50                   | —   | —                   | —  | —     | 921500 | 1580000 |                          |
|                                     | 323 L4  | 1025 | 1.5                                 | 864700                | 150                   | 50                   | —   | —                   | —  | —     | 968900 | 1580000 |                          |
|                                     | 323 L4  | 1101 | 1.4                                 | 869400                | 140                   | 50                   | —   | —                   | —  | —     | 992100 | 1580000 |                          |



**323 L** 448

**890310 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |        | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC) | R <sub>n2</sub> [N] |    |       |       |         | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---------|---------------------|----|-------|-------|---------|--------------------------|
|                                     |        |        |                                     |                       |                       |                      |         | MC                  | MZ | HC/PC | HZ/PZ | FZ      |                          |
| 1000                                | 323 L4 | 1279   | 1.2                                 | 879500                | 122                   | 50                   | —       | —                   | —  | —     | —     | 1043200 | 1580000                  |
|                                     | 323 L4 | 341    | 2.9                                 | 808800                | 200                   | 60                   | —       | —                   | —  | —     | —     | 768500  | 1580000                  |
|                                     | 323 L4 | 390    | 2.6                                 | 826500                | 200                   | 60                   | —       | —                   | —  | —     | —     | 803600  | 1580000                  |
|                                     | 323 L4 | 438    | 2.3                                 | 835700                | 200                   | 60                   | —       | —                   | —  | —     | —     | 835100  | 1580000                  |
|                                     | 323 L4 | 500    | 2.0                                 | 844300                | 200                   | 60                   | —       | —                   | —  | —     | —     | 873300  | 1580000                  |
|                                     | 323 L4 | 569    | 1.8                                 | 852600                | 177                   | 60                   | —       | —                   | —  | —     | —     | 911400  | 1580000                  |
|                                     | 323 L4 | 628    | 1.6                                 | 859100                | 162                   | 60                   | —       | —                   | —  | —     | —     | 941900  | 1580000                  |
|                                     | 323 L4 | 703    | 1.4                                 | 866600                | 146                   | 60                   | —       | —                   | —  | —     | —     | 978000  | 1580000                  |
|                                     | 323 L4 | 758    | 1.3                                 | 871600                | 136                   | 60                   | —       | —                   | —  | —     | —     | 1002800 | 1580000                  |
|                                     | 323 L4 | 882    | 1.1                                 | 881800                | 118                   | 60                   | —       | —                   | —  | —     | —     | 1054900 | 1580000                  |
|                                     | 323 L4 | 1025   | 0.98                                | 890300                | 103                   | 60                   | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
|                                     | 323 L4 | 1101   | 0.91                                | 890300                | 96                    | 60                   | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
|                                     | 323 L4 | 1279   | 0.78                                | 890300                | 82                    | 60                   | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
|                                     | 500    | 323 L3 | 83.3                                | 6.0                   | 702600                | 260                  | 90      | —                   | —  | —     | —     | —       | 605400                   |
| 323 L3                              |        | 105    | 4.8                                 | 747400                | 260                   | 90                   | —       | —                   | —  | —     | —     | 653000  | 1580000                  |
| 323 L3                              |        | 113    | 4.4                                 | 756600                | 260                   | 90                   | —       | —                   | —  | —     | —     | 669600  | 1580000                  |
| 323 L3                              |        | 120    | 4.2                                 | 763800                | 260                   | 90                   | —       | —                   | —  | —     | —     | 682800  | 1580000                  |
| 323 L3                              |        | 142    | 3.5                                 | 784900                | 260                   | 90                   | —       | —                   | —  | —     | —     | 722300  | 1580000                  |
| 323 L3                              |        | 165    | 3.0                                 | 804200                | 260                   | 90                   | —       | —                   | —  | —     | —     | 759400  | 1580000                  |
| 323 L3                              |        | 205    | 2.4                                 | 831600                | 232                   | 90                   | —       | —                   | —  | —     | —     | 817600  | 1580000                  |
| 323 L4                              |        | 390    | 1.3                                 | 873500                | 132                   | 100                  | —       | —                   | —  | —     | —     | 1012500 | 1580000                  |
| 323 L4                              |        | 341    | 1.5                                 | 864600                | 150                   | 100                  | —       | —                   | —  | —     | —     | 968200  | 1580000                  |
| 323 L4                              |        | 390    | 1.3                                 | 873500                | 132                   | 100                  | —       | —                   | —  | —     | —     | 1012500 | 1580000                  |
| 323 L4                              |        | 438    | 1.1                                 | 881300                | 119                   | 100                  | —       | —                   | —  | —     | —     | 1052200 | 1580000                  |
| 323 L4                              |        | 500    | 1.00                                | 890300                | 105                   | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 569    | 0.88                                | 890300                | 93                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 628    | 0.80                                | 890300                | 84                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 703    | 0.71                                | 890300                | 75                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 758    | 0.66                                | 890300                | 70                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 882    | 0.57                                | 890300                | 60                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 1025   | 0.49                                | 890300                | 51                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 1101   | 0.45                                | 890300                | 48                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |
| 323 L4                              |        | 1279   | 0.39                                | 890300                | 41                    | 100                  | —       | —                   | —  | —     | —     | 1100000 | 1580000                  |

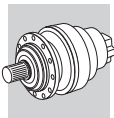
**325 L** 452

**1286700 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |        | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC) | R <sub>n2</sub> [N] |    |       |       |         | M <sub>2 max</sub><br>Nm |         |
|-------------------------------------|--------|--------|-------------------------------------|-----------------------|-----------------------|----------------------|---------|---------------------|----|-------|-------|---------|--------------------------|---------|
|                                     |        |        |                                     |                       |                       |                      |         | MC                  | MZ | HC/PC | HZ/PZ | FZ      |                          |         |
| 1500                                | 325 L4 | 341    | 4.4                                 | 931900                | 200                   | 65                   | —       | —                   | —  | —     | —     | 854400  | 2000000                  |         |
|                                     | 325 L4 | 390    | 3.8                                 | 952300                | 200                   | 65                   | —       | —                   | —  | —     | —     | 893500  | 2000000                  |         |
|                                     | 325 L4 | 438    | 3.4                                 | 1004300               | 200                   | 65                   | —       | —                   | —  | —     | —     | 928500  | 2000000                  |         |
|                                     | 325 L4 | 500    | 3.0                                 | 1026300               | 200                   | 65                   | —       | —                   | —  | —     | —     | 970900  | 2000000                  |         |
|                                     | 325 L4 | 569    | 2.6                                 | 1066500               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1013300 | 2000000                  |         |
|                                     | 325 L4 | 628    | 2.4                                 | 1093000               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1047300 | 2000000                  |         |
|                                     | 325 L4 | 703    | 2.1                                 | 1101500               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1087300 | 2000000                  |         |
|                                     | 325 L4 | 758    | 2.0                                 | 1147900               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1114900 | 2000000                  |         |
|                                     | 325 L4 | 882    | 1.7                                 | 1154000               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1172800 | 2000000                  |         |
|                                     | 325 L4 | 1025   | 1.5                                 | 1190200               | 200                   | 65                   | —       | —                   | —  | —     | —     | 1233200 | 2000000                  |         |
|                                     | 325 L4 | 1101   | 1.4                                 | 963200                | 155                   | 65                   | —       | —                   | —  | —     | —     | 1262700 | 2000000                  |         |
|                                     | 325 L4 | 1279   | 1.2                                 | 963200                | 134                   | 65                   | —       | —                   | —  | —     | —     | 1327700 | 2000000                  |         |
|                                     | 1000   | 325 L4 | 341                                 | 2.9                   | 1052400               | 200                  | 78      | —                   | —  | —     | —     | —       | 978000                   | 2000000 |
|                                     |        | 325 L4 | 390                                 | 2.6                   | 1075400               | 200                  | 78      | —                   | —  | —     | —     | —       | 1022800                  | 2000000 |
| 325 L4                              |        | 438    | 2.3                                 | 1120700               | 200                   | 78                   | —       | —                   | —  | —     | —     | 1062900 | 2000000                  |         |
| 325 L4                              |        | 500    | 2.0                                 | 1130200               | 200                   | 78                   | —       | —                   | —  | —     | —     | 1111400 | 2000000                  |         |
| 325 L4                              |        | 569    | 1.8                                 | 1157600               | 200                   | 78                   | —       | —                   | —  | —     | —     | 1160000 | 2000000                  |         |
| 325 L4                              |        | 628    | 1.6                                 | 1179300               | 200                   | 78                   | —       | —                   | —  | —     | —     | 1198800 | 2000000                  |         |
| 325 L4                              |        | 703    | 1.4                                 | 1197000               | 200                   | 78                   | —       | —                   | —  | —     | —     | 1244700 | 2000000                  |         |
| 325 L4                              |        | 758    | 1.3                                 | 1228300               | 192                   | 78                   | —       | —                   | —  | —     | —     | 1276200 | 2000000                  |         |
| 325 L4                              |        | 882    | 1.1                                 | 1254000               | 168                   | 78                   | —       | —                   | —  | —     | —     | 1342600 | 2000000                  |         |

**B**







**325 L**

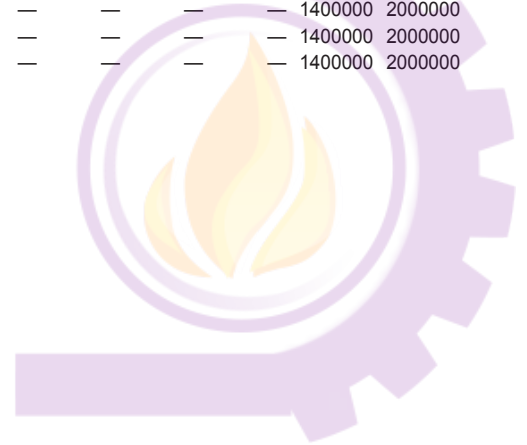
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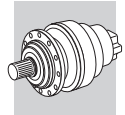
**1286700 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | P <sub>t</sub><br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |       |       |         | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|----|-------|-------|---------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ | HC/PC | HZ/PZ | FZ      |                          |
| <b>1000</b>                         | 325 L4  | 1025 | 0.98                                | 1286700               | 148                   | 78                   | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 1101 | 0.91                                | 963200                | 104                   | 78                   | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 1279 | 0.78                                | 963200                | 89                    | 78                   | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
| <b>500</b>                          | 325 L3  | 83.3 | 6.0                                 | 849100                | 260                   | 115                  | —   | —                   | —  | —     | —     | 770500  | 2000000                  |
|                                     | 325 L3  | 105  | 4.8                                 | 908900                | 260                   | 115                  | —   | —                   | —  | —     | —     | 831100  | 2000000                  |
|                                     | 325 L3  | 113  | 4.4                                 | 898100                | 260                   | 115                  | —   | —                   | —  | —     | —     | 852200  | 2000000                  |
|                                     | 325 L3  | 120  | 4.2                                 | 928800                | 260                   | 115                  | —   | —                   | —  | —     | —     | 869100  | 2000000                  |
|                                     | 325 L3  | 142  | 3.5                                 | 961400                | 260                   | 115                  | —   | —                   | —  | —     | —     | 919200  | 2000000                  |
|                                     | 325 L3  | 165  | 3.0                                 | 1005800               | 260                   | 115                  | —   | —                   | —  | —     | —     | 966600  | 2000000                  |
|                                     | 325 L3  | 205  | 2.4                                 | 963200                | 260                   | 115                  | —   | —                   | —  | —     | —     | 1040600 | 2000000                  |
|                                     | 325 L4  | 390  | 1.3                                 | 1228100               | 186                   | 130                  | —   | —                   | —  | —     | —     | 1288600 | 2000000                  |
|                                     | 325 L4  | 341  | 1.5                                 | 1206900               | 200                   | 130                  | —   | —                   | —  | —     | —     | 1232300 | 2000000                  |
|                                     | 325 L4  | 390  | 1.3                                 | 1228100               | 186                   | 130                  | —   | —                   | —  | —     | —     | 1288600 | 2000000                  |
|                                     | 325 L4  | 438  | 1.1                                 | 1258300               | 170                   | 130                  | —   | —                   | —  | —     | —     | 1339100 | 2000000                  |
|                                     | 325 L4  | 500  | 1.00                                | 1286700               | 152                   | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 569  | 0.88                                | 1286700               | 134                   | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 628  | 0.80                                | 1286700               | 121                   | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 703  | 0.71                                | 1286700               | 108                   | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 758  | 0.66                                | 1286600               | 100                   | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 882  | 0.57                                | 1286700               | 86                    | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 1025 | 0.49                                | 1286700               | 74                    | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 1101 | 0.45                                | 963200                | 52                    | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |
|                                     | 325 L4  | 1279 | 0.39                                | 963200                | 45                    | 130                  | —   | —                   | —  | —     | —     | 1400000 | 2000000                  |

**B**

آتور صنعت  
ATOORSANAT





## 25.4 RATING CHARTS FOR RIGHT ANGLE UNITS 300 R

Reading the rating chart.

| 301 R                      |        |      |                            |                |                |             | 2060 Nm              |      |      |             |       |      |                   |
|----------------------------|--------|------|----------------------------|----------------|----------------|-------------|----------------------|------|------|-------------|-------|------|-------------------|
|                            |        |      |                            |                |                |             | 258                  |      |      |             |       |      |                   |
| $n_1$<br>min <sup>-1</sup> |        | i    | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW | P (IEC)              | MC   | MZ   | R $n_2$ [N] |       | FZ   | $M_{2\max}$<br>Nm |
|                            |        |      |                            |                |                |             |                      |      |      | HC/PC       | HZ/PZ |      |                   |
| 1500                       | 301 R2 | 7.13 | 210                        | 1040           | 15.0           | 12.0        | 71-80-90-100-112-132 | 2050 | 2050 | 6170        | 7080  | 1350 | 3200              |
|                            | 301 R2 | 8.74 | 172                        | 1090           | 15.0           | 12.0        | 71-80-90-100-112-132 | 2190 | 2190 | 6550        | 7530  | 1440 | 3200              |
|                            | 301 R2 | 11.8 | 127                        | 1150           | 15.0           | 12.0        | 71-80-90-100-112-132 | 2420 | 2420 | 7180        | 8240  | 1590 | 3200              |
|                            | 301 R2 | 14.8 | 102                        | 940            | 10.6           | 12.0        | 71-80-90-100-112-132 | 2610 | 2610 | 7670        | 8810  | 1710 | 3200              |
|                            | 301 R2 | 18.5 | 81                         | 740            | 6.7            | 12.0        | 71-80-90-100-112-132 | 2810 | 2810 | 8200        | 9420  | 1850 | 3200              |

The rated torque of the gearbox, independent of installed mechanical power

1 Reference torque

8 Gearbox thermal capacity

2 Gearbox drive speed

9 Frame size of available IEC motor

3 Frame size of the right-angle gear unit.  
NOTE: letters (B) (C) near size indication identify different angle reduction dimensions. See dimensions pages.

10 Permitted overhung loading on output shaft, based on:

- service factor  $f_s=1$
- 10000 h theoretical lifetime
- speed of output  $n_2$

4 Gear ratio

5 Gearbox output speed

For forces not applied at shaft midpoint, see diagrams provided in the specific gearbox overall dimensioning pages

Gearbox rated output torque based on:

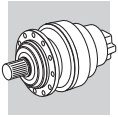
- 6
- service factor  $f_s=1$
  - 10000 h theoretical lifetime

11 Maximum torque

Gearbox rated input power, based on:

- 7
- service factor  $f_s=1$
  - 10000 h theoretical lifetime

12 Dimensions page



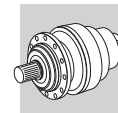
### 300 R



248

### 1250 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N]  |       |       |       |       | M <sub>2 max</sub><br>Nm |      |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|----------------------|-------|-------|-------|-------|--------------------------|------|
|                                     |        |                                     |                       |                       |          |                      | MC/PC                | MZ/PZ | HC    | HZ    | FZ    |                          |      |
| <b>1500</b>                         | 300 R2 | 7.13                                | 210                   | 580                   | 13.7     | 12.0                 | 71-80-90-100-112-132 | 2050  | 2050  | 6170  | 7080  | 1350                     | 2000 |
|                                     | 300 R2 | 8.74                                | 172                   | 610                   | 11.7     | 12.0                 | 71-80-90-100-112-132 | 2190  | 2190  | 6550  | 7530  | 1440                     | 2400 |
|                                     | 300 R2 | 11.8                                | 127                   | 590                   | 8.3      | 12.0                 | 71-80-90-100-112-132 | 2420  | 2420  | 7180  | 8240  | 1590                     | 2400 |
|                                     | 300 R2 | 14.8                                | 102                   | 510                   | 5.7      | 12.0                 | 71-80-90-100-112-132 | 2610  | 2610  | 7670  | 8810  | 1710                     | 2400 |
|                                     | 300 R2 | 18.5                                | 81                    | 370                   | 3.3      | 12.0                 | 71-80-90-100-112-132 | 2810  | 2810  | 8200  | 9420  | 1850                     | 2400 |
|                                     | 300 R3 | 24.8                                | 60                    | 730                   | 5.1      | 12.0                 | 71-80-90-100-112-132 | 3100  | 3100  | 8960  | 10300 | 2040                     | 2000 |
|                                     | 300 R3 | 30.4                                | 49                    | 840                   | 4.8      | 12.0                 | 71-80-90-100-112-132 | 3320  | 3320  | 9530  | 10900 | 2180                     | 2400 |
|                                     | 300 R3 | 37.3                                | 40                    | 840                   | 3.9      | 12.0                 | 71-80-90-100-112-132 | 3550  | 3550  | 10100 | 11600 | 2330                     | 2400 |
|                                     | 300 R3 | 41.2                                | 36                    | 650                   | 2.7      | 12.0                 | 71-80-90-100-112-132 | 3670  | 3670  | 10400 | 12000 | 2410                     | 2400 |
|                                     | 300 R3 | 50.4                                | 29.8                  | 850                   | 2.9      | 12.0                 | 71-80-90-100-112-132 | 3930  | 3930  | 11100 | 12700 | 2580                     | 2400 |
|                                     | 300 R3 | 62.9                                | 23.8                  | 850                   | 2.3      | 12.0                 | 71-80-90-100-112-132 | 4230  | 4230  | 11800 | 13600 | 2780                     | 2400 |
|                                     | 300 R3 | 68.2                                | 22.0                  | 650                   | 1.6      | 12.0                 | 71-80-90-100-112-132 | 4340  | 4340  | 12100 | 13900 | 2860                     | 2400 |
|                                     | 300 R3 | 78.7                                | 19.1                  | 850                   | 1.9      | 12.0                 | 71-80-90-100-112-132 | 4550  | 4550  | 12700 | 14600 | 2990                     | 2400 |
|                                     | 300 R3 | 85.2                                | 17.6                  | 650                   | 1.3      | 12.0                 | 71-80-90-100-112-132 | 4680  | 4680  | 13000 | 14900 | 3070                     | 2400 |
|                                     | 300 R3 | 106                                 | 14.1                  | 650                   | 1.1      | 12.0                 | 71-80-90-100-112-132 | 5040  | 5040  | 13900 | 15900 | 3310                     | 2400 |
|                                     | 300 R3 | 133                                 | 11.3                  | 550                   | 0.71     | 12.0                 | 71-80-90-100-112-132 | 5420  | 5420  | 14800 | 17000 | 3570                     | 2400 |
|                                     | 300 R4 | 106                                 | 14.2                  | 860                   | 1.4      | 10.0                 | 71-80-90-100-112-132 | 5030  | 5030  | 13800 | 15900 | 3310                     | 2400 |
|                                     | 300 R4 | 130                                 | 11.6                  | 860                   | 1.2      | 10.0                 | 71-80-90-100-112-132 | 5380  | 5380  | 14700 | 16900 | 3540                     | 2400 |
|                                     | 300 R4 | 143                                 | 10.5                  | 650                   | 0.81     | 10.0                 | 71-80-90-100-112-132 | 5560  | 5560  | 15200 | 17400 | 3660                     | 2400 |
|                                     | 300 R4 | 159                                 | 9.4                   | 870                   | 0.97     | 10.0                 | 71-80-90-100-112-132 | 5760  | 5760  | 15600 | 18000 | 3780                     | 2400 |
|                                     | 300 R4 | 175                                 | 8.5                   | 880                   | 0.89     | 10.0                 | 71-80-90-100-112-132 | 5950  | 5950  | 16100 | 18500 | 3910                     | 2400 |
|                                     | 300 R4 | 215                                 | 7.0                   | 910                   | 0.75     | 10.0                 | 71-80-90-100-112-132 | 6370  | 6370  | 17100 | 19700 | 4190                     | 2400 |
|                                     | 300 R4 | 237                                 | 6.3                   | 650                   | 0.49     | 10.0                 | 71-80-90-100-112-132 | 6580  | 6580  | 17600 | 20300 | 4330                     | 2400 |
|                                     | 300 R4 | 268                                 | 5.6                   | 930                   | 0.62     | 10.0                 | 71-80-90-100-112-132 | 6860  | 6860  | 18300 | 21000 | 4510                     | 2400 |
|                                     | 300 R4 | 291                                 | 5.2                   | 950                   | 0.58     | 10.0                 | 71-80-90-100-112-132 | 7040  | 7040  | 18800 | 21500 | 4630                     | 2400 |
|                                     | 300 R4 | 363                                 | 4.1                   | 980                   | 0.48     | 10.0                 | 71-80-90-100-112-132 | 7580  | 7580  | 20000 | 23000 | 4990                     | 2400 |
|                                     | 300 R4 | 394                                 | 3.8                   | 680                   | 0.31     | 10.0                 | 71-80-90-100-112-132 | 7790  | 7790  | 20500 | 23600 | 5120                     | 2400 |
|                                     | 300 R4 | 453                                 | 3.3                   | 1020                  | 0.40     | 10.0                 | 71-80-90-100-112-132 | 8160  | 8160  | 21400 | 24600 | 5370                     | 2400 |
|                                     | 300 R4 | 491                                 | 3.1                   | 710                   | 0.25     | 10.0                 | 71-80-90-100-112-132 | 8390  | 8390  | 21900 | 25200 | 5510                     | 2400 |
|                                     | 300 R4 | 613                                 | 2.4                   | 730                   | 0.21     | 10.0                 | 71-80-90-100-112-132 | 9030  | 9030  | 23500 | 27000 | 5940                     | 2400 |
| 300 R4                              | 766    | 2.0                                 | 760                   | 0.18                  | 10.0     | 71-80-90-100-112-132 | 9730                 | 9730  | 25100 | 28800 | 6400  | 2400                     |      |
| <b>1000</b>                         | 300 R2 | 7.13                                | 140                   | 660                   | 10.3     | 14.4                 | 71-80-90-100-112-132 | 2340  | 2340  | 6960  | 8000  | 1540                     | 2000 |
|                                     | 300 R2 | 8.74                                | 114                   | 690                   | 8.8      | 14.4                 | 71-80-90-100-112-132 | 2510  | 2510  | 7400  | 8500  | 1650                     | 2400 |
|                                     | 300 R2 | 11.8                                | 85                    | 630                   | 6.0      | 14.4                 | 71-80-90-100-112-132 | 2770  | 2770  | 8100  | 9310  | 1820                     | 2400 |
|                                     | 300 R2 | 14.8                                | 68                    | 530                   | 4.0      | 14.4                 | 71-80-90-100-112-132 | 2980  | 2980  | 8660  | 9950  | 1960                     | 2400 |
|                                     | 300 R2 | 18.5                                | 54                    | 370                   | 2.2      | 14.4                 | 71-80-90-100-112-132 | 3220  | 3220  | 9260  | 10600 | 2110                     | 2400 |
|                                     | 300 R3 | 24.8                                | 40                    | 730                   | 3.4      | 14.4                 | 71-80-90-100-112-132 | 3550  | 3550  | 10100 | 11600 | 2330                     | 2000 |
|                                     | 300 R3 | 30.4                                | 33                    | 850                   | 3.2      | 14.4                 | 71-80-90-100-112-132 | 3800  | 3800  | 10800 | 12400 | 2500                     | 2400 |
|                                     | 300 R3 | 37.3                                | 26.8                  | 850                   | 2.6      | 14.4                 | 71-80-90-100-112-132 | 4060  | 4060  | 11400 | 13100 | 2670                     | 2400 |
|                                     | 300 R3 | 41.2                                | 24.3                  | 650                   | 1.8      | 14.4                 | 71-80-90-100-112-132 | 4200  | 4200  | 11800 | 13500 | 2760                     | 2400 |
|                                     | 300 R3 | 50.4                                | 19.8                  | 850                   | 1.9      | 14.4                 | 71-80-90-100-112-132 | 4500  | 4500  | 12500 | 14400 | 2960                     | 2400 |
|                                     | 300 R3 | 62.9                                | 15.9                  | 850                   | 1.6      | 14.4                 | 71-80-90-100-112-132 | 4840  | 4840  | 13400 | 15400 | 3180                     | 2400 |
|                                     | 300 R3 | 68.2                                | 14.7                  | 650                   | 1.1      | 14.4                 | 71-80-90-100-112-132 | 4970  | 4970  | 13700 | 15800 | 3270                     | 2400 |
|                                     | 300 R3 | 78.7                                | 12.7                  | 860                   | 1.3      | 14.4                 | 71-80-90-100-112-132 | 5210  | 5210  | 14300 | 16400 | 3430                     | 2400 |
|                                     | 300 R3 | 85.2                                | 11.7                  | 650                   | 0.88     | 14.4                 | 71-80-90-100-112-132 | 5350  | 5350  | 14700 | 16800 | 3520                     | 2400 |
|                                     | 300 R3 | 106                                 | 9.4                   | 650                   | 0.70     | 14.4                 | 71-80-90-100-112-132 | 5770  | 5770  | 15700 | 18000 | 3790                     | 2400 |
|                                     | 300 R3 | 133                                 | 7.5                   | 550                   | 0.48     | 14.4                 | 71-80-90-100-112-132 | 6210  | 6210  | 16700 | 19200 | 4080                     | 2400 |
|                                     | 300 R4 | 106                                 | 9.4                   | 870                   | 0.97     | 12.0                 | 71-80-90-100-112-132 | 5760  | 5760  | 15600 | 18000 | 3780                     | 2400 |
|                                     | 300 R4 | 130                                 | 7.7                   | 890                   | 0.81     | 12.0                 | 71-80-90-100-112-132 | 6160  | 6160  | 16600 | 19100 | 4050                     | 2400 |
|                                     | 300 R4 | 143                                 | 7.0                   | 650                   | 0.54     | 12.0                 | 71-80-90-100-112-132 | 6370  | 6370  | 17100 | 19700 | 4190                     | 2400 |
|                                     | 300 R4 | 159                                 | 6.3                   | 920                   | 0.68     | 12.0                 | 71-80-90-100-112-132 | 6590  | 6590  | 17700 | 20300 | 4330                     | 2400 |
|                                     | 300 R4 | 175                                 | 5.7                   | 930                   | 0.63     | 12.0                 | 71-80-90-100-112-132 | 6810  | 6810  | 18200 | 20900 | 4480                     | 2400 |
|                                     | 300 R4 | 215                                 | 4.7                   | 960                   | 0.53     | 12.0                 | 71-80-90-100-112-132 | 7290  | 7290  | 19300 | 22200 | 4790                     | 2400 |
|                                     | 300 R4 | 237                                 | 4.2                   | 670                   | 0.33     | 12.0                 | 71-80-90-100-112-132 | 7540  | 7540  | 19900 | 22900 | 4950                     | 2400 |
|                                     | 300 R4 | 268                                 | 3.7                   | 1000                  | 0.44     | 12.0                 | 71-80-90-100-112-132 | 7850  | 7850  | 20700 | 23800 | 5160                     | 2400 |
|                                     | 300 R4 | 291                                 | 3.4                   | 1010                  | 0.41     | 12.0                 | 71-80-90-100-112-132 | 8060  | 8060  | 21200 | 24300 | 5300                     | 2400 |
|                                     | 300 R4 | 363                                 | 2.8                   | 1050                  | 0.34     | 12.0                 | 71-80-90-100-112-132 | 8680  | 8680  | 22600 | 26000 | 5710                     | 2400 |
|                                     | 300 R4 | 394                                 | 2.5                   | 730                   | 0.22     | 12.0                 | 71-80-90-100-112-132 | 8920  | 8920  | 23200 | 26600 | 5860                     | 2400 |
|                                     | 300 R4 | 453                                 | 2.2                   | 1090                  | 0.29     | 12.0                 | 71-80-90-100-112-132 | 9350  | 9350  | 24200 | 27800 | 6140                     | 2400 |
|                                     | 300 R4 | 491                                 | 2.0                   | 760                   | 0.18     | 12.0                 | 71-80-90-100-112-132 | 9600  | 9600  | 24800 | 28500 | 6310                     | 2400 |
|                                     | 300 R4 | 613                                 | 1.6                   | 790                   | 0.15     | 12.0                 | 71-80-90-100-112-132 | 10300 | 10300 | 26500 | 30400 | 6800                     | 2400 |



**300 R** 248

**1250 Nm**

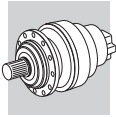
| n <sub>1</sub><br>min <sup>-1</sup> |               | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---------------|-------------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|---------------------|-------|-------|-------|------|--------------------------|
|                                     |               |             |                                     |                       |                       |          |                      | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |                          |
| <b>1000</b>                         | <b>300 R4</b> | <b>766</b>  | 1.3                                 | 820                   | 0.13                  | 12.0     | 71-80-90-100-112-132 | 11100               | 11100 | 28300 | 32500 | 7320 | 2400                     |
| <b>500</b>                          | <b>300 R2</b> | <b>7.13</b> | 70                                  | 730                   | 5.7                   | 24       | 71-80-90-100-112-132 | 2950                | 2950  | 8570  | 9850  | 1940 | 2000                     |
|                                     | <b>300 R2</b> | <b>8.74</b> | 57                                  | 820                   | 5.2                   | 24       | 71-80-90-100-112-132 | 3160                | 3160  | 9110  | 10500 | 2080 | 2400                     |
|                                     | <b>300 R2</b> | <b>11.8</b> | 42                                  | 650                   | 3.1                   | 24       | 71-80-90-100-112-132 | 3490                | 3490  | 9980  | 11500 | 2300 | 2400                     |
|                                     | <b>300 R2</b> | <b>14.8</b> | 34                                  | 550                   | 2.1                   | 24       | 71-80-90-100-112-132 | 3760                | 3760  | 10700 | 12300 | 2470 | 2400                     |
|                                     | <b>300 R2</b> | <b>18.5</b> | 27.1                                | 370                   | 1.1                   | 24       | 71-80-90-100-112-132 | 4050                | 4050  | 11400 | 13100 | 2660 | 2400                     |
|                                     | <b>300 R3</b> | <b>24.8</b> | 20.1                                | 730                   | 1.7                   | 24       | 71-80-90-100-112-132 | 4470                | 4470  | 12500 | 14300 | 2940 | 2000                     |
|                                     | <b>300 R3</b> | <b>30.4</b> | 16.4                                | 850                   | 1.6                   | 24       | 71-80-90-100-112-132 | 4790                | 4790  | 13200 | 15200 | 3150 | 2400                     |
|                                     | <b>300 R3</b> | <b>37.3</b> | 13.4                                | 860                   | 1.3                   | 24       | 71-80-90-100-112-132 | 5120                | 5120  | 14100 | 16200 | 3370 | 2400                     |
|                                     | <b>300 R3</b> | <b>41.2</b> | 12.1                                | 650                   | 0.91                  | 24       | 71-80-90-100-112-132 | 5290                | 5290  | 14500 | 16700 | 3480 | 2400                     |
|                                     | <b>300 R3</b> | <b>50.4</b> | 9.9                                 | 860                   | 0.98                  | 24       | 71-80-90-100-112-132 | 5660                | 5660  | 15400 | 17700 | 3720 | 2400                     |
|                                     | <b>300 R3</b> | <b>62.9</b> | 7.9                                 | 890                   | 0.81                  | 24       | 71-80-90-100-112-132 | 6100                | 6100  | 16500 | 18900 | 4010 | 2400                     |
|                                     | <b>300 R3</b> | <b>68.2</b> | 7.3                                 | 650                   | 0.55                  | 24       | 71-80-90-100-112-132 | 6260                | 6260  | 16900 | 19400 | 4120 | 2400                     |
|                                     | <b>300 R3</b> | <b>78.7</b> | 6.4                                 | 920                   | 0.67                  | 24       | 71-80-90-100-112-132 | 6570                | 6570  | 17600 | 20200 | 4320 | 2400                     |
|                                     | <b>300 R3</b> | <b>85.2</b> | 5.9                                 | 650                   | 0.44                  | 24       | 71-80-90-100-112-132 | 6750                | 6750  | 18000 | 20700 | 4430 | 2400                     |
|                                     | <b>300 R3</b> | <b>106</b>  | 4.7                                 | 660                   | 0.35                  | 24       | 71-80-90-100-112-132 | 7270                | 7270  | 19300 | 22200 | 4780 | 2400                     |
|                                     | <b>300 R3</b> | <b>133</b>  | 3.8                                 | 570                   | 0.25                  | 24       | 71-80-90-100-112-132 | 7820                | 7820  | 20600 | 23700 | 5140 | 2400                     |
|                                     | <b>300 R4</b> | <b>106</b>  | 4.7                                 | 960                   | 0.54                  | 20       | 71-80-90-100-112-132 | 7250                | 7250  | 19300 | 22100 | 4770 | 2400                     |
|                                     | <b>300 R4</b> | <b>130</b>  | 3.9                                 | 990                   | 0.45                  | 20       | 71-80-90-100-112-132 | 7760                | 7760  | 20500 | 23500 | 5100 | 2400                     |
|                                     | <b>300 R4</b> | <b>143</b>  | 3.5                                 | 690                   | 0.29                  | 20       | 71-80-90-100-112-132 | 8020                | 8020  | 21100 | 24200 | 5270 | 2400                     |
|                                     | <b>300 R4</b> | <b>159</b>  | 3.1                                 | 1030                  | 0.38                  | 20       | 71-80-90-100-112-132 | 8300                | 8300  | 21700 | 25000 | 5460 | 2400                     |
|                                     | <b>300 R4</b> | <b>175</b>  | 2.8                                 | 1050                  | 0.35                  | 20       | 71-80-90-100-112-132 | 8580                | 8580  | 22400 | 25700 | 5640 | 2400                     |
|                                     | <b>300 R4</b> | <b>215</b>  | 2.3                                 | 1080                  | 0.30                  | 20       | 71-80-90-100-112-132 | 9180                | 9180  | 23800 | 27400 | 6040 | 2400                     |
|                                     | <b>300 R4</b> | <b>237</b>  | 2.1                                 | 750                   | 0.19                  | 20       | 71-80-90-100-112-132 | 9490                | 9490  | 24500 | 28200 | 6240 | 2400                     |
|                                     | <b>300 R4</b> | <b>268</b>  | 1.9                                 | 1120                  | 0.25                  | 20       | 71-80-90-100-112-132 | 9890                | 9890  | 25500 | 29200 | 6500 | 2400                     |
|                                     | <b>300 R4</b> | <b>291</b>  | 1.7                                 | 1140                  | 0.23                  | 20       | 71-80-90-100-112-132 | 10200               | 10200 | 26100 | 30000 | 6680 | 2400                     |
|                                     | <b>300 R4</b> | <b>363</b>  | 1.4                                 | 1180                  | 0.19                  | 20       | 71-80-90-100-112-132 | 10900               | 10900 | 27900 | 32000 | 7190 | 2400                     |
|                                     | <b>300 R4</b> | <b>394</b>  | 1.3                                 | 820                   | 0.12                  | 20       | 71-80-90-100-112-132 | 11200               | 11200 | 28600 | 32800 | 7390 | 2400                     |
|                                     | <b>300 R4</b> | <b>453</b>  | 1.1                                 | 1230                  | 0.16                  | 20       | 71-80-90-100-112-132 | 11800               | 11800 | 29800 | 34000 | 7740 | 2400                     |
|                                     | <b>300 R4</b> | <b>491</b>  | 1.0                                 | 860                   | 0.10                  | 20       | 71-80-90-100-112-132 | 12000               | 12100 | 30500 | 34000 | 7950 | 2400                     |
|                                     | <b>300 R4</b> | <b>613</b>  | 0.82                                | 860                   | 0.08                  | 20       | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |
|                                     | <b>300 R4</b> | <b>766</b>  | 0.65                                | 860                   | 0.07                  | 20       | 71-80-90-100-112-132 | 12000               | 12500 | 31000 | 34000 | 8000 | 2400                     |

**301 R** 258



**2060 Nm**

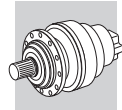
| n <sub>1</sub><br>min <sup>-1</sup> |               | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW             | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---------------|-------------|-------------------------------------|-----------------------|-----------------------|----------------------|----------------------|---------------------|-------|-------|-------|------|--------------------------|
|                                     |               |             |                                     |                       |                       |                      |                      | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| <b>1500</b>                         | <b>301 R2</b> | <b>7.13</b> | 210                                 | 1040                  | 15.0                  | 12.0                 | 71-80-90-100-112-132 | 2050                | 2050  | 6170  | 7080  | 1350 | 3200                     |
|                                     | <b>301 R2</b> | <b>8.74</b> | 172                                 | 1090                  | 15.0                  | 12.0                 | 71-80-90-100-112-132 | 2190                | 2190  | 6550  | 7530  | 1440 | 3200                     |
|                                     | <b>301 R2</b> | <b>11.8</b> | 127                                 | 1150                  | 15.0                  | 12.0                 | 71-80-90-100-112-132 | 2420                | 2420  | 7180  | 8240  | 1590 | 3200                     |
|                                     | <b>301 R2</b> | <b>14.8</b> | 102                                 | 940                   | 10.6                  | 12.0                 | 71-80-90-100-112-132 | 2610                | 2610  | 7670  | 8810  | 1710 | 3200                     |
|                                     | <b>301 R2</b> | <b>18.5</b> | 81                                  | 740                   | 6.7                   | 12.0                 | 71-80-90-100-112-132 | 2810                | 2810  | 8200  | 9420  | 1850 | 3200                     |
|                                     | <b>301 R3</b> | <b>24.8</b> | 60                                  | 1390                  | 9.7                   | 12.0                 | 71-80-90-100-112-132 | 3100                | 3100  | 8960  | 10300 | 2040 | 3400                     |
|                                     | <b>301 R3</b> | <b>30.4</b> | 49                                  | 1580                  | 8.9                   | 12.0                 | 71-80-90-100-112-132 | 3320                | 3320  | 9530  | 10900 | 2180 | 3400                     |
|                                     | <b>301 R3</b> | <b>37.3</b> | 40                                  | 1600                  | 7.4                   | 12.0                 | 71-80-90-100-112-132 | 3550                | 3550  | 10100 | 11600 | 2330 | 3400                     |
|                                     | <b>301 R3</b> | <b>41.2</b> | 36                                  | 1300                  | 5.4                   | 12.0                 | 71-80-90-100-112-132 | 3670                | 3670  | 10400 | 12000 | 2410 | 3400                     |
|                                     | <b>301 R3</b> | <b>50.4</b> | 29.8                                | 1630                  | 5.6                   | 12.0                 | 71-80-90-100-112-132 | 3930                | 3930  | 11100 | 12700 | 2580 | 3400                     |
|                                     | <b>301 R3</b> | <b>62.9</b> | 23.8                                | 1650                  | 4.5                   | 12.0                 | 71-80-90-100-112-132 | 4230                | 4230  | 11800 | 13600 | 2780 | 3400                     |
|                                     | <b>301 R3</b> | <b>68.2</b> | 22.0                                | 1300                  | 3.3                   | 12.0                 | 71-80-90-100-112-132 | 4340                | 4340  | 12100 | 13900 | 2860 | 3400                     |
|                                     | <b>301 R3</b> | <b>78.7</b> | 19.1                                | 1570                  | 3.4                   | 12.0                 | 71-80-90-100-112-132 | 4550                | 4550  | 12700 | 14600 | 2990 | 3400                     |
|                                     | <b>301 R3</b> | <b>85.2</b> | 17.6                                | 1300                  | 2.6                   | 12.0                 | 71-80-90-100-112-132 | 4680                | 4680  | 13000 | 14900 | 3070 | 3400                     |
|                                     | <b>301 R3</b> | <b>106</b>  | 14.1                                | 1300                  | 2.1                   | 12.0                 | 71-80-90-100-112-132 | 5040                | 5040  | 13900 | 15900 | 3310 | 3400                     |
| <b>301 R3</b>                       | <b>133</b>    | 11.3        | 1150                                | 1.5                   | 12.0                  | 71-80-90-100-112-132 | 5420                 | 5420                | 14800 | 17000 | 3570  | 3400 |                          |
| <b>301 R4</b>                       | <b>106</b>    | 14.2        | 1700                                | 2.8                   | 10.0                  | 71-80-90-100-112-132 | 5030                 | 5030                | 13800 | 15900 | 3310  | 3400 |                          |
| <b>301 R4</b>                       | <b>130</b>    | 11.6        | 1720                                | 2.3                   | 10.0                  | 71-80-90-100-112-132 | 5380                 | 5380                | 14700 | 16900 | 3540  | 3400 |                          |
| <b>301 R4</b>                       | <b>143</b>    | 10.5        | 1300                                | 1.6                   | 10.0                  | 71-80-90-100-112-132 | 5560                 | 5560                | 15200 | 17400 | 3660  | 3400 |                          |
| <b>301 R4</b>                       | <b>159</b>    | 9.4         | 1740                                | 1.9                   | 10.0                  | 71-80-90-100-112-132 | 5760                 | 5760                | 15600 | 18000 | 3780  | 3400 |                          |







|              |   |                |
|--------------|---|----------------|
| <b>301 R</b> |  258 | <b>2060 Nm</b> |
|--------------|---|----------------|

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW             | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| <b>1500</b>                         | 301 R4  | 175  | 8.5                                 | 1770                  | 1.8                   | 10.0                 | 71-80-90-100-112-132  | 5950                | 5950  | 16100 | 18500 | 3910 | 3400                     |
|                                     | 301 R4  | 215  | 7.0                                 | 1820                  | 1.5                   | 10.0                 | 71-80-90-100-112-132  | 6370                | 6370  | 17100 | 19700 | 4190 | 3400                     |
|                                     | 301 R4  | 237  | 6.3                                 | 1300                  | 0.97                  | 10.0                 | 71-80-90-100-112-132  | 6580                | 6580  | 17600 | 20300 | 4330 | 3400                     |
|                                     | 301 R4  | 268  | 5.6                                 | 1870                  | 1.2                   | 10.0                 | 71-80-90-100-112-132  | 6860                | 6860  | 18300 | 21000 | 4510 | 3400                     |
|                                     | 301 R4  | 291  | 5.2                                 | 1890                  | 1.2                   | 10.0                 | 71-80-90-100-112-132  | 7040                | 7040  | 18800 | 21500 | 4630 | 3400                     |
|                                     | 301 R4  | 363  | 4.1                                 | 1960                  | 0.96                  | 10.0                 | 71-80-90-100-112-132  | 7580                | 7580  | 20000 | 23000 | 4990 | 3400                     |
|                                     | 301 R4  | 394  | 3.8                                 | 1360                  | 0.61                  | 10.0                 | 71-80-90-100-112-132  | 7790                | 7790  | 20500 | 23600 | 5120 | 3400                     |
|                                     | 301 R4  | 453  | 3.3                                 | 1930                  | 0.76                  | 10.0                 | 71-80-90-100-112-132  | 8160                | 8160  | 21400 | 24600 | 5370 | 3400                     |
|                                     | 301 R4  | 491  | 3.1                                 | 1410                  | 0.51                  | 10.0                 | 71-80-90-100-112-132  | 8390                | 8390  | 21900 | 25200 | 5510 | 3400                     |
|                                     | 301 R4  | 613  | 2.4                                 | 1470                  | 0.42                  | 10.0                 | 71-80-90-100-112-132  | 9030                | 9030  | 23500 | 27000 | 5940 | 3400                     |
| 301 R4                              | 766   | 2.0  | 1530                                | 0.35                  | 10.0                  | 71-80-90-100-112-132 | 9730  | 9730                | 25100 | 28800 | 6400  | 3400 |                          |
| <b>1000</b>                         | 301 R2  | 7.13 | 140                                 | 1170                  | 15.0                  | 14.4                 | 71-80-90-100-112-132  | 2340                | 2340  | 6960  | 8000  | 1540 | 3200                     |
|                                     | 301 R2  | 8.74 | 114                                 | 1230                  | 15.0                  | 14.4                 | 71-80-90-100-112-132  | 2510                | 2510  | 7400  | 8500  | 1650 | 3200                     |
|                                     | 301 R2  | 11.8 | 85                                  | 1250                  | 11.8                  | 14.4                 | 71-80-90-100-112-132  | 2770                | 2770  | 8100  | 9310  | 1820 | 3200                     |
|                                     | 301 R2  | 14.8 | 68                                  | 1050                  | 7.9                   | 14.4                 | 71-80-90-100-112-132  | 2980                | 2980  | 8660  | 9950  | 1960 | 3200                     |
|                                     | 301 R2  | 18.5 | 54                                  | 740                   | 4.5                   | 14.4                 | 71-80-90-100-112-132  | 3220                | 3220  | 9260  | 10600 | 2110 | 3200                     |
|                                     | 301 R3  | 24.8 | 40                                  | 1430                  | 6.6                   | 14.4                 | 71-80-90-100-112-132  | 3550                | 3550  | 10100 | 11600 | 2330 | 3400                     |
|                                     | 301 R3  | 30.4 | 33                                  | 1620                  | 6.1                   | 14.4                 | 71-80-90-100-112-132  | 3800                | 3800  | 10800 | 12400 | 2500 | 3400                     |
|                                     | 301 R3  | 37.3 | 26.8                                | 1640                  | 5.0                   | 14.4                 | 71-80-90-100-112-132  | 4060                | 4060  | 11400 | 13100 | 2670 | 3400                     |
|                                     | 301 R3  | 41.2 | 24.3                                | 1300                  | 3.6                   | 14.4                 | 71-80-90-100-112-132  | 4200                | 4200  | 11800 | 13500 | 2760 | 3400                     |
|                                     | 301 R3  | 50.4 | 19.8                                | 1660                  | 3.8                   | 14.4                 | 71-80-90-100-112-132  | 4500                | 4500  | 12500 | 14400 | 2960 | 3400                     |
|                                     | 301 R3  | 62.9 | 15.9                                | 1690                  | 3.1                   | 14.4                 | 71-80-90-100-112-132  | 4840                | 4840  | 13400 | 15400 | 3180 | 3400                     |
|                                     | 301 R3  | 68.2 | 14.7                                | 1300                  | 2.2                   | 14.4                 | 71-80-90-100-112-132  | 4970                | 4970  | 13700 | 15800 | 3270 | 3400                     |
|                                     | 301 R3  | 78.7 | 12.7                                | 1590                  | 2.3                   | 14.4                 | 71-80-90-100-112-132  | 5210                | 5210  | 14300 | 16400 | 3430 | 3400                     |
|                                     | 301 R3  | 85.2 | 11.7                                | 1300                  | 1.8                   | 14.4                 | 71-80-90-100-112-132  | 5350                | 5350  | 14700 | 16800 | 3520 | 3400                     |
|                                     | 301 R3  | 106  | 9.4                                 | 1300                  | 1.4                   | 14.4                 | 71-80-90-100-112-132  | 5770                | 5770  | 15700 | 18000 | 3790 | 3400                     |
|                                     | 301 R3  | 133  | 7.5                                 | 1150                  | 0.99                  | 14.4                 | 71-80-90-100-112-132  | 6210                | 6210  | 16700 | 19200 | 4080 | 3400                     |
|                                     | 301 R4  | 106  | 9.4                                 | 1740                  | 1.9                   | 12.0                 | 71-80-90-100-112-132  | 5760                | 5760  | 15600 | 18000 | 3780 | 3400                     |
|                                     | 301 R4  | 130  | 7.7                                 | 1790                  | 1.6                   | 12.0                 | 71-80-90-100-112-132  | 6160                | 6160  | 16600 | 19100 | 4050 | 3400                     |
|                                     | 301 R4  | 143  | 7.0                                 | 1300                  | 1.1                   | 12.0                 | 71-80-90-100-112-132  | 6370                | 6370  | 17100 | 19700 | 4190 | 3400                     |
|                                     | 301 R4  | 159  | 6.3                                 | 1840                  | 1.4                   | 12.0                 | 71-80-90-100-112-132  | 6590                | 6590  | 17700 | 20300 | 4330 | 3400                     |
|                                     | 301 R4  | 175  | 5.7                                 | 1870                  | 1.3                   | 12.0                 | 71-80-90-100-112-132  | 6810                | 6810  | 18200 | 20900 | 4480 | 3400                     |
|                                     | 301 R4  | 215  | 4.7                                 | 1920                  | 1.1                   | 12.0                 | 71-80-90-100-112-132  | 7290                | 7290  | 19300 | 22200 | 4790 | 3400                     |
|                                     | 301 R4  | 237  | 4.2                                 | 1340                  | 0.67                  | 12.0                 | 71-80-90-100-112-132  | 7540                | 7540  | 19900 | 22900 | 4950 | 3400                     |
|                                     | 301 R4  | 268  | 3.7                                 | 2000                  | 0.88                  | 12.0                 | 71-80-90-100-112-132  | 7850                | 7850  | 20700 | 23800 | 5160 | 3400                     |
|                                     | 301 R4  | 291  | 3.4                                 | 2030                  | 0.82                  | 12.0                 | 71-80-90-100-112-132  | 8060                | 8060  | 21200 | 24300 | 5300 | 3400                     |
|                                     | 301 R4  | 363  | 2.8                                 | 2100                  | 0.69                  | 12.0                 | 71-80-90-100-112-132  | 8680                | 8680  | 22600 | 26000 | 5710 | 3400                     |
|                                     | 301 R4  | 394  | 2.5                                 | 1460                  | 0.44                  | 12.0                 | 71-80-90-100-112-132  | 8920                | 8920  | 23200 | 26600 | 5860 | 3400                     |
|                                     | 301 R4  | 453  | 2.2                                 | 2000                  | 0.52                  | 12.0                 | 71-80-90-100-112-132  | 9350                | 9350  | 24200 | 27800 | 6140 | 3400                     |
|                                     | 301 R4  | 491  | 2.0                                 | 1510                  | 0.36                  | 12.0                 | 71-80-90-100-112-132  | 9600                | 9600  | 24800 | 28500 | 6310 | 3400                     |
|                                     | 301 R4  | 613  | 1.6                                 | 1580                  | 0.30                  | 12.0                 | 71-80-90-100-112-132  | 10300               | 10300 | 26500 | 30400 | 6800 | 3400                     |
| 301 R4                              | 766   | 1.3  | 1640                                | 0.25                  | 12.0                  | 71-80-90-100-112-132 | 11100   | 11100               | 28300 | 32500 | 7320  | 3400 |                          |
| <b>500</b>                          | 301 R2  | 7.13 | 70                                  | 1370                  | 10.6                  | 24                   | 71-80-90-100-112-132  | 2950                | 2950  | 8570  | 9850  | 1940 | 3200                     |
|                                     | 301 R2  | 8.74 | 57                                  | 1520                  | 9.7                   | 24                   | 71-80-90-100-112-132  | 3160                | 3160  | 9110  | 10500 | 2080 | 3200                     |
|                                     | 301 R2  | 11.8 | 42                                  | 1300                  | 6.1                   | 24                   | 71-80-90-100-112-132  | 3490                | 3490  | 9980  | 11500 | 2300 | 3200                     |
|                                     | 301 R2  | 14.8 | 34                                  | 1150                  | 4.3                   | 24                   | 71-80-90-100-112-132  | 3760                | 3760  | 10700 | 12300 | 2470 | 3200                     |
|                                     | 301 R2  | 18.5 | 27.1                                | 740                   | 2.2                   | 24                   | 71-80-90-100-112-132  | 4050                | 4050  | 11400 | 13100 | 2660 | 3200                     |
|                                     | 301 R3  | 24.8 | 20.1                                | 1430                  | 3.3                   | 24                   | 71-80-90-100-112-132  | 4470                | 4470  | 12500 | 14300 | 2940 | 3400                     |
|                                     | 301 R3  | 30.4 | 16.4                                | 1680                  | 3.2                   | 24                   | 71-80-90-100-112-132  | 4790                | 4790  | 13200 | 15200 | 3150 | 3400                     |
|                                     | 301 R3  | 37.3 | 13.4                                | 1700                  | 2.6                   | 24                   | 71-80-90-100-112-132  | 5120                | 5120  | 14100 | 16200 | 3370 | 3400                     |
|                                     | 301 R3  | 41.2 | 12.1                                | 1300                  | 1.8                   | 24                   | 71-80-90-100-112-132  | 5290                | 5290  | 14500 | 16700 | 3480 | 3400                     |
|                                     | 301 R3  | 50.4 | 9.9                                 | 1730                  | 2.0                   | 24                   | 71-80-90-100-112-132  | 5660                | 5660  | 15400 | 17700 | 3720 | 3400                     |
|                                     | 301 R3  | 62.9 | 7.9                                 | 1760                  | 1.6                   | 24                   | 71-80-90-100-112-132  | 6100                | 6100  | 16500 | 18900 | 4010 | 3400                     |
|                                     | 301 R3  | 68.2 | 7.3                                 | 1300                  | 1.1                   | 24                   | 71-80-90-100-112-132  | 6260                | 6260  | 16900 | 19400 | 4120 | 3400                     |
|                                     | 301 R3  | 78.7 | 6.4                                 | 1600                  | 1.2                   | 24                   | 71-80-90-100-112-132  | 6570                | 6570  | 17600 | 20200 | 4320 | 3400                     |
|                                     | 301 R3  | 85.2 | 5.9                                 | 1300                  | 0.88                  | 24                   | 71-80-90-100-112-132  | 6750                | 6750  | 18000 | 20700 | 4430 | 3400                     |
|                                     | 301 R3  | 106  | 4.7                                 | 1310                  | 0.71                  | 24                   | 71-80-90-100-112-132  | 7270                | 7270  | 19300 | 22200 | 4780 | 3400                     |
|                                     | 301 R3  | 133  | 3.8                                 | 1150                  | 0.50                  | 24                   | 71-80-90-100-112-132  | 7820                | 7820  | 20600 | 23700 | 5140 | 3400                     |
|                                     | 301 R4  | 106  | 4.7                                 | 1920                  | 1.1                   | 20                   | 71-80-90-100-112-132  | 7250                | 7250  | 19300 | 22100 | 4770 | 3400                     |





**301 R**  258

**2060 Nm**

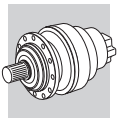
| n <sub>1</sub><br>min <sup>-1</sup> |  | i   | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | R <sub>n2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-----|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|-------|-------|-------|------|--------------------------|
|                                     |   |     |                                     |                       |                       |          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| 500                                 | 301 R4  | 130 | 3.9                                 | 1990                  | 0.91                  | 20       | 71-80-90-100-112-132  | 7760                | 7760  | 20500 | 23500 | 5100 | 3400                     |
|                                     | 301 R4  | 143 | 3.5                                 | 1380                  | 0.57                  | 20       | 71-80-90-100-112-132  | 8020                | 8020  | 21100 | 24200 | 5270 | 3400                     |
|                                     | 301 R4  | 159 | 3.1                                 | 2060                  | 0.77                  | 20       | 71-80-90-100-112-132  | 8300                | 8300  | 21700 | 25000 | 5460 | 3400                     |
|                                     | 301 R4  | 175 | 2.8                                 | 2090                  | 0.71                  | 20       | 71-80-90-100-112-132  | 8580                | 8580  | 22400 | 25700 | 5640 | 3400                     |
|                                     | 301 R4  | 215 | 2.3                                 | 2160                  | 0.60                  | 20       | 71-80-90-100-112-132  | 9180                | 9180  | 23800 | 27400 | 6040 | 3400                     |
|                                     | 301 R4  | 237 | 2.1                                 | 1510                  | 0.37                  | 20       | 71-80-90-100-112-132  | 9490                | 9490  | 24500 | 28200 | 6240 | 3400                     |
|                                     | 301 R4  | 268 | 1.9                                 | 2240                  | 0.49                  | 20       | 71-80-90-100-112-132  | 9890                | 9890  | 25500 | 29200 | 6500 | 3400                     |
|                                     | 301 R4  | 291 | 1.7                                 | 2270                  | 0.46                  | 20       | 71-80-90-100-112-132  | 10200               | 10200 | 26100 | 30000 | 6680 | 3400                     |
|                                     | 301 R4  | 363 | 1.4                                 | 2340                  | 0.38                  | 20       | 71-80-90-100-112-132  | 10900               | 10900 | 27900 | 32000 | 7190 | 3400                     |
|                                     | 301 R4  | 394 | 1.3                                 | 1650                  | 0.25                  | 20       | 71-80-90-100-112-132  | 11200               | 11200 | 28600 | 32800 | 7390 | 3400                     |
|                                     | 301 R4  | 453 | 1.1                                 | 2000                  | 0.26                  | 20       | 71-80-90-100-112-132  | 11800               | 11800 | 29800 | 34000 | 7740 | 3400                     |
|                                     | 301 R4  | 491 | 1.0                                 | 1710                  | 0.21                  | 20       | 71-80-90-100-112-132  | 12000               | 12100 | 30500 | 34000 | 7950 | 3400                     |
|                                     | 301 R4  | 613 | 0.82                                | 1720                  | 0.17                  | 20       | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |
|                                     | 301 R4  | 766 | 0.65                                | 1720                  | 0.13                  | 20       | 71-80-90-100-112-132  | 12000               | 12500 | 31000 | 34000 | 8000 | 3400                     |

**303 R**  268

**2970 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW             | P (IEC)  | R <sub>n2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 303 R2  | 9.23 | 163                                 | 1680                  | 30                    | 18.0                 | 71-80-90-100-112-132  | 6850                | 7910  | 13600 | 16400 | 4400  | 5200                     |
|                                     | 303 R2  | 10.9 | 138                                 | 1900                  | 29                    | 18.0                 | 71-80-90-100-112-132  | 7240                | 8360  | 14300 | 17200 | 4650  | 5200                     |
|                                     | 303 R2  | 13.7 | 110                                 | 1970                  | 24                    | 18.0                 | 71-80-90-100-112-132  | 7810                | 9020  | 15300 | 18400 | 5010  | 5200                     |
|                                     | 303 R2  | 15.9 | 94                                  | 1820                  | 19.1                  | 18.0                 | 71-80-90-100-112-132  | 8220                | 9480  | 16000 | 19300 | 5270  | 5200                     |
|                                     | 303 R2  | 19.2 | 78                                  | 1550                  | 13.5                  | 18.0                 | 71-80-90-100-112-132  | 8750                | 10100 | 16900 | 20400 | 5620  | 5200                     |
|                                     | 303 R2  | 24.8 | 61                                  | 860                   | 5.8                   | 18.0                 | 71-80-90-100-112-132  | 9530                | 11000 | 18300 | 22000 | 6110  | 5200                     |
|                                     | 303 R3  | 25.7 | 58                                  | 2030                  | 13.6                  | 14.0                 | 71-80-90-100-112-132  | 9640                | 11100 | 18500 | 22200 | 6190  | 5200                     |
|                                     | 303 R3  | 31.5 | 48                                  | 2110                  | 11.5                  | 14.0                 | 71-80-90-100-112-132  | 10300               | 11900 | 19600 | 23600 | 6620  | 5200                     |
|                                     | 303 R3  | 37.1 | 40                                  | 2390                  | 11.1                  | 14.0                 | 71-80-90-100-112-132  | 10900               | 12600 | 20600 | 24800 | 7000  | 5200                     |
|                                     | 303 R3  | 42.6 | 35                                  | 2070                  | 8.4                   | 14.0                 | 71-80-90-100-112-132  | 11400               | 13200 | 21500 | 25900 | 7320  | 5200                     |
|                                     | 303 R3  | 46.6 | 32                                  | 2160                  | 8.0                   | 14.0                 | 71-80-90-100-112-132  | 11800               | 13600 | 22100 | 26600 | 7550  | 5200                     |
|                                     | 303 R3  | 50.3 | 29.8                                | 2380                  | 8.2                   | 14.0                 | 71-80-90-100-112-132  | 12100               | 13900 | 22600 | 27200 | 7740  | 5200                     |
|                                     | 303 R3  | 54.2 | 27.7                                | 1820                  | 5.8                   | 14.0                 | 71-80-90-100-112-132  | 12400               | 14300 | 23100 | 27800 | 7930  | 5200                     |
|                                     | 303 R3  | 63.1 | 23.8                                | 2170                  | 5.9                   | 14.0                 | 71-80-90-100-112-132  | 13000               | 15000 | 24200 | 29100 | 8350  | 5200                     |
|                                     | 303 R3  | 73.3 | 20.5                                | 1820                  | 4.3                   | 14.0                 | 71-80-90-100-112-132  | 13700               | 15800 | 25300 | 30500 | 8780  | 5200                     |
|                                     | 303 R3  | 78.7 | 19.1                                | 2180                  | 4.8                   | 14.0                 | 71-80-90-100-112-132  | 14000               | 16200 | 25900 | 31100 | 8990  | 5200                     |
|                                     | 303 R3  | 91.5 | 16.4                                | 1820                  | 3.4                   | 14.0                 | 71-80-90-100-112-132  | 14700               | 17000 | 27100 | 32600 | 9450  | 5200                     |
|                                     | 303 R3  | 114  | 13.1                                | 1820                  | 2.7                   | 14.0                 | 71-80-90-100-112-132  | 15900               | 18300 | 28900 | 34800 | 10200 | 5200                     |
|                                     | 303 R4  | 129  | 11.6                                | 2620                  | 3.6                   | 12.0                 | 71-80-90-100-112-132  | 16500               | 19100 | 30000 | 36100 | 10600 | 5200                     |
|                                     | 303 R4  | 148  | 10.1                                | 2310                  | 2.8                   | 12.0                 | 71-80-90-100-112-132  | 17300               | 20000 | 31300 | 37600 | 11100 | 5200                     |
| 303 R4                              | 158   | 9.5  | 2660                                | 3.0                   | 12.0                  | 71-80-90-100-112-132 | 17700   | 20400               | 31900 | 38400 | 11300 | 5200  |                          |
| 303 R4                              | 185   | 8.1  | 2310                                | 2.2                   | 12.0                  | 71-80-90-100-112-132 | 18600   | 21500               | 33400 | 40200 | 11900 | 5200  |                          |
| 303 R4                              | 214   | 7.0  | 2730                                | 2.3                   | 12.0                  | 71-80-90-100-112-132 | 19600   | 22600               | 34900 | 42000 | 12500 | 5200  |                          |
| 303 R4                              | 231   | 6.5  | 1830                                | 1.4                   | 12.0                  | 71-80-90-100-112-132 | 20100   | 23100               | 35700 | 43000 | 12900 | 5200  |                          |
| 303 R4                              | 255   | 5.9  | 1840                                | 1.3                   | 12.0                  | 71-80-90-100-112-132 | 20700   | 23900               | 36800 | 44300 | 13300 | 5200  |                          |
| 303 R4                              | 290   | 5.2  | 2650                                | 1.6                   | 12.0                  | 71-80-90-100-112-132 | 21600   | 25000               | 38300 | 46000 | 13900 | 5200  |                          |
| 303 R4                              | 313   | 4.8  | 1850                                | 1.1                   | 12.0                  | 71-80-90-100-112-132 | 22200   | 25600               | 39100 | 47100 | 14200 | 5200  |                          |
| 303 R4                              | 336   | 4.5  | 2270                                | 1.2                   | 12.0                  | 71-80-90-100-112-132 | 22700   | 26200               | 40000 | 48100 | 14600 | 5200  |                          |
| 303 R4                              | 364   | 4.1  | 2310                                | 1.1                   | 12.0                  | 71-80-90-100-112-132 | 23300   | 26900               | 40900 | 49300 | 15000 | 5200  |                          |
| 303 R4                              | 390   | 3.8  | 1930                                | 0.88                  | 12.0                  | 71-80-90-100-112-132 | 23900   | 27600               | 41800 | 50300 | 15300 | 5200  |                          |
| 303 R4                              | 452   | 3.3  | 2250                                | 0.88                  | 12.0                  | 71-80-90-100-112-132 | 25100   | 28900               | 43700 | 52600 | 16100 | 5200  |                          |
| 303 R4                              | 528   | 2.8  | 2030                                | 0.68                  | 12.0                  | 71-80-90-100-112-132 | 26400   | 30500               | 45800 | 55100 | 16900 | 5200  |                          |
| 303 R4                              | 567   | 2.6  | 2430                                | 0.76                  | 12.0                  | 71-80-90-100-112-132 | 27000   | 31200               | 46800 | 56300 | 17400 | 5200  |                          |
| 303 R4                              | 659   | 2.3  | 2110                                | 0.57                  | 12.0                  | 71-80-90-100-112-132 | 28400   | 32800               | 48900 | 58900 | 18200 | 5200  |                          |
| 303 R4                              | 797   | 1.9  | 1820                                | 0.41                  | 12.0                  | 71-80-90-100-112-132 | 30300   | 35000               | 51800 | 62300 | 19400 | 5200  |                          |
| 303 R4                              | 824   | 1.8  | 2200                                | 0.47                  | 12.0                  | 71-80-90-100-112-132 | 30600   | 35400               | 52300 | 62900 | 19700 | 5200  |                          |
| 1000                                | 303 R2  | 9.23 | 108                                 | 1890                  | 23                    | 22                   | 71-80-90-100-112-132  | 7850                | 9060  | 15400 | 18500 | 5030  | 5200                     |
|                                     | 303 R2  | 10.9 | 92                                  | 2140                  | 22                    | 22                   | 71-80-90-100-112-132  | 8290                | 9570  | 16100 | 19400 | 5320  | 5200                     |
|                                     | 303 R2  | 13.7 | 73                                  | 2080                  | 16.9                  | 22                   | 71-80-90-100-112-132  | 8940                | 10300 | 17300 | 20800 | 5740  | 5200                     |
|                                     | 303 R2  | 15.9 | 63                                  | 1820                  | 12.7                  | 22                   | 71-80-90-100-112-132  | 9400                | 10900 | 18100 | 21700 | 6030  | 5200                     |



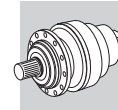


### 303 R

268



### 2970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |        | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N]  |       |       |       |       | M <sub>2 max</sub><br>Nm |      |
|-------------------------------------|--------|--------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|----------------------|-------|-------|-------|-------|--------------------------|------|
|                                     |        |        |                                     |                       |                       |          |                      | MC                   | MZ    | HC/PC | HZ/PZ | FZ    |                          |      |
| 1000                                | 303 R2 | 19.2   | 52                                  | 1640                  | 9.5                   | 22       | 71-80-90-100-112-132 | 10000                | 11600 | 19100 | 23000 | 6430  | 5200                     |      |
|                                     | 303 R2 | 24.8   | 40                                  | 860                   | 3.9                   | 22       | 71-80-90-100-112-132 | 10900                | 12600 | 20700 | 24800 | 7000  | 5200                     |      |
|                                     | 303 R3 | 25.7   | 39                                  | 2160                  | 9.6                   | 16.8     | 71-80-90-100-112-132 | 11000                | 12700 | 20900 | 25100 | 7080  | 5200                     |      |
|                                     | 303 R3 | 31.5   | 32                                  | 2160                  | 7.9                   | 16.8     | 71-80-90-100-112-132 | 11800                | 13600 | 22200 | 26700 | 7580  | 5200                     |      |
|                                     | 303 R3 | 37.1   | 26.9                                | 2460                  | 7.6                   | 16.8     | 71-80-90-100-112-132 | 12500                | 14400 | 23300 | 28100 | 8010  | 5200                     |      |
|                                     | 303 R3 | 42.6   | 23.5                                | 2110                  | 5.7                   | 16.8     | 71-80-90-100-112-132 | 13100                | 15100 | 24300 | 29200 | 8380  | 5200                     |      |
|                                     | 303 R3 | 46.6   | 21.5                                | 2170                  | 5.3                   | 16.8     | 71-80-90-100-112-132 | 13500                | 15500 | 25000 | 30000 | 8640  | 5200                     |      |
|                                     | 303 R3 | 50.3   | 19.9                                | 2470                  | 5.6                   | 16.8     | 71-80-90-100-112-132 | 13800                | 15900 | 25500 | 30700 | 8860  | 5200                     |      |
|                                     | 303 R3 | 54.2   | 18.5                                | 1820                  | 3.9                   | 16.8     | 71-80-90-100-112-132 | 14200                | 16300 | 26100 | 31400 | 9080  | 5200                     |      |
|                                     | 303 R3 | 63.1   | 15.9                                | 2180                  | 4.0                   | 16.8     | 71-80-90-100-112-132 | 14900                | 17200 | 27300 | 32900 | 9550  | 5200                     |      |
|                                     | 303 R3 | 73.3   | 13.6                                | 1820                  | 2.8                   | 16.8     | 71-80-90-100-112-132 | 15700                | 18100 | 28600 | 34400 | 10000 | 5200                     |      |
|                                     | 303 R3 | 78.7   | 12.7                                | 2190                  | 3.2                   | 16.8     | 71-80-90-100-112-132 | 16000                | 18500 | 29200 | 35100 | 10300 | 5200                     |      |
|                                     | 303 R3 | 91.5   | 10.9                                | 1820                  | 2.3                   | 16.8     | 71-80-90-100-112-132 | 16900                | 19500 | 30600 | 36800 | 10800 | 5200                     |      |
|                                     | 303 R3 | 114    | 8.7                                 | 1820                  | 1.8                   | 16.8     | 71-80-90-100-112-132 | 18200                | 21000 | 32700 | 39300 | 11700 | 5200                     |      |
|                                     | 303 R4 | 129    | 7.7                                 | 2710                  | 2.5                   | 14.4     | 71-80-90-100-112-132 | 18900                | 21800 | 33900 | 40800 | 12100 | 5200                     |      |
|                                     | 303 R4 | 148    | 6.7                                 | 2310                  | 1.8                   | 14.4     | 71-80-90-100-112-132 | 19800                | 22900 | 35300 | 42500 | 12700 | 5200                     |      |
|                                     | 303 R4 | 158    | 6.3                                 | 2760                  | 2.1                   | 14.4     | 71-80-90-100-112-132 | 20200                | 23400 | 36000 | 43300 | 13000 | 5200                     |      |
|                                     | 303 R4 | 185    | 5.4                                 | 2310                  | 1.5                   | 14.4     | 71-80-90-100-112-132 | 21300                | 24600 | 37700 | 45400 | 13700 | 5200                     |      |
|                                     | 303 R4 | 214    | 4.7                                 | 2810                  | 1.6                   | 14.4     | 71-80-90-100-112-132 | 22400                | 25800 | 39500 | 47500 | 14400 | 5200                     |      |
|                                     | 303 R4 | 231    | 4.3                                 | 1890                  | 0.97                  | 14.4     | 71-80-90-100-112-132 | 23000                | 26500 | 40300 | 48500 | 14700 | 5200                     |      |
|                                     | 303 R4 | 255    | 3.9                                 | 1920                  | 0.89                  | 14.4     | 71-80-90-100-112-132 | 23700                | 27400 | 41600 | 50000 | 15200 | 5200                     |      |
|                                     | 303 R4 | 290    | 3.4                                 | 2680                  | 1.1                   | 14.4     | 71-80-90-100-112-132 | 24800                | 28600 | 43200 | 52000 | 15900 | 5200                     |      |
|                                     | 303 R4 | 313    | 3.2                                 | 1990                  | 0.75                  | 14.4     | 71-80-90-100-112-132 | 25400                | 29300 | 44200 | 53200 | 16300 | 5200                     |      |
|                                     | 303 R4 | 336    | 3.0                                 | 2440                  | 0.86                  | 14.4     | 71-80-90-100-112-132 | 26000                | 30000 | 45100 | 54300 | 16700 | 5200                     |      |
|                                     | 303 R4 | 364    | 2.7                                 | 2480                  | 0.81                  | 14.4     | 71-80-90-100-112-132 | 26700                | 30800 | 46200 | 55600 | 17100 | 5200                     |      |
|                                     | 303 R4 | 390    | 2.6                                 | 2070                  | 0.63                  | 14.4     | 71-80-90-100-112-132 | 27300                | 31600 | 47200 | 56800 | 17500 | 5200                     |      |
|                                     | 303 R4 | 452    | 2.2                                 | 2250                  | 0.59                  | 14.4     | 71-80-90-100-112-132 | 28700                | 33100 | 49300 | 59400 | 18400 | 5200                     |      |
|                                     | 303 R4 | 528    | 1.9                                 | 2180                  | 0.49                  | 14.4     | 71-80-90-100-112-132 | 30200                | 34900 | 51700 | 62200 | 19400 | 5200                     |      |
|                                     | 303 R4 | 567    | 1.8                                 | 2600                  | 0.54                  | 14.4     | 71-80-90-100-112-132 | 31000                | 35700 | 52800 | 63500 | 19900 | 5200                     |      |
|                                     | 303 R4 | 659    | 1.5                                 | 2270                  | 0.41                  | 14.4     | 71-80-90-100-112-132 | 32600                | 37600 | 55300 | 66500 | 20900 | 5200                     |      |
|                                     | 303 R4 | 797    | 1.3                                 | 1930                  | 0.29                  | 14.4     | 71-80-90-100-112-132 | 34700                | 40000 | 58500 | 70400 | 22300 | 5200                     |      |
|                                     | 303 R4 | 824    | 1.2                                 | 2360                  | 0.34                  | 14.4     | 71-80-90-100-112-132 | 35100                | 40500 | 59100 | 71100 | 22500 | 5200                     |      |
|                                     | 500    | 303 R2 | 9.23                                | 54                    | 2260                  | 13.7     | 36                   | 71-80-90-100-112-132 | 9890  | 11400 | 18900 | 22700 | 6340                     | 5200 |
|                                     |        | 303 R2 | 10.9                                | 46                    | 2570                  | 13.2     | 36                   | 71-80-90-100-112-132 | 10400 | 12100 | 19900 | 23900 | 6700                     | 5200 |
|                                     |        | 303 R2 | 13.7                                | 37                    | 2150                  | 8.8      | 36                   | 71-80-90-100-112-132 | 11300 | 13000 | 21300 | 25600 | 7230                     | 5200 |
|                                     |        | 303 R2 | 15.9                                | 31                    | 1820                  | 6.4      | 36                   | 71-80-90-100-112-132 | 11800 | 13700 | 22300 | 26800 | 7600                     | 5200 |
|                                     |        | 303 R2 | 19.2                                | 26.0                  | 1650                  | 4.8      | 36                   | 71-80-90-100-112-132 | 12600 | 14600 | 23600 | 28300 | 8100                     | 5200 |
|                                     |        | 303 R2 | 24.8                                | 20.2                  | 860                   | 1.9      | 36                   | 71-80-90-100-112-132 | 13700 | 15900 | 25400 | 30600 | 8810                     | 5200 |
|                                     |        | 303 R3 | 25.7                                | 19.5                  | 2230                  | 5.0      | 28                   | 71-80-90-100-112-132 | 13900 | 16100 | 25700 | 30900 | 8920                     | 5200 |
|                                     |        | 303 R3 | 31.5                                | 15.9                  | 2250                  | 4.1      | 28                   | 71-80-90-100-112-132 | 14900 | 17200 | 27300 | 32900 | 9550                     | 5200 |
|                                     |        | 303 R3 | 37.1                                | 13.5                  | 2590                  | 4.0      | 28                   | 71-80-90-100-112-132 | 15700 | 18200 | 28700 | 34500 | 10100                    | 5200 |
|                                     |        | 303 R3 | 42.6                                | 11.7                  | 2190                  | 3.0      | 28                   | 71-80-90-100-112-132 | 16500 | 19000 | 29900 | 36000 | 10600                    | 5200 |
|                                     |        | 303 R3 | 46.6                                | 10.7                  | 2200                  | 2.7      | 28                   | 71-80-90-100-112-132 | 17000 | 19600 | 30700 | 37000 | 10900                    | 5200 |
| 303 R3                              |        | 50.3   | 9.9                                 | 2620                  | 3.0                   | 28       | 71-80-90-100-112-132 | 17400                | 20100 | 31400 | 37800 | 11200 | 5200                     |      |
| 303 R3                              |        | 54.2   | 9.2                                 | 1820                  | 1.9                   | 28       | 71-80-90-100-112-132 | 17800                | 20600 | 32200 | 38700 | 11400 | 5200                     |      |
| 303 R3                              |        | 63.1   | 7.9                                 | 2210                  | 2.0                   | 28       | 71-80-90-100-112-132 | 18800                | 21700 | 33700 | 40500 | 12000 | 5200                     |      |
| 303 R3                              |        | 73.3   | 6.8                                 | 1830                  | 1.4                   | 28       | 71-80-90-100-112-132 | 19700                | 22800 | 35200 | 42400 | 12700 | 5200                     |      |
| 303 R3                              |        | 78.7   | 6.4                                 | 2220                  | 1.6                   | 28       | 71-80-90-100-112-132 | 20200                | 23300 | 36000 | 43300 | 13000 | 5200                     |      |
| 303 R3                              |        | 91.5   | 5.5                                 | 1840                  | 1.2                   | 28       | 71-80-90-100-112-132 | 21200                | 24500 | 37600 | 45300 | 13600 | 5200                     |      |
| 303 R3                              |        | 114    | 4.4                                 | 1880                  | 0.94                  | 28       | 71-80-90-100-112-132 | 22900                | 26400 | 40200 | 48400 | 14700 | 5200                     |      |
| 303 R4                              |        | 129    | 3.9                                 | 2810                  | 1.3                   | 24       | 71-80-90-100-112-132 | 23800                | 27500 | 41700 | 50200 | 15300 | 5200                     |      |
| 303 R4                              |        | 148    | 3.4                                 | 2310                  | 0.92                  | 24       | 71-80-90-100-112-132 | 24900                | 28800 | 43500 | 52300 | 16000 | 5200                     |      |
| 303 R4                              |        | 158    | 3.2                                 | 2810                  | 1.0                   | 24       | 71-80-90-100-112-132 | 25500                | 29400 | 44400 | 53400 | 16400 | 5200                     |      |
| 303 R4                              |        | 185    | 2.7                                 | 2310                  | 0.74                  | 24       | 71-80-90-100-112-132 | 26900                | 31000 | 46500 | 55900 | 17200 | 5200                     |      |
| 303 R4                              |        | 214    | 2.3                                 | 2820                  | 0.78                  | 24       | 71-80-90-100-112-132 | 28200                | 32600 | 48600 | 58400 | 18100 | 5200                     |      |
| 303 R4                              |        | 231    | 2.2                                 | 2130                  | 0.55                  | 24       | 71-80-90-100-112-132 | 28900                | 33400 | 49700 | 59800 | 18600 | 5200                     |      |
| 303 R4                              |        | 255    | 2.0                                 | 2170                  | 0.50                  | 24       | 71-80-90-100-112-132 | 29900                | 34500 | 51200 | 61600 | 19200 | 5200                     |      |
| 303 R4                              |        | 290    | 1.7                                 | 2730                  | 0.56                  | 24       | 71-80-90-100-112-132 | 31200                | 36000 | 53200 | 64000 | 20000 | 5200                     |      |
| 303 R4                              |        | 313    | 1.6                                 | 2250                  | 0.43                  | 24       | 71-80-90-100-112-132 | 32000                | 36900 | 54400 | 65400 | 20500 | 5200                     |      |
| 303 R4                              |        | 336    | 1.5                                 | 2700                  | 0.48                  | 24       | 71-80-90-100-112-132 | 32800                | 37800 | 55600 | 66900 | 21000 | 5200                     |      |





**303 R**  268

**2970 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i   | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-----|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |     |                                     |                       |                       |          |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 500                                 | 303 R4  | 364 | 1.4                                 | 2730                  | 0.44                  | 24       | 71-80-90-100-112-132  | 33700               | 38800 | 56900 | 68500 | 21600 | 5200                     |
|                                     | 303 R4  | 390 | 1.3                                 | 2340                  | 0.35                  | 24       | 71-80-90-100-112-132  | 34400               | 39800 | 58100 | 69900 | 22100 | 5200                     |
|                                     | 303 R4  | 452 | 1.1                                 | 2250                  | 0.29                  | 24       | 71-80-90-100-112-132  | 36000               | 41700 | 60700 | 73100 | 23200 | 5200                     |
|                                     | 303 R4  | 528 | 0.95                                | 2440                  | 0.27                  | 24       | 71-80-90-100-112-132  | 36000               | 42000 | 63700 | 74000 | 24000 | 5200                     |
|                                     | 303 R4  | 567 | 0.88                                | 2850                  | 0.30                  | 24       | 71-80-90-100-112-132  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 R4  | 659 | 0.76                                | 2440                  | 0.22                  | 24       | 71-80-90-100-112-132  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 R4  | 797 | 0.63                                | 2000                  | 0.15                  | 24       | 71-80-90-100-112-132  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |
|                                     | 303 R4  | 824 | 0.61                                | 2440                  | 0.18                  | 24       | 71-80-90-100-112-132  | 36000               | 42000 | 64000 | 74000 | 24000 | 5200                     |

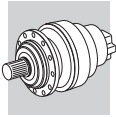
**304 R**  280

**3960 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW             | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------------------|---|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                      |   | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 304 R2  | 9.23 | 163                                 | 1680                  | 30                    | 18.0                 | 71-80-90-100-112-132  | 6850                | 7910  | 13600 | 16400 | 4400  | 6600                     |
|                                     | 304 R2  | 10.9 | 138                                 | 1980                  | 30                    | 18.0                 | 71-80-90-100-112-132  | 7240                | 8360  | 14300 | 17200 | 4650  | 6600                     |
|                                     | 304 R2  | 13.7 | 110                                 | 2490                  | 30                    | 18.0                 | 71-80-90-100-112-132  | 7810                | 9020  | 15300 | 18400 | 5010  | 6600                     |
|                                     | 304 R2  | 16.8 | 89                                  | 2390                  | 24                    | 18.0                 | 71-80-90-100-112-132  | 8380                | 9670  | 16300 | 19600 | 5370  | 6600                     |
|                                     | 304 R3  | 25.7 | 58                                  | 3020                  | 15.0                  | 14.0                 | 71-80-90-100-112-132  | 9640                | 11100 | 18500 | 22200 | 6190  | 7300                     |
|                                     | 304 R3  | 31.5 | 48                                  | 3090                  | 15.0                  | 14.0                 | 71-80-90-100-112-132  | 10300               | 11900 | 19600 | 23600 | 6620  | 7300                     |
|                                     | 304 R3  | 37.1 | 40                                  | 3440                  | 15.0                  | 14.0                 | 71-80-90-100-112-132  | 10900               | 12600 | 20600 | 24800 | 7000  | 7300                     |
|                                     | 304 R3  | 42.6 | 35                                  | 3190                  | 12.9                  | 14.0                 | 71-80-90-100-112-132  | 11400               | 13200 | 21500 | 25900 | 7320  | 7300                     |
|                                     | 304 R3  | 46.6 | 32                                  | 2850                  | 10.5                  | 14.0                 | 71-80-90-100-112-132  | 11800               | 13600 | 22100 | 26600 | 7550  | 7300                     |
|                                     | 304 R3  | 50.3 | 29.8                                | 3460                  | 11.9                  | 14.0                 | 71-80-90-100-112-132  | 12100               | 13900 | 22600 | 27200 | 7740  | 7300                     |
|                                     | 304 R3  | 63.1 | 23.8                                | 2850                  | 7.8                   | 14.0                 | 71-80-90-100-112-132  | 13000               | 15000 | 24200 | 29100 | 8350  | 7300                     |
|                                     | 304 R3  | 78.7 | 19.1                                | 2850                  | 6.2                   | 14.0                 | 71-80-90-100-112-132  | 14000               | 16200 | 25900 | 31100 | 8990  | 7300                     |
|                                     | 304 R3  | 97.0 | 15.5                                | 2390                  | 4.2                   | 14.0                 | 71-80-90-100-112-132  | 15000               | 17300 | 27500 | 33100 | 9630  | 7300                     |
|                                     | 304 R3  | 121  | 12.4                                | 2390                  | 3.4                   | 14.0                 | 71-80-90-100-112-132  | 16200               | 18700 | 29400 | 35400 | 10400 | 7300                     |
|                                     | 304 R4  | 89.4 | 16.8                                | 3330                  | 6.6                   | 12.0                 | 71-80-90-100-112-132  | 14600               | 16900 | 26900 | 32300 | 9370  | 7300                     |
|                                     | 304 R4  | 109  | 13.7                                | 3370                  | 5.5                   | 12.0                 | 71-80-90-100-112-132  | 15600               | 18000 | 28600 | 34400 | 10000 | 7300                     |
|                                     | 304 R4  | 129  | 11.6                                | 3530                  | 4.8                   | 12.0                 | 71-80-90-100-112-132  | 16500               | 19100 | 30000 | 36100 | 10600 | 7300                     |
|                                     | 304 R4  | 148  | 10.1                                | 3440                  | 4.1                   | 12.0                 | 71-80-90-100-112-132  | 17300               | 20000 | 31300 | 37600 | 11100 | 7300                     |
|                                     | 304 R4  | 158  | 9.5                                 | 3550                  | 4.0                   | 12.0                 | 71-80-90-100-112-132  | 17700               | 20400 | 31900 | 38400 | 11300 | 7300                     |
|                                     | 304 R4  | 185  | 8.1                                 | 3460                  | 3.3                   | 12.0                 | 71-80-90-100-112-132  | 18600               | 21500 | 33400 | 40200 | 11900 | 7300                     |
|                                     | 304 R4  | 214  | 7.0                                 | 3620                  | 3.0                   | 12.0                 | 71-80-90-100-112-132  | 19600               | 22600 | 34900 | 42000 | 12500 | 7300                     |
|                                     | 304 R4  | 227  | 6.6                                 | 3480                  | 2.7                   | 12.0                 | 71-80-90-100-112-132  | 19900               | 23000 | 35500 | 42700 | 12800 | 7300                     |
|                                     | 304 R4  | 267  | 5.6                                 | 3660                  | 2.4                   | 12.0                 | 71-80-90-100-112-132  | 21100               | 24300 | 37300 | 44900 | 13500 | 7300                     |
|                                     | 304 R4  | 290  | 5.2                                 | 3680                  | 2.3                   | 12.0                 | 71-80-90-100-112-132  | 21600               | 25000 | 38300 | 46000 | 13900 | 7300                     |
| 304 R4                              | 307   | 4.9  | 3500                                | 2.0                   | 12.0                  | 71-80-90-100-112-132 | 22000   | 25400               | 38900 | 46800 | 14100 | 7300  |                          |
| 304 R4                              | 338   | 4.4  | 2420                                | 1.3                   | 12.0                  | 71-80-90-100-112-132 | 22800   | 26300               | 40000 | 48200 | 14600 | 7300  |                          |
| 304 R4                              | 364   | 4.1  | 2940                                | 1.4                   | 12.0                  | 71-80-90-100-112-132 | 23300   | 26900               | 40900 | 49300 | 15000 | 7300  |                          |
| 304 R4                              | 414   | 3.6  | 2470                                | 1.1                   | 12.0                  | 71-80-90-100-112-132 | 24300   | 28100               | 42500 | 51200 | 15600 | 7300  |                          |
| 304 R4                              | 452   | 3.3  | 3690                                | 1.4                   | 12.0                  | 71-80-90-100-112-132 | 25100   | 28900               | 43700 | 52600 | 16100 | 7300  |                          |
| 304 R4                              | 560   | 2.7  | 2540                                | 0.81                  | 12.0                  | 71-80-90-100-112-132 | 26900   | 31100               | 46600 | 56100 | 17300 | 7300  |                          |
| 304 R4                              | 699   | 2.1  | 2630                                | 0.67                  | 12.0                  | 71-80-90-100-112-132 | 29000   | 33500               | 49800 | 59900 | 18600 | 7300  |                          |
| 1000                                | 304 R2  | 9.23 | 108                                 | 1890                  | 23                    | 21.6                 | 71-80-90-100-112-132  | 7850                | 9060  | 15400 | 18500 | 5030  | 6600                     |
|                                     | 304 R2  | 10.9 | 92                                  | 2240                  | 23                    | 21.6                 | 71-80-90-100-112-132  | 8290                | 9570  | 16100 | 19400 | 5320  | 6600                     |
|                                     | 304 R2  | 13.7 | 73                                  | 2690                  | 22                    | 21.6                 | 71-80-90-100-112-132  | 8940                | 10300 | 17300 | 20800 | 5740  | 6600                     |
|                                     | 304 R2  | 16.8 | 59                                  | 2390                  | 15.8                  | 21.6                 | 71-80-90-100-112-132  | 9590                | 11100 | 18400 | 22100 | 6150  | 6600                     |
|                                     | 304 R3  | 25.7 | 39                                  | 3130                  | 14.0                  | 16.8                 | 71-80-90-100-112-132  | 11000               | 12700 | 20900 | 25100 | 7080  | 7300                     |
|                                     | 304 R3  | 31.5 | 32                                  | 3180                  | 11.6                  | 16.8                 | 71-80-90-100-112-132  | 11800               | 13600 | 22200 | 26700 | 7580  | 7300                     |
|                                     | 304 R3  | 37.1 | 26.9                                | 3470                  | 10.7                  | 16.8                 | 71-80-90-100-112-132  | 12500               | 14400 | 23300 | 28100 | 8010  | 7300                     |
|                                     | 304 R3  | 42.6 | 23.5                                | 3270                  | 8.8                   | 16.8                 | 71-80-90-100-112-132  | 13100               | 15100 | 24300 | 29200 | 8380  | 7300                     |
|                                     | 304 R3  | 46.6 | 21.5                                | 2850                  | 7.0                   | 16.8                 | 71-80-90-100-112-132  | 13500               | 15500 | 25000 | 30000 | 8640  | 7300                     |
|                                     | 304 R3  | 50.3 | 19.9                                | 3490                  | 8.0                   | 16.8                 | 71-80-90-100-112-132  | 13800               | 15900 | 25500 | 30700 | 8860  | 7300                     |
|                                     | 304 R3  | 63.1 | 15.9                                | 2850                  | 5.2                   | 16.8                 | 71-80-90-100-112-132  | 14900               | 17200 | 27300 | 32900 | 9550  | 7300                     |
|                                     | 304 R3  | 78.7 | 12.7                                | 2850                  | 4.2                   | 16.8                 | 71-80-90-100-112-132  | 16000               | 18500 | 29200 | 35100 | 10300 | 7300                     |
|                                     | 304 R3  | 97.0 | 10.3                                | 2390                  | 2.8                   | 16.8                 | 71-80-90-100-112-132  | 17200               | 19800 | 31100 | 37400 | 11000 | 7300                     |
|                                     | 304 R3  | 121  | 8.2                                 | 2390                  | 2.3                   | 16.8                 | 71-80-90-100-112-132  | 18500               | 21400 | 33300 | 40000 | 11900 | 7300                     |

**B**





### 304 R

280

### 3960 Nm

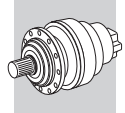
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW             | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------------------|----------------------|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                      |                      | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| <b>1000</b>                         | 304 R4 | 89.4 | 11.2                                | 3420                  | 4.5                   | 14.4                 | 71-80-90-100-112-132 | 16700               | 19300 | 30300 | 36500 | 10700 | 7300                     |
|                                     | 304 R4 | 109  | 9.1                                 | 3450                  | 3.7                   | 14.4                 | 71-80-90-100-112-132 | 17900               | 20700 | 32300 | 38800 | 11500 | 7300                     |
|                                     | 304 R4 | 129  | 7.7                                 | 3590                  | 3.3                   | 14.4                 | 71-80-90-100-112-132 | 18900               | 21800 | 33900 | 40800 | 12100 | 7300                     |
|                                     | 304 R4 | 148  | 6.7                                 | 3470                  | 2.8                   | 14.4                 | 71-80-90-100-112-132 | 19800               | 22900 | 35300 | 42500 | 12700 | 7300                     |
|                                     | 304 R4 | 158  | 6.3                                 | 3640                  | 2.7                   | 14.4                 | 71-80-90-100-112-132 | 20200               | 23400 | 36000 | 43300 | 13000 | 7300                     |
|                                     | 304 R4 | 185  | 5.4                                 | 3490                  | 2.2                   | 14.4                 | 71-80-90-100-112-132 | 21300               | 24600 | 37700 | 45400 | 13700 | 7300                     |
|                                     | 304 R4 | 214  | 4.7                                 | 3700                  | 2.0                   | 14.4                 | 71-80-90-100-112-132 | 22400               | 25800 | 39500 | 47500 | 14400 | 7300                     |
|                                     | 304 R4 | 227  | 4.4                                 | 3500                  | 1.8                   | 14.4                 | 71-80-90-100-112-132 | 22800               | 26300 | 40100 | 48300 | 14600 | 7300                     |
|                                     | 304 R4 | 267  | 3.7                                 | 3720                  | 1.6                   | 14.4                 | 71-80-90-100-112-132 | 24100               | 27800 | 42200 | 50700 | 15500 | 7300                     |
|                                     | 304 R4 | 290  | 3.4                                 | 3720                  | 1.5                   | 14.4                 | 71-80-90-100-112-132 | 24800               | 28600 | 43200 | 52000 | 15900 | 7300                     |
|                                     | 304 R4 | 307  | 3.3                                 | 3510                  | 1.4                   | 14.4                 | 71-80-90-100-112-132 | 25200               | 29100 | 43900 | 52800 | 16200 | 7300                     |
|                                     | 304 R4 | 338  | 3.0                                 | 2520                  | 0.88                  | 14.4                 | 71-80-90-100-112-132 | 26000               | 30100 | 45200 | 54400 | 16700 | 7300                     |
|                                     | 304 R4 | 364  | 2.7                                 | 3140                  | 1.0                   | 14.4                 | 71-80-90-100-112-132 | 26700               | 30800 | 46200 | 55600 | 17100 | 7300                     |
|                                     | 304 R4 | 414  | 2.4                                 | 2580                  | 0.74                  | 14.4                 | 71-80-90-100-112-132 | 27900               | 32200 | 48100 | 57800 | 17900 | 7300                     |
|                                     | 304 R4 | 452  | 2.2                                 | 3740                  | 0.98                  | 14.4                 | 71-80-90-100-112-132 | 28700               | 33100 | 49300 | 59400 | 18400 | 7300                     |
|                                     | 304 R4 | 560  | 1.8                                 | 2720                  | 0.57                  | 14.4                 | 71-80-90-100-112-132 | 30800               | 35600 | 52600 | 63300 | 19800 | 7300                     |
| 304 R4                              | 699    | 1.4  | 2830                                | 0.48                  | 14.4                  | 71-80-90-100-112-132 | 33200                | 38300               | 56300 | 67700 | 21300 | 7300  |                          |
| <b>500</b>                          | 304 R2 | 9.23 | 54                                  | 2330                  | 14.1                  | 36                   | 71-80-90-100-112-132 | 9890                | 11400 | 18900 | 22700 | 6340  | 6600                     |
|                                     | 304 R2 | 10.9 | 46                                  | 2720                  | 13.9                  | 36                   | 71-80-90-100-112-132 | 10400               | 12100 | 19900 | 23900 | 6700  | 6600                     |
|                                     | 304 R2 | 13.7 | 37                                  | 2850                  | 11.6                  | 36                   | 71-80-90-100-112-132 | 11300               | 13000 | 21300 | 25600 | 7230  | 6600                     |
|                                     | 304 R2 | 16.8 | 29.7                                | 2390                  | 7.9                   | 36                   | 71-80-90-100-112-132 | 12100               | 13900 | 22600 | 27200 | 7750  | 6600                     |
|                                     | 304 R3 | 25.7 | 19.5                                | 3290                  | 7.3                   | 28                   | 71-80-90-100-112-132 | 13900               | 16100 | 25700 | 30900 | 8920  | 7300                     |
|                                     | 304 R3 | 31.5 | 15.9                                | 3330                  | 6.1                   | 28                   | 71-80-90-100-112-132 | 14900               | 17200 | 27300 | 32900 | 9550  | 7300                     |
|                                     | 304 R3 | 37.1 | 13.5                                | 3520                  | 5.4                   | 28                   | 71-80-90-100-112-132 | 15700               | 18200 | 28700 | 34500 | 10100 | 7300                     |
|                                     | 304 R3 | 42.6 | 11.7                                | 3410                  | 4.6                   | 28                   | 71-80-90-100-112-132 | 16500               | 19000 | 29900 | 36000 | 10600 | 7300                     |
|                                     | 304 R3 | 46.6 | 10.7                                | 2850                  | 3.5                   | 28                   | 71-80-90-100-112-132 | 17000               | 19600 | 30700 | 37000 | 10900 | 7300                     |
|                                     | 304 R3 | 50.3 | 9.9                                 | 3540                  | 4.0                   | 28                   | 71-80-90-100-112-132 | 17400               | 20100 | 31400 | 37800 | 11200 | 7300                     |
|                                     | 304 R3 | 63.1 | 7.9                                 | 2850                  | 2.6                   | 28                   | 71-80-90-100-112-132 | 18800               | 21700 | 33700 | 40500 | 12000 | 7300                     |
|                                     | 304 R3 | 78.7 | 6.4                                 | 2850                  | 2.1                   | 28                   | 71-80-90-100-112-132 | 20200               | 23300 | 36000 | 43300 | 13000 | 7300                     |
|                                     | 304 R3 | 97.0 | 5.2                                 | 2390                  | 1.4                   | 28                   | 71-80-90-100-112-132 | 21700               | 25000 | 38300 | 46100 | 13900 | 7300                     |
|                                     | 304 R3 | 121  | 4.1                                 | 2440                  | 1.2                   | 28                   | 71-80-90-100-112-132 | 23300               | 26900 | 40900 | 49300 | 15000 | 7300                     |
|                                     | 304 R4 | 89.4 | 5.6                                 | 3490                  | 2.3                   | 24                   | 71-80-90-100-112-132 | 21100               | 24300 | 37400 | 45000 | 13500 | 7300                     |
|                                     | 304 R4 | 109  | 4.6                                 | 3500                  | 1.9                   | 24                   | 71-80-90-100-112-132 | 22500               | 26000 | 39700 | 47800 | 14500 | 7300                     |
|                                     | 304 R4 | 129  | 3.9                                 | 3710                  | 1.7                   | 24                   | 71-80-90-100-112-132 | 23800               | 27500 | 41700 | 50200 | 15300 | 7300                     |
|                                     | 304 R4 | 148  | 3.4                                 | 3510                  | 1.4                   | 24                   | 71-80-90-100-112-132 | 24900               | 28800 | 43500 | 52300 | 16000 | 7300                     |
|                                     | 304 R4 | 158  | 3.2                                 | 3730                  | 1.4                   | 24                   | 71-80-90-100-112-132 | 25500               | 29400 | 44400 | 53400 | 16400 | 7300                     |
|                                     | 304 R4 | 185  | 2.7                                 | 3520                  | 1.1                   | 24                   | 71-80-90-100-112-132 | 26900               | 31000 | 46500 | 55900 | 17200 | 7300                     |
|                                     | 304 R4 | 214  | 2.3                                 | 3770                  | 1.0                   | 24                   | 71-80-90-100-112-132 | 28200               | 32600 | 48600 | 58400 | 18100 | 7300                     |
|                                     | 304 R4 | 227  | 2.2                                 | 3550                  | 0.93                  | 24                   | 71-80-90-100-112-132 | 28700               | 33200 | 49400 | 59400 | 18400 | 7300                     |
|                                     | 304 R4 | 267  | 1.9                                 | 3820                  | 0.84                  | 24                   | 71-80-90-100-112-132 | 30400               | 35100 | 51900 | 62500 | 19500 | 7300                     |
|                                     | 304 R4 | 290  | 1.7                                 | 3830                  | 0.78                  | 24                   | 71-80-90-100-112-132 | 31200               | 36000 | 53200 | 64000 | 20000 | 7300                     |
|                                     | 304 R4 | 307  | 1.6                                 | 3610                  | 0.70                  | 24                   | 71-80-90-100-112-132 | 31800               | 36700 | 54100 | 65100 | 20400 | 7300                     |
|                                     | 304 R4 | 338  | 1.5                                 | 2810                  | 0.49                  | 24                   | 71-80-90-100-112-132 | 32800               | 37900 | 55700 | 67000 | 21100 | 7300                     |
|                                     | 304 R4 | 364  | 1.4                                 | 3540                  | 0.58                  | 24                   | 71-80-90-100-112-132 | 33700               | 38800 | 56900 | 68500 | 21600 | 7300                     |
|                                     | 304 R4 | 414  | 1.2                                 | 2910                  | 0.42                  | 24                   | 71-80-90-100-112-132 | 35100               | 40500 | 59200 | 71200 | 22500 | 7300                     |
|                                     | 304 R4 | 452  | 1.1                                 | 3930                  | 0.51                  | 24                   | 71-80-90-100-112-132 | 36000               | 41700 | 60700 | 73100 | 23200 | 7300                     |
|                                     | 304 R4 | 560  | 0.89                                | 3010                  | 0.32                  | 24                   | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |
|                                     | 304 R4 | 699  | 0.71                                | 3010                  | 0.25                  | 24                   | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 7300                     |

### 305 R

292

### 5600 Nm

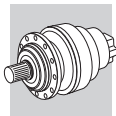
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |      | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|---------------------|-------|-------|-------|------|--------------------------|
|                                     |        |      |                                     |                       |                       |          |                      | MC                  | MZ    | HC/PC | HZ/PZ | FZ   |                          |
| <b>1500</b>                         | 305 R2 | 9.23 | 163                                 | 1680                  | 30                    | 18.0     | 71-80-90-100-112-132 | 6850                | 7910  | 13600 | 16400 | 4400 | 7700                     |
|                                     | 305 R2 | 10.9 | 138                                 | 1980                  | 30                    | 18.0     | 71-80-90-100-112-132 | 7240                | 8360  | 14300 | 17200 | 4650 | 7700                     |
|                                     | 305 R2 | 13.7 | 110                                 | 2490                  | 30                    | 18.0     | 71-80-90-100-112-132 | 7810                | 9020  | 15300 | 18400 | 5010 | 7700                     |
|                                     | 305 R2 | 15.9 | 94                                  | 2890                  | 30                    | 18.0     | 71-80-90-100-112-132 | 8220                | 9480  | 16000 | 19300 | 5270 | 7700                     |
|                                     | 305 R2 | 19.2 | 78                                  | 2860                  | 25                    | 18.0     | 71-80-90-100-112-132 | 8750                | 10100 | 16900 | 20400 | 5620 | 7700                     |



|              |     |                |
|--------------|-----|----------------|
| <b>305 R</b> | 292 | <b>5600 Nm</b> |
|--------------|-----|----------------|

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N]  |       |       |       |       | M <sub>2 max</sub><br>Nm |      |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|----------------------|-------|-------|-------|-------|--------------------------|------|
|                                     |        |                                     |                       |                       |          |                      | MC                   | MZ    | HC/PC | HZ/PZ | FZ    |                          |      |
| <b>1500</b>                         | 305 R3 | 25.7                                | 58                    | 3630                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 9640  | 11100 | 18500 | 22200 | 6190                     | 8800 |
|                                     | 305 R3 | 31.5                                | 48                    | 3770                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 10300 | 11900 | 19600 | 23600 | 6620                     | 8800 |
|                                     | 305 R3 | 37.1                                | 40                    | 4340                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 10900 | 12600 | 20600 | 24800 | 7000                     | 8800 |
|                                     | 305 R3 | 42.6                                | 35                    | 3790                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 11400 | 13200 | 21500 | 25900 | 7320                     | 8800 |
|                                     | 305 R3 | 46.6                                | 32                    | 4310                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 11800 | 13600 | 22100 | 26600 | 7550                     | 8800 |
|                                     | 305 R3 | 50.3                                | 29.8                  | 4410                  | 15.0     | 14.0                 | 71-80-90-100-112-132 | 12100 | 13900 | 22600 | 27200 | 7740                     | 8800 |
|                                     | 305 R3 | 54.2                                | 27.7                  | 3570                  | 11.3     | 14.0                 | 71-80-90-100-112-132 | 12400 | 14300 | 23100 | 27800 | 7930                     | 8800 |
|                                     | 305 R3 | 63.1                                | 23.8                  | 4330                  | 11.8     | 14.0                 | 71-80-90-100-112-132 | 13000 | 15000 | 24200 | 29100 | 8350                     | 8800 |
|                                     | 305 R3 | 73.3                                | 20.5                  | 3580                  | 8.4      | 14.0                 | 71-80-90-100-112-132 | 13700 | 15800 | 25300 | 30500 | 8780                     | 8800 |
|                                     | 305 R3 | 78.7                                | 19.1                  | 4350                  | 9.5      | 14.0                 | 71-80-90-100-112-132 | 14000 | 16200 | 25900 | 31100 | 8990                     | 8800 |
|                                     | 305 R3 | 91.5                                | 16.4                  | 3580                  | 6.7      | 14.0                 | 71-80-90-100-112-132 | 14700 | 17000 | 27100 | 32600 | 9450                     | 8800 |
|                                     | 305 R3 | 114                                 | 13.1                  | 3580                  | 5.4      | 14.0                 | 71-80-90-100-112-132 | 15900 | 18300 | 28900 | 34800 | 10200                    | 8800 |
|                                     | 305 R4 | 129                                 | 11.6                  | 5200                  | 7.1      | 12.0                 | 71-80-90-100-112-132 | 16500 | 19100 | 30000 | 36100 | 10600                    | 8800 |
|                                     | 305 R4 | 148                                 | 10.1                  | 4480                  | 5.4      | 12.0                 | 71-80-90-100-112-132 | 17300 | 20000 | 31300 | 37600 | 11100                    | 8800 |
|                                     | 305 R4 | 158                                 | 9.5                   | 5310                  | 6.0      | 12.0                 | 71-80-90-100-112-132 | 17700 | 20400 | 31900 | 38400 | 11300                    | 8800 |
|                                     | 305 R4 | 185                                 | 8.1                   | 4490                  | 4.3      | 12.0                 | 71-80-90-100-112-132 | 18600 | 21500 | 33400 | 40200 | 11900                    | 8800 |
|                                     | 305 R4 | 214                                 | 7.0                   | 5390                  | 4.5      | 12.0                 | 71-80-90-100-112-132 | 19600 | 22600 | 34900 | 42000 | 12500                    | 8800 |
|                                     | 305 R4 | 231                                 | 6.5                   | 3600                  | 2.8      | 12.0                 | 71-80-90-100-112-132 | 20100 | 23100 | 35700 | 43000 | 12900                    | 8800 |
|                                     | 305 R4 | 255                                 | 5.9                   | 3600                  | 2.5      | 12.0                 | 71-80-90-100-112-132 | 20700 | 23900 | 36800 | 44300 | 13300                    | 8800 |
|                                     | 305 R4 | 290                                 | 5.2                   | 5300                  | 3.2      | 12.0                 | 71-80-90-100-112-132 | 21600 | 25000 | 38300 | 46000 | 13900                    | 8800 |
|                                     | 305 R4 | 313                                 | 4.8                   | 3620                  | 2.1      | 12.0                 | 71-80-90-100-112-132 | 22200 | 25600 | 39100 | 47100 | 14200                    | 8800 |
|                                     | 305 R4 | 336                                 | 4.5                   | 4560                  | 2.4      | 12.0                 | 71-80-90-100-112-132 | 22700 | 26200 | 40000 | 48100 | 14600                    | 8800 |
|                                     | 305 R4 | 364                                 | 4.1                   | 4620                  | 2.3      | 12.0                 | 71-80-90-100-112-132 | 23300 | 26900 | 40900 | 49300 | 15000                    | 8800 |
|                                     | 305 R4 | 390                                 | 3.8                   | 3750                  | 1.7      | 12.0                 | 71-80-90-100-112-132 | 23900 | 27600 | 41800 | 50300 | 15300                    | 8800 |
| 305 R4                              | 452    | 3.3                                 | 4750                  | 1.9                   | 12.0     | 71-80-90-100-112-132 | 25100                | 28900 | 43700 | 52600 | 16100 | 8800                     |      |
| 305 R4                              | 528    | 2.8                                 | 3920                  | 1.3                   | 12.0     | 71-80-90-100-112-132 | 26400                | 30500 | 45800 | 55100 | 16900 | 8800                     |      |
| 305 R4                              | 567    | 2.6                                 | 4860                  | 1.5                   | 12.0     | 71-80-90-100-112-132 | 27000                | 31200 | 46800 | 56300 | 17400 | 8800                     |      |
| 305 R4                              | 659    | 2.3                                 | 4070                  | 1.1                   | 12.0     | 71-80-90-100-112-132 | 28400                | 32800 | 48900 | 58900 | 18200 | 8800                     |      |
| 305 R4                              | 797    | 1.9                                 | 3450                  | 0.77                  | 12.0     | 71-80-90-100-112-132 | 30300                | 35000 | 51800 | 62300 | 19400 | 8800                     |      |
| 305 R4                              | 824    | 1.8                                 | 4230                  | 0.91                  | 12.0     | 71-80-90-100-112-132 | 30600                | 35400 | 52300 | 62900 | 19700 | 8800                     |      |
| <b>1000</b>                         | 305 R2 | 9.23                                | 108                   | 1890                  | 23       | 22                   | 71-80-90-100-112-132 | 7850  | 9060  | 15400 | 18500 | 5030                     | 7700 |
|                                     | 305 R2 | 10.9                                | 92                    | 2240                  | 23       | 22                   | 71-80-90-100-112-132 | 8290  | 9570  | 16100 | 19400 | 5320                     | 7700 |
|                                     | 305 R2 | 13.7                                | 73                    | 2810                  | 23       | 22                   | 71-80-90-100-112-132 | 8940  | 10300 | 17300 | 20800 | 5740                     | 7700 |
|                                     | 305 R2 | 15.9                                | 63                    | 3270                  | 23       | 22                   | 71-80-90-100-112-132 | 9400  | 10900 | 18100 | 21700 | 6030                     | 7700 |
|                                     | 305 R2 | 19.2                                | 52                    | 2990                  | 17.3     | 22                   | 71-80-90-100-112-132 | 10000 | 11600 | 19100 | 23000 | 6430                     | 7700 |
|                                     | 305 R3 | 25.7                                | 39                    | 3900                  | 15.0     | 16.8                 | 71-80-90-100-112-132 | 11000 | 12700 | 20900 | 25100 | 7080                     | 8800 |
|                                     | 305 R3 | 31.5                                | 32                    | 3950                  | 14.4     | 16.8                 | 71-80-90-100-112-132 | 11800 | 13600 | 22200 | 26700 | 7580                     | 8800 |
|                                     | 305 R3 | 37.1                                | 26.9                  | 4600                  | 14.2     | 16.8                 | 71-80-90-100-112-132 | 12500 | 14400 | 23300 | 28100 | 8010                     | 8800 |
|                                     | 305 R3 | 42.6                                | 23.5                  | 3990                  | 10.7     | 16.8                 | 71-80-90-100-112-132 | 13100 | 15100 | 24300 | 29200 | 8380                     | 8800 |
|                                     | 305 R3 | 46.6                                | 21.5                  | 4340                  | 10.7     | 16.8                 | 71-80-90-100-112-132 | 13500 | 15500 | 25000 | 30000 | 8640                     | 8800 |
|                                     | 305 R3 | 50.3                                | 19.9                  | 4700                  | 10.7     | 16.8                 | 71-80-90-100-112-132 | 13800 | 15900 | 25500 | 30700 | 8860                     | 8800 |
|                                     | 305 R3 | 54.2                                | 18.5                  | 3580                  | 7.6      | 16.8                 | 71-80-90-100-112-132 | 14200 | 16300 | 26100 | 31400 | 9080                     | 8800 |
|                                     | 305 R3 | 63.1                                | 15.9                  | 4370                  | 7.9      | 16.8                 | 71-80-90-100-112-132 | 14900 | 17200 | 27300 | 32900 | 9550                     | 8800 |
|                                     | 305 R3 | 73.3                                | 13.6                  | 3590                  | 5.6      | 16.8                 | 71-80-90-100-112-132 | 15700 | 18100 | 28600 | 34400 | 10000                    | 8800 |
|                                     | 305 R3 | 78.7                                | 12.7                  | 4380                  | 6.4      | 16.8                 | 71-80-90-100-112-132 | 16000 | 18500 | 29200 | 35100 | 10300                    | 8800 |
|                                     | 305 R3 | 91.5                                | 10.9                  | 3600                  | 4.5      | 16.8                 | 71-80-90-100-112-132 | 16900 | 19500 | 30600 | 36800 | 10800                    | 8800 |
|                                     | 305 R3 | 114                                 | 8.7                   | 3600                  | 3.6      | 16.8                 | 71-80-90-100-112-132 | 18200 | 21000 | 32700 | 39300 | 11700                    | 8800 |
|                                     | 305 R4 | 129                                 | 7.7                   | 5370                  | 4.9      | 14.4                 | 71-80-90-100-112-132 | 18900 | 21800 | 33900 | 40800 | 12100                    | 8800 |
|                                     | 305 R4 | 148                                 | 6.7                   | 4490                  | 3.6      | 14.4                 | 71-80-90-100-112-132 | 19800 | 22900 | 35300 | 42500 | 12700                    | 8800 |
|                                     | 305 R4 | 158                                 | 6.3                   | 5420                  | 4.0      | 14.4                 | 71-80-90-100-112-132 | 20200 | 23400 | 36000 | 43300 | 13000                    | 8800 |
|                                     | 305 R4 | 185                                 | 5.4                   | 4490                  | 2.9      | 14.4                 | 71-80-90-100-112-132 | 21300 | 24600 | 37700 | 45400 | 13700                    | 8800 |
|                                     | 305 R4 | 214                                 | 4.7                   | 5480                  | 3.0      | 14.4                 | 71-80-90-100-112-132 | 22400 | 25800 | 39500 | 47500 | 14400                    | 8800 |
|                                     | 305 R4 | 231                                 | 4.3                   | 3680                  | 1.9      | 14.4                 | 71-80-90-100-112-132 | 23000 | 26500 | 40300 | 48500 | 14700                    | 8800 |
|                                     | 305 R4 | 255                                 | 3.9                   | 3740                  | 1.7      | 14.4                 | 71-80-90-100-112-132 | 23700 | 27400 | 41600 | 50000 | 15200                    | 8800 |
| 305 R4                              | 290    | 3.4                                 | 5350                  | 2.2                   | 14.4     | 71-80-90-100-112-132 | 24800                | 28600 | 43200 | 52000 | 15900 | 8800                     |      |
| 305 R4                              | 313    | 3.2                                 | 3850                  | 1.5                   | 14.4     | 71-80-90-100-112-132 | 25400                | 29300 | 44200 | 53200 | 16300 | 8800                     |      |
| 305 R4                              | 336    | 3.0                                 | 4890                  | 1.7                   | 14.4     | 71-80-90-100-112-132 | 26000                | 30000 | 45100 | 54300 | 16700 | 8800                     |      |
| 305 R4                              | 364    | 2.7                                 | 4960                  | 1.6                   | 14.4     | 71-80-90-100-112-132 | 26700                | 30800 | 46200 | 55600 | 17100 | 8800                     |      |
| 305 R4                              | 390    | 2.6                                 | 3980                  | 1.2                   | 14.4     | 71-80-90-100-112-132 | 27300                | 31600 | 47200 | 56800 | 17500 | 8800                     |      |
| 305 R4                              | 452    | 2.2                                 | 4750                  | 1.2                   | 14.4     | 71-80-90-100-112-132 | 28700                | 33100 | 49300 | 59400 | 18400 | 8800                     |      |
| 305 R4                              | 528    | 1.9                                 | 4200                  | 0.94                  | 14.4     | 71-80-90-100-112-132 | 30200                | 34900 | 51700 | 62200 | 19400 | 8800                     |      |





### 305 R

292

### 5600 Nm

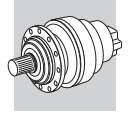
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)              | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|----------|----------------------|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |          |                      | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1000                                | 305 R4 | 567  | 1.8                                 | 5160                  | 1.1                   | 14.4     | 71-80-90-100-112-132 | 31000               | 35700 | 52800 | 63500 | 19900 | 8800                     |
|                                     | 305 R4 | 659  | 1.5                                 | 4360                  | 0.78                  | 14.4     | 71-80-90-100-112-132 | 32600               | 37600 | 55300 | 66500 | 20900 | 8800                     |
|                                     | 305 R4 | 797  | 1.3                                 | 3670                  | 0.54                  | 14.4     | 71-80-90-100-112-132 | 34700               | 40000 | 58500 | 70400 | 22300 | 8800                     |
|                                     | 305 R4 | 824  | 1.2                                 | 4530                  | 0.65                  | 14.4     | 71-80-90-100-112-132 | 35100               | 40500 | 59100 | 71100 | 22500 | 8800                     |
| 500                                 | 305 R2 | 9.23 | 54                                  | 2330                  | 14.1                  | 36       | 71-80-90-100-112-132 | 9890                | 11400 | 18900 | 22700 | 6340  | 7700                     |
|                                     | 305 R2 | 10.9 | 46                                  | 2750                  | 14.0                  | 36       | 71-80-90-100-112-132 | 10400               | 12100 | 19900 | 23900 | 6700  | 7700                     |
|                                     | 305 R2 | 13.7 | 37                                  | 3340                  | 13.6                  | 36       | 71-80-90-100-112-132 | 11300               | 13000 | 21300 | 25600 | 7230  | 7700                     |
|                                     | 305 R2 | 15.9 | 31                                  | 3530                  | 12.4                  | 36       | 71-80-90-100-112-132 | 11800               | 13700 | 22300 | 26800 | 7600  | 7700                     |
|                                     | 305 R2 | 19.2 | 26.0                                | 3040                  | 8.8                   | 36       | 71-80-90-100-112-132 | 12600               | 14600 | 23600 | 28300 | 8100  | 7700                     |
|                                     | 305 R3 | 25.7 | 19.5                                | 4190                  | 9.4                   | 28       | 71-80-90-100-112-132 | 13900               | 16100 | 25700 | 30900 | 8920  | 8800                     |
|                                     | 305 R3 | 31.5 | 15.9                                | 4260                  | 7.8                   | 28       | 71-80-90-100-112-132 | 14900               | 17200 | 27300 | 32900 | 9550  | 8800                     |
|                                     | 305 R3 | 37.1 | 13.5                                | 5080                  | 7.8                   | 28       | 71-80-90-100-112-132 | 15700               | 18200 | 28700 | 34500 | 10100 | 8800                     |
|                                     | 305 R3 | 42.6 | 11.7                                | 4340                  | 5.9                   | 28       | 71-80-90-100-112-132 | 16500               | 19000 | 29900 | 36000 | 10600 | 8800                     |
|                                     | 305 R3 | 46.6 | 10.7                                | 4390                  | 5.4                   | 28       | 71-80-90-100-112-132 | 17000               | 19600 | 30700 | 37000 | 10900 | 8800                     |
|                                     | 305 R3 | 50.3 | 9.9                                 | 5230                  | 6.0                   | 28       | 71-80-90-100-112-132 | 17400               | 20100 | 31400 | 37800 | 11200 | 8800                     |
|                                     | 305 R3 | 54.2 | 9.2                                 | 3600                  | 3.8                   | 28       | 71-80-90-100-112-132 | 17800               | 20600 | 32200 | 38700 | 11400 | 8800                     |
|                                     | 305 R3 | 63.1 | 7.9                                 | 4420                  | 4.0                   | 28       | 71-80-90-100-112-132 | 18800               | 21700 | 33700 | 40500 | 12000 | 8800                     |
|                                     | 305 R3 | 73.3 | 6.8                                 | 3600                  | 2.8                   | 28       | 71-80-90-100-112-132 | 19700               | 22800 | 35200 | 42400 | 12700 | 8800                     |
|                                     | 305 R3 | 78.7 | 6.4                                 | 4450                  | 3.2                   | 28       | 71-80-90-100-112-132 | 20200               | 23300 | 36000 | 43300 | 13000 | 8800                     |
|                                     | 305 R3 | 91.5 | 5.5                                 | 3600                  | 2.3                   | 28       | 71-80-90-100-112-132 | 21200               | 24500 | 37600 | 45300 | 13600 | 8800                     |
|                                     | 305 R3 | 114  | 4.4                                 | 3670                  | 1.8                   | 28       | 71-80-90-100-112-132 | 22900               | 26400 | 40200 | 48400 | 14700 | 8800                     |
|                                     | 305 R4 | 129  | 3.9                                 | 5480                  | 2.5                   | 24       | 71-80-90-100-112-132 | 23800               | 27500 | 41700 | 50200 | 15300 | 8800                     |
|                                     | 305 R4 | 148  | 3.4                                 | 4490                  | 1.8                   | 24       | 71-80-90-100-112-132 | 24900               | 28800 | 43500 | 52300 | 16000 | 8800                     |
|                                     | 305 R4 | 158  | 3.2                                 | 5490                  | 2.1                   | 24       | 71-80-90-100-112-132 | 25500               | 29400 | 44400 | 53400 | 16400 | 8800                     |
|                                     | 305 R4 | 185  | 2.7                                 | 4490                  | 1.4                   | 24       | 71-80-90-100-112-132 | 26900               | 31000 | 46500 | 55900 | 17200 | 8800                     |
|                                     | 305 R4 | 214  | 2.3                                 | 5520                  | 1.5                   | 24       | 71-80-90-100-112-132 | 28200               | 32600 | 48600 | 58400 | 18100 | 8800                     |
|                                     | 305 R4 | 231  | 2.2                                 | 4100                  | 1.1                   | 24       | 71-80-90-100-112-132 | 28900               | 33400 | 49700 | 59800 | 18600 | 8800                     |
|                                     | 305 R4 | 255  | 2.0                                 | 4170                  | 0.97                  | 24       | 71-80-90-100-112-132 | 29900               | 34500 | 51200 | 61600 | 19200 | 8800                     |
|                                     | 305 R4 | 290  | 1.7                                 | 5450                  | 1.1                   | 24       | 71-80-90-100-112-132 | 31200               | 36000 | 53200 | 64000 | 20000 | 8800                     |
|                                     | 305 R4 | 313  | 1.6                                 | 4320                  | 0.82                  | 24       | 71-80-90-100-112-132 | 32000               | 36900 | 54400 | 65400 | 20500 | 8800                     |
|                                     | 305 R4 | 336  | 1.5                                 | 5350                  | 0.94                  | 24       | 71-80-90-100-112-132 | 32800               | 37800 | 55600 | 66900 | 21000 | 8800                     |
|                                     | 305 R4 | 364  | 1.4                                 | 5400                  | 0.88                  | 24       | 71-80-90-100-112-132 | 33700               | 38800 | 56900 | 68500 | 21600 | 8800                     |
|                                     | 305 R4 | 390  | 1.3                                 | 4490                  | 0.68                  | 24       | 71-80-90-100-112-132 | 34400               | 39800 | 58100 | 69900 | 22100 | 8800                     |
|                                     | 305 R4 | 452  | 1.1                                 | 4750                  | 0.62                  | 24       | 71-80-90-100-112-132 | 36000               | 41700 | 60700 | 73100 | 23200 | 8800                     |
|                                     | 305 R4 | 528  | 0.95                                | 4690                  | 0.53                  | 24       | 71-80-90-100-112-132 | 36000               | 42000 | 63700 | 74000 | 24000 | 8800                     |
|                                     | 305 R4 | 567  | 0.88                                | 5600                  | 0.58                  | 24       | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 8800                     |
|                                     | 305 R4 | 659  | 0.76                                | 4690                  | 0.42                  | 24       | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 8800                     |
|                                     | 305 R4 | 797  | 0.63                                | 3800                  | 0.28                  | 24       | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 8800                     |
|                                     | 305 R4 | 824  | 0.61                                | 4690                  | 0.34                  | 24       | 71-80-90-100-112-132 | 36000               | 42000 | 64000 | 74000 | 24000 | 8800                     |



### 306 R

304

### 7300 Nm

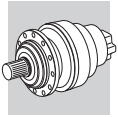
| n <sub>1</sub><br>min <sup>-1</sup> |        | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW                 | P (IEC)                  | Rn <sub>2</sub> [N] |       |       |       |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|--------|------|-------------------------------------|-----------------------|-----------------------|--------------------------|--------------------------|---------------------|-------|-------|-------|-------|--------------------------|
|                                     |        |      |                                     |                       |                       |                          |                          | MC                  | MZ    | HC/PC | HZ/PZ | FZ    |                          |
| 1500                                | 306 R2 | 9.23 | 163                                 | 1680                  | 30                    | 18.0                     | 71-80-90-100-112-132-160 | 8540                | 9670  | 22200 | 25900 | 6410  | 12000                    |
|                                     | 306 R2 | 10.9 | 138                                 | 1980                  | 30                    | 18.0                     | 71-80-90-100-112-132-160 | 9020                | 10200 | 23400 | 27200 | 6780  | 12000                    |
|                                     | 306 R2 | 13.7 | 110                                 | 2490                  | 30                    | 18.0                     | 71-80-90-100-112-132-160 | 9730                | 11000 | 25000 | 29100 | 7310  | 12000                    |
|                                     | 306 R2 | 15.9 | 94                                  | 2890                  | 30                    | 18.0                     | 71-80-90-100-112-132-160 | 10200               | 11600 | 26200 | 30500 | 7690  | 12000                    |
|                                     | 306 R2 | 19.2 | 78                                  | 3490                  | 30                    | 18.0                     | 71-80-90-100-112-132-160 | 10900               | 12400 | 27700 | 32300 | 8190  | 12000                    |
| 306 R3                              | 33.2   | 45   | 5810                                | 30                    | 14.0                  | 71-80-90-100-112-132-160 | 13100                    | 14800               | 32700 | 38000 | 9830  | 14900 |                          |
| 306 R3                              | 39.2   | 38   | 6550                                | 29                    | 14.0                  | 71-80-90-100-112-132-160 | 13800                    | 15700               | 34300 | 40000 | 10400 | 14900 |                          |
| 306 R3                              | 46.3   | 32   | 7510                                | 28                    | 14.0                  | 71-80-90-100-112-132-160 | 14600                    | 16600               | 36100 | 42000 | 11000 | 14900 |                          |
| 306 R3                              | 58.1   | 25.8 | 7580                                | 22                    | 14.0                  | 71-80-90-100-112-132-160 | 15800                    | 17900               | 38600 | 45000 | 11800 | 14900 |                          |
| 306 R3                              | 67.5   | 22.2 | 7090                                | 18.1                  | 14.0                  | 71-80-90-100-112-132-160 | 16600                    | 18800               | 40400 | 47100 | 12500 | 14900 |                          |
| 306 R3                              | 72.9   | 20.6 | 7420                                | 17.5                  | 14.0                  | 71-80-90-100-112-132-160 | 17000                    | 19300               | 41300 | 48100 | 12800 | 14900 |                          |
| 306 R3                              | 84.7   | 17.7 | 7530                                | 15.3                  | 14.0                  | 71-80-90-100-112-132-160 | 17900                    | 20300               | 43300 | 50400 | 13400 | 14900 |                          |
| 306 R3                              | 98.5   | 15.2 | 6490                                | 11.3                  | 14.0                  | 71-80-90-100-112-132-160 | 18800                    | 21300               | 45300 | 52700 | 14100 | 14900 |                          |
| 306 R3                              | 119    | 12.6 | 6490                                | 9.4                   | 14.0                  | 71-80-90-100-112-132-160 | 20000                    | 22700               | 47900 | 55800 | 15000 | 14900 |                          |



| 306 R                      |   |        |                            |                |                |                          | 7300 Nm   |                          |       |       |        |       |                 |       |
|----------------------------|---|--------|----------------------------|----------------|----------------|--------------------------|---|--------------------------|-------|-------|--------|-------|-----------------|-------|
| $n_1$<br>min <sup>-1</sup> |  | i      | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | Pt<br>kW                 | P (IEC)  | MC                       | MZ    | HC/PC | HZ/PZ  | FZ    | $M_2$ max<br>Nm |       |
| 1500                       | 306 R3  | 144    | 10.4                       | 5490           | 6.6            | 14.0                     | 71-80-90-100-112-132-160  | 21300                    | 24200 | 50700 | 59100  | 16000 | 14900           |       |
|                            | 306 R4  | 158    | 9.5                        | 9620           | 10.8           | 12.0                     | 71-80-90-100-112-132-160  | 22000                    | 24900 | 52100 | 60700  | 16500 | 14900           |       |
|                            | 306 R4  | 168    | 8.9                        | 7560           | 8.0            | 12.0                     | 71-80-90-100-112-132-160  | 22400                    | 25400 | 53100 | 61800  | 16900 | 14900           |       |
|                            | 306 R4  | 181    | 8.3                        | 9450           | 9.3            | 12.0                     | 71-80-90-100-112-132-160  | 23000                    | 26100 | 54300 | 63200  | 17300 | 14900           |       |
|                            | 306 R4  | 214    | 7.0                        | 9730           | 8.1            | 12.0                     | 71-80-90-100-112-132-160  | 24300                    | 27600 | 57100 | 66500  | 18300 | 14900           |       |
|                            | 306 R4  | 230    | 6.5                        | 7590           | 5.8            | 12.0                     | 71-80-90-100-112-132-160  | 24900                    | 28300 | 58400 | 68000  | 18700 | 14900           |       |
|                            | 306 R4  | 249    | 6.0                        | 8200           | 5.9            | 12.0                     | 71-80-90-100-112-132-160  | 25600                    | 29000 | 59700 | 69600  | 19200 | 14900           |       |
|                            | 306 R4  | 289    | 5.2                        | 8280           | 5.1            | 12.0                     | 71-80-90-100-112-132-160  | 26900                    | 30500 | 62500 | 72800  | 20200 | 14900           |       |
|                            | 306 R4  | 312    | 4.8                        | 7590           | 4.3            | 12.0                     | 71-80-90-100-112-132-160  | 27600                    | 31300 | 63900 | 74500  | 20700 | 14900           |       |
|                            | 306 R4  | 389    | 3.9                        | 7590           | 3.5            | 12.0                     | 71-80-90-100-112-132-160  | 29700                    | 33700 | 68300 | 79600  | 22300 | 14900           |       |
|                            | 306 R4  | 420    | 3.6                        | 8790           | 3.7            | 12.0                     | 71-80-90-100-112-132-160  | 30500                    | 34500 | 69900 | 81400  | 22900 | 14900           |       |
|                            | 306 R4  | 455    | 3.3                        | 7020           | 2.7            | 12.0                     | 71-80-90-100-112-132-160  | 31300                    | 35500 | 71600 | 83400  | 23500 | 14900           |       |
|                            | 306 R4  | 488    | 3.1                        | 9020           | 3.3            | 12.0                     | 71-80-90-100-112-132-160  | 32000                    | 36300 | 73200 | 85200  | 24100 | 14900           |       |
|                            | 306 R4  | 550    | 2.7                        | 7260           | 2.3            | 12.0                     | 71-80-90-100-112-132-160  | 33300                    | 37800 | 75800 | 88300  | 25100 | 14900           |       |
|                            | 306 R4  | 590    | 2.5                        | 8480           | 2.5            | 12.0                     | 71-80-90-100-112-132-160  | 34100                    | 38700 | 77400 | 90200  | 25600 | 14900           |       |
|                            | 306 R4  | 665    | 2.3                        | 6010           | 1.6            | 12.0                     | 71-80-90-100-112-132-160  | 35500                    | 40300 | 80300 | 93500  | 26700 | 14900           |       |
| 306 R4                     | 830   | 1.8    | 6270                       | 1.3            | 12.0           | 71-80-90-100-112-132-160 | 38300   | 43300                    | 85800 | 99900 | 28700  | 14900 |                 |       |
| 1000                       | 306 R2  | 9.23   | 108                        | 1890           | 23             | 22                       | 71-80-90-100-112-132-160  | 9770                     | 11100 | 25100 | 29200  | 7340  | 12000           |       |
|                            | 306 R2  | 10.9   | 92                         | 2240           | 23             | 22                       | 71-80-90-100-112-132-160  | 10300                    | 11700 | 26400 | 30700  | 7760  | 12000           |       |
|                            | 306 R2  | 13.7   | 73                         | 2810           | 23             | 22                       | 71-80-90-100-112-132-160  | 11100                    | 12600 | 28300 | 32900  | 8370  | 12000           |       |
|                            | 306 R2  | 15.9   | 63                         | 3270           | 23             | 22                       | 71-80-90-100-112-132-160  | 11700                    | 13300 | 29600 | 34400  | 8800  | 12000           |       |
|                            | 306 R2  | 19.2   | 52                         | 3940           | 23             | 22                       | 71-80-90-100-112-132-160  | 12500                    | 14100 | 31300 | 36500  | 9380  | 12000           |       |
|                            | 306 R3  | 33.2   | 30                         | 6330           | 22             | 16.8                     | 71-80-90-100-112-132-160  | 15000                    | 17000 | 36900 | 43000  | 11300 | 14900           |       |
|                            | 306 R3  | 39.2   | 25.5                       | 7280           | 21             | 16.8                     | 71-80-90-100-112-132-160  | 15800                    | 17900 | 38800 | 45100  | 11900 | 14900           |       |
|                            | 306 R3  | 46.3   | 21.6                       | 8170           | 20             | 16.8                     | 71-80-90-100-112-132-160  | 16700                    | 19000 | 40800 | 47500  | 12600 | 14900           |       |
|                            | 306 R3  | 58.1   | 17.2                       | 8200           | 16.2           | 16.8                     | 71-80-90-100-112-132-160  | 18000                    | 20400 | 43600 | 50800  | 13600 | 14900           |       |
|                            | 306 R3  | 67.5   | 14.8                       | 7340           | 12.5           | 16.8                     | 71-80-90-100-112-132-160  | 19000                    | 21500 | 45600 | 53100  | 14300 | 14900           |       |
|                            | 306 R3  | 72.9   | 13.7                       | 7710           | 12.1           | 16.8                     | 71-80-90-100-112-132-160  | 19500                    | 22000 | 46700 | 54400  | 14600 | 14900           |       |
|                            | 306 R3  | 84.7   | 11.8                       | 7820           | 10.6           | 16.8                     | 71-80-90-100-112-132-160  | 20500                    | 23200 | 48900 | 56900  | 15400 | 14900           |       |
|                            | 306 R3  | 98.5   | 10.2                       | 6500           | 7.6            | 16.8                     | 71-80-90-100-112-132-160  | 21500                    | 24400 | 51100 | 59500  | 16200 | 14900           |       |
|                            | 306 R3  | 119    | 8.4                        | 6510           | 6.3            | 16.8                     | 71-80-90-100-112-132-160  | 22900                    | 26000 | 54100 | 63000  | 17200 | 14900           |       |
|                            | 306 R3  | 144    | 6.9                        | 5500           | 4.4            | 16.8                     | 71-80-90-100-112-132-160  | 24400                    | 27700 | 57300 | 66700  | 18400 | 14900           |       |
|                            | 306 R4  | 158    | 6.3                        | 9760           | 7.3            | 14.4                     | 71-80-90-100-112-132-160  | 25200                    | 28500 | 58900 | 68600  | 18900 | 14900           |       |
|                            | 306 R4  | 168    | 6.0                        | 7660           | 5.4            | 14.4                     | 71-80-90-100-112-132-160  | 25700                    | 29100 | 60000 | 69800  | 19300 | 14900           |       |
|                            | 306 R4  | 181    | 5.5                        | 9450           | 6.2            | 14.4                     | 71-80-90-100-112-132-160  | 26400                    | 29900 | 61300 | 71400  | 19800 | 14900           |       |
|                            | 306 R4  | 214    | 4.7                        | 9850           | 5.5            | 14.4                     | 71-80-90-100-112-132-160  | 27800                    | 31600 | 64500 | 75100  | 20900 | 14900           |       |
|                            | 306 R4  | 230    | 4.3                        | 7590           | 3.9            | 14.4                     | 71-80-90-100-112-132-160  | 28600                    | 32400 | 65900 | 76800  | 21500 | 14900           |       |
|                            | 306 R4  | 249    | 4.0                        | 8620           | 4.1            | 14.4                     | 71-80-90-100-112-132-160  | 29300                    | 33200 | 67500 | 78600  | 22000 | 14900           |       |
|                            | 306 R4  | 289    | 3.5                        | 8840           | 3.6            | 14.4                     | 71-80-90-100-112-132-160  | 30800                    | 34900 | 70600 | 82200  | 23100 | 14900           |       |
|                            | 306 R4  | 312    | 3.2                        | 7590           | 2.9            | 14.4                     | 71-80-90-100-112-132-160  | 31600                    | 35800 | 72200 | 84100  | 23700 | 14900           |       |
|                            | 306 R4  | 389    | 2.6                        | 7590           | 2.3            | 14.4                     | 71-80-90-100-112-132-160  | 34000                    | 38500 | 77200 | 89900  | 25500 | 14900           |       |
|                            | 306 R4  | 420    | 2.4                        | 9390           | 2.6            | 14.4                     | 71-80-90-100-112-132-160  | 34900                    | 39500 | 79000 | 91900  | 26200 | 14900           |       |
|                            | 306 R4  | 455    | 2.2                        | 7530           | 2.0            | 14.4                     | 71-80-90-100-112-132-160  | 35800                    | 40600 | 80900 | 94200  | 26900 | 14900           |       |
|                            | 306 R4  | 488    | 2.0                        | 9390           | 2.3            | 14.4                     | 71-80-90-100-112-132-160  | 36700                    | 41600 | 82600 | 96200  | 27600 | 14900           |       |
|                            | 306 R4  | 550    | 1.8                        | 7740           | 1.7            | 14.4                     | 71-80-90-100-112-132-160  | 38200                    | 43200 | 85600 | 99700  | 28700 | 14900           |       |
|                            | 306 R4  | 590    | 1.7                        | 8910           | 1.8            | 14.4                     | 71-80-90-100-112-132-160  | 39100                    | 44300 | 87500 | 101800 | 29400 | 14900           |       |
|                            | 306 R4  | 665    | 1.5                        | 6490           | 1.2            | 14.4                     | 71-80-90-100-112-132-160  | 40700                    | 46100 | 90700 | 105600 | 30600 | 14900           |       |
|                            | 306 R4  | 830    | 1.2                        | 6760           | 0.96           | 14.4                     | 71-80-90-100-112-132-160  | 43800                    | 49600 | 96900 | 112800 | 32900 | 14900           |       |
|                            | 500   | 306 R2 | 9.23                       | 54             | 2330           | 14.1                     | 36  | 71-80-90-100-112-132-160 | 12300 | 13900 | 30900  | 36000 | 9250            | 12000 |
|                            |   | 306 R2 | 10.9                       | 46             | 2750           | 14.0                     | 36  | 71-80-90-100-112-132-160 | 13000 | 14700 | 32500  | 37800 | 9770            | 12000 |
|                            |   | 306 R2 | 13.7                       | 37             | 3460           | 14.1                     | 36  | 71-80-90-100-112-132-160 | 14000 | 15900 | 34800  | 40500 | 10500           | 12000 |
|                            |   | 306 R2 | 15.9                       | 31             | 4020           | 14.1                     | 36  | 71-80-90-100-112-132-160 | 14800 | 16700 | 36400  | 42400 | 11100           | 12000 |
|                            |   | 306 R2 | 19.2                       | 26.0           | 4510           | 13.1                     | 36  | 71-80-90-100-112-132-160 | 15700 | 17800 | 38500  | 44900 | 11800           | 12000 |
| 306 R3                     |   | 33.2   | 15.1                       | 7350           | 12.7           | 28                       | 71-80-90-100-112-132-160  | 18900                    | 21400 | 45400 | 52900  | 14200 | 14900           |       |
| 306 R3                     |   | 39.2   | 12.8                       | 8730           | 12.8           | 28                       | 71-80-90-100-112-132-160  | 19900                    | 22600 | 47700 | 55600  | 15000 | 14900           |       |
| 306 R3                     |   | 46.3   | 10.8                       | 9450           | 11.7           | 28                       | 71-80-90-100-112-132-160  | 21100                    | 23900 | 50200 | 58400  | 15800 | 14900           |       |
| 306 R3                     |   | 58.1   | 8.6                        | 9100           | 9.0            | 28                       | 71-80-90-100-112-132-160  | 22700                    | 25800 | 53700 | 62500  | 17100 | 14900           |       |
| 306 R3                     |   | 67.5   | 7.4                        | 7590           | 6.4            | 28                       | 71-80-90-100-112-132-160  | 23900                    | 27100 | 56200 | 65400  | 18000 | 14900           |       |
| 306 R3                     |   | 72.9   | 6.9                        | 8140           | 6.4            | 28                       | 71-80-90-100-112-132-160  | 24500                    | 27800 | 57500 | 66900  | 18400 | 14900           |       |
| 306 R3                     |   | 84.7   | 5.9                        | 8210           | 5.6            | 28                       | 71-80-90-100-112-132-160  | 25800                    | 29200 | 60100 | 70000  | 19400 | 14900           |       |

B





### 306 R

304

### 7300 Nm

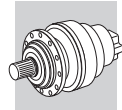
| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)                  | Rn <sub>2</sub> [N]      |       |        |        |        | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------|--------------------------|--------------------------|-------|--------|--------|--------|--------------------------|-------|
|                                     |        |                                     |                       |                       |          |                          | MC                       | MZ    | HC/PC  | HZ/PZ  | FZ     |                          |       |
| 500                                 | 306 R3 | 98.5                                | 5.1                   | 6530                  | 3.8      | 28                       | 71-80-90-100-112-132-160 | 27100 | 30700  | 62900  | 73300  | 20400                    | 14900 |
|                                     | 306 R3 | 119                                 | 4.2                   | 6730                  | 3.2      | 28                       | 71-80-90-100-112-132-160 | 28900 | 32700  | 66600  | 77600  | 21700                    | 14900 |
|                                     | 306 R3 | 144                                 | 3.5                   | 5710                  | 2.3      | 28                       | 71-80-90-100-112-132-160 | 30800 | 34900  | 70500  | 82100  | 23100                    | 14900 |
|                                     | 306 R4 | 158                                 | 3.2                   | 9850                  | 3.7      | 24                       | 71-80-90-100-112-132-160 | 31700 | 35900  | 72500  | 84400  | 23800                    | 14900 |
|                                     | 306 R4 | 168                                 | 3.0                   | 7700                  | 2.7      | 24                       | 71-80-90-100-112-132-160 | 32400 | 36700  | 73800  | 86000  | 24300                    | 14900 |
|                                     | 306 R4 | 181                                 | 2.8                   | 9450                  | 3.1      | 24                       | 71-80-90-100-112-132-160 | 33200 | 37600  | 75500  | 87900  | 24900                    | 14900 |
|                                     | 306 R4 | 214                                 | 2.3                   | 9890                  | 2.7      | 24                       | 71-80-90-100-112-132-160 | 35100 | 39800  | 79400  | 92400  | 26400                    | 14900 |
|                                     | 306 R4 | 230                                 | 2.2                   | 7640                  | 2.0      | 24                       | 71-80-90-100-112-132-160 | 36000 | 40800  | 81200  | 94500  | 27000                    | 14900 |
|                                     | 306 R4 | 249                                 | 2.0                   | 9520                  | 2.3      | 24                       | 71-80-90-100-112-132-160 | 36900 | 41800  | 83100  | 96700  | 27700                    | 14900 |
|                                     | 306 R4 | 289                                 | 1.7                   | 9430                  | 1.9      | 24                       | 71-80-90-100-112-132-160 | 38800 | 44000  | 86900  | 101200 | 29200                    | 14900 |
|                                     | 306 R4 | 312                                 | 1.6                   | 7730                  | 1.5      | 24                       | 71-80-90-100-112-132-160 | 39800 | 45100  | 88900  | 103500 | 29900                    | 14900 |
|                                     | 306 R4 | 389                                 | 1.3                   | 8240                  | 1.3      | 24                       | 71-80-90-100-112-132-160 | 42800 | 48500  | 95000  | 110600 | 32200                    | 14900 |
|                                     | 306 R4 | 420                                 | 1.2                   | 9940                  | 1.4      | 24                       | 71-80-90-100-112-132-160 | 44000 | 49800  | 97200  | 113200 | 33000                    | 14900 |
|                                     | 306 R4 | 455                                 | 1.1                   | 8490                  | 1.1      | 24                       | 71-80-90-100-112-132-160 | 45000 | 51000  | 99600  | 115900 | 33900                    | 14900 |
|                                     | 306 R4 | 488                                 | 1.0                   | 9530                  | 1.2      | 24                       | 71-80-90-100-112-132-160 | 45000 | 51000  | 101000 | 118400 | 34700                    | 14900 |
|                                     | 306 R4 | 550                                 | 0.91                  | 8500                  | 0.91     | 24                       | 71-80-90-100-112-132-160 | 45000 | 51000  | 101000 | 119000 | 35000                    | 14900 |
| 306 R4                              | 590    | 0.85                                | 9500                  | 0.95                  | 24       | 71-80-90-100-112-132-160 | 45000                    | 51000 | 101000 | 119000 | 35000  | 14900                    |       |
| 306 R4                              | 665    | 0.75                                | 7000                  | 0.62                  | 24       | 71-80-90-100-112-132-160 | 45000                    | 51000 | 101000 | 119000 | 35000  | 14900                    |       |
| 306 R4                              | 830    | 0.60                                | 7000                  | 0.50                  | 24       | 71-80-90-100-112-132-160 | 45000                    | 51000 | 101000 | 119000 | 35000  | 14900                    |       |

### 307 R

316



### 14000 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i      | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)                  | Rn <sub>2</sub> [N]      |       |       |        |       | M <sub>2 max</sub><br>Nm |       |
|-------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|----------|--------------------------|--------------------------|-------|-------|--------|-------|--------------------------|-------|
|                                     |        |                                     |                       |                       |          |                          | MC                       | MZ    | HC/PC | HZ/PZ  | FZ    |                          |       |
| 1500                                | 307 R2 | 13.0                                | 116                   | 5110                  | 66       | 35                       | 132-160-180-200          | 10600 | 13300 | 26500  | 34700 | 9230                     | 18600 |
|                                     | 307 R2 | 15.5                                | 97                    | 6090                  | 66       | 35                       | 132-160-180-200          | 11300 | 14100 | 27900  | 36600 | 9790                     | 21000 |
|                                     | 307 R2 | 19.8                                | 76                    | 7820                  | 66       | 35                       | 132-160-180-200          | 12200 | 15400 | 30100  | 39400 | 10600                    | 21000 |
|                                     | 307 R2 | 23.5                                | 64                    | 7970                  | 57       | 35                       | 132-160-180-200          | 13000 | 16300 | 31700  | 41500 | 11300                    | 21000 |
|                                     | 307 R3 | 31.6                                | 47                    | 5570                  | 30       | 22                       | 71-80-90-100-112-132-160 | 14300 | 17900 | 34600  | 45400 | 12400                    | 18600 |
|                                     | 307 R3 | 37.7                                | 40                    | 6650                  | 30       | 22                       | 71-80-90-100-112-132-160 | 15200 | 19000 | 36500  | 47800 | 13200                    | 21000 |
|                                     | 307 R3 | 44.6                                | 34                    | 7860                  | 30       | 22                       | 71-80-90-100-112-132-160 | 16000 | 20100 | 38400  | 50300 | 13900                    | 21000 |
|                                     | 307 R3 | 55.9                                | 26.8                  | 9860                  | 30       | 22                       | 71-80-90-100-112-132-160 | 17300 | 21700 | 41100  | 53800 | 15000                    | 21000 |
|                                     | 307 R3 | 65.0                                | 23.1                  | 11000                 | 29       | 22                       | 71-80-90-100-112-132-160 | 18200 | 22800 | 43000  | 56300 | 15800                    | 21000 |
|                                     | 307 R3 | 71.8                                | 20.9                  | 10100                 | 24       | 22                       | 71-80-90-100-112-132-160 | 18800 | 23600 | 44300  | 58000 | 16300                    | 21000 |
|                                     | 307 R3 | 78.6                                | 19.1                  | 11100                 | 24       | 22                       | 71-80-90-100-112-132-160 | 19400 | 24300 | 45500  | 59600 | 16800                    | 21000 |
|                                     | 307 R3 | 83.4                                | 18.0                  | 10200                 | 21       | 22                       | 71-80-90-100-112-132-160 | 19800 | 24800 | 46300  | 60700 | 17200                    | 21000 |
|                                     | 307 R3 | 99.0                                | 15.2                  | 8580                  | 14.9     | 22                       | 71-80-90-100-112-132-160 | 20900 | 26200 | 48800  | 63900 | 18200                    | 21000 |
|                                     | 307 R3 | 120                                 | 12.5                  | 8630                  | 12.4     | 22                       | 71-80-90-100-112-132-160 | 22300 | 28000 | 51600  | 67600 | 19400                    | 21000 |
|                                     | 307 R4 | 152                                 | 9.9                   | 13500                 | 15.0     | 15.0                     | 71-80-90-100-112-132-160 | 24100 | 30300 | 55400  | 72700 | 21000                    | 21000 |
|                                     | 307 R4 | 165                                 | 9.1                   | 10900                 | 11.7     | 15.0                     | 71-80-90-100-112-132-160 | 24800 | 31100 | 56900  | 74500 | 21600                    | 21000 |
| 307 R4                              | 191    | 7.9                                 | 14000                 | 13.0                  | 15.0     | 71-80-90-100-112-132-160 | 26000                    | 32700 | 59400 | 77800  | 22600 | 21000                    |       |
| 307 R4                              | 206    | 7.3                                 | 14100                 | 12.2                  | 15.0     | 71-80-90-100-112-132-160 | 26700                    | 33500 | 60700 | 79600  | 23200 | 21000                    |       |
| 307 R4                              | 232    | 6.5                                 | 11100                 | 8.5                   | 15.0     | 71-80-90-100-112-132-160 | 27800                    | 34900 | 63000 | 82500  | 24200 | 21000                    |       |
| 307 R4                              | 258    | 5.8                                 | 14600                 | 10.0                  | 15.0     | 71-80-90-100-112-132-160 | 28800                    | 36100 | 65000 | 85200  | 25000 | 21000                    |       |
| 307 R4                              | 284    | 5.3                                 | 11300                 | 7.0                   | 15.0     | 71-80-90-100-112-132-160 | 29700                    | 37300 | 66900 | 87700  | 25900 | 21000                    |       |
| 307 R4                              | 300    | 5.0                                 | 14000                 | 8.3                   | 15.0     | 71-80-90-100-112-132-160 | 30300                    | 38000 | 68000 | 89100  | 26300 | 21000                    |       |
| 307 R4                              | 331    | 4.5                                 | 11500                 | 6.2                   | 15.0     | 71-80-90-100-112-132-160 | 31300                    | 39300 | 70000 | 91800  | 27200 | 21000                    |       |
| 307 R4                              | 363    | 4.1                                 | 12300                 | 6.0                   | 15.0     | 71-80-90-100-112-132-160 | 32300                    | 40500 | 72000 | 94300  | 28000 | 21000                    |       |
| 307 R4                              | 413    | 3.6                                 | 11900                 | 5.1                   | 15.0     | 71-80-90-100-112-132-160 | 33700                    | 42300 | 74900 | 98100  | 29300 | 21000                    |       |
| 307 R4                              | 453    | 3.3                                 | 13400                 | 5.3                   | 15.0     | 71-80-90-100-112-132-160 | 34700                    | 43600 | 76900 | 100800 | 30200 | 21000                    |       |
| 307 R4                              | 490    | 3.1                                 | 9330                  | 3.4                   | 15.0     | 71-80-90-100-112-132-160 | 35700                    | 44700 | 78800 | 103300 | 31000 | 21000                    |       |
| 307 R4                              | 581    | 2.6                                 | 12600                 | 3.9                   | 15.0     | 71-80-90-100-112-132-160 | 37700                    | 47400 | 82900 | 108700 | 32800 | 21000                    |       |
| 307 R4                              | 690    | 2.2                                 | 9800                  | 2.5                   | 15.0     | 71-80-90-100-112-132-160 | 40000                    | 50100 | 87300 | 114400 | 34700 | 21000                    |       |
| 1000                                | 307 R2 | 13.0                                | 77                    | 5770                  | 50       | 42                       | 132-160-180-200          | 12200 | 15300 | 29900  | 39200 | 10600                    | 18600 |
|                                     | 307 R2 | 15.5                                | 65                    | 6880                  | 50       | 42                       | 132-160-180-200          | 12900 | 16200 | 31500  | 41300 | 11200                    | 21000 |
|                                     | 307 R2 | 19.8                                | 50                    | 8830                  | 50       | 42                       | 132-160-180-200          | 14000 | 17600 | 34000  | 44500 | 12200                    | 21000 |
|                                     | 307 R2 | 23.5                                | 42                    | 8290                  | 39       | 42                       | 132-160-180-200          | 14800 | 18600 | 35800  | 46900 | 12900                    | 21000 |

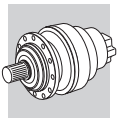




**307 R**  316

**14000 Nm**

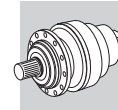
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW                 | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|--------|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>1000</b>                         | 307 R3  | 31.6 | 32                                  | 6180                  | 22                    | 26                       | 71-80-90-100-112-132-160  | 16400               | 20500  | 39100  | 51200  | 14200 | 18600                    |
|                                     | 307 R3  | 37.7 | 26.5                                | 7510                  | 23                    | 26                       | 71-80-90-100-112-132-160  | 17400               | 21800  | 41200  | 54000  | 15100 | 21000                    |
|                                     | 307 R3  | 44.6 | 22.4                                | 8870                  | 23                    | 26                       | 71-80-90-100-112-132-160  | 18400               | 23000  | 43300  | 56800  | 16000 | 21000                    |
|                                     | 307 R3  | 55.9 | 17.9                                | 11100                 | 23                    | 26                       | 71-80-90-100-112-132-160  | 19800               | 24800  | 46400  | 60800  | 17200 | 21000                    |
|                                     | 307 R3  | 65.0 | 15.4                                | 12200                 | 21                    | 26                       | 71-80-90-100-112-132-160  | 20800               | 26100  | 48500  | 63600  | 18100 | 21000                    |
|                                     | 307 R3  | 71.8 | 13.9                                | 10500                 | 16.7                  | 26                       | 71-80-90-100-112-132-160  | 21500               | 27000  | 50000  | 65500  | 18700 | 21000                    |
|                                     | 307 R3  | 78.6 | 12.7                                | 11800                 | 17.3                  | 26                       | 71-80-90-100-112-132-160  | 22200               | 27800  | 51400  | 67300  | 19300 | 21000                    |
|                                     | 307 R3  | 83.4 | 12.0                                | 10600                 | 14.6                  | 26                       | 71-80-90-100-112-132-160  | 22600               | 28400  | 52300  | 68500  | 19700 | 21000                    |
|                                     | 307 R3  | 99.0 | 10.1                                | 8700                  | 10.1                  | 26                       | 71-80-90-100-112-132-160  | 23900               | 30000  | 55100  | 72200  | 20800 | 21000                    |
|                                     | 307 R3  | 120  | 8.4                                 | 8700                  | 8.3                   | 26                       | 71-80-90-100-112-132-160  | 25500               | 32000  | 58300  | 76400  | 22200 | 21000                    |
|                                     | 307 R4  | 152  | 6.6                                 | 14300                 | 11.2                  | 18.0                     | 71-80-90-100-112-132-160  | 27600               | 34700  | 62600  | 82100  | 24000 | 21000                    |
|                                     | 307 R4  | 165  | 6.1                                 | 11200                 | 8.0                   | 18.0                     | 71-80-90-100-112-132-160  | 28400               | 35600  | 64200  | 84100  | 24700 | 21000                    |
|                                     | 307 R4  | 191  | 5.2                                 | 14800                 | 9.2                   | 18.0                     | 71-80-90-100-112-132-160  | 29800               | 37400  | 67000  | 87800  | 25900 | 21000                    |
|                                     | 307 R4  | 206  | 4.9                                 | 14900                 | 8.6                   | 18.0                     | 71-80-90-100-112-132-160  | 30600               | 38300  | 68600  | 89900  | 26600 | 21000                    |
|                                     | 307 R4  | 232  | 4.3                                 | 11600                 | 5.9                   | 18.0                     | 71-80-90-100-112-132-160  | 31800               | 39900  | 71100  | 93200  | 27700 | 21000                    |
|                                     | 307 R4  | 258  | 3.9                                 | 14900                 | 6.8                   | 18.0                     | 71-80-90-100-112-132-160  | 33000               | 41400  | 73400  | 96200  | 28600 | 21000                    |
|                                     | 307 R4  | 284  | 3.5                                 | 12000                 | 5.0                   | 18.0                     | 71-80-90-100-112-132-160  | 34000               | 42700  | 75600  | 99000  | 29600 | 21000                    |
|                                     | 307 R4  | 300  | 3.3                                 | 14000                 | 5.5                   | 18.0                     | 71-80-90-100-112-132-160  | 34700               | 43500  | 76800  | 100600 | 30100 | 21000                    |
|                                     | 307 R4  | 331  | 3.0                                 | 12300                 | 4.4                   | 18.0                     | 71-80-90-100-112-132-160  | 35800               | 44900  | 79100  | 103700 | 31100 | 21000                    |
|                                     | 307 R4  | 363  | 2.8                                 | 12300                 | 4.0                   | 18.0                     | 71-80-90-100-112-132-160  | 36900               | 46300  | 81300  | 106500 | 32100 | 21000                    |
| 307 R4                              | 413   | 2.4  | 12800                               | 3.7                   | 18.0                  | 71-80-90-100-112-132-160 | 38600   | 48400               | 84500  | 110800 | 33500  | 21000 |                          |
| 307 R4                              | 453   | 2.2  | 14000                               | 3.6                   | 18.0                  | 71-80-90-100-112-132-160 | 39800   | 49900               | 86900  | 113900 | 34600  | 21000 |                          |
| 307 R4                              | 490   | 2.0  | 9900                                | 2.4                   | 18.0                  | 71-80-90-100-112-132-160 | 40800   | 51200               | 89000  | 116600 | 35500  | 21000 |                          |
| 307 R4                              | 581   | 1.7  | 13300                               | 2.7                   | 18.0                  | 71-80-90-100-112-132-160 | 43200   | 54200               | 93600  | 122700 | 37600  | 21000 |                          |
| 307 R4                              | 690   | 1.4  | 10400                               | 1.8                   | 18.0                  | 71-80-90-100-112-132-160 | 45700   | 57400               | 98600  | 129200 | 39800  | 21000 |                          |
| <b>500</b>                          | 307 R2  | 13.0 | 39                                  | 6780                  | 29                    | 70                       | 132-160-180-200   | 15300               | 19200  | 36800  | 48300  | 13300 | 18600                    |
|                                     | 307 R2  | 15.5 | 32                                  | 7950                  | 29                    | 70                       | 132-160-180-200   | 16200               | 20400  | 38800  | 50900  | 14100 | 21000                    |
|                                     | 307 R2  | 19.8 | 25.2                                | 9630                  | 27                    | 70                       | 132-160-180-200   | 17700               | 22200  | 41900  | 54800  | 15300 | 21000                    |
|                                     | 307 R2  | 23.5 | 21.2                                | 8480                  | 20                    | 70                       | 132-160-180-200   | 18700               | 23500  | 44100  | 57700  | 16200 | 21000                    |
|                                     | 307 R3  | 31.6 | 15.8                                | 7380                  | 13.4                  | 44                       | 71-80-90-100-112-132-160  | 20600               | 25900  | 48100  | 63100  | 17900 | 18600                    |
|                                     | 307 R3  | 37.7 | 13.2                                | 9250                  | 14.1                  | 44                       | 71-80-90-100-112-132-160  | 21900               | 27400  | 50800  | 66500  | 19000 | 21000                    |
|                                     | 307 R3  | 44.6 | 11.2                                | 10900                 | 14.1                  | 44                       | 71-80-90-100-112-132-160  | 23100               | 29000  | 53400  | 69900  | 20100 | 21000                    |
|                                     | 307 R3  | 55.9 | 8.9                                 | 13500                 | 13.9                  | 44                       | 71-80-90-100-112-132-160  | 24900               | 31300  | 57100  | 74800  | 21700 | 21000                    |
|                                     | 307 R3  | 65.0 | 7.7                                 | 13700                 | 12.1                  | 44                       | 71-80-90-100-112-132-160  | 26200               | 32900  | 59800  | 78300  | 22800 | 21000                    |
|                                     | 307 R3  | 71.8 | 7.0                                 | 11100                 | 8.8                   | 44                       | 71-80-90-100-112-132-160  | 27100               | 34000  | 61600  | 80700  | 23600 | 21000                    |
|                                     | 307 R3  | 78.6 | 6.4                                 | 12300                 | 9.0                   | 44                       | 71-80-90-100-112-132-160  | 27900               | 35100  | 63300  | 82900  | 24300 | 21000                    |
|                                     | 307 R3  | 83.4 | 6.0                                 | 11200                 | 7.7                   | 44                       | 71-80-90-100-112-132-160  | 28500               | 35800  | 64400  | 84400  | 24800 | 21000                    |
|                                     | 307 R3  | 99.0 | 5.1                                 | 8700                  | 5.0                   | 44                       | 71-80-90-100-112-132-160  | 30200               | 37900  | 67800  | 88800  | 26200 | 21000                    |
|                                     | 307 R3  | 120  | 4.2                                 | 8930                  | 4.3                   | 44                       | 71-80-90-100-112-132-160  | 32100               | 40300  | 71800  | 94100  | 27900 | 21000                    |
|                                     | 307 R4  | 152  | 3.3                                 | 14900                 | 5.8                   | 30                       | 71-80-90-100-112-132-160  | 34800               | 43700  | 77100  | 101000 | 30300 | 21000                    |
|                                     | 307 R4  | 165  | 3.0                                 | 12300                 | 4.4                   | 30                       | 71-80-90-100-112-132-160  | 35800               | 44900  | 79100  | 103600 | 31100 | 21000                    |
|                                     | 307 R4  | 191  | 2.6                                 | 14900                 | 4.6                   | 30                       | 71-80-90-100-112-132-160  | 37500               | 47100  | 82500  | 108100 | 32600 | 21000                    |
|                                     | 307 R4  | 206  | 2.4                                 | 14900                 | 4.3                   | 30                       | 71-80-90-100-112-132-160  | 38500               | 48300  | 84400  | 110600 | 33500 | 21000                    |
|                                     | 307 R4  | 232  | 2.2                                 | 13000                 | 3.3                   | 30                       | 71-80-90-100-112-132-160  | 40100               | 50300  | 87600  | 114700 | 34800 | 21000                    |
|                                     | 307 R4  | 258  | 1.9                                 | 15100                 | 3.5                   | 30                       | 71-80-90-100-112-132-160  | 41500               | 52100  | 90400  | 118400 | 36100 | 21000                    |
| 307 R4                              | 284   | 1.8  | 13500                               | 2.8                   | 30                    | 71-80-90-100-112-132-160 | 42900   | 53800               | 93100  | 121900 | 37300  | 21000 |                          |
| 307 R4                              | 300   | 1.7  | 14400                               | 2.8                   | 30                    | 71-80-90-100-112-132-160 | 43700   | 54800               | 94500  | 123900 | 38000  | 21000 |                          |
| 307 R4                              | 331   | 1.5  | 13800                               | 2.5                   | 30                    | 71-80-90-100-112-132-160 | 45100   | 56600               | 97400  | 127600 | 39200  | 21000 |                          |
| 307 R4                              | 363   | 1.4  | 12300                               | 2.0                   | 30                    | 71-80-90-100-112-132-160 | 46500   | 58400               | 100100 | 131200 | 40400  | 21000 |                          |
| 307 R4                              | 413   | 1.2  | 14400                               | 2.1                   | 30                    | 71-80-90-100-112-132-160 | 48600   | 61000               | 104100 | 136400 | 42200  | 21000 |                          |
| 307 R4                              | 453   | 1.1  | 14900                               | 1.9                   | 30                    | 71-80-90-100-112-132-160 | 50100   | 62800               | 107000 | 140200 | 43500  | 21000 |                          |
| 307 R4                              | 490   | 1.0  | 11000                               | 1.3                   | 30                    | 71-80-90-100-112-132-160 | 51400   | 64500               | 109000 | 143600 | 44700  | 21000 |                          |
| 307 R4                              | 581   | 0.86 | 14300                               | 1.5                   | 30                    | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |
| 307 R4                              | 690   | 0.72 | 11000                               | 0.94                  | 30                    | 71-80-90-100-112-132-160 | 52000   | 65000               | 109000 | 145000 | 45000  | 21000 |                          |

**B**





| 309 R                      |   |        |                            |                |                |          | 328   |                          | 16460 Nm |              |        |       |                 |       |
|----------------------------|---|--------|----------------------------|----------------|----------------|----------|---|--------------------------|----------|--------------|--------|-------|-----------------|-------|
| $n_1$<br>min <sup>-1</sup> |  | i      | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | Pt<br>kW | P (IEC)  | MC                       | MZ       | $R_{n2}$ [N] |        |       | $M_2$ max<br>Nm |       |
|                            |   |        |                            |                |                |          |   | HC/PC                    | HZ/PZ    | FZ           |        |       |                 |       |
| 1500                       | 309 R2  | 13.0   | 116                        | 5110           | 66             | 35       | 132-160-180-200   | —                        | —        | 26900        | 34700  | 7390  | 27400           |       |
|                            | 309 R2  | 15.5   | 97                         | 6090           | 66             | 35       | 132-160-180-200   | —                        | —        | 28400        | 36600  | 7830  | 27400           |       |
|                            | 309 R2  | 19.8   | 76                         | 7820           | 66             | 35       | 132-160-180-200   | —                        | —        | 30600        | 39400  | 8510  | 27400           |       |
|                            | 309 R2  | 23.5   | 64                         | 9280           | 66             | 35       | 132-160-180-200   | —                        | —        | 32200        | 41500  | 9010  | 27400           |       |
|                            | 309 R3  | 31.6   | 47                         | 5580           | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 35200        | 45400  | 9950  | 27900           |       |
|                            | 309 R3  | 37.7   | 40                         | 6650           | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 37100        | 47800  | 10500 | 29000           |       |
|                            | 309 R3  | 44.6   | 34                         | 7860           | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 39000        | 50300  | 11100 | 29000           |       |
|                            | 309 R3  | 55.9   | 26.8                       | 9860           | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 41700        | 53800  | 12000 | 29000           |       |
|                            | 309 R3  | 65.0   | 23.1                       | 11200          | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 43700        | 56300  | 12600 | 29000           |       |
|                            | 309 R3  | 71.8   | 20.9                       | 12700          | 30             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 45000        | 58000  | 13100 | 29000           |       |
|                            | 309 R3  | 83.4   | 18.0                       | 14000          | 29             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 47100        | 60700  | 13700 | 29000           |       |
|                            | 309 R3  | 99.0   | 15.2                       | 12800          | 22             | 22       | 71-80-90-100-112-132-160  | —                        | —        | 49500        | 63900  | 14500 | 29000           |       |
|                            | 309 R3  | 120    | 12.5                       | 12900          | 18.6           | 22       | 71-80-90-100-112-132-160  | —                        | —        | 52500        | 67600  | 15500 | 29000           |       |
|                            | 309 R4  | 152    | 9.9                        | 18600          | 15.0           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 56300        | 72700  | 16800 | 29000           |       |
|                            | 309 R4  | 165    | 9.1                        | 16300          | 15.0           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 57800        | 74500  | 17300 | 29000           |       |
|                            | 309 R4  | 191    | 7.9                        | 17300          | 15.0           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 60300        | 77800  | 18100 | 29000           |       |
|                            | 309 R4  | 206    | 7.3                        | 19800          | 15.0           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 61700        | 79600  | 18600 | 29000           |       |
|                            | 309 R4  | 232    | 6.5                        | 16700          | 12.7           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 64000        | 82500  | 19300 | 29000           |       |
|                            | 309 R4  | 258    | 5.8                        | 17400          | 12.0           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 66000        | 85200  | 20000 | 29000           |       |
|                            | 309 R4  | 284    | 5.3                        | 16900          | 10.5           | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 68000        | 87700  | 20700 | 29000           |       |
|                            | 309 R4  | 331    | 4.5                        | 17200          | 9.2            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 71200        | 91800  | 21800 | 29000           |       |
|                            | 309 R4  | 374    | 4.0                        | 14300          | 6.8            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 73800        | 95200  | 22700 | 29000           |       |
|                            | 309 R4  | 413    | 3.6                        | 17900          | 7.7            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 76100        | 98100  | 23400 | 29000           |       |
|                            | 309 R4  | 457    | 3.3                        | 13800          | 5.4            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 78400        | 101100 | 24200 | 29000           |       |
|                            | 309 R4  | 490    | 3.1                        | 14000          | 5.1            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 80100        | 103300 | 24800 | 29000           |       |
|                            | 309 R4  | 581    | 2.6                        | 15800          | 4.8            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 84300        | 108700 | 26200 | 29000           |       |
|                            | 309 R4  | 690    | 2.2                        | 14800          | 3.8            | 15.0     | 71-80-90-100-112-132-160  | —                        | —        | 88700        | 114400 | 27800 | 29000           |       |
|                            | 1000  | 309 R2 | 13.0                       | 77             | 5770           | 50       | 42  | 132-160-180-200          | —        | —            | 30400  | 39200 | 8450            | 27400 |
|                            |   | 309 R2 | 15.5                       | 65             | 6880           | 50       | 42  | 132-160-180-200          | —        | —            | 32100  | 41300 | 8970            | 27400 |
|                            |   | 309 R2 | 19.8                       | 50             | 8830           | 50       | 42  | 132-160-180-200          | —        | —            | 34500  | 44500 | 9740            | 27400 |
|                            |   | 309 R2 | 23.5                       | 42             | 10200          | 48       | 42  | 132-160-180-200          | —        | —            | 36400  | 46900 | 10300           | 27400 |
|                            |   | 309 R3 | 31.6                       | 32             | 6300           | 23       | 26  | 71-80-90-100-112-132-160 | —        | —            | 39700  | 51200 | 11400           | 27900 |
| 309 R3                     |   | 37.7   | 26.5                       | 7510           | 23             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 41900        | 54000  | 12100 | 29000           |       |
| 309 R3                     |   | 44.6   | 22.4                       | 8870           | 23             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 44000        | 56800  | 12800 | 29000           |       |
| 309 R3                     |   | 55.9   | 17.9                       | 11100          | 23             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 47100        | 60800  | 13800 | 29000           |       |
| 309 R3                     |   | 65.0   | 15.4                       | 12500          | 22             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 49300        | 63600  | 14500 | 29000           |       |
| 309 R3                     |   | 71.8   | 13.9                       | 14300          | 23             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 50800        | 65500  | 15000 | 29000           |       |
| 309 R3                     |   | 83.4   | 12.0                       | 15500          | 21             | 26       | 71-80-90-100-112-132-160  | —                        | —        | 53100        | 68500  | 15700 | 29000           |       |
| 309 R3                     |   | 99.0   | 10.1                       | 13000          | 15.1           | 26       | 71-80-90-100-112-132-160  | —                        | —        | 56000        | 72200  | 16700 | 29000           |       |
| 309 R3                     |   | 120    | 8.4                        | 13000          | 12.5           | 26       | 71-80-90-100-112-132-160  | —                        | —        | 59200        | 76400  | 17700 | 29000           |       |
| 309 R4                     |   | 152    | 6.6                        | 20200          | 15.0           | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 63600        | 82100  | 19200 | 29000           |       |
| 309 R4                     |   | 165    | 6.1                        | 16700          | 12.0           | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 65200        | 84100  | 19800 | 29000           |       |
| 309 R4                     |   | 191    | 5.2                        | 17500          | 10.8           | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 68100        | 87800  | 20700 | 29000           |       |
| 309 R4                     |   | 206    | 4.9                        | 21300          | 12.2           | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 69700        | 89900  | 21200 | 29000           |       |
| 309 R4                     |   | 232    | 4.3                        | 17200          | 8.8            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 72300        | 93200  | 22100 | 29000           |       |
| 309 R4                     |   | 258    | 3.9                        | 17500          | 8.0            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 74600        | 96200  | 22900 | 29000           |       |
| 309 R4                     |   | 284    | 3.5                        | 17500          | 7.3            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 76800        | 99000  | 23700 | 29000           |       |
| 309 R4                     |   | 331    | 3.0                        | 18500          | 6.6            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 80400        | 103700 | 24900 | 29000           |       |
| 309 R4                     |   | 374    | 2.7                        | 14300          | 4.5            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 83400        | 107500 | 25900 | 29000           |       |
| 309 R4                     |   | 413    | 2.4                        | 19200          | 5.5            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 85900        | 110800 | 26800 | 29000           |       |
| 309 R4                     |   | 457    | 2.2                        | 14800          | 3.8            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 88500        | 114200 | 27700 | 29000           |       |
| 309 R4                     |   | 490    | 2.0                        | 14900          | 3.6            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 90400        | 116600 | 28400 | 29000           |       |
| 309 R4                     |   | 581    | 1.7                        | 15800          | 3.2            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 95200        | 122700 | 30000 | 29000           |       |
| 309 R4                     |   | 690    | 1.4                        | 15900          | 2.7            | 18.0     | 71-80-90-100-112-132-160  | —                        | —        | 100200       | 129200 | 31800 | 29000           |       |
| 500                        |   | 309 R2 | 13.0                       | 39             | 6780           | 29       | 70  | 132-160-180-200          | —        | —            | 37400  | 48300 | 10700           | 27400 |
|                            |   | 309 R2 | 15.5                       | 32             | 7950           | 29       | 70  | 132-160-180-200          | —        | —            | 39500  | 50900 | 11300           | 27400 |
|                            |   | 309 R2 | 19.8                       | 25.2           | 10200          | 29       | 70  | 132-160-180-200          | —        | —            | 42500  | 54800 | 12300           | 27400 |
|                            |   | 309 R2 | 23.5                       | 21.2           | 11200          | 26       | 70  | 132-160-180-200          | —        | —            | 44800  | 57700 | 13000           | 27400 |

B





**309 R**  328

**16460 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 309 R3  | 31.6 | 15.8                                | 7760                  | 14.1                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 48900  | 63100  | 14300 | 27900                    |
|                                     | 309 R3  | 37.7 | 13.2                                | 9250                  | 14.1                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 51600  | 66500  | 15200 | 29000                    |
|                                     | 309 R3  | 44.6 | 11.2                                | 10900                 | 14.1                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 54200  | 69900  | 16100 | 29000                    |
|                                     | 309 R3  | 55.9 | 8.9                                 | 13700                 | 14.1                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 58000  | 74800  | 17300 | 29000                    |
|                                     | 309 R3  | 65.0 | 7.7                                 | 14100                 | 12.5                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 60700  | 78300  | 18200 | 29000                    |
|                                     | 309 R3  | 71.8 | 7.0                                 | 16400                 | 13.1                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 62500  | 80700  | 18800 | 29000                    |
|                                     | 309 R3  | 83.4 | 6.0                                 | 16700                 | 11.5                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 65400  | 84400  | 19800 | 29000                    |
|                                     | 309 R3  | 99.0 | 5.1                                 | 13000                 | 7.5                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 68900  | 88800  | 21000 | 29000                    |
|                                     | 309 R3  | 120  | 4.2                                 | 13400                 | 6.4                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 72900  | 94100  | 22400 | 29000                    |
|                                     | 309 R4  | 152  | 3.3                                 | 21300                 | 8.3                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 78300  | 101000 | 24200 | 29000                    |
|                                     | 309 R4  | 165  | 3.0                                 | 18400                 | 6.6                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 80300  | 103600 | 24900 | 29000                    |
|                                     | 309 R4  | 191  | 2.6                                 | 17500                 | 5.4                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 83900  | 108100 | 26100 | 29000                    |
|                                     | 309 R4  | 206  | 2.4                                 | 21300                 | 6.1                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 85800  | 110600 | 26800 | 29000                    |
|                                     | 309 R4  | 232  | 2.2                                 | 18100                 | 4.6                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 89000  | 114700 | 27900 | 29000                    |
|                                     | 309 R4  | 258  | 1.9                                 | 17800                 | 4.1                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 91800  | 118400 | 28900 | 29000                    |
|                                     | 309 R4  | 284  | 1.8                                 | 18200                 | 3.8                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 94500  | 121900 | 29800 | 29000                    |
|                                     | 309 R4  | 331  | 1.5                                 | 20600                 | 3.7                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 99000  | 127600 | 31400 | 29000                    |
|                                     | 309 R4  | 374  | 1.3                                 | 14600                 | 2.3                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 102700 | 132400 | 32700 | 29000                    |
|                                     | 309 R4  | 413  | 1.2                                 | 21300                 | 3.1                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 105800 | 136400 | 33800 | 29000                    |
|                                     | 309 R4  | 457  | 1.1                                 | 16700                 | 2.2                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 109000 | 140600 | 34900 | 29000                    |
|                                     | 309 R4  | 490  | 1.0                                 | 16900                 | 2.0                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 143600 | 35800 | 29000                    |
|                                     | 309 R4  | 581  | 0.86                                | 15800                 | 1.6                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |
|                                     | 309 R4  | 690  | 0.72                                | 17000                 | 1.5                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 110000 | 145000 | 36000 | 29000                    |

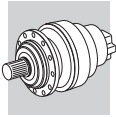
**310 R**  340

**34120 Nm**

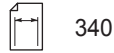
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 1500                                | 310 R2 (B)  | 12.0 | 125                                 | 10100                 | 130                   | 55       | 160-180-200-225   | —                   | —  | 31200  | 39200  | 13000 | 47600                    |
|                                     | 310 R2 (B)  | 15.4 | 97                                  | 10700                 | 115                   | 55       | 160-180-200-225   | —                   | —  | 33600  | 42300  | 14100 | 47600                    |
|                                     | 310 R2 (B)  | 18.3 | 82                                  | 11100                 | 101                   | 55       | 160-180-200-225   | —                   | —  | 35400  | 44500  | 15000 | 47600                    |
|                                     | 310 R2 (C)  | 16.6 | 90                                  | 11200                 | 112                   | 55       | 160-180-200-225-250   | —                   | —  | 34400  | 43200  | 14500 | 47600                    |
|                                     | 310 R2 (C)  | 21.3 | 70                                  | 11800                 | 92                    | 55       | 160-180-200-225-250   | —                   | —  | 37100  | 46600  | 15800 | 47600                    |
|                                     | 310 R2 (C)  | 25.3 | 59                                  | 12200                 | 81                    | 55       | 160-180-200-225-250   | —                   | —  | 39000  | 49000  | 16700 | 47600                    |
|                                     | 310 R3  | 37.7 | 40                                  | 6650                  | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 44000  | 55300  | 19000 | 47600                    |
|                                     | 310 R3  | 44.6 | 34                                  | 7860                  | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 46200  | 58100  | 20100 | 47600                    |
|                                     | 310 R3  | 55.9 | 26.8                                | 9860                  | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 49500  | 62200  | 21700 | 47600                    |
|                                     | 310 R3  | 65.0 | 23.1                                | 11500                 | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 51700  | 65100  | 22800 | 47600                    |
|                                     | 310 R3  | 71.8 | 20.9                                | 12700                 | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 53300  | 67000  | 23600 | 47600                    |
|                                     | 310 R3  | 78.6 | 19.1                                | 13900                 | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 54800  | 68900  | 24300 | 47600                    |
|                                     | 310 R3  | 83.4 | 18.0                                | 14700                 | 30                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 55800  | 70100  | 24800 | 47600                    |
|                                     | 310 R3  | 99.0 | 15.2                                | 16400                 | 29                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 58700  | 73800  | 26300 | 47600                    |
|                                     | 310 R3  | 120  | 12.5                                | 17400                 | 25                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 62200  | 78200  | 28000 | 47600                    |
|                                     | 310 R4  | 136  | 11.0                                | 21000                 | 27                    | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 64600  | 81200  | 29200 | 47600                    |
|                                     | 310 R4  | 160  | 9.4                                 | 22000                 | 24                    | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 67800  | 85300  | 30900 | 47600                    |
|                                     | 310 R4  | 189  | 7.9                                 | 23200                 | 22                    | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 71300  | 89700  | 32600 | 47600                    |
|                                     | 310 R4  | 206  | 7.3                                 | 22100                 | 19.0                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 73100  | 91900  | 33500 | 47600                    |
|                                     | 310 R4  | 234  | 6.4                                 | 24700                 | 18.7                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 76000  | 95600  | 35000 | 47600                    |
|                                     | 310 R4  | 258  | 5.8                                 | 22800                 | 15.7                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 78300  | 98400  | 36200 | 47600                    |
|                                     | 310 R4  | 283  | 5.3                                 | 26100                 | 16.4                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 80500  | 101200 | 37300 | 47600                    |
|                                     | 310 R4  | 305  | 4.9                                 | 23400                 | 13.6                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 82300  | 103500 | 38200 | 47600                    |
|                                     | 310 R4  | 334  | 4.5                                 | 27400                 | 14.6                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 84600  | 106300 | 39400 | 47600                    |
|                                     | 310 R4  | 363  | 4.1                                 | 24100                 | 11.8                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 86700  | 109000 | 40500 | 47600                    |
|                                     | 310 R4  | 419  | 3.6                                 | 29000                 | 12.3                  | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 90500  | 113800 | 42500 | 47600                    |
|                                     | 310 R4  | 454  | 3.3                                 | 20000                 | 7.8                   | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 92700  | 116600 | 43600 | 47600                    |
|                                     | 310 R4  | 517  | 2.9                                 | 25600                 | 8.8                   | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 96400  | 121200 | 45600 | 47600                    |
|                                     | 310 R4  | 590  | 2.5                                 | 21800                 | 6.6                   | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 100300 | 126100 | 47600 | 47600                    |
|                                     | 310 R4  | 639  | 2.3                                 | 21500                 | 6.0                   | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 102700 | 129100 | 48900 | 47600                    |
|                                     | 310 R4  | 757  | 2.0                                 | 26400                 | 6.2                   | 15.0     | 71-80-90-100-112-132-160  | —                   | —  | 108100 | 135900 | 51700 | 47600                    |

**B**





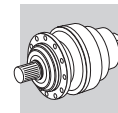
## 310 R



## 34120 Nm



| n <sub>1</sub><br>min <sup>-1</sup> |                   | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW                 | P (IEC)                  | Rn <sub>2</sub> [N] |        |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|-------------------|-------------|-------------------------------------|-----------------------|-----------------------|--------------------------|--------------------------|---------------------|--------|--------|--------|-------|--------------------------|
|                                     |                   |             |                                     |                       |                       |                          |                          | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ    |                          |
|                                     |                   | <b>898</b>  | 1.7                                 | 23200                 | 4.6                   | 15.0                     | 71-80-90-100-112-132-160 | —                   | —      | 113800 | 143100 | 54800 | 47600                    |
| <b>1000</b>                         | <b>310 R2 (B)</b> | <b>12.0</b> | 83                                  | 11400                 | 106                   | 66                       | 160-180-200-225          | —                   | —      | 35200  | 44300  | 14900 | 47600                    |
|                                     | <b>310 R2 (B)</b> | <b>15.4</b> | 65                                  | 12000                 | 87                    | 66                       | 160-180-200-225          | —                   | —      | 38000  | 47700  | 16200 | 47600                    |
|                                     | <b>310 R2 (B)</b> | <b>18.3</b> | 55                                  | 12500                 | 76                    | 66                       | 160-180-200-225          | —                   | —      | 40000  | 50200  | 17100 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>16.6</b> | 60                                  | 12600                 | 84                    | 66                       | 160-180-200-225-250      | —                   | —      | 38800  | 48800  | 16600 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>21.3</b> | 47                                  | 13300                 | 69                    | 66                       | 160-180-200-225-250      | —                   | —      | 41800  | 52600  | 18000 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>25.3</b> | 39                                  | 13500                 | 59                    | 66                       | 160-180-200-225-250      | —                   | —      | 44100  | 55400  | 19100 | 47600                    |
|                                     | <b>310 R3</b>     | <b>37.7</b> | 26.5                                | 7510                  | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 49600  | 62400  | 21800 | 47600                    |
|                                     | <b>310 R3</b>     | <b>44.6</b> | 22.4                                | 8870                  | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 52200  | 65600  | 23000 | 47600                    |
|                                     | <b>310 R3</b>     | <b>55.9</b> | 17.9                                | 11100                 | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 55900  | 70200  | 24900 | 47600                    |
|                                     | <b>310 R3</b>     | <b>65.0</b> | 15.4                                | 12900                 | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 58400  | 73500  | 26100 | 47600                    |
|                                     | <b>310 R3</b>     | <b>71.8</b> | 13.9                                | 14300                 | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 60200  | 75700  | 27000 | 47600                    |
|                                     | <b>310 R3</b>     | <b>78.6</b> | 12.7                                | 15700                 | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 61900  | 77800  | 27800 | 47600                    |
|                                     | <b>310 R3</b>     | <b>83.4</b> | 12.0                                | 16600                 | 23                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 63000  | 79200  | 28400 | 47600                    |
|                                     | <b>310 R3</b>     | <b>99.0</b> | 10.1                                | 18200                 | 21                    | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 66300  | 83400  | 30100 | 47600                    |
|                                     | <b>310 R3</b>     | <b>120</b>  | 8.4                                 | 18300                 | 17.5                  | 26                       | 71-80-90-100-112-132-160 | —                   | —      | 70200  | 88300  | 32000 | 47600                    |
|                                     | <b>310 R4</b>     | <b>136</b>  | 7.4                                 | 23700                 | 21                    | 18.0                     | 71-80-90-100-112-132-160 | —                   | —      | 72900  | 91700  | 33400 | 47600                    |
|                                     | <b>310 R4</b>     | <b>160</b>  | 6.2                                 | 24900                 | 18.3                  | 18.0                     | 71-80-90-100-112-132-160 | —                   | —      | 76600  | 96400  | 35300 | 47600                    |
|                                     | <b>310 R4</b>     | <b>189</b>  | 5.3                                 | 26100                 | 16.3                  | 18.0                     | 71-80-90-100-112-132-160 | —                   | —      | 80500  | 101300 | 37300 | 47600                    |
|                                     | <b>310 R4</b>     | <b>206</b>  | 4.9                                 | 23500                 | 13.5                  | 18.0                     | 71-80-90-100-112-132-160 | —                   | —      | 82600  | 103800 | 38400 | 47600                    |
|                                     | <b>310 R4</b>     | <b>234</b>  | 4.3                                 | 27800                 | 14.0                  | 18.0                     | 71-80-90-100-112-132-160 | —                   | —      | 85800  | 107900 | 40100 | 47600                    |
| <b>310 R4</b>                       | <b>258</b>        | 3.9         | 24400                               | 11.2                  | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 88400  | 111200 | 41400  | 47600 |                          |
| <b>310 R4</b>                       | <b>283</b>        | 3.5         | 29300                               | 12.3                  | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 90900  | 114300 | 42700  | 47600 |                          |
| <b>310 R4</b>                       | <b>305</b>        | 3.3         | 25100                               | 9.7                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 92900  | 116800 | 43800  | 47600 |                          |
| <b>310 R4</b>                       | <b>334</b>        | 3.0         | 30700                               | 10.9                  | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 95500  | 120100 | 45100  | 47600 |                          |
| <b>310 R4</b>                       | <b>363</b>        | 2.8         | 25800                               | 8.4                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 97900  | 123100 | 46400  | 47600 |                          |
| <b>310 R4</b>                       | <b>419</b>        | 2.4         | 32000                               | 9.0                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 102200 | 128600 | 48700  | 47600 |                          |
| <b>310 R4</b>                       | <b>454</b>        | 2.2         | 21800                               | 5.7                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 104700 | 131700 | 50000  | 47600 |                          |
| <b>310 R4</b>                       | <b>517</b>        | 1.9         | 27400                               | 6.3                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 108900 | 136900 | 52200  | 47600 |                          |
| <b>310 R4</b>                       | <b>590</b>        | 1.7         | 21800                               | 4.4                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 113200 | 142400 | 54500  | 47600 |                          |
| <b>310 R4</b>                       | <b>639</b>        | 1.6         | 23500                               | 4.4                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 116000 | 145800 | 56000  | 47600 |                          |
| <b>310 R4</b>                       | <b>757</b>        | 1.3         | 27300                               | 4.3                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 122000 | 153500 | 59200  | 47600 |                          |
| <b>310 R4</b>                       | <b>898</b>        | 1.1         | 25400                               | 3.3                   | 18.0                  | 71-80-90-100-112-132-160 | —                        | —                   | 128500 | 161600 | 62700  | 47600 |                          |
| <b>500</b>                          | <b>310 R2 (B)</b> | <b>12.0</b> | 42                                  | 14100                 | 65                    | 110                      | 160-180-200-225          | —                   | —      | 43400  | 54500  | 18800 | 47600                    |
|                                     | <b>310 R2 (B)</b> | <b>15.4</b> | 32                                  | 14800                 | 53                    | 110                      | 160-180-200-225          | —                   | —      | 46700  | 58800  | 20400 | 47600                    |
|                                     | <b>310 R2 (B)</b> | <b>18.3</b> | 27.3                                | 14700                 | 45                    | 110                      | 160-180-200-225          | —                   | —      | 49200  | 61900  | 21600 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>16.6</b> | 30                                  | 15500                 | 52                    | 110                      | 160-180-200-225-250      | —                   | —      | 47800  | 60100  | 20900 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>21.3</b> | 23.4                                | 16300                 | 43                    | 110                      | 160-180-200-225-250      | —                   | —      | 51500  | 64800  | 22700 | 47600                    |
|                                     | <b>310 R2 (C)</b> | <b>25.3</b> | 19.7                                | 15700                 | 35                    | 110                      | 160-180-200-225-250      | —                   | —      | 54200  | 68200  | 24100 | 47600                    |
|                                     | <b>310 R3</b>     | <b>37.7</b> | 13.2                                | 9250                  | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 61100  | 76900  | 27500 | 47600                    |
|                                     | <b>310 R3</b>     | <b>44.6</b> | 11.2                                | 10900                 | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 64200  | 80800  | 29000 | 47600                    |
|                                     | <b>310 R3</b>     | <b>55.9</b> | 8.9                                 | 13700                 | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 68800  | 86500  | 31300 | 47600                    |
|                                     | <b>310 R3</b>     | <b>65.0</b> | 7.7                                 | 15900                 | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 71900  | 90500  | 32900 | 47600                    |
|                                     | <b>310 R3</b>     | <b>71.8</b> | 7.0                                 | 17600                 | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 74100  | 93200  | 34000 | 47600                    |
|                                     | <b>310 R3</b>     | <b>78.6</b> | 6.4                                 | 18900                 | 13.8                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 76200  | 95800  | 35100 | 47600                    |
|                                     | <b>310 R3</b>     | <b>83.4</b> | 6.0                                 | 20500                 | 14.1                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 77500  | 97500  | 35800 | 47600                    |
|                                     | <b>310 R3</b>     | <b>99.0</b> | 5.1                                 | 18400                 | 10.7                  | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 81600  | 102600 | 37900 | 47600                    |
|                                     | <b>310 R3</b>     | <b>120</b>  | 4.2                                 | 19100                 | 9.2                   | 44                       | 71-80-90-100-112-132-160 | —                   | —      | 86400  | 108700 | 40400 | 47600                    |
|                                     | <b>310 R4</b>     | <b>136</b>  | 3.7                                 | 29000                 | 12.6                  | 30                       | 71-80-90-100-112-132-160 | —                   | —      | 89800  | 112900 | 42100 | 47600                    |
|                                     | <b>310 R4</b>     | <b>160</b>  | 3.1                                 | 30400                 | 11.2                  | 30                       | 71-80-90-100-112-132-160 | —                   | —      | 94300  | 118600 | 44500 | 47600                    |
|                                     | <b>310 R4</b>     | <b>189</b>  | 2.6                                 | 31800                 | 9.9                   | 30                       | 71-80-90-100-112-132-160 | —                   | —      | 99200  | 124700 | 47000 | 47600                    |
|                                     | <b>310 R4</b>     | <b>206</b>  | 2.4                                 | 26400                 | 7.6                   | 30                       | 71-80-90-100-112-132-160 | —                   | —      | 101700 | 127800 | 48400 | 47600                    |
|                                     | <b>310 R4</b>     | <b>234</b>  | 2.1                                 | 32600                 | 8.2                   | 30                       | 71-80-90-100-112-132-160 | —                   | —      | 105700 | 132900 | 50500 | 47600                    |
| <b>310 R4</b>                       | <b>258</b>        | 1.9         | 27400                               | 6.3                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 108800 | 136900 | 52200  | 47600 |                          |
| <b>310 R4</b>                       | <b>283</b>        | 1.8         | 33000                               | 6.9                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 111900 | 140700 | 53800  | 47600 |                          |
| <b>310 R4</b>                       | <b>305</b>        | 1.6         | 28200                               | 5.5                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 114400 | 143800 | 55100  | 47600 |                          |
| <b>310 R4</b>                       | <b>334</b>        | 1.5         | 33300                               | 5.9                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 117600 | 147800 | 56800  | 47600 |                          |
| <b>310 R4</b>                       | <b>363</b>        | 1.4         | 29000                               | 4.7                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 120600 | 151600 | 58400  | 47600 |                          |
| <b>310 R4</b>                       | <b>419</b>        | 1.2         | 33700                               | 4.8                   | 30                    | 71-80-90-100-112-132-160 | —                        | —                   | 125900 | 158300 | 61300  | 47600 |                          |

**B**





**310 R**  340

**34120 Nm**

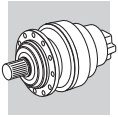
| n <sub>1</sub><br>min <sup>-1</sup> |  | i   | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-----|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |     |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 310 R4  | 454 | 1.1                                 | 25400                 | 3.3                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 128900 | 162100 | 62900 | 47600                    |
|                                     | 310 R4  | 517 | 0.97                                | 30600                 | 3.5                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 R4  | 590 | 0.85                                | 21800                 | 2.2                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 R4  | 639 | 0.78                                | 26000                 | 2.4                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 R4  | 757 | 0.66                                | 28000                 | 2.2                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 133000 | 166000 | 65000 | 47600                    |
|                                     | 310 R4  | 898 | 0.56                                | 26000                 | 1.7                   | 30       | 71-80-90-100-112-132-160  | —                   | —  | 133000 | 166000 | 65000 | 47600                    |

**311 R**  352

**48330 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW                 | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|--------------------------|---|---------------------|--------|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |                          |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ    |                          |
| 1500                                | 311 R2 (B)  | 12.0 | 125                                 | 11900                 | 150                   | 75                       | 180-200-225-250   | —                   | —      | 36900  | 45900  | 13000 | 58300                    |
|                                     | 311 R2 (B)  | 15.4 | 97                                  | 15400                 | 150                   | 75                       | 180-200-225-250   | —                   | —      | 39700  | 49500  | 14100 | 58300                    |
|                                     | 311 R2 (B)  | 18.3 | 82                                  | 16000                 | 146                   | 75                       | 180-200-225-250   | —                   | —      | 41800  | 52100  | 15000 | 58300                    |
|                                     | 311 R2 (C)  | 16.6 | 90                                  | 14400                 | 144                   | 90                       | 180-200-225-250   | —                   | —      | 40600  | 50600  | 14500 | 58300                    |
|                                     | 311 R2 (C)  | 21.3 | 70                                  | 16900                 | 132                   | 90                       | 180-200-225-250   | —                   | —      | 43800  | 54500  | 15800 | 58300                    |
|                                     | 311 R2 (C)  | 25.3 | 59                                  | 17600                 | 116                   | 90                       | 180-200-225-250   | —                   | —      | 46100  | 57400  | 16700 | 58300                    |
|                                     | 311 R3  | 53.0 | 28.3                                | 20300                 | 66                    | 40                       | 132-160-180-200   | —                   | —      | 57500  | 71600  | 21300 | 58300                    |
|                                     | 311 R3  | 63.2 | 23.7                                | 24000                 | 65                    | 40                       | 132-160-180-200   | —                   | —      | 60600  | 75500  | 22600 | 58300                    |
|                                     | 311 R3  | 68.0 | 22.1                                | 24000                 | 61                    | 40                       | 132-160-180-200   | —                   | —      | 62000  | 77200  | 23200 | 58300                    |
|                                     | 311 R3  | 81.1 | 18.5                                | 25900                 | 55                    | 40                       | 132-160-180-200   | —                   | —      | 65400  | 81400  | 24600 | 58300                    |
|                                     | 311 R3  | 96.3 | 15.6                                | 27200                 | 49                    | 40                       | 132-160-180-200   | —                   | —      | 68800  | 85700  | 26000 | 58300                    |
|                                     | 311 R3  | 104  | 14.4                                | 28700                 | 47                    | 40                       | 132-160-180-200   | —                   | —      | 70400  | 87700  | 26700 | 58300                    |
|                                     | 311 R3  | 124  | 12.1                                | 30200                 | 42                    | 40                       | 132-160-180-200   | —                   | —      | 74100  | 92400  | 28300 | 58300                    |
|                                     | 311 R3  | 147  | 10.2                                | 26900                 | 32                    | 40                       | 132-160-180-200   | —                   | —      | 78100  | 97200  | 29900 | 58300                    |
|                                     | 311 R4  | 154  | 9.7                                 | 26400                 | 30                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 79300  | 98700  | 30500 | 58300                    |
|                                     | 311 R4  | 182  | 8.2                                 | 31200                 | 30                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 83300  | 103800 | 32200 | 58300                    |
|                                     | 311 R4  | 198  | 7.6                                 | 33800                 | 30                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 85400  | 106400 | 33100 | 58300                    |
|                                     | 311 R4  | 229  | 6.6                                 | 35300                 | 27                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 89200  | 111100 | 34700 | 58300                    |
|                                     | 311 R4  | 266  | 5.6                                 | 36900                 | 25                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 93300  | 116200 | 36500 | 58300                    |
|                                     | 311 R4  | 294  | 5.1                                 | 38000                 | 23                    | 22                       | 71-80-90-100-112-132-160  | —                   | —      | 96100  | 119700 | 37700 | 58300                    |
| 311 R4                              | 322   | 4.7  | 39000                               | 22                    | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 98800  | 123100 | 38900  | 58300 |                          |
| 311 R4                              | 341   | 4.4  | 39200                               | 20                    | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 100600 | 125300 | 39700  | 58300 |                          |
| 311 R4                              | 413   | 3.6  | 40600                               | 17.4                  | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 106500 | 132600 | 42300  | 58300 |                          |
| 311 R4                              | 438   | 3.4  | 37500                               | 15.2                  | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 108400 | 135000 | 43100  | 58300 |                          |
| 311 R4                              | 490   | 3.1  | 34500                               | 12.5                  | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 112100 | 139600 | 44800  | 58300 |                          |
| 311 R4                              | 520   | 2.9  | 38600                               | 13.2                  | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 114100 | 142100 | 45700  | 58300 |                          |
| 311 R4                              | 629   | 2.4  | 39700                               | 11.2                  | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 120800 | 150500 | 48600  | 58300 |                          |
| 311 R4                              | 746   | 2.0  | 30500                               | 7.3                   | 22                    | 71-80-90-100-112-132-160 | —   | —                   | 127200 | 158400 | 51500  | 58300 |                          |
| 1000                                | 311 R2 (B)  | 12.0 | 83                                  | 13500                 | 125                   | 90                       | 180-200-225-250   | —                   | —      | 41600  | 51800  | 14900 | 58300                    |
|                                     | 311 R2 (B)  | 15.4 | 65                                  | 17400                 | 126                   | 90                       | 180-200-225-250   | —                   | —      | 44900  | 55900  | 16200 | 58300                    |
|                                     | 311 R2 (B)  | 18.3 | 55                                  | 18100                 | 110                   | 90                       | 180-200-225-250   | —                   | —      | 47200  | 58800  | 17100 | 58300                    |
|                                     | 311 R2 (C)  | 16.6 | 60                                  | 16200                 | 109                   | 108                      | 180-200-225-250   | —                   | —      | 45900  | 57200  | 16600 | 58300                    |
|                                     | 311 R2 (C)  | 21.3 | 47                                  | 19100                 | 100                   | 108                      | 180-200-225-250   | —                   | —      | 49500  | 61600  | 18000 | 58300                    |
|                                     | 311 R2 (C)  | 25.3 | 39                                  | 19500                 | 85                    | 108                      | 180-200-225-250   | —                   | —      | 52100  | 64800  | 19100 | 58300                    |
|                                     | 311 R3  | 53.0 | 18.9                                | 22900                 | 50                    | 48                       | 132-160-180-200   | —                   | —      | 65000  | 80900  | 24400 | 58300                    |
|                                     | 311 R3  | 63.2 | 15.8                                | 27100                 | 49                    | 48                       | 132-160-180-200   | —                   | —      | 68500  | 85300  | 25900 | 58300                    |
|                                     | 311 R3  | 68.0 | 14.7                                | 27100                 | 46                    | 48                       | 132-160-180-200   | —                   | —      | 70000  | 87200  | 26500 | 58300                    |
|                                     | 311 R3  | 81.1 | 12.3                                | 29200                 | 41                    | 48                       | 132-160-180-200   | —                   | —      | 73800  | 91900  | 28100 | 58300                    |
|                                     | 311 R3  | 96.3 | 10.4                                | 30700                 | 37                    | 48                       | 132-160-180-200   | —                   | —      | 77700  | 96800  | 29800 | 58300                    |
|                                     | 311 R3  | 104  | 9.6                                 | 32200                 | 35                    | 48                       | 132-160-180-200   | —                   | —      | 79500  | 99100  | 30600 | 58300                    |
|                                     | 311 R3  | 124  | 8.1                                 | 33000                 | 31                    | 48                       | 132-160-180-200   | —                   | —      | 83700  | 104300 | 32400 | 58300                    |
|                                     | 311 R3  | 147  | 6.8                                 | 27000                 | 21                    | 48                       | 132-160-180-200   | —                   | —      | 88200  | 109800 | 34300 | 58300                    |
|                                     | 311 R4  | 154  | 6.5                                 | 29800                 | 23                    | 26                       | 71-80-90-100-112-132-160  | —                   | —      | 89500  | 111500 | 34900 | 58300                    |
|                                     | 311 R4  | 182  | 5.5                                 | 35200                 | 23                    | 26                       | 71-80-90-100-112-132-160  | —                   | —      | 94100  | 117200 | 36900 | 58300                    |
|                                     | 311 R4  | 198  | 5.0                                 | 38200                 | 23                    | 26                       | 71-80-90-100-112-132-160  | —                   | —      | 96500  | 120200 | 37900 | 58300                    |
|                                     | 311 R4  | 229  | 4.4                                 | 39600                 | 21                    | 26                       | 71-80-90-100-112-132-160  | —                   | —      | 100700 | 125500 | 39800 | 58300                    |

**B**



### 311 R

352

### 48330 Nm

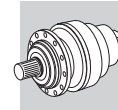
| n <sub>1</sub><br>min <sup>-1</sup> |            | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)                  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|------------|------|-------------------------------------|-----------------------|-----------------------|----------|--------------------------|---------------------|----|--------|--------|-------|--------------------------|
|                                     |            |      |                                     |                       |                       |          |                          | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| <b>1000</b>                         | 311 R4     | 266  | 3.8                                 | 41200                 | 18.3                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 105400 | 131300 | 41800 | 58300                    |
|                                     | 311 R4     | 294  | 3.4                                 | 41000                 | 16.5                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 108600 | 135200 | 43200 | 58300                    |
|                                     | 311 R4     | 322  | 3.1                                 | 43300                 | 15.9                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 111600 | 139000 | 44500 | 58300                    |
|                                     | 311 R4     | 341  | 2.9                                 | 42200                 | 14.6                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 113600 | 141500 | 45400 | 58300                    |
|                                     | 311 R4     | 413  | 2.4                                 | 43500                 | 12.5                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 120200 | 149800 | 48400 | 58300                    |
|                                     | 311 R4     | 438  | 2.3                                 | 40100                 | 10.8                  | 26       | 71-80-90-100-112-132-160 | —                   | —  | 122400 | 152500 | 49400 | 58300                    |
|                                     | 311 R4     | 490  | 2.0                                 | 34700                 | 8.4                   | 26       | 71-80-90-100-112-132-160 | —                   | —  | 126600 | 157700 | 51200 | 58300                    |
|                                     | 311 R4     | 520  | 1.9                                 | 40500                 | 9.2                   | 26       | 71-80-90-100-112-132-160 | —                   | —  | 128800 | 160500 | 52300 | 58300                    |
|                                     | 311 R4     | 629  | 1.6                                 | 41200                 | 7.8                   | 26       | 71-80-90-100-112-132-160 | —                   | —  | 136400 | 169900 | 55700 | 58300                    |
|                                     | 311 R4     | 746  | 1.3                                 | 32500                 | 5.2                   | 26       | 71-80-90-100-112-132-160 | —                   | —  | 143600 | 178900 | 59000 | 58300                    |
| <b>500</b>                          | 311 R2 (B) | 12.0 | 42                                  | 16700                 | 77                    | 150      | 180-200-225-250          | —                   | —  | 51200  | 63800  | 18800 | 58300                    |
|                                     | 311 R2 (B) | 15.4 | 32                                  | 21400                 | 77                    | 150      | 180-200-225-250          | —                   | —  | 55200  | 68800  | 20400 | 58300                    |
|                                     | 311 R2 (B) | 18.3 | 27.3                                | 21400                 | 65                    | 150      | 180-200-225-250          | —                   | —  | 58100  | 72400  | 21600 | 58300                    |
|                                     | 311 R2 (C) | 16.6 | 30                                  | 20000                 | 67                    | 180      | 180-200-225-250          | —                   | —  | 56500  | 70400  | 20900 | 58300                    |
|                                     | 311 R2 (C) | 21.3 | 23.4                                | 23500                 | 61                    | 180      | 180-200-225-250          | —                   | —  | 60900  | 75800  | 22700 | 58300                    |
|                                     | 311 R2 (C) | 25.3 | 19.7                                | 22500                 | 49                    | 180      | 180-200-225-250          | —                   | —  | 64100  | 79800  | 24100 | 58300                    |
|                                     | 311 R3     | 53.0 | 9.4                                 | 28100                 | 30                    | 80       | 132-160-180-200          | —                   | —  | 80000  | 99600  | 30800 | 58300                    |
|                                     | 311 R3     | 63.2 | 7.9                                 | 33400                 | 30                    | 80       | 132-160-180-200          | —                   | —  | 84300  | 105000 | 32600 | 58300                    |
|                                     | 311 R3     | 68.0 | 7.4                                 | 32400                 | 27                    | 80       | 132-160-180-200          | —                   | —  | 86200  | 107400 | 33400 | 58300                    |
|                                     | 311 R3     | 81.1 | 6.2                                 | 36000                 | 25                    | 80       | 132-160-180-200          | —                   | —  | 90900  | 113200 | 35500 | 58300                    |
|                                     | 311 R3     | 96.3 | 5.2                                 | 34300                 | 20                    | 80       | 132-160-180-200          | —                   | —  | 95700  | 119200 | 37500 | 58300                    |
|                                     | 311 R3     | 104  | 4.8                                 | 35500                 | 19.5                  | 80       | 132-160-180-200          | —                   | —  | 97900  | 122000 | 38500 | 58300                    |
|                                     | 311 R3     | 124  | 4.0                                 | 36500                 | 16.9                  | 80       | 132-160-180-200          | —                   | —  | 103100 | 128400 | 40800 | 58300                    |
|                                     | 311 R3     | 147  | 3.4                                 | 28400                 | 11.1                  | 80       | 132-160-180-200          | —                   | —  | 108500 | 135200 | 43200 | 58300                    |
|                                     | 311 R4     | 154  | 3.2                                 | 36700                 | 14.1                  | 44       | 71-80-90-100-112-132-160 | —                   | —  | 110200 | 137300 | 43900 | 58300                    |
|                                     | 311 R4     | 182  | 2.7                                 | 43400                 | 14.1                  | 44       | 71-80-90-100-112-132-160 | —                   | —  | 115800 | 144300 | 46400 | 58300                    |
|                                     | 311 R4     | 198  | 2.5                                 | 43300                 | 12.9                  | 44       | 71-80-90-100-112-132-160 | —                   | —  | 118800 | 148000 | 47700 | 58300                    |
|                                     | 311 R4     | 229  | 2.2                                 | 46200                 | 11.9                  | 44       | 71-80-90-100-112-132-160 | —                   | —  | 124000 | 154500 | 50100 | 58300                    |
|                                     | 311 R4     | 266  | 1.9                                 | 46600                 | 10.4                  | 44       | 71-80-90-100-112-132-160 | —                   | —  | 129700 | 161600 | 52700 | 58300                    |
|                                     | 311 R4     | 294  | 1.7                                 | 44800                 | 9.0                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 133600 | 166500 | 54400 | 58300                    |
|                                     | 311 R4     | 322  | 1.6                                 | 47100                 | 8.7                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 137400 | 171100 | 56100 | 58300                    |
|                                     | 311 R4     | 341  | 1.5                                 | 45400                 | 7.9                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 139800 | 174200 | 57200 | 58300                    |
|                                     | 311 R4     | 413  | 1.2                                 | 46200                 | 6.6                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 148000 | 184400 | 61000 | 58300                    |
|                                     | 311 R4     | 438  | 1.1                                 | 44300                 | 6.0                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 150700 | 187700 | 62200 | 58300                    |
|                                     | 311 R4     | 490  | 1.0                                 | 35200                 | 4.2                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 155800 | 194100 | 64600 | 58300                    |
|                                     | 311 R4     | 520  | 0.96                                | 43000                 | 4.9                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 157000 | 195000 | 65000 | 58300                    |
|                                     | 311 R4     | 629  | 0.80                                | 43000                 | 4.0                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 157000 | 195000 | 65000 | 58300                    |
|                                     | 311 R4     | 746  | 0.67                                | 34000                 | 2.7                   | 44       | 71-80-90-100-112-132-160 | —                   | —  | 157000 | 195000 | 65000 | 58300                    |

### 313 R

364

### 57970 Nm

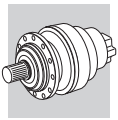
| n <sub>1</sub><br>min <sup>-1</sup> |            | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW        | P (IEC)         | Rn <sub>2</sub> [N] |       |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|------------|------|-------------------------------------|-----------------------|-----------------------|-----------------|-----------------|---------------------|-------|--------|--------|--------|--------------------------|
|                                     |            |      |                                     |                       |                       |                 |                 | MC                  | MZ    | HC/PC  | HZ/PZ  | FZ     |                          |
| <b>1500</b>                         | 313 R2 (B) | 12.2 | 123                                 | 12100                 | 150                   | 75              | 180-200-225-250 | —                   | —     | 45700  | 54100  | 16100  | 86300                    |
|                                     | 313 R2 (B) | 15.9 | 95                                  | 15700                 | 150                   | 75              | 180-200-225-250 | —                   | —     | 49500  | 58600  | 17600  | 86300                    |
|                                     | 313 R2 (B) | 19.1 | 79                                  | 19100                 | 150                   | 75              | 180-200-225-250 | —                   | —     | 52300  | 61900  | 18700  | 86300                    |
|                                     | 313 R2 (C) | 16.8 | 89                                  | 14600                 | 144                   | 90              | 180-200-225-250 | —                   | —     | 50400  | 59600  | 17900  | 105000                   |
|                                     | 313 R2 (C) | 22.0 | 68                                  | 19000                 | 144                   | 90              | 180-200-225-250 | —                   | —     | 54600  | 64600  | 19600  | 105000                   |
|                                     | 313 R2 (C) | 26.4 | 57                                  | 22800                 | 144                   | 90              | 180-200-225-250 | —                   | —     | 57700  | 68300  | 20800  | 105000                   |
|                                     | 313 R3     | 53.7 | 28.0                                | 20500                 | 66                    | 40              | 132-160-180-200 | —                   | —     | 71300  | 84400  | 26400  | 105000                   |
|                                     | 313 R3     | 64.0 | 23.4                                | 24500                 | 66                    | 40              | 132-160-180-200 | —                   | —     | 75200  | 89000  | 28000  | 105000                   |
|                                     | 313 R3     | 69.9 | 21.4                                | 26700                 | 66                    | 40              | 132-160-180-200 | —                   | —     | 77200  | 91400  | 28800  | 105000                   |
|                                     | 313 R3     | 82.2 | 18.3                                | 31400                 | 66                    | 40              | 132-160-180-200 | —                   | —     | 81100  | 95900  | 30400  | 105000                   |
|                                     | 313 R3     | 97.5 | 15.4                                | 37300                 | 66                    | 40              | 132-160-180-200 | —                   | —     | 85300  | 101000 | 32200  | 105000                   |
|                                     | 313 R3     | 107  | 14.0                                | 38800                 | 62                    | 40              | 132-160-180-200 | —                   | —     | 87800  | 103900 | 33200  | 105000                   |
| 313 R3                              | 127        | 11.8 | 40700                               | 55                    | 40                    | 132-160-180-200 | —               | —                   | 92400 | 109400 | 35100  | 105000 |                          |
| 313 R3                              | 153        | 9.8  | 39000                               | 44                    | 40                    | 132-160-180-200 | —               | —                   | 97700 | 115600 | 37400  | 105000 |                          |



| 313 R             |            |                   |                 |                 |       |                          | 57970 Nm                 |                 |        |        |        |                    |        |
|-------------------|------------|-------------------|-----------------|-----------------|-------|--------------------------|--------------------------|-----------------|--------|--------|--------|--------------------|--------|
| n <sub>1</sub>    | i          | n <sub>2</sub>    | M <sub>n2</sub> | P <sub>n1</sub> | Pt    | P (IEC)                  | Rn <sub>2</sub> [N]      |                 |        |        |        | M <sub>2 max</sub> |        |
| min <sup>-1</sup> |            | min <sup>-1</sup> | Nm              | kW              | kW    |                          | MC                       | MZ              | HC/PC  | HZ/PZ  | FZ     | Nm                 |        |
| 1500              | 313 R4     | 185               | 8.1             | 31600           | 30    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 103300 | 122300 | 39800              | 105000 |
|                   | 313 R4     | 201               | 7.5             | 34300           | 30    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 106000 | 125400 | 40900              | 105000 |
|                   | 313 R4     | 237               | 6.3             | 40500           | 30    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 111400 | 131800 | 43200              | 105000 |
|                   | 313 R4     | 281               | 5.3             | 48100           | 30    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 117200 | 138800 | 45800              | 105000 |
|                   | 313 R4     | 309               | 4.9             | 44500           | 26    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 120600 | 142700 | 47200              | 105000 |
|                   | 313 R4     | 346               | 4.3             | 53000           | 27    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 124700 | 147600 | 49000              | 105000 |
|                   | 313 R4     | 387               | 3.9             | 46700           | 21    | 22                       | 71-80-90-100-112-132-160 | —               | —      | 129100 | 152800 | 50900              | 105000 |
|                   | 313 R4     | 450               | 3.3             | 47700           | 18.8  | 22                       | 71-80-90-100-112-132-160 | —               | —      | 135100 | 159800 | 53600              | 105000 |
|                   | 313 R4     | 496               | 3.0             | 52100           | 18.6  | 22                       | 71-80-90-100-112-132-160 | —               | —      | 139000 | 164500 | 55300              | 105000 |
|                   | 313 R4     | 535               | 2.8             | 48900           | 16.2  | 22                       | 71-80-90-100-112-132-160 | —               | —      | 142200 | 168300 | 56700              | 105000 |
|                   | 313 R4     | 647               | 2.3             | 50400           | 13.8  | 22                       | 71-80-90-100-112-132-160 | —               | —      | 150500 | 178100 | 60400              | 105000 |
|                   | 313 R4     | 778               | 1.9             | 44200           | 10.1  | 22                       | 71-80-90-100-112-132-160 | —               | —      | 159100 | 188300 | 64300              | 105000 |
|                   | 1000       | 313 R2 (B)        | 12.2            | 82              | 13700 | 126                      | 90                       | 180-200-225-250 | —      | —      | 51600  | 61100              | 18400  |
| 313 R2 (B)        |            | 15.9              | 63              | 17700           | 124   | 90                       | 180-200-225-250          | —               | —      | 55900  | 66100  | 20100              | 86300  |
| 313 R2 (B)        |            | 19.1              | 52              | 21800           | 127   | 90                       | 180-200-225-250          | —               | —      | 59100  | 69900  | 21400              | 86300  |
| 313 R2 (C)        |            | 16.8              | 59              | 16400           | 109   | 108                      | 180-200-225-250          | —               | —      | 56900  | 67400  | 20500              | 105000 |
| 313 R2 (C)        |            | 22.0              | 46              | 21400           | 109   | 108                      | 180-200-225-250          | —               | —      | 61600  | 72900  | 22400              | 105000 |
| 313 R2 (C)        |            | 26.4              | 38              | 25000           | 105   | 108                      | 180-200-225-250          | —               | —      | 65100  | 77100  | 23800              | 105000 |
| 313 R3            |            | 53.7              | 18.6            | 23200           | 50    | 48                       | 132-160-180-200          | —               | —      | 80600  | 95300  | 30200              | 105000 |
| 313 R3            |            | 64.0              | 15.6            | 27700           | 50    | 48                       | 132-160-180-200          | —               | —      | 84900  | 100500 | 32000              | 105000 |
| 313 R3            |            | 69.9              | 14.3            | 30200           | 50    | 48                       | 132-160-180-200          | —               | —      | 87200  | 103200 | 33000              | 105000 |
| 313 R3            |            | 82.2              | 12.2            | 35500           | 50    | 48                       | 132-160-180-200          | —               | —      | 91500  | 108300 | 34800              | 105000 |
| 313 R3            |            | 97.5              | 10.3            | 42100           | 50    | 48                       | 132-160-180-200          | —               | —      | 96400  | 114100 | 36800              | 105000 |
| 313 R3            |            | 107               | 9.3             | 42800           | 46    | 48                       | 132-160-180-200          | —               | —      | 99100  | 117300 | 38000              | 105000 |
| 313 R3            |            | 127               | 7.9             | 43400           | 39    | 48                       | 132-160-180-200          | —               | —      | 104400 | 123500 | 40200              | 105000 |
| 313 R3            |            | 153               | 6.5             | 39000           | 29    | 48                       | 132-160-180-200          | —               | —      | 110300 | 130600 | 42800              | 105000 |
| 313 R4            |            | 185               | 5.4             | 35700           | 23    | 26                       | 71-80-90-100-112-132-160 | —               | —      | 116700 | 138100 | 45500              | 105000 |
| 313 R4            |            | 201               | 5.0             | 38800           | 23    | 26                       | 71-80-90-100-112-132-160 | —               | —      | 119700 | 141600 | 46800              | 105000 |
| 313 R4            |            | 237               | 4.2             | 45600           | 23    | 26                       | 71-80-90-100-112-132-160 | —               | —      | 125800 | 148900 | 49500              | 105000 |
| 313 R4            |            | 281               | 3.6             | 49700           | 21    | 26                       | 71-80-90-100-112-132-160 | —               | —      | 132400 | 156700 | 52400              | 105000 |
| 313 R4            |            | 309               | 3.2             | 47600           | 18.2  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 136200 | 161200 | 54100              | 105000 |
| 313 R4            |            | 346               | 2.9             | 54500           | 18.6  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 140900 | 166700 | 56100              | 105000 |
| 313 R4            |            | 387               | 2.6             | 49500           | 15.1  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 145800 | 172500 | 58300              | 105000 |
| 313 R4            |            | 450               | 2.2             | 50700           | 13.3  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 152500 | 180500 | 61300              | 105000 |
| 313 R4            |            | 496               | 2.0             | 52200           | 12.5  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 157000 | 185800 | 63300              | 105000 |
| 313 R4            |            | 535               | 1.9             | 52200           | 11.6  | 26                       | 71-80-90-100-112-132-160 | —               | —      | 160600 | 190000 | 64900              | 105000 |
| 313 R4            | 647        | 1.5               | 53900           | 9.9             | 26    | 71-80-90-100-112-132-160 | —                        | —               | 170000 | 201200 | 69200  | 105000             |        |
| 313 R4            | 778        | 1.3               | 47100           | 7.2             | 26    | 71-80-90-100-112-132-160 | —                        | —               | 179700 | 212700 | 73600  | 105000             |        |
| 500               | 313 R2 (B) | 12.2              | 41              | 17000           | 78    | 150                      | 180-200-225-250          | —               | —      | 63600  | 75200  | 23200              | 86300  |
|                   | 313 R2 (B) | 15.9              | 32              | 21900           | 77    | 150                      | 180-200-225-250          | —               | —      | 68800  | 81400  | 25300              | 86300  |
|                   | 313 R2 (B) | 19.1              | 26.2            | 26900           | 78    | 150                      | 180-200-225-250          | —               | —      | 72700  | 86100  | 26900              | 86300  |
|                   | 313 R2 (C) | 16.8              | 29.7            | 20200           | 67    | 180                      | 180-200-225-250          | —               | —      | 70100  | 82900  | 25800              | 105000 |
|                   | 313 R2 (C) | 22.0              | 22.8            | 26400           | 67    | 180                      | 180-200-225-250          | —               | —      | 75900  | 89800  | 28200              | 105000 |
|                   | 313 R2 (C) | 26.4              | 18.9            | 28300           | 60    | 180                      | 180-200-225-250          | —               | —      | 80200  | 94900  | 30000              | 105000 |
|                   | 313 R3     | 53.7              | 9.3             | 28400           | 30    | 80                       | 132-160-180-200          | —               | —      | 99200  | 117400 | 38000              | 105000 |
|                   | 313 R3     | 64.0              | 7.8             | 34100           | 31    | 80                       | 132-160-180-200          | —               | —      | 104600 | 123800 | 40300              | 105000 |
|                   | 313 R3     | 69.9              | 7.1             | 37200           | 31    | 80                       | 132-160-180-200          | —               | —      | 107400 | 127100 | 41500              | 105000 |
|                   | 313 R3     | 82.2              | 6.1             | 43700           | 31    | 80                       | 132-160-180-200          | —               | —      | 112700 | 133400 | 43800              | 105000 |
|                   | 313 R3     | 97.5              | 5.1             | 50000           | 29    | 80                       | 132-160-180-200          | —               | —      | 118700 | 140400 | 46400              | 105000 |
|                   | 313 R3     | 107               | 4.7             | 45100           | 24    | 80                       | 132-160-180-200          | —               | —      | 122000 | 144400 | 47900              | 105000 |
|                   | 313 R3     | 127               | 3.9             | 46600           | 21    | 80                       | 132-160-180-200          | —               | —      | 128500 | 152000 | 50700              | 105000 |
|                   | 313 R3     | 153               | 3.3             | 41100           | 15.4  | 80                       | 132-160-180-200          | —               | —      | 135800 | 160700 | 53900              | 105000 |
|                   | 313 R4     | 185               | 2.7             | 43900           | 14.1  | 44                       | 71-80-90-100-112-132-160 | —               | —      | 143700 | 170000 | 57400              | 105000 |
|                   | 313 R4     | 201               | 2.5             | 47700           | 14.1  | 44                       | 71-80-90-100-112-132-160 | —               | —      | 147300 | 174400 | 59000              | 105000 |
|                   | 313 R4     | 237               | 2.1             | 53000           | 13.2  | 44                       | 71-80-90-100-112-132-160 | —               | —      | 154900 | 183300 | 62400              | 105000 |
|                   | 313 R4     | 281               | 1.8             | 51300           | 10.8  | 44                       | 71-80-90-100-112-132-160 | —               | —      | 163000 | 192900 | 66000              | 105000 |
|                   | 313 R4     | 309               | 1.6             | 53500           | 10.2  | 44                       | 71-80-90-100-112-132-160 | —               | —      | 167700 | 198400 | 68100              | 105000 |
|                   | 313 R4     | 346               | 1.4             | 55200           | 9.5   | 44                       | 71-80-90-100-112-132-160 | —               | —      | 173400 | 205200 | 70700              | 105000 |
|                   | 313 R4     | 387               | 1.3             | 55500           | 8.5   | 44                       | 71-80-90-100-112-132-160 | —               | —      | 179500 | 212400 | 73500              | 105000 |



B







**313 R**  364

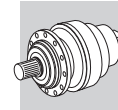
**57970 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i   | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|-----|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |     |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 313 R4  | 450 | 1.1                                 | 57000                 | 7.5                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 187800 | 222200 | 77300 | 105000                   |
|                                     | 313 R4  | 496 | 1.0                                 | 53000                 | 6.3                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 228800 | 79800 | 105000                   |
|                                     | 313 R4  | 535 | 0.94                                | 58000                 | 6.4                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 R4  | 647 | 0.77                                | 58000                 | 5.3                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |
|                                     | 313 R4  | 778 | 0.64                                | 49000                 | 3.7                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 192000 | 231000 | 80000 | 105000                   |

**314 R**  376



**84000 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i          | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|---|------------|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|--------|--------------------------|--------|
|                                     |   |            |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |        |
| 1500                                | 314 R3 (B)  | 51.1       | 29.4                                | 38500                 | 130                   | 55       | 180-200-225   | —                   | —  | 75000  | 88100  | 29200  | 115000                   |        |
|                                     | 314 R3 (B)  | 65.5       | 22.9                                | 49700                 | 130                   | 55       | 180-200-225   | —                   | —  | 80900  | 94900  | 31700  | 115000                   |        |
|                                     | 314 R3 (B)  | 77.8       | 19.3                                | 51500                 | 114                   | 55       | 180-200-225   | —                   | —  | 85100  | 100000 | 33600  | 115000                   |        |
|                                     | 314 R3 (B)  | 82.3       | 18.2                                | 52400                 | 110                   | 55       | 180-200-225   | —                   | —  | 86600  | 101600 | 34200  | 115000                   |        |
|                                     | 314 R3 (B)  | 97.6       | 15.4                                | 55100                 | 97                    | 55       | 180-200-225   | —                   | —  | 91100  | 107000 | 36200  | 115000                   |        |
|                                     | 314 R3 (B)  | 113        | 13.2                                | 48000                 | 73                    | 55       | 180-200-225   | —                   | —  | 95300  | 111900 | 38100  | 115000                   |        |
|                                     | 314 R3 (C)  | 70.7       | 21.2                                | 43900                 | 107                   | 55       | 180-200-225-250   | —                   | —  | 82700  | 97100  | 32500  | 115000                   |        |
|                                     | 314 R3 (C)  | 90.7       | 16.5                                | 47300                 | 90                    | 55       | 180-200-225-250   | —                   | —  | 89200  | 104700 | 35300  | 115000                   |        |
|                                     | 314 R3 (C)  | 108        | 13.9                                | 49800                 | 80                    | 55       | 180-200-225-250   | —                   | —  | 93900  | 110200 | 37400  | 115000                   |        |
|                                     | 314 R3 (C)  | 114        | 13.2                                | 51700                 | 78                    | 55       | 180-200-225-250   | —                   | —  | 95400  | 112100 | 38100  | 115000                   |        |
|                                     | 314 R3 (C)  | 135        | 11.1                                | 60500                 | 77                    | 55       | 180-200-225-250   | —                   | —  | 100500 | 118000 | 40300  | 115000                   |        |
|                                     | 314 R3 (C)  | 157        | 9.5                                 | 52000                 | 57                    | 55       | 180-200-225-250   | —                   | —  | 105100 | 123400 | 42400  | 115000                   |        |
|                                     | 314 R4  | 160        | 9.4                                 | 56200                 | 35                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 105800 | 124200 | 42700  | 115000                   |        |
|                                     | 314 R4  | 189        | 7.9                                 | 59000                 | 35                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 111200 | 130500 | 45100  | 115000                   |        |
|                                     | 314 R4  | 238        | 6.3                                 | 71100                 | 35                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 119000 | 139700 | 48700  | 115000                   |        |
|                                     | 314 R4  | 276        | 5.4                                 | 75700                 | 35                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 124500 | 146200 | 51200  | 115000                   |        |
|                                     | 314 R4  | 354        | 4.2                                 | 78200                 | 35                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 134200 | 157500 | 55600  | 115000                   |        |
|                                     | 314 R4  | 421        | 3.6                                 | 78800                 | 33                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 141300 | 165900 | 58900  | 115000                   |        |
|                                     | 314 R4  | 445        | 3.4                                 | 67800                 | 27                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 143600 | 168700 | 60000  | 115000                   |        |
|                                     | 314 R4  | 528        | 2.8                                 | 68800                 | 23                    | 22       | 71-80-90-100-112-132-160  | —                   | —  | 151200 | 177500 | 63500  | 115000                   |        |
|                                     | 314 R4  | 614        | 2.4                                 | 57600                 | 16.7                  | 22       | 71-80-90-100-112-132-160  | —                   | —  | 158200 | 185800 | 66800  | 115000                   |        |
|                                     | 1000  | 314 R3 (B) | 51.1                                | 19.6                  | 43500                 | 98       | 66  | 180-200-225         | —  | —      | 84700  | 99500  | 33400                    | 115000 |
|                                     |   | 314 R3 (B) | 65.5                                | 15.3                  | 56500                 | 99       | 66  | 180-200-225         | —  | —      | 91300  | 107200 | 36300                    | 115000 |
|                                     |   | 314 R3 (B) | 77.8                                | 12.9                  | 58000                 | 86       | 66  | 180-200-225         | —  | —      | 96100  | 112900 | 38400                    | 115000 |
|                                     |   | 314 R3 (B) | 82.3                                | 12.2                  | 58900                 | 82       | 66  | 180-200-225         | —  | —      | 97800  | 114800 | 39100                    | 115000 |
|                                     |   | 314 R3 (B) | 97.6                                | 10.2                  | 62000                 | 73       | 66  | 180-200-225         | —  | —      | 102900 | 120800 | 41400                    | 115000 |
|                                     |   | 314 R3 (B) | 113                                 | 8.8                   | 52000                 | 53       | 66  | 180-200-225         | —  | —      | 107700 | 126400 | 43600                    | 115000 |
| 314 R3 (C)                          |   | 70.7       | 14.1                                | 49600                 | 81                    | 66       | 180-200-225-250   | —                   | —  | 93400  | 109700 | 37200  | 115000                   |        |
| 314 R3 (C)                          |   | 90.7       | 11.0                                | 53500                 | 68                    | 66       | 180-200-225-250   | —                   | —  | 100700 | 118200 | 40400  | 115000                   |        |
| 314 R3 (C)                          |   | 108        | 9.3                                 | 56300                 | 60                    | 66       | 180-200-225-250   | —                   | —  | 106000 | 124500 | 42800  | 115000                   |        |
| 314 R3 (C)                          |   | 114        | 8.8                                 | 57700                 | 58                    | 66       | 180-200-225-250   | —                   | —  | 107800 | 126600 | 43600  | 115000                   |        |
| 314 R3 (C)                          |   | 135        | 7.4                                 | 63700                 | 54                    | 66       | 180-200-225-250   | —                   | —  | 113500 | 133200 | 46200  | 115000                   |        |
| 314 R3 (C)                          |   | 157        | 6.4                                 | 52000                 | 38                    | 66       | 180-200-225-250   | —                   | —  | 118700 | 139400 | 48600  | 115000                   |        |
| 314 R4                              |   | 160        | 6.2                                 | 63400                 | 35                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 119500 | 140300 | 48900  | 115000                   |        |
| 314 R4                              |   | 189        | 5.3                                 | 66700                 | 35                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 125600 | 147400 | 51700  | 115000                   |        |
| 314 R4                              |   | 238        | 4.2                                 | 77000                 | 35                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 134400 | 157800 | 55700  | 115000                   |        |
| 314 R4                              |   | 276        | 3.6                                 | 78700                 | 34                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 140600 | 165100 | 58600  | 115000                   |        |
| 314 R4                              |   | 354        | 2.8                                 | 79600                 | 27                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 151500 | 177900 | 63700  | 115000                   |        |
| 314 R4                              |   | 421        | 2.4                                 | 80200                 | 23                    | 26       | 71-80-90-100-112-132-160  | —                   | —  | 159500 | 187300 | 67400  | 115000                   |        |
| 314 R4                              |   | 445        | 2.2                                 | 70700                 | 18.8                  | 26       | 71-80-90-100-112-132-160  | —                   | —  | 162200 | 190500 | 68700  | 115000                   |        |
| 314 R4                              |   | 528        | 1.9                                 | 72400                 | 16.2                  | 26       | 71-80-90-100-112-132-160  | —                   | —  | 170800 | 200500 | 72700  | 115000                   |        |
| 314 R4                              |   | 614        | 1.6                                 | 61600                 | 11.9                  | 26       | 71-80-90-100-112-132-160  | —                   | —  | 178700 | 209800 | 76500  | 115000                   |        |
| 500                                 |   | 314 R3 (B) | 51.1                                | 9.8                   | 53600                 | 60       | 110   | 180-200-225         | —  | —      | 104300 | 122500 | 42100                    | 115000 |
|                                     |   | 314 R3 (B) | 65.5                                | 7.6                   | 69400                 | 61       | 110   | 180-200-225         | —  | —      | 112400 | 132000 | 45700                    | 115000 |
|                                     |   | 314 R3 (B) | 77.8                                | 6.4                   | 71700                 | 53       | 110   | 180-200-225         | —  | —      | 118400 | 139000 | 48400                    | 115000 |
|                                     |   | 314 R3 (B) | 82.3                                | 6.1                   | 64600                 | 45       | 110   | 180-200-225         | —  | —      | 120400 | 141300 | 49300                    | 115000 |
|                                     |   | 314 R3 (B) | 97.6                                | 5.1                   | 65400                 | 38       | 110   | 180-200-225         | —  | —      | 126700 | 148800 | 52200                    | 115000 |
|                                     |   | 314 R3 (B) | 113                                 | 4.4                   | 52900                 | 27       | 110   | 180-200-225         | —  | —      | 132600 | 155600 | 54900                    | 115000 |





**314 R**  376

**84000 Nm**

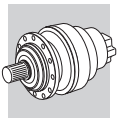
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |       | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|-------|--------------------------|
|                                     |   |      |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ    |                          |
| 500                                 | 314 R3 (C)  | 70.7 | 7.1                                 | 61100                 | 50                    | 110      | 180-200-225-250   | —                   | —  | 115000 | 135100 | 46900 | 115000                   |
|                                     | 314 R3 (C)  | 90.7 | 5.5                                 | 65800                 | 42                    | 110      | 180-200-225-250   | —                   | —  | 124000 | 145500 | 51000 | 115000                   |
|                                     | 314 R3 (C)  | 108  | 4.6                                 | 69000                 | 37                    | 110      | 180-200-225-250   | —                   | —  | 130500 | 153200 | 53900 | 115000                   |
|                                     | 314 R3 (C)  | 114  | 4.4                                 | 66200                 | 33                    | 110      | 180-200-225-250   | —                   | —  | 132700 | 155800 | 55000 | 115000                   |
|                                     | 314 R3 (C)  | 135  | 3.7                                 | 67200                 | 29                    | 110      | 180-200-225-250   | —                   | —  | 139700 | 164000 | 58200 | 115000                   |
|                                     | 314 R3 (C)  | 157  | 3.2                                 | 55500                 | 20                    | 110      | 180-200-225-250   | —                   | —  | 146200 | 171600 | 61200 | 115000                   |
|                                     | 314 R4  | 160  | 3.1                                 | 74700                 | 28                    | 44       | 71-80-90-100-112-132-160  | —                   | —  | 147100 | 172700 | 61600 | 115000                   |
|                                     | 314 R4  | 189  | 2.6                                 | 78200                 | 24                    | 44       | 71-80-90-100-112-132-160  | —                   | —  | 154600 | 181500 | 65100 | 115000                   |
|                                     | 314 R4  | 238  | 2.1                                 | 80700                 | 20                    | 44       | 71-80-90-100-112-132-160  | —                   | —  | 165500 | 194300 | 70200 | 115000                   |
|                                     | 314 R4  | 276  | 1.8                                 | 81400                 | 17.4                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 173100 | 203300 | 73800 | 115000                   |
|                                     | 314 R4  | 354  | 1.4                                 | 82500                 | 13.8                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 186600 | 219100 | 80300 | 115000                   |
|                                     | 314 R4  | 421  | 1.2                                 | 83200                 | 11.7                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 196400 | 230600 | 85000 | 115000                   |
|                                     | 314 R4  | 445  | 1.1                                 | 77900                 | 10.4                  | 44       | 71-80-90-100-112-132-160  | —                   | —  | 199700 | 234500 | 86600 | 115000                   |
|                                     | 314 R4  | 528  | 0.95                                | 79200                 | 8.9                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 206000 | 243000 | 90000 | 115000                   |
|                                     | 314 R4  | 614  | 0.81                                | 66800                 | 6.4                   | 44       | 71-80-90-100-112-132-160  | —                   | —  | 206000 | 243000 | 90000 | 115000                   |

**315 R**  388

**105000 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW        | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|-----------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                 |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 315 R3 (B)  | 51.1 | 29.4                                | 48100                 | 150                   | 75              | 180-200-225-250   | —                   | —      | 75000  | 88100  | 29200  | 135000                   |
|                                     | 315 R3 (B)  | 65.5 | 22.9                                | 62100                 | 150                   | 75              | 180-200-225-250   | —                   | —      | 80900  | 94900  | 31700  | 135000                   |
|                                     | 315 R3 (B)  | 77.8 | 19.3                                | 64400                 | 143                   | 75              | 180-200-225-250   | —                   | —      | 85100  | 100000 | 33600  | 135000                   |
|                                     | 315 R3 (B)  | 82.3 | 18.2                                | 65500                 | 137                   | 75              | 180-200-225-250   | —                   | —      | 86600  | 101600 | 34200  | 135000                   |
|                                     | 315 R3 (B)  | 97.6 | 15.4                                | 68800                 | 121                   | 75              | 180-200-225-250   | —                   | —      | 91100  | 107000 | 36200  | 135000                   |
|                                     | 315 R3 (B)  | 113  | 13.2                                | 60000                 | 91                    | 75              | 180-200-225-250   | —                   | —      | 95300  | 111900 | 38100  | 135000                   |
|                                     | 315 R3 (C)  | 70.7 | 21.2                                | 54900                 | 134                   | 90              | 180-200-225-250   | —                   | —      | 82700  | 97100  | 32500  | 135000                   |
|                                     | 315 R3 (C)  | 90.7 | 16.5                                | 59200                 | 112                   | 90              | 180-200-225-250   | —                   | —      | 89200  | 104700 | 35300  | 135000                   |
|                                     | 315 R3 (C)  | 108  | 13.9                                | 62300                 | 100                   | 90              | 180-200-225-250   | —                   | —      | 93900  | 110200 | 37400  | 135000                   |
|                                     | 315 R3 (C)  | 114  | 13.2                                | 64700                 | 98                    | 90              | 180-200-225-250   | —                   | —      | 95400  | 112100 | 38100  | 135000                   |
|                                     | 315 R3 (C)  | 135  | 11.1                                | 75700                 | 96                    | 90              | 180-200-225-250   | —                   | —      | 100500 | 118000 | 40300  | 135000                   |
|                                     | 315 R3 (C)  | 157  | 9.5                                 | 65000                 | 71                    | 90              | 180-200-225-250   | —                   | —      | 105100 | 123400 | 42400  | 135000                   |
|                                     | 315 R4  | 225  | 6.7                                 | 77700                 | 61                    | 40              | 132-160-180-200   | —                   | —      | 117100 | 137500 | 47800  | 135000                   |
|                                     | 315 R4  | 269  | 5.6                                 | 82000                 | 54                    | 40              | 132-160-180-200   | —                   | —      | 123500 | 145000 | 50700  | 135000                   |
|                                     | 315 R4  | 345  | 4.3                                 | 96000                 | 49                    | 40              | 132-160-180-200   | —                   | —      | 133100 | 156200 | 55100  | 135000                   |
|                                     | 315 R4  | 409  | 3.7                                 | 98300                 | 43                    | 40              | 132-160-180-200   | —                   | —      | 140100 | 164500 | 58400  | 135000                   |
|                                     | 315 R4  | 525  | 2.9                                 | 99400                 | 34                    | 40              | 132-160-180-200   | —                   | —      | 151000 | 177300 | 63400  | 135000                   |
|                                     | 315 R4  | 623  | 2.4                                 | 100200                | 29                    | 40              | 132-160-180-200   | —                   | —      | 158900 | 186600 | 67200  | 135000                   |
|                                     | 315 R4  | 659  | 2.3                                 | 88200                 | 24                    | 40              | 132-160-180-200   | —                   | —      | 161600 | 189800 | 68400  | 135000                   |
|                                     | 315 R4  | 782  | 1.9                                 | 90300                 | 20                    | 40              | 132-160-180-200   | —                   | —      | 170200 | 199800 | 72400  | 135000                   |
| 315 R4                              | 909   | 1.6  | 76900                               | 15.0                  | 40                    | 132-160-180-200 | —   | —                   | 178000 | 209000 | 76200  | 135000 |                          |
| 1000                                | 315 R3 (B)  | 51.1 | 19.6                                | 54400                 | 122                   | 90              | 180-200-225-250   | —                   | —      | 84700  | 99500  | 33400  | 135000                   |
|                                     | 315 R3 (B)  | 65.5 | 15.3                                | 70700                 | 124                   | 90              | 180-200-225-250   | —                   | —      | 91300  | 107200 | 36300  | 135000                   |
|                                     | 315 R3 (B)  | 77.8 | 12.9                                | 72500                 | 107                   | 90              | 180-200-225-250   | —                   | —      | 96100  | 112900 | 38400  | 135000                   |
|                                     | 315 R3 (B)  | 82.3 | 12.2                                | 73700                 | 103                   | 90              | 180-200-225-250   | —                   | —      | 97800  | 114800 | 39100  | 135000                   |
|                                     | 315 R3 (B)  | 97.6 | 10.2                                | 77500                 | 91                    | 90              | 180-200-225-250   | —                   | —      | 102900 | 120800 | 41400  | 135000                   |
|                                     | 315 R3 (B)  | 113  | 8.8                                 | 65000                 | 66                    | 90              | 180-200-225-250   | —                   | —      | 107700 | 126400 | 43600  | 135000                   |
|                                     | 315 R3 (C)  | 70.7 | 14.1                                | 62000                 | 101                   | 108             | 180-200-225-250   | —                   | —      | 93400  | 109700 | 37200  | 135000                   |
|                                     | 315 R3 (C)  | 90.7 | 11.0                                | 66800                 | 85                    | 108             | 180-200-225-250   | —                   | —      | 100700 | 118200 | 40400  | 135000                   |
|                                     | 315 R3 (C)  | 108  | 9.3                                 | 70400                 | 75                    | 108             | 180-200-225-250   | —                   | —      | 106000 | 124500 | 42800  | 135000                   |
|                                     | 315 R3 (C)  | 114  | 8.8                                 | 72100                 | 73                    | 108             | 180-200-225-250   | —                   | —      | 107800 | 126600 | 43600  | 135000                   |
|                                     | 315 R3 (C)  | 135  | 7.4                                 | 79600                 | 68                    | 108             | 180-200-225-250   | —                   | —      | 113500 | 133200 | 46200  | 135000                   |
|                                     | 315 R3 (C)  | 157  | 6.4                                 | 65000                 | 47                    | 108             | 180-200-225-250   | —                   | —      | 118700 | 139400 | 48600  | 135000                   |
|                                     | 315 R4  | 225  | 4.4                                 | 86800                 | 46                    | 48              | 132-160-180-200   | —                   | —      | 132300 | 155300 | 54800  | 135000                   |
|                                     | 315 R4  | 269  | 3.7                                 | 90500                 | 40                    | 48              | 132-160-180-200   | —                   | —      | 139500 | 163700 | 58100  | 135000                   |
|                                     | 315 R4  | 345  | 2.9                                 | 98900                 | 34                    | 48              | 132-160-180-200   | —                   | —      | 150300 | 176500 | 63100  | 135000                   |
|                                     | 315 R4  | 409  | 2.4                                 | 100100                | 29                    | 48              | 132-160-180-200   | —                   | —      | 158200 | 185800 | 66800  | 135000                   |
|                                     | 315 R4  | 525  | 1.9                                 | 101500                | 23                    | 48              | 132-160-180-200   | —                   | —      | 170500 | 200200 | 72600  | 135000                   |

**B**

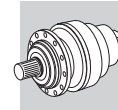


|              |     |                  |
|--------------|-----|------------------|
| <b>315 R</b> | 388 | <b>105000 Nm</b> |
|--------------|-----|------------------|

| n <sub>1</sub><br>min <sup>-1</sup> | i          | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) | Rn <sub>2</sub> [N] |    |       |        |        | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|------------|-------------------------------------|-----------------------|-----------------------|----------|---------|---------------------|----|-------|--------|--------|--------------------------|--------|
|                                     |            |                                     |                       |                       |          |         | MC                  | MZ | HC/PC | HZ/PZ  | FZ     |                          |        |
| <b>1000</b>                         | 315 R4     | 623                                 | 1.6                   | 102400                | 19.4     | 48      | 132-160-180-200     | —  | —     | 179500 | 210800 | 76900                    | 135000 |
|                                     | 315 R4     | 659                                 | 1.5                   | 93300                 | 16.8     | 48      | 132-160-180-200     | —  | —     | 182500 | 214300 | 78300                    | 135000 |
|                                     | 315 R4     | 782                                 | 1.3                   | 95600                 | 14.5     | 48      | 132-160-180-200     | —  | —     | 192200 | 225600 | 82900                    | 135000 |
|                                     | 315 R4     | 909                                 | 1.1                   | 82200                 | 10.7     | 48      | 132-160-180-200     | —  | —     | 201000 | 236000 | 87200                    | 135000 |
| <b>500</b>                          | 315 R3 (B) | 51.1                                | 9.8                   | 67000                 | 75       | 150     | 180-200-225-250     | —  | —     | 104300 | 122500 | 42100                    | 135000 |
|                                     | 315 R3 (B) | 65.5                                | 7.6                   | 86800                 | 76       | 150     | 180-200-225-250     | —  | —     | 112400 | 132000 | 45700                    | 135000 |
|                                     | 315 R3 (B) | 77.8                                | 6.4                   | 89600                 | 66       | 150     | 180-200-225-250     | —  | —     | 118400 | 139000 | 48400                    | 135000 |
|                                     | 315 R3 (B) | 82.3                                | 6.1                   | 80700                 | 56       | 150     | 180-200-225-250     | —  | —     | 120400 | 141300 | 49300                    | 135000 |
|                                     | 315 R3 (B) | 97.6                                | 5.1                   | 81700                 | 48       | 150     | 180-200-225-250     | —  | —     | 126700 | 148800 | 52200                    | 135000 |
|                                     | 315 R3 (B) | 113                                 | 4.4                   | 66200                 | 33       | 150     | 180-200-225-250     | —  | —     | 132600 | 155600 | 54900                    | 135000 |
|                                     | 315 R3 (C) | 70.7                                | 7.1                   | 76400                 | 62       | 180     | 180-200-225-250     | —  | —     | 115000 | 135100 | 46900                    | 135000 |
|                                     | 315 R3 (C) | 90.7                                | 5.5                   | 82300                 | 52       | 180     | 180-200-225-250     | —  | —     | 124000 | 145500 | 51000                    | 135000 |
|                                     | 315 R3 (C) | 108                                 | 4.6                   | 86200                 | 46       | 180     | 180-200-225-250     | —  | —     | 130500 | 153200 | 53900                    | 135000 |
|                                     | 315 R3 (C) | 114                                 | 4.4                   | 82800                 | 42       | 180     | 180-200-225-250     | —  | —     | 132700 | 155800 | 55000                    | 135000 |
|                                     | 315 R3 (C) | 135                                 | 3.7                   | 84000                 | 36       | 180     | 180-200-225-250     | —  | —     | 139700 | 164000 | 58200                    | 135000 |
|                                     | 315 R3 (C) | 157                                 | 3.2                   | 69300                 | 25       | 180     | 180-200-225-250     | —  | —     | 146200 | 171600 | 61200                    | 135000 |
|                                     | 315 R4     | 225                                 | 2.2                   | 98500                 | 26       | 80      | 132-160-180-200     | —  | —     | 162800 | 191200 | 69000                    | 135000 |
|                                     | 315 R4     | 269                                 | 1.9                   | 100900                | 22       | 80      | 132-160-180-200     | —  | —     | 171700 | 201600 | 73200                    | 135000 |
|                                     | 315 R4     | 345                                 | 1.4                   | 102900                | 17.7     | 80      | 132-160-180-200     | —  | —     | 185000 | 217200 | 79500                    | 135000 |
|                                     | 315 R4     | 409                                 | 1.2                   | 103900                | 15.0     | 80      | 132-160-180-200     | —  | —     | 194800 | 228700 | 84200                    | 135000 |
|                                     | 315 R4     | 525                                 | 0.95                  | 105000                | 11.8     | 80      | 132-160-180-200     | —  | —     | 206000 | 243000 | 90000                    | 135000 |
|                                     | 315 R4     | 623                                 | 0.80                  | 105000                | 10.0     | 80      | 132-160-180-200     | —  | —     | 206000 | 243000 | 90000                    | 135000 |
|                                     | 315 R4     | 659                                 | 0.76                  | 99000                 | 8.9      | 80      | 132-160-180-200     | —  | —     | 206000 | 243000 | 90000                    | 135000 |
|                                     | 315 R4     | 782                                 | 0.64                  | 99000                 | 7.5      | 80      | 132-160-180-200     | —  | —     | 206000 | 243000 | 90000                    | 135000 |
|                                     | 315 R4     | 909                                 | 0.55                  | 83500                 | 5.4      | 80      | 132-160-180-200     | —  | —     | 206000 | 243000 | 90000                    | 135000 |



|              |     |                  |
|--------------|-----|------------------|
| <b>316 R</b> | 400 | <b>138820 Nm</b> |
|--------------|-----|------------------|

| n <sub>1</sub><br>min <sup>-1</sup> | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) | Rn <sub>2</sub> [N] |                 |       |        |        | M <sub>2 max</sub><br>Nm |        |        |
|-------------------------------------|-------------|-------------------------------------|-----------------------|-----------------------|----------|---------|---------------------|-----------------|-------|--------|--------|--------------------------|--------|--------|
|                                     |             |                                     |                       |                       |          |         | MC                  | MZ              | HC/PC | HZ/PZ  | FZ     |                          |        |        |
| <b>1500</b>                         | 316 R3 (B)  | 51.1                                | 29.4                  | 50000                 | 150      | 75      | 180-200-225-250     | —               | —     | 124800 | 138800 | 48600                    | 192000 |        |
|                                     | 316 R3 (B)  | 65.5                                | 22.9                  | 63800                 | 150      | 75      | 180-200-225-250     | —               | —     | 134500 | 149500 | 52800                    | 192000 |        |
|                                     | 316 R3 (B)  | 77.8                                | 19.3                  | 65800                 | 146      | 75      | 180-200-225-250     | —               | —     | 141600 | 157400 | 55900                    | 192000 |        |
|                                     | 316 R3 (C)  | 70.7                                | 21.2                  | 59300                 | 144      | 90      | 180-200-225-250     | —               | —     | 137600 | 153000 | 54200                    | 192000 |        |
|                                     | 316 R3 (C)  | 90.7                                | 16.5                  | 69800                 | 132      | 90      | 180-200-225-250     | —               | —     | 148200 | 164900 | 58900                    | 192000 |        |
|                                     | 316 R3 (C)  | 108                                 | 13.9                  | 72500                 | 116      | 90      | 180-200-225-250     | —               | —     | 156100 | 173600 | 62300                    | 192000 |        |
|                                     | 316 R4      | 225                                 | 6.7                   | 94500                 | 74       | 45      | 132-160-180-200     | —               | —     | 194700 | 216600 | 79700                    | 192000 |        |
|                                     | 316 R4      | 269                                 | 5.6                   | 99700                 | 66       | 45      | 132-160-180-200     | —               | —     | 205300 | 228300 | 84600                    | 192000 |        |
|                                     | 316 R4      | 289                                 | 5.2                   | 105700                | 65       | 45      | 132-160-180-200     | —               | —     | 209900 | 233400 | 86600                    | 192000 |        |
|                                     | 316 R4      | 345                                 | 4.3                   | 107300                | 55       | 45      | 132-160-180-200     | —               | —     | 221300 | 246100 | 91900                    | 192000 |        |
|                                     | 316 R4      | 409                                 | 3.7                   | 112700                | 49       | 45      | 132-160-180-200     | —               | —     | 232900 | 259100 | 97300                    | 192000 |        |
|                                     | 316 R4      | 443                                 | 3.4                   | 117300                | 47       | 45      | 132-160-180-200     | —               | —     | 238500 | 265200 | 99900                    | 192000 |        |
|                                     | 316 R4      | 525                                 | 2.9                   | 118900                | 40       | 45      | 132-160-180-200     | —               | —     | 251000 | 279200 | 105700                   | 192000 |        |
|                                     | 316 R4      | 623                                 | 2.4                   | 115400                | 33       | 45      | 132-160-180-200     | —               | —     | 264300 | 293900 | 111900                   | 192000 |        |
|                                     | <b>1000</b> | 316 R3 (B)                          | 51.1                  | 19.6                  | 56900    | 128     | 90                  | 180-200-225-250 | —     | —      | 140900 | 156700                   | 55700  | 192000 |
|                                     |             | 316 R3 (B)                          | 65.5                  | 15.3                  | 72400    | 127     | 90                  | 180-200-225-250 | —     | —      | 151900 | 168900                   | 60500  | 192000 |
| 316 R3 (B)                          |             | 77.8                                | 12.9                  | 74300                 | 110      | 90      | 180-200-225-250     | —               | —     | 159900 | 177800 | 64000                    | 192000 |        |
| 316 R3 (C)                          |             | 70.7                                | 14.1                  | 66900                 | 109      | 108     | 180-200-225-250     | —               | —     | 155300 | 172800 | 62000                    | 192000 |        |
| 316 R3 (C)                          |             | 90.7                                | 11.0                  | 78800                 | 100      | 108     | 180-200-225-250     | —               | —     | 167400 | 186200 | 67400                    | 192000 |        |
| 316 R3 (C)                          |             | 108                                 | 9.3                   | 81900                 | 87       | 108     | 180-200-225-250     | —               | —     | 176200 | 196000 | 71400                    | 192000 |        |
| 316 R4                              |             | 225                                 | 4.4                   | 106600                | 56       | 54      | 132-160-180-200     | —               | —     | 219900 | 244600 | 91300                    | 192000 |        |
| 316 R4                              |             | 269                                 | 3.7                   | 112200                | 49       | 54      | 132-160-180-200     | —               | —     | 231900 | 257900 | 96800                    | 192000 |        |
| 316 R4                              |             | 289                                 | 3.5                   | 116700                | 48       | 54      | 132-160-180-200     | —               | —     | 237000 | 263600 | 99200                    | 192000 |        |
| 316 R4                              |             | 345                                 | 2.9                   | 120700                | 41       | 54      | 132-160-180-200     | —               | —     | 249900 | 277900 | 105200                   | 192000 |        |
| 316 R4                              |             | 409                                 | 2.4                   | 126200                | 36       | 54      | 132-160-180-200     | —               | —     | 263100 | 292600 | 111400                   | 192000 |        |
| 316 R4                              |             | 443                                 | 2.3                   | 127400                | 34       | 54      | 132-160-180-200     | —               | —     | 269300 | 299500 | 114300                   | 192000 |        |
| 316 R4                              |             | 525                                 | 1.9                   | 127500                | 29       | 54      | 132-160-180-200     | —               | —     | 283500 | 315300 | 121000                   | 192000 |        |
| 316 R4                              |             | 623                                 | 1.6                   | 119300                | 23       | 54      | 132-160-180-200     | —               | —     | 298500 | 331900 | 128100                   | 192000 |        |





**316 R**  400

**138820 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|---------------------|----|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |          |   | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| 500                                 | 316 R3 (B)  | 51.1 | 9.8                                 | 70800                 | 79                    | 150      | 180-200-225-250   | —                   | —  | 173500 | 192900 | 70100  | 192000                   |
|                                     | 316 R3 (B)  | 65.5 | 7.6                                 | 90400                 | 79                    | 150      | 180-200-225-250   | —                   | —  | 187000 | 207900 | 76200  | 192000                   |
|                                     | 316 R3 (B)  | 77.8 | 6.4                                 | 91500                 | 67                    | 150      | 180-200-225-250   | —                   | —  | 196800 | 218900 | 80700  | 192000                   |
|                                     | 316 R3 (C)  | 70.7 | 7.1                                 | 82400                 | 67                    | 180      | 180-200-225-250   | —                   | —  | 191300 | 212700 | 78100  | 192000                   |
|                                     | 316 R3 (C)  | 90.7 | 5.5                                 | 97000                 | 61                    | 180      | 180-200-225-250   | —                   | —  | 206100 | 229200 | 84900  | 192000                   |
|                                     | 316 R3 (C)  | 108  | 4.6                                 | 99600                 | 53                    | 180      | 180-200-225-250   | —                   | —  | 217000 | 241300 | 89900  | 192000                   |
|                                     | 316 R4  | 225  | 2.2                                 | 127600                | 34                    | 90       | 132-160-180-200   | —                   | —  | 270700 | 301100 | 115000 | 192000                   |
|                                     | 316 R4  | 269  | 1.9                                 | 130000                | 29                    | 90       | 132-160-180-200   | —                   | —  | 285500 | 317500 | 122000 | 192000                   |
|                                     | 316 R4  | 289  | 1.7                                 | 131000                | 27                    | 90       | 132-160-180-200   | —                   | —  | 291800 | 324500 | 124900 | 192000                   |
|                                     | 316 R4  | 345  | 1.4                                 | 133500                | 23                    | 90       | 132-160-180-200   | —                   | —  | 307700 | 342200 | 132500 | 192000                   |
|                                     | 316 R4  | 409  | 1.2                                 | 135900                | 19.6                  | 90       | 132-160-180-200   | —                   | —  | 323900 | 360200 | 140300 | 192000                   |
|                                     | 316 R4  | 443  | 1.1                                 | 137000                | 18.3                  | 90       | 132-160-180-200   | —                   | —  | 331600 | 368700 | 144000 | 192000                   |
|                                     | 316 R4  | 525  | 0.95                                | 138800                | 15.6                  | 90       | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |
|                                     | 316 R4  | 623  | 0.80                                | 124000                | 11.8                  | 90       | 132-160-180-200   | —                   | —  | 345000 | 385000 | 150000 | 192000                   |

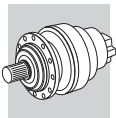
**317 R**  410

**187860 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW        | P (IEC)  | Rn <sub>2</sub> [N] |        |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|-----------------|---|---------------------|--------|--------|--------|--------|--------------------------|
|                                     |   |      |                                     |                       |                       |                 |   | MC                  | MZ     | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 317 R3 (B)  | 49.8 | 30                                  | 46900                 | 150                   | 90              | 180-200-225-250   | —                   | —      | 159200 | 169500 | 48200  | 393000                   |
|                                     | 317 R3 (B)  | 64.9 | 23.1                                | 61200                 | 150                   | 90              | 180-200-225-250   | —                   | —      | 172400 | 183500 | 52700  | 393000                   |
|                                     | 317 R3 (B)  | 78.1 | 19.2                                | 75100                 | 150                   | 90              | 180-200-225-250   | —                   | —      | 182200 | 194000 | 56000  | 393000                   |
|                                     | 317 R3 (B)  | 83.3 | 18.0                                | 80200                 | 150                   | 90              | 180-200-225-250   | —                   | —      | 185800 | 197800 | 57200  | 393000                   |
|                                     | 317 R3 (B)  | 100  | 15.0                                | 96200                 | 150                   | 90              | 180-200-225-250   | —                   | —      | 196400 | 209100 | 60900  | 393000                   |
|                                     | 317 R3 (B)  | 119  | 12.6                                | 111000                | 150                   | 90              | 180-200-225-250   | —                   | —      | 206700 | 220100 | 64400  | 393000                   |
|                                     | 317 R3 (C)  | 68.9 | 21.8                                | 57800                 | 144                   | 100             | 180-200-225-250   | —                   | —      | 175500 | 186900 | 53700  | 393000                   |
|                                     | 317 R3 (C)  | 89.8 | 16.7                                | 75300                 | 144                   | 100             | 180-200-225-250   | —                   | —      | 190000 | 202300 | 58700  | 393000                   |
|                                     | 317 R3 (C)  | 108  | 13.9                                | 90600                 | 144                   | 100             | 180-200-225-250   | —                   | —      | 200900 | 213900 | 62400  | 393000                   |
|                                     | 317 R3 (C)  | 115  | 13.0                                | 96600                 | 144                   | 100             | 180-200-225-250   | —                   | —      | 204800 | 218100 | 63800  | 393000                   |
|                                     | 317 R3 (C)  | 139  | 10.8                                | 116300                | 144                   | 100             | 180-200-225-250   | —                   | —      | 216500 | 230500 | 67800  | 393000                   |
|                                     | 317 R3 (C)  | 165  | 9.1                                 | 118900                | 124                   | 100             | 180-200-225-250   | —                   | —      | 227900 | 242700 | 71800  | 393000                   |
|                                     | 317 R4  | 220  | 6.8                                 | 81400                 | 66                    | 50              | 132-160-180-200   | —                   | —      | 248500 | 264500 | 79000  | 393000                   |
|                                     | 317 R4  | 262  | 5.7                                 | 97200                 | 66                    | 50              | 132-160-180-200   | —                   | —      | 262000 | 278900 | 83800  | 393000                   |
|                                     | 317 R4  | 336  | 4.5                                 | 124700                | 66                    | 50              | 132-160-180-200   | —                   | —      | 282300 | 300600 | 91100  | 393000                   |
|                                     | 317 R4  | 399  | 3.8                                 | 148000                | 66                    | 50              | 132-160-180-200   | —                   | —      | 297200 | 316500 | 96500  | 393000                   |
|                                     | 317 R4  | 438  | 3.4                                 | 157000                | 64                    | 50              | 132-160-180-200   | —                   | —      | 305700 | 325500 | 99500  | 393000                   |
|                                     | 317 R4  | 520  | 2.9                                 | 164800                | 56                    | 50              | 132-160-180-200   | —                   | —      | 321800 | 342600 | 105400 | 393000                   |
|                                     | 317 R4  | 626  | 2.4                                 | 155000                | 44                    | 50              | 132-160-180-200   | —                   | —      | 340200 | 362200 | 112100 | 393000                   |
|                                     | 317 R4  | 677  | 2.2                                 | 164700                | 43                    | 50              | 132-160-180-200   | —                   | —      | 348300 | 370800 | 115000 | 393000                   |
| 317 R4                              | 803   | 1.9  | 165900                              | 37                    | 50                    | 132-160-180-200 | —   | —                   | 366700 | 390400 | 121800 | 393000 |                          |
| 317 R4                              | 953   | 1.6  | 145000                              | 27                    | 50                    | 132-160-180-200 | —   | —                   | 386000 | 411000 | 129000 | 393000 |                          |
| 1000                                | 317 R3 (B)  | 49.8 | 20.1                                | 53000                 | 122                   | 108             | 180-200-225-250   | —                   | —      | 179800 | 191400 | 55200  | 393000                   |
|                                     | 317 R3 (B)  | 64.9 | 15.4                                | 69100                 | 122                   | 108             | 180-200-225-250   | —                   | —      | 194700 | 207300 | 60300  | 393000                   |
|                                     | 317 R3 (B)  | 78.1 | 12.8                                | 85500                 | 126                   | 108             | 180-200-225-250   | —                   | —      | 205800 | 219100 | 64100  | 393000                   |
|                                     | 317 R3 (B)  | 83.3 | 12.0                                | 90800                 | 125                   | 108             | 180-200-225-250   | —                   | —      | 209800 | 223400 | 65500  | 393000                   |
|                                     | 317 R3 (B)  | 100  | 10.0                                | 109300                | 125                   | 108             | 180-200-225-250   | —                   | —      | 221800 | 236100 | 69700  | 393000                   |
|                                     | 317 R3 (B)  | 119  | 8.4                                 | 119100                | 115                   | 108             | 180-200-225-250   | —                   | —      | 233500 | 248600 | 73800  | 393000                   |
|                                     | 317 R3 (C)  | 68.9 | 14.5                                | 65200                 | 109                   | 120             | 180-200-225-250   | —                   | —      | 198200 | 211000 | 61500  | 393000                   |
|                                     | 317 R3 (C)  | 89.8 | 11.1                                | 85000                 | 109                   | 120             | 180-200-225-250   | —                   | —      | 214600 | 228500 | 67200  | 393000                   |
|                                     | 317 R3 (C)  | 108  | 9.2                                 | 102400                | 109                   | 120             | 180-200-225-250   | —                   | —      | 226900 | 241600 | 71500  | 393000                   |
|                                     | 317 R3 (C)  | 115  | 8.7                                 | 109100                | 109                   | 120             | 180-200-225-250   | —                   | —      | 231300 | 246300 | 73000  | 393000                   |
|                                     | 317 R3 (C)  | 139  | 7.2                                 | 131400                | 109                   | 120             | 180-200-225-250   | —                   | —      | 244500 | 260300 | 77700  | 393000                   |
|                                     | 317 R3 (C)  | 165  | 6.1                                 | 119600                | 83                    | 120             | 180-200-225-250   | —                   | —      | 257400 | 274100 | 82200  | 393000                   |
|                                     | 317 R4  | 220  | 4.6                                 | 92000                 | 50                    | 60              | 132-160-180-200   | —                   | —      | 280600 | 298700 | 90500  | 393000                   |
|                                     | 317 R4  | 262  | 3.8                                 | 109700                | 50                    | 60              | 132-160-180-200   | —                   | —      | 295900 | 315000 | 96000  | 393000                   |
|                                     | 317 R4  | 336  | 3.0                                 | 140800                | 50                    | 60              | 132-160-180-200   | —                   | —      | 318900 | 339500 | 104300 | 393000                   |
|                                     | 317 R4  | 399  | 2.5                                 | 167100                | 50                    | 60              | 132-160-180-200   | —                   | —      | 335700 | 357400 | 110400 | 393000                   |
|                                     | 317 R4  | 438  | 2.3                                 | 172800                | 47                    | 60              | 132-160-180-200   | —                   | —      | 345200 | 367600 | 113900 | 393000                   |

**B**





### 317 R

410

### 187860 Nm

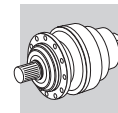
| n <sub>1</sub><br>min <sup>-1</sup> | i          | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) | Rn <sub>2</sub> [N] |    |       |        |        | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|------------|-------------------------------------|-----------------------|-----------------------|----------|---------|---------------------|----|-------|--------|--------|--------------------------|--------|
|                                     |            |                                     |                       |                       |          |         | MC                  | MZ | HC/PC | HZ/PZ  | FZ     |                          |        |
| <b>1000</b>                         | 317 R4     | 520                                 | 1.9                   | 175200                | 40       | 60      | 132-160-180-200     | —  | —     | 363400 | 387000 | 120600                   | 393000 |
|                                     | 317 R4     | 626                                 | 1.6                   | 155000                | 29       | 60      | 132-160-180-200     | —  | —     | 384200 | 409100 | 128300                   | 393000 |
|                                     | 317 R4     | 677                                 | 1.5                   | 167400                | 29       | 60      | 132-160-180-200     | —  | —     | 393300 | 418800 | 131700                   | 393000 |
|                                     | 317 R4     | 803                                 | 1.2                   | 168500                | 25       | 60      | 132-160-180-200     | —  | —     | 414100 | 440900 | 139400                   | 393000 |
|                                     | 317 R4     | 953                                 | 1.0                   | 154900                | 19.2     | 60      | 132-160-180-200     | —  | —     | 435900 | 464100 | 147600                   | 393000 |
| <b>500</b>                          | 317 R3 (B) | 49.8                                | 10.0                  | 65200                 | 75       | 180     | 180-200-225-250     | —  | —     | 221300 | 235700 | 69500                    | 393000 |
|                                     | 317 R3 (B) | 64.9                                | 7.7                   | 85000                 | 75       | 180     | 180-200-225-250     | —  | —     | 239700 | 255200 | 75900                    | 393000 |
|                                     | 317 R3 (B) | 78.1                                | 6.4                   | 106500                | 78       | 180     | 180-200-225-250     | —  | —     | 253400 | 269800 | 80800                    | 393000 |
|                                     | 317 R3 (B) | 83.3                                | 6.0                   | 113100                | 78       | 180     | 180-200-225-250     | —  | —     | 258300 | 275000 | 82500                    | 393000 |
|                                     | 317 R3 (B) | 100                                 | 5.0                   | 134900                | 77       | 180     | 180-200-225-250     | —  | —     | 273100 | 290700 | 87800                    | 393000 |
|                                     | 317 R3 (B) | 119                                 | 4.2                   | 123400                | 60       | 180     | 180-200-225-250     | —  | —     | 287500 | 306100 | 92900                    | 393000 |
|                                     | 317 R3 (C) | 68.9                                | 7.3                   | 80300                 | 67       | 200     | 180-200-225-250     | —  | —     | 244000 | 259800 | 77500                    | 393000 |
|                                     | 317 R3 (C) | 89.8                                | 5.6                   | 104700                | 67       | 200     | 180-200-225-250     | —  | —     | 264200 | 281300 | 84600                    | 393000 |
|                                     | 317 R3 (C) | 108                                 | 4.6                   | 123600                | 66       | 200     | 180-200-225-250     | —  | —     | 279300 | 297400 | 90000                    | 393000 |
|                                     | 317 R3 (C) | 115                                 | 4.3                   | 134400                | 67       | 200     | 180-200-225-250     | —  | —     | 284800 | 303200 | 92000                    | 393000 |
|                                     | 317 R3 (C) | 139                                 | 3.6                   | 154600                | 64       | 200     | 180-200-225-250     | —  | —     | 301000 | 320500 | 97800                    | 393000 |
|                                     | 317 R3 (C) | 165                                 | 3.0                   | 130200                | 45       | 200     | 180-200-225-250     | —  | —     | 316900 | 337400 | 103600                   | 393000 |
|                                     | 317 R4     | 220                                 | 2.3                   | 112500                | 30       | 100     | 132-160-180-200     | —  | —     | 345400 | 367800 | 114000                   | 393000 |
|                                     | 317 R4     | 262                                 | 1.9                   | 134900                | 30       | 100     | 132-160-180-200     | —  | —     | 364200 | 387800 | 120900                   | 393000 |
|                                     | 317 R4     | 336                                 | 1.5                   | 173400                | 31       | 100     | 132-160-180-200     | —  | —     | 392600 | 418000 | 131400                   | 393000 |
|                                     | 317 R4     | 399                                 | 1.3                   | 196500                | 29       | 100     | 132-160-180-200     | —  | —     | 413200 | 440000 | 139100                   | 393000 |
|                                     | 317 R4     | 438                                 | 1.1                   | 182400                | 25       | 100     | 132-160-180-200     | —  | —     | 425000 | 452500 | 143500                   | 393000 |
|                                     | 317 R4     | 520                                 | 0.96                  | 184300                | 21       | 100     | 132-160-180-200     | —  | —     | 442000 | 470000 | 150000                   | 393000 |
|                                     | 317 R4     | 626                                 | 0.80                  | 155000                | 14.6     | 100     | 132-160-180-200     | —  | —     | 442000 | 470000 | 150000                   | 393000 |
|                                     | 317 R4     | 677                                 | 0.74                  | 170000                | 14.9     | 100     | 132-160-180-200     | —  | —     | 442000 | 470000 | 150000                   | 393000 |
|                                     | 317 R4     | 803                                 | 0.62                  | 170000                | 12.5     | 100     | 132-160-180-200     | —  | —     | 442000 | 470000 | 150000                   | 393000 |
|                                     | 317 R4     | 953                                 | 0.52                  | 156200                | 9.7      | 100     | 132-160-180-200     | —  | —     | 442000 | 470000 | 150000                   | 393000 |

### 318 R

420

### 280580 Nm

| n <sub>1</sub><br>min <sup>-1</sup> | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) | Rn <sub>2</sub> [N] |                 |       |        |        | M <sub>2 max</sub><br>Nm |        |        |
|-------------------------------------|-------------|-------------------------------------|-----------------------|-----------------------|----------|---------|---------------------|-----------------|-------|--------|--------|--------------------------|--------|--------|
|                                     |             |                                     |                       |                       |          |         | MC                  | MZ              | HC/PC | HZ/PZ  | FZ     |                          |        |        |
| <b>1500</b>                         | 318 R4 (B)  | 225                                 | 6.7                   | 200200                | 150      | 90      | 180-200-225-250     | —               | —     | 313900 | 320300 | 106200                   | 500000 |        |
|                                     | 318 R4 (B)  | 288                                 | 5.2                   | 215700                | 133      | 90      | 180-200-225-250     | —               | —     | 338300 | 345200 | 115400                   | 500000 |        |
|                                     | 318 R4 (B)  | 342                                 | 4.4                   | 226200                | 117      | 90      | 180-200-225-250     | —               | —     | 356100 | 363400 | 122200                   | 500000 |        |
|                                     | 318 R4 (B)  | 362                                 | 4.1                   | 229600                | 113      | 90      | 180-200-225-250     | —               | —     | 362100 | 369600 | 124500                   | 500000 |        |
|                                     | 318 R4 (B)  | 430                                 | 3.5                   | 240400                | 99       | 90      | 180-200-225-250     | —               | —     | 381200 | 389100 | 131800                   | 500000 |        |
|                                     | 318 R4 (B)  | 499                                 | 3.0                   | 250300                | 89       | 90      | 180-200-225-250     | —               | —     | 398900 | 407000 | 138600                   | 500000 |        |
|                                     | 318 R4 (C)  | 311                                 | 4.8                   | 220500                | 126      | 110     | 180-200-225-250     | —               | —     | 346100 | 353200 | 118400                   | 500000 |        |
|                                     | 318 R4 (C)  | 399                                 | 3.8                   | 235700                | 105      | 110     | 180-200-225-250     | —               | —     | 373000 | 380600 | 128700                   | 500000 |        |
|                                     | 318 R4 (C)  | 474                                 | 3.2                   | 246800                | 92       | 110     | 180-200-225-250     | —               | —     | 392600 | 400700 | 136200                   | 500000 |        |
|                                     | 318 R4 (C)  | 501                                 | 3.0                   | 250600                | 89       | 110     | 180-200-225-250     | —               | —     | 399300 | 407500 | 138800                   | 500000 |        |
|                                     | 318 R4 (C)  | 595                                 | 2.5                   | 262400                | 78       | 110     | 180-200-225-250     | —               | —     | 420300 | 428900 | 146900                   | 500000 |        |
|                                     | 318 R4 (C)  | 691                                 | 2.2                   | 265600                | 68       | 110     | 180-200-225-250     | —               | —     | 439700 | 448800 | 154500                   | 500000 |        |
|                                     | <b>1000</b> | 318 R4 (B)                          | 225                   | 4.5                   | 225300   | 119     | 108                 | 180-200-225-250 | —     | —      | 354500 | 361800                   | 121600 | 500000 |
|                                     |             | 318 R4 (B)                          | 288                   | 3.5                   | 240900   | 99      | 108                 | 180-200-225-250 | —     | —      | 382100 | 389900                   | 132100 | 500000 |
| 318 R4 (B)                          |             | 342                                 | 2.9                   | 252200                | 87       | 108     | 180-200-225-250     | —               | —     | 402200 | 410500 | 139900                   | 500000 |        |
| 318 R4 (B)                          |             | 362                                 | 2.8                   | 256000                | 84       | 108     | 180-200-225-250     | —               | —     | 409000 | 417400 | 142500                   | 500000 |        |
| 318 R4 (B)                          |             | 430                                 | 2.3                   | 264300                | 73       | 108     | 180-200-225-250     | —               | —     | 430600 | 439400 | 150900                   | 500000 |        |
| 318 R4 (B)                          |             | 499                                 | 2.0                   | 267100                | 63       | 108     | 180-200-225-250     | —               | —     | 450400 | 459700 | 158700                   | 500000 |        |
| 318 R4 (C)                          |             | 311                                 | 3.2                   | 245800                | 93       | 132     | 180-200-225-250     | —               | —     | 390800 | 398900 | 135500                   | 500000 |        |
| 318 R4 (C)                          |             | 399                                 | 2.5                   | 262900                | 78       | 132     | 180-200-225-250     | —               | —     | 421200 | 429900 | 147300                   | 500000 |        |
| 318 R4 (C)                          |             | 474                                 | 2.1                   | 266200                | 66       | 132     | 180-200-225-250     | —               | —     | 443400 | 452500 | 155900                   | 500000 |        |
| 318 R4 (C)                          |             | 501                                 | 2.0                   | 267200                | 63       | 132     | 180-200-225-250     | —               | —     | 450900 | 460200 | 158800                   | 500000 |        |
| 318 R4 (C)                          |             | 595                                 | 1.7                   | 270500                | 54       | 132     | 180-200-225-250     | —               | —     | 474700 | 484400 | 168200                   | 500000 |        |
| 318 R4 (C)                          |             | 691                                 | 1.4                   | 273400                | 47       | 132     | 180-200-225-250     | —               | —     | 496600 | 506800 | 176800                   | 500000 |        |
| <b>500</b>                          |             | 318 R4 (B)                          | 225                   | 2.2                   | 265200   | 70      | 180                 | 180-200-225-250 | —     | —      | 436500 | 445400                   | 153200 | 500000 |
|                                     |             | 318 R4 (B)                          | 288                   | 1.7                   | 269900   | 55      | 180                 | 180-200-225-250 | —     | —      | 470400 | 480000                   | 166500 | 500000 |



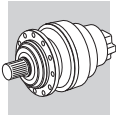
**318 R** 420

| n <sub>1</sub><br>min <sup>-1</sup> |            | i   | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)         | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|------------|-----|-------------------------------------|-----------------------|-----------------------|----------|-----------------|---------------------|----|--------|--------|--------|--------------------------|
|                                     |            |     |                                     |                       |                       |          |                 | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| 500                                 | 318 R4 (B) | 342 | 1.5                                 | 273200                | 47                    | 180      | 180-200-225-250 | —                   | —  | 495200 | 505300 | 176300 | 500000                   |
|                                     | 318 R4 (B) | 362 | 1.4                                 | 274200                | 45                    | 180      | 180-200-225-250 | —                   | —  | 503000 | 513900 | 179600 | 500000                   |
|                                     | 318 R4 (B) | 430 | 1.2                                 | 277600                | 38                    | 180      | 180-200-225-250 | —                   | —  | 503000 | 541000 | 190100 | 500000                   |
|                                     | 318 R4 (B) | 499 | 1.0                                 | 280600                | 33                    | 180      | 180-200-225-250 | —                   | —  | 503000 | 565000 | 199900 | 500000                   |
|                                     | 318 R4 (C) | 311 | 1.6                                 | 271300                | 52                    | 220      | 180-200-225-250 | —                   | —  | 481200 | 491100 | 170700 | 500000                   |
|                                     | 318 R4 (C) | 399 | 1.3                                 | 276200                | 41                    | 220      | 180-200-225-250 | —                   | —  | 503000 | 529200 | 185500 | 500000                   |
|                                     | 318 R4 (C) | 474 | 1.1                                 | 279500                | 35                    | 220      | 180-200-225-250 | —                   | —  | 503000 | 557100 | 196400 | 500000                   |
|                                     | 318 R4 (C) | 501 | 1.00                                | 280600                | 33                    | 220      | 180-200-225-250 | —                   | —  | 503000 | 565000 | 200000 | 500000                   |
|                                     | 318 R4 (C) | 595 | 0.84                                | 280600                | 28                    | 220      | 180-200-225-250 | —                   | —  | 503000 | 565000 | 200000 | 500000                   |
|                                     | 318 R4 (C) | 691 | 0.72                                | 280600                | 24                    | 220      | 180-200-225-250 | —                   | —  | 503000 | 565000 | 200000 | 500000                   |

**319 R** 430

| n <sub>1</sub><br>min <sup>-1</sup> |            | i          | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)         | Rn <sub>2</sub> [N] |    |        |        |        | M <sub>2 max</sub><br>Nm |
|-------------------------------------|------------|------------|-------------------------------------|-----------------------|-----------------------|----------|-----------------|---------------------|----|--------|--------|--------|--------------------------|
|                                     |            |            |                                     |                       |                       |          |                 | MC                  | MZ | HC/PC  | HZ/PZ  | FZ     |                          |
| 1500                                | 319 R4 (B) | 249        | 6.0                                 | 227700                | 150                   | 95       | 180-200-225-250 | —                   | —  | 372100 | 409900 | 109900 | 680000                   |
|                                     | 319 R4 (B) | 320        | 4.7                                 | 289000                | 150                   | 95       | 180-200-225-250 | —                   | —  | 401000 | 441800 | 119400 | 680000                   |
|                                     | 319 R4 (B) | 379        | 4.0                                 | 304200                | 142                   | 95       | 180-200-225-250 | —                   | —  | 422100 | 465100 | 126500 | 680000                   |
|                                     | 319 R4 (B) | 401        | 3.7                                 | 310500                | 137                   | 95       | 180-200-225-250 | —                   | —  | 429200 | 472900 | 128800 | 680000                   |
|                                     | 319 R4 (B) | 475        | 3.2                                 | 300900                | 112                   | 95       | 180-200-225-250 | —                   | —  | 451500 | 497400 | 136300 | 680000                   |
|                                     | 319 R4 (B) | 563        | 2.7                                 | 313000                | 99                    | 95       | 180-200-225-250 | —                   | —  | 475300 | 523700 | 144300 | 680000                   |
|                                     | 319 R4 (B) | 655        | 2.3                                 | 321300                | 87                    | 95       | 180-200-225-250 | —                   | —  | 497300 | 547900 | 151700 | 680000                   |
|                                     | 319 R4 (C) | 345        | 4.4                                 | 259700                | 134                   | 115      | 180-200-225-250 | —                   | —  | 410200 | 451900 | 122500 | 680000                   |
|                                     | 319 R4 (C) | 442        | 3.4                                 | 279900                | 112                   | 115      | 180-200-225-250 | —                   | —  | 442100 | 487100 | 133100 | 680000                   |
|                                     | 319 R4 (C) | 525        | 2.9                                 | 294600                | 100                   | 115      | 180-200-225-250 | —                   | —  | 465400 | 512700 | 140900 | 680000                   |
|                                     | 319 R4 (C) | 555        | 2.7                                 | 306300                | 98                    | 115      | 180-200-225-250 | —                   | —  | 473200 | 521400 | 143600 | 680000                   |
|                                     | 319 R4 (C) | 657        | 2.3                                 | 322200                | 87                    | 115      | 180-200-225-250 | —                   | —  | 497800 | 548400 | 151900 | 680000                   |
|                                     | 319 R4 (C) | 780        | 1.9                                 | 331100                | 75                    | 115      | 180-200-225-250 | —                   | —  | 524000 | 577300 | 160800 | 680000                   |
|                                     | 319 R4 (C) | 906        | 1.7                                 | 335900                | 66                    | 115      | 180-200-225-250 | —                   | —  | 548200 | 604000 | 169100 | 680000                   |
|                                     | 1000       | 319 R4 (B) | 249                                 | 4.0                   | 257100                | 122      | 114             | 180-200-225-250     | —  | —      | 420200 | 462900 | 125800                   |
| 319 R4 (B)                          |            | 320        | 3.1                                 | 323900                | 120                   | 114      | 180-200-225-250 | —                   | —  | 452800 | 498900 | 136700 | 680000                   |
| 319 R4 (B)                          |            | 379        | 2.6                                 | 342600                | 107                   | 114      | 180-200-225-250 | —                   | —  | 476700 | 525200 | 144800 | 680000                   |
| 319 R4 (B)                          |            | 401        | 2.5                                 | 348100                | 103                   | 114      | 180-200-225-250 | —                   | —  | 484800 | 534100 | 147500 | 680000                   |
| 319 R4 (B)                          |            | 475        | 2.1                                 | 326400                | 81                    | 114      | 180-200-225-250 | —                   | —  | 509900 | 561800 | 156000 | 680000                   |
| 319 R4 (B)                          |            | 563        | 1.8                                 | 335400                | 70                    | 114      | 180-200-225-250 | —                   | —  | 536800 | 591400 | 165200 | 680000                   |
| 319 R4 (B)                          |            | 655        | 1.5                                 | 339600                | 61                    | 114      | 180-200-225-250 | —                   | —  | 561600 | 618700 | 173700 | 680000                   |
| 319 R4 (C)                          |            | 345        | 2.9                                 | 293300                | 101                   | 138      | 180-200-225-250 | —                   | —  | 463300 | 510400 | 140200 | 680000                   |
| 319 R4 (C)                          |            | 442        | 2.3                                 | 316100                | 85                    | 138      | 180-200-225-250 | —                   | —  | 499300 | 550100 | 152400 | 680000                   |
| 319 R4 (C)                          |            | 525        | 1.9                                 | 332800                | 75                    | 138      | 180-200-225-250 | —                   | —  | 525600 | 579100 | 161300 | 680000                   |
| 319 R4 (C)                          |            | 555        | 1.8                                 | 338600                | 72                    | 138      | 180-200-225-250 | —                   | —  | 534500 | 588800 | 164400 | 680000                   |
| 319 R4 (C)                          |            | 657        | 1.5                                 | 343700                | 62                    | 138      | 180-200-225-250 | —                   | —  | 562200 | 619400 | 173900 | 680000                   |
| 319 R4 (C)                          |            | 780        | 1.3                                 | 353300                | 54                    | 138      | 180-200-225-250 | —                   | —  | 591800 | 652000 | 184100 | 680000                   |
| 319 R4 (C)                          |            | 906        | 1.1                                 | 354900                | 46                    | 138      | 180-200-225-250 | —                   | —  | 619100 | 682100 | 193600 | 680000                   |
| 500                                 |            | 319 R4 (B) | 249                                 | 2.0                   | 316600                | 75       | 190             | 180-200-225-250     | —  | —      | 517300 | 570000 | 158500                   |
|                                     | 319 R4 (B) | 320        | 1.6                                 | 373900                | 69                    | 190      | 180-200-225-250 | —                   | —  | 557500 | 614200 | 172300 | 680000                   |
|                                     | 319 R4 (B) | 379        | 1.3                                 | 386000                | 60                    | 190      | 180-200-225-250 | —                   | —  | 586900 | 646600 | 182400 | 680000                   |
|                                     | 319 R4 (B) | 401        | 1.2                                 | 379400                | 56                    | 190      | 180-200-225-250 | —                   | —  | 596800 | 657500 | 185800 | 680000                   |
|                                     | 319 R4 (B) | 475        | 1.1                                 | 364500                | 45                    | 190      | 180-200-225-250 | —                   | —  | 627700 | 691600 | 196500 | 680000                   |
|                                     | 319 R4 (B) | 563        | 0.89                                | 367600                | 39                    | 190      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (B) | 655        | 0.76                                | 359700                | 32                    | 190      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (C) | 345        | 1.5                                 | 361100                | 62                    | 230      | 180-200-225-250 | —                   | —  | 570300 | 628400 | 176700 | 680000                   |
|                                     | 319 R4 (C) | 442        | 1.1                                 | 389200                | 52                    | 230      | 180-200-225-250 | —                   | —  | 614700 | 677200 | 192000 | 680000                   |
|                                     | 319 R4 (C) | 525        | 0.95                                | 403700                | 45                    | 230      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (C) | 555        | 0.90                                | 389900                | 42                    | 230      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (C) | 657        | 0.76                                | 367600                | 33                    | 230      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (C) | 780        | 0.64                                | 367600                | 28                    | 230      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |
|                                     | 319 R4 (C) | 906        | 0.55                                | 359700                | 23                    | 230      | 180-200-225-250 | —                   | —  | 638000 | 702000 | 200000 | 680000                   |

**B**



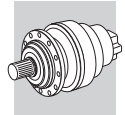
### 321 R

440

### 655200 Nm




| n <sub>1</sub><br>min <sup>-1</sup> | i              | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) | Rn <sub>2</sub> [N] |    |       |        |        | M <sub>2 max</sub><br>Nm |        |
|-------------------------------------|----------------|-------------------------------------|-----------------------|-----------------------|----------|---------|---------------------|----|-------|--------|--------|--------------------------|--------|
|                                     |                |                                     |                       |                       |          |         | MC                  | MZ | HC/PC | HZ/PZ  | FZ     |                          |        |
| <b>1500</b>                         | 321 R4 (B) 221 | 221                                 | 6.8                   | 205600                | 150      | 105     | 180-200-225-250     | —  | —     | 440600 | 522400 | 634000                   | 934000 |
|                                     | 321 R4 (B) 288 | 288                                 | 5.2                   | 265300                | 150      | 105     | 180-200-225-250     | —  | —     | 477000 | 565700 | 692600                   | 934000 |
|                                     | 321 R4 (B) 347 | 347                                 | 4.3                   | 320600                | 150      | 105     | 180-200-225-250     | —  | —     | 504300 | 598000 | 736800                   | 934000 |
|                                     | 321 R4 (B) 370 | 370                                 | 4.1                   | 341300                | 150      | 105     | 180-200-225-250     | —  | —     | 514100 | 609600 | 752700                   | 934000 |
|                                     | 321 R4 (B) 446 | 446                                 | 3.4                   | 409600                | 150      | 105     | 180-200-225-250     | —  | —     | 543500 | 644500 | 800600                   | 934000 |
|                                     | 321 R4 (B) 529 | 529                                 | 2.8                   | 484700                | 150      | 105     | 180-200-225-250     | —  | —     | 572100 | 678500 | 847700                   | 934000 |
|                                     | 321 R4 (C) 306 | 306                                 | 4.9                   | 249000                | 144      | 125     | 180-200-225-250     | —  | —     | 485700 | 576000 | 706700                   | 934000 |
|                                     | 321 R4 (C) 399 | 399                                 | 3.8                   | 324600                | 144      | 125     | 180-200-225-250     | —  | —     | 525900 | 623700 | 771900                   | 934000 |
|                                     | 321 R4 (C) 481 | 481                                 | 3.1                   | 390700                | 144      | 125     | 180-200-225-250     | —  | —     | 556000 | 659300 | 821100                   | 934000 |
|                                     | 321 R4 (C) 512 | 512                                 | 2.9                   | 416600                | 144      | 125     | 180-200-225-250     | —  | —     | 566800 | 672100 | 838900                   | 934000 |
|                                     | 321 R4 (C) 617 | 617                                 | 2.4                   | 501400                | 144      | 125     | 180-200-225-250     | —  | —     | 599200 | 710600 | 892300                   | 934000 |
|                                     | 321 R4 (C) 732 | 732                                 | 2.0                   | 521400                | 126      | 125     | 180-200-225-250     | —  | —     | 630800 | 748000 | 944800                   | 934000 |
| <b>1000</b>                         | 321 R4 (B) 221 | 221                                 | 4.5                   | 233700                | 125      | 126     | 180-200-225-250     | —  | —     | 497500 | 590000 | 725800                   | 934000 |
|                                     | 321 R4 (B) 288 | 288                                 | 3.5                   | 304200                | 125      | 126     | 180-200-225-250     | —  | —     | 538700 | 638800 | 792800                   | 934000 |
|                                     | 321 R4 (B) 347 | 347                                 | 2.9                   | 361600                | 123      | 126     | 180-200-225-250     | —  | —     | 569500 | 675400 | 843400                   | 934000 |
|                                     | 321 R4 (B) 370 | 370                                 | 2.7                   | 391600                | 125      | 126     | 180-200-225-250     | —  | —     | 580600 | 688500 | 861600                   | 934000 |
|                                     | 321 R4 (B) 446 | 446                                 | 2.2                   | 460100                | 122      | 126     | 180-200-225-250     | —  | —     | 613800 | 727900 | 916500                   | 934000 |
|                                     | 321 R4 (B) 529 | 529                                 | 1.9                   | 513000                | 115      | 126     | 180-200-225-250     | —  | —     | 646100 | 766200 | 970400                   | 934000 |
|                                     | 321 R4 (C) 306 | 306                                 | 3.3                   | 281200                | 109      | 150     | 180-200-225-250     | —  | —     | 548500 | 650500 | 808900                   | 934000 |
|                                     | 321 R4 (C) 399 | 399                                 | 2.5                   | 366600                | 109      | 150     | 180-200-225-250     | —  | —     | 593900 | 704300 | 883600                   | 934000 |
|                                     | 321 R4 (C) 481 | 481                                 | 2.1                   | 441300                | 109      | 150     | 180-200-225-250     | —  | —     | 627900 | 744600 | 940000                   | 934000 |
|                                     | 321 R4 (C) 512 | 512                                 | 2.0                   | 470500                | 109      | 150     | 180-200-225-250     | —  | —     | 640100 | 759100 | 960200                   | 934000 |
|                                     | 321 R4 (C) 617 | 617                                 | 1.6                   | 566500                | 109      | 150     | 180-200-225-250     | —  | —     | 676700 | 802500 | 1021500                  | 934000 |
|                                     | 321 R4 (C) 732 | 732                                 | 1.4                   | 529800                | 86       | 150     | 180-200-225-250     | —  | —     | 712400 | 844800 | 1081500                  | 934000 |
| <b>500</b>                          | 321 R4 (B) 221 | 221                                 | 2.3                   | 290300                | 78       | 210     | 180-200-225-250     | —  | —     | 612500 | 726400 | 914500                   | 934000 |
|                                     | 321 R4 (B) 288 | 288                                 | 1.7                   | 379500                | 78       | 210     | 180-200-225-250     | —  | —     | 663200 | 786500 | 998900                   | 934000 |
|                                     | 321 R4 (B) 347 | 347                                 | 1.4                   | 450300                | 77       | 210     | 180-200-225-250     | —  | —     | 701200 | 831500 | 1062600                  | 934000 |
|                                     | 321 R4 (B) 370 | 370                                 | 1.4                   | 483100                | 77       | 210     | 180-200-225-250     | —  | —     | 714800 | 847600 | 1085500                  | 934000 |
|                                     | 321 R4 (B) 446 | 446                                 | 1.1                   | 567200                | 75       | 210     | 180-200-225-250     | —  | —     | 755600 | 896100 | 1154700                  | 934000 |
|                                     | 321 R4 (B) 529 | 529                                 | 0.95                  | 536400                | 60       | 210     | 180-200-225-250     | —  | —     | 779000 | 923000 | 1200000                  | 934000 |
|                                     | 321 R4 (C) 306 | 306                                 | 1.6                   | 346300                | 67       | 250     | 180-200-225-250     | —  | —     | 675300 | 800800 | 1019200                  | 934000 |
|                                     | 321 R4 (C) 399 | 399                                 | 1.3                   | 451600                | 67       | 250     | 180-200-225-250     | —  | —     | 731200 | 867100 | 1113300                  | 934000 |
|                                     | 321 R4 (C) 481 | 481                                 | 1.0                   | 543700                | 67       | 250     | 180-200-225-250     | —  | —     | 773000 | 916700 | 1184300                  | 934000 |
|                                     | 321 R4 (C) 512 | 512                                 | 0.98                  | 575400                | 66       | 250     | 180-200-225-250     | —  | —     | 779000 | 923000 | 1200000                  | 934000 |
|                                     | 321 R4 (C) 617 | 617                                 | 0.81                  | 655200                | 63       | 250     | 180-200-225-250     | —  | —     | 779000 | 923000 | 1200000                  | 934000 |
|                                     | 321 R4 (C) 732 | 732                                 | 0.68                  | 536400                | 43       | 250     | 180-200-225-250     | —  | —     | 779000 | 923000 | 1200000                  | 934000 |

B



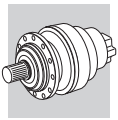
## 25.5 3/V - PLANETARYWORM RATING CHARTS

Reading the rating chart.

| 3/V 00 L3                  |   |     |                            |                |                |             |   | 1250 Nm  |       |                     |       |      |   |  |
|----------------------------|---|-----|----------------------------|----------------|----------------|-------------|---|----------|-------|---------------------|-------|------|---|--|
| $n_1$<br>min <sup>-1</sup> |  | i   | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW | P (IEC)  | MC/PC    | MZ/PZ | Rn <sub>2</sub> [N] |       |      |  |  |
|                            |   |     |                            |                |                |             |   | B5 / B14 |       |                     |       |      |   |  |
| 1500                       | 3/V 00L3  | 415 | 3.6                        | 1000           | 0.57           | —           | 63 71 80  | 7930     | 7930  | 20900               | 24000 | 5210 | 250   |  |
|                            | 3/V 00L3  | 436 | 3.4                        | 730            | 0.42           | —           | 63 71 —   | 8060     | 8060  | 21200               | 24300 | 5300 | 250   |  |
|                            | 3/V 00L3  | 509 | 2.9                        | 1040           | 0.48           | —           | 63 71 80  | 8490     | 8490  | 22200               | 25500 | 5580 | 250   |  |
|                            | 3/V 00L3  | 562 | 2.7                        | 720            | 0.30           | —           | 63 71 80  | 8770     | 8770  | 22900               | 26300 | 5770 | 250   |  |
|                            | 3/V 00L3  | 654 | 2.3                        | 1090           | 0.41           | —           | 63 71 —   | 9230     | 9230  | 23900               | 27500 | 6070 | 250   |  |

|   |   |    |   |
|---|---|----|---|
| 1 | Reference torque  | 8  | Gearbox thermal capacity  |
| 2 | Gearbox drive speed   | 9  | Frame size of compatible IEC electric motor<br>- IEC inputs marked with * feature a lowered key.  |
| 3 | Frame size of combined worm<br>+ planetary gearbox  | 10 | Permitted overhung loading on output shaft,<br>based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime<br>- speed of output $n_2$ |
| 4 | Gear ratio  | 11 | For forces not applied at shaft midpoint,<br>see diagrams provided in the specific gearbox<br>overall dimensioning pages                          |
| 5 | Gearbox output speed  |    |   |
| 6 | Gearbox rated output torque based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime |    |   |
| 7 | Gearbox rated input power, based on:<br>- service factor $f_s=1$<br>- 10000 h theoretical lifetime  |    |   |





### 3/V 00 L3

1250 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|---------------------|-------|-------|-------|------|-----|
|                                     |          |      |                                     |                       |                       |          |          | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |     |
|                                     |          |      |                                     |                       |                       |          |          | B5 / B14            |       |       |       |      |     |
| 1500                                | 3/V 00L3 | 415  | 3.6                                 | 1000                  | 0.57                  | —        | 63 71 80 | 7930                | 7930  | 20900 | 24000 | 5210 | 250 |
|                                     | 3/V 00L3 | 436  | 3.4                                 | 730                   | 0.42                  | —        | 63 71 —  | 8060                | 8060  | 21200 | 24300 | 5300 | 250 |
|                                     | 3/V 00L3 | 509  | 2.9                                 | 1040                  | 0.48                  | —        | 63 71 80 | 8490                | 8490  | 22200 | 25500 | 5580 | 250 |
|                                     | 3/V 00L3 | 562  | 2.7                                 | 720                   | 0.30                  | —        | 63 71 80 | 8770                | 8770  | 22900 | 26300 | 5770 | 250 |
|                                     | 3/V 00L3 | 654  | 2.3                                 | 1090                  | 0.41                  | —        | 63 71 —  | 9230                | 9230  | 23900 | 27500 | 6070 | 250 |
|                                     | 3/V 00L3 | 689  | 2.2                                 | 1100                  | 0.37                  | —        | 63 71 80 | 9390                | 9390  | 24300 | 27900 | 6170 | 250 |
|                                     | 3/V 00L3 | 818  | 1.8                                 | 1110                  | 0.36                  | —        | 63 71 —  | 9940                | 9940  | 25600 | 29400 | 6540 | 250 |
|                                     | 3/V 00L3 | 903  | 1.7                                 | 790                   | 0.23                  | —        | 63 71 —  | 10300               | 10300 | 26400 | 30300 | 6760 | 250 |
|                                     | 3/V 00L3 | 997  | 1.5                                 | 800                   | 0.18                  | —        | 63 71 80 | 10600               | 10600 | 27100 | 31200 | 6980 | 250 |
|                                     | 3/V 00L3 | 1107 | 1.4                                 | 1190                  | 0.28                  | —        | 63 71 —  | 11000               | 11000 | 28000 | 32200 | 7230 | 250 |
|                                     | 3/V 00L3 | 1198 | 1.3                                 | 830                   | 0.17                  | —        | 63 71 —  | 11300               | 11300 | 28700 | 33000 | 7420 | 250 |
|                                     | 3/V 00L3 | 1381 | 1.1                                 | 1230                  | 0.24                  | —        | 63 71 —  | 11800               | 11800 | 29900 | 34000 | 7780 | 250 |
|                                     | 3/V 00L3 | 1495 | 1.0                                 | 860                   | 0.14                  | —        | 63 71 —  | 12000               | 12200 | 30700 | 34000 | 7990 | 250 |
|                                     | 3/V 00L3 | 1869 | 0.80                                | 860                   | 0.12                  | —        | 63 71 —  | 12000               | 12500 | 31000 | 34000 | 8000 | 250 |
|                                     | 3/V 00L3 | 2337 | 0.64                                | 860                   | 0.10                  | —        | 63 71 —  | 12000               | 12500 | 31000 | 34000 | 8000 | 250 |

### 3/V 01 L3

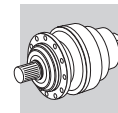
2460 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |      |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|---------------------|-------|-------|-------|------|-----|
|                                     |          |      |                                     |                       |                       |          |          | MC/PC               | MZ/PZ | HC    | HZ    | FZ   |     |
|                                     |          |      |                                     |                       |                       |          |          | B5 / B14            |       |       |       |      |     |
| 1500                                | 3/V 01L3 | 430  | 3.5                                 | 1880                  | 0.90                  | —        | 63 71 80 | 8020                | 8020  | 21100 | 24200 | 5270 | 260 |
|                                     | 3/V 01L3 | 443  | 3.4                                 | 1370                  | 0.66                  | —        | 63 71 80 | 8100                | 8100  | 21300 | 24400 | 5330 | 260 |
|                                     | 3/V 01L3 | 509  | 2.9                                 | 1270                  | 0.58                  | —        | 63 71 80 | 8490                | 8490  | 22200 | 25500 | 5580 | 260 |
|                                     | 3/V 01L3 | 562  | 2.7                                 | 1400                  | 0.58                  | —        | 63 71 80 | 8770                | 8770  | 22900 | 26300 | 5770 | 260 |
|                                     | 3/V 01L3 | 654  | 2.3                                 | 1180                  | 0.45                  | —        | 63 71 —  | 9230                | 9230  | 23900 | 27500 | 6070 | 260 |
|                                     | 3/V 01L3 | 689  | 2.2                                 | 1710                  | 0.58                  | —        | 63 71 80 | 9390                | 9390  | 24300 | 27900 | 6170 | 260 |
|                                     | 3/V 01L3 | 799  | 1.9                                 | 1540                  | 0.43                  | —        | 63 71 80 | 9860                | 9860  | 25400 | 29200 | 6480 | 260 |
|                                     | 3/V 01L3 | 903  | 1.7                                 | 1230                  | 0.36                  | —        | 63 71 —  | 10300               | 10300 | 26400 | 30300 | 6760 | 260 |
|                                     | 3/V 01L3 | 997  | 1.5                                 | 1600                  | 0.36                  | —        | 63 71 80 | 10600               | 10600 | 27100 | 31200 | 6980 | 260 |
|                                     | 3/V 01L3 | 1105 | 1.4                                 | 1990                  | 0.45                  | —        | 63 71 —  | 11000               | 11000 | 28000 | 32200 | 7230 | 260 |
|                                     | 3/V 01L3 | 1198 | 1.3                                 | 1650                  | 0.34                  | —        | 63 71 —  | 11300               | 11300 | 28700 | 33000 | 7420 | 260 |
|                                     | 3/V 01L3 | 1381 | 1.1                                 | 1880                  | 0.36                  | —        | 63 71 —  | 11800               | 11800 | 29900 | 34000 | 7780 | 260 |
|                                     | 3/V 01L3 | 1495 | 1.0                                 | 1720                  | 0.29                  | —        | 63 71 —  | 12000               | 12200 | 30700 | 34000 | 7990 | 260 |
|                                     | 3/V 01L3 | 1869 | 0.80                                | 1720                  | 0.24                  | —        | 63 71 —  | 12000               | 12500 | 31000 | 34000 | 8000 | 260 |
|                                     | 3/V 01L3 | 2337 | 0.64                                | 1720                  | 0.20                  | —        | 63 71 —  | 12000               | 12500 | 31000 | 34000 | 8000 | 260 |

### 3/V 03 L3

2970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  | Rn <sub>2</sub> [N] |       |       |       |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|---------------------|-------|-------|-------|-------|-----|
|                                     |          |      |                                     |                       |                       |          |          | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |     |
|                                     |          |      |                                     |                       |                       |          |          | B5 / B14            |       |       |       |       |     |
| 1500                                | 3/V 03L3 | 395  | 3.8                                 | 2210                  | 1.2                   | —        | 71 80 90 | 24000               | 27700 | 42000 | 50500 | 15400 | 270 |
|                                     | 3/V 03L3 | 460  | 3.3                                 | 2310                  | 1.1                   | —        | 71 80 90 | 25200               | 29100 | 43900 | 52900 | 16200 | 270 |
|                                     | 3/V 03L3 | 502  | 3.0                                 | 2020                  | 0.83                  | —        | 71 80 90 | 26000               | 30000 | 45100 | 54300 | 16700 | 270 |
|                                     | 3/V 03L3 | 544  | 2.8                                 | 2730                  | 1.1                   | —        | 71 80 90 | 26700               | 30800 | 46200 | 55600 | 17100 | 270 |
|                                     | 3/V 03L3 | 623  | 2.4                                 | 2220                  | 0.80                  | —        | 71 80 90 | 27900               | 32200 | 48100 | 57900 | 17900 | 270 |
|                                     | 3/V 03L3 | 736  | 2.0                                 | 2720                  | 0.83                  | —        | 71 80 90 | 29500               | 34100 | 50600 | 60800 | 18900 | 270 |
|                                     | 3/V 03L3 | 793  | 1.9                                 | 2180                  | 0.62                  | —        | 71 80 90 | 30200               | 34900 | 51700 | 62200 | 19400 | 270 |
|                                     | 3/V 03L3 | 923  | 1.6                                 | 2670                  | 0.65                  | —        | 71 80 90 | 31800               | 36700 | 54100 | 65100 | 20400 | 270 |
|                                     | 3/V 03L3 | 1023 | 1.5                                 | 2710                  | 0.66                  | —        | 71 80 —  | 32900               | 38000 | 55800 | 67200 | 21100 | 270 |
|                                     | 3/V 03L3 | 1189 | 1.3                                 | 2340                  | 0.49                  | —        | 71 80 —  | 34600               | 40000 | 58400 | 70300 | 22200 | 270 |
|                                     | 3/V 03L3 | 1385 | 1.1                                 | 2820                  | 0.51                  | —        | 71 80 —  | 36000               | 42000 | 61100 | 73600 | 23400 | 270 |
|                                     | 3/V 03L3 | 1610 | 0.93                                | 2440                  | 0.38                  | —        | 71 80 —  | 36000               | 42000 | 64000 | 74000 | 24000 | 270 |
|                                     | 3/V 03L3 | 1728 | 0.87                                | 2850                  | 0.41                  | —        | 71 80 —  | 36000               | 42000 | 64000 | 74000 | 24000 | 270 |
|                                     | 3/V 03L3 | 2009 | 0.75                                | 2440                  | 0.30                  | —        | 71 80 —  | 36000               | 42000 | 64000 | 74000 | 24000 | 270 |
|                                     | 3/V 03L3 | 2511 | 0.60                                | 2300                  | 0.23                  | —        | 71 80 —  | 36000               | 42000 | 64000 | 74000 | 24000 | 270 |



### 3/V 04 L3

### 3960 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |     |     | Rn <sub>2</sub> [N] |       |       |       |       |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|-------|----|-----|-----|---------------------|-------|-------|-------|-------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC    | MZ/PZ | HC | HZ  | FZ  | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 1500                                | 3/V 04L3 | 384  | 3.9                                 | 3510                  | 1.9                   | —        | B5       | 71    | 80 | 90  | 100 | 112                 | 23700 | 27400 | 41600 | 50100 | 15200 | 282 |
|                                     | 3/V 04L3 | 453  | 3.3                                 | 3730                  | 1.7                   | —        | B5 / B14 | 71    | 80 | 90  | 100 | 112                 | 25100 | 29000 | 43700 | 52600 | 16100 | 282 |
|                                     | 3/V 04L3 | 501  | 3.0                                 | 3010                  | 1.4                   | —        | 71       | 80    | 90 | 100 | 112 | 26000               | 30000 | 45100 | 54200 | 16700 | 282   |     |
|                                     | 3/V 04L3 | 568  | 2.6                                 | 3160                  | 1.2                   | —        | 71       | 80    | 90 | 100 | 112 | 27100               | 31300 | 46800 | 56300 | 17400 | 282   |     |
|                                     | 3/V 04L3 | 623  | 2.4                                 | 3530                  | 1.2                   | —        | 71       | 80    | 90 | 100 | 112 | 27900               | 32200 | 48100 | 57900 | 17900 | 282   |     |
|                                     | 3/V 04L3 | 710  | 2.1                                 | 2640                  | 0.73                  | —        | 71       | 80    | 90 | 100 | 112 | 29200               | 33700 | 50000 | 60200 | 18700 | 282   |     |
|                                     | 3/V 04L3 | 769  | 1.9                                 | 3330                  | 0.90                  | —        | 71       | 80    | 90 | 100 | 112 | 29900               | 34600 | 51300 | 61700 | 19200 | 282   |     |
|                                     | 3/V 04L3 | 887  | 1.7                                 | 2740                  | 0.61                  | —        | 71       | 80    | 90 | 100 | 112 | 31400               | 36300 | 53500 | 64400 | 20100 | 282   |     |
|                                     | 3/V 04L3 | 981  | 1.5                                 | 3860                  | 0.91                  | —        | 71       | 80    | 90 | 100 | 112 | 32500               | 37500 | 55100 | 66300 | 20800 | 282   |     |
|                                     | 3/V 04L3 | 1152 | 1.3                                 | 3570                  | 0.67                  | —        | 71       | 80    | 90 | 100 | 112 | 34300               | 39600 | 57900 | 69600 | 22000 | 282   |     |
|                                     | 3/V 04L3 | 1231 | 1.2                                 | 3610                  | 0.68                  | —        | 71       | 80    | 90 | 100 | 112 | 35000               | 40400 | 59000 | 71000 | 22500 | 282   |     |
|                                     | 3/V 04L3 | 1419 | 1.1                                 | 2970                  | 0.45                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 61600 | 74000 | 23600 | 282   |     |
|                                     | 3/V 04L3 | 1536 | 0.98                                | 3740                  | 0.56                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 63100 | 74000 | 24000 | 282   |     |
|                                     | 3/V 04L3 | 1774 | 0.85                                | 3000                  | 0.37                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 282   |     |
|                                     | 3/V 04L3 | 1893 | 0.79                                | 3000                  | 0.37                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 282   |     |
|                                     | 3/V 04L3 | 2366 | 0.63                                | 3000                  | 0.29                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 282   |     |

### 3/V 05 L3

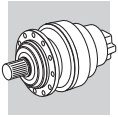
### 5800 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |     |     | Rn <sub>2</sub> [N] |       |       |       |       |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|-------|----|-----|-----|---------------------|-------|-------|-------|-------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC    | MZ/PZ | HC | HZ  | FZ  | MC/PC               | MZ/PZ | HC    | HZ    | FZ    |       |     |
| 1500                                | 3/V 05L3 | 396  | 3.8                                 | 3760                  | 1.9                   | —        | B5       | 71    | 80 | 90  | 100 | 112                 | 24000 | 27700 | 42000 | 50500 | 15400 | 294 |
|                                     | 3/V 05L3 | 462  | 3.3                                 | 4820                  | 2.0                   | —        | B5 / B14 | 71    | 80 | 90  | 100 | 112                 | 25300 | 29200 | 44000 | 52900 | 16200 | 294 |
|                                     | 3/V 05L3 | 529  | 2.8                                 | 3920                  | 1.5                   | —        | 71       | 80    | 90 | 100 | 112 | 26400               | 30500 | 45800 | 55100 | 17000 | 294   |     |
|                                     | 3/V 05L3 | 576  | 2.6                                 | 4870                  | 1.7                   | —        | 71       | 80    | 90 | 100 | 112 | 27200               | 31400 | 47000 | 56500 | 17400 | 294   |     |
|                                     | 3/V 05L3 | 623  | 2.4                                 | 4460                  | 1.6                   | —        | 71       | 80    | 90 | 100 | 112 | 27900               | 32200 | 48100 | 57900 | 17900 | 294   |     |
|                                     | 3/V 05L3 | 715  | 2.1                                 | 4120                  | 1.2                   | —        | 71       | 80    | 90 | 100 | 112 | 29200               | 33700 | 50200 | 60300 | 18800 | 294   |     |
|                                     | 3/V 05L3 | 793  | 1.9                                 | 4200                  | 1.1                   | —        | 71       | 80    | 90 | 100 | 112 | 30200               | 34900 | 51700 | 62200 | 19400 | 294   |     |
|                                     | 3/V 05L3 | 894  | 1.7                                 | 4290                  | 1.0                   | —        | 71       | 80    | 90 | 100 | 112 | 31500               | 36300 | 53600 | 64500 | 20200 | 294   |     |
|                                     | 3/V 05L3 | 1057 | 1.4                                 | 4410                  | 0.97                  | —        | 71       | 80    | 90 | 100 | 112 | 33300               | 38400 | 56400 | 67800 | 21400 | 294   |     |
|                                     | 3/V 05L3 | 1116 | 1.3                                 | 4460                  | 0.83                  | —        | 71       | 80    | 90 | 100 | 112 | 33900               | 39100 | 57300 | 69000 | 21700 | 294   |     |
|                                     | 3/V 05L3 | 1231 | 1.2                                 | 5470                  | 1.0                   | —        | 71       | 80    | 90 | 100 | 112 | 35000               | 40400 | 59000 | 71000 | 22500 | 294   |     |
|                                     | 3/V 05L3 | 1431 | 1.0                                 | 4650                  | 0.75                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 61700 | 74000 | 23600 | 294   |     |
|                                     | 3/V 05L3 | 1674 | 0.90                                | 4430                  | 0.57                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 294   |     |
|                                     | 3/V 05L3 | 1786 | 0.84                                | 4690                  | 0.61                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 294   |     |
|                                     | 3/V 05L3 | 2232 | 0.67                                | 4430                  | 0.46                  | —        | 71       | 80    | 90 | 100 | 112 | 36000               | 42000 | 64000 | 74000 | 24000 | 294   |     |

### 3/V 06 L3

### 10840 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |     |     | Rn <sub>2</sub> [N] |       |        |        |       |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|-------|----|-----|-----|---------------------|-------|--------|--------|-------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC    | MZ/PZ | HC | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |       |     |
| 1500                                | 3/V 06L3 | 395  | 3.8                                 | 7590                  | 3.8                   | —        | B5       | 71    | 80 | 90  | 100 | 112                 | 29900 | 33800  | 68700  | 80000 | 22400 | 306 |
|                                     | 3/V 06L3 | 427  | 3.5                                 | 8820                  | 4.1                   | —        | B5 / B14 | 71    | 80 | 90  | 100 | 112                 | 30600 | 34700  | 70300  | 81800 | 23000 | 306 |
|                                     | 3/V 06L3 | 527  | 2.8                                 | 7590                  | 2.9                   | —        | 71       | 80    | 90 | 100 | 112 | 32900               | 37200 | 74900  | 87200  | 24700 | 306   |     |
|                                     | 3/V 06L3 | 569  | 2.6                                 | 8560                  | 3.0                   | —        | 71       | 80    | 90 | 100 | 112 | 33700               | 38200 | 76600  | 89200  | 25300 | 306   |     |
|                                     | 3/V 06L3 | 661  | 2.3                                 | 9370                  | 2.8                   | —        | 71       | 80    | 90 | 100 | 112 | 35500               | 40200 | 80100  | 93300  | 26600 | 306   |     |
|                                     | 3/V 06L3 | 698  | 2.2                                 | 7540                  | 2.1                   | —        | 71       | 80    | 90 | 100 | 112 | 36100               | 40900 | 81400  | 94800  | 27100 | 306   |     |
|                                     | 3/V 06L3 | 791  | 1.9                                 | 7680                  | 2.1                   | —        | 71       | 80    | 90 | 100 | 112 | 37600               | 42600 | 84500  | 98400  | 28300 | 306   |     |
|                                     | 3/V 06L3 | 930  | 1.6                                 | 7890                  | 1.7                   | —        | 71       | 80    | 90 | 100 | 112 | 39700               | 45000 | 88800  | 103400 | 29800 | 306   |     |
|                                     | 3/V 06L3 | 992  | 1.5                                 | 9450                  | 2.1                   | —        | 71       | 80    | 90 | 100 | 112 | 40600               | 46000 | 90500  | 105400 | 30500 | 306   |     |
|                                     | 3/V 06L3 | 1153 | 1.3                                 | 8250                  | 1.6                   | —        | 71       | 80    | 90 | 100 | 112 | 42700               | 48400 | 94700  | 110200 | 32100 | 306   |     |
|                                     | 3/V 06L3 | 1212 | 1.2                                 | 7820                  | 1.5                   | —        | 71       | 80    | 90 | 100 | 112 | 43400               | 49200 | 96100  | 111900 | 32600 | 306   |     |
|                                     | 3/V 06L3 | 1395 | 1.1                                 | 8400                  | 1.3                   | —        | 71       | 80    | 90 | 100 | 112 | 45000               | 51000 | 100200 | 116700 | 34200 | 306   |     |
|                                     | 3/V 06L3 | 1768 | 0.85                                | 8630                  | 1.1                   | —        | 71       | 80    | 90 | 100 | 112 | 45000               | 51000 | 101000 | 119000 | 35000 | 306   |     |
|                                     | 3/V 06L3 | 2139 | 0.70                                | 8500                  | 0.91                  | —        | 71       | 80    | 90 | 100 | 112 | 45000               | 51000 | 101000 | 119000 | 35000 | 306   |     |
|                                     | 3/V 06L3 | 2588 | 0.58                                | 7000                  | 0.62                  | —        | 71       | 80    | 90 | 100 | 112 | 45000               | 51000 | 101000 | 119000 | 35000 | 306   |     |



### 3/V 07 L3

15680 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|-------|-----|-----|-----|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC    | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 1500                                | 3/V 07L3 | 386  | 3.9                                 | 9020                  | 4.5                   | —        | B5 / B14 |       |     |     |     | 32900               | 41300 | 73400  | 96100  | 28600 | 318 |
|                                     | 3/V 07L3 | 460  | 3.3                                 | 12300                 | 5.3                   | —        | 80       | 90    | 100 | 112 | 132 | 34900               | 43800 | 77300  | 101300 | 30400 | 318 |
|                                     | 3/V 07L3 | 507  | 3.0                                 | 13600                 | 5.3                   | —        | 80       | 90    | 100 | 112 | 132 | 36100               | 45300 | 79600  | 104300 | 31400 | 318 |
|                                     | 3/V 07L3 | 655  | 2.3                                 | 14400                 | 4.8                   | —        | 80       | 90    | 100 | 112 | 132 | 39300               | 49300 | 85900  | 112600 | 34100 | 318 |
|                                     | 3/V 07L3 | 761  | 2.0                                 | 14200                 | 4.0                   | —        | 80       | 90    | 100 | 112 | 132 | 41300               | 51800 | 89900  | 117800 | 35900 | 318 |
|                                     | 3/V 07L3 | 773  | 1.9                                 | 9970                  | 2.6                   | —        | 80       | 90    | 100 | 112 | 132 | 41500               | 52100 | 90300  | 118400 | 36100 | 318 |
|                                     | 3/V 07L3 | 920  | 1.6                                 | 12300                 | 2.9                   | —        | 80       | 90    | 100 | 112 | 132 | 44000               | 55200 | 95200  | 124700 | 38200 | 318 |
|                                     | 3/V 07L3 | 1015 | 1.5                                 | 14400                 | 3.1                   | —        | 80       | 90    | 100 | 112 | 132 | 45400               | 57000 | 98000  | 128400 | 39500 | 318 |
|                                     | 3/V 07L3 | 1159 | 1.3                                 | 10600                 | 2.0                   | —        | 80       | 90    | 100 | 112 | 132 | 47500               | 59600 | 102000 | 133700 | 41300 | 318 |
|                                     | 3/V 07L3 | 1288 | 1.2                                 | 14500                 | 2.5                   | —        | 80       | 90    | 100 | 112 | 132 | 49200               | 61700 | 105300 | 138000 | 42800 | 318 |
|                                     | 3/V 07L3 | 1411 | 1.1                                 | 12300                 | 2.0                   | —        | 80       | 90    | 100 | 112 | 132 | 50700               | 63600 | 108200 | 141800 | 44100 | 318 |
|                                     | 3/V 07L3 | 1545 | 0.97                                | 11000                 | 1.6                   | —        | 80       | 90    | 100 | 112 | 132 | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |
|                                     | 3/V 07L3 | 1964 | 0.76                                | 12300                 | 1.5                   | —        | 80       | 90    | 100 | 112 | 132 | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |
|                                     | 3/V 07L3 | 2150 | 0.70                                | 11000                 | 1.2                   | —        | 80       | 90    | 100 | 112 | 132 | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |
|                                     | 3/V 07L3 | 2472 | 0.61                                | 11000                 | 1.1                   | —        | 80       | 90    | 100 | 112 | 132 | 52000               | 65000 | 109000 | 145000 | 45000 | 318 |

B

### 3/V 09 L3

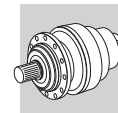
23240 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |     |     |    | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|-----|-----|----|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 1500                                | 3/V 09L3 | 370  | 4.1                                 | 13000                 | 7.3                   | —        | B5      |       |     |     |    | —                   | —     | 73600  | 94900  | 22600 | 330 |
|                                     | 3/V 09L3 | 442  | 3.4                                 | 17700                 | 8.4                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 77600  | 100100 | 24000 | 330 |
|                                     | 3/V 09L3 | 507  | 3.0                                 | 14300                 | 5.6                   | —        | —       | —     | 132 | 160 | —  | —                   | —     | 80900  | 104300 | 25100 | 330 |
|                                     | 3/V 09L3 | 655  | 2.3                                 | 17600                 | 5.6                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 87300  | 112600 | 27300 | 330 |
|                                     | 3/V 09L3 | 761  | 2.0                                 | 14400                 | 3.9                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 91300  | 117800 | 28700 | 330 |
|                                     | 3/V 09L3 | 800  | 1.9                                 | 21400                 | 5.8                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 92700  | 119600 | 29200 | 330 |
|                                     | 3/V 09L3 | 840  | 1.8                                 | 20100                 | 5.0                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 94100  | 121400 | 29700 | 330 |
|                                     | 3/V 09L3 | 1004 | 1.5                                 | 18100                 | 3.9                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 99300  | 128000 | 31500 | 330 |
|                                     | 3/V 09L3 | 1159 | 1.3                                 | 16200                 | 2.9                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 103600 | 133700 | 33000 | 330 |
|                                     | 3/V 09L3 | 1288 | 1.2                                 | 21500                 | 3.6                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 107000 | 138000 | 34200 | 330 |
|                                     | 3/V 09L3 | 1497 | 1.0                                 | 18300                 | 2.6                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 110000 | 144300 | 36000 | 330 |
|                                     | 3/V 09L3 | 1623 | 0.92                                | 14700                 | 2.1                   | —        | 100     | 112   | —   | —   | —  | —                   | —     | 110000 | 145000 | 36000 | 330 |
|                                     | 3/V 09L3 | 1792 | 0.84                                | 22000                 | 2.8                   | —        | 100     | 112   | —   | —   | —  | —                   | —     | 110000 | 145000 | 36000 | 330 |
|                                     | 3/V 09L3 | 2150 | 0.70                                | 17000                 | 1.7                   | —        | 100     | 112   | 132 | —   | —  | —                   | —     | 110000 | 145000 | 36000 | 330 |
|                                     | 3/V 09L3 | 2472 | 0.61                                | 17000                 | 1.6                   | —        | 100     | 112   | —   | —   | —  | —                   | —     | 110000 | 145000 | 36000 | 330 |

### 3/V 10 L3

34120 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |     |         |    | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|-----|---------|----|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ      | FZ | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| 1500                                | 3/V 10L3 | 436  | 3.4                                 | 26700                 | 12.2                  | —        | B5      |       |     |         |    | —                   | —     | 91600  | 115200 | 43100 | 342 |
|                                     | 3/V 10L3 | 507  | 3.0                                 | 25900                 | 10.2                  | —        | —       | —     | 132 | 160 (*) | —  | —                   | —     | 95800  | 120500 | 45300 | 342 |
|                                     | 3/V 10L3 | 560  | 2.7                                 | 25900                 | 9.2                   | —        | —       | —     | 132 | 160 (*) | —  | —                   | —     | 98700  | 124100 | 46800 | 342 |
|                                     | 3/V 10L3 | 614  | 2.4                                 | 21800                 | 7.1                   | —        | —       | —     | 132 | 160 (*) | —  | —                   | —     | 101500 | 127600 | 48300 | 342 |
|                                     | 3/V 10L3 | 701  | 2.1                                 | 21900                 | 6.0                   | —        | —       | —     | 132 | 160 (*) | —  | —                   | —     | 105600 | 132800 | 50400 | 342 |
|                                     | 3/V 10L3 | 773  | 1.9                                 | 22400                 | 5.8                   | —        | —       | —     | 132 | 160 (*) | —  | —                   | —     | 108700 | 136700 | 52100 | 342 |
|                                     | 3/V 10L3 | 920  | 1.6                                 | 21800                 | 4.9                   | —        | 100     | 112   | 132 | —       | —  | —                   | —     | 114600 | 144100 | 55200 | 342 |
|                                     | 3/V 10L3 | 1004 | 1.5                                 | 31800                 | 6.9                   | —        | 100     | 112   | 132 | —       | —  | —                   | —     | 117600 | 147900 | 56900 | 342 |
|                                     | 3/V 10L3 | 1120 | 1.3                                 | 29100                 | 5.6                   | —        | 100     | 112   | 132 | —       | —  | —                   | —     | 121600 | 152800 | 59000 | 342 |
|                                     | 3/V 10L3 | 1227 | 1.2                                 | 21800                 | 3.9                   | —        | 100     | 112   | 132 | —       | —  | —                   | —     | 124900 | 157100 | 60800 | 342 |
|                                     | 3/V 10L3 | 1411 | 1.1                                 | 21800                 | 3.3                   | —        | 100     | 112   | 132 | —       | —  | —                   | —     | 130300 | 163800 | 63700 | 342 |



### 3/V 10 L4

### 34120 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |          |     |     |     | MC/PC | MZ/PZ  | Rn <sub>2</sub> [N] |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|----------|-----|-----|-----|-------|--------|---------------------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | B5      | B5 / B14 |     |     |     |       |        | HC                  | HZ     | FZ    |     |
| 1500                                | 3/V 10L4 | 1657 | 0.91                                | 33300                 | 4.1                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 1826 | 0.82                                | 26700                 | 3.0                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 2016 | 0.74                                | 29400                 | 3.0                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 2209 | 0.68                                | 32300                 | 3.0                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 2455 | 0.61                                | 34100                 | 2.8                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 2835 | 0.53                                | 30600                 | 2.2                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 3273 | 0.46                                | 34100                 | 2.1                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 3570 | 0.42                                | 30600                 | 1.9                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 4036 | 0.37                                | 30600                 | 1.6                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
|                                     | 3/V 10L4 | 4637 | 0.32                                | 30600                 | 1.6                   | —        | 71      | 80       | 90  | 100 | 112 | —     | —      | 133000              | 166000 | 65000 | 343 |
| 3/V 10L4                            | 5081     | 0.30 | 34100                               | 1.6                   | —                     | 71       | 80      | 90       | 100 | 112 | —   | —     | 133000 | 166000              | 65000  | 343   |     |

### 3/V 11 L3

### 48330 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |     |     |     |         | MC/PC | MZ/PZ | Rn <sub>2</sub> [N] |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-----|-----|-----|---------|-------|-------|---------------------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | B5      |     |     |     |         |       |       | HC                  | HZ     | FZ    |     |
| 1500                                | 3/V 11L3 | 430  | 3.5                                 | 40900                 | 18.7                  | —        | —       | —   | —   | 160 | 180 (*) | —     | —     | 107800              | 134200 | 42800 | 354 |
|                                     | 3/V 11L3 | 510  | 2.9                                 | 34500                 | 13.3                  | —        | —       | —   | —   | 160 | 180 (*) | —     | —     | 113400              | 141300 | 45400 | 354 |
|                                     | 3/V 11L3 | 551  | 2.7                                 | 39000                 | 13.9                  | —        | —       | —   | —   | 160 | 180 (*) | —     | —     | 116100              | 144600 | 46600 | 354 |
|                                     | 3/V 11L3 | 644  | 2.3                                 | 40000                 | 12.5                  | —        | —       | —   | 132 | 160 | —       | —     | —     | 121700              | 151600 | 49000 | 354 |
|                                     | 3/V 11L3 | 720  | 2.1                                 | 40200                 | 12.0                  | —        | —       | —   | 132 | 160 | —       | —     | —     | 125800              | 156700 | 50900 | 354 |
|                                     | 3/V 11L3 | 827  | 1.8                                 | 41400                 | 10.1                  | —        | —       | —   | 132 | 160 | —       | —     | —     | 131100              | 163400 | 53300 | 354 |
|                                     | 3/V 11L3 | 900  | 1.7                                 | 41000                 | 10.0                  | —        | 100     | 112 | 132 | —   | —       | —     | —     | 134500              | 167600 | 54800 | 354 |
|                                     | 3/V 11L3 | 1004 | 1.5                                 | 35700                 | 8.0                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 139000              | 173200 | 56900 | 354 |
|                                     | 3/V 11L3 | 1103 | 1.4                                 | 43200                 | 8.4                   | —        | —       | —   | 132 | 160 | —       | —     | —     | 143000              | 178100 | 58700 | 354 |
|                                     | 3/V 11L3 | 1274 | 1.2                                 | 35100                 | 6.0                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 149300              | 186000 | 61600 | 354 |
|                                     | 3/V 11L3 | 1378 | 1.1                                 | 44700                 | 7.1                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 152900              | 190400 | 63200 | 354 |
|                                     | 3/V 11L3 | 1636 | 0.92                                | 43000                 | 5.8                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 157000              | 195000 | 65000 | 354 |
|                                     | 3/V 11L3 | 1963 | 0.76                                | 43000                 | 4.9                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 157000              | 195000 | 65000 | 354 |
|                                     | 3/V 11L3 | 2329 | 0.64                                | 34000                 | 3.3                   | —        | 100     | 112 | 132 | —   | —       | —     | —     | 157000              | 195000 | 65000 | 354 |

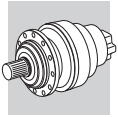
### 3/V 11 L4

### 48330 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |    |     |     |     | MC/PC | MZ/PZ | Rn <sub>2</sub> [N] |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|----------|----|-----|-----|-----|-------|-------|---------------------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | B5 / B14 |    |     |     | B5  |       |       | HC                  | HZ     | FZ    |     |
| 1500                                | 3/V 11L4 | 2510 | 0.60                                | 48300                 | 3.9                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 2887 | 0.52                                | 48300                 | 3.5                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 3222 | 0.47                                | 46900                 | 3.0                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 3557 | 0.42                                | 42300                 | 2.8                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 4106 | 0.37                                | 48300                 | 2.7                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 4410 | 0.34                                | 45200                 | 2.3                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |
|                                     | 3/V 11L4 | 5021 | 0.30                                | 48300                 | 2.2                   | —        | 80       | 90 | 100 | 112 | 132 | —     | —     | 157000              | 195000 | 65000 | 355 |

B





### 3/V 13 L3

57970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |     |     |         | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|-----|-----|---------|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ      | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| <b>B5</b>                           |          |      |                                     |                       |                       |          |         |       |     |     |         |                     |       |        |        |       |     |
| 1500                                | 3/V 13L3 | 370  | 4.1                                 | 39500                 | 21                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 127300 | 150700 | 50200 | 366 |
|                                     | 3/V 13L3 | 425  | 3.5                                 | 47300                 | 21                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 132700 | 157100 | 52600 | 366 |
|                                     | 3/V 13L3 | 516  | 2.9                                 | 52000                 | 19.8                  | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 140700 | 166500 | 56100 | 366 |
|                                     | 3/V 13L3 | 567  | 2.6                                 | 49300                 | 17.1                  | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 144700 | 171300 | 57800 | 366 |
|                                     | 3/V 13L3 | 673  | 2.2                                 | 50700                 | 14.8                  | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 152300 | 180300 | 61200 | 366 |
|                                     | 3/V 13L3 | 741  | 2.0                                 | 45800                 | 13.2                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 156800 | 185500 | 63200 | 366 |
|                                     | 3/V 13L3 | 810  | 1.9                                 | 44500                 | 10.8                  | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 161100 | 190600 | 65100 | 366 |
|                                     | 3/V 13L3 | 870  | 1.7                                 | 53800                 | 13.2                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 164500 | 194700 | 66700 | 366 |
|                                     | 3/V 13L3 | 1009 | 1.5                                 | 54300                 | 10.8                  | —        | —       | —     | —   | 132 | 160     | —                   | —     | 172000 | 203600 | 70100 | 366 |
|                                     | 3/V 13L3 | 1088 | 1.4                                 | 51200                 | 10.3                  | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 175900 | 208200 | 71900 | 366 |
|                                     | 3/V 13L3 | 1291 | 1.2                                 | 52800                 | 9.0                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 185200 | 219200 | 76100 | 366 |
|                                     | 3/V 13L3 | 1418 | 1.1                                 | 57400                 | 8.9                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 190500 | 225400 | 78500 | 366 |
|                                     | 3/V 13L3 | 1620 | 0.93                                | 49000                 | 6.5                   | —        | —       | —     | 132 | 160 | —       | —                   | —     | 192000 | 231000 | 80000 | 366 |
|                                     | 3/V 13L3 | 1682 | 0.89                                | 57970                 | 7.6                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 192000 | 231000 | 80000 | 366 |
|                                     | 3/V 13L3 | 2019 | 0.74                                | 57970                 | 6.5                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 192000 | 231000 | 80000 | 366 |
|                                     | 3/V 13L3 | 2430 | 0.62                                | 49000                 | 4.5                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 192000 | 231000 | 80000 | 366 |

B

### 3/V 13 L4

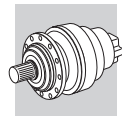
57970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|-----|-----|-----|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| <b>B5 / B14</b>                     |          |      |                                     |                       |                       |          |         |       |     |     |     |                     |       |        |        |       |     |
| 1500                                | 3/V 13L4 | 2773 | 0.46                                | 55400                 | 4.5                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |
|                                     | 3/V 13L4 | 3263 | 0.46                                | 55400                 | 3.5                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |
|                                     | 3/V 13L4 | 3515 | 0.43                                | 57970                 | 3.4                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |
|                                     | 3/V 13L4 | 4046 | 0.37                                | 55400                 | 3.1                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |
|                                     | 3/V 13L4 | 4536 | 0.33                                | 57970                 | 2.9                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |
|                                     | 3/V 13L4 | 5046 | 0.30                                | 53000                 | 2.4                   | —        | 80      | 90    | 100 | 112 | 132 | —                   | —     | 192000 | 231000 | 80000 | 367 |

### 3/V 14 L3




84000 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |     |     |         | Rn <sub>2</sub> [N] |       |        |        |       |     |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|-----|-----|---------|---------------------|-------|--------|--------|-------|-----|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ      | MC/PC               | MZ/PZ | HC     | HZ     | FZ    |     |
| <b>B5</b>                           |          |      |                                     |                       |                       |          |         |       |     |     |         |                     |       |        |        |       |     |
| 1500                                | 3/V 14L3 | 397  | 3.8                                 | 46100                 | 22                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 138800 | 163000 | 57800 | 378 |
|                                     | 3/V 14L3 | 446  | 3.4                                 | 47700                 | 21                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 143800 | 168800 | 60100 | 378 |
|                                     | 3/V 14L3 | 498  | 3.0                                 | 57800                 | 22                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 148600 | 174500 | 62300 | 378 |
|                                     | 3/V 14L3 | 579  | 2.6                                 | 57100                 | 18.7                  | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 155500 | 182600 | 65500 | 378 |
|                                     | 3/V 14L3 | 665  | 2.3                                 | 70200                 | 21                    | —        | —       | —     | —   | 160 | 180 (*) | —                   | —     | 162000 | 190200 | 68600 | 378 |
|                                     | 3/V 14L3 | 695  | 2.2                                 | 43000                 | 13.2                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 164300 | 192800 | 69700 | 378 |
|                                     | 3/V 14L3 | 794  | 1.9                                 | 49300                 | 12.5                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 170900 | 200700 | 72800 | 378 |
|                                     | 3/V 14L3 | 893  | 1.7                                 | 55200                 | 13.2                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 177000 | 207800 | 75700 | 378 |
|                                     | 3/V 14L3 | 997  | 1.5                                 | 61900                 | 12.5                  | —        | —       | —     | 132 | 160 | —       | —                   | —     | 183000 | 214800 | 78500 | 378 |
|                                     | 3/V 14L3 | 1116 | 1.3                                 | 52500                 | 10.3                  | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 189300 | 222200 | 81500 | 378 |
|                                     | 3/V 14L3 | 1324 | 1.1                                 | 62300                 | 10.3                  | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 199300 | 233900 | 86300 | 378 |
|                                     | 3/V 14L3 | 1339 | 1.1                                 | 47700                 | 8.0                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 199900 | 234700 | 86700 | 378 |
|                                     | 3/V 14L3 | 1589 | 0.94                                | 56600                 | 8.0                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 206000 | 243000 | 90000 | 378 |
|                                     | 3/V 14L3 | 1662 | 0.90                                | 75500                 | 10.0                  | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 206000 | 243000 | 90000 | 378 |
|                                     | 3/V 14L3 | 1994 | 0.75                                | 71000                 | 8.0                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 206000 | 243000 | 90000 | 378 |
|                                     | 3/V 14L3 | 2318 | 0.65                                | 66800                 | 6.5                   | —        | 100     | 112   | 132 | —   | —       | —                   | —     | 206000 | 243000 | 90000 | 378 |



### 3/V 14 L4




84000 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |     |     |     | MC/PC | MZ/PZ | Rn <sub>2</sub> [N] |        |       |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-----|-----|-----|-------|-------|---------------------|--------|-------|---|
|                                     |   |      |                                     |                       |                       |          | B5  | 160 | 160 | 160 |       |       | HC                  | HZ     | FZ    |   |
| 1500                                | 3/V 14L4  | 2504 | 0.60                                | 83200                 | 7.4                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 2782 | 0.54                                | 83200                 | 6.4                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 3182 | 0.47                                | 80100                 | 5.2                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 3472 | 0.43                                | 75500                 | 4.5                   | —        | —   | —   | 132 | 160 | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 3993 | 0.38                                | 75500                 | 3.9                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 4312 | 0.35                                | 83200                 | 4.3                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |
|                                     | 3/V 14L4  | 4959 | 0.30                                | 83200                 | 3.7                   | —        | 100   | 112 | 132 | —   | —     | —     | 206000              | 243000 | 90000 | 379   |

B




### 3/V 15 L3

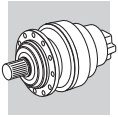
105000 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |     |     |     |     | MC/PC | MZ/PZ | Rn <sub>2</sub> [N] |        |       |  |
|-------------------------------------|--|------|-------------------------------------|-----------------------|-----------------------|----------|--|-----|-----|-----|-----|-------|-------|---------------------|--------|-------|--|
|                                     |  |      |                                     |                       |                       |          | B5   | 160 | 160 | 160 | 160 |       |       | HC                  | HZ     | FZ    |  |
| 1500                                | 3/V 15L3   | 386  | 3.9                                 | 67400                 | 33                    | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 137700              | 161700 | 57300 | 390  |
|                                     | 3/V 15L3   | 446  | 3.4                                 | 65100                 | 29                    | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 143800              | 168800 | 60100 | 390  |
|                                     | 3/V 15L3   | 498  | 3.0                                 | 85600                 | 33                    | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 148600              | 174500 | 62300 | 390  |
|                                     | 3/V 15L3   | 560  | 2.7                                 | 81700                 | 29                    | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 153900              | 180700 | 64800 | 390  |
|                                     | 3/V 15L3   | 665  | 2.3                                 | 88300                 | 26                    | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 162000              | 190200 | 68600 | 390  |
|                                     | 3/V 15L3   | 840  | 1.8                                 | 80400                 | 19.2                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 173800              | 204100 | 74200 | 390  |
|                                     | 3/V 15L3   | 997  | 1.5                                 | 93500                 | 18.9                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 183000              | 214800 | 78500 | 390  |
|                                     | 3/V 15L3   | 1120 | 1.3                                 | 92200                 | 17.6                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 189500              | 222500 | 81600 | 390  |
|                                     | 3/V 15L3   | 1329 | 1.1                                 | 97300                 | 15.7                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 199500              | 234200 | 86400 | 390  |
|                                     | 3/V 15L3   | 1400 | 1.1                                 | 86900                 | 13.6                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 202600              | 237900 | 88000 | 390  |
|                                     | 3/V 15L3   | 1662 | 0.90                                | 99000                 | 13.1                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 206000              | 243000 | 90000 | 390  |
|                                     | 3/V 15L3   | 1994 | 0.75                                | 94300                 | 10.8                  | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 206000              | 243000 | 90000 | 390  |
|                                     | 3/V 15L3   | 2318 | 0.65                                | 83500                 | 8.2                   | —        | 132  | 160 | 180 | 200 | 225 | —     | —     | 206000              | 243000 | 90000 | 390  |

### 3/V 15 L4




105000 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |     |     |         | MC/PC | MZ/PZ | Rn <sub>2</sub> [N] |        |       |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-----|-----|---------|-------|-------|---------------------|--------|-------|---|
|                                     |   |      |                                     |                       |                       |          | B5  | 160 | 160 | 160     |       |       | HC                  | HZ     | FZ    |   |
| 1500                                | 3/V 15L4  | 2780 | 0.54                                | 105000                | 7.7                   | —        | —   | —   | 132 | 160 (*) | —     | —     | 206000              | 243000 | 90000 | 391   |
|                                     | 3/V 15L4  | 3300 | 0.45                                | 105000                | 6.5                   | —        | —   | —   | 132 | 160 (*) | —     | —     | 206000              | 243000 | 90000 | 391   |
|                                     | 3/V 15L4  | 3489 | 0.43                                | 99000                 | 5.8                   | —        | —   | —   | 132 | 160 (*) | —     | —     | 206000              | 243000 | 90000 | 391   |
|                                     | 3/V 15L4  | 4171 | 0.36                                | 105000                | 5.4                   | —        | 100   | 112 | 132 | —       | —     | —     | 206000              | 243000 | 90000 | 391   |
|                                     | 3/V 15L4  | 4950 | 0.30                                | 105000                | 4.6                   | —        | 100   | 112 | 132 | —       | —     | —     | 206000              | 243000 | 90000 | 391   |
|                                     | 3/V 15L4  | 5234 | 0.29                                | 99000                 | 4.1                   | —        | 100   | 112 | 132 | —       | —     | —     | 206000              | 243000 | 90000 | 391   |



### 3/V 16 L3




138820 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|-----|-----|-----|---------------------|-------|--------|--------|--------|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |   |
| <b>B5</b>                           |   |      |                                     |                       |                       |          |   |       |     |     |     |                     |       |        |        |        |   |
| <b>1500</b>                         | 3/V 16L3  | 397  | 3.8                                 | 99700                 | 48                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 230900 | 256800 | 96300  | 402   |
|                                     | 3/V 16L3  | 446  | 3.4                                 | 93400                 | 41                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 239100 | 265900 | 100100 | 402   |
|                                     | 3/V 16L3  | 530  | 2.8                                 | 110900                | 41                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 251700 | 279900 | 106000 | 402   |
|                                     | 3/V 16L3  | 669  | 2.2                                 | 84000                 | 25                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 270000 | 300300 | 114600 | 402   |
|                                     | 3/V 16L3  | 794  | 1.9                                 | 99700                 | 25                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 284200 | 316100 | 121400 | 402   |
|                                     | 3/V 16L3  | 893  | 1.7                                 | 100800                | 24                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 294300 | 327300 | 126200 | 402   |
|                                     | 3/V 16L3  | 1059 | 1.4                                 | 119600                | 24                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 309800 | 344600 | 133600 | 402   |
|                                     | 3/V 16L3  | 1324 | 1.1                                 | 112100                | 18.6                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 331300 | 368500 | 143900 | 402   |
|                                     | 3/V 16L3  | 1589 | 0.94                                | 112100                | 15.5                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 345000 | 385000 | 150000 | 402   |

B




### 3/V 16 L4

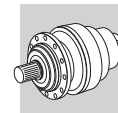
138820 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |         |    | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|--|------|-------------------------------------|-----------------------|-----------------------|----------|--|-------|-----|---------|----|---------------------|-------|--------|--------|--------|--|
|                                     |  |      |                                     |                       |                       |          | MC/PC  | MZ/PZ | HC  | HZ      | FZ | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |  |
| <b>B5</b>                           |  |      |                                     |                       |                       |          |  |       |     |         |    |                     |       |        |        |        |  |
| <b>1500</b>                         | 3/V 16L4   | 1826 | 0.82                                | 108300                | 12.2                  | —        | —  | —     | 132 | 160 (*) | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 2167 | 0.69                                | 128500                | 12.2                  | —        | —  | —     | 132 | 160 (*) | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 2343 | 0.64                                | 138800                | 12.1                  | —        | —  | —     | 132 | 160 (*) | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 2738 | 0.55                                | 114100                | 9.0                   | —        | 100  | 112   | 132 | —       | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 3250 | 0.46                                | 135500                | 9.0                   | —        | 100  | 112   | 132 | —       | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 3514 | 0.43                                | 138800                | 8.5                   | —        | 100  | 112   | 132 | —       | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 4171 | 0.36                                | 138800                | 7.2                   | —        | 100  | 112   | 132 | —       | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |
|                                     | 3/V 16L4   | 4950 | 0.30                                | 124000                | 5.4                   | —        | 100  | 112   | 132 | —       | —  | —                   | —     | 345000 | 385000 | 150000 | 403  |

### 3/V 17 L3




208110 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|-----|-----|-----|---------------------|-------|--------|--------|--------|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |   |
| <b>B5</b>                           |   |      |                                     |                       |                       |          |   |       |     |     |     |                     |       |        |        |        |   |
| <b>1500</b>                         | 3/V 17L3  | 405  | 3.7                                 | 126000                | 58                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 298600 | 317900 | 96900  | 412   |
|                                     | 3/V 17L3  | 425  | 3.5                                 | 106700                | 48                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 303000 | 322600 | 98500  | 412   |
|                                     | 3/V 17L3  | 512  | 2.9                                 | 128400                | 48                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 320300 | 341000 | 104800 | 412   |
|                                     | 3/V 17L3  | 567  | 2.6                                 | 118700                | 41                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 330300 | 351700 | 108500 | 412   |
|                                     | 3/V 17L3  | 608  | 2.5                                 | 134700                | 42                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 337200 | 359000 | 111000 | 412   |
|                                     | 3/V 17L3  | 683  | 2.2                                 | 142900                | 41                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 349200 | 371800 | 115400 | 412   |
|                                     | 3/V 17L3  | 810  | 1.9                                 | 141200                | 34                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 367600 | 391400 | 122100 | 412   |
|                                     | 3/V 17L3  | 851  | 1.8                                 | 106700                | 25                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 373000 | 397100 | 124200 | 412   |
|                                     | 3/V 17L3  | 1024 | 1.5                                 | 128400                | 25                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 394300 | 419900 | 132100 | 412   |
|                                     | 3/V 17L3  | 1134 | 1.3                                 | 128000                | 24                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 406600 | 432900 | 136600 | 412   |
|                                     | 3/V 17L3  | 1215 | 1.2                                 | 150900                | 25                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 415100 | 442000 | 139800 | 412   |
|                                     | 3/V 17L3  | 1365 | 1.1                                 | 154100                | 24                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 429900 | 457700 | 145400 | 412   |






### 3/V 17 L4

208110 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |         | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|-----|-----|---------|---------------------|-------|--------|--------|--------|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ      | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |   |
| <b>B5</b>                           |   |      |                                     |                       |                       |          |   |       |     |     |         |                     |       |        |        |        |   |
| 1500                                | 3/V 17L4  | 1780 | 0.84                                | 184300                | 21                    | —        | —   | —     | —   | 160 | 180 (*) | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 2065 | 0.73                                | 184300                | 17.5                  | —        | —   | —     | —   | 160 | 180 (*) | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 2485 | 0.60                                | 155000                | 12.2                  | —        | —   | —     | —   | 160 | 180 (*) | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 2773 | 0.54                                | 166400                | 13.2                  | —        | —   | —     | 132 | 160 | —       | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 3168 | 0.47                                | 190800                | 12.5                  | —        | —   | —     | 132 | 160 | —       | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 3583 | 0.42                                | 170000                | 9.6                   | —        | —   | —     | —   | 160 | 180 (*) | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 4129 | 0.36                                | 184300                | 9.3                   | —        | —   | —     | 132 | 160 | —       | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 4449 | 0.34                                | 203000                | 10.3                  | —        | 100   | 112   | 132 | —   | —       | —                   | —     | 442000 | 470000 | 150000 | 413   |
|                                     | 3/V 17L4  | 4970 | 0.30                                | 155000                | 6.5                   | —        | —   | —     | 132 | 160 | —       | —                   | —     | 442000 | 470000 | 150000 | 413   |




### 3/V 18 L4

280580 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|-----|-----|-----|---------------------|-------|--------|--------|--------|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |   |
| <b>B5</b>                           |   |      |                                     |                       |                       |          |   |       |     |     |     |                     |       |        |        |        |   |
| 1500                                | 3/V 18L4  | 765  | 2.0                                 | 185000                | 47                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 453300 | 462600 | 159800 | 422   |
|                                     | 3/V 18L4  | 982  | 1.5                                 | 237400                | 47                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 488500 | 498600 | 173600 | 422   |
|                                     | 3/V 18L4  | 1165 | 1.3                                 | 275600                | 46                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 524900 | 183800 | 422   |
|                                     | 3/V 18L4  | 1232 | 1.2                                 | 276700                | 43                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 533700 | 187300 | 422   |
|                                     | 3/V 18L4  | 1473 | 1.0                                 | 255400                | 34                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 563100 | 198800 | 422   |
|                                     | 3/V 18L4  | 1748 | 0.86                                | 280580                | 31                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 1848 | 0.81                                | 280580                | 30                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 2295 | 0.65                                | 212900                | 19.2                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 2464 | 0.61                                | 280580                | 23                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 2945 | 0.51                                | 273300                | 19.2                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 3495 | 0.43                                | 280580                | 16.6                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 3696 | 0.41                                | 280580                | 15.7                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 4386 | 0.34                                | 280580                | 13.3                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |
|                                     | 3/V 18L4  | 5099 | 0.29                                | 280580                | 11.4                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 503000 | 565000 | 200000 | 422   |

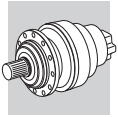
### 3/V 19 L4

476410 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |        |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|-----|-----|-----|---------------------|-------|--------|--------|--------|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ     |   |
| <b>B5</b>                           |   |      |                                     |                       |                       |          |   |       |     |     |     |                     |       |        |        |        |   |
| 1500                                | 3/V 19L4  | 2582 | 0.58                                | 365200                | 29                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 638000 | 702000 | 200000 | 432   |
|                                     | 3/V 19L4  | 3231 | 0.46                                | 367600                | 23                    | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 638000 | 702000 | 200000 | 432   |
|                                     | 3/V 19L4  | 4095 | 0.37                                | 380000                | 19.2                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 638000 | 702000 | 200000 | 432   |
|                                     | 3/V 19L4  | 4457 | 0.34                                | 359700                | 16.3                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 638000 | 702000 | 200000 | 432   |
|                                     | 3/V 19L4  | 5164 | 0.29                                | 403700                | 17.3                  | —        | 132   | 160   | 180 | 200 | 225 | —                   | —     | 638000 | 702000 | 200000 | 432   |

B





**3/V 21 L4**

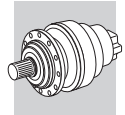
**655740 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |          | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)   |       |     |     |     | Rn <sub>2</sub> [N] |       |        |        |         |     |
|-------------------------------------|----------|-------------|-------------------------------------|-----------------------|-----------------------|----------|-----------|-------|-----|-----|-----|---------------------|-------|--------|--------|---------|-----|
|                                     |          |             |                                     |                       |                       |          | MC/PC     | MZ/PZ | HC  | HZ  | FZ  | MC/PC               | MZ/PZ | HC     | HZ     | FZ      |     |
|                                     |          |             |                                     |                       |                       |          | <b>B5</b> |       |     |     |     | <b>V</b>            |       |        |        |         |     |
| <b>1500</b>                         | 3/V 21L4 | <b>1062</b> | 1.4                                 | 443000                | 79                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 705200 | 836300 | 1069400 | 442 |
|                                     | 3/V 21L4 | <b>1260</b> | 1.2                                 | 425500                | 65                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 742400 | 880400 | 1132200 | 442 |
|                                     | 3/V 21L4 | <b>1517</b> | 0.99                                | 512200                | 65                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>1800</b> | 0.83                                | 536400                | 57                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>1890</b> | 0.79                                | 460000                | 48                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>2275</b> | 0.66                                | 553700                | 48                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>2520</b> | 0.60                                | 511700                | 41                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>2700</b> | 0.56                                | 536400                | 39                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>3600</b> | 0.42                                | 536400                | 30                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>3780</b> | 0.40                                | 460000                | 25                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>4550</b> | 0.33                                | 553700                | 25                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |
|                                     | 3/V 21L4 | <b>5040</b> | 0.30                                | 552000                | 24                    | —        | 132       | 160   | 180 | 200 | 225 | —                   | —     | 779000 | 923000 | 1200000 | 442 |

**B**

آتور صنعت  
ATOORSANAT





25.6 3/A - COMBINED UNITS RATING CHARTS

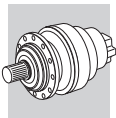
Reading the rating chart.

| 3/A 00 L2                  |           |      |                            |                |                |             |         | 1250 Nm |    |    |     |                     |   |   |   |      |      |       |       |      |     |
|----------------------------|-----------|------|----------------------------|----------------|----------------|-------------|---------|---------|----|----|-----|---------------------|---|---|---|------|------|-------|-------|------|-----|
| $n_1$<br>min <sup>-1</sup> |           | $i$  | $n_2$<br>min <sup>-1</sup> | $M_{n2}$<br>Nm | $P_{n1}$<br>kW | $P_t$<br>kW | P (IEC) |         |    |    |     | R <sub>n2</sub> [N] |   |   |   |      |      |       |       |      |     |
|                            |           |      |                            |                |                |             | MC/PC   | MZ/PZ   | HC | HZ | FZ  |                     |   |   |   |      |      |       |       |      |     |
| 1500                       | 3/A 00 L2 | 19.1 | 78                         | 470            | 4.3            | —           | 63      | 71      | 80 | 90 | 100 | 112                 | — | — | — | 2840 | 2840 | 8290  | 9530  | 1870 | 251 |
|                            | 3/A 00 L2 | 23.4 | 64                         | 580            | 4.3            | —           | 63      | 71      | 80 | 90 | 100 | 112                 | — | — | — | 3040 | 3040 | 8810  | 10100 | 2000 | 251 |
|                            | 3/A 00 L2 | 31.7 | 47                         | 650            | 3.5            | —           | 63      | 71      | 80 | 90 | 100 | 112                 | — | — | — | 3370 | 3370 | 9650  | 11100 | 2210 | 251 |
|                            | 3/A 00 L2 | 39.6 | 38                         | 550            | 2.4            | —           | 63      | 71      | 80 | 90 | 100 | 112                 | — | — | — | 3620 | 3620 | 10300 | 11800 | 2380 | 251 |
|                            | 3/A 00 L2 | 41.5 | 36                         | 650            | 2.7            | —           | 63      | 71      | 80 | 90 | 100 | 112                 | — | — | — | 3680 | 3680 | 10500 | 12000 | 2420 | 251 |

- 1 Reference torque
- 2 Gearbox drive speed
- 3 Frame size of combined planetary + bevel helical unit
- 4 Gear ratio
- 5 Gearbox output speed
- 6 Gearbox rated output torque based on:
  - service factor  $f_s=1$
  - 10000 h theoretical lifetime
- 7 Gearbox rated input power, based on:
  - service factor  $f_s=1$
  - 10000 h theoretical lifetime
- 8 Gearbox thermal capacity
- 9 Frame size of available IEC motor
- 10 Permitted overhung loading on output shaft, based on:
  - service factor  $f_s=1$
  - 10000 h theoretical lifetime
  - speed of output  $n_2$




For forces not applied at shaft midpoint, see diagrams provided in the specific gearbox overall dimensioning pages
- 11 Dimensions page





### 3/A 00 L2




### 1250 Nm

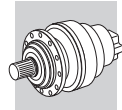
| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |    |     |       |       |    |      |      | Rn <sub>2</sub> [N] |       |       |      |     |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|----|----|-----|-------|-------|----|------|------|---------------------|-------|-------|------|-----|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC | HZ   | FZ   |                     |       |       |      |     |   |
| 1500                                | 3/A 00 L2   | 19.1 | 78                                  | 470                   | 4.3                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 2840 | 2840                | 8290  | 9530  | 1870 | 251 |   |
|                                     | 3/A 00 L2   | 23.4 | 64                                  | 580                   | 4.3                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3040 | 3040                | 8810  | 10100 | 2000 | 251 |   |
|                                     | 3/A 00 L2   | 31.7 | 47                                  | 650                   | 3.5                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3370 | 3370                | 9650  | 11100 | 2210 | 251 |   |
|                                     | 3/A 00 L2   | 39.6 | 38                                  | 550                   | 2.4                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3620 | 3620                | 10300 | 11800 | 2380 | 251 |   |
|                                     | 3/A 00 L2   | 41.5 | 36                                  | 650                   | 2.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3680 | 3680                | 10500 | 12000 | 2420 | 251 |   |
|                                     | 3/A 00 L2   | 51.8 | 28.9                                | 550                   | 1.8                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3960 | 3960                | 11200 | 12800 | 2610 | 251 |   |
|                                     | 3/A 00 L2   | 61.2 | 24.5                                | 650                   | 1.8                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4190 | 4190                | 11700 | 13500 | 2750 | 251 |   |
|                                     | 3/A 00 L2   | 71.0 | 21.1                                | 650                   | 1.6                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4400 | 4400                | 12300 | 14100 | 2890 | 251 |   |
|                                     | 3/A 00 L2   | 80.2 | 18.7                                | 650                   | 1.4                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4580 | 4580                | 12700 | 14600 | 3010 | 251 |   |
|                                     | 3/A 00 L2   | 88.6 | 16.9                                | 550                   | 1.1                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4740 | 4740                | 13100 | 15100 | 3120 | 251 |   |
|                                     | 3/A 00 L2   | 100  | 15.0                                | 550                   | 0.95                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4940 | 4940                | 13600 | 15600 | 3240 | 251 |   |
|                                     | 3/A 00 L2   | 107  | 14.0                                | 650                   | 1.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 5050 | 5050                | 13900 | 16000 | 3320 | 251 |   |
|                                     | 3/A 00 L2   | 134  | 11.2                                | 550                   | 0.71                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 5440 | 5440                | 14900 | 17100 | 3580 | 251 |   |
|                                     | 3/A 00 L2   | 171  | 8.8                                 | 550                   | 0.55                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 5900 | 5900                | 16000 | 18400 | 3880 | 251 |   |
|                                     | 3/A 00 L2   | 203  | 7.4                                 | 650                   | 0.55                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6240 | 6240                | 16800 | 19300 | 4100 | 251 |   |
|                                     | 3/A 00 L2   | 219  | 6.9                                 | 620                   | 0.49                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6400 | 6400                | 17200 | 19800 | 4210 | 251 |   |
|                                     | 3/A 00 L2   | 253  | 5.9                                 | 550                   | 0.37                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6720 | 6720                | 18000 | 20700 | 4420 | 251 |   |
|                                     | 3/A 00 L2   | 296  | 5.1                                 | 650                   | 0.38                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 7080 | 7080                | 18900 | 21700 | 4660 | 251 |   |
|                                     | 3/A 00 L2   | 319  | 4.7                                 | 440                   | 0.24                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 7260 | 7260 | 19300               | 22100 | 4770  | 251  |     |   |
|                                     | 3/A 00 L2   | 369  | 4.1                                 | 560                   | 0.26                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 7630 | 7630                | 20100 | 23100 | 5010 | 251 |   |
|                                     | 3/A 00 L2   | 391  | 3.8                                 | 540                   | 0.24                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 7770 | 7770 | 20500               | 23500 | 5110  | 251  |     |   |
|                                     | 3/A 00 L2   | 441  | 3.4                                 | 690                   | 0.27                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 8090 | 8090 | 21200               | 24400 | 5320  | 251  |     |   |
|                                     | 3/A 00 L2   | 550  | 2.7                                 | 590                   | 0.19                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 8710 | 8710 | 22700               | 26100 | 5730  | 251  |     |   |
|                                     | 3/A 00 L2   | 660  | 2.3                                 | 610                   | 0.16                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 9250 | 9250 | 24000               | 27500 | 6080  | 251  |     |   |

B

### 3/A 01 L2




### 2460 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |    |     |       |       |    |      |      | Rn <sub>2</sub> [N] |       |       |      |     |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|----|----|-----|-------|-------|----|------|------|---------------------|-------|-------|------|-----|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC | HZ   | FZ   |                     |       |       |      |     |   |
| 1500                                | 3/A 01 L2   | 18.8 | 80                                  | 710                   | 6.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 2830 | 2830                | 8250  | 9470  | 1860 | 261 |   |
|                                     | 3/A 01 L2   | 23.0 | 65                                  | 870                   | 6.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 3020 | 3020                | 8760  | 10100 | 1990 | 261 |   |
|                                     | 3/A 01 L2   | 31.2 | 48                                  | 1180                  | 6.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 3340 | 3340                | 9600  | 11000 | 2200 | 261 |   |
|                                     | 3/A 01 L2   | 35.8 | 42                                  | 760                   | 3.7                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 3500 | 3500                | 10000 | 11500 | 2300 | 261 |   |
|                                     | 3/A 01 L2   | 40.1 | 37                                  | 870                   | 3.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3640 | 3640                | 10300 | 11900 | 2390 | 261 |   |
|                                     | 3/A 01 L2   | 43.9 | 34                                  | 930                   | 3.7                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 3750 | 3750                | 10600 | 12200 | 2470 | 261 |   |
|                                     | 3/A 01 L2   | 49.1 | 31                                  | 830                   | 2.9                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 3890 | 3890                | 11000 | 12600 | 2560 | 261 |   |
|                                     | 3/A 01 L2   | 54.2 | 27.7                                | 1180                  | 3.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4020 | 4020                | 11300 | 13000 | 2650 | 261 |   |
|                                     | 3/A 01 L2   | 59.4 | 25.2                                | 1260                  | 3.7                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 4150 | 4150                | 11600 | 13400 | 2730 | 261 |   |
|                                     | 3/A 01 L2   | 74.2 | 20.2                                | 1150                  | 2.7                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —    | 4470 | 4470                | 12400 | 14300 | 2940 | 261 |   |
|                                     | 3/A 01 L2   | 81.3 | 18.4                                | 1300                  | 2.8                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4610 | 4610                | 12800 | 14700 | 3030 | 261 |   |
|                                     | 3/A 01 L2   | 102  | 14.8                                | 1150                  | 2.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 4960 | 4960                | 13700 | 15700 | 3260 | 261 |   |
|                                     | 3/A 01 L2   | 133  | 11.3                                | 1300                  | 1.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 5430 | 5430                | 14800 | 17100 | 3570 | 261 |   |
|                                     | 3/A 01 L2   | 166  | 9.0                                 | 1150                  | 1.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 5850 | 5850                | 15900 | 18200 | 3840 | 261 |   |
|                                     | 3/A 01 L2   | 184  | 8.1                                 | 1030                  | 0.97                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6050 | 6050                | 16400 | 18800 | 3980 | 261 |   |
|                                     | 3/A 01 L2   | 204  | 7.3                                 | 1300                  | 1.1                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6260 | 6260                | 16900 | 19400 | 4120 | 261 |   |
|                                     | 3/A 01 L2   | 220  | 6.8                                 | 830                   | 0.65                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6410 | 6410                | 17200 | 19800 | 4220 | 261 |   |
|                                     | 3/A 01 L2   | 255  | 5.9                                 | 1150                  | 0.78                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6740 | 6740                | 18000 | 20700 | 4430 | 261 |   |
|                                     | 3/A 01 L2   | 269  | 5.6                                 | 1010                  | 0.65                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 6860 | 6860                | 18300 | 21000 | 4510 | 261 |   |
|                                     | 3/A 01 L2   | 311  | 4.8                                 | 1150                  | 0.64                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 7200 | 7200                | 19100 | 22000 | 4740 | 261 |   |
|                                     | 3/A 01 L2   | 364  | 4.1                                 | 1340                  | 0.64                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 7590 | 7590                | 20100 | 23000 | 4990 | 261 |   |
|                                     | 3/A 01 L2   | 393  | 3.8                                 | 830                   | 0.36                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 7790 | 7790 | 20500               | 23600 | 5120  | 261  |     |   |
|                                     | 3/A 01 L2   | 454  | 3.3                                 | 1150                  | 0.44                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —    | 8170 | 8170                | 21400 | 24600 | 5370 | 261 |   |
|                                     | 3/A 01 L2   | 533  | 2.8                                 | 1120                  | 0.36                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 8620 | 8620 | 22500               | 25800 | 5660  | 261  |     |   |
|                                     | 3/A 01 L2   | 665  | 2.3                                 | 1150                  | 0.30                  | —        | 63  | 71    | —  | —  | —   | —     | —     | —  | 9280 | 9280 | 24000               | 27600 | 6100  | 261  |     |   |



### 3/A 03 L2




### 2970 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |    |     |       |       |    |    |       | Rn <sub>2</sub> [N] |       |       |       |     |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|----|----|-----|-------|-------|----|----|-------|---------------------|-------|-------|-------|-----|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC | HZ | FZ    |                     |       |       |       |     |   |
| 1500                                | 3/A 03 L2   | 19.4 | 77                                  | 1050                  | 9.3                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 8790  | 10100               | 17000 | 20500 | 5640  | 271 |   |
|                                     | 3/A 03 L2   | 23.0 | 65                                  | 1240                  | 9.3                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 9290  | 10700               | 17900 | 21500 | 5960  | 271 |   |
|                                     | 3/A 03 L2   | 28.8 | 52                                  | 1550                  | 9.3                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 10000 | 11600               | 19100 | 23000 | 6430  | 271 |   |
|                                     | 3/A 03 L2   | 33.5 | 45                                  | 1800                  | 9.3                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 10500 | 12200               | 20000 | 24100 | 6760  | 271 |   |
|                                     | 3/A 03 L2   | 40.5 | 37                                  | 1650                  | 7.0                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 11200 | 13000               | 21200 | 25500 | 7200  | 271 |   |
|                                     | 3/A 03 L2   | 43.4 | 35                                  | 1800                  | 7.2                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 11500 | 13300               | 21600 | 26000 | 7370  | 271 |   |
|                                     | 3/A 03 L2   | 52.5 | 28.6                                | 1650                  | 5.4                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 12200 | 14100               | 22900 | 27600 | 7850  | 271 |   |
|                                     | 3/A 03 L2   | 52.5 | 28.6                                | 1650                  | 5.4                   | —        | —   | —     | 80 | 90 | 100 | 112   | —     | —  | —  | 12200 | 14100               | 22900 | 27600 | 7850  | 271 |   |
|                                     | 3/A 03 L2   | 62.9 | 23.8                                | 1550                  | 4.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 13000 | 15000               | 24200 | 29100 | 8340  | 271 |   |
|                                     | 3/A 03 L2   | 73.2 | 20.5                                | 1800                  | 4.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 13700 | 15800               | 25300 | 30400 | 8770  | 271 |   |
|                                     | 3/A 03 L2   | 88.5 | 16.9                                | 1650                  | 3.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 14600 | 16800               | 26800 | 32200 | 9340  | 271 |   |
|                                     | 3/A 03 L2   | 96.9 | 15.5                                | 1690                  | 3.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 15000 | 17300               | 27500 | 33100 | 9630  | 271 |   |
|                                     | 3/A 03 L2   | 182  | 8.3                                 | 1830                  | 1.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 18500 | 21400               | 33200 | 40000 | 11900 | 271 |   |
|                                     | 3/A 03 L2   | 220  | 6.8                                 | 1650                  | 1.3                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 19700 | 22800               | 35200 | 42300 | 12700 | 271 |   |
|                                     | 3/A 03 L2   | 269  | 5.6                                 | 1840                  | 1.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 21100 | 24400               | 37400 | 45000 | 13500 | 271 |   |
|                                     | 3/A 03 L2   | 269  | 5.6                                 | 1840                  | 1.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 21100 | 24400               | 37400 | 45000 | 13500 | 271 |   |
|                                     | 3/A 03 L2   | 326  | 4.6                                 | 1660                  | 0.88                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 22500 | 26000               | 39600 | 47600 | 14400 | 271 |   |
|                                     | 3/A 03 L2   | 352  | 4.3                                 | 2020                  | 0.99                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 23100 | 26600               | 40500 | 48800 | 14800 | 271 |   |
|                                     | 3/A 03 L2   | 409  | 3.7                                 | 1940                  | 0.82                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 24300 | 28000               | 42400 | 51000 | 15600 | 271 |   |
|                                     | 3/A 03 L2   | 495  | 3.0                                 | 1720                  | 0.60                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 25900 | 29800               | 44900 | 54000 | 16600 | 271 |   |
|                                     | 3/A 03 L2   | 574  | 2.6                                 | 1740                  | 0.52                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 27200 | 31400               | 46900 | 56500 | 17400 | 271 |   |
|                                     | 3/A 03 L2   | 605  | 2.5                                 | 1800                  | 0.51                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 27600 | 31900               | 47700 | 57400 | 17700 | 271 |   |
|                                     | 3/A 03 L2   | 731  | 2.1                                 | 1800                  | 0.42                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 29400 | 34000               | 50500 | 60700 | 18900 | 271 |   |

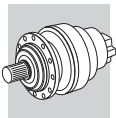
B

### 3/A 04 L2

### 3960 Nm

| n <sub>1</sub><br>min <sup>-1</sup> |  | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |    |     |       |       |    |    |       | Rn <sub>2</sub> [N] |       |       |       |     |  |
|-------------------------------------|---|------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|----|----|-----|-------|-------|----|----|-------|---------------------|-------|-------|-------|-----|---|
|                                     |   |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC | HZ | FZ    |                     |       |       |       |     |   |
| 1500                                | 3/A 04 L2   | 18.7 | 80                                  | 1920                  | 17.7                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 8680  | 10000               | 16800 | 20200 | 5570  | 283 |   |
|                                     | 3/A 04 L2   | 22.1 | 68                                  | 2270                  | 17.7                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 9170  | 10600               | 17700 | 21300 | 5880  | 283 |   |
|                                     | 3/A 04 L2   | 25.6 | 59                                  | 1920                  | 12.9                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 9630  | 11100               | 18500 | 22200 | 6180  | 283 |   |
|                                     | 3/A 04 L2   | 27.7 | 54                                  | 2830                  | 17.6                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 9890  | 11400               | 18900 | 22800 | 6350  | 283 |   |
|                                     | 3/A 04 L2   | 30.2 | 50                                  | 2270                  | 12.9                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 10200 | 11700               | 19400 | 23300 | 6530  | 283 |   |
|                                     | 3/A 04 L2   | 35.3 | 43                                  | 2270                  | 11.1                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 10700 | 12400               | 20300 | 24500 | 6880  | 283 |   |
|                                     | 3/A 04 L2   | 39.1 | 38                                  | 2270                  | 10.0                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 11100 | 12800               | 21000 | 25200 | 7120  | 283 |   |
|                                     | 3/A 04 L2   | 44.3 | 34                                  | 2850                  | 11.1                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 11600 | 13300               | 21800 | 26200 | 7420  | 283 |   |
|                                     | 3/A 04 L2   | 49.7 | 30                                  | 2270                  | 7.9                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 12000 | 13900               | 22500 | 27100 | 7710  | 283 |   |
|                                     | 3/A 04 L2   | 54.5 | 27.5                                | 2390                  | 7.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 12400 | 14300               | 23200 | 27900 | 7950  | 283 |   |
|                                     | 3/A 04 L2   | 62.4 | 24.0                                | 2850                  | 7.9                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 13000 | 15000               | 24100 | 29000 | 8320  | 283 |   |
|                                     | 3/A 04 L2   | 68.4 | 21.9                                | 2510                  | 6.3                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 13400 | 15400               | 24800 | 29800 | 8580  | 283 |   |
|                                     | 3/A 04 L2   | 81.7 | 18.4                                | 2370                  | 5.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 14200 | 16400               | 26200 | 31500 | 9100  | 283 |   |
|                                     | 3/A 04 L2   | 90.7 | 16.5                                | 2390                  | 4.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 14700 | 17000               | 27000 | 32500 | 9420  | 283 |   |
|                                     | 3/A 04 L2   | 102  | 14.7                                | 2550                  | 4.3                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 15300 | 17600               | 27900 | 33600 | 9790  | 283 |   |
|                                     | 3/A 04 L2   | 117  | 12.8                                | 2390                  | 3.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 16000 | 18500               | 29100 | 35000 | 10300 | 283 |   |
|                                     | 3/A 04 L2   | 129  | 11.6                                | 2720                  | 3.6                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 16500 | 19100               | 30000 | 36100 | 10600 | 283 |   |
|                                     | 3/A 04 L2   | 149  | 10.1                                | 2390                  | 2.8                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 17300 | 20000               | 31300 | 37700 | 11100 | 283 |   |
|                                     | 3/A 04 L2   | 162  | 9.2                                 | 2900                  | 3.1                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 17800 | 20600               | 32100 | 38700 | 11400 | 283 |   |
|                                     | 3/A 04 L2   | 174  | 8.6                                 | 2970                  | 2.9                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 18200 | 21100               | 32800 | 39500 | 11700 | 283 |   |
|                                     | 3/A 04 L2   | 205  | 7.3                                 | 3500                  | 2.9                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 19300 | 22300               | 34500 | 41500 | 12400 | 283 |   |
|                                     | 3/A 04 L2   | 226  | 6.6                                 | 3500                  | 2.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 19900 | 23000               | 35500 | 42700 | 12800 | 283 |   |
|                                     | 3/A 04 L2   | 250  | 6.0                                 | 3500                  | 2.4                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 20600 | 23800               | 36600 | 44000 | 13200 | 283 |   |
|                                     | 3/A 04 L2   | 283  | 5.3                                 | 2850                  | 1.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 21500 | 24800               | 38000 | 45700 | 13800 | 283 |   |
|                                     | 3/A 04 L2   | 317  | 4.7                                 | 2400                  | 1.3                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 22300 | 25700               | 39300 | 47300 | 14300 | 283 |   |
|                                     | 3/A 04 L2   | 349  | 4.3                                 | 2430                  | 1.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 23000 | 26600               | 40400 | 48600 | 14800 | 283 |   |
|                                     | 3/A 04 L2   | 386  | 3.9                                 | 2450                  | 1.1                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 23800 | 27500               | 41700 | 50200 | 15300 | 283 |   |
|                                     | 3/A 04 L2   | 469  | 3.2                                 | 2500                  | 0.92                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 25400 | 29300               | 44200 | 53100 | 16300 | 283 |   |
|                                     | 3/A 04 L2   | 520  | 2.9                                 | 2520                  | 0.84                  | —        | 63  | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 26300 | 30300               | 45600 | 54800 | 16900 | 283 |   |





**3/A 05 L2**

**5800 Nm**

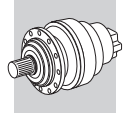
| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |    |    |     |       |       |    |    |       | Rn <sub>2</sub> [N] |       |       |       |     |  |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|----|----|-----|-------|-------|----|----|-------|---------------------|-------|-------|-------|-----|--|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC | HZ | FZ    |                     |       |       |       |     |  |
| 1500                                | 3/A 05L2 | 18.7 | 80                                  | 1920                  | 17.7                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 8680  | 10000               | 16800 | 20200 | 5570  | 295 |  |
|                                     | 3/A 05L2 | 22.1 | 68                                  | 2270                  | 17.7                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 9170  | 10600               | 17700 | 21300 | 5880  | 295 |  |
|                                     | 3/A 05L2 | 27.7 | 54                                  | 2850                  | 17.7                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 9890  | 11400               | 18900 | 22800 | 6350  | 295 |  |
|                                     | 3/A 05L2 | 32.2 | 47                                  | 3310                  | 17.7                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 10400 | 12000               | 19800 | 23800 | 6670  | 295 |  |
|                                     | 3/A 05L2 | 39.0 | 38                                  | 3020                  | 13.3                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 11100 | 12800               | 21000 | 25200 | 7110  | 295 |  |
|                                     | 3/A 05L2 | 44.0 | 34                                  | 3310                  | 12.9                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 11500 | 13300               | 21700 | 26100 | 7400  | 295 |  |
|                                     | 3/A 05L2 | 53.3 | 28.2                                | 3040                  | 9.8                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 12300 | 14200               | 23000 | 27700 | 7890  | 295 |  |
|                                     | 3/A 05L2 | 57.0 | 26.3                                | 3310                  | 10.0                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 12600 | 14500               | 23500 | 28300 | 8070  | 295 |  |
|                                     | 3/A 05L2 | 62.6 | 24.0                                | 3220                  | 8.9                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 13000 | 15000               | 24200 | 29100 | 8330  | 295 |  |
|                                     | 3/A 05L2 | 72.5 | 20.7                                | 3310                  | 7.9                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 13600 | 15700               | 25200 | 30400 | 8740  | 295 |  |
|                                     | 3/A 05L2 | 75.8 | 19.8                                | 3060                  | 7.0                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 13800 | 16000               | 25600 | 30800 | 8870  | 295 |  |
|                                     | 3/A 05L2 | 85.6 | 17.5                                | 3520                  | 7.1                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 14400 | 16600               | 26500 | 31900 | 9240  | 295 |  |
|                                     | 3/A 05L2 | 104  | 14.5                                | 3080                  | 5.1                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | —  | —  | 15300 | 17700               | 28100 | 33800 | 9840  | 295 |  |
|                                     | 3/A 05L2 | 121  | 12.4                                | 3520                  | 5.0                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 16200 | 18700               | 29400 | 35400 | 10400 | 295 |  |
|                                     | 3/A 05L2 | 141  | 10.7                                | 3600                  | 4.4                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 17000 | 19600               | 30800 | 37000 | 10900 | 295 |  |
|                                     | 3/A 05L2 | 162  | 9.2                                 | 2900                  | 3.1                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | —  | —  | 17800 | 20600               | 32100 | 38700 | 11400 | 295 |  |
|                                     | 3/A 05L2 | 175  | 8.5                                 | 3600                  | 3.5                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 18300 | 21100               | 32900 | 39600 | 11700 | 295 |  |
|                                     | 3/A 05L2 | 212  | 7.1                                 | 3100                  | 2.5                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 19500 | 22500               | 34800 | 41900 | 12500 | 295 |  |
|                                     | 3/A 05L2 | 212  | 7.1                                 | 3100                  | 2.5                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 19500 | 22500               | 34800 | 41900 | 12500 | 295 |  |
|                                     | 3/A 05L2 | 241  | 6.2                                 | 4290                  | 3.1                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 20300 | 23500               | 36200 | 43500 | 13000 | 295 |  |
|                                     | 3/A 05L2 | 280  | 5.4                                 | 3600                  | 2.2                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 21400 | 24700               | 37800 | 45500 | 13700 | 295 |  |
|                                     | 3/A 05L2 | 329  | 4.6                                 | 3650                  | 1.9                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 22600 | 26100               | 39700 | 47800 | 14500 | 295 |  |
|                                     | 3/A 05L2 | 398  | 3.8                                 | 3180                  | 1.4                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 24000 | 27800               | 42100 | 50600 | 15400 | 295 |  |
|                                     | 3/A 05L2 | 422  | 3.6                                 | 4400                  | 1.8                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 24500 | 28300               | 42800 | 51500 | 15700 | 295 |  |
|                                     | 3/A 05L2 | 491  | 3.1                                 | 3880                  | 1.4                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 25800 | 29800               | 44800 | 53900 | 16500 | 295 |  |
|                                     | 3/A 05L2 | 594  | 2.5                                 | 3300                  | 0.96                  | —        | 63      | 71    | 80 | 90 | 100 | 112   | —     | —  | —  | 27500 | 31700               | 47400 | 57100 | 17600 | 295 |  |

B

**3/A 06 L2**




**10840 Nm**

| n <sub>1</sub><br>min <sup>-1</sup> |          | i    | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC) |       |    |    |     |       |       |     |     |       | Rn <sub>2</sub> [N] |       |       |       |     |  |
|-------------------------------------|----------|------|-------------------------------------|-----------------------|-----------------------|----------|---------|-------|----|----|-----|-------|-------|-----|-----|-------|---------------------|-------|-------|-------|-----|--|
|                                     |          |      |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC  | HZ  | FZ    |                     |       |       |       |     |  |
| 1500                                | 3/A 06L2 | 27.7 | 54                                  | 3320                  | 21                    | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 12300 | 14000               | 30900 | 36000 | 9250  | 307 |  |
|                                     | 3/A 06L2 | 32.7 | 46                                  | 3920                  | 21                    | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 13000 | 14700               | 32500 | 37900 | 9780  | 307 |  |
|                                     | 3/A 06L2 | 34.9 | 43                                  | 3490                  | 17.2                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 13300 | 15100               | 33200 | 38600 | 9990  | 307 |  |
|                                     | 3/A 06L2 | 41.1 | 37                                  | 4910                  | 21                    | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 14000 | 15900               | 34800 | 40500 | 10500 | 307 |  |
|                                     | 3/A 06L2 | 47.2 | 32                                  | 3840                  | 14.0                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 14700 | 16700               | 36300 | 42300 | 11000 | 307 |  |
|                                     | 3/A 06L2 | 51.7 | 29.0                                | 5170                  | 17.2                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 15200 | 17200               | 37300 | 43400 | 11400 | 307 |  |
|                                     | 3/A 06L2 | 55.7 | 26.9                                | 4530                  | 14.0                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 15500 | 17600               | 38100 | 44400 | 11700 | 307 |  |
|                                     | 3/A 06L2 | 60.1 | 24.9                                | 6010                  | 17.2                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 15900 | 18100               | 39000 | 45500 | 12000 | 307 |  |
|                                     | 3/A 06L2 | 69.9 | 21.5                                | 5690                  | 14.0                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 16800 | 19000               | 40800 | 47500 | 12600 | 307 |  |
|                                     | 3/A 06L2 | 81.2 | 18.5                                | 6480                  | 13.8                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 17600 | 20000               | 42700 | 49700 | 13200 | 307 |  |
|                                     | 3/A 06L2 | 88.5 | 16.9                                | 6210                  | 12.1                  | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 18100 | 20600               | 43800 | 51000 | 13600 | 307 |  |
|                                     | 3/A 06L2 | 98.3 | 15.3                                | 5380                  | 9.4                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 18800 | 21300               | 45200 | 52700 | 14100 | 307 |  |
|                                     | 3/A 06L2 | 112  | 13.4                                | 6180                  | 9.8                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 19600 | 22200               | 47100 | 54800 | 14700 | 307 |  |
|                                     | 3/A 06L2 | 125  | 12.0                                | 5440                  | 7.5                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 20300 | 23000               | 48600 | 56500 | 15300 | 307 |  |
|                                     | 3/A 06L2 | 141  | 10.7                                | 7760                  | 9.8                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 21200 | 24000               | 50400 | 58700 | 15900 | 307 |  |
|                                     | 3/A 06L2 | 164  | 9.2                                 | 6500                  | 7.1                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 22300 | 25200               | 52700 | 61400 | 16700 | 307 |  |
|                                     | 3/A 06L2 | 190  | 7.9                                 | 7760                  | 7.3                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 23400 | 26500               | 55100 | 64200 | 17600 | 307 |  |
|                                     | 3/A 06L2 | 198  | 7.6                                 | 5500                  | 4.9                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 23700 | 26900               | 55800 | 65000 | 17800 | 307 |  |
|                                     | 3/A 06L2 | 221  | 6.8                                 | 6520                  | 5.3                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 24600 | 27900               | 57700 | 67100 | 18500 | 307 |  |
|                                     | 3/A 06L2 | 267  | 5.6                                 | 5500                  | 3.7                   | —        | —       | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 26200 | 29700               | 61000 | 71100 | 19700 | 307 |  |
|                                     | 3/A 06L2 | 276  | 5.4                                 | 7760                  | 5.0                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 26500 | 30000               | 61600 | 71800 | 19900 | 307 |  |
|                                     | 3/A 06L2 | 321  | 4.7                                 | 6610                  | 3.7                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 27900 | 31600               | 64500 | 75100 | 20900 | 307 |  |
|                                     | 3/A 06L2 | 388  | 3.9                                 | 5640                  | 2.6                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 29700 | 33600               | 68300 | 79500 | 22300 | 307 |  |
|                                     | 3/A 06L2 | 380  | 3.9                                 | 6180                  | 2.9                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 29500 | 33400               | 67900 | 79000 | 22200 | 307 |  |
|                                     | 3/A 06L2 | 435  | 3.5                                 | 7760                  | 3.2                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 30800 | 34900               | 70600 | 82300 | 23200 | 307 |  |
|                                     | 3/A 06L2 | 505  | 3.0                                 | 7150                  | 2.5                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 32400 | 36700               | 73900 | 86100 | 24400 | 307 |  |
|                                     | 3/A 06L2 | 555  | 2.7                                 | 7270                  | 2.3                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 33400 | 37900               | 76000 | 88500 | 25100 | 307 |  |
|                                     | 3/A 06L2 | 611  | 2.5                                 | 5920                  | 1.7                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 34500 | 39100               | 78300 | 91100 | 25900 | 307 |  |
|                                     | 3/A 06L2 | 671  | 2.2                                 | 6020                  | 1.6                   | —        | 63      | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 35600 | 40400               | 80500 | 93700 | 26800 | 307 |  |



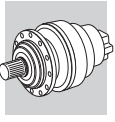
### 3/A 07 L2

### 15680 Nm

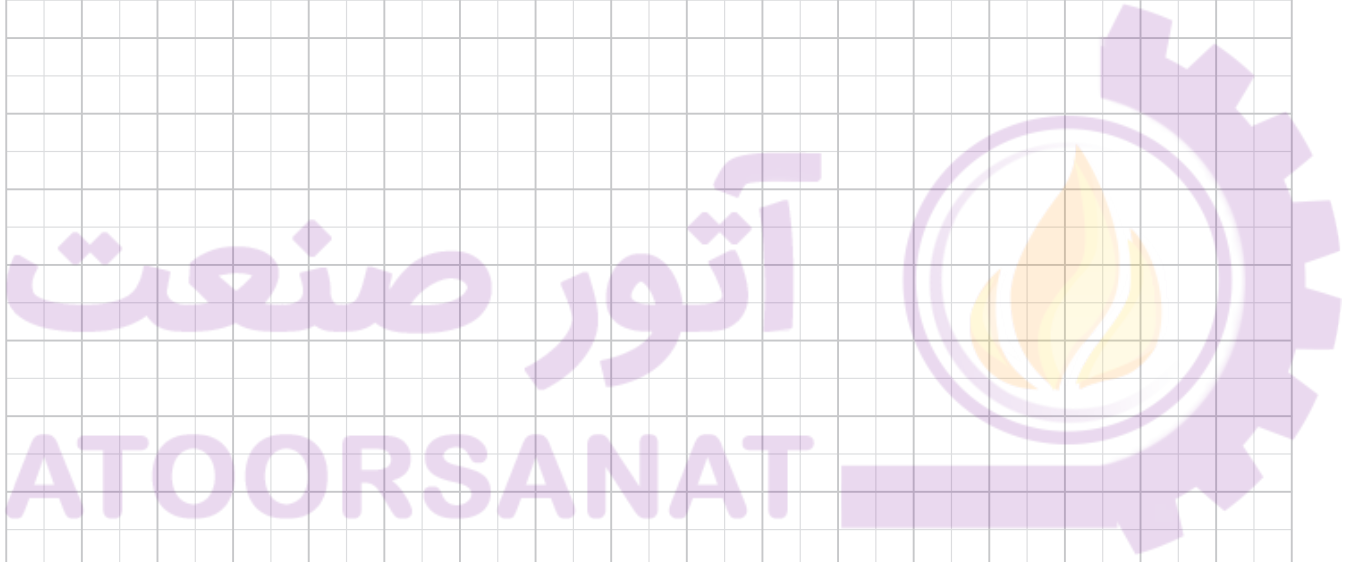
| n <sub>1</sub><br>min <sup>-1</sup> |  | i           | n <sub>2</sub><br>min <sup>-1</sup> | M <sub>n2</sub><br>Nm | P <sub>n1</sub><br>kW | Pt<br>kW | P (IEC)  |       |    |    |     |       |       |     |     |       |       |       | Rn <sub>2</sub> [N] |       |       |     |  |  |
|-------------------------------------|---|-------------|-------------------------------------|-----------------------|-----------------------|----------|---|-------|----|----|-----|-------|-------|-----|-----|-------|-------|-------|---------------------|-------|-------|-----|--|---|
|                                     |   |             |                                     |                       |                       |          | MC/PC   | MZ/PZ | HC | HZ | FZ  | MC/PC | MZ/PZ | HC  | HZ  | FZ    |       |       |                     |       |       |     |  |   |
| <b>1500</b>                         | <b>3/A 07L2</b>   | <b>27.1</b> | 55                                  | 6650                  | 42                    | —        | —   | —     | —  | —  | —   | —     | —     | 132 | 160 | 180   | 13600 | 17000 | 33100               | 43300 | 11800 | 319 |  |   |
|                                     | <b>3/A 07L2</b>   | <b>32.3</b> | 46                                  | 7940                  | 42                    | —        | —   | —     | —  | —  | —   | —     | —     | 132 | 160 | 180   | 14400 | 18100 | 34900               | 45700 | 12500 | 319 |  |   |
|                                     | <b>3/A 07L2</b>   | <b>41.5</b> | 36                                  | 9620                  | 40                    | —        | —   | —     | —  | —  | —   | —     | —     | 132 | 160 | 180   | 15700 | 19600 | 37600               | 49200 | 13600 | 319 |  |   |
|                                     | <b>3/A 07L2</b>   | <b>49.2</b> | 30                                  | 8380                  | 29                    | —        | —   | —     | —  | —  | —   | —     | —     | 132 | 160 | 180   | 16600 | 20800 | 39500               | 51800 | 14400 | 319 |  |   |
|                                     | <b>3/A 07L2</b>   | <b>57.3</b> | 26.2                                | 6650                  | 20                    | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 17400 | 21900 | 41400 | 54200               | 15200 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>68.3</b> | 22.0                                | 7940                  | 20                    | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 18500 | 23200 | 43600 | 57200               | 16100 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>87.7</b> | 17.1                                | 10200                 | 20                    | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 20100 | 25200 | 47000 | 61600               | 17500 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>109</b>  | 13.8                                | 8860                  | 14.5                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 21600 | 27100 | 50100 | 65700               | 18800 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>130</b>  | 11.6                                | 11100                 | 15.2                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 22900 | 28700 | 52900 | 69300               | 19900 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>140</b>  | 10.7                                | 11100                 | 14.1                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 23500 | 29500 | 54100 | 70900               | 20400 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>155</b>  | 9.7                                 | 9000                  | 10.3                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 24300 | 30500 | 55800 | 73100               | 21100 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>180</b>  | 8.3                                 | 10900                 | 10.8                  | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 25500 | 32000 | 58300 | 76500               | 22200 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>198</b>  | 7.6                                 | 8700                  | 7.8                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 26300 | 33000 | 60000 | 78600               | 22900 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>223</b>  | 6.7                                 | 9000                  | 7.2                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 27400 | 34400 | 62200 | 81500               | 23800 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>241</b>  | 6.2                                 | 9000                  | 6.6                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 28200 | 35300 | 63700 | 83500               | 24500 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>282</b>  | 5.3                                 | 8700                  | 5.5                   | —        | —   | —     | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 29600 | 37200 | 66700 | 87400               | 25800 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>341</b>  | 4.4                                 | 11500                 | 6.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 31600 | 39700 | 70700 | 92600               | 27500 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>405</b>  | 3.7                                 | 9080                  | 4.0                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 33500 | 42000 | 74400 | 97500               | 29100 | 319   |     |  |   |
|                                     | <b>3/A 07L2</b>   | <b>439</b>  | 3.4                                 | 9180                  | 3.7                   | —        | 63  | 71    | 80 | 90 | 100 | 112   | 132   | 160 | 180 | 34400 | 43100 | 76200 | 99900               | 29900 | 319   |     |  |   |

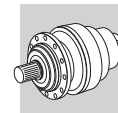
B





B





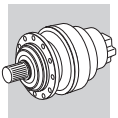
## 25.7 RATING CHARTS FOR INLINE UNITS 300 L

Reading the rating chart.

|    |      | 300 L                      |                            |                            |                             |                             |                              | 1250 Nm                |                        |  |   |                        |                           |      |
|----|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------------------|--|---|------------------------|---------------------------|------|
|    |      | 246                        |                            |                            |                             |                             |                              |                        |                        |  |   |                        |                           |      |
| L1 | i    | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | P <sub>t</sub><br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|    |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |                        |  |   |                        |                           |      |
|    | 3.48 | 760                        | 730                        | 730                        | 730                         | 730                         | 730                          | 20                     | 7.5                    | 2000                                   | 4000                                      | 260                    | 4F                        | 2000 |
|    | 4.26 | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 20                     | 7.5                    | 2000                                   | 4000                                      | 330                    | 4H                        | 2400 |
|    | 5.77 | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 20                     | 7.5                    | 2000                                   | 4000                                      | 260                    | 4F                        | 2400 |
|    | 7.20 | 700                        | 600                        | 550                        | 550                         | 550                         | 510                          | 16.5                   | 7.5                    | 2000                                   | 4000                                      | 160                    | 4D                        | 2400 |



|                                       |   |    |  |
|---------------------------------------|---|----|--|
| 1                                     | Reference torque                                      | 7  | Input angular velocity                   |
| 2                                     | Number of reduction stages (in-line gear unit)        | 8  | Maximum input angular velocity           |
| 3                                     | Gear ratio  | 9  | Rated brake torque (Hydraulic brake)     |
| Gearbox rated output torque based on: |   | 10 | Negative multidisc hydraulic brake       |
| 4                                     | - service factor $f_s=1$<br>- $n_2 \cdot h$ indicated | 11 | Maximum output torque at gearbox         |
| 5                                     | Maximum power transmitted to input shaft              | 12 | Page where dimensions can be sorted from |
| 6                                     | Gearbox thermal capacity                              |    |  |







**300 L** 246

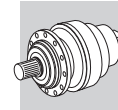
**1250 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |      |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   | [kW] |
| <b>L1</b>   | 3.48      | 760                  | 730               | 730               | 730               | 730               | 730               | 20             | 7.5            | 2000           | 4000              | 260            | 4F  | 2000              |      |
|   | 4.26      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 20             | 7.5            | 2000           | 4000              | 330            | 4H  | 2400              |      |
|   | 5.77      | 860                  | 730               | 650               | 650               | 650               | 630               | 20             | 7.5            | 2000           | 4000              | 260            | 4F  | 2400              |      |
|   | 7.20      | 700                  | 600               | 550               | 550               | 550               | 510               | 16.5           | 7.5            | 2000           | 4000              | 160            | 4D  | 2400              |      |
|   | 9.00      | 460                  | 390               | 370               | 370               | 370               | 370               | 8.9            | 7.5            | 2000           | 4000              | 160            | 4D  | 2400              |      |
| <b>L2</b>   | 12.1      | 760                  | 730               | 730               | 730               | 730               | 730               | 11.9           | 7.5            | 2000           | 4000              | 100            | 4B  | 2000              |      |
|   | 14.8      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 12.6           | 7.5            | 2000           | 4000              | 100            | 4B  | 2000              |      |
|   | 18.2      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 10.4           | 7.5            | 2000           | 4000              | 100            | 4B  | 2400              |      |
|   | 20.1      | 860                  | 730               | 650               | 650               | 650               | 630               | 7.2            | 7.5            | 2000           | 4000              | 100            | 4B  | 2000              |      |
|   | 24.6      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 7.8            | 7.5            | 2000           | 4000              | 100            | 4B  | 2400              |      |
|   | 30.7      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 6.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 33.3      | 860                  | 730               | 650               | 650               | 650               | 630               | 4.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 38.4      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 5.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 41.5      | 860                  | 730               | 650               | 650               | 650               | 630               | 3.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 51.9      | 860                  | 730               | 650               | 650               | 650               | 630               | 2.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 64.8      | 700                  | 600               | 550               | 550               | 550               | 510               | 2.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | <b>L3</b> | 51.6                 | 1250              | 1070              | 950               | 860               | 840               | 720            | 4.2            | 7.5            | 2000              | 4000           | 50  | 4A                | 2000 |
|   |           | 63.2                 | 1250              | 1070              | 950               | 860               | 840               | 720            | 3.5            | 7.5            | 2000              | 4000           | 50  | 4A                | 2400 |
| 69.9  |           | 860                  | 730               | 650               | 650               | 650               | 630               | 2.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 2000              |      |
| 77.5  |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 3.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 85.6  |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 2.7            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 105   |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 2.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 116   |           | 860                  | 730               | 650               | 650               | 650               | 630               | 1.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 131   |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 1.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 142   |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 1.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 177   |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 1.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 192   |           | 860                  | 730               | 650               | 650               | 650               | 630               | 1.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 221   |           | 1250                 | 1070              | 950               | 860               | 840               | 720               | 1.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 240   |           | 860                  | 730               | 650               | 650               | 650               | 630               | 0.82           | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 299   |           | 860                  | 730               | 650               | 650               | 650               | 630               | 0.66           | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 374   |           | 860                  | 730               | 650               | 650               | 650               | 630               | 0.53           | 7.5            | 2000           | 4000              | 50             | 4A  | 2400              |      |
| <b>L4</b>   | 330       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.72           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 403       | 860                  | 730               | 650               | 650               | 650               | 630               | 0.50           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 447       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.53           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 494       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.48           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 558       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.42           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 616       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.38           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 755       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.31           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 819       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.29           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 942       | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.25           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1022      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.23           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1108      | 860                  | 730               | 650               | 650               | 650               | 630               | 0.18           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1275      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.19           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1383      | 860                  | 730               | 650               | 650               | 650               | 630               | 0.15           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1591      | 1250                 | 1070              | 950               | 860               | 840               | 720               | 0.15           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
|   | 1725      | 860                  | 730               | 650               | 650               | 650               | 630               | 0.12           | 6              | 2000           | 4000              | 50             | 4A  | 2400              |      |
| 2153  | 860       | 730                  | 650               | 650               | 650               | 630               | 0.09              | 6              | 2000           | 4000           | 50                | 4A             | 2400  |                   |      |
| 2692  | 1000      | 1000                 | 890               | 850               | 760               | 630               | 0.09              | 6              | 2000           | 4000           | 50                | 4A             | 2400  |                   |      |

**301 L** 256



**2460 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 3.48 | 1490                 | 1430              | 1430              | 1430              | 1430              | 1300              | 30             | 7.5            | 2000           | 4000              | 440            | 4L  | 3400              |
|   | 4.26 | 2460                 | 2140              | 1890              | 1730              | 1580              | 1280              | 30             | 7.5            | 2000           | 4000              | 440            | 4L  | 3400              |
|   | 5.77 | 1720                 | 1460              | 1300              | 1300              | 1300              | 1240              | 30             | 7.5            | 2000           | 4000              | 400            | 4K  | 3400              |
|   | 7.20 | 1150                 | 1150              | 1150              | 1150              | 1150              | 940               | 30             | 7.5            | 2000           | 4000              | 260            | 4F  | 3400              |





**301 L**  256

**2460 Nm**

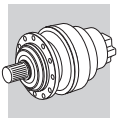
|  | i    | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | P <sub>t</sub><br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] |  | M <sub>2max</sub><br>[Nm] |      |
|---|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------------------|--|---|------------------------|---|---------------------------|------|
|   |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |                        |  |   |                        |   |                           |      |
| L1  | 9.00 | 920                        | 780                        | 730                        | 730                         | 730                         | 730                          | 15.8                   | 7.5                    | 2000                                   | 4000                                      | 260                    | 4F  | 3400                      |      |
|   | L2   | 12.1                       | 1490                       | 1430                       | 1430                        | 1430                        | 1430                         | 1300                   | 23.9                   | 7.5                                    | 2000                                      | 4000                   | 160   | 4D                        | 3400 |
| L2  | 14.8 | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 25.0                   | 7.5                    | 2000                                   | 4000                                      | 160                    | 4D  | 3400                      |      |
|   | 18.2 | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 20.7                   | 7.5                    | 2000                                   | 4000                                      | 160                    | 4D  | 3400                      |      |
|   | 20.1 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 14.4                   | 7.5                    | 2000                                   | 4000                                      | 160                    | 4D  | 3400                      |      |
|   | 24.6 | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 15.6                   | 7.5                    | 2000                                   | 4000                                      | 160                    | 4D  | 3400                      |      |
|   | 30.7 | 2000                       | 2000                       | 1830                       | 1730                        | 1580                        | 1280                         | 12.6                   | 7.5                    | 2000                                   | 4000                                      | 100                    | 4B  | 3400                      |      |
|   | 33.3 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 8.7                    | 7.5                    | 2000                                   | 4000                                      | 100                    | 4B  | 3400                      |      |
|   | 38.4 | 1600                       | 1570                       | 1570                       | 1570                        | 1530                        | 1280                         | 10.1                   | 7.5                    | 2000                                   | 4000                                      | 100                    | 4B  | 3400                      |      |
|   | 41.5 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 7.0                    | 7.5                    | 2000                                   | 4000                                      | 100                    | 4B  | 3400                      |      |
|   | 51.9 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 5.9                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 64.8 | 1150                       | 1150                       | 1150                       | 1150                        | 1150                        | 940                          | 4.0                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | L3   | 51.6                       | 2460                       | 2140                       | 1890                        | 1730                        | 1580                         | 1280                   | 8.3                    | 7.5                                    | 2000                                      | 4000                   | 50  | 4A                        | 3400 |
|   |      | 63.2                       | 2460                       | 2140                       | 1890                        | 1730                        | 1580                         | 1280                   | 7.0                    | 7.5                                    | 2000                                      | 4000                   | 50  | 4A                        | 3400 |
|   |      | 69.9                       | 1720                       | 1460                       | 1300                        | 1300                        | 1300                         | 1240                   | 4.7                    | 7.5                                    | 2000                                      | 4000                   | 50  | 4A                        | 3400 |
|   |      | 77.5                       | 2460                       | 2140                       | 1890                        | 1730                        | 1580                         | 1280                   | 5.9                    | 7.5                                    | 2000                                      | 4000                   | 50  | 4A                        | 3400 |
| 85.6  |      | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 5.4                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 105   |      | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 4.4                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 116   |      | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 3.1                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 131   |      | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 3.5                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 142   |      | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 3.2                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 177   |      | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 2.6                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 192   |      | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 2.0                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 221   |      | 2000                       | 2000                       | 1830                       | 1730                        | 1580                        | 1280                         | 2.1                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 240   |      | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 1.6                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 299   |      | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 1.3                    | 7.5                    | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 374   | 1720 | 1460                       | 1300                       | 1300                       | 1300                        | 1240                        | 1.0                          | 7.5                    | 2000                   | 4000                                   | 50  | 4A                     | 3400  |                           |      |
| L4  | 330  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 1.4                    | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 403  | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 1.00                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 447  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 1.06                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 494  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.96                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 558  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.85                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 616  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.77                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 755  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.63                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 819  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.58                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 942  | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.50                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 1022 | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.46                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 1108 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 0.36                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 1275 | 2460                       | 2140                       | 1890                       | 1730                        | 1580                        | 1280                         | 0.37                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 1383 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 0.29                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
|   | 1591 | 2000                       | 2000                       | 1830                       | 1730                        | 1580                        | 1280                         | 0.30                   | 6                      | 2000                                   | 4000                                      | 50                     | 4A  | 3400                      |      |
| 1725  | 1720 | 1460                       | 1300                       | 1300                       | 1300                        | 1240                        | 0.23                         | 6                      | 2000                   | 4000                                   | 50  | 4A                     | 3400  |                           |      |
| 2153  | 1720 | 1460                       | 1300                       | 1300                       | 1300                        | 1240                        | 0.19                         | 6                      | 2000                   | 4000                                   | 50  | 4A                     | 3400  |                           |      |
| 2692  | 1720 | 1460                       | 1300                       | 1300                       | 1300                        | 1240                        | 0.15                         | 6                      | 2000                   | 4000                                   | 50  | 4A                     | 3400  |                           |      |

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**2970 Nm**



|  | i    | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | P <sub>t</sub><br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] |  | M <sub>2max</sub><br>[Nm] |
|---|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------------------|--|---|------------------------|---|---------------------------|
|   |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |                        |  |   |                        |   |                           |
| L1  | 3.60 | 2410                       | 2310                       | 2310                       | 2310                        | 2310                        | 2120                         | 40                     | 11                     | 1800                                   | 3800                                      | 800                    | 5G  | 5200                      |
|   | 4.25 | 2970                       | 2810                       | 2810                       | 2650                        | 2570                        | 2090                         | 40                     | 11                     | 1800                                   | 3800                                      | 800                    | 5G  | 5200                      |
|   | 5.33 | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 40                     | 11                     | 1800                                   | 3800                                      | 630                    | 5E  | 5200                      |
|   | 6.20 | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 40                     | 11                     | 1800                                   | 3800                                      | 500                    | 5C  | 5200                      |
|   | 7.50 | 2000                       | 1750                       | 1650                       | 1650                        | 1650                        | 1500                         | 40                     | 11                     | 1800                                   | 3800                                      | 400                    | 5B  | 5200                      |
| 9.67  | 1050 | 900                        | 860                        | 860                        | 860                         | 860                         | 17.3                         | 11                     | 1800                   | 3800                                   | 400                                       | 5B                     | 5200  |                           |
| L2  | 12.5 | 2410                       | 2310                       | 2310                       | 2310                        | 2130                        | 1730                         | 20                     | 9                      | 2000                                   | 4000                                      | 260                    | 4F  | 5200                      |







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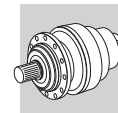
**2970 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L2</b>   | 15.3      | 2410                 | 2310              | 2310              | 2310              | 2100              | 1700              | 20             | 9              | 2000           | 4000              | 260            | 4F  | 5200              |
|   | 18.1      | 2970                 | 2810              | 2810              | 2650              | 2350              | 1910              | 20             | 9              | 2000           | 4000              | 260            | 4F  | 5200              |
|   | 20.8      | 2410                 | 2210              | 2210              | 2210              | 2030              | 1650              | 20             | 9              | 2000           | 4000              | 160            | 4D  | 5200              |
|   | 22.7      | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 20             | 9              | 2000           | 4000              | 160            | 4D  | 5200              |
|   | 24.5      | 2770                 | 2700              | 2650              | 2620              | 2280              | 1850              | 20             | 9              | 2000           | 4000              | 160            | 4D  | 5200              |
|   | 26.4      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 15.2           | 9              | 2000           | 4000              | 160            | 4D  | 5200              |
|   | 30.8      | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 15.9           | 9              | 2000           | 4000              | 160            | 4D  | 5200              |
|   | 35.8      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 11.2           | 9              | 2000           | 4000              | 100            | 4B  | 5200              |
|   | 38.4      | 2850                 | 2450              | 2230              | 2200              | 2140              | 2030              | 12.8           | 9              | 2000           | 4000              | 100            | 4B  | 5200              |
|   | 44.6      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 9.2            | 9              | 2000           | 4000              | 100            | 4B  | 5200              |
|   | 55.8      | 2300                 | 2080              | 1840              | 1820              | 1820              | 1820              | 7.6            | 9              | 2000           | 4000              | 100            | 4B  | 5200              |
|   | <b>L3</b> | 53.4                 | 2410              | 2310              | 2310              | 2310              | 2100              | 1700           | 9.3            | 7.5            | 2000              | 4000           | 100   | 4B                |
| 63.1  |           | 2970                 | 2810              | 2810              | 2650              | 2390              | 1940              | 9.8            | 7.5            | 2000           | 4000              | 100            | 4B  | 5200              |
| 72.3  |           | 2410                 | 2310              | 2310              | 2310              | 2130              | 1730              | 7.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 77.2  |           | 2970                 | 2810              | 2810              | 2650              | 2350              | 1910              | 8.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 90.2  |           | 2410                 | 2310              | 2310              | 2310              | 2130              | 1730              | 5.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 105   |           | 2970                 | 2810              | 2810              | 2650              | 2350              | 1910              | 6.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 113   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 4.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 124   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 4.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 141   |           | 2770                 | 2700              | 2650              | 2620              | 2280              | 1850              | 4.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 152   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 3.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 164   |           | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 3.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 178   |           | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 3.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 190   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 2.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 220   |           | 2250                 | 2200              | 2250              | 2250              | 1830              | 1800              | 2.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 258   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 2.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 276   |           | 2850                 | 2450              | 2230              | 2200              | 2140              | 2030              | 2.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 321   |           | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 1.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 389   |           | 2000                 | 1750              | 1650              | 1650              | 1650              | 1500              | 1.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 5200              |
| 402   | 2440      | 2080                 | 1840              | 1820              | 1820              | 1820              | 1.3               | 7.5            | 2000           | 4000           | 50                | 4A             | 5200  |                   |
| <b>L4</b>   | 413       | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 1.6            | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 446       | 2970                 | 2810              | 2810              | 2650              | 2350              | 1910              | 1.5            | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 492       | 2770                 | 2700              | 2650              | 2620              | 2280              | 1850              | 1.3            | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 556       | 2970                 | 2810              | 2810              | 2650              | 2350              | 1910              | 1.2            | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 649       | 2410                 | 2310              | 2310              | 2310              | 2130              | 1730              | 0.84           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 718       | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 0.76           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 816       | 2770                 | 2700              | 2650              | 2620              | 2280              | 1850              | 0.80           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 896       | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 0.61           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1018      | 2770                 | 2700              | 2650              | 2620              | 2280              | 1850              | 0.64           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1098      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 0.50           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1278      | 2850                 | 2520              | 2230              | 2200              | 2140              | 2030              | 0.53           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1370      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 0.40           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1586      | 2250                 | 2250              | 2250              | 2250              | 1830              | 1800              | 0.34           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1854      | 2440                 | 2080              | 1840              | 1820              | 1820              | 1820              | 0.29           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
|   | 1991      | 2850                 | 2450              | 2230              | 2200              | 2140              | 2030              | 0.34           | 6              | 2000           | 4000              | 50             | 4A  | 5200              |
| 2243  | 2000      | 1750                 | 1650              | 1650              | 1650              | 1500              | 0.21              | 6              | 2000           | 4000           | 50                | 4A             | 5200  |                   |
| 2799  | 2000      | 1750                 | 1650              | 1650              | 1650              | 1500              | 0.17              | 6              | 2000           | 4000           | 50                | 4A             | 5200  |                   |

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**3960 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 3.60 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 50             | 12             | 1800           | 3800              | 800            | 5G  | 7300              |
|   | 4.25 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 50             | 12             | 1800           | 3800              | 800            | 5G  | 7300              |
|   | 5.33 | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 50             | 12             | 1800           | 3800              | 630            | 5E  | 7300              |
|   | 6.57 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 50             | 12             | 1800           | 3800              | 500            | 5C  | 7300              |
| <b>L2</b>   | 12.5 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 30             | 9              | 2000           | 4000              | 260            | 4F  | 7300              |





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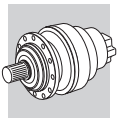
**3960 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L2</b>   | 15.3 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 30             | 9              | 2000           | 4000              | 260            | 4F  | 7300              |
|   | 18.1 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 30             | 9              | 2000           | 4000              | 260            | 4F  | 7300              |
|   | 20.8 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 30             | 9              | 2000           | 4000              | 160            | 4D  | 7300              |
|   | 22.7 | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 28             | 9              | 2000           | 4000              | 160            | 4D  | 7300              |
|   | 24.5 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 30             | 9              | 2000           | 4000              | 160            | 4D  | 7300              |
|   | 30.8 | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 20             | 9              | 2000           | 4000              | 160            | 4D  | 7300              |
|   | 38.4 | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 16.2           | 9              | 2000           | 4000              | 160            | 4D  | 7300              |
|   | 47.3 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 10.9           | 9              | 2000           | 4000              | 100            | 4B  | 7300              |
|   | 59.1 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 8.9            | 9              | 2000           | 4000              | 100            | 4B  | 7300              |
| <b>L3</b>   | 43.6 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 18.4           | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 53.4 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 15.1           | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 63.1 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 13.4           | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 72.3 | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 11.2           | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 77.2 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 11.0           | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 90.2 | 3710                 | 3520              | 3500              | 3440              | 3080              | 2830              | 9.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 105  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 8.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 111  | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 7.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 130  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 6.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 141  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 6.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 150  | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 5.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 165  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 3.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 178  | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 4.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 202  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 3.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 220  | 3960                 | 3710              | 3660              | 3540              | 3430              | 2780              | 4.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 273  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 2.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 341  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 1.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 426  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 1.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 7300              |
| <b>L4</b>   | 413  | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 2.0            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 446  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 2.1            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 492  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 1.9            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 556  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 1.7            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 649  | 3710                 | 3520              | 3500              | 3440              | 3120              | 2830              | 1.4            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 702  | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 0.93           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 816  | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 1.1            | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1018 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 0.92           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1164 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 0.56           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1271 | 3960                 | 3750              | 3690              | 3540              | 3430              | 2780              | 0.74           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1344 | 3710                 | 3520              | 3500              | 3440              | 3080              | 2830              | 0.65           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1586 | 3960                 | 3710              | 3660              | 3540              | 3430              | 2780              | 0.59           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1815 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 0.36           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 1991 | 3740                 | 3190              | 2850              | 2850              | 2850              | 2710              | 0.42           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
|   | 2269 | 3000                 | 2560              | 2390              | 2390              | 2390              | 2390              | 0.29           | 6              | 2000           | 4000              | 50             | 4A  | 7300              |
| 2453  | 3000 | 2560                 | 2390              | 2390              | 2390              | 2390              | 0.27              | 6              | 2000           | 4000           | 50                | 4A             | 7300  |                   |

**305 L** 290

**5800 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 3.60 | 4700                 | 4490              | 4490              | 4490              | 4480              | 3640              | 60             | 13             | 1800           | 3800              | 1000           | 5K  | 8800              |
|   | 4.25 | 5800                 | 5500              | 5480              | 5300              | 4410              | 3580              | 60             | 13             | 1800           | 3800              | 1000           | 5K  | 8800              |
|   | 5.33 | 5600                 | 5040              | 4470              | 4400              | 4280              | 3490              | 60             | 13             | 1800           | 3800              | 1000           | 5K  | 8800              |
|   | 6.20 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 60             | 13             | 1800           | 3800              | 800            | 5G  | 8800              |
|   | 7.50 | 3800                 | 3300              | 3100              | 3100              | 3000              | 2790              | 60             | 13             | 1800           | 3800              | 630            | 5E  | 8800              |
| <b>L2</b>   | 12.5 | 4700                 | 4490              | 4490              | 4490              | 3800              | 3090              | 30             | 9              | 2000           | 4000              | 400            | 4K  | 8800              |
|   | 15.3 | 4700                 | 4490              | 4490              | 4490              | 3750              | 3040              | 30             | 9              | 2000           | 4000              | 330            | 4H  | 8800              |
|   | 18.1 | 5800                 | 5500              | 5480              | 5300              | 4210              | 3420              | 30             | 9              | 2000           | 4000              | 400            | 4K  | 8800              |
|   | 20.8 | 4700                 | 4450              | 4430              | 4430              | 3630              | 2950              | 30             | 9              | 2000           | 4000              | 260            | 4F  | 8800              |



**305 L** 290

**5800 Nm**

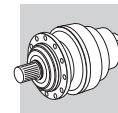
| i         | M <sub>n2</sub> [Nm]    |                         |                         |                          |                          |                           | P <sub>1</sub> [kW] | P <sub>t</sub> [kW] | n <sub>1</sub> [min <sup>-1</sup> ] | n <sub>1max</sub> [min <sup>-1</sup> ] | M <sub>b</sub> [Nm] | M <sub>2max</sub> [Nm] |     |      |      |
|-----------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------|---------------------|-------------------------------------|--|---------------------|------------------------|-----|------|------|
|           | n <sub>2</sub> :h 10000 | n <sub>2</sub> :h 25000 | n <sub>2</sub> :h 50000 | n <sub>2</sub> :h 100000 | n <sub>2</sub> :h 500000 | n <sub>2</sub> :h 1000000 |                     |                     |                                     |  |                     |                        |     |      |      |
| <b>L2</b> | 22.7                    | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 30                  | 9                                   | 2000                                   | 4000                | 330                    | 4H  | 8800 |      |
|           | 24.5                    | 5530                    | 5400                    | 5300                     | 5230                     | 4070                      | 3310                | 30                  | 9                                   | 2000                                   | 4000                | 330                    | 4H  | 8800 |      |
|           | 26.4                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 30                  | 9                                   | 2000                                   | 4000                | 260                    | 4F  | 8800 |      |
|           | 30.8                    | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 30                  | 9                                   | 2000                                   | 4000                | 260                    | 4F  | 8800 |      |
|           | 35.8                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 22.4                                | 9                                      | 2000                | 4000                   | 160 | 4D   | 8800 |
|           | 38.4                    | 5600                    | 4900                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 25.5                                | 9                                      | 2000                | 4000                   | 160 | 4D   | 8800 |
|           | 44.6                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 18.3                                | 9                                      | 2000                | 4000                   | 160 | 4D   | 8800 |
|           | 55.8                    | 4430                    | 4000                    | 3600                     | 3600                     | 3500                      | 3460                | 3460                | 15.2                                | 9                                      | 2000                | 4000                   | 160 | 4D   | 8800 |
| <b>L3</b> | 53.4                    | 4700                    | 4490                    | 4490                     | 4490                     | 3750                      | 3040                | 3040                | 18.8                                | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 63.1                    | 5800                    | 5480                    | 5480                     | 5300                     | 4270                      | 3470                | 3470                | 19.4                                | 7.5                                    | 2000                | 4000                   | 160 | 4D   | 8800 |
|           | 72.3                    | 4700                    | 4490                    | 4490                     | 4490                     | 3800                      | 3090                | 3090                | 14.1                                | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 77.2                    | 5800                    | 5500                    | 5480                     | 5300                     | 4210                      | 3420                | 3420                | 16.3                                | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 90.2                    | 4700                    | 4490                    | 4490                     | 4490                     | 3800                      | 3090                | 3090                | 11.4                                | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 105                     | 5800                    | 5500                    | 5480                     | 5300                     | 4210                      | 3420                | 3420                | 12.3                                | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 113                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 8.7                                 | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 124                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 8.0                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 141                     | 5530                    | 5350                    | 5300                     | 5230                     | 4070                      | 3310                | 3310                | 8.9                                 | 7.5                                    | 2000                | 4000                   | 100 | 4B   | 8800 |
|           | 152                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 6.7                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 164                     | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 7.7                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 178                     | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 7.2                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 190                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 5.5                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 220                     | 4750                    | 4750                    | 4750                     | 4750                     | 3660                      | 3210                | 3210                | 4.9                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 258                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 4.1                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 276                     | 5600                    | 4900                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 4.6                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 321                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 3.3                                 | 7.5                                    | 2000                | 4000                   | 50  | 4A   | 8800 |
| 389       | 3800                    | 3300                    | 3100                    | 3100                     | 3000                     | 2790                      | 2790                | 2.2                 | 7.5                                 | 2000                                   | 4000                | 50                     | 4A  | 8800 |      |
| 402       | 4690                    | 4000                    | 3600                    | 3600                     | 3550                     | 3460                      | 3460                | 2.6                 | 6                                   | 2000                                   | 4000                | 50                     | 4A  | 8800 |      |
| <b>L4</b> | 413                     | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 3.2                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 446                     | 5800                    | 5500                    | 5480                     | 5300                     | 4210                      | 3420                | 3420                | 3.1                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 492                     | 5530                    | 5350                    | 5300                     | 5230                     | 4070                      | 3310                | 3310                | 2.6                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 556                     | 5800                    | 5500                    | 5480                     | 5300                     | 4210                      | 3420                | 3420                | 2.5                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 649                     | 4700                    | 4490                    | 4490                     | 4490                     | 3800                      | 3090                | 3090                | 1.7                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 718                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 1.5                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 816                     | 5530                    | 5350                    | 5300                     | 5230                     | 4070                      | 3310                | 3310                | 1.6                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 896                     | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 1.2                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1018                    | 5530                    | 5350                    | 5300                     | 5230                     | 4070                      | 3310                | 3310                | 1.3                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1098                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 0.99                                | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1278                    | 5600                    | 5040                    | 4470                     | 4400                     | 4280                      | 3490                | 3490                | 1.0                                 | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1370                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 0.79                                | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1586                    | 4750                    | 4750                    | 4750                     | 4750                     | 3660                      | 3210                | 3210                | 0.71                                | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
|           | 1854                    | 4690                    | 4000                    | 3600                     | 3600                     | 3550                      | 3460                | 3460                | 0.59                                | 6                                      | 2000                | 4000                   | 50  | 4A   | 8800 |
| 1991      | 5600                    | 4900                    | 4470                    | 4400                     | 4280                     | 3490                      | 3490                | 0.67                | 6                                   | 2000                                   | 4000                | 50                     | 4A  | 8800 |      |
| 2243      | 3800                    | 3300                    | 3100                    | 3100                     | 3000                     | 2790                      | 2790                | 0.40                | 6                                   | 2000                                   | 4000                | 50                     | 4A  | 8800 |      |
| 2799      | 3800                    | 3300                    | 3100                    | 3100                     | 3000                     | 2790                      | 2790                | 0.32                | 6                                   | 2000                                   | 4000                | 50                     | 4A  | 8800 |      |

**306 L** 302

**10840 Nm**



| i         | M <sub>n2</sub> [Nm]    |                         |                         |                          |                          |                           | P <sub>1</sub> [kW] | P <sub>t</sub> [kW] | n <sub>1</sub> [min <sup>-1</sup> ] | n <sub>1max</sub> [min <sup>-1</sup> ] | M <sub>b</sub> [Nm] | M <sub>2max</sub> [Nm] |      |       |       |
|-----------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------|---------------------|-------------------------------------|--|---------------------|------------------------|------|-------|-------|
|           | n <sub>2</sub> :h 10000 | n <sub>2</sub> :h 25000 | n <sub>2</sub> :h 50000 | n <sub>2</sub> :h 100000 | n <sub>2</sub> :h 500000 | n <sub>2</sub> :h 1000000 |                     |                     |                                     |  |                     |                        |      |       |       |
| <b>L1</b> | 3.60                    | 10840                   | 10380                   | 10380                    | 10380                    | 7100                      | 5770                | 75                  | 18                                  | 1600                                   | 3000                | 2600                   | 6K   | 14900 |       |
|           | 4.25                    | 10420                   | 9850                    | 9850                     | 9600                     | 6990                      | 5680                | 75                  | 18                                  | 1600                                   | 3000                | 2600                   | 6K   | 14900 |       |
|           | 5.33                    | 10080                   | 9350                    | 8300                     | 7950                     | 6810                      | 5530                | 5530                | 75                                  | 18                                     | 1600                | 3000                   | 2100 | 6G    | 14900 |
|           | 6.20                    | 8630                    | 7370                    | 6530                     | 6500                     | 6460                      | 5480                | 5480                | 75                                  | 18                                     | 1600                | 3000                   | 1500 | 6E    | 14900 |
|           | 7.50                    | 7000                    | 5900                    | 5500                     | 5500                     | 5040                      | 5040                | 5040                | 75                                  | 18                                     | 1600                | 3000                   | 1100 | 6C    | 14900 |
| <b>L2</b> | 13.0                    | 8020                    | 8020                    | 8020                     | 8020                     | 6210                      | 5040                | 40                  | 13                                  | 1800                                   | 3800                | 800                    | 5G   | 14900 |       |
|           | 15.3                    | 9770                    | 9340                    | 9340                     | 9300                     | 6110                      | 4960                | 40                  | 13                                  | 1800                                   | 3800                | 800                    | 5G   | 14900 |       |
|           | 18.1                    | 10420                   | 9850                    | 9850                     | 9600                     | 6860                      | 5570                | 40                  | 13                                  | 1800                                   | 3800                | 630                    | 5E   | 14900 |       |







**306 L**  302

**10840 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:   | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L2</b>   | 22.7 | 9560                 | 9100              | 9100              | 9100              | 6680              | 5430              | 40             | 13             | 1800           | 3800              | 500            | 5C  | 14900             |
|   | 26.4 | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 40             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 28.4 | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 40             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 33.1 | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 40             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 38.4 | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 34             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 46.5 | 8500                 | 7370              | 6530              | 6500              | 6460              | 5480              | 29             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 56.3 | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 21             | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
|   | 72.5 | 6400                 | 5900              | 5500              | 5500              | 5040              | 5040              | 16.3           | 13             | 1800           | 3800              | 400            | 5B  | 14900             |
| <b>L3</b>   | 53.2 | 9770                 | 9340              | 9340              | 9300              | 6110              | 4960              | 20             | 7.5            | 2000           | 4000              | 260            | 4F  | 14900             |
|   | 65.2 | 9770                 | 9340              | 9340              | 9300              | 6110              | 4960              | 20             | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 77.0 | 10420                | 9850              | 9850              | 9600              | 6860              | 5570              | 20             | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 81.9 | 8320                 | 7700              | 7700              | 7530              | 5950              | 4830              | 20             | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 88.3 | 9450                 | 9450              | 9450              | 9450              | 6970              | 5660              | 20             | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 104  | 10420                | 9850              | 9850              | 9600              | 6860              | 5570              | 20             | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 112  | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 15.2           | 7.5            | 2000           | 4000              | 160            | 4D  | 14900             |
|   | 121  | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 17.2           | 7.5            | 2000           | 4000              | 100            | 4B  | 14900             |
|   | 141  | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 14.8           | 7.5            | 2000           | 4000              | 100            | 4B  | 14900             |
|   | 152  | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 11.3           | 7.5            | 2000           | 4000              | 100            | 4B  | 14900             |
|   | 190  | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 10.2           | 7.5            | 2000           | 4000              | 100            | 4B  | 14900             |
|   | 205  | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 10.6           | 7.5            | 2000           | 4000              | 100            | 4B  | 14900             |
|   | 222  | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 8.8            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 238  | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 9.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 268  | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 6.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 288  | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 5.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 325  | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 4.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 405  | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 4.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 14900             |
| <b>L4</b>   | 391  | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 5.1            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 444  | 10420                | 9850              | 9850              | 9600              | 6860              | 5570              | 5.3            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 509  | 9450                 | 9450              | 9450              | 9450              | 6970              | 5660              | 4.1            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 589  | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 3.8            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 636  | 9450                 | 9450              | 9450              | 9450              | 6970              | 5660              | 3.3            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 700  | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 3.2            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 809  | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 2.2            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 877  | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 2.0            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1015 | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 2.2            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1095 | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 1.6            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1279 | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 1.6            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1475 | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 1.5            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1597 | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 1.3            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 1843 | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 1.2            | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 2074 | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 0.80           | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
|   | 2337 | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 0.71           | 6              | 2000           | 4000              | 50             | 4A  | 14900             |
| 2916  | 7000 | 5900                 | 5500              | 5500              | 5040              | 5040              | 0.57              | 6              | 2000           | 4000           | 50                | 4A             | 14900   |                   |

**307 L**  314

**15680 Nm**



|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:   | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 3.43 | 9000                 | 9000              | 9000              | 9000              | 8300              | 7960              | 115            | 22             | 1500           | 2500              | 3200           | 6L  | 18600             |
|   | 4.09 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 115            | 22             | 1500           | 2500              | 3200           | 6L  | 21000             |
|   | 5.25 | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 115            | 22             | 1500           | 2500              | 3200           | 6L  | 21000             |
|   | 6.23 | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 115            | 22             | 1500           | 2500              | 2100           | 6G  | 21000             |
| <b>L2</b>   | 12.3 | 9000                 | 9000              | 9000              | 9000              | 8300              | 7960              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 18600             |
|   | 14.7 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 60             | 18             | 1800           | 3800              | 800            | 5G  | 21000             |
|   | 17.4 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 21000             |
|   | 21.8 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 60             | 18             | 1800           | 3800              | 800            | 5G  | 21000             |
|   | 25.4 | 14670                | 14010             | 14010             | 13510             | 9560              | 7770              | 60             | 18             | 1800           | 3800              | 630            | 5E  | 21000             |



**307 L**

314



**15680 Nm**

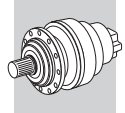
|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L2</b>   | 28.0 | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 60             | 18             | 1800           | 3800              | 500            | 5C  | 21000             |
|   | 30.7 | 12300                | 12300             | 12300             | 12300             | 9560              | 7770              | 60             | 18             | 1800           | 3800              | 500            | 5C  | 21000             |
|   | 32.6 | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 60             | 18             | 1800           | 3800              | 500            | 5C  | 21000             |
|   | 38.6 | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 46             | 18             | 1800           | 3800              | 400            | 5B  | 21000             |
|   | 46.7 | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 39             | 18             | 1800           | 3800              | 400            | 5B  | 21000             |
| <b>L3</b>   | 51.3 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 30             | 11             | 2000           | 4000              | 330            | 4H  | 21000             |
|   | 60.5 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 30             | 11             | 2000           | 4000              | 330            | 4H  | 21000             |
|   | 74.1 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 80.6 | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 93.0 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 100  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 113  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 26             | 11             | 2000           | 4000              | 160            | 4D  | 21000             |
|   | 126  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 26             | 11             | 2000           | 4000              | 160            | 4D  | 21000             |
|   | 139  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 22             | 11             | 2000           | 4000              | 160            | 4D  | 21000             |
|   | 146  | 15000                | 14010             | 14010             | 13510             | 9560              | 7770              | 23             | 11             | 2000           | 4000              | 160            | 4D  | 21000             |
|   | 162  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 19.4           | 11             | 2000           | 4000              | 100            | 4B  | 21000             |
|   | 177  | 12300                | 12300             | 12300             | 12300             | 9560              | 7770              | 15.9           | 11             | 2000           | 4000              | 100            | 4B  | 21000             |
|   | 202  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 15.9           | 11             | 2000           | 4000              | 100            | 4B  | 21000             |
|   | 221  | 15000                | 13800             | 12900             | 12500             | 9560              | 7770              | 15.6           | 11             | 2000           | 4000              | 100            | 4B  | 21000             |
|   | 239  | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 10.5           | 11             | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 284  | 14330                | 12700             | 11300             | 10790             | 9340              | 7590              | 11.3           | 11             | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 336  | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 7.5            | 11             | 2000           | 4000              | 50             | 4A  | 21000             |
| <b>L4</b>   | 349  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 10.2           | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 406  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 8.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 465  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 7.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 509  | 15000                | 14010             | 14010             | 13510             | 9560              | 7770              | 7.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 579  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 6.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 654  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 5.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 722  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 4.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 801  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 4.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 906  | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 3.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 999  | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 3.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 1157 | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 2.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 1274 | 12300                | 12300             | 12300             | 12300             | 9560              | 7770              | 2.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 1408 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 2.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 1591 | 15000                | 13800             | 12900             | 12500             | 9560              | 7770              | 2.2            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 1767 | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 2.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 2041 | 14330                | 12700             | 11300             | 10790             | 9340              | 7590              | 1.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |
|   | 2423 | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 1.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 21000             |

**309 L**

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**23240 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 3.43 | 13000                | 13000             | 13000             | 13000             | 12310             | 10920             | 150            | 25             | 1500           | 2000              | 3200           | 6L  | 27900             |
|   | 4.09 | 23240                | 22070             | 22070             | 20260             | 13120             | 10660             | 150            | 25             | 1500           | 2000              | 3200           | 6L  | 29000             |
|   | 5.25 | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 150            | 25             | 1500           | 2000              | 3200           | 6L  | 29000             |
|   | 6.23 | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 150            | 25             | 1500           | 2000              | 3200           | 6L  | 29000             |
| <b>L2</b>   | 12.3 | 13000                | 13000             | 13000             | 13000             | 10290             | 8360              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 27900             |
|   | 14.7 | 17730                | 17730             | 17730             | 17730             | 11650             | 9460              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 29000             |
|   | 17.4 | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 29000             |
|   | 21.8 | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 60             | 18             | 1800           | 3800              | 1000           | 5K  | 29000             |
|   | 25.4 | 14670                | 14300             | 14300             | 14300             | 11060             | 8990              | 60             | 18             | 1800           | 3800              | 800            | 5G  | 29000             |
|   | 28.0 | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 29000             |
|   | 32.6 | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 60             | 18             | 1800           | 3800              | 630            | 5E  | 29000             |
|   | 38.6 | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 29000             |
|   | 46.7 | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 58             | 18             | 1800           | 3800              | 400            | 5B  | 29000             |





**309 L**  326

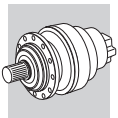
**23240 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:        | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L3</b>   | 51.3      | 17730                | 17730             | 17730             | 17730             | 11650             | 9460              | 30             | 11             | 2000           | 4000              | 400            | 4K  | 29000             |
|   | 60.5      | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 30             | 11             | 2000           | 4000              | 400            | 4K  | 29000             |
|   | 74.1      | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 80.6      | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 93.0      | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 100       | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 113       | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 126       | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 30             | 11             | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 139       | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 30             | 11             | 2000           | 4000              | 160            | 4D  | 29000             |
|   | 162       | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 29             | 11             | 2000           | 4000              | 160            | 4D  | 29000             |
|   | 183       | 14670                | 14300             | 14300             | 14300             | 11060             | 8990              | 18.2           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | 202       | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 23.9           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | 223       | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 17.5           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | 239       | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 16.3           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | 284       | 15800                | 15800             | 15800             | 15000             | 12810             | 10410             | 12.8           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | 336       | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 11.6           | 11             | 2000           | 4000              | 100            | 4B  | 29000             |
|   | <b>L4</b> | 349                  | 21620             | 21260             | 21260             | 18580             | 11460             | 9310           | 14.4           | 7.5            | 2000              | 4000           | 100   | 4B                |
| 406   |           | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 12.3           | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 465   |           | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 10.7           | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 509   |           | 14670                | 14300             | 14300             | 14300             | 11060             | 8990              | 6.7            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 579   |           | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 8.7            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 654   |           | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 6.6            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 722   |           | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 7.0            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 801   |           | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 5.4            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 906   |           | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 4.7            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 999   |           | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 4.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 1149  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 3.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 1286  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 3.1            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 1380  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 2.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 1605  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 2.5            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 1723  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 2.3            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 2003  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 1.9            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |
| 2423  |           | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 1.7            | 7.5            | 2000           | 4000              | 50             | 4A  | 29000             |

**310 L**  338



**34120 Nm**

|  | i     | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |       | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:    | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.09  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 175            | 35             | 1500           | 1800              | —              | —   | 47600             |
|   | 5.25  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 175            | 35             | 1500           | 1800              | —              | —   | 47600             |
|   | 6.23  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 175            | 35             | 1500           | 1800              | —              | —   | 47600             |
| <b>L2</b>   | 14.7  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 75             | 22             | 1600           | 3000              | 2100           | 6G  | 47600             |
|   | 17.4  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 75             | 22             | 1600           | 3000              | 2100           | 6G  | 47600             |
|   | 21.8  | 34120                | 31930             | 26580             | 21590             | 13320             | 10820             | 75             | 22             | 1600           | 3000              | 1500           | 6E  | 47600             |
|   | 25.4  | 27110                | 25910             | 25910             | 21590             | 13320             | 10820             | 75             | 22             | 1600           | 3000              | 1500           | 6E  | 47600             |
|   | 28.0  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 75             | 22             | 1600           | 3000              | 1500           | 6E  | 47600             |
|   | 30.7  | 21800                | 21800             | 21800             | 20150             | 13320             | 10820             | 75             | 22             | 1600           | 3000              | 1050           | 6C  | 47600             |
|   | 32.6  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 75             | 22             | 1600           | 3000              | 1050           | 6C  | 47600             |
|   | 38.6  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 75             | 22             | 1600           | 3000              | 850            | 6B  | 47600             |
| 46.7  | 26000 | 21200                | 18420             | 18230             | 12860             | 10440             | 75                | 22             | 1600           | 3000           | 850               | 6B             | 47600   |                   |
| <b>L3</b>   | 53.0  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 630            | 5E  | 47600             |
|   | 62.6  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 630            | 5E  | 47600             |
|   | 73.9  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 500            | 5C  | 47600             |
|   | 80.3  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 91.3  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 101   | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 110   | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |





**310 L**  338

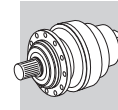
**34120 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L3</b>   | 119  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 130  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 142  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 164  | 34120                | 31930             | 26580             | 21590             | 13320             | 10820             | 38             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 177  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 30             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 202  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 30             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 230  | 21800                | 21800             | 21800             | 20150             | 13320             | 10820             | 19.6           | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 249  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 22             | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 295  | 28000                | 25880             | 23350             | 21100             | 13020             | 10570             | 19.6           | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
|   | 350  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 15.3           | 18             | 1800           | 3800              | 400            | 5B  | 47600             |
| <b>L4</b>   | 392  | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 15.7           | 11             | 2000           | 4000              | 100            | 4B  | 47600             |
|   | 451  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 15.7           | 11             | 2000           | 4000              | 100            | 4B  | 47600             |
|   | 507  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 13.8           | 11             | 2000           | 4000              | 100            | 4B  | 47600             |
|   | 556  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 11.5           | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 637  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 11.0           | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 726  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 9.6            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 818  | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 8.5            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 939  | 34120                | 32340             | 26580             | 21590             | 13320             | 10820             | 6.8            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1021 | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 6.8            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1164 | 30600                | 26240             | 23350             | 21100             | 13020             | 10570             | 6.0            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1259 | 28000                | 25880             | 23350             | 21100             | 13020             | 10570             | 5.3            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1438 | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 4.3            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1672 | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 3.7            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 1794 | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 3.4            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 2022 | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 3.0            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |
|   | 2523 | 26000                | 21200             | 18420             | 18230             | 12860             | 10440             | 2.4            | 11             | 2000           | 4000              | 50             | 4A  | 47600             |

**311 L**  350



**48330 Nm**

|  | i     | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |       | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.09  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 200            | 35             | 1500           | 1800              | —              | —   | 58300             |
|   | 5.25  | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 200            | 35             | 1500           | 1800              | —              | —   | 58300             |
|   | 6.23  | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 200            | 35             | 1500           | 1800              | —              | —   | 58300             |
| <b>L2</b>   | 14.0  | 35700                | 35700             | 35700             | 31100             | 19190             | 15590             | 115            | 26             | 1500           | 2500              | 3200           | 6L  | 58300             |
|   | 16.7  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 115            | 26             | 1500           | 2500              | 3200           | 6L  | 58300             |
|   | 18.0  | 43000                | 39550             | 35220             | 32000             | 19700             | 16000             | 115            | 26             | 1500           | 2500              | 2600           | 6K  | 58300             |
|   | 21.5  | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 115            | 26             | 1500           | 2500              | 2100           | 6G  | 58300             |
|   | 25.5  | 35200                | 34500             | 34500             | 31100             | 19190             | 15590             | 115            | 26             | 1500           | 2500              | 1500           | 6E  | 58300             |
|   | 27.6  | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 115            | 26             | 1500           | 2500              | 2100           | 6G  | 58300             |
|   | 32.7  | 43000                | 39550             | 35220             | 32000             | 19700             | 16000             | 115            | 26             | 1500           | 2500              | 1500           | 6E  | 58300             |
|   | 38.8  | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 115            | 26             | 1500           | 2500              | 850            | 6B  | 58300             |
| <b>L3</b>   | 50.5  | 35700                | 35700             | 35700             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 58300             |
|   | 60.2  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 58300             |
|   | 71.1  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 58300             |
|   | 77.3  | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 58300             |
|   | 89.3  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 58300             |
|   | 104   | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 58300             |
|   | 115   | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 126   | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 133   | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 147   | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 59             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 161   | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 56             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 171   | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 52             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 191   | 35200                | 34500             | 34500             | 31100             | 19190             | 15590             | 38             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | 203   | 43000                | 39550             | 35220             | 32000             | 19700             | 16000             | 44             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
| 245   | 43000 | 39550                | 35220             | 32000             | 19700             | 16000             | 36                | 18             | 1800           | 3800           | 400               | 5B             | 58300   |                   |





**311 L**  350

**48330 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L3</b>   | 291       | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 24             | 18             | 1800           | 3800              | 400            | 5B  | 58300             |
|   | <b>L4</b> | 348                  | 48330             | 45840             | 38290             | 31100             | 19190             | 15590          | 30             | 11             | 2000              | 4000           | 160   | 4D                |
|   | 410       | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 26             | 11             | 2000           | 4000              | 160            | 4D  | 58300             |
|   | 512       | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 21             | 11             | 2000           | 4000              | 100            | 4B  | 58300             |
|   | 568       | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 18.4           | 11             | 2000           | 4000              | 100            | 4B  | 58300             |
|   | 627       | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 16.2           | 11             | 2000           | 4000              | 100            | 4B  | 58300             |
|   | 724       | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 14.7           | 11             | 2000           | 4000              | 100            | 4B  | 58300             |
|   | 825       | 46920                | 43390             | 38290             | 31100             | 19190             | 15590             | 12.6           | 11             | 2000           | 4000              | 100            | 4B  | 58300             |
|   | 904       | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 11.8           | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 986       | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 10.3           | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 1058      | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 9.6            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 1230      | 45210                | 39550             | 35220             | 32000             | 19700             | 16000             | 8.3            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 1415      | 43000                | 39550             | 35220             | 32000             | 19700             | 16000             | 7.2            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 1680      | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 4.8            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 1766      | 43000                | 39550             | 35220             | 32000             | 19700             | 16000             | 5.8            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |
|   | 2096      | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 3.8            | 11             | 2000           | 4000              | 50             | 4A  | 58300             |

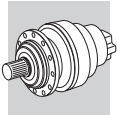
**313 L**  362

**57970 Nm**

|  | i     | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|--|-------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|--|-------------------|
|  |       | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |  |                   |
| <b>L1</b>  | 4.14  | 55410                | 55000             | 55000             | 46000             | 28400             | 23000             | 250            | 45             | 900            | 1200              | —              | —  | 105000            |
|  | 5.40  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 250            | 45             | 900            | 1200              | —              | —  | 105000            |
|  | 6.50  | 49000                | 42400             | 39000             | 39000             | 27800             | 22500             | 250            | 45             | 900            | 1200              | —              | —  | 105000            |
| <b>L2</b>  | 14.2  | 52000                | 52000             | 52000             | 46000             | 28400             | 23000             | 150            | 30             | 1500           | 2000              | 3200           | 6L   | 105000            |
|  | 16.9  | 55410                | 55000             | 54000             | 45210             | 27900             | 22660             | 150            | 30             | 1500           | 2000              | 3200           | 6L   | 105000            |
|  | 18.5  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 150            | 30             | 1500           | 2000              | 3200           | 6L   | 105000            |
|  | 21.8  | 55410                | 55000             | 55000             | 45400             | 28000             | 22800             | 150            | 30             | 1500           | 2000              | 2600           | 6K   | 105000            |
|  | 25.8  | 53000                | 52000             | 52000             | 45210             | 27900             | 22660             | 150            | 30             | 1500           | 2000              | 2100           | 6G   | 105000            |
|  | 28.4  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 150            | 30             | 1500           | 2000              | 2100           | 6G   | 105000            |
|  | 33.6  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 150            | 30             | 1500           | 2000              | 2100           | 6G   | 105000            |
|  | 40.5  | 49000                | 42400             | 39000             | 39000             | 27700             | 22500             | 150            | 30             | 1500           | 2000              | 1500           | 6E   | 105000            |
| <b>L3</b>  | 51.1  | 52000                | 52000             | 49140             | 45210             | 27900             | 22660             | 60             | 18             | 1800           | 3800              | 1000           | 5K   | 105000            |
|  | 61.0  | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 60             | 18             | 1800           | 3800              | 1000           | 5K   | 105000            |
|  | 72.0  | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 60             | 18             | 1800           | 3800              | 1000           | 5K   | 105000            |
|  | 78.3  | 55410                | 55000             | 55000             | 45400             | 28000             | 22800             | 60             | 18             | 1800           | 3800              | 1000           | 5K   | 105000            |
|  | 92.4  | 55410                | 55000             | 55000             | 45400             | 28000             | 22800             | 60             | 18             | 1800           | 3800              | 800            | 5G   | 105000            |
|  | 110   | 53000                | 52000             | 52000             | 45210             | 27900             | 22660             | 60             | 18             | 1800           | 3800              | 500            | 5C   | 105000            |
|  | 120   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 60             | 18             | 1800           | 3800              | 500            | 5C   | 105000            |
|  | 135   | 55410                | 55000             | 55000             | 45400             | 28000             | 22800             | 60             | 18             | 1800           | 3800              | 500            | 5C   | 105000            |
|  | 143   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 60             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
|  | 151   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 60             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
|  | 163   | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 60             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
|  | 176   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 60             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
|  | 182   | 49000                | 42400             | 39000             | 39000             | 27700             | 22500             | 56             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
|  | 194   | 53000                | 52000             | 52000             | 45210             | 27900             | 22660             | 57             | 18             | 1800           | 3800              | 400            | 5B   | 105000            |
| 209  | 57970 | 49730                | 45000             | 45000             | 27800             | 22600             | 54                | 18             | 1800           | 3800           | 400               | 5B             | 105000   |                   |
| 252  | 57970 | 49730                | 45000             | 45000             | 27800             | 22600             | 45                | 18             | 1800           | 3800           | 400               | 5B             | 105000   |                   |
| 304  | 49000 | 42400                | 39000             | 39000             | 27700             | 22500             | 33                | 18             | 1800           | 3800           | 400               | 5B             | 105000   |                   |
| <b>L4</b>  | 352   | 55410                | 52510             | 52510             | 45210             | 27900             | 22660             | 30             | 11             | 2000           | 4000              | 160            | 4D   | 105000            |
|  | 394   | 55410                | 55000             | 55000             | 45400             | 28000             | 22800             | 30             | 11             | 2000           | 4000              | 160            | 4D   | 105000            |
|  | 452   | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 29             | 11             | 2000           | 4000              | 160            | 4D   | 105000            |
|  | 514   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 25             | 11             | 2000           | 4000              | 160            | 4D   | 105000            |
|  | 564   | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 23             | 11             | 2000           | 4000              | 160            | 4D   | 105000            |
|  | 633   | 52800                | 52000             | 52000             | 45210             | 27900             | 22660             | 19.7           | 11             | 2000           | 4000              | 100            | 4B   | 105000            |
|  | 695   | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 18.7           | 11             | 2000           | 4000              | 100            | 4B   | 105000            |











**313 L**  362

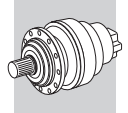
**57970 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L4</b>   | 790  | 52800                | 52000             | 52000             | 45210             | 27900             | 22660             | 15.8           | 11             | 2000           | 4000              | 100            | 4B  | 105000            |
|   | 889  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 14.6           | 11             | 2000           | 4000              | 100            | 4B  | 105000            |
|   | 1014 | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 12.8           | 11             | 2000           | 4000              | 100            | 4B  | 105000            |
|   | 1117 | 52800                | 52000             | 52000             | 45210             | 27900             | 22660             | 11.2           | 11             | 2000           | 4000              | 50             | 4A  | 105000            |
|   | 1266 | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 10.3           | 11             | 2000           | 4000              | 50             | 4A  | 105000            |
|   | 1394 | 52800                | 52000             | 52000             | 45210             | 27900             | 22660             | 9.0            | 11             | 2000           | 4000              | 50             | 4A  | 105000            |
|   | 1502 | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 8.7            | 11             | 2000           | 4000              | 50             | 4A  | 105000            |
|   | 1817 | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 7.2            | 11             | 2000           | 4000              | 50             | 4A  | 105000            |
|   | 2187 | 49000                | 42400             | 39000             | 39000             | 27700             | 22500             | 5.3            | 11             | 2000           | 4000              | 50             | 4A  | 105000            |

**314 L**  374



**84000 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.25      | 84000                | 80000             | 77600             | 68000             | 42400             | 34240             | 260            | 55             | 450            | 800               | —              | —   | 115000            |
|   | 5.33      | 79200                | 69600             | 65464             | 62400             | 39200             | 31760             | 260            | 55             | 450            | 800               | —              | —   | 115000            |
|   | 6.20      | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 260            | 55             | 450            | 800               | —              | —   | 115000            |
| <b>L2</b>   | 17.4      | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
|   | 22.3      | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
|   | 26.5      | 84000                | 80000             | 77600             | 62400             | 38720             | 31520             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
|   | 28.0      | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
|   | 33.2      | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
|   | 38.6      | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 175            | 40             | 1500           | 1800              | —              | —   | 115000            |
| <b>L3</b>   | 62.6      | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 75             | 25             | 1600           | 3000              | 2100           | 6G  | 115000            |
|   | 73.9      | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 75             | 25             | 1600           | 3000              | 2100           | 6G  | 115000            |
|   | 92.7      | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 75             | 25             | 1600           | 3000              | 1500           | 6E  | 115000            |
|   | 108       | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 75             | 25             | 1600           | 3000              | 1500           | 6E  | 115000            |
|   | 138       | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 75             | 25             | 1600           | 3000              | 1500           | 6E  | 115000            |
|   | 164       | 84000                | 80000             | 77600             | 62400             | 38720             | 31520             | 75             | 25             | 1600           | 3000              | 1050           | 6C  | 115000            |
|   | 174       | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 75             | 25             | 1600           | 3000              | 1050           | 6C  | 115000            |
|   | 206       | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 71             | 25             | 1600           | 3000              | 850            | 6B  | 115000            |
|   | 240       | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 49             | 25             | 1600           | 3000              | 850            | 6B  | 115000            |
|   | <b>L4</b> | 314                  | 84000             | 80000             | 77600             | 63200             | 38960             | 31680          | 40             | 15             | 1800              | 3800           | 630   | 5E                |
| 388   |           | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 40             | 15             | 1800           | 3800              | 630            | 5E  | 115000            |
| 458   |           | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 39             | 15             | 1800           | 3800              | 500            | 5C  | 115000            |
| 495   |           | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 36             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 554   |           | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 32             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 588   |           | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 30             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 668   |           | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 27             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 738   |           | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 24             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 858   |           | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 21             | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 926   |           | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 18.2           | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 1038  |           | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 17.2           | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 1099  |           | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 15.3           | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 1277  |           | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 13.2           | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 1485  |           | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 9.2            | 15             | 1800           | 3800              | 400            | 5B  | 115000            |
| 1796  | 66792     | 57416                | 52000             | 52000             | 32800             | 26640             | 7.6               | 15             | 1800           | 3800           | 400               | 5B             | 115000  |                   |





**315 L**  386

**105000 Nm**

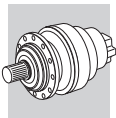
|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:        | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.25      | 105000               | 100000            | 97000             | 85000             | 53000             | 42800             | 260            | 60             | 500            | 800               | —              | —   | 135000            |
|   | 5.33      | 99000                | 87000             | 81830             | 78000             | 49000             | 39700             | 260            | 60             | 500            | 800               | —              | —   | 135000            |
|   | 6.20      | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 260            | 60             | 500            | 800               | —              | —   | 135000            |
| <b>L2</b>   | 17.4      | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
|   | 22.3      | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
|   | 26.5      | 105000               | 100000            | 97000             | 78000             | 48400             | 39400             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
|   | 28.0      | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
|   | 33.2      | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
|   | 38.6      | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 200            | 45             | 1500           | 1800              | —              | —   | 135000            |
| <b>L3</b>   | 59.6      | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 115            | 30             | 1500           | 2500              | 2600           | 6K  | 135000            |
|   | 71.1      | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 115            | 30             | 1500           | 2500              | 2100           | 6G  | 135000            |
|   | 91.3      | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 115            | 30             | 1500           | 2500              | 1500           | 6E  | 135000            |
|   | 108       | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 115            | 30             | 1500           | 2500              | 1100           | 6C  | 135000            |
|   | 139       | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 115            | 30             | 1500           | 2500              | 850            | 6B  | 135000            |
|   | 165       | 105000               | 100000            | 97000             | 78000             | 48400             | 39400             | 110            | 30             | 1500           | 2500              | 850            | 6B  | 135000            |
|   | 174       | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 98             | 30             | 1500           | 2500              | 850            | 6B  | 135000            |
|   | 207       | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 82             | 30             | 1500           | 2500              | 850            | 6B  | 135000            |
|   | 241       | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 57             | 30             | 1500           | 2500              | 850            | 6B  | 135000            |
|   | <b>L4</b> | 302                  | 105000            | 100000            | 97000             | 79000             | 48700             | 39600          | 60             | 18             | 1800              | 3800           | 400   | 5B                |
| 370   |           | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 441   |           | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 51             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 487   |           | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 46             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 533   |           | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 42             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 591   |           | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 38             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 672   |           | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 33             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 741   |           | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 30             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 862   |           | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 26             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 930   |           | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 23             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 1043  |           | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 21             | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 1104  |           | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 19.1           | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 1284  |           | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 16.4           | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 1492  |           | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 11.4           | 18             | 1800           | 3800              | 400            | 5B  | 135000            |
| 1805  |           | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 9.4            | 18             | 1800           | 3800              | 400            | 5B  | 135000            |

**316 L**  398

**138820 Nm**



|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
|   | 1:   | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.25 | 138820               | 130420            | 113000            | 100000            | 66000             | 54000             | 280            | 68             | 350            | 500               | —              | —   | 192000            |
| <b>L2</b>   | 17.4 | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 200            | 50             | 1500           | 1800              | —              | —   | 192000            |
|   | 22.3 | 138820               | 126000            | 107000            | 85300             | 53300             | 42700             | 200            | 50             | 1500           | 1800              | —              | —   | 192000            |
|   | 26.5 | 124000               | 115000            | 98650             | 80130             | 49440             | 40500             | 200            | 50             | 1500           | 1800              | —              | —   | 192000            |
| <b>L3</b>   | 59.6 | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 115            | 35             | 1500           | 2500              | 3200           | 6L  | 192000            |
|   | 71.1 | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 115            | 35             | 1500           | 2500              | 2600           | 6K  | 192000            |
|   | 76.5 | 138820               | 126000            | 107000            | 85300             | 53300             | 42700             | 115            | 35             | 1500           | 2500              | 2600           | 6K  | 192000            |
|   | 91.3 | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 115            | 35             | 1500           | 2500              | 2100           | 6G  | 192000            |
|   | 108  | 138820               | 125920            | 103000            | 83700             | 51600             | 42000             | 115            | 35             | 1500           | 2500              | 2100           | 6G  | 192000            |
|   | 117  | 138820               | 126000            | 107000            | 85300             | 53300             | 42700             | 115            | 35             | 1500           | 2500              | 1500           | 6E  | 192000            |
|   | 139  | 138820               | 122980            | 103000            | 83700             | 51600             | 42000             | 115            | 35             | 1500           | 2500              | 1500           | 6E  | 192000            |
|   | 165  | 124000               | 115000            | 98650             | 80130             | 49440             | 40500             | 115            | 35             | 1500           | 2500              | 1100           | 6C  | 192000            |
| <b>L4</b>   | 215  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 192000            |
|   | 256  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 800            | 5G  | 192000            |
|   | 302  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 630            | 5E  | 192000            |
|   | 329  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 630            | 5E  | 192000            |







**316 L**  398

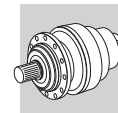
**138820 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L4</b>   | 370  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 192000            |
|   | 441  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 487  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 59             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 533  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 54             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 566  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 51             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 591  | 138820               | 122980            | 103000            | 83700             | 51600             | 42000             | 48             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 625  | 138820               | 126000            | 107000            | 85300             | 53300             | 42700             | 46             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 685  | 138820               | 126000            | 103000            | 83700             | 51600             | 42000             | 42             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 726  | 138820               | 126000            | 107000            | 85300             | 53300             | 42700             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 741  | 138820               | 122980            | 103000            | 83700             | 51600             | 42000             | 38             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 812  | 138820               | 125920            | 103000            | 83700             | 51600             | 42000             | 35             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 862  | 138820               | 122980            | 103000            | 83700             | 51600             | 42000             | 33             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 1043 | 138820               | 122980            | 103000            | 83700             | 51600             | 42000             | 27             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |
|   | 1237 | 124000               | 115000            | 98650             | 80130             | 49440             | 40500             | 21             | 18             | 1800           | 3800              | 400            | 5B  | 192000            |

**317 L**  408



**208110 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.09 | 208110               | 196530            | 166000            | 135000            | 83000             | 67240             | 300            | 85             | 200            | 300               | —              | —   | 393000            |
|   | 5.25 | 187860               | 172400            | 154050            | 131030            | 80850             | 65670             | 300            | 85             | 200            | 300               | —              | —   | 393000            |
|   | 6.23 | 156150               | 134380            | 119950            | 118770            | 79850             | 64860             | 300            | 85             | 200            | 300               | —              | —   | 393000            |
| <b>L2</b>   | 16.9 | 207080               | 180000            | 147000            | 120000            | 74000             | 60000             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
|   | 22.1 | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
|   | 26.6 | 155000               | 155000            | 144000            | 117000            | 72000             | 59000             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
|   | 28.4 | 187860               | 172400            | 154050            | 131030            | 80850             | 65670             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
|   | 34.1 | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
|   | 40.5 | 156150               | 134380            | 119950            | 118770            | 79850             | 64860             | 250            | 55             | 900            | 1200              | —              | —   | 393000            |
| <b>L3</b>   | 58.1 | 207080               | 180000            | 147000            | 120000            | 74000             | 60000             | 150            | 35             | 1500           | 2000              | 3200           | 6L  | 393000            |
|   | 69.3 | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 150            | 35             | 1500           | 2000              | 3200           | 6L  | 393000            |
|   | 89.0 | 207080               | 179000            | 145000            | 118000            | 73000             | 59000             | 150            | 35             | 1500           | 2000              | 2600           | 6K  | 393000            |
|   | 106  | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 150            | 35             | 1500           | 2000              | 2100           | 6G  | 393000            |
|   | 116  | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 150            | 35             | 1500           | 2000              | 1500           | 6E  | 393000            |
|   | 138  | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 150            | 35             | 1500           | 2000              | 1500           | 6E  | 393000            |
|   | 166  | 155000               | 155000            | 144000            | 117000            | 72000             | 59000             | 150            | 35             | 1500           | 2000              | 1100           | 6C  | 393000            |
|   | 179  | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 150            | 35             | 1500           | 2000              | 1100           | 6C  | 393000            |
|   | 213  | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 138            | 35             | 1500           | 2000              | 850            | 6B  | 393000            |
|   | 252  | 156150               | 134380            | 119950            | 118770            | 79850             | 64860             | 99             | 35             | 1500           | 2000              | 850            | 6B  | 393000            |
| <b>L4</b>   | 310  | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 60             | 18             | 1800           | 3800              | 630            | 5E  | 393000            |
|   | 360  | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 393000            |
|   | 449  | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 60             | 18             | 1800           | 3800              | 500            | 5C  | 393000            |
|   | 493  | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 552  | 207080               | 179000            | 145000            | 118000            | 73000             | 59000             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 619  | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 60             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 719  | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 53             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 792  | 207080               | 178190            | 144740            | 117560            | 72540             | 58920             | 48             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 904  | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 40             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 1032 | 184310               | 177000            | 144000            | 117000            | 72000             | 59000             | 37             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 1134 | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 32             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 1318 | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 27             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 1595 | 170000               | 163960            | 154050            | 131030            | 80850             | 65670             | 23             | 18             | 1800           | 3800              | 400            | 5B  | 393000            |
|   | 1893 | 156150               | 134380            | 119950            | 118770            | 79850             | 64860             | 16.3           | 18             | 1800           | 3800              | 400            | 5B  | 393000            |





**318 L**  418

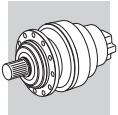
**280580 Nm**

|  | i      | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|--------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |        | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.40   | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 340            | 95             | 200            | 300               | —              | —   | 500000            |
|   | 18.7   | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 260            | 63             | 500            | 800               | —              | —   | 500000            |
|   |        | 23.5                 | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 260            | 63             | 500               | 800            | —   | —                 |
| <b>L2</b>   | 27.3   | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 260            | 63             | 500            | 800               | —              | —   | 500000            |
|   | 76.5   | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 200            | 40             | 1500           | 1800              | —              | —   | 500000            |
|   |        | 98.2                 | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 200            | 40             | 1500              | 1800           | 3200  | 6L                |
|   | 117    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 200            | 40             | 1500           | 1800              | 3200           | 6L  | 500000            |
|   |        | 123                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 200            | 40             | 1500              | 1800           | 2600  | 6K                |
|   | 146    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 200            | 40             | 1500           | 1800              | 2100           | 6G  | 500000            |
| <b>L3</b>   | 170    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 200            | 40             | 1500           | 1800              | 2100           | 6G  | 500000            |
|   | 262    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 115            | 22             | 1500           | 2500              | 1500           | 6E  | 500000            |
|   |        | 313                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 115            | 22             | 1500              | 2500           | 1100  | 6C                |
|   | 337    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 115            | 22             | 1500           | 2500              | 1100           | 6C  | 500000            |
|   |        | 402                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 110            | 22             | 1500              | 2500           | 850   | 6B                |
|   | 422    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 105            | 22             | 1500           | 2500              | 850            | 6B  | 500000            |
|   |        | 477                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 93             | 22             | 1500              | 2500           | 850   | 6B                |
|   | 515    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 86             | 22             | 1500           | 2500              | 850            | 6B  | 500000            |
|   |        | 612                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 73             | 22             | 1500              | 2500           | 850   | 6B                |
|   | 647    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 69             | 22             | 1500           | 2500              | 850            | 6B  | 500000            |
|   |        | 726                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 61             | 22             | 1500              | 2500           | 850   | 6B                |
|   | 768    | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 58             | 22             | 1500           | 2500              | 850            | 6B  | 500000            |
|   |        | 911                  | 280580            | 262990            | 218310            | 177320            | 109410            | 88870          | 49             | 22             | 1500              | 2500           | 850   | 6B                |
| 1059  | 280580 | 262990               | 218310            | 177320            | 109410            | 88870             | 41                | 22             | 1500           | 2500           | 850               | 6B             | 500000  |                   |

**319 L**  428

**476410 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                |                   |                |   |                   |
| <b>L1</b>   | 4.88      | 476410               | 383900            | 311830            | 253280            | 156280            | 126940            | 380            | 115            | 200            | 300               | —              | —   | 680000            |
|   | 5.77      | 367580               | 317550            | 284270            | 249240            | 153790            | 124910            | 380            | 115            | 200            | 300               | —              | —   | 680000            |
| <b>L2</b>   | 20.7      | 403720               | 348000            | 308000            | 250000            | 154000            | 125000            | 260            | 70             | 500            | 800               | —              | —   | 680000            |
|   | 24.5      | 367580               | 317550            | 280280            | 248000            | 153000            | 124000            | 260            | 70             | 500            | 800               | —              | —   | 680000            |
|   |           | 26.0                 | 389910            | 348000            | 286000            | 233000            | 144000            | 117000         | 260            | 70             | 500               | 800            | —   | —                 |
|   | 30.2      | 308140               | 296000            | 241000            | 196000            | 121000            | 98000             | 260            | 70             | 500            | 800               | —              | —   | 680000            |
|   |           | 35.8                 | 359680            | 317550            | 267610            | 220000            | 136000            | 110000         | 260            | 70             | 500               | 800            | —   | —                 |
| <b>L3</b>   | 84.8      | 403720               | 348000            | 286000            | 232000            | 143000            | 116000            | 200            | 50             | 1500           | 1800              | —              | —   | 680000            |
|   | 109       | 403720               | 348000            | 301000            | 245000            | 151000            | 123000            | 200            | 50             | 1500           | 1800              | —              | —   | 680000            |
|   |           | 129                  | 403720            | 348000            | 284000            | 231000            | 142000            | 116000         | 200            | 50             | 1500              | 1800           | 3200  | 6L                |
|   | 137       | 389910               | 348000            | 286000            | 233000            | 144000            | 117000            | 200            | 50             | 1500           | 1800              | 2600           | 6K  | 680000            |
|   |           | 162                  | 367580            | 317550            | 270690            | 248000            | 153000            | 124000         | 200            | 50             | 1500              | 1800           | 2600  | 6K                |
|   | 188       | 308140               | 296000            | 241000            | 196000            | 121000            | 98000             | 200            | 50             | 1500           | 1800              | 2100           | 6G  | 680000            |
|   |           | 223                  | 359680            | 317550            | 267610            | 220000            | 136000            | 110000         | 200            | 50             | 1500              | 1800           | 2100  | 6G                |
|   | <b>L4</b> | 347                  | 403720            | 348000            | 286000            | 232000            | 143000            | 116000         | 115            | 30             | 1500              | 2500           | 1100  | 6C                |
| 445   |           | 403720               | 348000            | 286000            | 232000            | 143000            | 116000            | 115            | 30             | 1500           | 2500              | 850            | 6B  | 680000            |
|   |           | 528                  | 403720            | 348000            | 286000            | 232000            | 143000            | 116000         | 115            | 30             | 1500              | 2500           | 850   | 6B                |
| 571   |           | 403720               | 348000            | 301000            | 245000            | 151000            | 123000            | 109            | 30             | 1500           | 2500              | 850            | 6B  | 680000            |
|   |           | 678                  | 403720            | 348000            | 301000            | 245000            | 151000            | 123000         | 92             | 30             | 1500              | 2500           | 850   | 6B                |
| 717   |           | 389910               | 348000            | 286000            | 233000            | 144000            | 117000            | 87             | 30             | 1500           | 2500              | 850            | 6B  | 680000            |
|   |           | 850                  | 389910            | 348000            | 286000            | 233000            | 144000            | 117000         | 73             | 30             | 1500              | 2500           | 850   | 6B                |
| 912   |           | 359680               | 317550            | 267610            | 220000            | 136000            | 110000            | 66             | 30             | 1500           | 2500              | 850            | 6B  | 680000            |
|   |           | 1007                 | 367580            | 317550            | 270690            | 248000            | 153000            | 124000         | 60             | 30             | 1500              | 2500           | 850   | 6B                |
| 1195  |           | 367580               | 317550            | 270690            | 248000            | 153000            | 124000            | 50             | 30             | 1500           | 2500              | 850            | 6B  | 680000            |
|   |           | 1389                 | 359680            | 317550            | 267610            | 220000            | 136000            | 110000         | 43             | 30             | 1500              | 2500           | 850   | 6B                |



**321 L** 438

**655740 Nm**

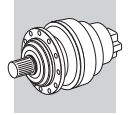
| i              | M <sub>n2</sub> [Nm]    |                         |                         |                          |                          |                           | P <sub>1</sub> [kW] | P <sub>t</sub> [kW] | n <sub>1</sub> [min <sup>-1</sup> ] | n <sub>1max</sub> [min <sup>-1</sup> ] | M <sub>b</sub> [Nm] | M <sub>2max</sub> [Nm] |        |
|----------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------|---------------------|-------------------------------------|--|---------------------|------------------------|--------|
|                | n <sub>2</sub> ·h 10000 | n <sub>2</sub> ·h 25000 | n <sub>2</sub> ·h 50000 | n <sub>2</sub> ·h 100000 | n <sub>2</sub> ·h 500000 | n <sub>2</sub> ·h 1000000 |                     |                     |                                     |  |                     |                        |        |
| <b>L1</b> 4.44 | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 540                 | 115                 | 200                                 | 300                                    | —                   | —                      | 934000 |
| <b>L2</b> 18.2 | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 300                 | 95                  | 200                                 | 300                                    | —                   | —                      | 934000 |
| 23.3           | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 172000                    | 300                 | 95                  | 200                                 | 300                                    | —                   | —                      | 934000 |
| 27.7           | 536350                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 300                 | 95                  | 200                                 | 300                                    | —                   | —                      | 934000 |
| <b>L3</b> 75.3 | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| 98.2           | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| 118            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| 126            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 172000                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| 152            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 172000                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| 180            | 536350                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 250                 | 60                  | 1000                                | 1200                                   | —                   | —                      | 934000 |
| <b>L4</b> 258  | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 2100                | 6G                     | 934000 |
| 308            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 2100                | 6G                     | 934000 |
| 395            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 2100                | 6G                     | 934000 |
| 469            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 1500                | 6E                     | 934000 |
| 515            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 1500                | 6E                     | 934000 |
| 612            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 150                 | 35                  | 1500                                | 2000                                   | 1100                | 6C                     | 934000 |
| 736            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 130                 | 35                  | 1500                                | 2000                                   | 850                 | 6B                     | 934000 |
| 796            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 172000                    | 120                 | 35                  | 1500                                | 2000                                   | 850                 | 6B                     | 934000 |
| 945            | 655740                  | 517290                  | 420170                  | 341290                   | 210580                   | 172000                    | 101                 | 35                  | 1500                                | 2000                                   | 850                 | 6B                     | 934000 |
| 1122           | 536350                  | 517290                  | 420170                  | 341290                   | 210580                   | 171050                    | 79                  | 35                  | 1500                                | 2000                                   | 850                 | 6B                     | 934000 |

**323 L** 448

**890310 Nm**

| i               | M <sub>n2</sub> [Nm]    |                         |                         |                          |                          |                           | P <sub>1</sub> [kW] | P <sub>t</sub> [kW] | n <sub>1</sub> [min <sup>-1</sup> ] | n <sub>1max</sub> [min <sup>-1</sup> ] | M <sub>b</sub> [Nm] | M <sub>2max</sub> [Nm] |         |
|-----------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------|---------------------|-------------------------------------|--|---------------------|------------------------|---------|
|                 | n <sub>2</sub> ·h 10000 | n <sub>2</sub> ·h 25000 | n <sub>2</sub> ·h 50000 | n <sub>2</sub> ·h 100000 | n <sub>2</sub> ·h 500000 | n <sub>2</sub> ·h 1000000 |                     |                     |                                     |  |                     |                        |         |
| <b>L1</b> 4.60  | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 850                 | 150                 | 150                                 | 250                                    | —                   | —                      | 1580000 |
| <b>L2</b> 19.6  | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 380                 | 130                 | 200                                 | 300                                    | —                   | —                      | 1580000 |
| 22.4            | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 380                 | 130                 | 200                                 | 300                                    | —                   | —                      | 1580000 |
| 26.5            | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 380                 | 130                 | 200                                 | 300                                    | —                   | —                      | 1580000 |
| 33.1            | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 380                 | 130                 | 200                                 | 300                                    | —                   | —                      | 1580000 |
| <b>L3</b> 83.3  | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 104.6           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 112.8           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 119.6           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 141.5           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 164.5           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 260                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| 205.3           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 210                 | 90                  | 500                                 | 800                                    | —                   | —                      | 1580000 |
| <b>L4</b> 341.0 | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 3200                | 6L                     | 1580000 |
| 389.9           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 3200                | 6L                     | 1580000 |
| 437.6           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 3200                | 6L                     | 1580000 |
| 500.4           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 3200                | 6L                     | 1580000 |
| 568.8           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 627.9           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 200                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 702.8           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 197                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 757.6           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 182                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 881.9           | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 157                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 1025.2          | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 135                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 1100.6          | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 126                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |
| 1279.5          | 890310                  | 829940                  | 742050                  | 602740                   | 371910                   | 302080                    | 108                 | 50                  | 1500                                | 1800                                   | 2600                | 6K                     | 1580000 |





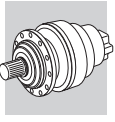
325 L

452

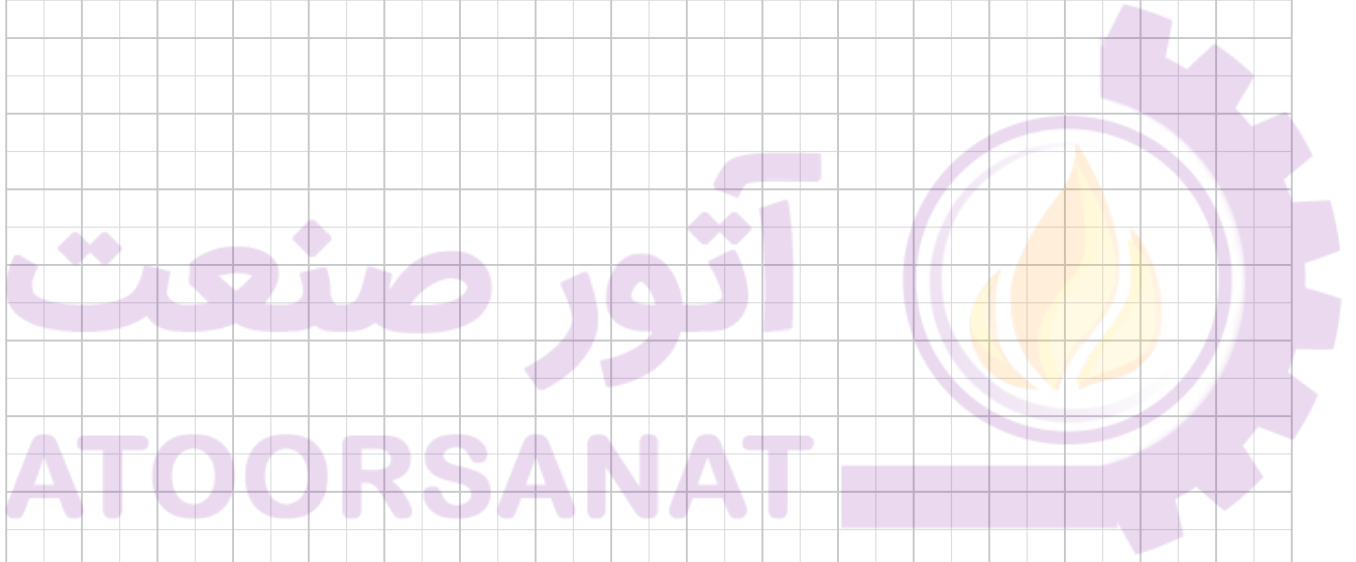
1286700 Nm

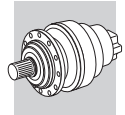
|           | i      | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | P <sub>t</sub> | n <sub>1</sub>       | n <sub>1max</sub>    | M <sub>b</sub> | M <sub>2max</sub> |         |
|-----------|--------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------------|----------------------|----------------|-------------------|---------|
|           |        | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |                |                      |                      |                |                   |         |
|           | 1:     | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           | [kW]           | [kW]           | [min <sup>-1</sup> ] | [min <sup>-1</sup> ] | [Nm]           | [Nm]              |         |
| <b>L1</b> | 4.60   | 1286700              | 1166950           | 947860            | 769900            | 475050            | 385860            | 1050           | 190            | 120                  | 250                  | —              | —                 | 2000000 |
| <b>L2</b> | 19.6   | 1286600              | 1104050           | 896760            | 729000            | 449450            | 365060            | 380            | 160            | 200                  | 300                  | —              | —                 | 2000000 |
|           | 22.4   | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 380            | 160            | 200                  | 300                  | —              | —                 | 2000000 |
|           | 26.5   | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 380            | 160            | 200                  | 300                  | —              | —                 | 2000000 |
|           | 33.1   | 963170               | 963170            | 845000            | 686160            | 423380            | 343890            | 380            | 160            | 200                  | 300                  | —              | —                 | 2000000 |
| <b>L3</b> | 83.3   | 1286600              | 1104050           | 896760            | 728400            | 449450            | 365060            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 104.6  | 1286600              | 1104050           | 896760            | 728400            | 449450            | 365060            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 112.8  | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 119.6  | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 141.5  | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 164.5  | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 260            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
|           | 205.3  | 963170               | 963170            | 845000            | 686160            | 423380            | 343890            | 226            | 115            | 500                  | 800                  | —              | —                 | 2000000 |
| <b>L4</b> | 341.0  | 1286600              | 1104050           | 896760            | 728400            | 449450            | 365060            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 389.9  | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 437.6  | 1286600              | 1104050           | 896760            | 728400            | 449450            | 365060            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 500.4  | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 568.8  | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 627.9  | 1286700              | 1083740           | 880270            | 715000            | 441180            | 358350            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 702.8  | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 200            | 65             | 1500                 | 1800                 | 3200           | 6L                | 2000000 |
|           | 757.6  | 1286600              | 1104050           | 896760            | 728400            | 449450            | 365060            | 200            | 65             | 1500                 | 1800                 | 2600           | 6K                | 2000000 |
|           | 881.9  | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 200            | 65             | 1500                 | 1800                 | 2600           | 6K                | 2000000 |
|           | 1025.2 | 1286700              | 1066430           | 866210            | 703580            | 434130            | 352630            | 193            | 65             | 1500                 | 1800                 | 2600           | 6K                | 2000000 |
|           | 1100.6 | 963170               | 963170            | 845120            | 686350            | 423550            | 343890            | 135            | 65             | 1500                 | 1800                 | 2600           | 6K                | 2000000 |
|           | 1279.5 | 963170               | 963170            | 845120            | 686350            | 423550            | 343890            | 116            | 65             | 1500                 | 1800                 | 2600           | 6K                | 2000000 |

C



C



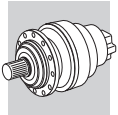


## 25.8 RATING CHARTS FOR RIGHT ANGLE UNITS 300 R

Reading the rating chart.

|    |      | 300 R                      |                            |                            |                             |                             |                              |                        |                        | 1250 Nm                                |   |                        |                           |      |  |
|----|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------------------|--|---|------------------------|---------------------------|------|--|
|    |      | 248                        |                            |                            |                             |                             |                              |                        |                        |  |   |                        |                           |      |  |
| R2 | i    | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | P <sub>t</sub><br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |  |
|    |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |                        |  |   |                        |                           |      |  |
|    | 7.13 | 760                        | 730                        | 730                        | 730                         | 730                         | 730                          | 15.0                   | 12                     | 2000                                   | 4000                                      | 160                    | 4D                        | 2000 |  |
|    | 8.74 | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 15.0                   | 12                     | 2000                                   | 4000                                      | 160                    | 4D                        | 2400 |  |
|    | 11.8 | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 12.2                   | 12                     | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |  |
|    | 14.8 | 700                        | 600                        | 550                        | 550                         | 550                         | 510                          | 8.3                    | 12                     | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |  |
|    | 18.5 | 460                        | 390                        | 370                        | 370                         | 370                         | 370                          | 4.5                    | 12                     | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |  |

|   |   |    |  |
|---|---|----|--|
| 1 | Reference torque                                      | 7  | Input angular velocity                   |
| 2 | Number of reduction stages (right-angled gear unit)   | 8  | Maximum input angular velocity           |
| 3 | Gear ratio<br>Gearbox rated output torque based on:   | 9  | Rated brake torque (Hydraulic brake)     |
| 4 | - service factor $f_s=1$<br>- $n_2 \cdot h$ indicated | 10 | Negative multidisc hydraulic brake       |
| 5 | Maximum power transmitted to the input shaft          | 11 | Maximum output torque at gearbox         |
| 6 | Gearbox thermal capacity                              | 12 | Page where dimensions can be sorted from |



**300 R**



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**1250 Nm**

| i         | 1:        | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |      |
|-----------|-----------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|------|
|           |           | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |      |
| <b>R2</b> | 7.13      | 760                        | 730                        | 730                        | 730                         | 730                         | 730                          | 15.0                   | 12         | 2000                                   | 4000                                      | 160                    | 4D                        | 2000 |      |
|           | 8.74      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 15.0                   | 12         | 2000                                   | 4000                                      | 160                    | 4D                        | 2400 |      |
|           | 11.8      | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 12.2                   | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |      |
|           | 14.8      | 700                        | 600                        | 550                        | 550                         | 550                         | 510                          | 8.3                    | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |      |
|           | 18.5      | 460                        | 390                        | 370                        | 370                         | 370                         | 370                          | 4.5                    | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 2400 |      |
| <b>R3</b> | 24.8      | 760                        | 730                        | 730                        | 730                         | 730                         | 730                          | 6.2                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2000 |      |
|           | 30.4      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 6.6                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 37.3      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 5.5                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 41.2      | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 3.6                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 50.4      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 4.3                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 62.9      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 3.5                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 68.2      | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 2.4                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 78.7      | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 2.9                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 85.2      | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 2.0                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 106       | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 1.7                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | 133       | 700                        | 600                        | 550                        | 550                         | 550                         | 510                          | 1.2                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
|           | <b>R4</b> | 106                        | 1250                       | 1070                       | 950                         | 860                         | 840                          | 720                    | 2.2        | 10                                     | 2000                                      | 4000                   | 50                        | 4A   | 2400 |
|           |           | 130                        | 1250                       | 1070                       | 950                         | 860                         | 840                          | 720                    | 1.8        | 10                                     | 2000                                      | 4000                   | 50                        | 4A   | 2400 |
| 143       |           | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 1.4                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 159       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 1.5                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 175       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 1.3                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 215       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 1.1                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 237       |           | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 0.86                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 268       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 0.88                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 291       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 0.81                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 363       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 0.65                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 394       |           | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 0.52                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 453       |           | 1250                       | 1070                       | 950                        | 860                         | 840                         | 720                          | 0.52                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 491       |           | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 0.41                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 613       |           | 860                        | 730                        | 650                        | 650                         | 650                         | 630                          | 0.33                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 2400 |      |
| 766       | 860       | 730                        | 650                        | 650                        | 650                         | 630                         | 0.27                         | 10                     | 2000       | 4000                                   | 50  | 4A                     | 2400                      |      |      |

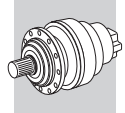
**301 R**



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**2060 Nm**

| i         | 1:   | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|-----------|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|
|           |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |
| <b>R2</b> | 7.13 | 1490                       | 1430                       | 1430                       | 1430                        | 1430                        | 1300                         | 15.0                   | 12         | 2000                                   | 4000                                      | 260                    | 4F                        | 3200 |
|           | 8.74 | 2060                       | 2060                       | 1890                       | 1730                        | 1580                        | 1280                         | 15.0                   | 12         | 2000                                   | 4000                                      | 330                    | 4H                        | 3200 |
|           | 11.8 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 15.0                   | 12         | 2000                                   | 4000                                      | 260                    | 4F                        | 3200 |
|           | 14.8 | 1150                       | 1150                       | 1150                       | 1150                        | 1150                        | 940                          | 15.0                   | 12         | 2000                                   | 4000                                      | 160                    | 4D                        | 3200 |
|           | 18.5 | 920                        | 780                        | 740                        | 740                         | 740                         | 740                          | 8.0                    | 12         | 2000                                   | 4000                                      | 160                    | 4D                        | 3200 |
| <b>R3</b> | 24.8 | 1490                       | 1430                       | 1430                       | 1430                        | 1430                        | 1300                         | 12.4                   | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 3400 |
|           | 30.4 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 13.1                   | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 3400 |
|           | 37.3 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 10.8                   | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 3400 |
|           | 41.2 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 7.3                    | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 3400 |
|           | 50.4 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 8.4                    | 12         | 2000                                   | 4000                                      | 100                    | 4B                        | 3400 |
|           | 62.9 | 2000                       | 2000                       | 1830                       | 1730                        | 1580                        | 1280                         | 7.0                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 68.2 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 4.8                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 78.7 | 1600                       | 1600                       | 1600                       | 1600                        | 1530                        | 1280                         | 5.8                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 85.2 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 4.0                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 106  | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 3.3                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 133  | 1150                       | 1150                       | 1150                       | 1150                        | 1150                        | 940                          | 2.0                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
| <b>R4</b> | 106  | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 4.5                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 130  | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 3.6                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 143  | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 2.7                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|           | 159  | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 3.0                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |



**301 R** 258

**2060 Nm**

| i  | 1:  | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|----|-----|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|
|    |     | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |
| R4 | 175 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 2.7                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 215 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 2.2                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 237 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 1.7                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 268 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 1.8                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 291 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 1.6                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 363 | 2460                       | 2140                       | 1900                       | 1730                        | 1580                        | 1280                         | 1.3                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 394 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 1.0                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 453 | 2000                       | 2000                       | 1830                       | 1730                        | 1580                        | 1280                         | 1.0                    | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 491 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 0.82                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 613 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 0.66                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |
|    | 766 | 1720                       | 1460                       | 1300                       | 1300                        | 1300                        | 1240                         | 0.52                   | 10         | 2000                                   | 4000                                      | 50                     | 4A                        | 3400 |

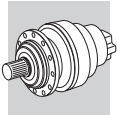
**303 R** 268

**2970 Nm**

| i  | 1:   | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|----|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|
|    |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |
| R2 | 9.23 | 2410                       | 2310                       | 2310                       | 2310                        | 2310                        | 1940                         | 35                     | 18         | 1800                                   | 3800                                      | 330                    | 4H                        | 5200 |
|    | 10.9 | 2970                       | 2810                       | 2810                       | 2650                        | 2570                        | 2090                         | 35                     | 18         | 1800                                   | 3800                                      | 330                    | 4H                        | 5200 |
|    | 13.7 | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 32                     | 18         | 1800                                   | 3800                                      | 260                    | 4F                        | 5200 |
|    | 15.9 | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 23                     | 18         | 1800                                   | 3800                                      | 260                    | 4F                        | 5200 |
|    | 19.2 | 2000                       | 1750                       | 1650                       | 1650                        | 1650                        | 1500                         | 17.2                   | 18         | 1800                                   | 3800                                      | 160                    | 4D                        | 5200 |
|    | 24.8 | 1050                       | 900                        | 860                        | 860                         | 860                         | 860                          | 7.0                    | 18         | 1800                                   | 3800                                      | 160                    | 4D                        | 5200 |
| R3 | 25.7 | 2410                       | 2310                       | 2310                       | 2310                        | 2130                        | 1730                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 160                    | 4D                        | 5200 |
|    | 31.5 | 2410                       | 2310                       | 2310                       | 2310                        | 2100                        | 1700                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 37.1 | 2970                       | 2810                       | 2810                       | 2650                        | 2350                        | 1910                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 42.6 | 2410                       | 2210                       | 2210                       | 2210                        | 2030                        | 1650                         | 11.6                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 46.6 | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 11.2                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 50.3 | 2770                       | 2700                       | 2650                       | 2620                        | 2280                        | 1850                         | 12.2                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 54.2 | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 8.1                    | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 63.1 | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 8.7                    | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 5200 |
|    | 73.3 | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 6.2                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 78.7 | 2850                       | 2450                       | 2230                       | 2200                        | 2140                        | 2030                         | 7.1                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 91.5 | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 5.2                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 114  | 2300                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 4.3                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
| R4 | 129  | 2970                       | 2810                       | 2810                       | 2650                        | 2390                        | 1940                         | 5.1                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 148  | 2410                       | 2310                       | 2310                       | 2310                        | 2130                        | 1730                         | 3.6                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 158  | 2970                       | 2810                       | 2810                       | 2650                        | 2350                        | 1910                         | 4.3                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 185  | 2410                       | 2310                       | 2310                       | 2310                        | 2130                        | 1730                         | 2.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 214  | 2970                       | 2810                       | 2810                       | 2650                        | 2350                        | 1910                         | 3.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 231  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 2.4                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 255  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 2.1                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 290  | 2770                       | 2700                       | 2650                       | 2620                        | 2280                        | 1850                         | 2.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 313  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 1.7                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 336  | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 2.0                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 364  | 2850                       | 2520                       | 2230                       | 2200                        | 2140                        | 2030                         | 1.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 390  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 1.4                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 452  | 2250                       | 2250                       | 2250                       | 2250                        | 1830                        | 1800                         | 1.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 528  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 1.0                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 567  | 2850                       | 2450                       | 2230                       | 2200                        | 2140                        | 2030                         | 1.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 659  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 0.83                   | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 797  | 2000                       | 1750                       | 1650                       | 1650                        | 1650                        | 1500                         | 0.59                   | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |
|    | 824  | 2440                       | 2080                       | 1840                       | 1820                        | 1820                        | 1820                         | 0.66                   | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 5200 |







### 304 R

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### 3960 Nm

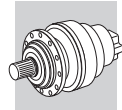
| i         | 1:   | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|-----------|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|
|           |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |
| <b>R2</b> | 9.23 | 3710                       | 3520                       | 3500                       | 3220                        | 2390                        | 1940                         | 35                     | 18         | 1800                                   | 3800                                      | 330                    | 4H                        | 6600 |
|           | 10.9 | 3960                       | 3750                       | 3690                       | 3540                        | 2680                        | 2180                         | 35                     | 18         | 1800                                   | 3800                                      | 330                    | 4H                        | 6600 |
|           | 13.7 | 3740                       | 3190                       | 2850                       | 2850                        | 2850                        | 2560                         | 35                     | 18         | 1800                                   | 3800                                      | 260                    | 4F                        | 6600 |
|           | 16.8 | 3000                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 28                     | 18         | 1800                                   | 3800                                      | 260                    | 4F                        | 6600 |
| <b>R3</b> | 25.7 | 3710                       | 3520                       | 3500                       | 3440                        | 3080                        | 2830                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 160                    | 4D                        | 7300 |
|           | 31.5 | 3710                       | 3520                       | 3500                       | 3440                        | 3080                        | 2830                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 37.1 | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 42.6 | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 46.6 | 3740                       | 3190                       | 2850                       | 2850                        | 2850                        | 2710                         | 14.2                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 50.3 | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 15.0                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 63.1 | 3740                       | 3190                       | 2850                       | 2850                        | 2850                        | 2710                         | 10.9                   | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 78.7 | 3740                       | 3190                       | 2850                       | 2850                        | 2850                        | 2710                         | 9.0                    | 14         | 2.000                                  | 4.000                                     | 100                    | 4B                        | 7300 |
|           | 97.0 | 3010                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 5.9                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 121  | 3010                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 4.9                    | 14         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
| <b>R4</b> | 89.4 | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 9.4                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 109  | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 7.8                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 129  | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 7.1                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 148  | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 5.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 158  | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 5.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 185  | 3710                       | 3520                       | 3500                       | 3440                        | 3080                        | 2830                         | 4.7                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 214  | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 4.4                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 227  | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 3.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 267  | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 3.5                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 290  | 3960                       | 3750                       | 3690                       | 3540                        | 3430                        | 2780                         | 3.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 307  | 3710                       | 3520                       | 3500                       | 3440                        | 3120                        | 2830                         | 2.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 338  | 3010                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 1.9                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 364  | 3740                       | 3190                       | 2850                       | 2850                        | 2850                        | 2710                         | 2.3                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 414  | 3010                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 1.6                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 452  | 3960                       | 3710                       | 3660                       | 3540                        | 3430                        | 2780                         | 2.1                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
|           | 560  | 3010                       | 2560                       | 2390                       | 2390                        | 2390                        | 2390                         | 1.2                    | 12         | 2.000                                  | 4.000                                     | 50                     | 4A                        | 7300 |
| 699       | 3010 | 2560                       | 2390                       | 2390                       | 2390                        | 2390                        | 0.93                         | 12                     | 2.000      | 4.000                                  | 50  | 4A                     | 7300                      |      |

### 305 R

292



### 5600 Nm

| i         | 1:   | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |      |
|-----------|------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|------|
|           |      | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |      |
| <b>R2</b> | 9.23 | 4650                       | 4050                       | 4000                       | 3870                        | 2390                        | 1940                         | 35                     | 18         | 1800                                   | 3800                                      | 440                    | 4L                        | 7700 |
|           | 10.9 | 5300                       | 4720                       | 4720                       | 4350                        | 2680                        | 2180                         | 35                     | 18         | 1800                                   | 3800                                      | 440                    | 4L                        | 7700 |
|           | 13.7 | 5600                       | 5040                       | 4470                       | 4280                        | 3150                        | 2560                         | 35                     | 18         | 1800                                   | 3800                                      | 440                    | 4L                        | 7700 |
|           | 15.9 | 4690                       | 4000                       | 3600                       | 3600                        | 3500                        | 2840                         | 35                     | 18         | 1800                                   | 3800                                      | 330                    | 4H                        | 7700 |
|           | 19.2 | 3800                       | 3300                       | 3100                       | 3100                        | 3000                        | 2790                         | 32                     | 18         | 1800                                   | 3800                                      | 260                    | 4F                        | 7700 |
| <b>R3</b> | 25.7 | 4680                       | 4490                       | 4490                       | 4490                        | 3800                        | 3090                         | 15.0                   | 14         | 2000                                   | 4000                                      | 260                    | 4F                        | 8800 |
|           | 31.5 | 4700                       | 4490                       | 4490                       | 4490                        | 3750                        | 3040                         | 15.0                   | 14         | 2000                                   | 4000                                      | 260                    | 4F                        | 8800 |
|           | 37.1 | 5800                       | 5500                       | 5480                       | 5300                        | 4210                        | 3420                         | 15.0                   | 14         | 2000                                   | 4000                                      | 260                    | 4F                        | 8800 |
|           | 42.6 | 4700                       | 4450                       | 4430                       | 4430                        | 3630                        | 2950                         | 15.0                   | 14         | 2000                                   | 4000                                      | 160                    | 4D                        | 8800 |
|           | 46.6 | 5600                       | 5040                       | 4470                       | 4400                        | 4280                        | 3490                         | 15.0                   | 14         | 2000                                   | 4000                                      | 160                    | 4D                        | 8800 |
|           | 50.3 | 5530                       | 5350                       | 5300                       | 5230                        | 4070                        | 3310                         | 15.0                   | 14         | 2000                                   | 4000                                      | 160                    | 4D                        | 8800 |
|           | 54.2 | 4690                       | 4000                       | 3600                       | 3600                        | 3550                        | 3460                         | 15.0                   | 14         | 2000                                   | 4000                                      | 100                    | 4B                        | 8800 |
|           | 63.1 | 5600                       | 5040                       | 4470                       | 4400                        | 4280                        | 3490                         | 15.0                   | 14         | 2000                                   | 4000                                      | 100                    | 4B                        | 8800 |
|           | 73.3 | 4690                       | 4000                       | 3600                       | 3600                        | 3550                        | 3460                         | 12.3                   | 14         | 2000                                   | 4000                                      | 100                    | 4B                        | 8800 |
|           | 78.7 | 5600                       | 4900                       | 4470                       | 4400                        | 4280                        | 3490                         | 14.3                   | 14         | 2000                                   | 4000                                      | 100                    | 4B                        | 8800 |
|           | 91.5 | 4690                       | 4000                       | 3600                       | 3600                        | 3550                        | 3460                         | 10.2                   | 14         | 2000                                   | 4000                                      | 100                    | 4B                        | 8800 |
| 114       | 4430 | 4000                       | 3600                       | 3600                       | 3500                        | 3460                        | 8.6                          | 14                     | 2000       | 4000                                   | 50  | 4A                     | 8800                      |      |
| <b>R4</b> | 129  | 5800                       | 5480                       | 5480                       | 5300                        | 4270                        | 3470                         | 10.3                   | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 8800 |
|           | 148  | 4700                       | 4490                       | 4490                       | 4490                        | 3800                        | 3090                         | 7.4                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 8800 |
|           | 158  | 5800                       | 5500                       | 5480                       | 5300                        | 4210                        | 3420                         | 8.6                    | 12         | 2000                                   | 4000                                      | 50                     | 4A                        | 8800 |





**305 R**  292

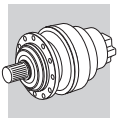
**5600 Nm**

|  | i   | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----|----------------|-------------------|----------------|---|-------------------|
|   |     | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |    |                |                   |                |   |                   |
| R4  | 185 | 4700                 | 4490              | 4490              | 4490              | 3800              | 3090              | 6.0            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 214 | 5800                 | 5500              | 5480              | 5300              | 4210              | 3420              | 6.4            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 231 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 4.7            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 255 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 4.3            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 290 | 5530                 | 5400              | 5300              | 5230              | 4070              | 3310              | 4.5            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 313 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 3.5            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 336 | 5600                 | 5040              | 4470              | 4400              | 4280              | 3490              | 3.9            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 364 | 5600                 | 5040              | 4470              | 4400              | 4280              | 3490              | 3.6            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 390 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 2.8            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 452 | 4750                 | 4750              | 4750              | 4750              | 3660              | 3210              | 2.5            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 528 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 2.1            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 567 | 5600                 | 4900              | 4470              | 4400              | 4280              | 3490              | 2.3            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 659 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 1.7            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 797 | 3800                 | 3300              | 3100              | 3100              | 3000              | 2790              | 1.1            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |
|   | 824 | 4690                 | 4000              | 3600              | 3600              | 3550              | 3460              | 1.3            | 12 | 2000           | 4000              | 50             | 4A  | 8800              |

**306 R**  304



**7300 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt   | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|--|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|------|----------------|-------------------|----------------|--|-------------------|
|  |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |      |                |                   |                |  |                   |
| R2   | 9.23 | 4650                 | 4050              | 4000              | 3870              | 2390              | 1940              | 35             | 18   | 1800           | 3800              | 440            | 4L   | 12000             |
|  | 10.9 | 5300                 | 4720              | 4720              | 4350              | 2680              | 2180              | 35             | 18   | 1800           | 3800              | 440            | 4L   | 12000             |
|  | 13.7 | 6500                 | 5920              | 5920              | 5100              | 3150              | 2560              | 35             | 18   | 1800           | 3800              | 440            | 4L   | 12000             |
|  | 15.9 | 7300                 | 6890              | 6530              | 5670              | 3500              | 2840              | 35             | 18   | 1800           | 3800              | 440            | 4L   | 12000             |
|  | 19.2 | 7000                 | 5900              | 5500              | 5400              | 3990              | 3240              | 35             | 18   | 1800           | 3800              | 400            | 4K   | 12000             |
| R3   | 33.2 | 8020                 | 8020              | 8020              | 8020              | 5680              | 4620              | 35             | 14   | 2000           | 4000              | 260            | 4F   | 14900             |
|  | 39.2 | 9770                 | 9340              | 9340              | 9300              | 6110              | 4960              | 35             | 14   | 2000           | 4000              | 260            | 4F   | 14900             |
|  | 46.3 | 10420                | 9850              | 9850              | 9600              | 6860              | 5570              | 35             | 14   | 2000           | 4000              | 260            | 4F   | 14900             |
|  | 58.1 | 9560                 | 9100              | 9100              | 9100              | 6680              | 5430              | 35             | 14   | 2000           | 4000              | 260            | 4F   | 14900             |
|  | 67.5 | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 25             | 14   | 2000           | 4000              | 260            | 4F   | 14900             |
|  | 72.9 | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 27             | 14   | 2000           | 4000              | 160            | 4D   | 14900             |
|  | 84.7 | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 23             | 14   | 2000           | 4000              | 160            | 4D   | 14900             |
|  | 98.5 | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 17.7           | 14   | 2000           | 4000              | 100            | 4B   | 14900             |
|  | 119  | 8500                 | 7370              | 6530              | 6500              | 6460              | 5480              | 15.2           | 14   | 2000           | 4000              | 100            | 4B   | 14900             |
|  | 144  | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 10.7           | 14   | 2000           | 4000              | 100            | 4B   | 14900             |
|  | R4   | 158                  | 10420             | 9850              | 9850              | 9600              | 6860              | 5570           | 14.9 | 12             | 2000              | 4000           | 100  | 4B                |
| 168  |      | 8320                 | 7700              | 7700              | 7530              | 5950              | 4830              | 11.3           | 12   | 2000           | 4000              | 100            | 4B   | 14900             |
| 181  |      | 9450                 | 9450              | 9450              | 9450              | 6970              | 5660              | 11.6           | 12   | 2000           | 4000              | 100            | 4B   | 14900             |
| 214  |      | 10420                | 9850              | 9850              | 9600              | 6860              | 5570              | 11.1           | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 230  |      | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 7.7            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 249  |      | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 9.0            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 289  |      | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 7.6            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 312  |      | 7890                 | 7590              | 7590              | 7590              | 6620              | 5380              | 5.7            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 389  |      | 8500                 | 7590              | 7590              | 7590              | 6620              | 5380              | 5.2            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 420  |      | 10080                | 9350              | 8300              | 7950              | 6810              | 5530              | 5.4            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 455  |      | 8630                 | 7370              | 6530              | 6500              | 6460              | 5480              | 4.4            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 488  |      | 9540                 | 9350              | 8300              | 7950              | 6810              | 5530              | 4.5            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 550  |      | 8500                 | 7370              | 6530              | 6500              | 6460              | 5480              | 3.7            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 590  |      | 9500                 | 8500              | 7800              | 7800              | 6810              | 5530              | 3.8            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 665  |      | 7000                 | 5900              | 5500              | 5500              | 5040              | 5040              | 2.5            | 12   | 2000           | 4000              | 50             | 4A   | 14900             |
| 830  | 7000 | 5900                 | 5500              | 5500              | 5040              | 5040              | 2.0               | 12             | 2000 | 4000           | 50                | 4A             | 14900  |                   |





**307 R**  316

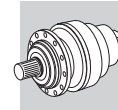
**14000 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt   | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |      |                |                   |                |   |                   |
|   | 1:        | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |      |                |                   |                |   |                   |
| <b>R2</b>   | 13.0      | 9000                 | 8500              | 8270              | 7960              | 6570              | 5340              | 85             | 35   | 1800           | 3800              | 1000           | 5K  | 18600             |
|   | 15.5      | 11400                | 10690             | 9630              | 9520              | 7440              | 6040              | 85             | 35   | 1800           | 3800              | 1000           | 5K  | 21000             |
|   | 19.8      | 14000                | 12700             | 11300             | 10790             | 8850              | 7190              | 85             | 35   | 1800           | 3800              | 800            | 5G  | 21000             |
|   | 23.5      | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 74             | 35   | 1800           | 3800              | 500            | 5C  | 21000             |
| <b>R3</b>   | 31.6      | 9000                 | 9000              | 9000              | 8300              | 5490              | 4460              | 35             | 22   | 2000           | 4000              | 400            | 4K  | 18600             |
|   | 37.7      | 15680                | 14890             | 12400             | 10070             | 6210              | 5050              | 35             | 22   | 2000           | 4000              | 440            | 4L  | 21000             |
|   | 44.6      | 15680                | 14890             | 13930             | 11310             | 6980              | 5670              | 35             | 22   | 2000           | 4000              | 400            | 4K  | 21000             |
|   | 55.9      | 15680                | 14890             | 14890             | 13260             | 8180              | 6650              | 35             | 22   | 2000           | 4000              | 330            | 4H  | 21000             |
|   | 65.0      | 14670                | 14010             | 14010             | 13510             | 9090              | 7380              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 71.8      | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 78.6      | 12300                | 12300             | 12300             | 12300             | 9560              | 7770              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 83.4      | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 33             | 22   | 2000           | 4000              | 260            | 4F  | 21000             |
|   | 99.0      | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 23             | 22   | 2000           | 4000              | 160            | 4D  | 21000             |
|   | 120       | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 19.9           | 22   | 2000           | 4000              | 160            | 4D  | 21000             |
|   | <b>R4</b> | 152                  | 15680             | 14890             | 14890             | 13510             | 9560              | 7770           | 15.0 | 15             | 2000              | 4000           | 100   | 4B                |
| 165   |           | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 191   |           | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 206   |           | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 232   |           | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 14.3           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 258   |           | 15680                | 14890             | 14890             | 13510             | 9560              | 7770              | 13.8           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 284   |           | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 11.6           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 300   |           | 15000                | 14010             | 14010             | 13510             | 9560              | 7770              | 11.8           | 15   | 2000           | 4000              | 100            | 4B  | 21000             |
| 331   |           | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 10.0           | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 363   |           | 12300                | 12300             | 12300             | 12300             | 9560              | 7770              | 8.0            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 413   |           | 14840                | 12700             | 11300             | 10790             | 9340              | 7590              | 8.0            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 453   |           | 15000                | 13800             | 12900             | 12500             | 9560              | 7770              | 7.8            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 490   |           | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 5.3            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 581   |           | 14330                | 12710             | 11300             | 10790             | 9340              | 7590              | 5.7            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |
| 690   |           | 11000                | 9600              | 8700              | 8700              | 8240              | 7490              | 3.8            | 15   | 2000           | 4000              | 50             | 4A  | 21000             |

**309 R**  328

**16460 Nm**

|  | i         | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt   | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|------|----------------|-------------------|----------------|---|-------------------|
|   |           | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |      |                |                   |                |   |                   |
|   | 1:        | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                |      |                |                   |                |   |                   |
| <b>R2</b>   | 13.0      | 9800                 | 9120              | 8270              | 7960              | 6570              | 5340              | 85             | 35   | 1800           | 3800              | 1000           | 5K  | 27400             |
|   | 15.5      | 11400                | 10690             | 9630              | 9520              | 7440              | 6040              | 85             | 35   | 1800           | 3800              | 1000           | 5K  | 27400             |
|   | 19.8      | 14000                | 13270             | 12270             | 12270             | 8850              | 7190              | 85             | 35   | 1800           | 3800              | 1000           | 5K  | 27400             |
|   | 23.5      | 16460                | 14070             | 12500             | 12370             | 9980              | 8110              | 85             | 35   | 1800           | 3800              | 800            | 5G  | 27400             |
| <b>R3</b>   | 31.6      | 12800                | 12310             | 10960             | 8900              | 5490              | 4460              | 35             | 22   | 2000           | 4000              | 440            | 4L  | 27900             |
|   | 37.7      | 15830                | 15260             | 12400             | 10070             | 6210              | 5050              | 35             | 22   | 2000           | 4000              | 440            | 4L  | 29000             |
|   | 44.6      | 18670                | 17150             | 13930             | 11310             | 6980              | 5670              | 35             | 22   | 2000           | 4000              | 400            | 4K  | 29000             |
|   | 55.9      | 18510                | 17140             | 16330             | 13260             | 8180              | 6650              | 35             | 22   | 2000           | 4000              | 400            | 4K  | 29000             |
|   | 65.0      | 14670                | 14300             | 14300             | 14010             | 9090              | 7380              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 71.8      | 21980                | 19060             | 16940             | 15790             | 9740              | 7910              | 35             | 22   | 2000           | 4000              | 330            | 4H  | 29000             |
|   | 83.4      | 18300                | 18100             | 16940             | 16190             | 10830             | 8790              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 99.0      | 17000                | 14400             | 13000             | 13000             | 12210             | 9910              | 35             | 22   | 2000           | 4000              | 260            | 4F  | 29000             |
|   | 120       | 17000                | 14400             | 13000             | 13000             | 12370             | 10280             | 30             | 22   | 2000           | 4000              | 160            | 4D  | 29000             |
|   | <b>R4</b> | 152                  | 21620             | 21260             | 21260             | 18580             | 11460             | 9310           | 15.0 | 15             | 2000              | 4000           | 160   | 4D                |
| 165   |           | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 15.0           | 15   | 2000           | 4000              | 160            | 4D  | 29000             |
| 191   |           | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 15.0           | 15   | 2000           | 4000              | 160            | 4D  | 29000             |
| 206   |           | 21620                | 21260             | 21260             | 18580             | 11460             | 9310              | 15.0           | 15   | 2000           | 4000              | 160            | 4D  | 29000             |
| 232   |           | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 29000             |
| 258   |           | 18510                | 17500             | 17500             | 17140             | 11160             | 9070              | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 29000             |
| 284   |           | 18300                | 18100             | 16940             | 16190             | 12810             | 10410             | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 29000             |
| 331   |           | 21980                | 19060             | 16940             | 16190             | 12810             | 10410             | 15.0           | 15   | 2000           | 4000              | 100            | 4B  | 29000             |
| 374   |           | 14670                | 14300             | 14300             | 14010             | 11060             | 8990              | 9.2            | 15   | 2000           | 4000              | 100            | 4B  | 29000             |



**309 R** 328

**16460 Nm**

| i  | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |       |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------|--|---|------------------------|---------------------------|----|-------|
|    | n <sub>2</sub> :h    | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h |                        |            |  |   |                        |                           |    |       |
| 1: | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                        |            |  |   |                        |                           |    |       |
| R4 | 413                  | 21980             | 19060             | 16940             | 16190             | 12810             | 10410                  | 12.0       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 29000 |
|    | 457                  | 17000             | 14400             | 13000             | 13000             | 12370             | 10280                  | 8.8        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 29000 |
|    | 490                  | 17000             | 14400             | 13000             | 13000             | 12370             | 10280                  | 8.2        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 29000 |
|    | 581                  | 15800             | 15800             | 15800             | 15000             | 12810             | 10410                  | 6.4        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 29000 |
|    | 690                  | 17000             | 14400             | 13000             | 13000             | 12370             | 10280                  | 5.8        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 29000 |

**310 R** 340

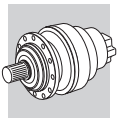
**34120 Nm**

| i  | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |       |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------|--|---|------------------------|---------------------------|----|-------|
|    | n <sub>2</sub> :h    | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h |                        |            |  |   |                        |                           |    |       |
| 1: | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                        |            |  |   |                        |                           |    |       |
| R2 | 12.0                 | 28200             | 27800             | 25000             | 21590             | 13320             | 10820                  | 130        | 55                                     | 1500                                      | 2500                   | 3200                      | 6L | 47600 |
|    | 15.4                 | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 130        | 55                                     | 1500                                      | 2500                   | 2600                      | 6K | 47600 |
|    | 18.3                 | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 130        | 55                                     | 1500                                      | 2500                   | 2100                      | 6G | 47600 |
|    | 16.6                 | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 130        | 55                                     | 1500                                      | 2500                   | 2600                      | 6K | 47600 |
|    | 21.3                 | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 130        | 55                                     | 1500                                      | 2500                   | 2600                      | 6K | 47600 |
|    | 25.3                 | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 119        | 55                                     | 1500                                      | 2500                   | 2100                      | 6G | 47600 |
| R3 | 37.7                 | 15830             | 15260             | 12400             | 10070             | 6210              | 5050                   | 35         | 22                                     | 1800                                      | 3800                   | 440                       | 4L | 47600 |
|    | 44.6                 | 18670             | 17150             | 13930             | 11310             | 6980              | 5670                   | 35         | 22                                     | 1800                                      | 3800                   | 440                       | 4L | 47600 |
|    | 55.9                 | 23410             | 20100             | 16320             | 13260             | 8180              | 6650                   | 35         | 22                                     | 1800                                      | 3800                   | 400                       | 4K | 47600 |
|    | 65.0                 | 27110             | 22330             | 18140             | 14730             | 9090              | 7380                   | 35         | 22                                     | 1800                                      | 3800                   | 400                       | 4K | 47600 |
|    | 71.8                 | 29990             | 23930             | 19440             | 15790             | 9740              | 7910                   | 35         | 22                                     | 1800                                      | 3800                   | 400                       | 4K | 47600 |
|    | 78.6                 | 21800             | 21100             | 20150             | 16840             | 10390             | 8440                   | 35         | 22                                     | 1800                                      | 3800                   | 330                       | 4H | 47600 |
|    | 83.4                 | 30600             | 26240             | 21600             | 17550             | 10830             | 8790                   | 35         | 22                                     | 1800                                      | 3800                   | 400                       | 4K | 47600 |
|    | 99.0                 | 26000             | 21200             | 18420             | 18230             | 12210             | 9910                   | 35         | 22                                     | 1800                                      | 3800                   | 330                       | 4H | 47600 |
|    | 120                  | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 35         | 22                                     | 1800                                      | 3800                   | 260                       | 4F | 47600 |
| R4 | 136                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 35         | 15                                     | 2000                                      | 4000                   | 260                       | 4F | 47600 |
|    | 160                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 35         | 15                                     | 2000                                      | 4000                   | 260                       | 4F | 47600 |
|    | 189                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 35         | 15                                     | 2000                                      | 4000                   | 260                       | 4F | 47600 |
|    | 206                  | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 34         | 15                                     | 2000                                      | 4000                   | 160                       | 4D | 47600 |
|    | 234                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 25         | 15                                     | 2000                                      | 4000                   | 160                       | 4D | 47600 |
|    | 258                  | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 27         | 15                                     | 2000                                      | 4000                   | 160                       | 4D | 47600 |
|    | 283                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 19.1       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 305                  | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 23         | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 334                  | 34120             | 32340             | 26580             | 21590             | 13320             | 10820                  | 19.1       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 363                  | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 19.1       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 419                  | 34120             | 31930             | 26580             | 21590             | 13320             | 10820                  | 16.9       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 454                  | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 13.5       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 517                  | 30600             | 26240             | 23350             | 21100             | 13020             | 10570                  | 13.5       | 15                                     | 2000                                      | 4000                   | 100                       | 4B | 47600 |
|    | 590                  | 21800             | 21800             | 21800             | 20150             | 13320             | 10820                  | 8.7        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 47600 |
|    | 639                  | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 9.6        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 47600 |
|    | 757                  | 28000             | 25880             | 23350             | 21100             | 13020             | 10570                  | 8.8        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 47600 |
|    | 898                  | 26000             | 21200             | 18420             | 18230             | 12860             | 10440                  | 6.8        | 15                                     | 2000                                      | 4000                   | 50                        | 4A | 47600 |

**311 R** 352

**48330 Nm**

| i  | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |       |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------|--|---|------------------------|---------------------------|----|-------|
|    | n <sub>2</sub> :h    | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h | n <sub>2</sub> :h |                        |            |  |   |                        |                           |    |       |
| 1: | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           |                        |            |  |   |                        |                           |    |       |
| R2 | 12.0                 | 28200             | 27800             | 25000             | 24910             | 15900             | 12700                  | 150        | 75                                     | 1500                                      | 2500                   | 3200                      | 6L | 58300 |
|    | 15.4                 | 35600             | 33600             | 31960             | 30600             | 18800             | 15300                  | 150        | 75                                     | 1500                                      | 2500                   | 3200                      | 6L | 58300 |
|    | 18.3                 | 34000             | 29500             | 27000             | 27000             | 18600             | 15100                  | 150        | 75                                     | 1500                                      | 2500                   | 2600                      | 6K | 58300 |
|    | 16.6                 | 48330             | 42150             | 34220             | 27800             | 17150             | 13940                  | 150        | 90                                     | 1500                                      | 2500                   | 3200                      | 6L | 58300 |
|    | 21.3                 | 45210             | 39560             | 35220             | 30380             | 18740             | 15230                  | 150        | 90                                     | 1500                                      | 2500                   | 2600                      | 6K | 58300 |
|    | 25.3                 | 34000             | 29500             | 27000             | 26000             | 18510             | 15040                  | 150        | 90                                     | 1500                                      | 2500                   | 2100                      | 6G | 58300 |



**311 R** 352

**48330 Nm**

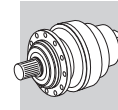
|           | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt   | n <sub>1</sub>       | n <sub>1max</sub>    | M <sub>b</sub> | M <sub>2max</sub> |       |
|-----------|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|------|----------------------|----------------------|----------------|-------------------|-------|
|           |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |      |                      |                      |                |                   |       |
|           | 1:   | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           | [kW]           | [kW] | [min <sup>-1</sup> ] | [min <sup>-1</sup> ] | [Nm]           | [Nm]              |       |
| <b>R3</b> | 53.0 | 32500                | 32430             | 32440             | 27690             | 17090             | 13880             | 85             | 40   | 2000                 | 4000                 | 800            | 5G                | 58300 |
|           | 63.2 | 40540                | 38880             | 38290             | 31100             | 19190             | 15590             | 85             | 40   | 2000                 | 4000                 | 800            | 5G                | 58300 |
|           | 68.0 | 41900                | 39560             | 35220             | 30380             | 18740             | 15230             | 85             | 40   | 2000                 | 4000                 | 630            | 5E                | 58300 |
|           | 81.1 | 46930                | 43390             | 38290             | 31100             | 19190             | 15590             | 85             | 40   | 2000                 | 4000                 | 630            | 5E                | 58300 |
|           | 96.3 | 35200                | 34500             | 34500             | 31100             | 19190             | 15590             | 83             | 40   | 2000                 | 4000                 | 500            | 5C                | 58300 |
|           | 104  | 45210                | 39560             | 35220             | 32000             | 19700             | 16000             | 85             | 40   | 2000                 | 4000                 | 500            | 5C                | 58300 |
|           | 124  | 43000                | 39560             | 35220             | 32000             | 19700             | 16000             | 75             | 40   | 2000                 | 4000                 | 400            | 5B                | 58300 |
|           | 147  | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 51             | 40   | 2000                 | 4000                 | 400            | 5B                | 58300 |
| <b>R4</b> | 154  | 48330                | 39700             | 32240             | 26190             | 16160             | 13130             | 35             | 22   | 2000                 | 4000                 | 330            | 4H                | 58300 |
|           | 182  | 48330                | 44590             | 36210             | 29420             | 18150             | 14740             | 35             | 22   | 2000                 | 4000                 | 330            | 4H                | 58300 |
|           | 198  | 46930                | 43390             | 38290             | 31100             | 19190             | 15590             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 58300 |
|           | 229  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 58300 |
|           | 266  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 58300 |
|           | 294  | 46930                | 43390             | 38290             | 31100             | 19190             | 15590             | 35             | 22   | 2000                 | 4000                 | 160            | 4D                | 58300 |
|           | 322  | 48330                | 45840             | 38290             | 31100             | 19190             | 15590             | 33             | 22   | 2000                 | 4000                 | 160            | 4D                | 58300 |
|           | 341  | 46930                | 43390             | 38290             | 31100             | 19190             | 15590             | 31             | 22   | 2000                 | 4000                 | 160            | 4D                | 58300 |
|           | 413  | 46930                | 43390             | 38290             | 31100             | 19190             | 15590             | 25             | 22   | 2000                 | 4000                 | 160            | 4D                | 58300 |
|           | 438  | 45210                | 39560             | 35220             | 32000             | 19700             | 16000             | 23             | 22   | 2000                 | 4000                 | 100            | 4D                | 58300 |
|           | 490  | 35200                | 34500             | 34500             | 31100             | 19190             | 15590             | 17.0           | 22   | 2000                 | 4000                 | 100            | 4B                | 58300 |
|           | 520  | 43000                | 39560             | 35220             | 32000             | 19700             | 16000             | 19.6           | 22   | 2000                 | 4000                 | 100            | 4B                | 58300 |
|           | 629  | 43000                | 39560             | 35220             | 32000             | 19700             | 16000             | 16.2           | 22   | 2000                 | 4000                 | 100            | 4B                | 58300 |
|           | 746  | 34000                | 29500             | 27000             | 27000             | 18600             | 15100             | 10.8           | 22   | 2000                 | 4000                 | 100            | 4B                | 58300 |

**313 R** 364

**57970 Nm**



|           | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt   | n <sub>1</sub>       | n <sub>1max</sub>    | M <sub>b</sub> | M <sub>2max</sub> |        |
|-----------|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|------|----------------------|----------------------|----------------|-------------------|--------|
|           |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |      |                      |                      |                |                   |        |
|           | 1:   | 10000                | 25000             | 50000             | 100000            | 500000            | 1000000           | [kW]           | [kW] | [min <sup>-1</sup> ] | [min <sup>-1</sup> ] | [Nm]           | [Nm]              |        |
| <b>R2</b> | 12.2 | 28500                | 28100             | 25300             | 25130             | 16100             | 12900             | 150            | 75   | 1500                 | 2500                 | 3200           | 6L                | 86300  |
|           | 15.9 | 36700                | 35600             | 32870             | 31400             | 18900             | 15500             | 150            | 75   | 1500                 | 2500                 | 3200           | 6L                | 86300  |
|           | 19.1 | 44100                | 41000             | 37800             | 36000             | 22100             | 17700             | 150            | 75   | 1500                 | 2500                 | 3200           | 6L                | 86300  |
|           | 16.8 | 53340                | 42520             | 34530             | 28050             | 17310             | 14060             | 150            | 90   | 1500                 | 2500                 | 3200           | 6L                | 105000 |
|           | 22.0 | 57970                | 49730             | 41580             | 33760             | 20830             | 16920             | 150            | 90   | 1500                 | 2500                 | 2600           | 6K                | 105000 |
|           | 26.4 | 49000                | 41000             | 33100             | 31730             | 23730             | 19270             | 150            | 90   | 1500                 | 2500                 | 2600           | 6K                | 105000 |
| <b>R3</b> | 53.7 | 35120                | 32860             | 32860             | 27940             | 17240             | 14000             | 85             | 40   | 1800                 | 3800                 | 800            | 5G                | 105000 |
|           | 64.0 | 40990                | 39380             | 38920             | 31620             | 19510             | 15850             | 85             | 40   | 1800                 | 3800                 | 800            | 5G                | 105000 |
|           | 69.9 | 44280                | 43120             | 41410             | 33630             | 20750             | 16860             | 85             | 40   | 1800                 | 3800                 | 800            | 5G                | 105000 |
|           | 82.2 | 51000                | 50890             | 46350             | 37650             | 23230             | 18870             | 85             | 40   | 1800                 | 3800                 | 630            | 5E                | 105000 |
|           | 97.5 | 52430                | 50280             | 50280             | 42440             | 26190             | 21270             | 85             | 40   | 1800                 | 3800                 | 630            | 5E                | 105000 |
|           | 107  | 57970                | 49730             | 44600             | 42590             | 27200             | 22090             | 85             | 40   | 1800                 | 3800                 | 630            | 5E                | 105000 |
|           | 127  | 57970                | 49730             | 45000             | 42590             | 27200             | 22090             | 85             | 40   | 1800                 | 3800                 | 500            | 5C                | 105000 |
|           | 153  | 49000                | 42400             | 39000             | 39000             | 27700             | 22500             | 65             | 40   | 1800                 | 3800                 | 400            | 5B                | 105000 |
| <b>R4</b> | 185  | 55410                | 44980             | 36540             | 29680             | 18310             | 14870             | 35             | 22   | 2000                 | 4000                 | 330            | 4H                | 105000 |
|           | 201  | 55410                | 47690             | 38730             | 31460             | 19410             | 15770             | 35             | 22   | 2000                 | 4000                 | 330            | 4H                | 105000 |
|           | 237  | 55410                | 52510             | 43510             | 35340             | 21810             | 17710             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 105000 |
|           | 281  | 53000                | 50280             | 49050             | 39840             | 24580             | 19970             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 105000 |
|           | 309  | 57970                | 49730             | 44290             | 42550             | 26250             | 21320             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 105000 |
|           | 346  | 55410                | 55000             | 52510             | 45210             | 27900             | 22660             | 35             | 22   | 2000                 | 4000                 | 260            | 4F                | 105000 |
|           | 387  | 57970                | 49730             | 45000             | 42590             | 27200             | 22090             | 34             | 22   | 2000                 | 4000                 | 160            | 4D                | 105000 |
|           | 450  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 29             | 22   | 2000                 | 4000                 | 160            | 4D                | 105000 |
|           | 496  | 53000                | 52000             | 52200             | 45210             | 27900             | 22660             | 25             | 22   | 2000                 | 4000                 | 160            | 4D                | 105000 |
|           | 535  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 24             | 22   | 2000                 | 4000                 | 160            | 4D                | 105000 |
|           | 647  | 57970                | 49730             | 45000             | 45000             | 27800             | 22600             | 20             | 22   | 2000                 | 4000                 | 100            | 4B                | 105000 |
|           | 778  | 49000                | 42400             | 39000             | 39000             | 27700             | 22500             | 14.9           | 22   | 2000                 | 4000                 | 100            | 4B                | 105000 |







**314 R**  376

**84000 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |    |                |                   |                |   |                   |
| R3  | 51.1 | 81840                | 78152             | 66080             | 53208             | 32832             | 26680             | 130            | 55 | 1500           | 2500              | 3200           | 6L  | 115000            |
|   | 65.5 | 84000                | 80000             | 77600             | 64640             | 38800             | 30720             | 130            | 55 | 1500           | 2500              | 3200           | 6L  | 115000            |
|   | 77.8 | 84000                | 80000             | 77600             | 62400             | 39040             | 31520             | 130            | 55 | 1500           | 2500              | 2600           | 6K  | 115000            |
|   | 82.3 | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 130            | 55 | 1500           | 2500              | 2600           | 6K  | 115000            |
|   | 97.6 | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 130            | 55 | 1500           | 2500              | 2100           | 6G  | 115000            |
|   | 113  | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 94             | 55 | 1500           | 2500              | 2100           | 6G  | 115000            |
|   | 70.7 | 83176                | 78144             | 67784             | 55056             | 33968             | 27592             | 130            | 55 | 1500           | 2500              | 3200           | 6L  | 115000            |
|   | 90.7 | 84000                | 78144             | 67784             | 55056             | 33968             | 27592             | 130            | 55 | 1500           | 2500              | 3200           | 6L  | 115000            |
|   | 108  | 84000                | 80000             | 67784             | 55056             | 33968             | 27592             | 100            | 55 | 1500           | 2500              | 2600           | 6K  | 115000            |
|   | 114  | 79200                | 69600             | 65464             | 56000             | 35280             | 29040             | 117            | 55 | 1500           | 2500              | 2600           | 6K  | 115000            |
|   | 135  | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 98             | 55 | 1500           | 2500              | 2100           | 6G  | 115000            |
|   | 157  | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 70             | 55 | 1500           | 2500              | 2100           | 6G  | 115000            |
|   | R4   | 160                  | 83176             | 78144             | 67784             | 55056             | 33968             | 27592          | 35 | 22             | 1800              | 3800           | 440   | 4L                |
| 189   |      | 84000                | 79200             | 67784             | 55056             | 33968             | 27592             | 35             | 22 | 1800           | 3800              | 440            | 4L  | 115000            |
| 238   |      | 84000                | 80000             | 76000             | 62400             | 38320             | 31120             | 35             | 22 | 1800           | 3800              | 400            | 4K  | 115000            |
| 276   |      | 84000                | 80000             | 77600             | 63200             | 38960             | 31680             | 35             | 22 | 1800           | 3800              | 400            | 4K  | 115000            |
| 354   |      | 84000                | 80000             | 77600             | 66400             | 40800             | 33360             | 35             | 22 | 1800           | 3800              | 400            | 4K  | 115000            |
| 421   |      | 84000                | 80000             | 77600             | 62400             | 38720             | 31440             | 35             | 22 | 1800           | 3800              | 330            | 4H  | 115000            |
| 445   |      | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 35             | 22 | 1800           | 3800              | 400            | 4K  | 115000            |
| 528   |      | 79200                | 69600             | 65464             | 62400             | 39040             | 31760             | 32             | 22 | 1800           | 3800              | 330            | 4H  | 115000            |
| 614   |      | 66792                | 57416             | 52000             | 52000             | 32800             | 26640             | 22             | 22 | 1800           | 3800              | 260            | 4F  | 115000            |

**315 R**  388

**105000 Nm**

|  | i    | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|----|----------------|-------------------|----------------|---|-------------------|
|   |      | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |    |                |                   |                |   |                   |
| R3  | 51.1 | 102300               | 97690             | 82600             | 66510             | 41040             | 33350             | 150            | 75 | 1500           | 2500              | 2600           | 6K  | 135000            |
|   | 65.5 | 105000               | 100000            | 97000             | 80800             | 48500             | 38400             | 150            | 75 | 1500           | 2500              | 2100           | 6G  | 135000            |
|   | 77.8 | 105000               | 100000            | 97000             | 78000             | 48800             | 39400             | 150            | 75 | 1500           | 2500              | 2100           | 6G  | 135000            |
|   | 82.3 | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 150            | 75 | 1500           | 2500              | 1500           | 6E  | 135000            |
|   | 97.6 | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 150            | 75 | 1500           | 2500              | 1500           | 6E  | 135000            |
|   | 113  | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 118            | 75 | 1500           | 2500              | 850            | 6B  | 135000            |
|   | 70.7 | 103970               | 97680             | 84730             | 68820             | 42460             | 34490             | 150            | 90 | 1500           | 2500              | 2100           | 6G  | 135000            |
|   | 90.7 | 105000               | 97680             | 84730             | 68820             | 42460             | 34490             | 150            | 90 | 1500           | 2500              | 1500           | 6E  | 135000            |
|   | 108  | 105000               | 100000            | 84730             | 68820             | 42460             | 34490             | 150            | 90 | 1500           | 2500              | 1500           | 6E  | 135000            |
|   | 114  | 99000                | 87000             | 81830             | 70000             | 44100             | 36300             | 146            | 90 | 1500           | 2500              | 1100           | 6C  | 135000            |
|   | 135  | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 125            | 90 | 1500           | 2500              | 1100           | 6C  | 135000            |
|   | 157  | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 88             | 90 | 1500           | 2500              | 850            | 6B  | 135000            |
|   | R4   | 225                  | 103970            | 97680             | 84730             | 68820             | 42460             | 34490          | 90 | 40             | 1800              | 3800           | 500   | 5C                |
| 269   |      | 105000               | 99000             | 84730             | 68820             | 42460             | 34490             | 83             | 40 | 1800           | 3800              | 500            | 5C  | 135000            |
| 345   |      | 105000               | 100000            | 95000             | 78000             | 47900             | 38900             | 65             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 409   |      | 105000               | 100000            | 97000             | 79000             | 48700             | 39600             | 55             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 525   |      | 105000               | 100000            | 97000             | 83000             | 51000             | 41700             | 43             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 623   |      | 105000               | 100000            | 97000             | 78000             | 48400             | 39300             | 36             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 659   |      | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 32             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 782   |      | 99000                | 87000             | 81830             | 78000             | 48800             | 39700             | 27             | 40 | 1800           | 3800              | 400            | 5B  | 135000            |
| 909   |      | 83490                | 71770             | 65000             | 65000             | 41000             | 33300             | 18.7           | 40 | 1800           | 3800              | 400            | 5B  | 135000            |





**316 R** 400

**138820 Nm**

| i         | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |        |
|-----------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|----|--------|
|           | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |    |        |
| <b>R3</b> | 51.1                       | 108000                     | 101000                     | 87200                       | 70300                       | 42300                        | 33900                  | 150        | 75                                     | 1500                                      | 2500                   | 2600                      | 6K | 192000 |
|           | 65.5                       | 134000                     | 126000                     | 104000                      | 82600                       | 50000                        | 40200                  | 150        | 75                                     | 1500                                      | 2500                   | 2600                      | 6K | 192000 |
|           | 77.8                       | 124000                     | 115000                     | 98650                       | 80130                       | 49440                        | 40500                  | 150        | 75                                     | 1500                                      | 2500                   | 2100                      | 6G | 192000 |
|           | 70.7                       | 138810                     | 112590                     | 91410                       | 74250                       | 45820                        | 37220                  | 150        | 90                                     | 1500                                      | 2500                   | 2100                      | 6G | 192000 |
|           | 90.7                       | 138820                     | 122980                     | 99890                       | 81130                       | 50060                        | 40660                  | 150        | 90                                     | 1500                                      | 2500                   | 2100                      | 6G | 192000 |
|           | 108                        | 124000                     | 108000                     | 98650                       | 80130                       | 49440                        | 40160                  | 150        | 90                                     | 1500                                      | 2500                   | 1500                      | 6E | 192000 |
| <b>R4</b> | 225                        | 138810                     | 126000                     | 103000                      | 83700                       | 51600                        | 42000                  | 85         | 45                                     | 1800                                      | 3800                   | 800                       | 5G | 192000 |
|           | 269                        | 138820                     | 126000                     | 103000                      | 83700                       | 51600                        | 42000                  | 85         | 45                                     | 1800                                      | 3800                   | 630                       | 5E | 192000 |
|           | 289                        | 138820                     | 126000                     | 107000                      | 85300                       | 53300                        | 42700                  | 85         | 45                                     | 1800                                      | 3800                   | 630                       | 5E | 192000 |
|           | 345                        | 138820                     | 126000                     | 103000                      | 83700                       | 51600                        | 42000                  | 83         | 45                                     | 1800                                      | 3800                   | 500                       | 5C | 192000 |
|           | 409                        | 138820                     | 125920                     | 103000                      | 83700                       | 51600                        | 42000                  | 69         | 45                                     | 1800                                      | 3800                   | 400                       | 5B | 192000 |
|           | 443                        | 138820                     | 126000                     | 107000                      | 85300                       | 53300                        | 42700                  | 65         | 45                                     | 1800                                      | 3800                   | 400                       | 5B | 192000 |
|           | 525                        | 138820                     | 122980                     | 103000                      | 83700                       | 51600                        | 42000                  | 54         | 45                                     | 1800                                      | 3800                   | 400                       | 5B | 192000 |
|           | 623                        | 124000                     | 115000                     | 98650                       | 80130                       | 49440                        | 40500                  | 42         | 45                                     | 1800                                      | 3800                   | 400                       | 5B | 192000 |

**317 R** 410

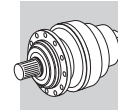
**187860 Nm**

| i         | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |        |
|-----------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|----|--------|
|           | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |    |        |
| <b>R3</b> | 49.8                       | 108300                     | 99090                      | 80420                       | 65330                       | 40310                        | 32760                  | 150        | 90                                     | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 64.9                       | 134800                     | 119290                     | 96820                       | 78650                       | 48530                        | 39440                  | 150        | 90                                     | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 78.1                       | 151300                     | 138800                     | 115100                      | 92600                       | 55260                        | 45000                  | 150        | 90                                     | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 83.3                       | 165870                     | 148000                     | 120000                      | 96000                       | 58700                        | 46960                  | 150        | 90                                     | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 100                        | 170000                     | 161770                     | 134800                      | 109200                      | 65810                        | 53480                  | 150        | 90                                     | 1500                                      | 2500                   | 2100                      | 6G | 393000 |
|           | 119                        | 156150                     | 134380                     | 119950                      | 118760                      | 74300                        | 60290                  | 150        | 90                                     | 1500                                      | 2500                   | 1500                      | 6E | 393000 |
|           | 68.9                       | 145590                     | 110540                     | 89790                       | 72940                       | 45010                        | 36570                  | 150        | 100                                    | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 89.8                       | 175270                     | 133080                     | 108100                      | 87810                       | 54180                        | 44020                  | 150        | 100                                    | 1500                                      | 2500                   | 2600                      | 6K | 393000 |
|           | 108                        | 137600                     | 127510                     | 123140                      | 99980                       | 61690                        | 50120                  | 150        | 100                                    | 1500                                      | 2500                   | 2100                      | 6G | 393000 |
|           | 115                        | 187860                     | 158560                     | 128730                      | 104560                      | 64520                        | 52420                  | 150        | 100                                    | 1500                                      | 2500                   | 2100                      | 6G | 393000 |
|           | 139                        | 167000                     | 163960                     | 146640                      | 119060                      | 73470                        | 59690                  | 150        | 100                                    | 1500                                      | 2500                   | 1500                      | 6E | 393000 |
|           | 165                        | 156150                     | 134380                     | 119950                      | 118760                      | 79850                        | 64860                  | 141        | 100                                    | 1500                                      | 2500                   | 1100                      | 6C | 393000 |
| <b>R4</b> | 220                        | 136030                     | 110120                     | 89450                       | 72650                       | 44830                        | 36410                  | 90         | 50                                     | 1800                                      | 3800                   | 500                       | 5C | 393000 |
|           | 262                        | 163270                     | 124610                     | 101220                      | 82210                       | 50730                        | 41200                  | 90         | 50                                     | 1800                                      | 3800                   | 500                       | 5C | 393000 |
|           | 336                        | 195330                     | 148390                     | 120530                      | 97900                       | 60410                        | 49060                  | 90         | 50                                     | 1800                                      | 3800                   | 500                       | 5C | 393000 |
|           | 399                        | 207070                     | 167280                     | 135880                      | 110370                      | 68100                        | 55310                  | 90         | 50                                     | 1800                                      | 3800                   | 500                       | 5C | 393000 |
|           | 438                        | 184310                     | 171620                     | 141110                      | 114620                      | 70720                        | 57440                  | 87         | 50                                     | 1800                                      | 3800                   | 500                       | 5C | 393000 |
|           | 520                        | 184310                     | 171620                     | 141110                      | 114620                      | 70720                        | 57440                  | 73         | 50                                     | 1800                                      | 3800                   | 400                       | 5B | 393000 |
|           | 626                        | 155000                     | 155000                     | 144000                      | 117000                      | 72000                        | 59000                  | 53         | 50                                     | 1800                                      | 3800                   | 400                       | 5B | 393000 |
|           | 677                        | 170000                     | 163960                     | 154050                      | 131030                      | 80850                        | 65670                  | 53         | 50                                     | 1800                                      | 3800                   | 400                       | 5B | 393000 |
|           | 803                        | 170000                     | 163960                     | 154050                      | 131030                      | 80850                        | 65670                  | 45         | 50                                     | 1800                                      | 3800                   | 400                       | 5B | 393000 |
|           | 953                        | 156150                     | 134380                     | 119950                      | 118760                      | 79850                        | 64860                  | 32         | 50                                     | 1800                                      | 3800                   | 400                       | 5B | 393000 |

**318 R** 420



**280580 Nm**

| i         | M <sub>n2</sub> [Nm]       |                            |                            |                             |                             |                              | P <sub>1</sub><br>[kW] | Pt<br>[kW] | n <sub>1</sub><br>[min <sup>-1</sup> ] | n <sub>1max</sub><br>[min <sup>-1</sup> ] | M <sub>b</sub><br>[Nm] | M <sub>2max</sub><br>[Nm] |    |        |
|-----------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------|------------|--|---|------------------------|---------------------------|----|--------|
|           | n <sub>2</sub> ·h<br>10000 | n <sub>2</sub> ·h<br>25000 | n <sub>2</sub> ·h<br>50000 | n <sub>2</sub> ·h<br>100000 | n <sub>2</sub> ·h<br>500000 | n <sub>2</sub> ·h<br>1000000 |                        |            |  |   |                        |                           |    |        |
| <b>R4</b> | 225                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 150        | 90                                     | 1500                                      | 2500                   | 1500                      | 6E | 500000 |
|           | 288                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 150        | 90                                     | 1500                                      | 2500                   | 1500                      | 6E | 500000 |
|           | 342                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 130        | 90                                     | 1500                                      | 2500                   | 1100                      | 6C | 500000 |
|           | 362                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 123        | 90                                     | 1500                                      | 2500                   | 1100                      | 6C | 500000 |
|           | 430                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 103        | 90                                     | 1500                                      | 2500                   | 850                       | 6B | 500000 |
|           | 499                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 87         | 90                                     | 1500                                      | 2500                   | 850                       | 6B | 500000 |
|           | 311                        | 280580                     | 262990                     | 218310                      | 177320                      | 109410                       | 88870                  | 143        | 110                                    | 1500                                      | 2500                   | 1100                      | 6C | 500000 |





**318 R**  420

**280580 Nm**

|  | i   | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt  | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|-----|----------------|-------------------|----------------|---|-------------------|
|   |     | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |     |                |                   |                |   |                   |
| R4  | 399 | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 111            | 110 | 1500           | 2500              | 850            | 6B  | 500000            |
|   | 474 | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 94             | 110 | 1500           | 2500              | 850            | 6B  | 500000            |
|   | 501 | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 89             | 110 | 1500           | 2500              | 850            | 6B  | 500000            |
|   | 595 | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 75             | 110 | 1500           | 2500              | 850            | 6B  | 500000            |
|   | 691 | 280580               | 262990            | 218310            | 177320            | 109410            | 88870             | 63             | 110 | 1500           | 2500              | 850            | 6B  | 500000            |



**319 R**  430

**403720 Nm**

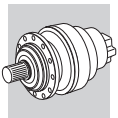
|  | i   | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt  | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|-----|----------------|-------------------|----------------|---|-------------------|
|   |     | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |     |                |                   |                |   |                   |
| R4  | 249 | 390680               | 296370            | 240760            | 195590            | 120710            | 98100             | 150            | 95  | 1500           | 2500              | 2100           | 6G  | 680000            |
|   | 320 | 403720               | 345000            | 283900            | 226500            | 136700            | 112800            | 150            | 95  | 1500           | 2500              | 1500           | 6E  | 680000            |
|   | 379 | 403720               | 348000            | 284000            | 231000            | 142000            | 116000            | 150            | 95  | 1500           | 2500              | 1500           | 6E  | 680000            |
|   | 401 | 389910               | 348000            | 286000            | 233000            | 144000            | 117000            | 150            | 95  | 1500           | 2500              | 1500           | 6E  | 680000            |
|   | 475 | 367580               | 317580            | 270690            | 248000            | 153000            | 124000            | 127            | 95  | 1500           | 2500              | 1100           | 6C  | 680000            |
|   | 563 | 367580               | 317580            | 270690            | 248000            | 153000            | 124000            | 107            | 95  | 1500           | 2500              | 850            | 6B  | 680000            |
|   | 655 | 359690               | 317560            | 267610            | 220000            | 136000            | 110000            | 92             | 95  | 1500           | 2500              | 850            | 6B  | 680000            |
|   | 345 | 403720               | 306690            | 249110            | 202340            | 124850            | 101410            | 150            | 115 | 1500           | 2500              | 1100           | 6C  | 680000            |
|   | 442 | 403720               | 306690            | 249110            | 202340            | 124850            | 101410            | 140            | 115 | 1500           | 2500              | 1100           | 6C  | 680000            |
|   | 525 | 403720               | 306690            | 249110            | 202340            | 124850            | 101410            | 118            | 115 | 1500           | 2500              | 1100           | 6C  | 680000            |
|   | 555 | 389910               | 313000            | 257800            | 208700            | 128900            | 105600            | 112            | 115 | 1500           | 2500              | 850            | 6B  | 680000            |
|   | 657 | 367580               | 317580            | 270690            | 232200            | 145100            | 119000            | 92             | 115 | 1500           | 2500              | 850            | 6B  | 680000            |
|   | 780 | 367580               | 317580            | 270690            | 248000            | 153000            | 124000            | 77             | 115 | 1500           | 2500              | 850            | 6B  | 680000            |
|   | 906 | 359690               | 317560            | 267610            | 220000            | 136000            | 110000            | 67             | 115 | 1500           | 2500              | 850            | 6B  | 680000            |

**321 R**  440

**655200 Nm**

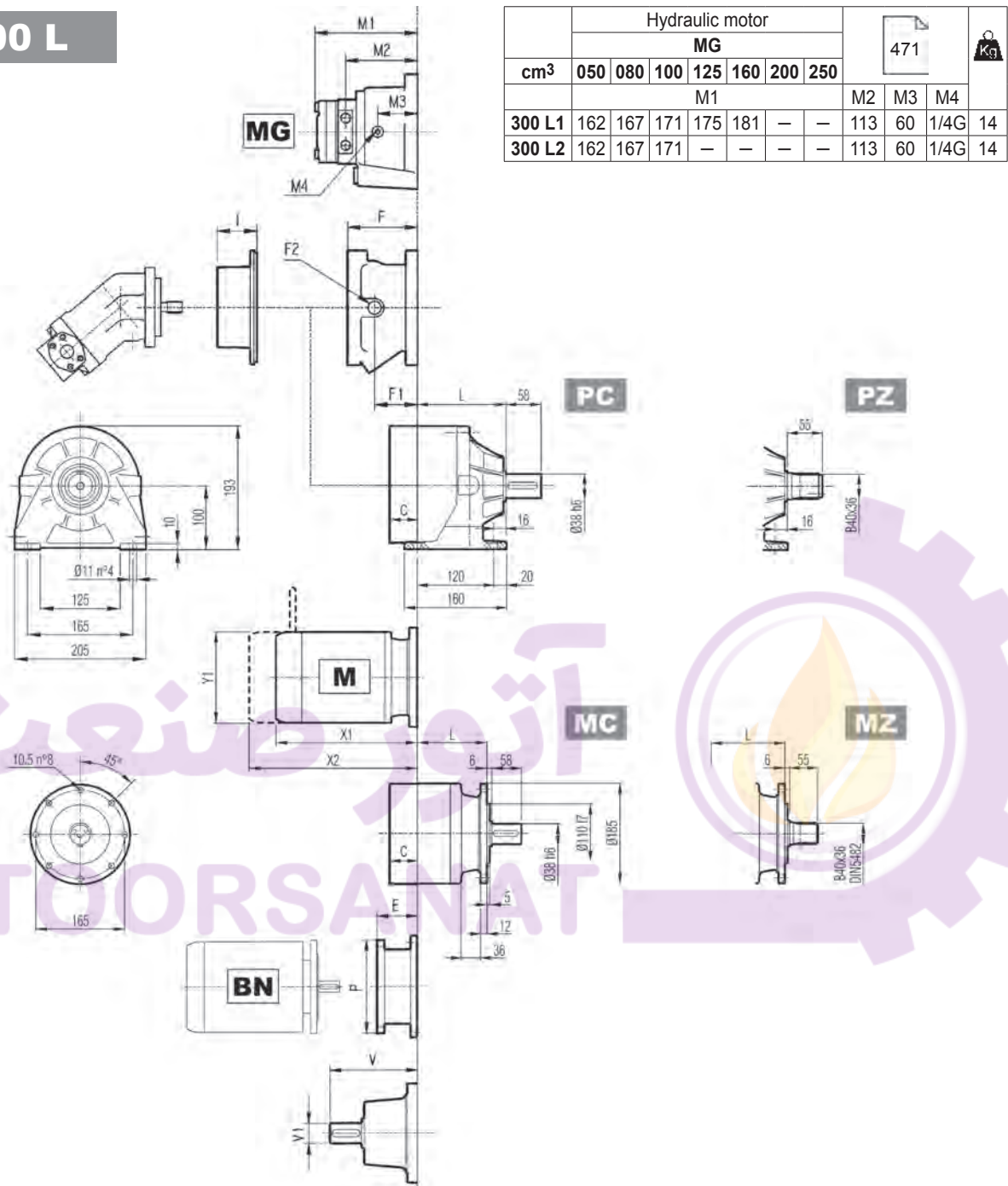
|  | i   | M <sub>n2</sub> [Nm] |                   |                   |                   |                   |                   | P <sub>1</sub> | Pt  | n <sub>1</sub> | n <sub>1max</sub> | M <sub>b</sub> |  | M <sub>2max</sub> |
|---|-----|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|-----|----------------|-------------------|----------------|---|-------------------|
|   |     | n <sub>2</sub> ·h    | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h | n <sub>2</sub> ·h |                |     |                |                   |                |   |                   |
| R4  | 221 | 374000               | 281300            | 226400            | 181800            | 111130            | 90320             | 150            | 105 | 1500           | 2500              | 2600           | 6K  | 934000            |
|   | 288 | 447500               | 340100            | 268500            | 216800            | 133790            | 108740            | 150            | 105 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 347 | 506300               | 377100            | 307000            | 247800            | 152340            | 123900            | 150            | 105 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 370 | 528500               | 402100            | 317800            | 264200            | 159330            | 129500            | 150            | 105 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 446 | 587310               | 445420            | 366500            | 293970            | 181430            | 147460            | 150            | 105 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 529 | 536350               | 503040            | 410200            | 331430            | 204550            | 166260            | 150            | 105 | 1500           | 2500              | 1500           | 6E  | 934000            |
|   | 306 | 401340               | 304660            | 247480            | 201030            | 124050            | 100790            | 150            | 125 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 399 | 483180               | 366770            | 297930            | 242020            | 149350            | 121350            | 150            | 125 | 1500           | 2500              | 2100           | 6G  | 934000            |
|   | 481 | 550170               | 417600            | 339230            | 275560            | 170050            | 138170            | 132            | 125 | 1500           | 2500              | 1100           | 6C  | 934000            |
|   | 512 | 575410               | 436760            | 354790            | 288200            | 177850            | 144510            | 125            | 125 | 1500           | 2500              | 1100           | 6C  | 934000            |
|   | 617 | 655200               | 497290            | 403960            | 328150            | 202500            | 164540            | 120            | 125 | 1500           | 2500              | 1100           | 6C  | 934000            |
|   | 732 | 536360               | 517290            | 420170            | 341290            | 210580            | 171050            | 113            | 125 | 1500           | 2500              | 850            | 6B  | 934000            |





26 DIMENSIONS

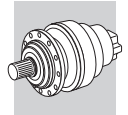
300 L



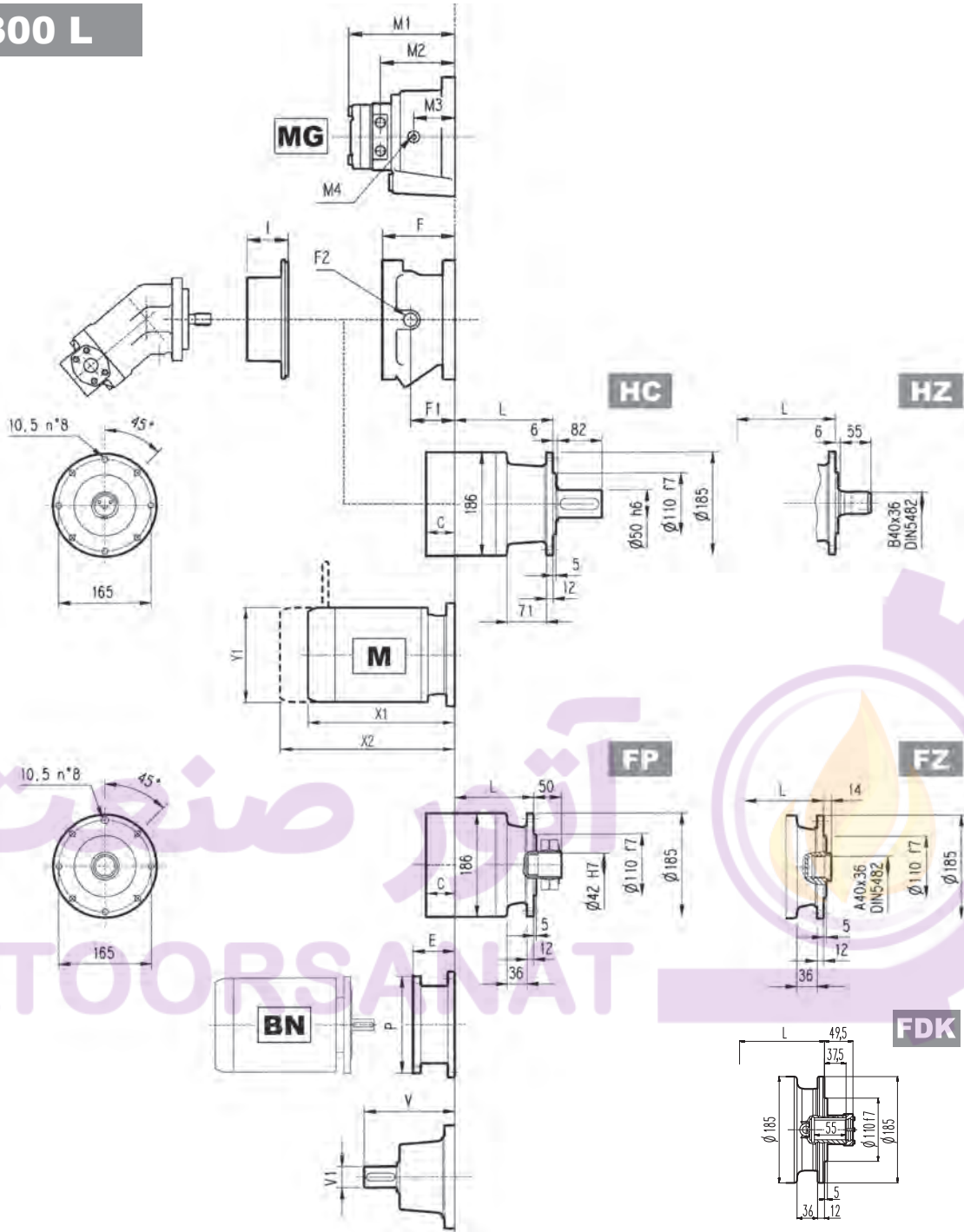
|                 |     | Hydraulic motor |     |     |     |     |     |     |    |      |    |
|-----------------|-----|-----------------|-----|-----|-----|-----|-----|-----|----|------|----|
|                 |     | MG              |     |     |     |     |     | 471 |    |      |    |
| cm <sup>3</sup> | 050 | 080             | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 |     |                 |     |     |     |     | M1  | M2  | M3 | M4   |    |
| 300 L1          | 162 | 167             | 171 | 175 | 181 | —   | —   | 113 | 60 | 1/4G | 14 |
| 300 L2          | 162 | 167             | 171 | —   | —   | —   | —   | 113 | 60 | 1/4G | 14 |

|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 300 L1 | 80      | 86      | 115     | 80            | 18      | 23      | 20      | 16            |
| 300 L2 | 133     | 139     | 168     | 133           | 22      | 27      | 24      | 20            |
| 300 L3 | 186     | 192     | 221     | 186           | 26      | 31      | 28      | 24            |
| 300 L4 | 239     | 245     | 274     | 239           | 30      | 35      | 32      | 28            |

|        | Kg    |    |    |     |    |    | C  | Input | I   | Kg  |    |       |      |       |    |
|--------|-------|----|----|-----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg |    |       |     | F   | F1 | F2    | Type | Input | Kg |
| 300 L1 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 300 L2 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 300 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 300 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A     | 10 |



300 L



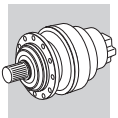
FP

$M_{2max} = 1300 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 300 L1 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 300 L2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 300 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 300 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

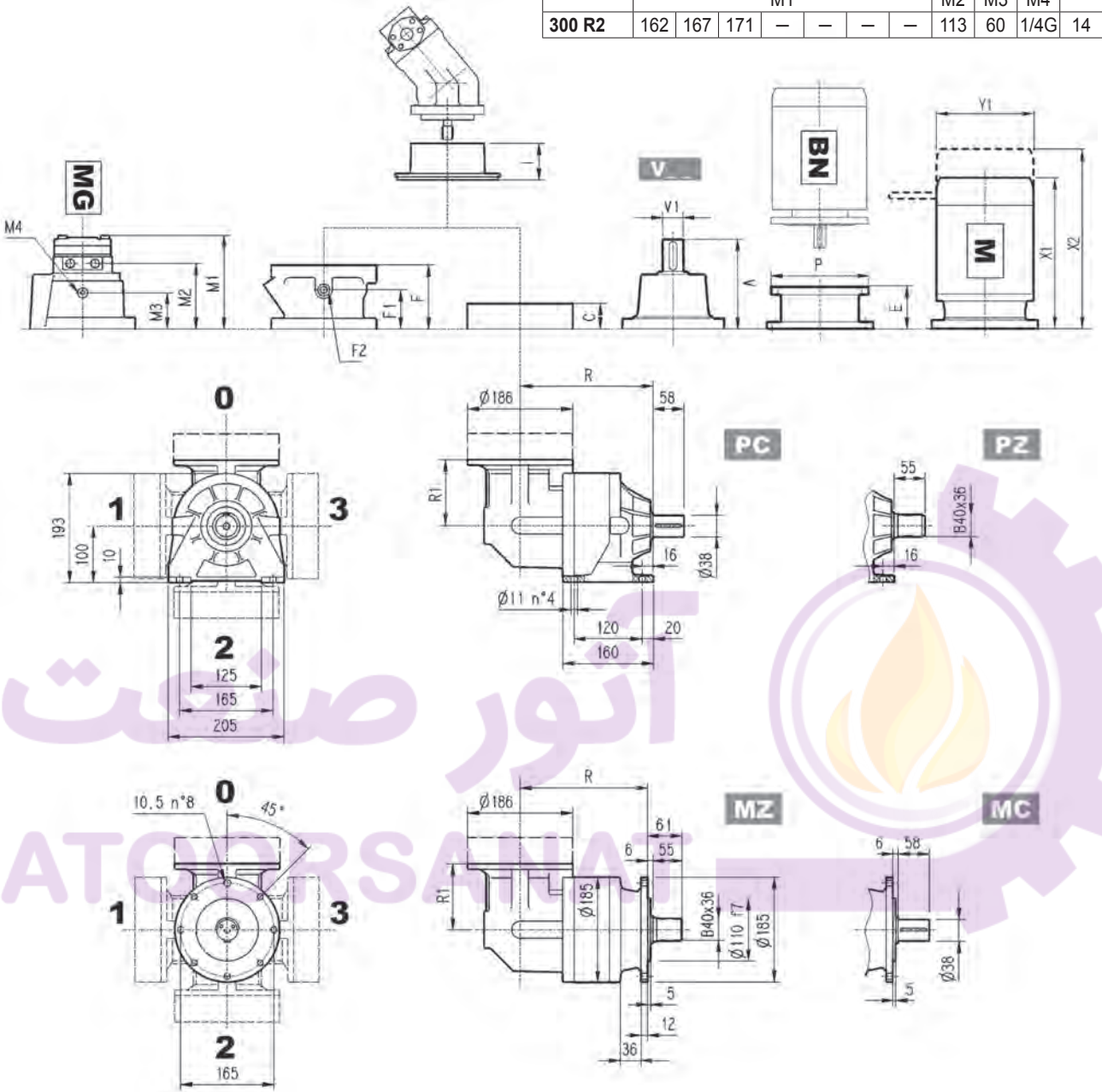
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 300 L1 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 300 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 300 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 300 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |





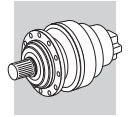
**300 R**

|                 |                 |     |     |     |     |     |     |     |    |      |    |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 | Hydraulic motor |     |     |     |     |     |     | 471 | Kg |      |    |
|                 | MG              |     |     |     |     |     |     |     |    |      |    |
| cm <sup>3</sup> | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 | M1              |     |     |     |     |     |     | M2  | M3 | M4   |    |
| <b>300 R2</b>   | 162             | 167 | 171 | -   | -   | -   | -   | 113 | 60 | 1/4G | 14 |

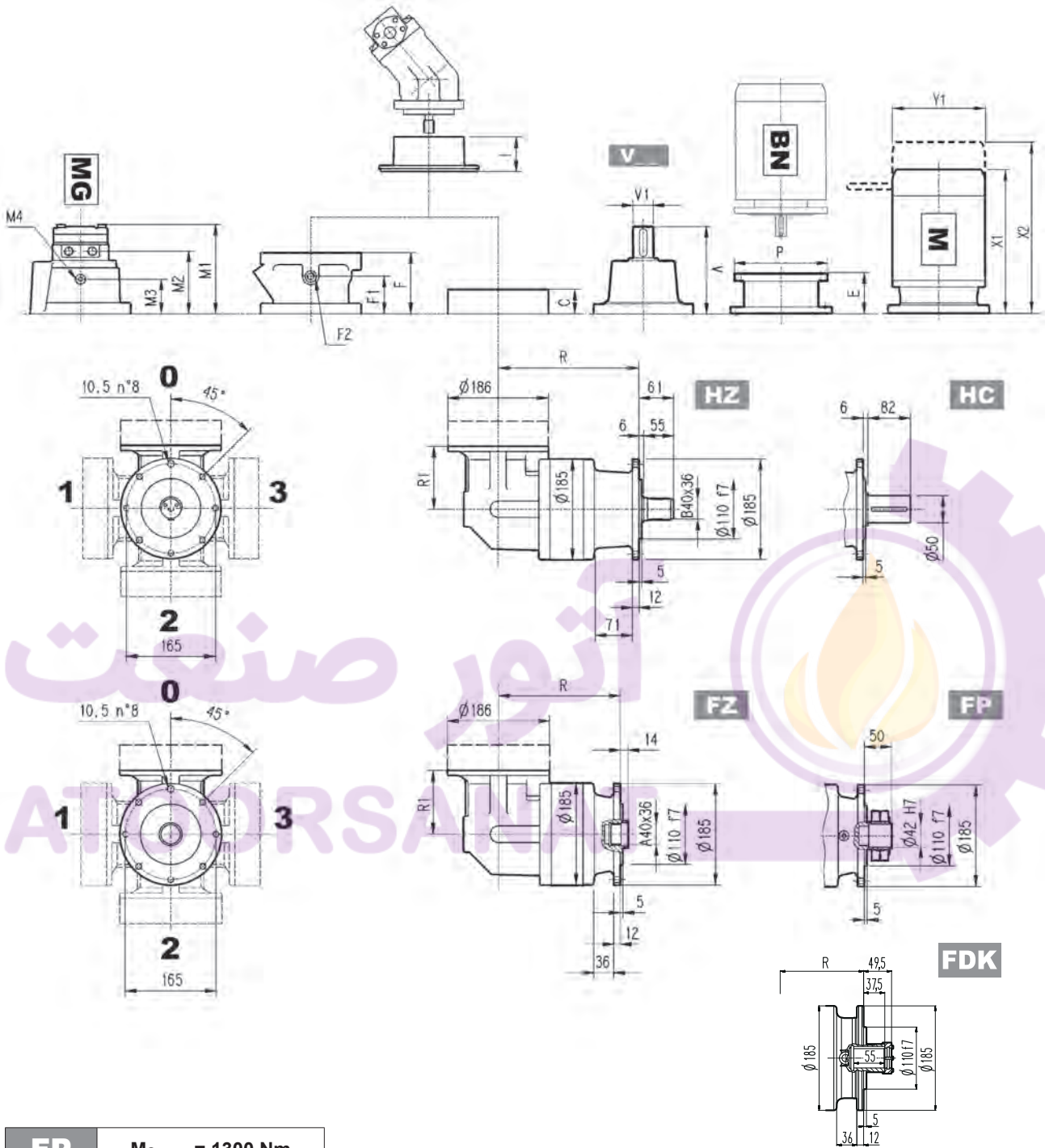


|               |         |         |         |               |     |         |         |         |               |
|---------------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|               | R       |         |         |               | R1  | Kg      |         |         |               |
|               | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| <b>300 R2</b> | 172     | 178     | 207     | 172           | 122 | 32      | 37      | 34      | 30            |
| <b>300 R3</b> | 225     | 231     | 260     | 225           | 122 | 36      | 41      | 38      | 34            |
| <b>300 R4</b> | 278     | 284     | 313     | 278           | 122 | 40      | 45      | 42      | 38            |

|               |       |    |    |     |    |    |    |       |     |     |    |       |      |       |    |
|---------------|-------|----|----|-----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|               | V     | V1 | Kg | V   | V1 | Kg | C  | Input | I   | F   | F1 | F2    | Type | Input | Kg |
| <b>300 R2</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| <b>300 R3</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A     | 10 |
| <b>300 R4</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A     | 10 |



# 300 R

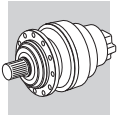


**FP**

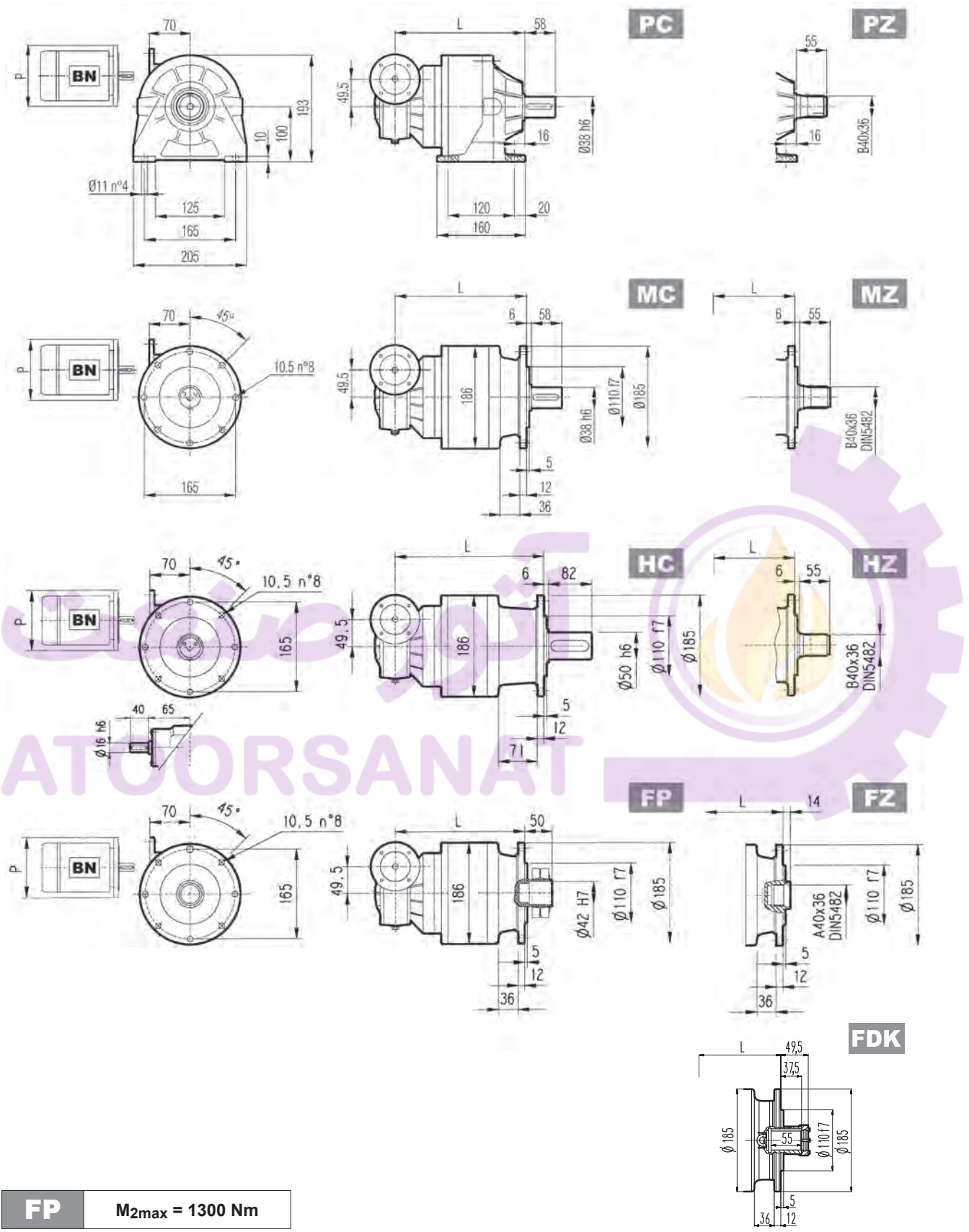
$M_{2max} = 1300 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 300 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 300 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 300 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 300 R2 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 300 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |
| 300 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | —        | —   | —   | —       | —   | —   |



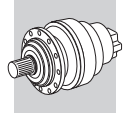
**3/V 00 L3**



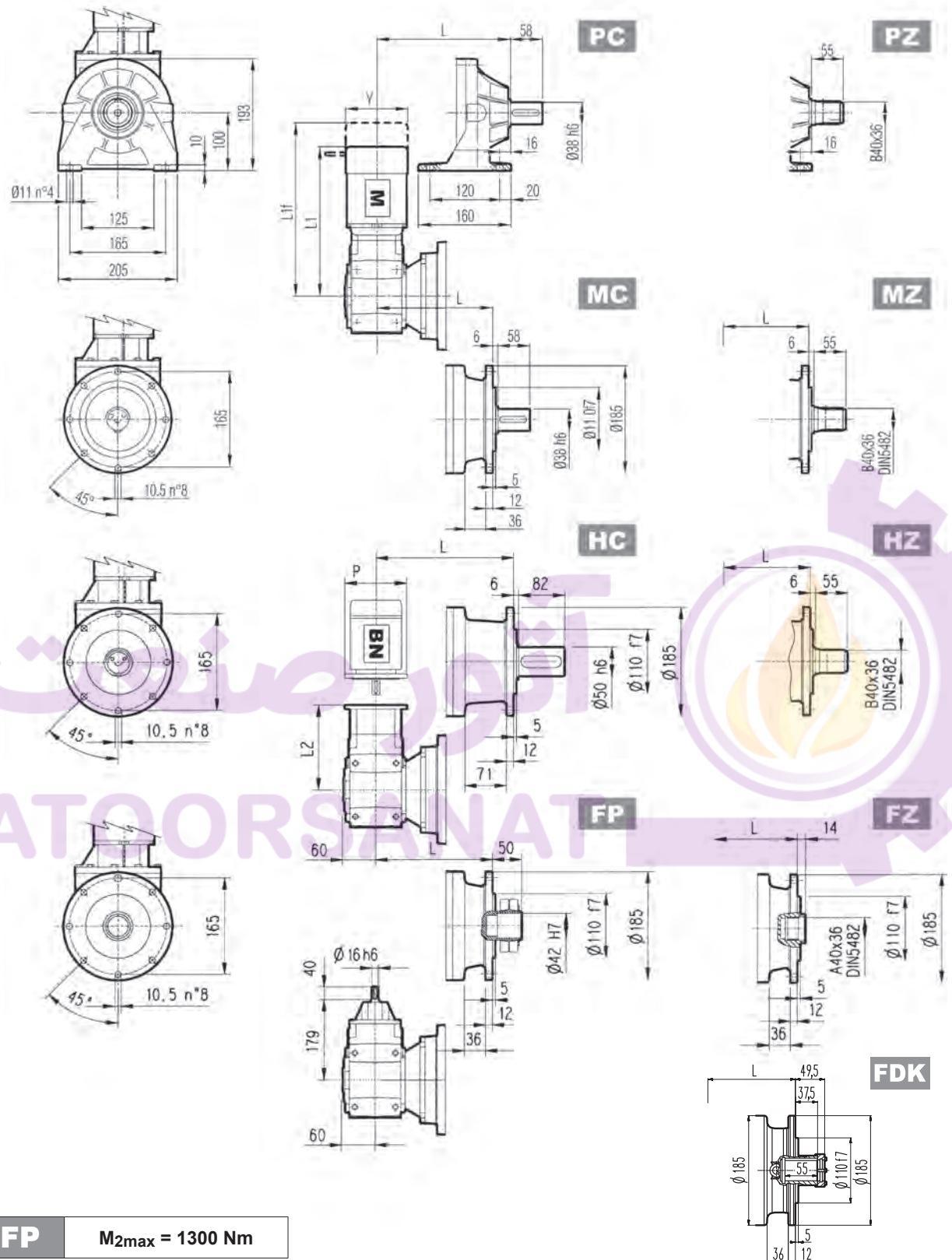
**FP**  $M_{2max} = 1300 \text{ Nm}$

|           | L       |         |         |               | $\overset{\circ}{\text{Kg}}$ |         |         |               | P63 | P71 | P80 |
|-----------|---------|---------|---------|---------------|------------------------------|---------|---------|---------------|-----|-----|-----|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ                      | PC - PZ | HC - HZ | FP - FZ - FDK | P   | P   | P   |
| 3/V 00 L3 | 255     | 261     | 290     | 255           | 25                           | 30      | 27      | 23            | 140 | 160 | 200 |





**3/A 00 L2**



**FP**  $M_{2max} = 1300 \text{ Nm}$

| 3/A 00 L2 | L       |     |       |         |     |     |         |     |      |               |         |     | Kg       |     |           |     |           |     |     |     |     |     |
|-----------|---------|-----|-------|---------|-----|-----|---------|-----|------|---------------|---------|-----|----------|-----|-----------|-----|-----------|-----|-----|-----|-----|-----|
|           | MC - MZ |     |       | PC - PZ |     |     | HC - HZ |     |      | FP - FZ - FDK |         |     |          |     |           |     |           |     |     |     |     |     |
| 3/A 00 L2 | 193     |     |       | 199     |     |     | 228     |     |      | 193           |         |     | 38       | 43  | 40        | 36  |           |     |     |     |     |     |
|           | P63     |     | P71   |         | P80 |     | P90     |     | P100 |               | S1 + M1 |     | S2 + M2S |     | S3 + M3SA |     | S3 + M3LA |     |     |     |     |     |
|           | L2      | P   | L2    | P       | L2  | P   | L2      | P   | L2   | P             | L1      | L1f | Y        | L1  | L1f       | Y   | L1        | L1f | Y   |     |     |     |
| 3/A 00 L2 | 212.5   | 140 | 212.5 | 160     | 232 | 200 | 232     | 200 | 242  | 250           | 368     | 428 | 138      | 394 | 466       | 156 | 439       | 535 | 195 | 470 | 563 | 195 |

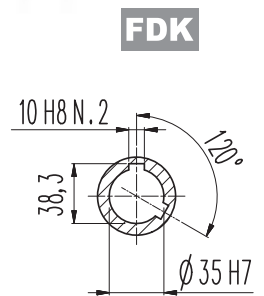
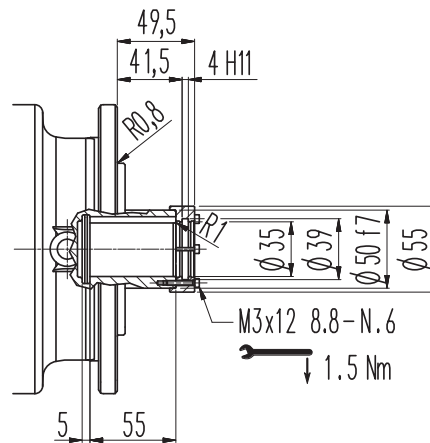
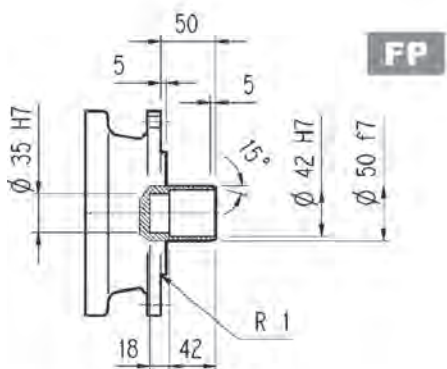
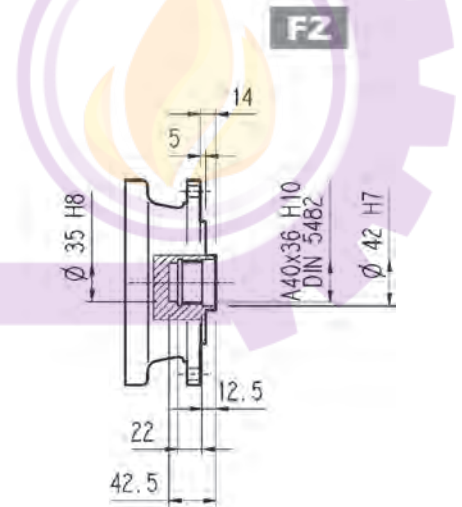
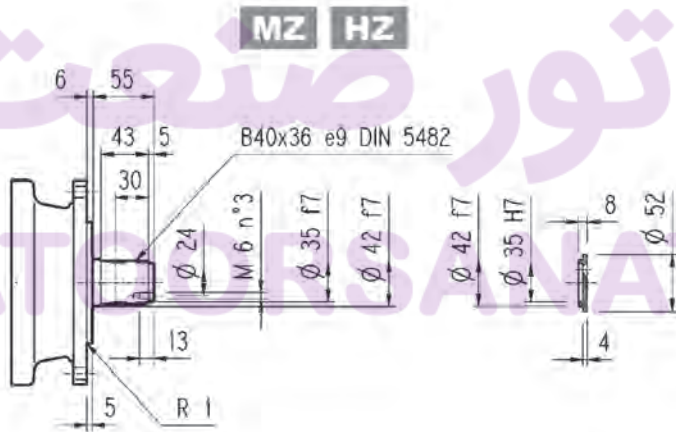
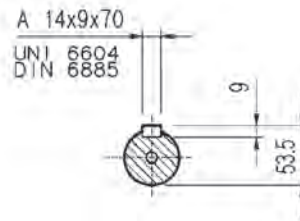
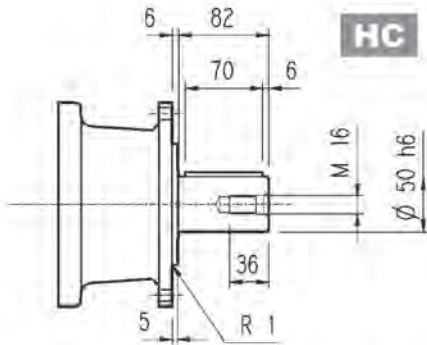
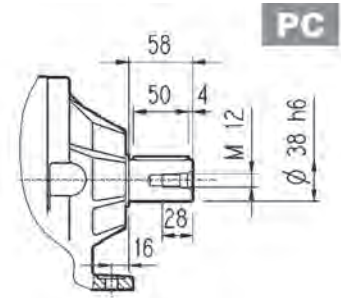
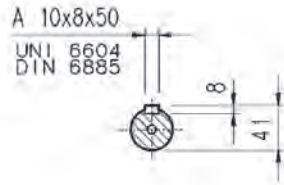
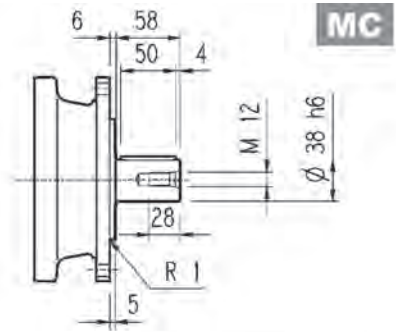


300 L

300 R

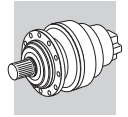
3/V 00 L3

3/A 00 L2



FP M<sub>2max</sub> = 1300 Nm





300 L

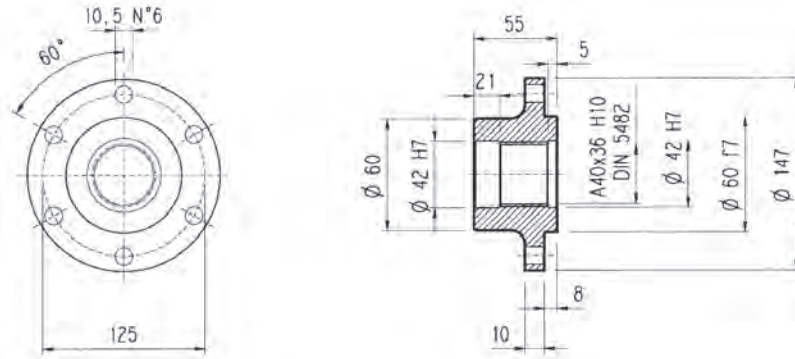
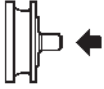
300 R

3/V 00 L3

3/A 00 L2

Flange

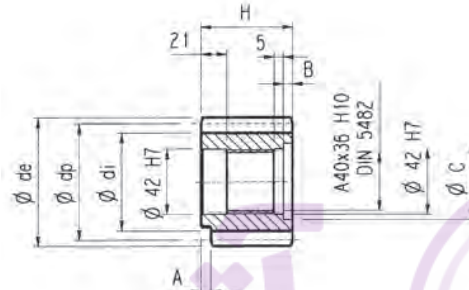
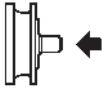
W0A



Material: Steel C40

Pinions

P...

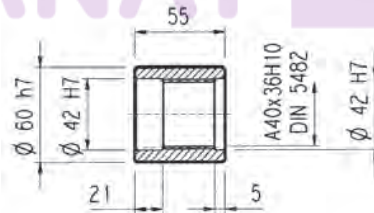


$\alpha = 20^\circ$

|     | m   | z  | x     | dp | di   | de   | H  | A  | B  | C  | Material                              |
|-----|-----|----|-------|----|------|------|----|----|----|----|---------------------------------------|
| PBE | 4.5 | 14 | 0.507 | 63 | 56   | 75.5 | 55 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PCE | 5   | 14 | 0.500 | 70 | 62.5 | 84.8 | 65 | —  | 10 | 53 |                                       |
| PDC | 6   | 12 | 0.250 | 72 | 61   | 84.8 | 59 | 14 | 4  | 54 |                                       |
| PDE | 6   | 14 | 0.500 | 84 | 73   | 99.6 | 65 | —  | 10 | 54 |                                       |

Sleeve coupling

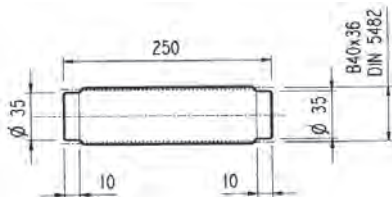
M0A



Material: Steel 16CrNi4

Splined bars

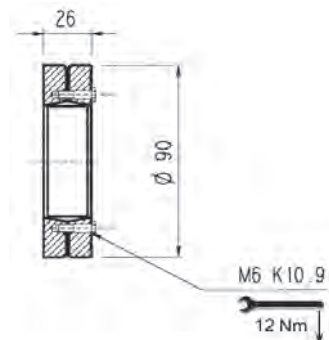
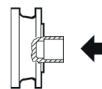
B0A

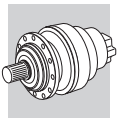


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

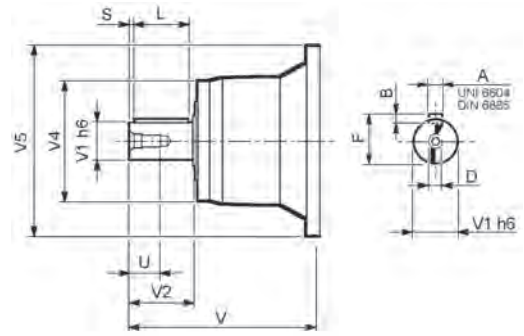
G0A





300 L

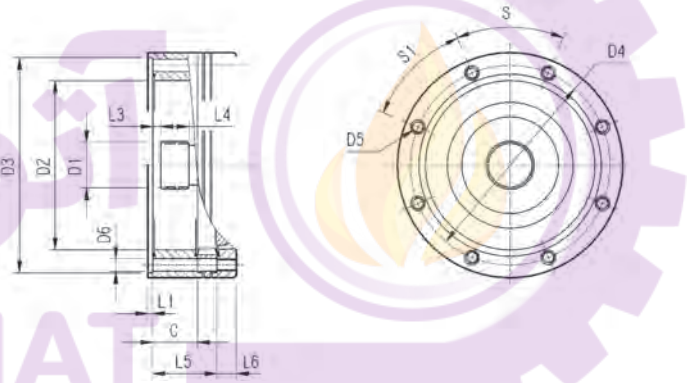
300 R



|              |      | V     | V1 | V2 | V4  | V5  | A  | B | F  | L  | S | D   | U  |
|--------------|------|-------|----|----|-----|-----|----|---|----|----|---|-----|----|
| 300 L1       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 300 L2       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 300 L3       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 300 L4       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 300 R2-R3-R4 | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |

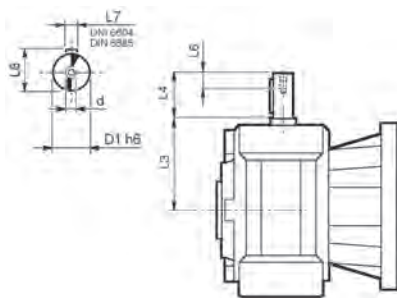
300 L

300 R



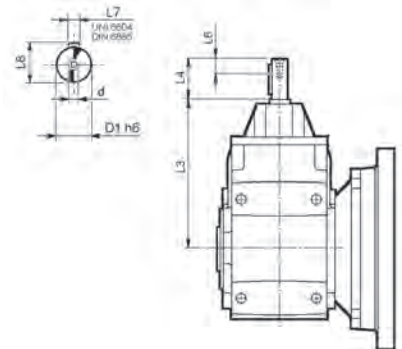
|              |      | C  | D1            | D2  | D3     | D4  | D5      | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1  | Input |
|--------------|------|----|---------------|-----|--------|-----|---------|----|----|----|----|----|-----|----|-----|-----|-------|
| 300 L1       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 53  | 18 | 45° | 45° | A     |
| 300 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 106 | 18 | 45° | 45° | A     |
| 300 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 159 | 18 | 45° | 45° | A     |
| 300 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 212 | 18 | 45° | 45° | A     |
| 300 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45° | A     |

3/V 00 L3

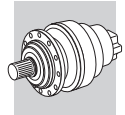


|              | D1 h6 | L3 | L4 | L6 | L7 | L8 | d  |
|--------------|-------|----|----|----|----|----|----|
| 3/V 00 L3_HS | 16    | 65 | 40 | 16 | 5  | 18 | M6 |

3/A 00 L2



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/A 00 L2_HS | 16    | 179 | 40 | 16 | 5  | 18 | M6 |



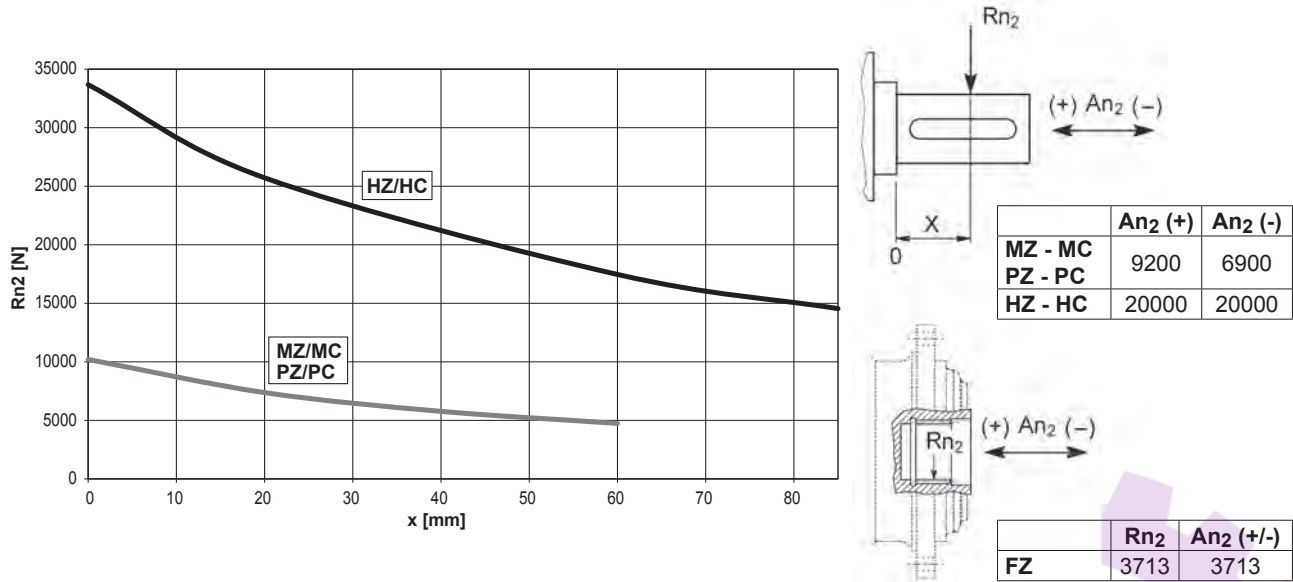
300 L

300 R

3/V 00 L3

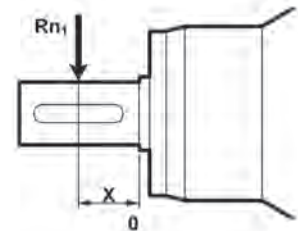
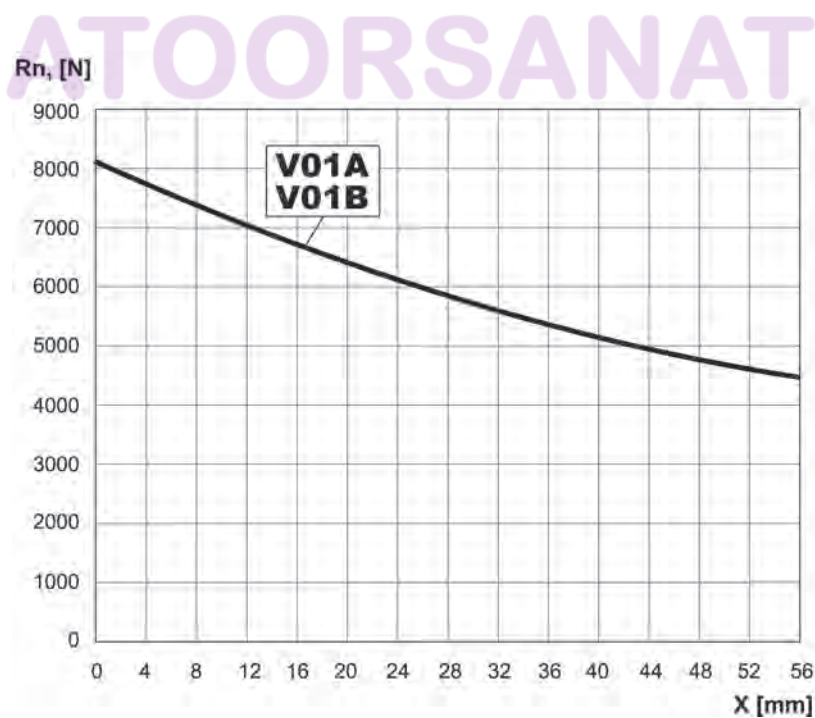
3/A 00 L2

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$

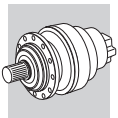


| Load corrective factor $f_{h2}$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |       |       |        |        |         |
|--|------------------------|-------|-------|-------|--------|--------|---------|
|  |                        | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|  | $f_{h2}$               |       |       |       |        |        |         |
|  | FZ                     | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |
|  | MZ - MC - PZ - PC      | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |
|  | HZ - HC                | 1.27  | 1.27  | 1.26  | 1.00   | 0.62   | 0.50    |

Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$

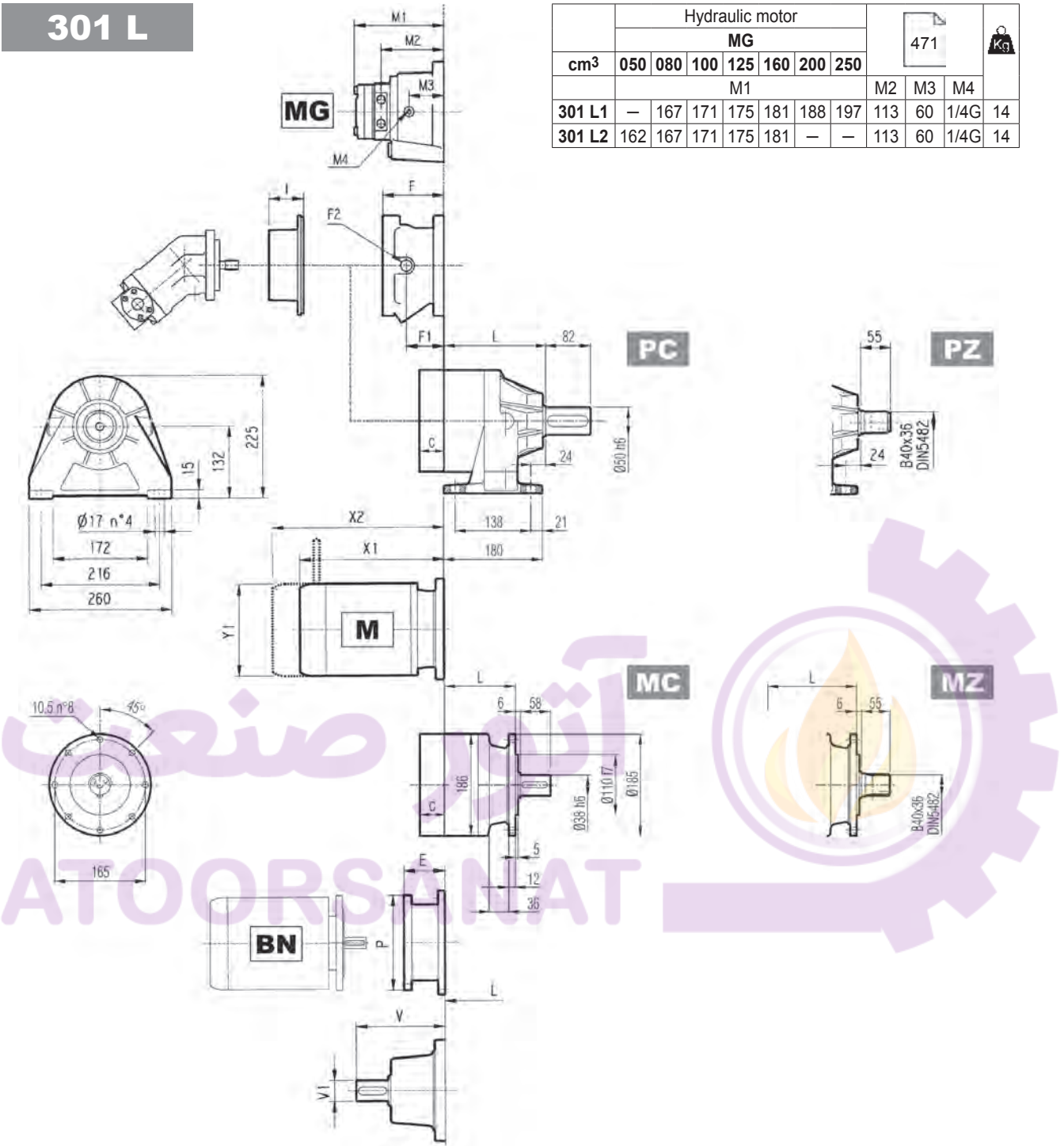


| Load corrective factor $f_{h1}$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
| $f_{h1}$                                     |                        | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |
|  |                        | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



**301 L**

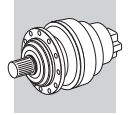
|                 |  | Hydraulic motor |     |     |     |     |     |     | 471 |    |      | Kg |
|-----------------|--|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 |  | MG              |     |     |     |     |     |     |     |    |      |    |
| cm <sup>3</sup> |  | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 |  | M1              |     |     |     |     |     |     | M2  | M3 | M4   |    |
| 301 L1          |  | —               | 167 | 171 | 175 | 181 | 188 | 197 | 113 | 60 | 1/4G | 14 |
| 301 L2          |  | 162             | 167 | 171 | 175 | 181 | —   | —   | 113 | 60 | 1/4G | 14 |



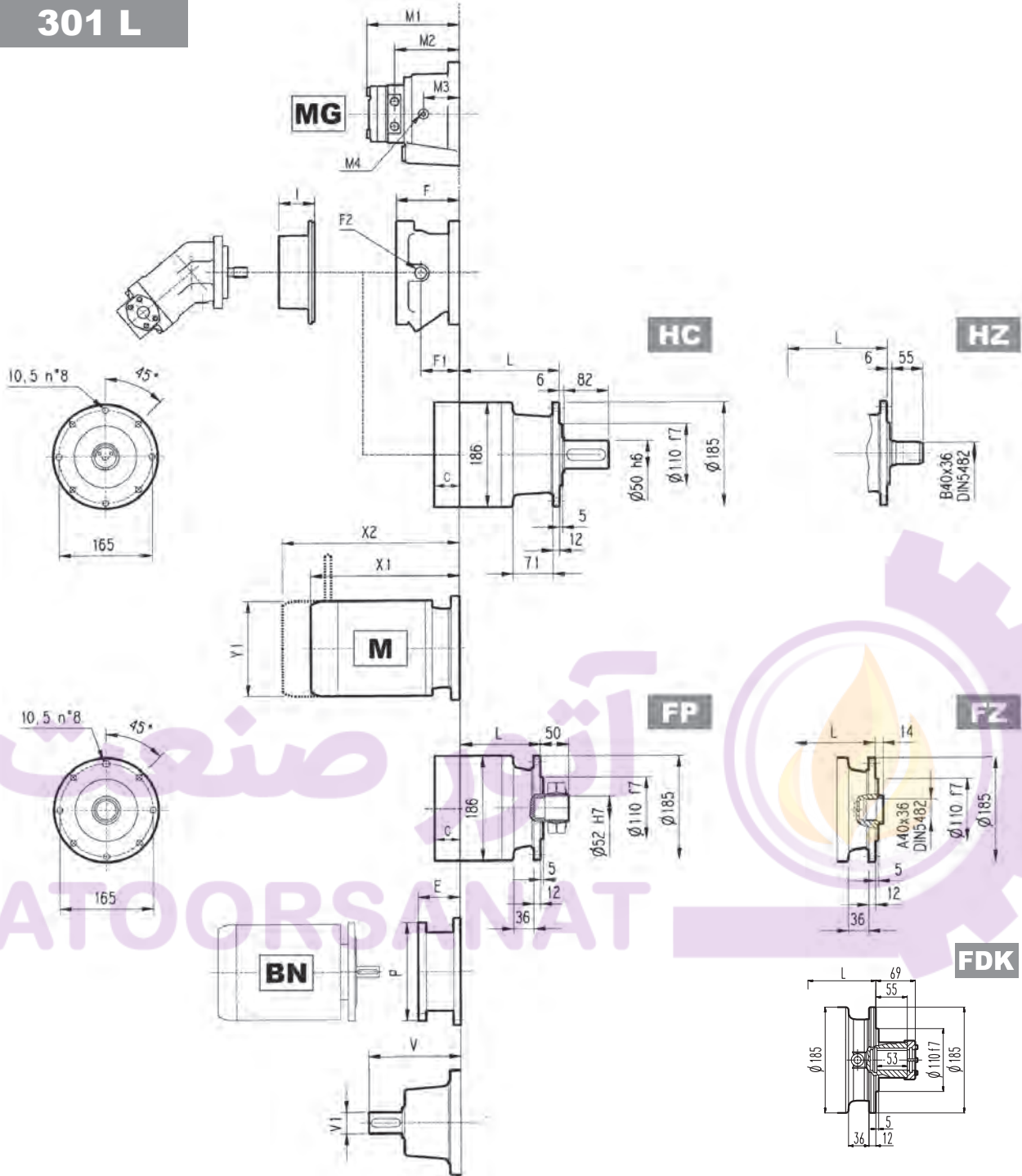
|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 301 L1 | 92      | 132     | 126     | 92            | 21      | 26      | 23      | 19            |
| 301 L2 | 145     | 185     | 176     | 145           | 25      | 30      | 27      | 23            |
| 301 L3 | 198     | 238     | 232     | 198           | 29      | 34      | 31      | 27            |
| 301 L4 | 251     | 291     | 285     | 251           | 33      | 38      | 35      | 31            |

|        | V     |    | Kg |     | Kg |    | C  | Input | I   | Type |    |       |      |       | Kg |
|--------|-------|----|----|-----|----|----|----|-------|-----|------|----|-------|------|-------|----|
|        | V     | V1 | V  | V1  | V  | V1 |    |       |     | F    | F1 | F2    | Type | Input |    |
| 301 L1 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |
| 301 L2 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105  | 65 | 1/4 G | 4    | A     | 10 |
| 301 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105  | 65 | 1/4 G | 4    | A     | 10 |
| 301 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     |     | 105  | 65 | 1/4 G | 4    | A     | 10 |





# 301 L



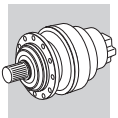
## FP

$M_{2max} = 2400 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 301 L1 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 301 L2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 301 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 301 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

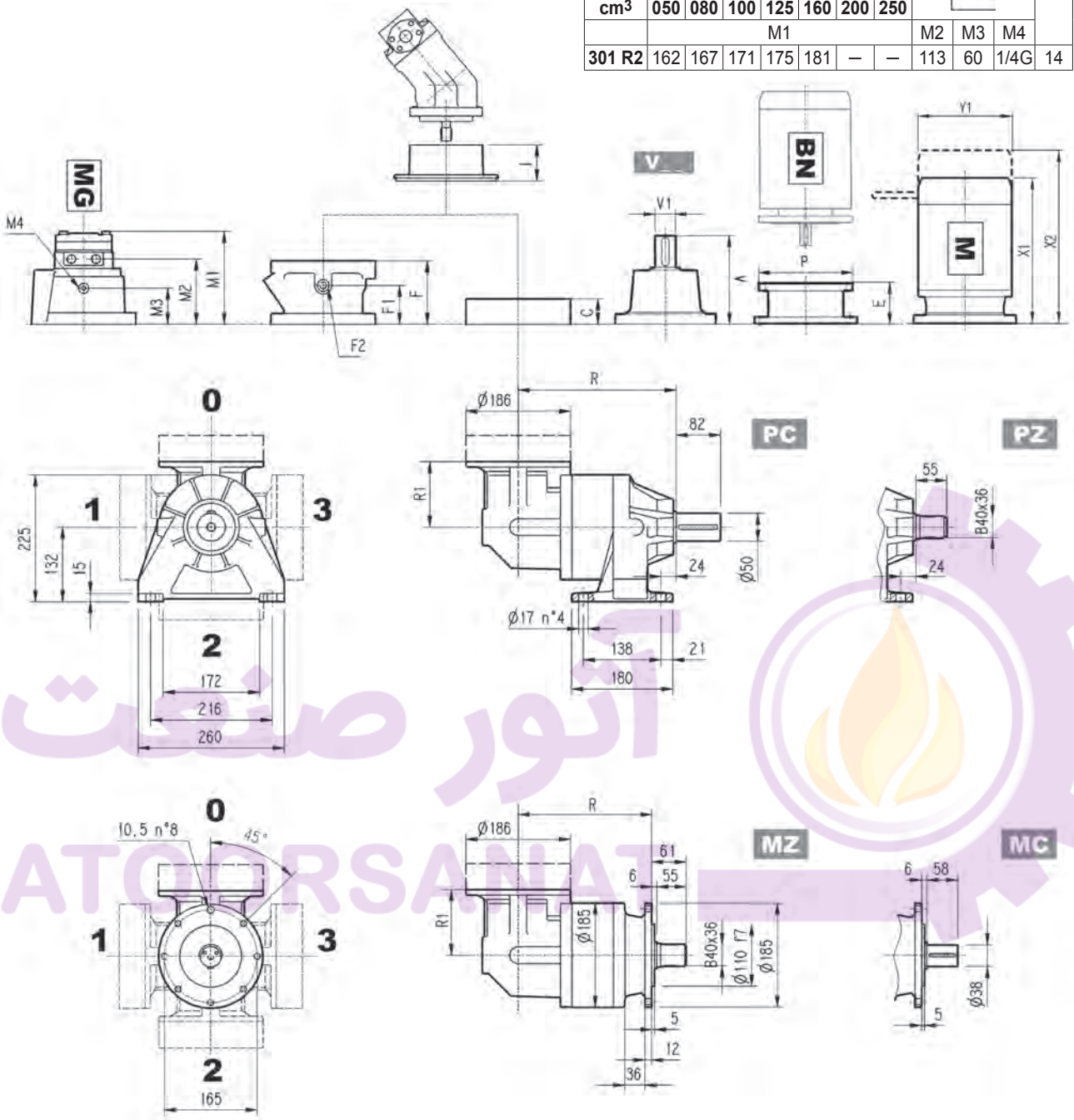
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 301 L1 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 301 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 301 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |
| 301 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 |





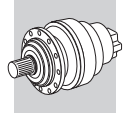
**301 R**

|                 |     |     |     |     |     |     |     |     |    |      |    |  |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|----|------|----|--|
| Hydraulic motor |     |     |     |     |     |     |     |     |    | 471  | Kg |  |
| MG              |     |     |     |     |     |     |     |     |    |      |    |  |
| cm <sup>3</sup> | 050 | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |  |
| M1              |     |     |     |     |     |     |     | M2  | M3 | M4   |    |  |
| 301 R2          | 162 | 167 | 171 | 175 | 181 | —   | —   | 113 | 60 | 1/4G | 14 |  |

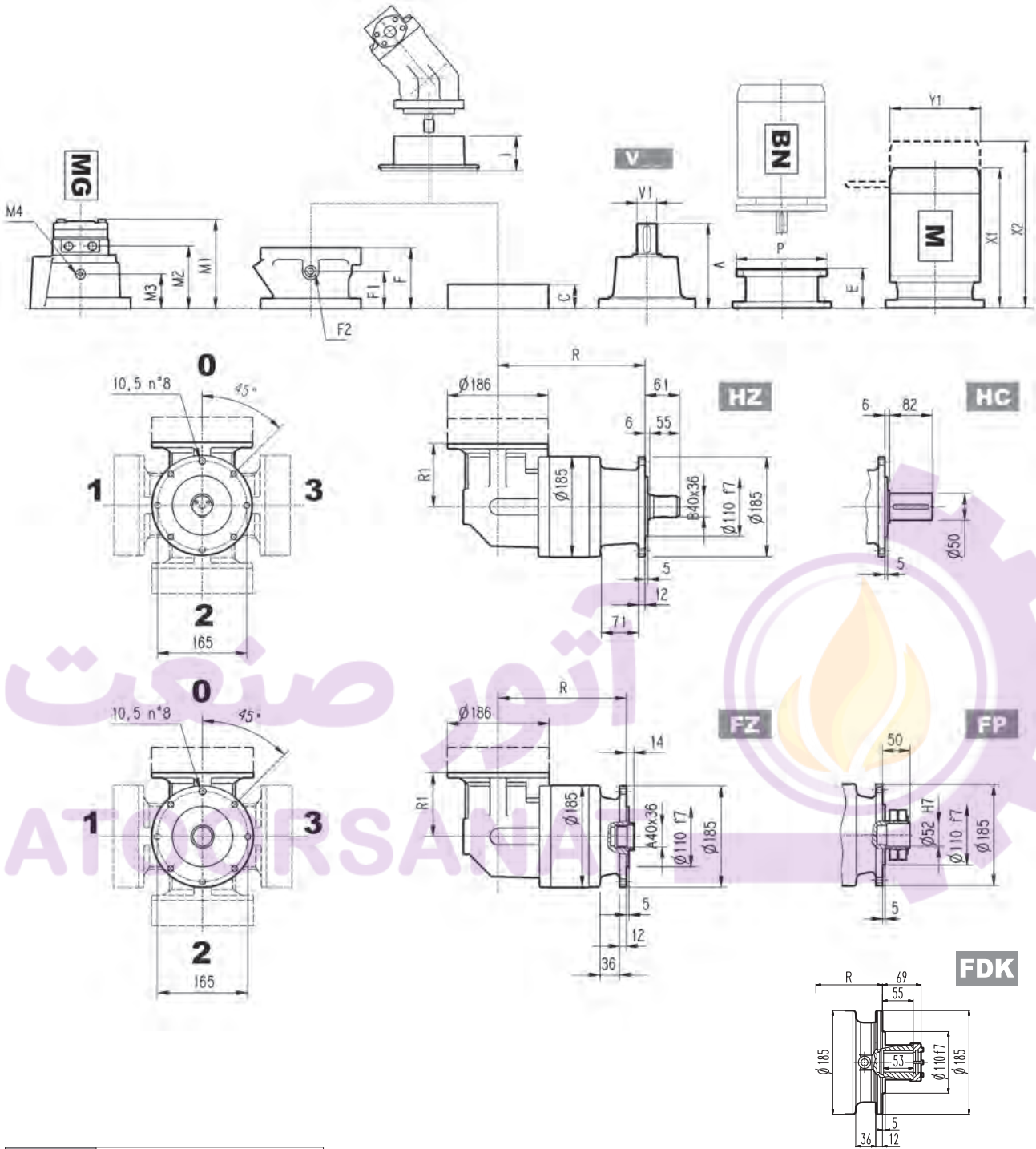


|        | R       |         |         |               | R1  | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 301 R2 | 184     | 225     | 219     | 184           | 122 | 35      | 42      | 37      | 33            |
| 301 R3 | 237     | 278     | 272     | 237           | 122 | 39      | 46      | 41      | 37            |
| 301 R4 | 290     | 331     | 325     | 290           | 122 | 43      | 50      | 45      | 41            |

|        | Kg    |    |    |     |    |    | C  | Input | I   | Kg  |    |       |      |       |    |
|--------|-------|----|----|-----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg |    |       |     | F   | F1 | F2    | Type | Input | Kg |
| 301 R2 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 301 R3 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 301 R4 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |



# 301 R

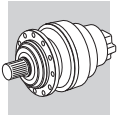


**FP**

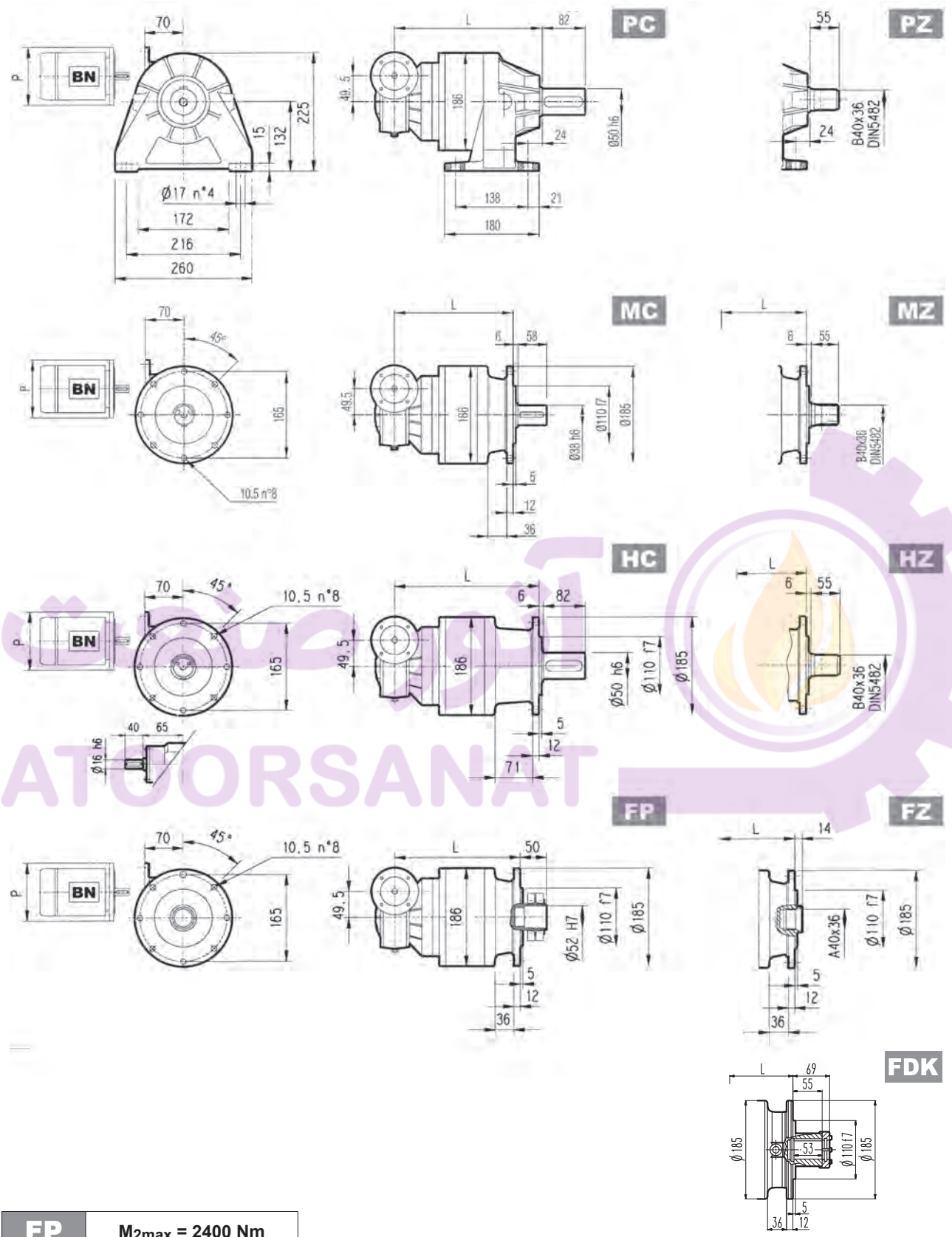
$M_{2max} = 2400 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 301 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 301 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 301 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 301 R2 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 301 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |
| 301 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | —        | —   | —   | —       | —   | —   |



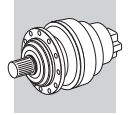
**3/V 01 L3**



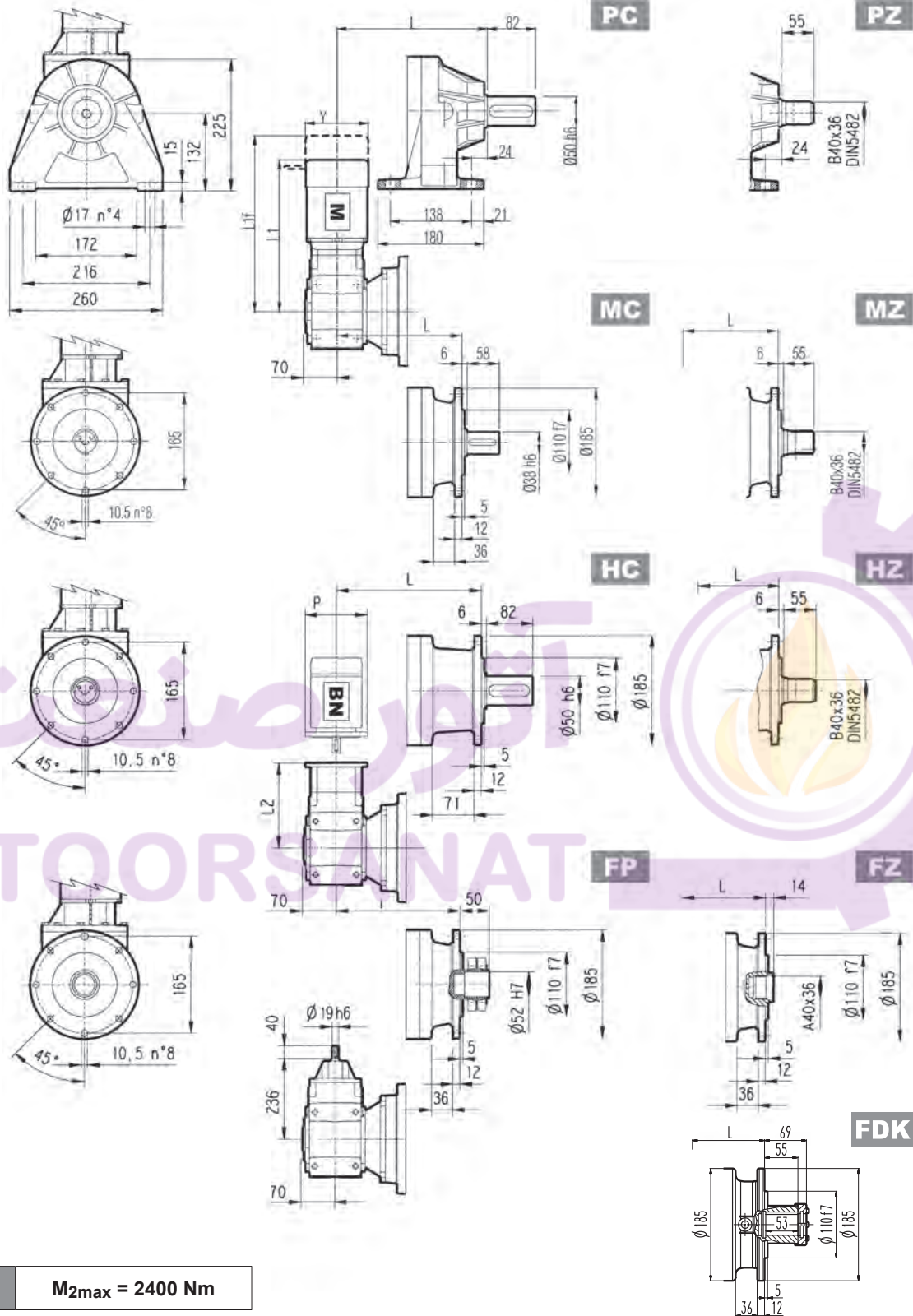
**FP**  $M_{2max} = 2400 \text{ Nm}$

|           | L       |         |         |               | Kg      |         |         |               | P63 | P71 | P80 |
|-----------|---------|---------|---------|---------------|---------|---------|---------|---------------|-----|-----|-----|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | P   | P   | P   |
| 3/V 01 L3 | 267     | 308     | 302     | 267           | 28      | 35      | 30      | 26            | 140 | 160 | 200 |



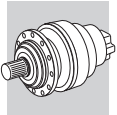


3/A 01 L2



**FP** M<sub>2max</sub> = 2400 Nm

|           | L       |     |         |     |         |    |               |     |         |       |         |  | $\overset{\circ}{\text{Kg}}$ |     |               |         |     |     |          |     |     |           |     |     |           |     |     |
|-----------|---------|-----|---------|-----|---------|----|---------------|-----|---------|-------|---------|--|------------------------------|-----|---------------|---------|-----|-----|----------|-----|-----|-----------|-----|-----|-----------|-----|-----|
|           | MC - MZ |     | PC - PZ |     | HC - HZ |    | FP - FZ - FDK |     | MC - MZ |       | PC - PZ |  | HC - HZ                      |     | FP - FZ - FDK |         |     |     |          |     |     |           |     |     |           |     |     |
| 3/A 01 L2 | 202     | 208 | 237     | 202 | 40      | 46 | 43            | 40  |         |       |         |  |                              |     |               |         |     |     |          |     |     |           |     |     |           |     |     |
|           | P63     |     |         | P71 |         |    | P80           |     |         | P90   |         |  | P100                         |     |               | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3SA |     |     | S3 + M3LA |     |     |
|           | L2      | P   |         | L2  | P       |    | L2            | P   |         | L2    | P       |  | L2                           | P   |               | L1      | L1f | Y   | L1       | L1f | Y   | L1        | L1f | Y   | L1        | L1f | Y   |
| 3/A 01 L2 | 226     | 140 |         | 226 | 160     |    | 245.5         | 200 |         | 245.5 | 200     |  | 255.5                        | 250 |               | 382     | 442 | 138 | 408      | 480 | 156 | 453       | 549 | 195 | 484       | 577 | 195 |

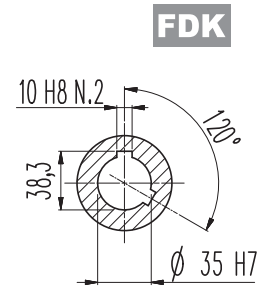
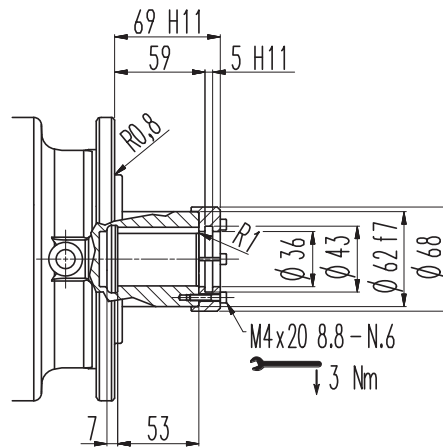
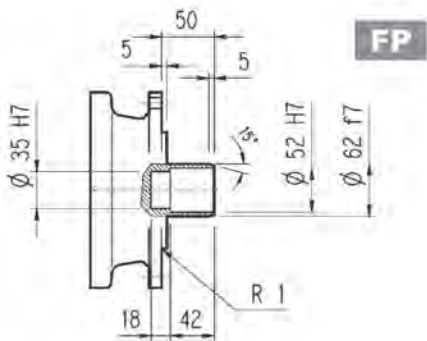
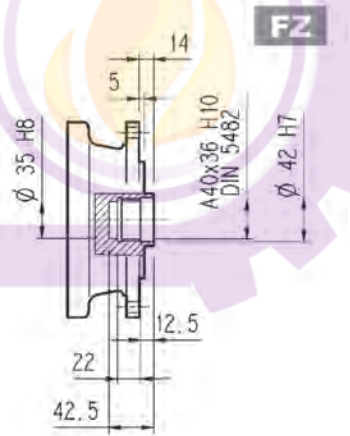
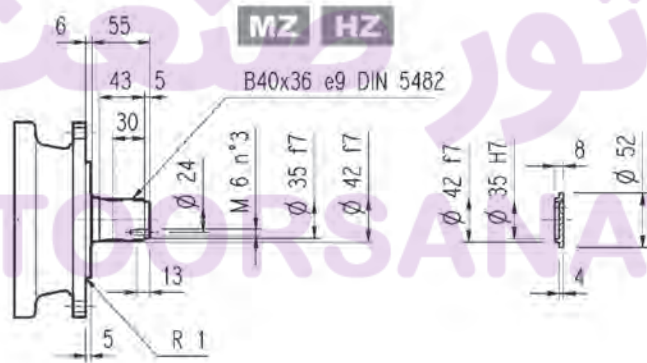
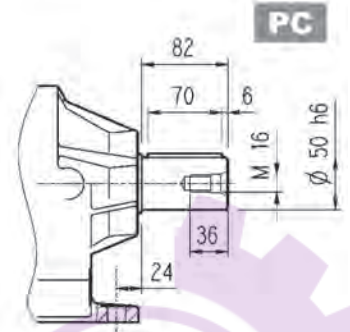
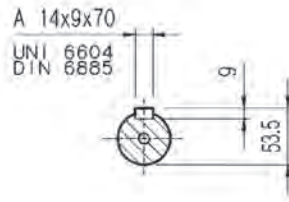
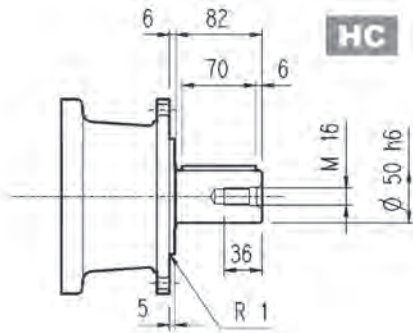
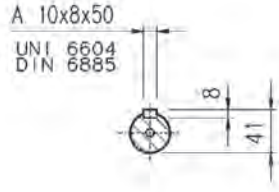
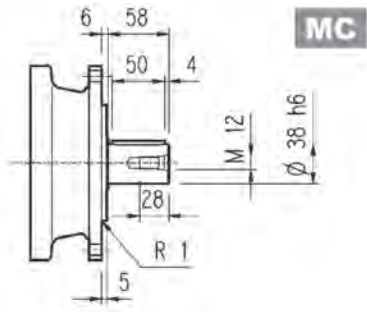


301 L

301 R

3/V 01 L3

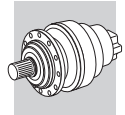
3/A 01 L2



FP

M<sub>2max</sub> = 2400 Nm





**301 L**

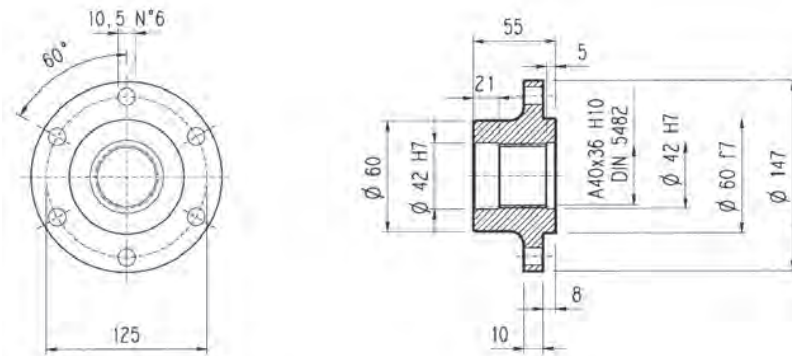
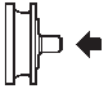
**301 R**

**3/V 01 L3**

**3/A 01 L2**

**Flange**

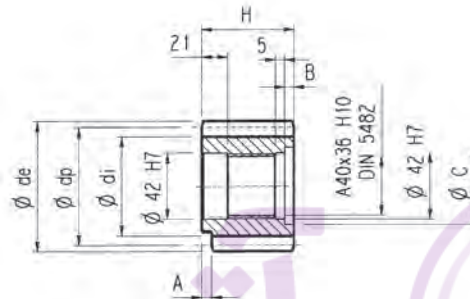
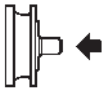
**W0A**



Material: Steel C40

**Pinions**

**P...**

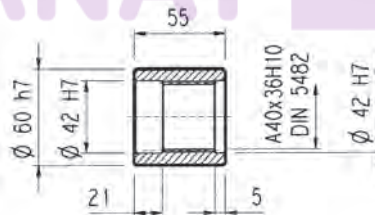
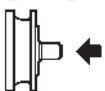


$\alpha = 20^\circ$

|     | m   | z  | x     | dp | di   | de   | H  | A  | B  | C  | Material                              |
|-----|-----|----|-------|----|------|------|----|----|----|----|---------------------------------------|
| PBE | 4.5 | 14 | 0.507 | 63 | 56   | 75.5 | 55 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PCE | 5   | 14 | 0.500 | 70 | 62.5 | 84.8 | 65 | —  | 10 | 53 |                                       |
| PDC | 6   | 12 | 0.250 | 72 | 61   | 84.8 | 59 | 14 | 4  | 54 |                                       |
| PDE | 6   | 14 | 0.500 | 84 | 73   | 99.6 | 65 | —  | 10 | 54 |                                       |

**Sleeve coupling**

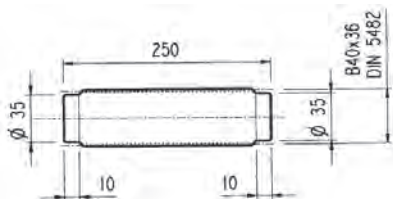
**M0A**



Material: Steel 16CrNi4

**Splined bars**

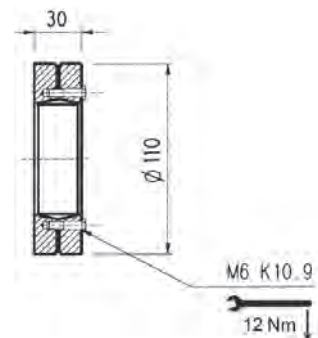
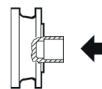
**B0A**



Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

**Shrink disc**

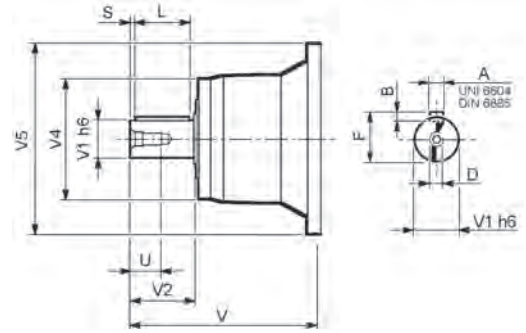
**G0A**





301 L

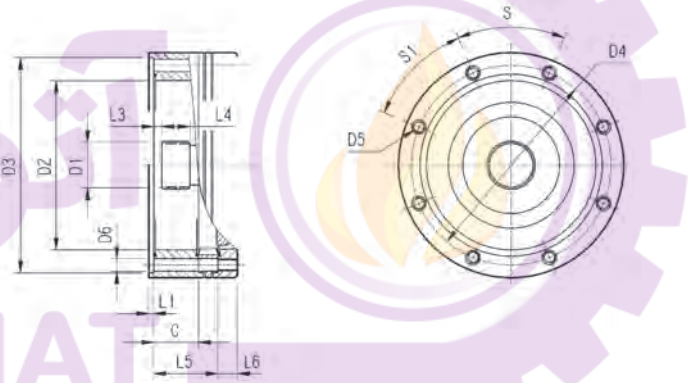
301 R



|              |      | V     | V1 | V2 | V4  | V5  | A  | B | F  | L  | S | D   | U  |
|--------------|------|-------|----|----|-----|-----|----|---|----|----|---|-----|----|
| 301 L1       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 301 L2       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 301 L3       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 301 L4       | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |
| 301 R2-R3-R4 | V01A | 137.5 | 24 | 36 | 120 | 186 | 8  | 7 | 27 | 30 | 3 | M8  | 19 |
|              | V01B | 158   | 38 | 58 | 120 | 186 | 10 | 8 | 41 | 50 | 4 | M12 | 28 |

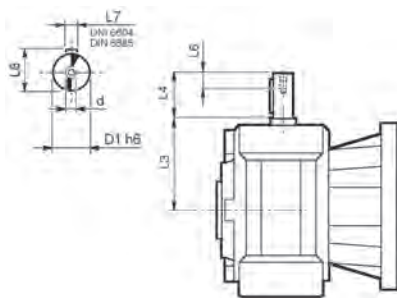
301 L

301 R



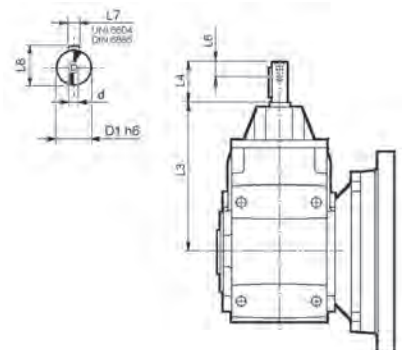
|              |      | C  | D1            | D2  | D3     | D4  | D5      | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1  | Input |
|--------------|------|----|---------------|-----|--------|-----|---------|----|----|----|----|----|-----|----|-----|-----|-------|
| 301 L1       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 65  | 18 | 45° | 45° | A     |
| 301 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 118 | 18 | 45° | 45° | A     |
| 301 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 171 | 18 | 45° | 45° | A     |
| 301 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 224 | 18 | 45° | 45° | A     |
| 301 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45° | A     |

3/V 01 L3

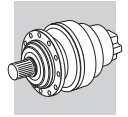


|              | D1 h6 | L3 | L4 | L6 | L7 | L8 | d  |
|--------------|-------|----|----|----|----|----|----|
| 3/V 01 L3_HS | 16    | 65 | 40 | 16 | 5  | 18 | M6 |

3/A 01 L2



|              | D1 h6 | L3    | L4 | L6 | L7 | L8   | d  |
|--------------|-------|-------|----|----|----|------|----|
| 3/A 01 L2_HS | 19    | 235.5 | 40 | 16 | 6  | 21.5 | M6 |



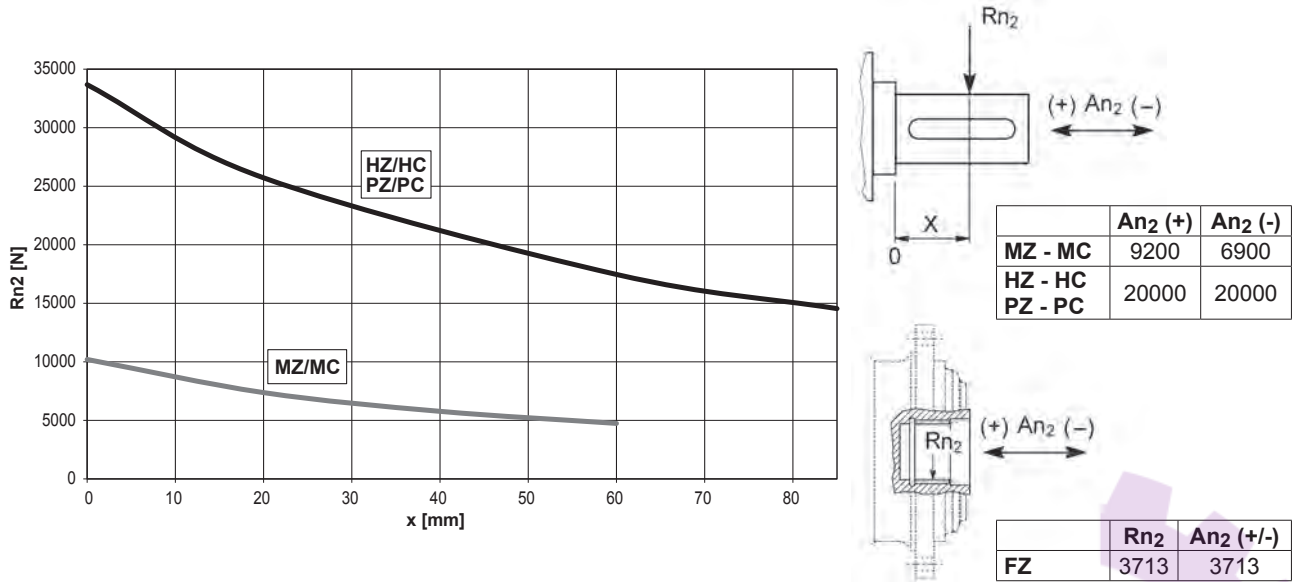
301 L

301 R

3/V 01 L3

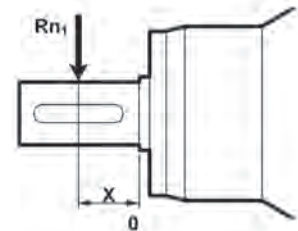
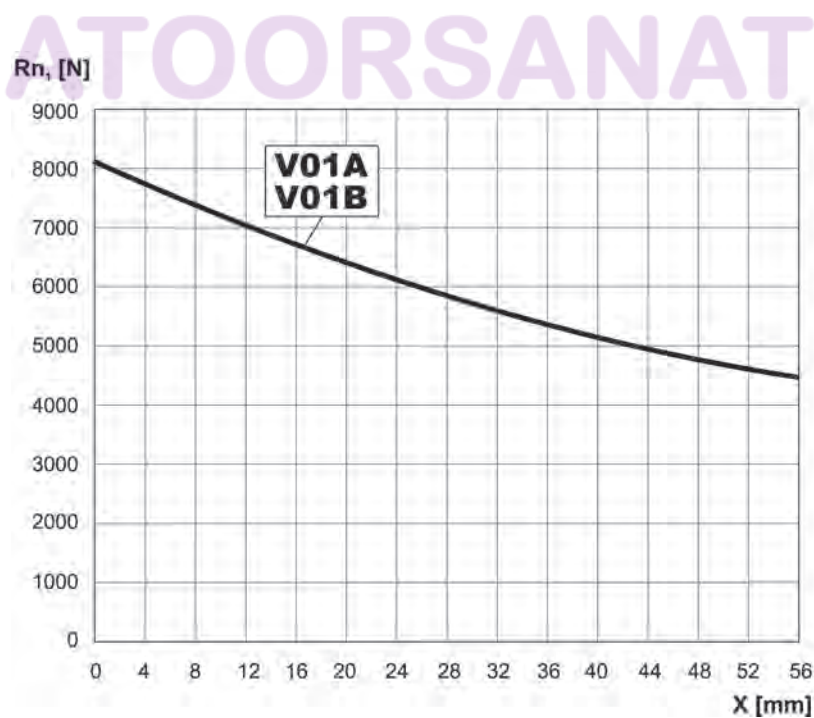
3/A 01 L2

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$

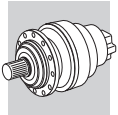


| Load corrective factor $fh_2$<br>on shafts | $Fh_2 = n_2 \cdot h$ |       |         |                   |        |        |         |
|--|----------------------|-------|---------|-------------------|--------|--------|---------|
|  |                      | 10000 | 25000   | 50000             | 100000 | 500000 | 1000000 |
|  | $fh_2$               | FZ    | MZ - MC | HZ - HC - PZ - PC |        |        |         |
|  |                      | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                      | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                      | 1.27  | 1.27    | 1.26              | 1.00   | 0.62   | 0.50    |

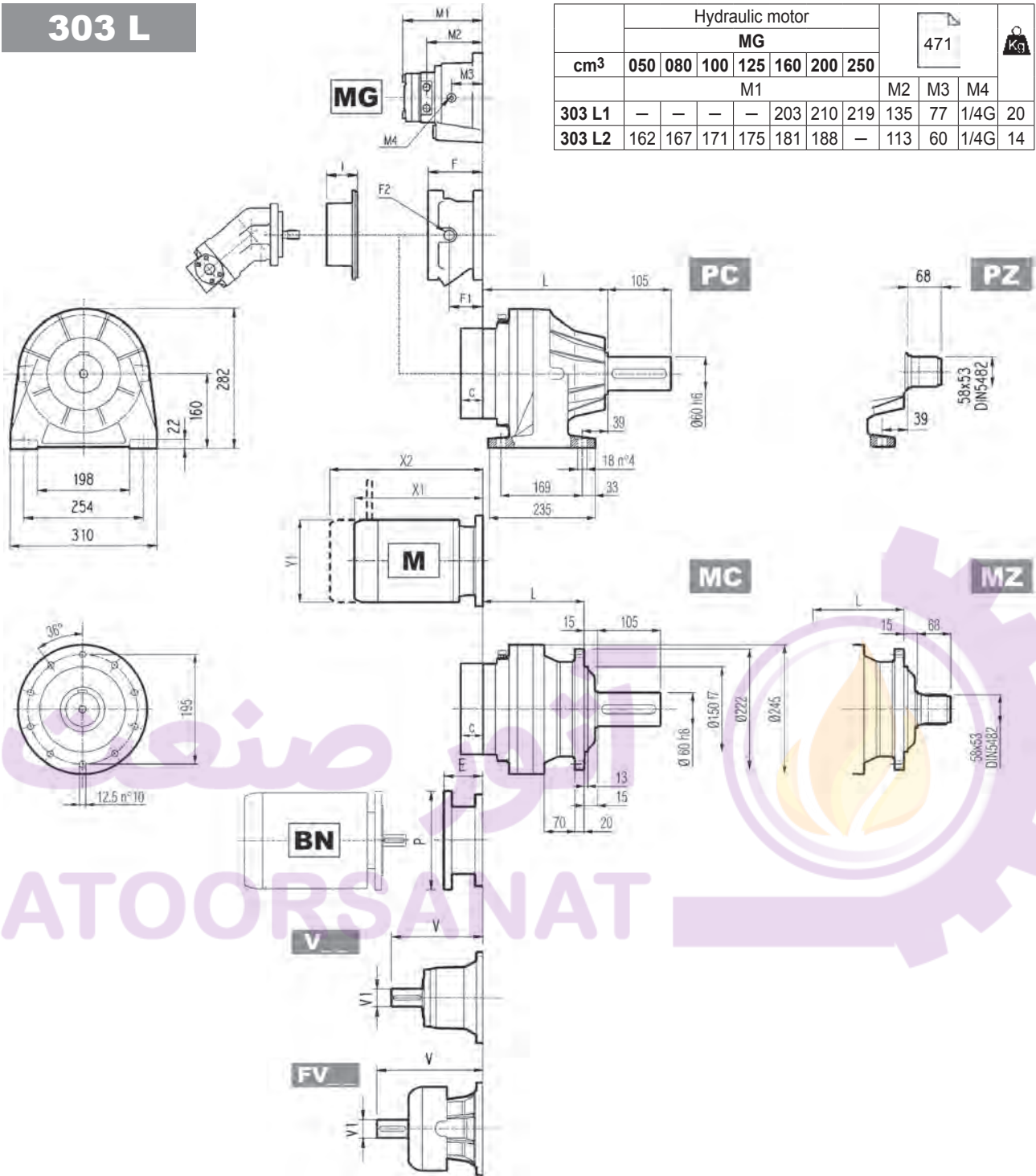
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $Fh_1 = n_1 \cdot h$ |        |        |         |         |         |          |
|--|----------------------|--------|--------|---------|---------|---------|----------|
|  | $fh_1$               | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  |                      | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



# 303 L

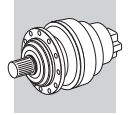


|                 |  | Hydraulic motor |     |     |     |     |     | 471 |     |    | Kg   |    |
|-----------------|--|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 |  | MG              |     |     |     |     |     |     |     |    |      |    |
| cm <sup>3</sup> |  | 050             | 080 | 100 | 125 | 160 | 200 | 250 | M2  | M3 | M4   |    |
|                 |  | M1              |     |     |     |     |     | M2  | M3  | M4 |      |    |
| 303 L1          |  | —               | —   | —   | —   | 203 | 210 | 219 | 135 | 77 | 1/4G | 20 |
| 303 L2          |  | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G | 14 |

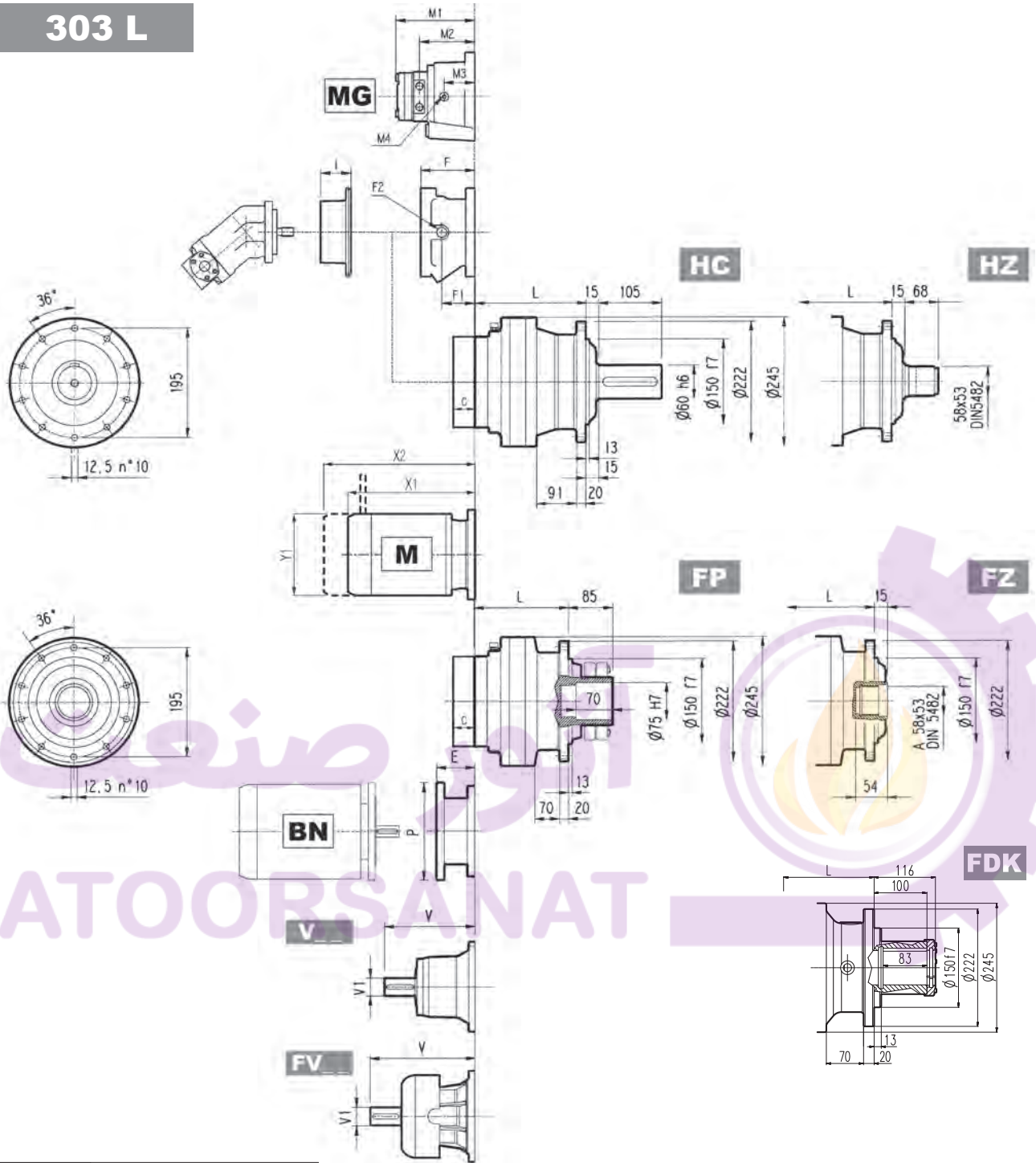
|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 303 L1 | 125     | 165     | 150     | 125           | 31      | 40      | 35      | 31            |
| 303 L2 | 178     | 218     | 203     | 178           | 35      | 44      | 39      | 35            |
| 303 L3 | 231     | 271     | 256     | 231           | 39      | 48      | 43      | 39            |
| 303 L4 | 284     | 324     | 309     | 284           | 43      | 52      | 47      | 43            |

|        | V     |    |    | Kg  |    |    | V   |    |    | Kg |    |    | C  | Input | I   | F   |    |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1 | F2    |      |       |    |
| 303 L1 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | —   | 145 | 95 | 1/4 G | 5    | A     | 16 |
| 303 L2 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 303 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 303 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |





# 303 L

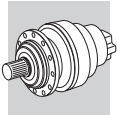


**FP**  $M_{2max} = 5200 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 303 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 303 L2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 303 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 303 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |

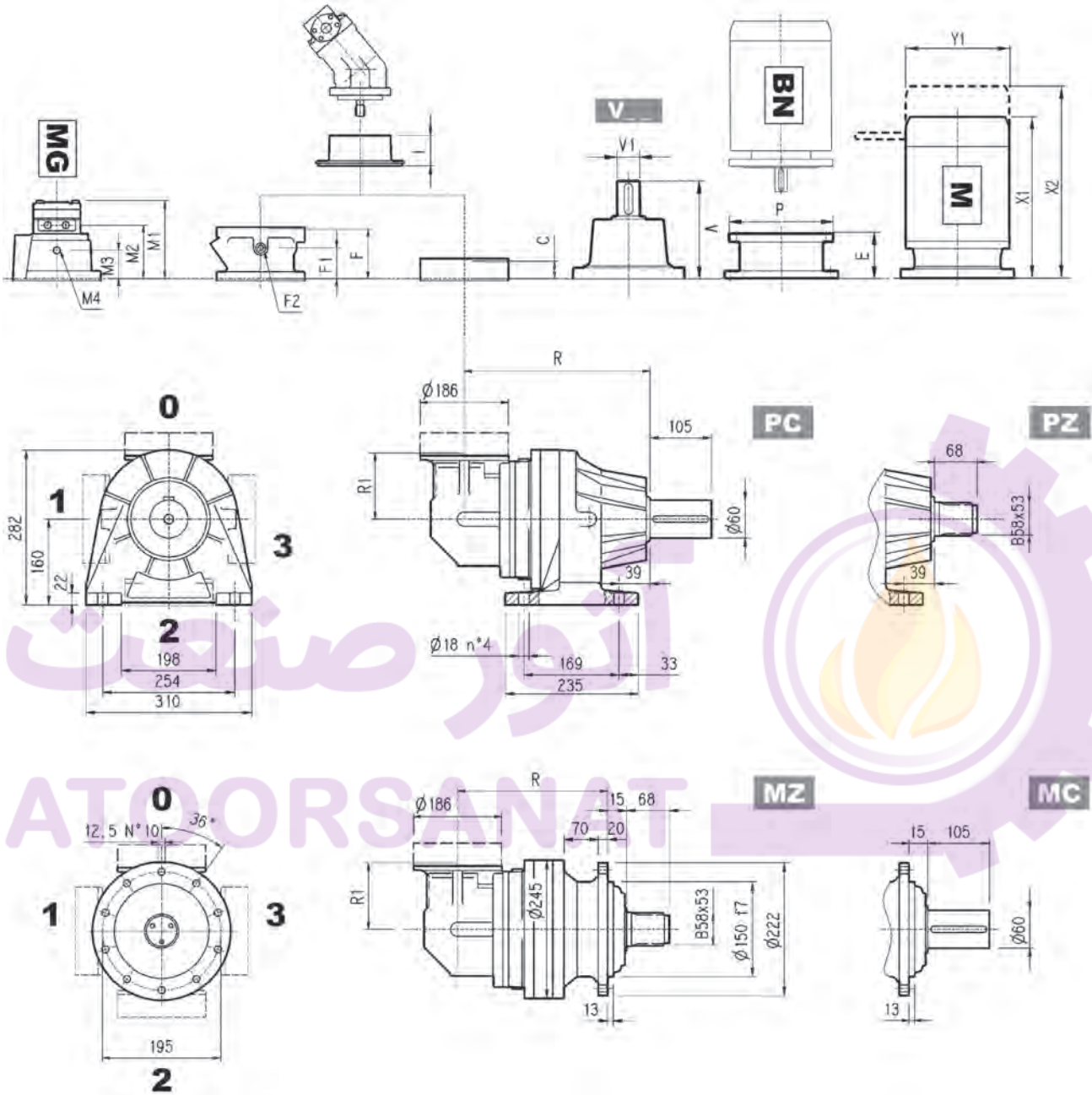
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 303 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 303 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 303 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 303 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |





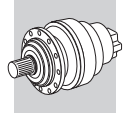
# 303 R

| cm <sup>3</sup> | Hydraulic motor |     |     |     |     |     |     | 471 | Kg |      |    |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 | MG              |     |     |     |     |     |     |     |    |      |    |
|                 | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 | M1              |     |     |     |     |     |     | M2  | M3 | M4   |    |
| <b>303 R2</b>   | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G | 14 |

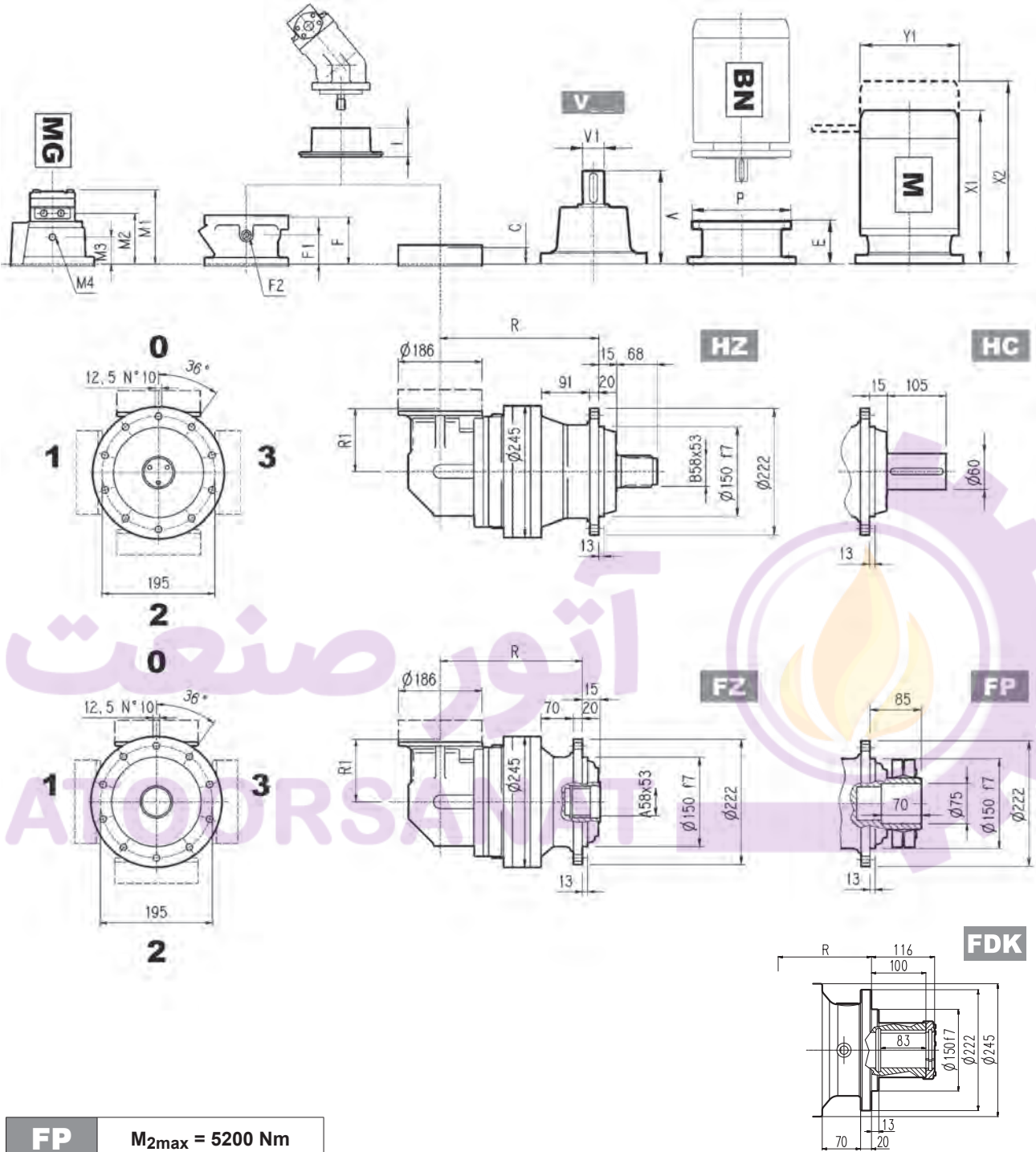


|               | R       |         |         |               | R1  | Kg      |         |         |               |
|---------------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|               | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| <b>303 R2</b> | 217     | 257     | 242     | 217           | 140 | 51      | 60      | 55      | 51            |
| <b>303 R3</b> | 270     | 310     | 295     | 270           | 122 | 49      | 58      | 53      | 49            |
| <b>303 R4</b> | 323     | 363     | 348     | 323           | 122 | 53      | 62      | 57      | 53            |

|               | V     |    |    |     |    |    | C  |       |     | I   |    |       |      |       |    |
|---------------|-------|----|----|-----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|               | V     | V1 | Kg | V   | V1 | Kg | C  | Input | I   | F   | F1 | F2    | Type | Input | Kg |
| <b>303 R2</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| <b>303 R3</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |
| <b>303 R4</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |



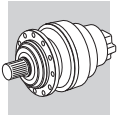
# 303 R



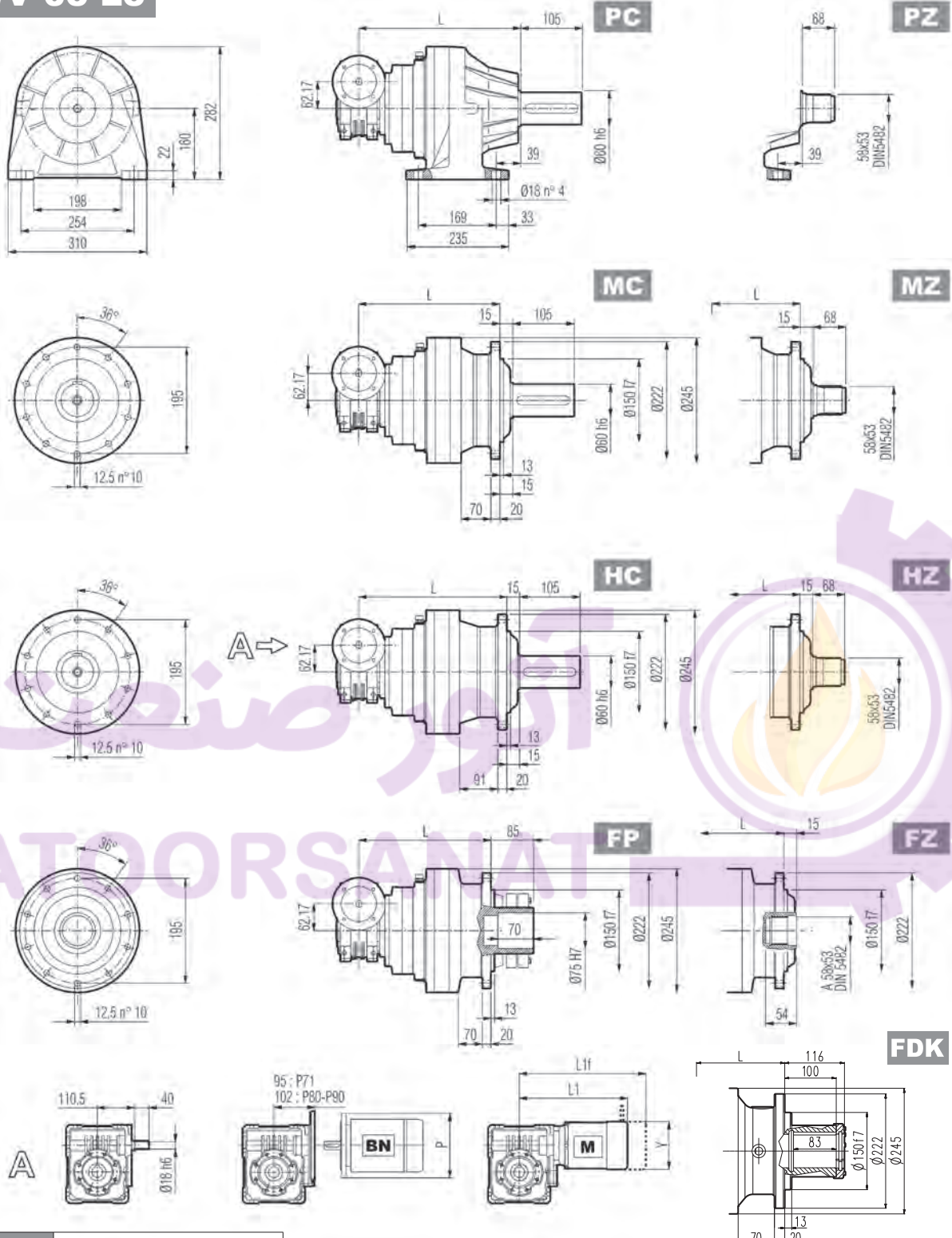
**FP**  $M_{2max} = 5200 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 303 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 303 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 303 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 303 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 303 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |
| 303 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |



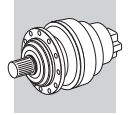
**3/V 03 L3**



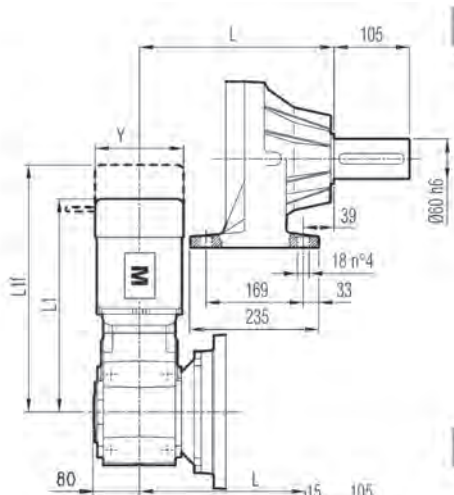
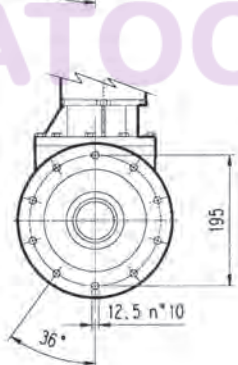
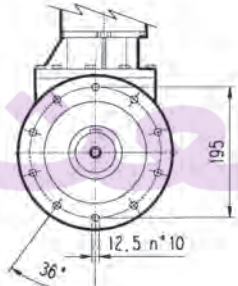
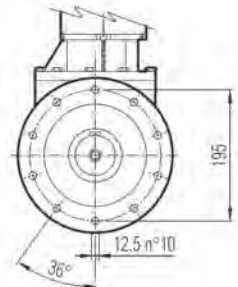
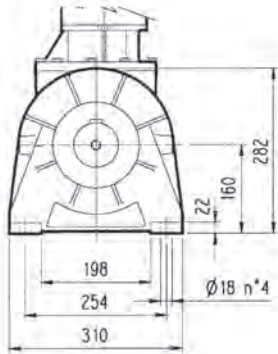
**FP**  $M_{2max} = 5200 \text{ Nm}$

| 3/V 03 L3 | L       |         |         |               | Kg      |         |          |               |     |
|-----------|---------|---------|---------|---------------|---------|---------|----------|---------------|-----|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ  | FP - FZ - FDK |     |
|           | 270     | 330     | 315     | 270           | 43      | 51      | 45       | 41            |     |
|           | P71     | P80     | P90     | S1 + M1       |         |         | S2 + M2S |               |     |
|           | P       | P       | P       | L1            | L1f     | Y       | L1       | L1f           | Y   |
| 3/V 03 L3 | 160     | 200     | 200     | 289           | 350     | 138     | 317      | 393           | 156 |

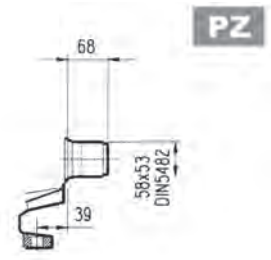




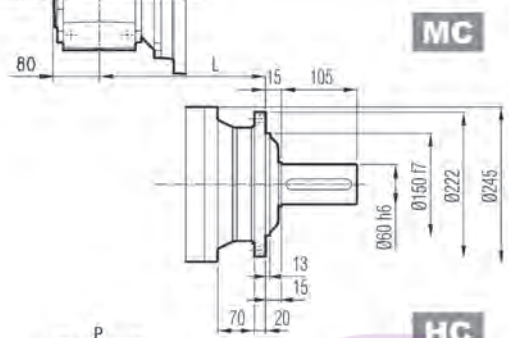
**3/A 03 L2**



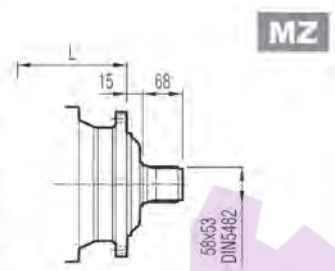
**PC**



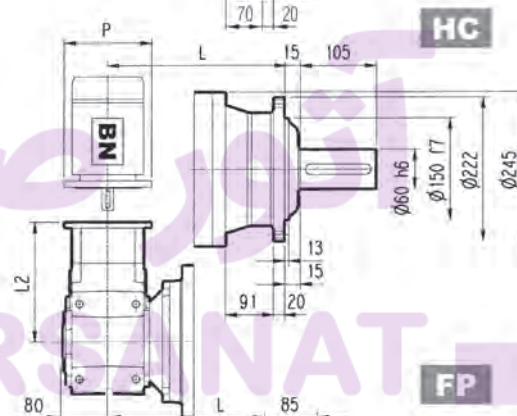
**PZ**



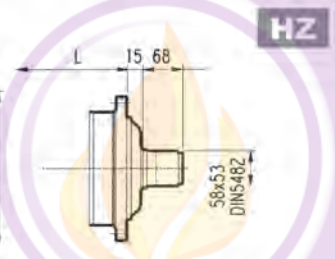
**MC**



**MZ**



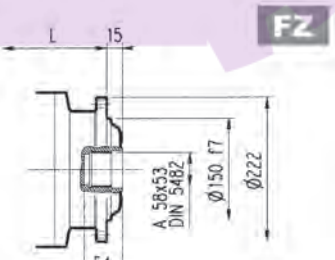
**HC**



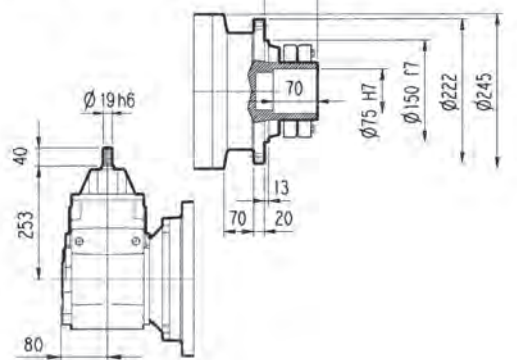
**HZ**



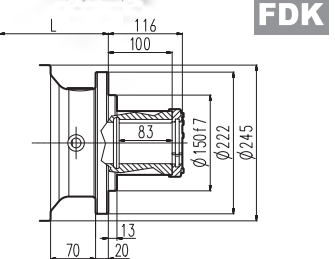
**FP**



**FZ**



**FDK**



**FP**  $M_{2max} = 5200 \text{ Nm}$

|           | L       |     |         |     |         |    |               |    | $\overset{\circ}{\text{Kg}}$ |  |         |  |         |  |               |  |
|-----------|---------|-----|---------|-----|---------|----|---------------|----|------------------------------|--|---------|--|---------|--|---------------|--|
|           | MC - MZ |     | PC - PZ |     | HC - HZ |    | FP - FZ - FDK |    | MC - MZ                      |  | PC - PZ |  | HC - HZ |  | FP - FZ - FDK |  |
| 3/A 03 L2 | 225     | 285 | 270     | 225 | 63      | 71 | 65            | 60 |                              |  |         |  |         |  |               |  |

|           | P63 |     | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3SA |     |     | S3 + M3LA |     |     |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|---------|-----|-----|----------|-----|-----|-----------|-----|-----|-----------|-----|-----|
|           | L2  | P   | L2  | P   | L2  | P   | L2  | P   | L2   | P   | L2   | P   | L1      | L1f | Y   | L1       | L1f | Y   | L1        | L1f | Y   | L1        | L1f | Y   |
| 3/A 03 L2 | 243 | 140 | 243 | 160 | 262 | 200 | 262 | 200 | 272  | 250 | 272  | 250 | 399     | 416 | 138 | 425      | 497 | 156 | 470       | 467 | 195 | 501       | 518 | 195 |

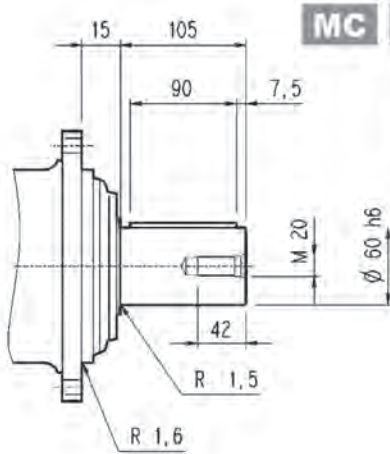


303 L

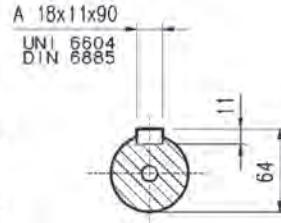
303 R

3/V 03 L3

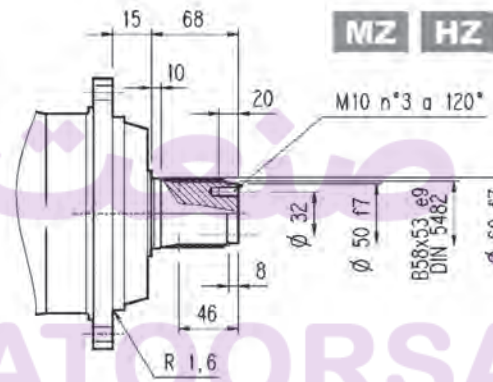
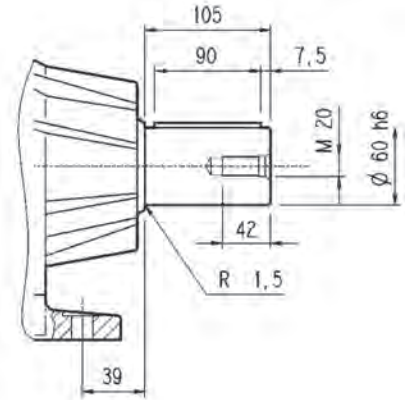
3/A 03 L2



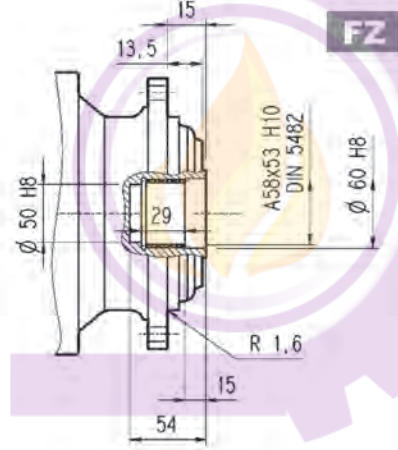
MC HC



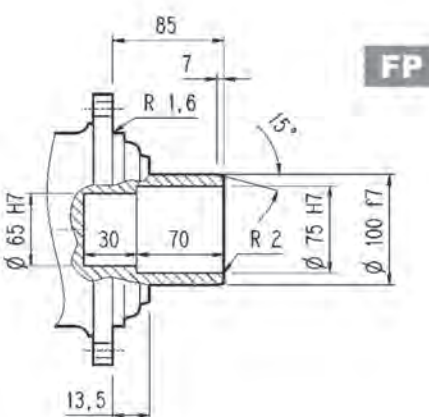
PC



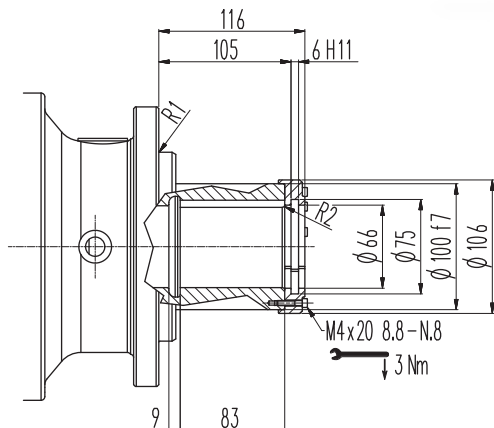
MZ HZ



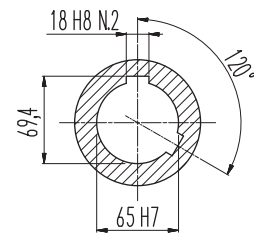
FZ



FP

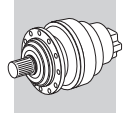


FDK



**FP**  $M_{2max} = 5200 \text{ Nm}$





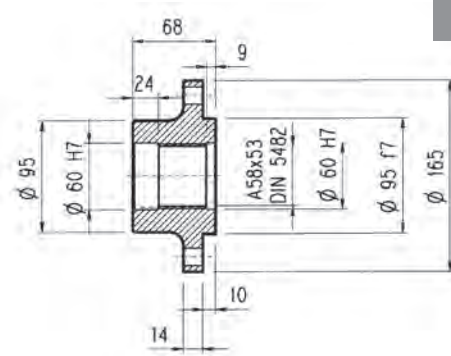
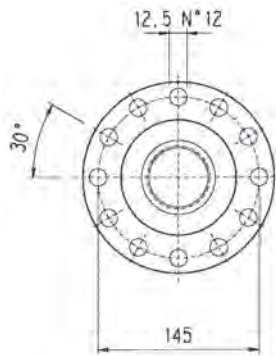
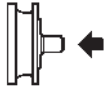
303 L

303 R

3/V 03 L3

3/A 03 L2

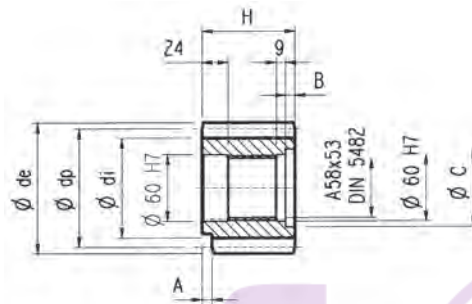
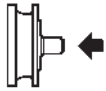
Flange



W0A

Material: Steel C40

Pinions

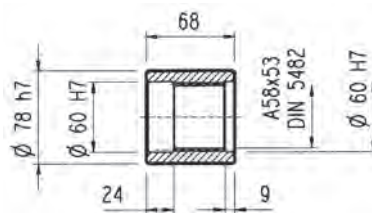
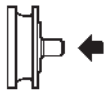


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di   | de    | H  | A  | B  | C  | Material                              |
|------|----|----|-------|-----|------|-------|----|----|----|----|---------------------------------------|
| PCL1 | 5  | 19 | —     | 95  | 82   | 104   | 77 | 12 | 9  | 72 | Steel 39NiCrMo3 hardened and tempered |
| PCL2 | 5  | 19 | —     | 95  | 82   | 104   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PCM  | 5  | 20 | —     | 100 | 87.5 | 110   | 68 | 18 | —  | —  | Steel 18NiCrMo5 case hardened         |
| PCP  | 5  | 22 | —     | 110 | 97.5 | 120   | 68 | 18 | —  | —  | Steel 18NiCrMo5 case hardened         |
| PDE  | 6  | 14 | 0.500 | 84  | 75   | 99.6  | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PDI  | 6  | 18 | 0.500 | 108 | 99   | 123.6 | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PDM  | 6  | 20 | 0.833 | 120 | 115  | 140   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PFD  | 8  | 13 | 0.675 | 104 | 95   | 127.6 | 68 | —  | —  | —  | Steel 18NiCrMo5 case hardened         |
| PFE1 | 8  | 14 | —     | 112 | 92   | 126   | 68 | —  | —  | —  | Steel 18NiCrMo5 case hardened         |
| PFE2 | 8  | 14 | —     | 112 | 92   | 126   | 80 | —  | 12 | 72 | Steel 18NiCrMo5 case hardened         |
| PFF  | 8  | 15 | —     | 120 | 100  | 136   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PFP  | 8  | 22 | —     | 176 | 156  | 190   | 77 | 12 | 10 | 71 | Steel 39NiCrMo3 hardened and tempered |
| PHG  | 10 | 16 | 0.500 | 160 | 145  | 188   | 75 | —  | 7  | 72 | Steel 39NiCrMo3 hardened and tempered |

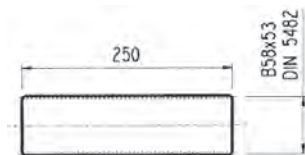
Sleeve coupling



M0A

Material: Steel 16CrNi4

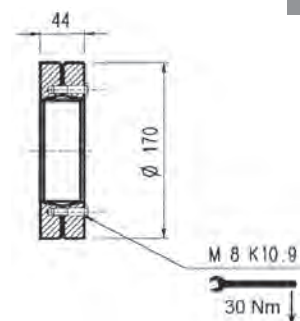
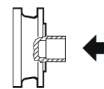
Splined bars



B0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

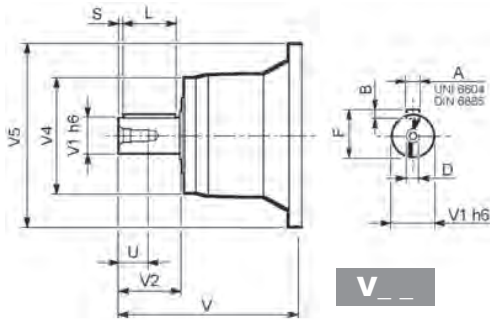


G0A

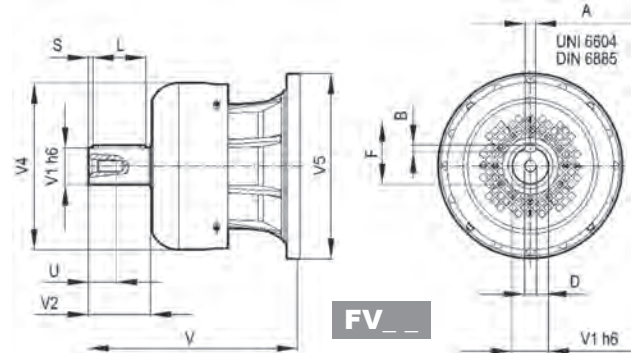


303 L

303 R



V \_ \_

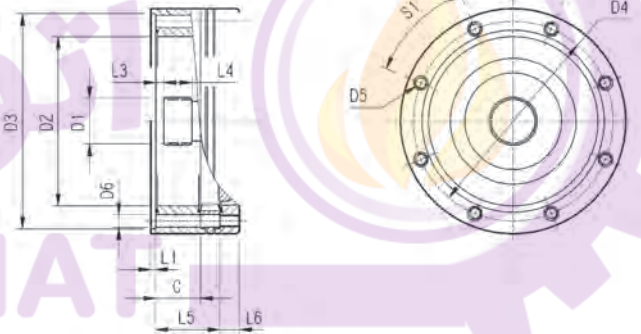


FV \_ \_

|              |       | V     | V1 | V2 | V4    | V5  | A  | B | F    | L  | S | D   | U  |
|--------------|-------|-------|----|----|-------|-----|----|---|------|----|---|-----|----|
| 303 L1       | V05B  | 239   | 48 | 82 | 155   | 245 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
|              | FV05B | 276   | 48 | 82 | 219.5 | 244 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
| 303 L2       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 303 L3       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 303 L4       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 303 R2-R3-R4 | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |

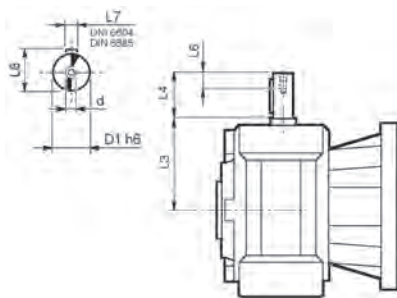
303 L

303 R



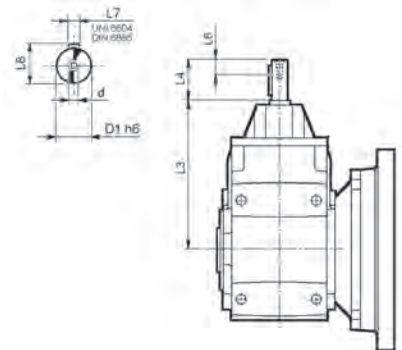
|              |      | C  | D1            | D2  | D3     | D4  | D5      | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1  | Input |
|--------------|------|----|---------------|-----|--------|-----|---------|----|----|----|----|----|-----|----|-----|-----|-------|
| 303 L1       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | —   | 18 | 45° | 45° | A     |
| 303 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 53  | 18 | 45° | 45° | A     |
| 303 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 106 | 18 | 45° | 45° | A     |
| 303 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 159 | 18 | 45° | 45° | A     |
| 303 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45° | A     |

3/V 03 L3

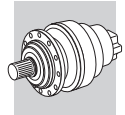


|              | D1 h6 | L3    | L4 | L6 | L7 | L8   | d  |
|--------------|-------|-------|----|----|----|------|----|
| 3/V 03 L3_HS | 18    | 110.5 | 40 | 16 | 6  | 20.5 | M6 |

3/A 03 L2



|              | D1 h6 | L3    | L4 | L6 | L7 | L8   | d  |
|--------------|-------|-------|----|----|----|------|----|
| 3/A 03 L2_HS | 19    | 252.5 | 40 | 16 | 6  | 21.5 | M6 |



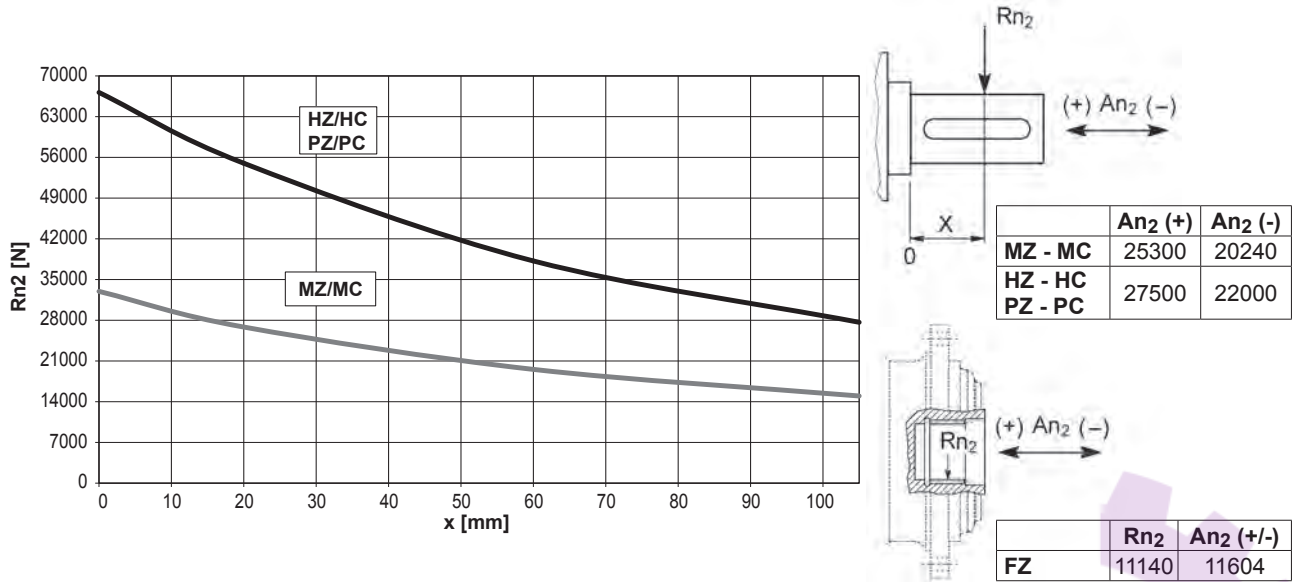
303 L

303 R

3/V 03 L3

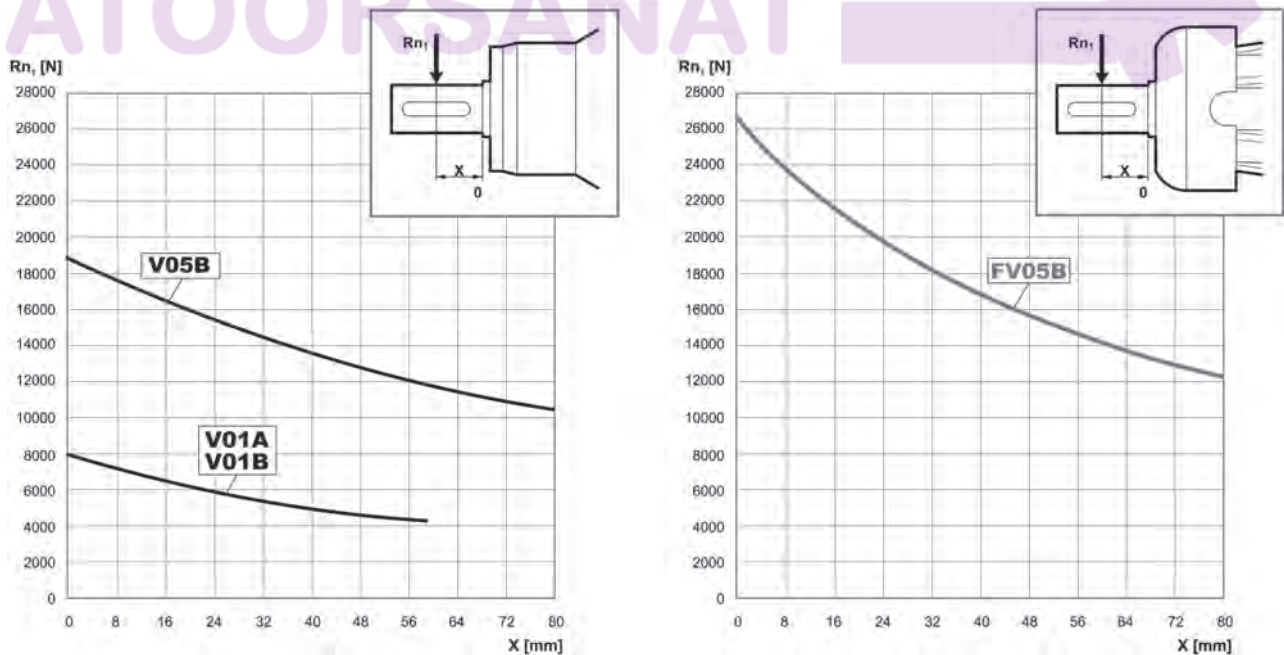
3/A 03 L2

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$

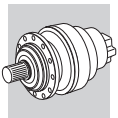


| Load corrective factor $fh_2$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |       |       |        |        |         |
|--|------------------------|-------|-------|-------|--------|--------|---------|
|  |                        | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|  | $fh_2$                 | FZ    | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    |
|  | MZ - MC                | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |
|  | HZ - HC - PZ - PC      | 1.48  | 1.48  | 1.23  | 1.00   | 0.62   | 0.50    |

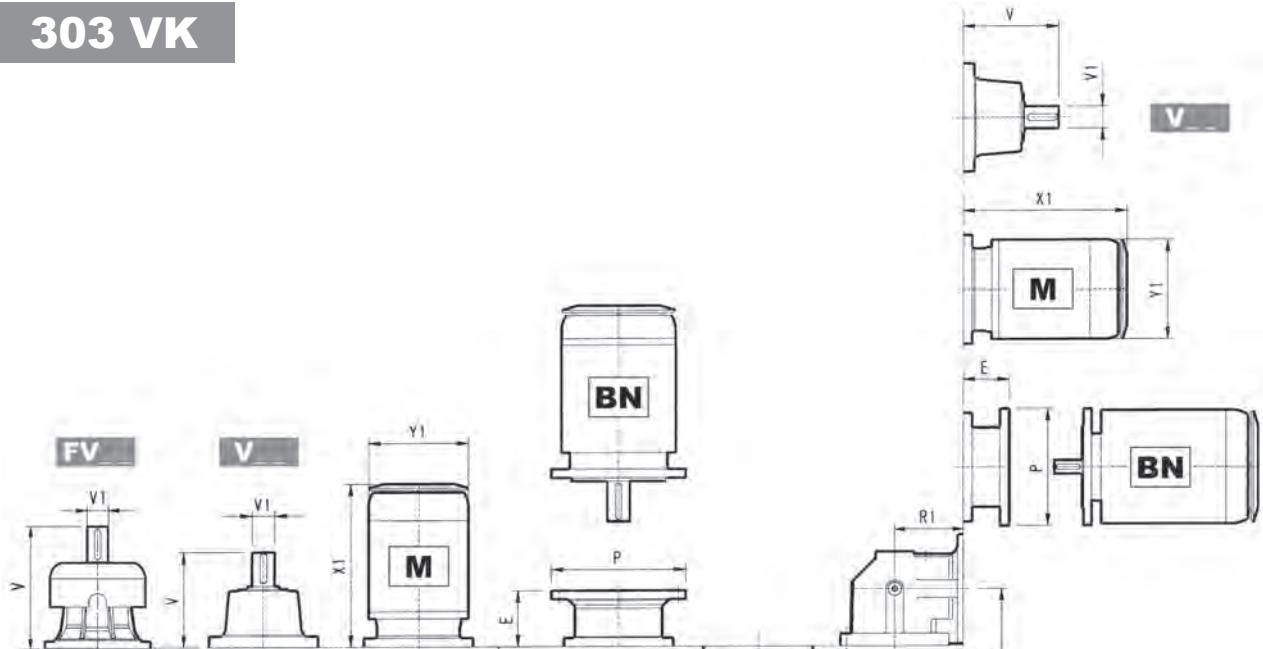
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
| $fh_1$                                     |                        | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



### 303 VK



### 303 L\_VK

### 303 R\_VK

A 22x14x140  
LNI 6604-69 / DIN 6885

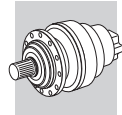
|        | L   | V  |       |    |    |     |    | BN  |    |    |    |   |    | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |     |
|--------|-----|----|-------|----|----|-----|----|-----|----|----|----|---|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|
|        |     | V  | V1    | V  | V1 | V   | V1 | V   | V1 | V  | V1 | V | V1 | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |     |
| 303 L1 | 51  | 65 | 239   | 48 | 15 | —   | —  | 276 | 48 | 17 | —  | — | —  | —   | 65  | 160 | 84  | 200 | 84  | 200  | 94  | 250  | 94  | 250  | 114 | 300  | 144 | 350  | 144 | 350  | 174 | 400 |
| 303 L2 | 104 | 70 | 137.5 | 24 | 6  | 158 | 38 | 7   | —  | —  | —  | — | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |
| 303 L3 | 157 | 73 | 137.5 | 24 | 6  | 158 | 38 | 7   | —  | —  | —  | — | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |
| 303 L4 | 210 | 77 | 137.5 | 24 | 6  | 158 | 38 | 7   | —  | —  | —  | — | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 303 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 303 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 303 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 303 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |

|        | R   | R1  | V  | V1    | BN |    |     |    |   |    | P71 |    | P80 |    | P90 |    | P100 |    | P112 |     | P132 |   |
|--------|-----|-----|----|-------|----|----|-----|----|---|----|-----|----|-----|----|-----|----|------|----|------|-----|------|---|
|        |     |     |    |       | V  | V1 | V   | V1 | V | V1 | V   | V1 | E   | P  | E   | P  | E    | P  | E    | P   | E    | P |
| 303 R2 | 143 | 140 | 85 | 137.5 | 24 | 6  | 158 | 38 | 7 | 65 | 160 | 84 | 200 | 84 | 200 | 94 | 250  | 94 | 250  | 114 | 300  |   |
| 303 R3 | 196 | 122 | 83 | 137.5 | 24 | 6  | 158 | 38 | 7 | 65 | 160 | 84 | 200 | 84 | 200 | 94 | 250  | 94 | 250  | 114 | 300  |   |
| 303 R4 | 249 | 122 | 87 | 137.5 | 24 | 6  | 158 | 38 | 7 | 65 | 160 | 84 | 200 | 84 | 200 | 94 | 250  | 94 | 250  | 114 | 300  |   |

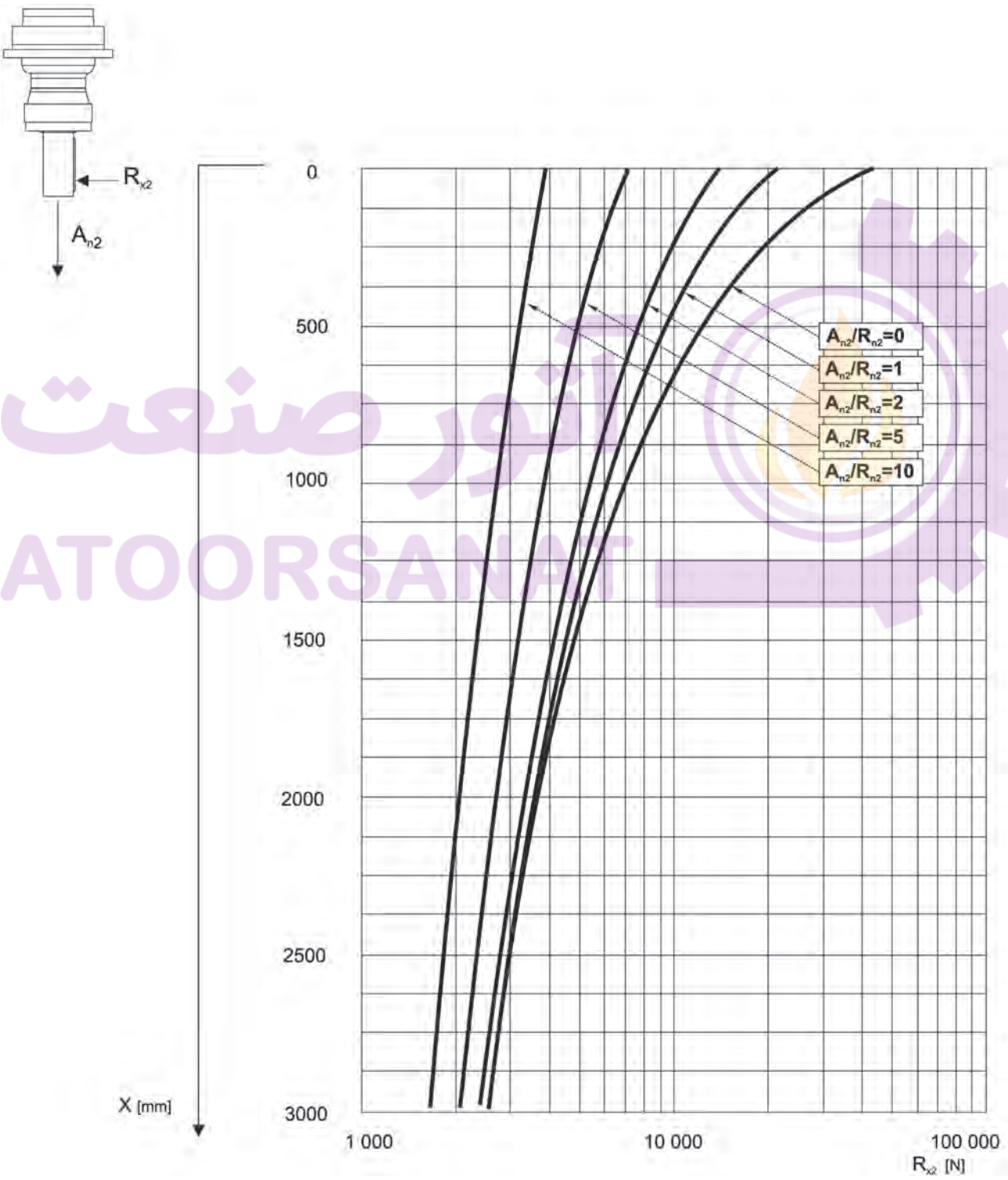
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 303 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 303 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |
| 303 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |



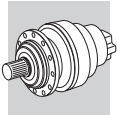


### 303 VK

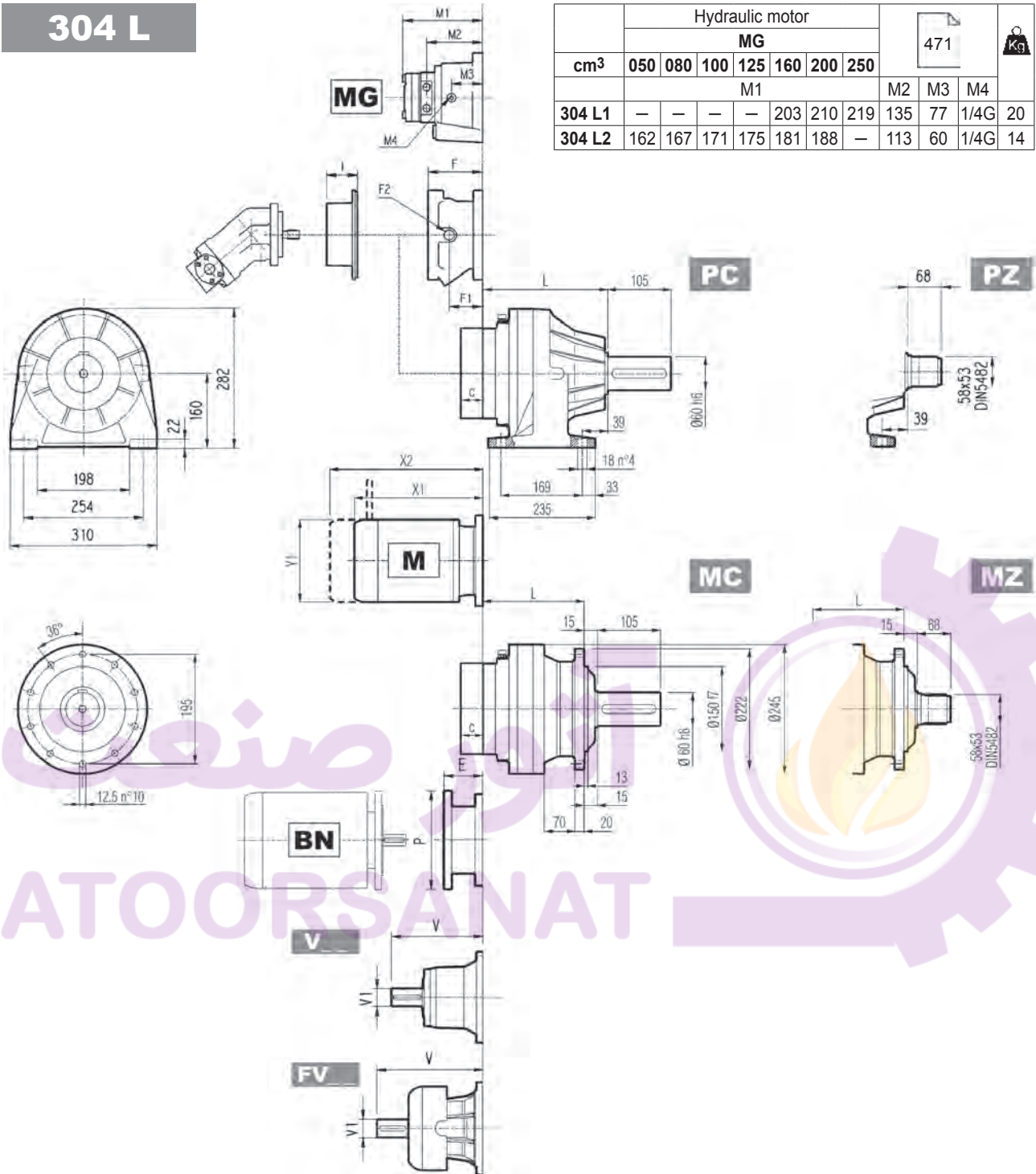
The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.







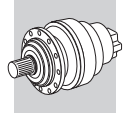
**304 L**



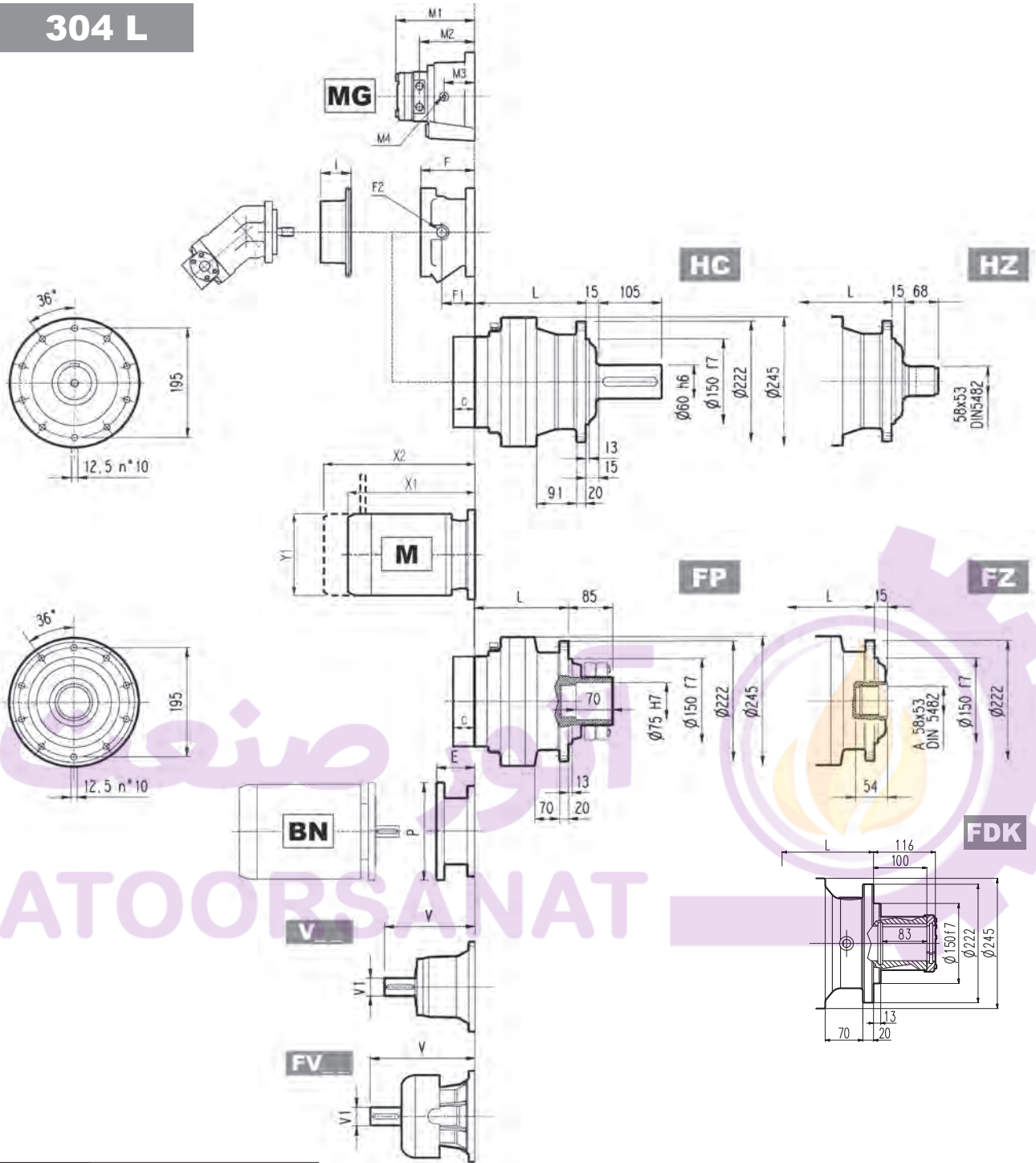
|                 |  | Hydraulic motor |     |     |     |     |     | 471 |     |    | Kg      |
|-----------------|--|-----------------|-----|-----|-----|-----|-----|-----|-----|----|---------|
|                 |  | MG              |     |     |     |     |     |     |     |    |         |
| cm <sup>3</sup> |  | 050             | 080 | 100 | 125 | 160 | 200 | 250 | M2  | M3 | M4      |
|                 |  | M1              |     |     |     |     |     | M2  | M3  | M4 |         |
| 304 L1          |  | —               | —   | —   | —   | 203 | 210 | 219 | 135 | 77 | 1/4G 20 |
| 304 L2          |  | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G 14 |

|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 304 L1 | 125     | 165     | 150     | 125           | 31      | 40      | 35      | 31            |
| 304 L2 | 190     | 230     | 215     | 190           | 38      | 47      | 42      | 38            |
| 304 L3 | 243     | 283     | 268     | 243           | 42      | 51      | 46      | 42            |
| 304 L4 | 296     | 336     | 321     | 296           | 46      | 55      | 50      | 46            |

|        | V     |    |    | Kg  |    |    | V   |    |    | Kg |    |    | C  | Input | I   | F   |    |       |      | Kg |       |
|--------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|----|-------|------|----|-------|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1 | F2    | Type |    | Input |
| 304 L1 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     |     | 145 | 95 | 1/4 G | 5    | A  | 16    |
| 304 L2 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A  | 10    |
| 304 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     |     | 105 | 65 | 1/4 G | 4    | A  | 10    |
| 304 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A  | 10    |



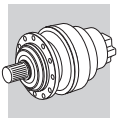
# 304 L



**FP**  $M_{2max} = 7300 \text{ Nm}$

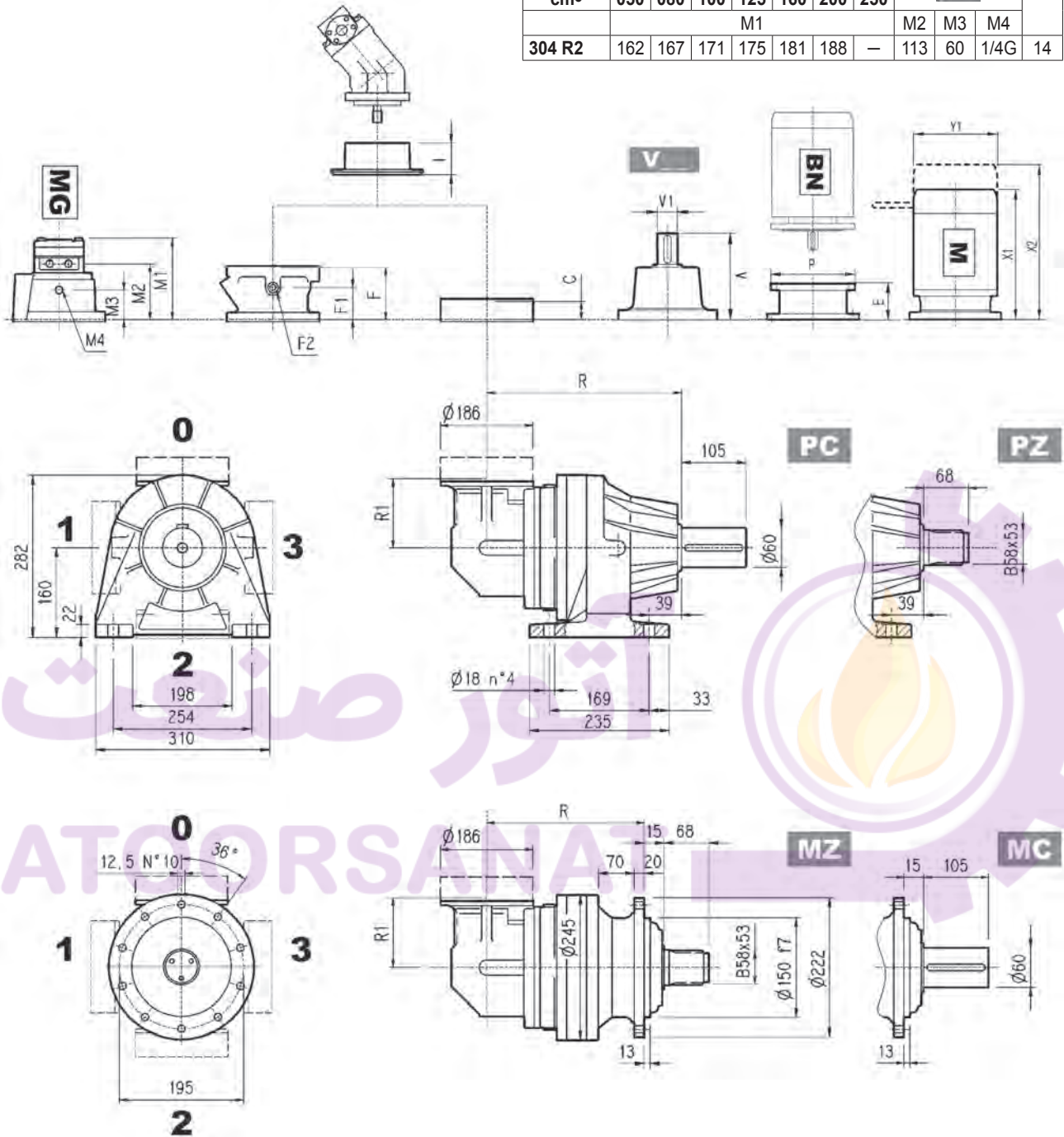
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 304 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 304 L2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 304 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 304 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 304 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 304 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 304 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 304 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |



**304 R**

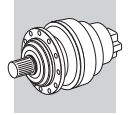
| cm <sup>3</sup> | Hydraulic motor |     |     |     |     |     |     | 471 |    |      | Kg |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 | MG              |     |     |     |     |     |     | M2  | M3 | M4   |    |
|                 | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 | M1              |     |     |     |     |     |     |     |    |      |    |
| <b>304 R2</b>   | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G | 14 |



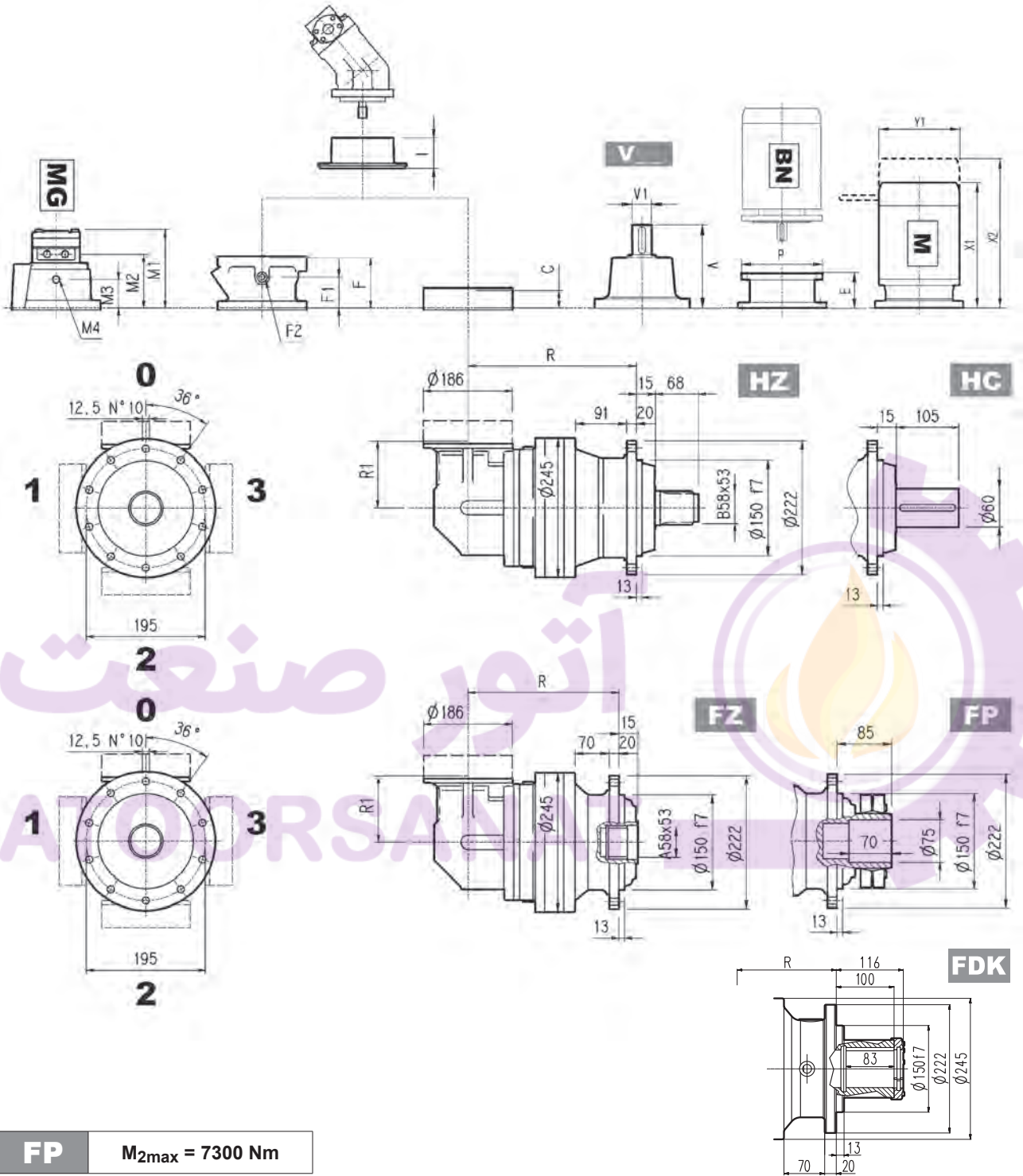
|               | R       |         |         |               | R1  | Kg      |         |         |               |
|---------------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|               | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| <b>304 R2</b> | 217     | 257     | 242     | 217           | 140 | 51      | 60      | 55      | 51            |
| <b>304 R3</b> | 282     | 322     | 307     | 282           | 122 | 52      | 61      | 56      | 52            |
| <b>304 R4</b> | 335     | 375     | 360     | 335           | 122 | 56      | 65      | 60      | 56            |

|               | V     |    |    |     |    |    | C  | Input | I   | Type |    |       |      |       |    |
|---------------|-------|----|----|-----|----|----|----|-------|-----|------|----|-------|------|-------|----|
|               | V     | V1 | Kg | V   | V1 | Kg |    |       |     | F    | F1 | F2    | Type | Input | Kg |
| <b>304 R2</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |
| <b>304 R3</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |
| <b>304 R4</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |





# 304 R



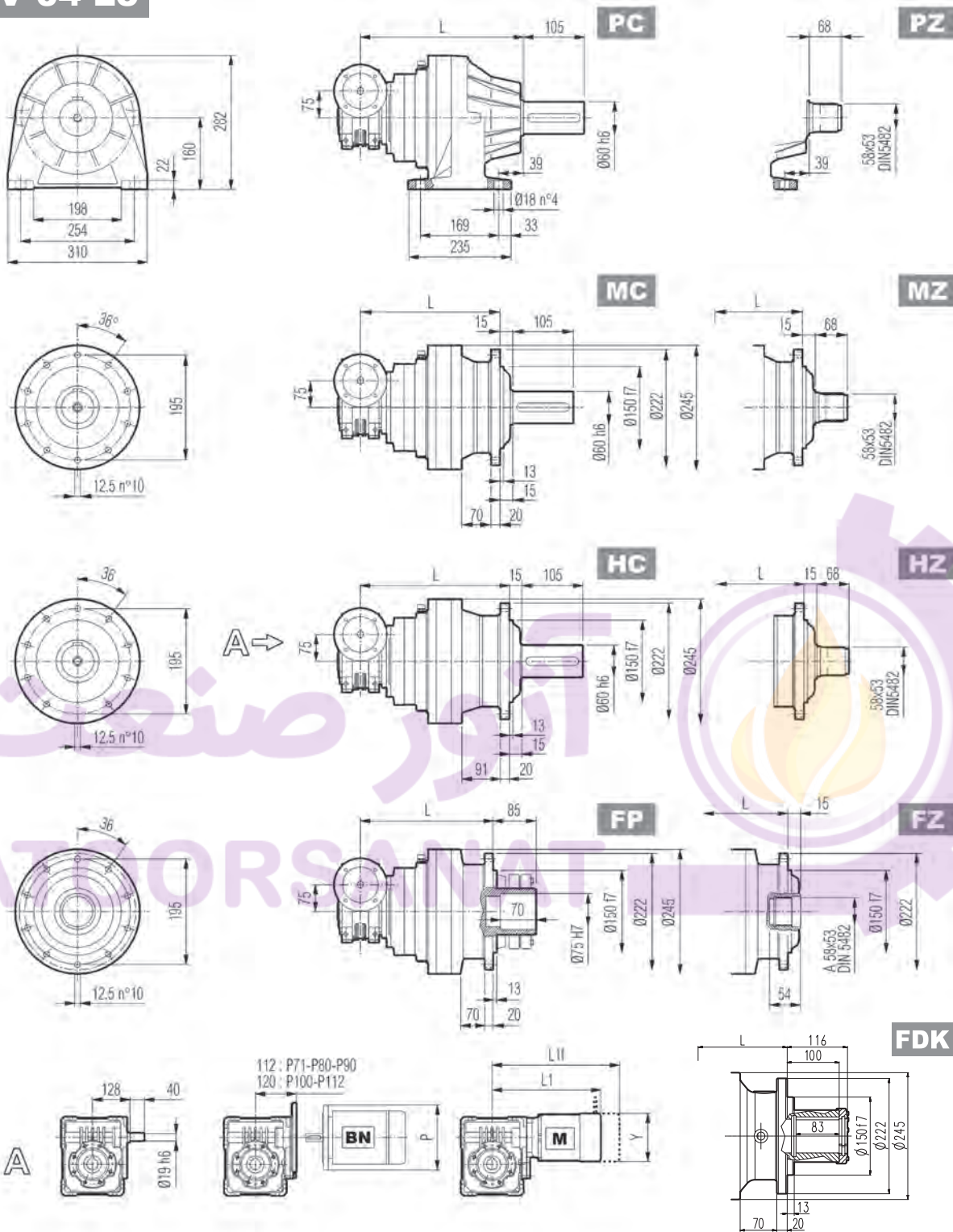
**FP**  $M_{2max} = 7300 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 304 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 304 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 304 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 304 R2 | -       | -   | -   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 304 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | -       | -   | -   |
| 304 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | -       | -   | -   |



**3/V 04 L3**



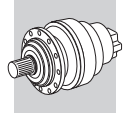
**FP**  $M_{2max} = 7300 \text{ Nm}$

|           | L       |         |         |               | $\overset{\circ}{\text{Kg}}$ |         |         |               | P71 | P80 | P90 | P100 |
|-----------|---------|---------|---------|---------------|------------------------------|---------|---------|---------------|-----|-----|-----|------|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ                      | PC - PZ | HC - HZ | FP - FZ - FDK | P   | P   | P   | P    |
| 3/V 04 L3 | 305     | 345     | 330     | 305           | 47                           | 56      | 51      | 47            | 160 | 200 | 200 | 250  |

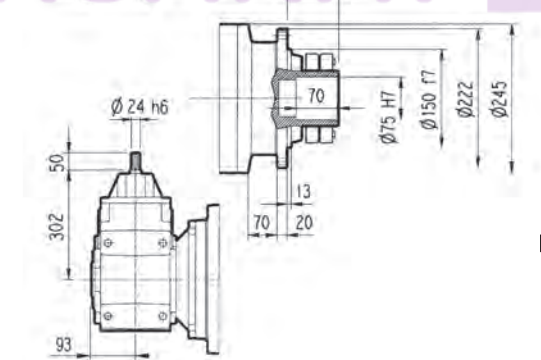
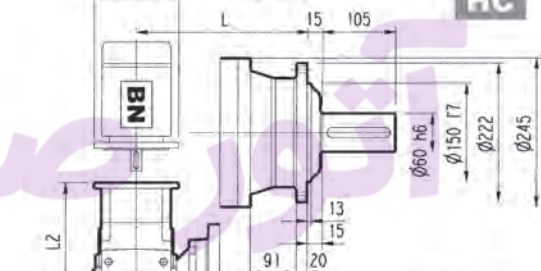
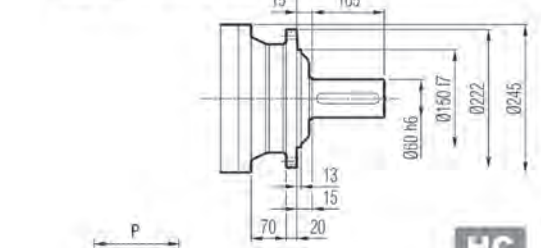
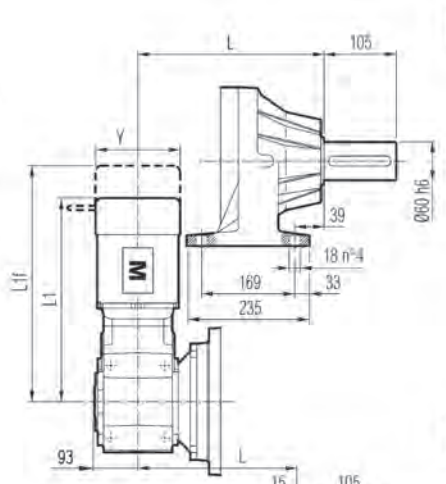
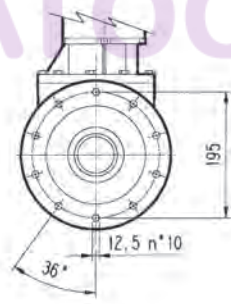
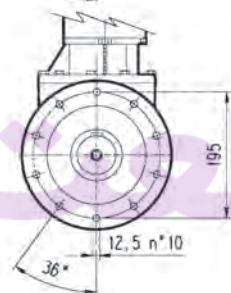
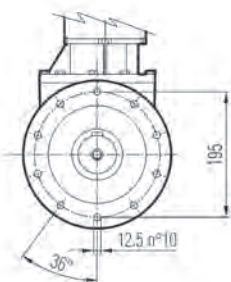
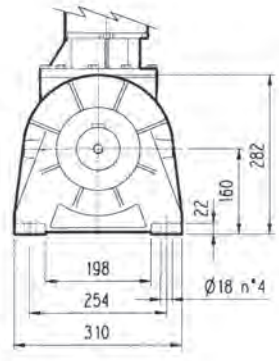
  

|           | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|-----------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | L1      | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 04 L3 | 308     | 369 | 138 | 333      | 409 | 156 | 376      | 472 | 193 | 408      | 499 | 193 |





**3/A 04 L2**



**PC**

**MC**

**HC**

**FP**

**PZ**

**MZ**

**HZ**

**FZ**

**FDK**

**FP**  $M_{2max} = 7300 \text{ Nm}$

| 3/A 04 L2 | L       |     |         |          |         |     |               |     | Kg    | L         |         |         |               |     |     |  |  |
|-----------|---------|-----|---------|----------|---------|-----|---------------|-----|-------|-----------|---------|---------|---------------|-----|-----|--|--|
|           | MC - MZ |     | PC - PZ |          | HC - HZ |     | FP - FZ - FDK |     |       | MC - MZ   | PC - PZ | HC - HZ | FP - FZ - FDK |     |     |  |  |
|           | P63     |     | P71     |          | P80     |     | P90           |     | P100  |           | P112    |         | P132          |     |     |  |  |
|           | L2      | P   | L2      | P        | L2      | P   | L2            | P   | L2    | P         | L2      | P       | L2            | P   |     |  |  |
| 3/A 04 L2 | 263     | 140 | 263     | 160      | 282.5   | 200 | 282.5         | 200 | 292.5 | 250       | 292.5   | 250     | 329           | 457 |     |  |  |
|           | S1 + M1 |     |         | S2 + M2S |         |     | S3 + M3SA     |     |       | S3 + M3LA |         |         | S4 + M4       |     |     |  |  |
| 3/A 04 L2 | L1      | L1f | Y       | L1       | L1f     | Y   | L1            | L1f | Y     | L1        | L1f     | Y       | L1            | L1f | Y   |  |  |
| 3/A 04 L2 | 418     | 439 | 138     | 447      | 517     | 156 | 490           | 487 | 195   | 522       | 538     | 195     | 630           | 738 | 258 |  |  |



304 L

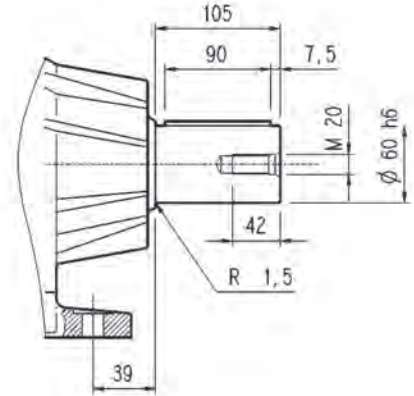
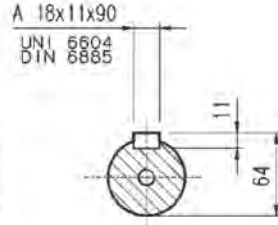
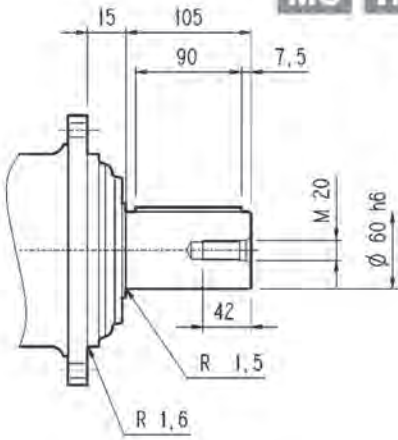
304 R

3/V 04 L3

3/A 04 L2

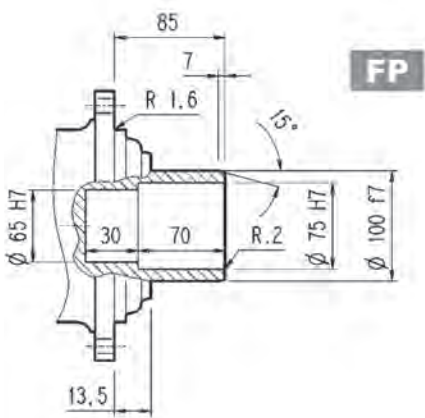
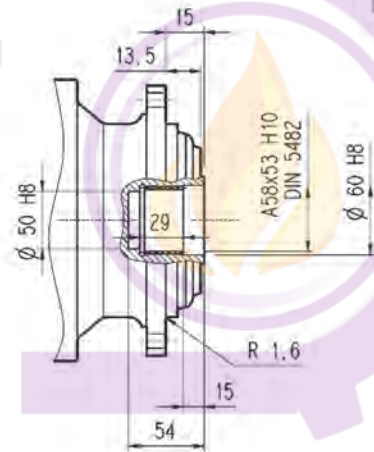
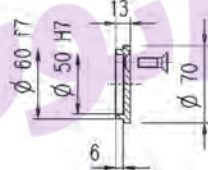
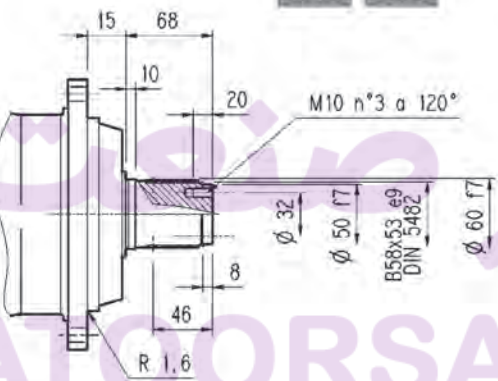
MC HC

PC

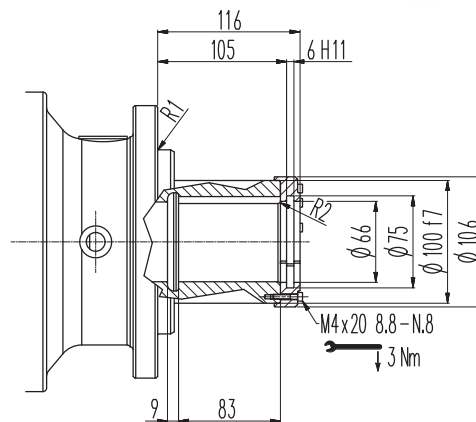


MZ HZ

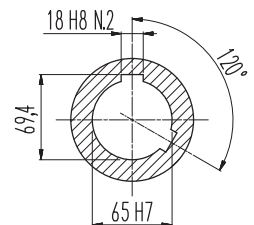
FZ



FP

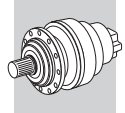


FDK



FP

M<sub>2max</sub> = 7300 Nm



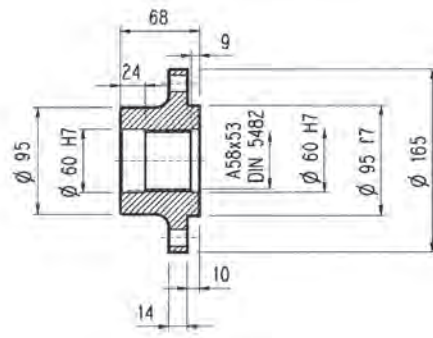
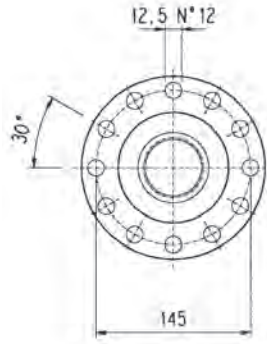
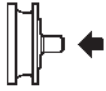
304 L

304 R

3/V 04 L3

3/A 04 L2

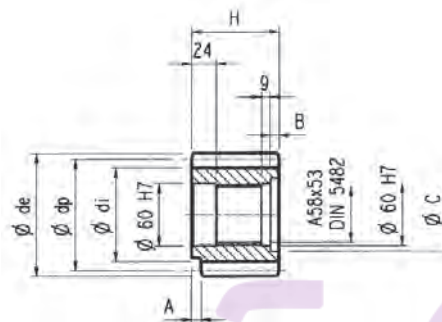
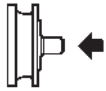
Flange



W0A

Material: Steel C40

Pinions

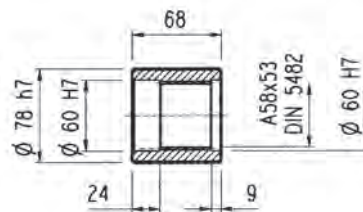
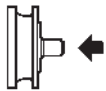


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di   | de    | H  | A  | B  | C  | Material                              |
|------|----|----|-------|-----|------|-------|----|----|----|----|---------------------------------------|
| PCL1 | 5  | 19 | —     | 95  | 82   | 104   | 77 | 12 | 9  | 72 | Steel 39NiCrMo3 hardened and tempered |
| PCL2 | 5  | 19 | —     | 95  | 82   | 104   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PCM  | 5  | 20 | —     | 100 | 87.5 | 110   | 68 | 18 | —  | —  | Steel 18NiCrMo5 case hardened         |
| PCP  | 5  | 22 | —     | 110 | 97.5 | 120   | 68 | 18 | —  | —  | Steel 18NiCrMo5 case hardened         |
| PDE  | 6  | 14 | 0.500 | 84  | 75   | 99.6  | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PDI  | 6  | 18 | 0.500 | 108 | 99   | 123.6 | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PDM  | 6  | 20 | 0.833 | 120 | 115  | 140   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PFD  | 8  | 13 | 0.675 | 104 | 95   | 127.6 | 68 | —  | —  | —  | Steel 18NiCrMo5 case hardened         |
| PFE1 | 8  | 14 | —     | 112 | 92   | 126   | 68 | —  | —  | —  | Steel 18NiCrMo5 case hardened         |
| PFE2 | 8  | 14 | —     | 112 | 92   | 126   | 80 | —  | 12 | 72 | Steel 18NiCrMo5 case hardened         |
| PFF  | 8  | 15 | —     | 120 | 100  | 136   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PFG  | 8  | 22 | —     | 176 | 156  | 190   | 77 | 12 | 10 | 71 | Steel 39NiCrMo3 hardened and tempered |
| PHG  | 10 | 16 | 0.500 | 160 | 145  | 188   | 75 | —  | 7  | 72 | Steel 39NiCrMo3 hardened and tempered |

Sleeve coupling



M0A

Material: Steel 16CrNi4

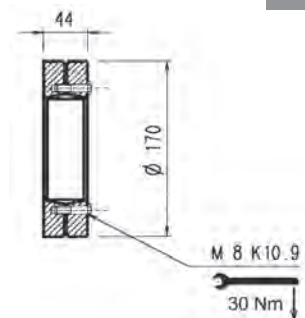
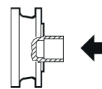
Splined bars



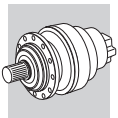
B0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

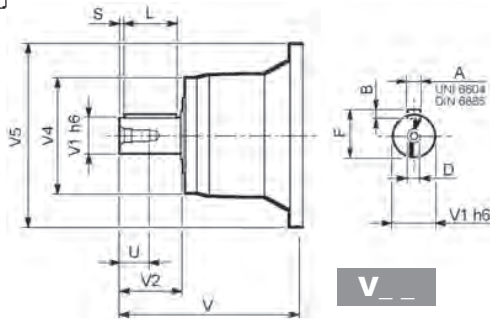


G0A

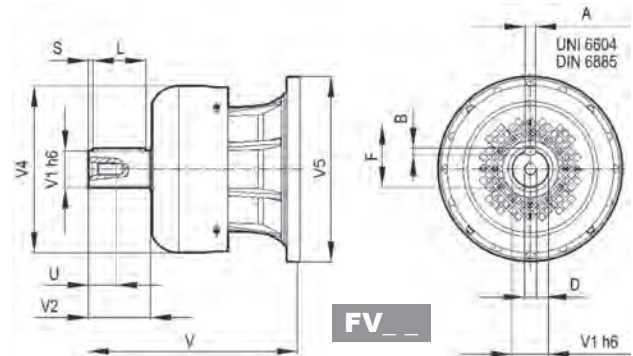


304 L

304 R



V \_\_

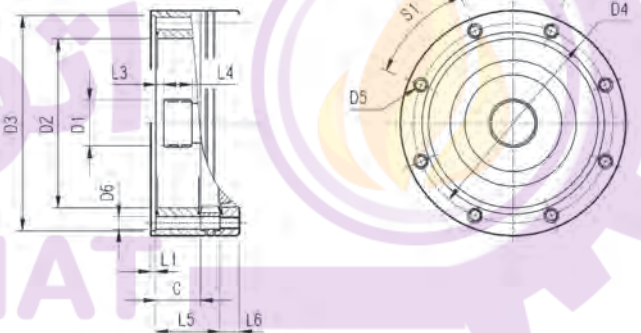


FV \_\_

|              |       | V     | V1 | V2 | V4    | V5  | A  | B | F    | L  | S | D   | U  |
|--------------|-------|-------|----|----|-------|-----|----|---|------|----|---|-----|----|
| 304 L1       | V05B  | 239   | 48 | 82 | 155   | 245 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
|              | FV05B | 276   | 48 | 82 | 219.5 | 244 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
| 304 L2       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 304 L3       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 304 L4       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 304 R2-R3-R4 | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |

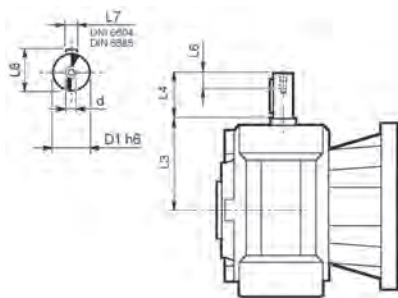
304 L

304 R



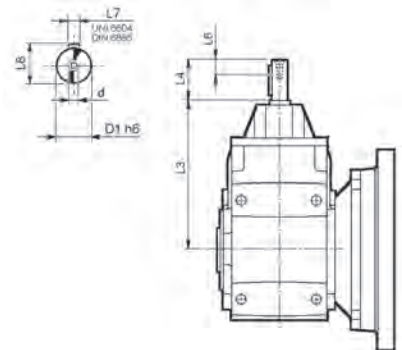
|              |      | C  | D1            | D2  | D3     | D4  | D5      | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1  | Input |
|--------------|------|----|---------------|-----|--------|-----|---------|----|----|----|----|----|-----|----|-----|-----|-------|
| 304 L1       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | —   | 18 | 45° | 45° | A     |
| 304 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 65  | 18 | 45° | 45° | A     |
| 304 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 118 | 18 | 45° | 45° | A     |
| 304 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 171 | 18 | 45° | 45° | A     |
| 304 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45° | A     |

3/V 04 L3



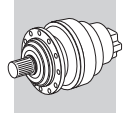
|              | D1 h6 | L3  | L4 | L6 | L7 | L8   | d  |
|--------------|-------|-----|----|----|----|------|----|
| 3/V 04 L3_HS | 19    | 128 | 40 | 16 | 6  | 21.5 | M6 |

3/A 04 L2



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/A 04 L2_HS | 24    | 302 | 50 | 19 | 8  | 27 | M8 |





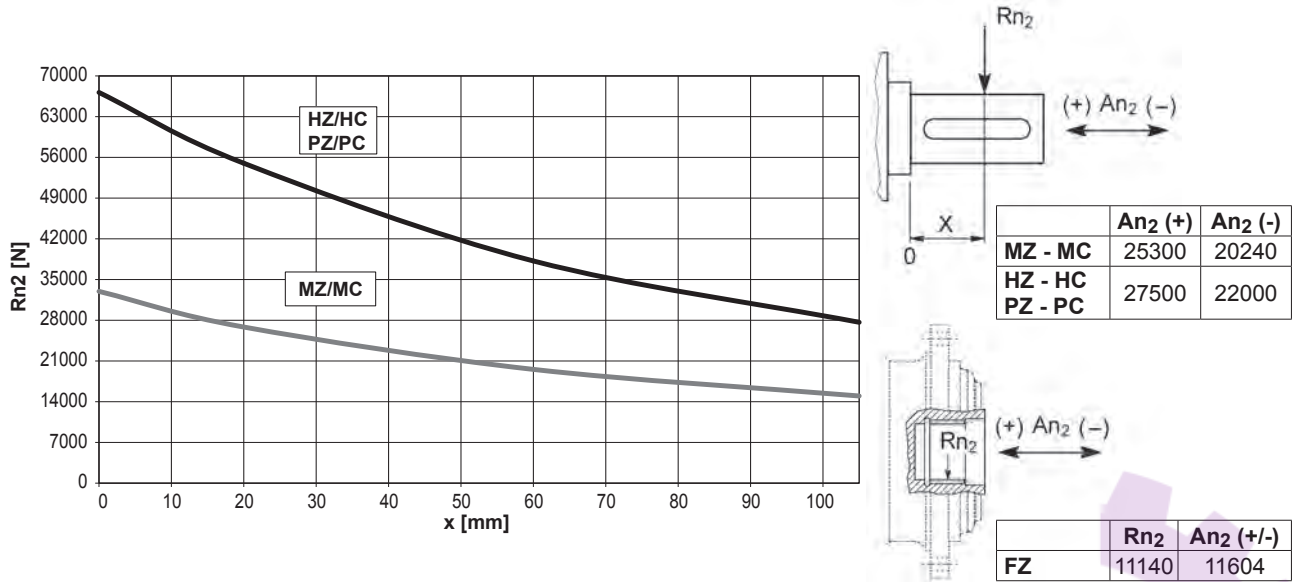
**304 L**

**304 R**

**3/V 04 L3**

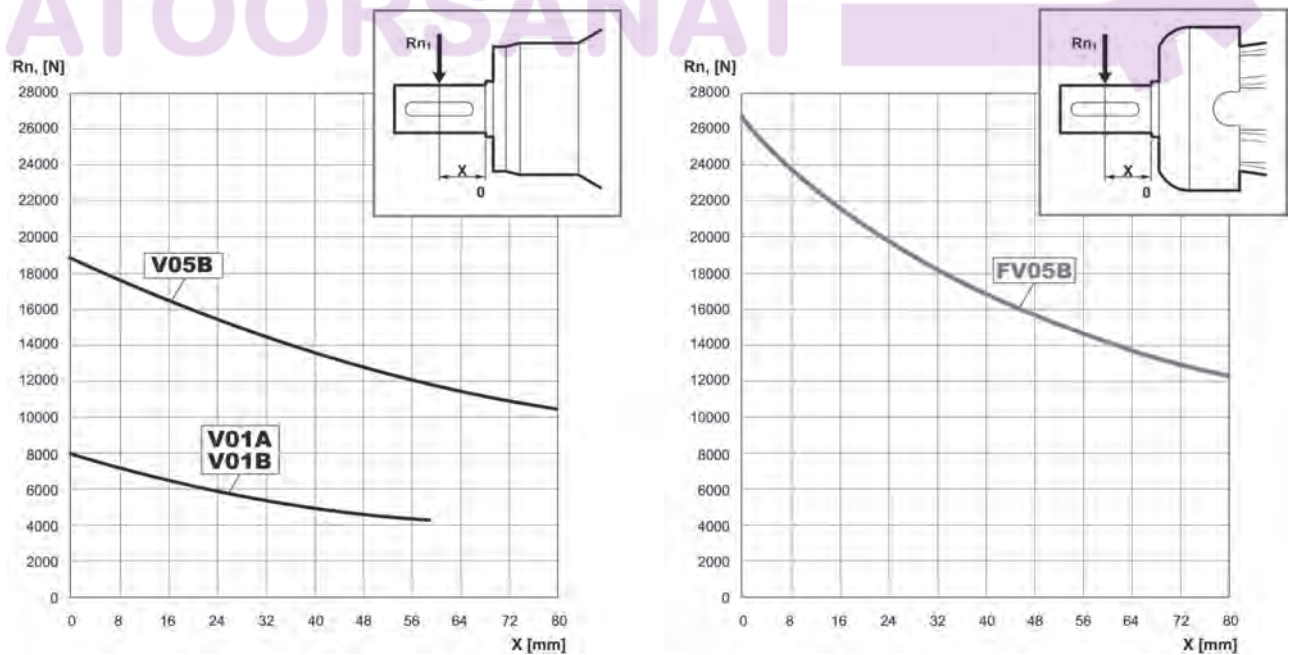
**3/A 04 L2**

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |         |                   |        |        |         |
|--|------------------------|-------|---------|-------------------|--------|--------|---------|
|  |                        | 10000 | 25000   | 50000             | 100000 | 500000 | 1000000 |
|  | $fh_2$                 | FZ    | MZ - MC | HZ - HC - PZ - PC |        |        |         |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 1.48  | 1.48    | 1.23              | 1.00   | 0.62   | 0.50    |

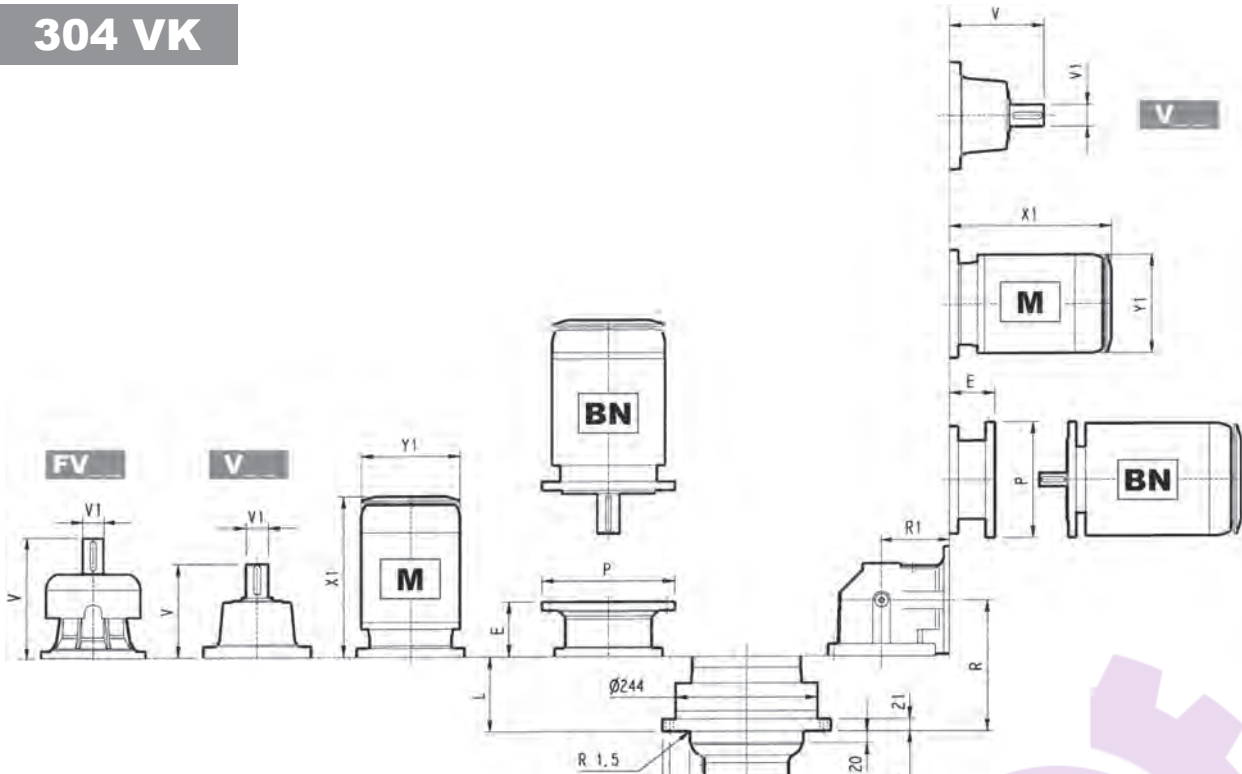
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  | $fh_1$                 | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |

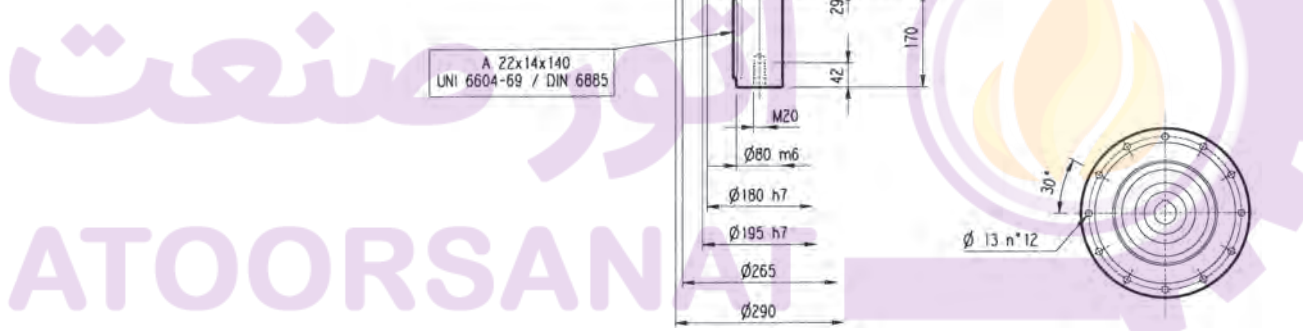


### 304 VK



### 304 L\_VK

### 304 R\_VK

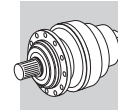


|        | L   | V  |       |    |    |     |    | V1 |     |    |    |   |    | P71 |    | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |     |     |
|--------|-----|----|-------|----|----|-----|----|----|-----|----|----|---|----|-----|----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|-----|
|        |     | Kg | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg  | V  | V1  | E   | P   | E   | P    | E   | P    | E   | P    | E   | P    | E   | P    | E   | P    |     |     |     |
| 304 L1 | 51  | 65 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —   | —  | 65  | 160 | 84  | 200 | 84   | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | 144  | 350 | 174 | 400 |
| 304 L2 | 116 | 73 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —   | 65 | 160 | 84  | 200 | 84  | 200  | 94  | 250  | 94  | 250  | 114 | 300  | 144 | 350  | —   | —    | —   | —   |     |
| 304 L3 | 169 | 76 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —   | 65 | 160 | 84  | 200 | 84  | 200  | 94  | 250  | 94  | 250  | 114 | 300  | 144 | 350  | —   | —    | —   | —   |     |
| 304 L4 | 222 | 80 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —   | 65 | 160 | 84  | 200 | 84  | 200  | 94  | 250  | 94  | 250  | 114 | 300  | 144 | 350  | —   | —    | —   | —   |     |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 304 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 304 L2 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 304 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 304 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |

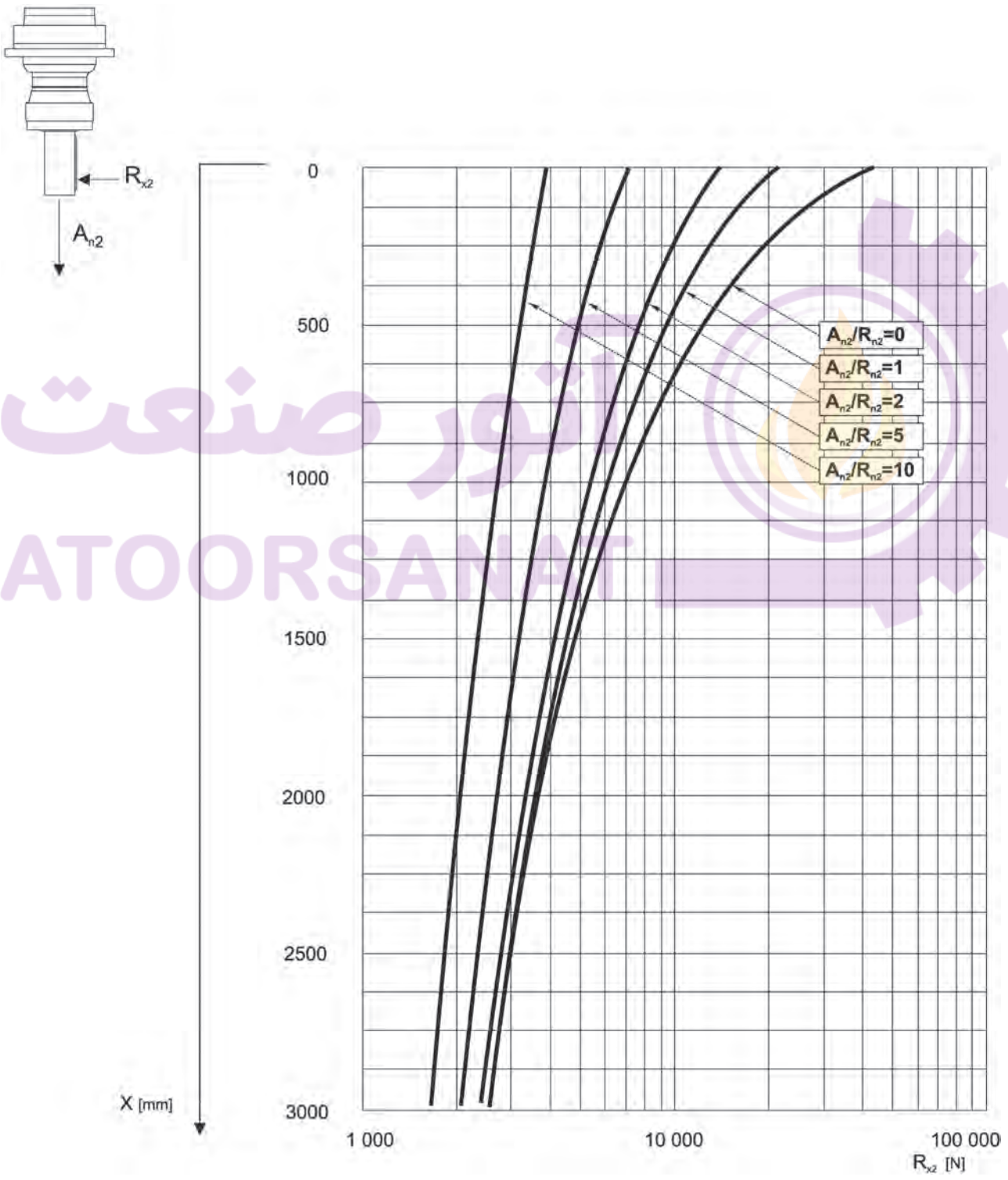
|        | R   | R1  | Kg | V     |    |    |     |    |    | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|----|-------|----|----|-----|----|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        |     |     |    | V     | V1 | Kg | V   | V1 | Kg | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 304 R2 | 143 | 140 | 85 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 304 R3 | 208 | 122 | 86 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 304 R4 | 261 | 122 | 90 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

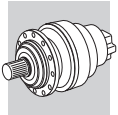
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 304 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 304 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |
| 304 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | —       | —   | —   |



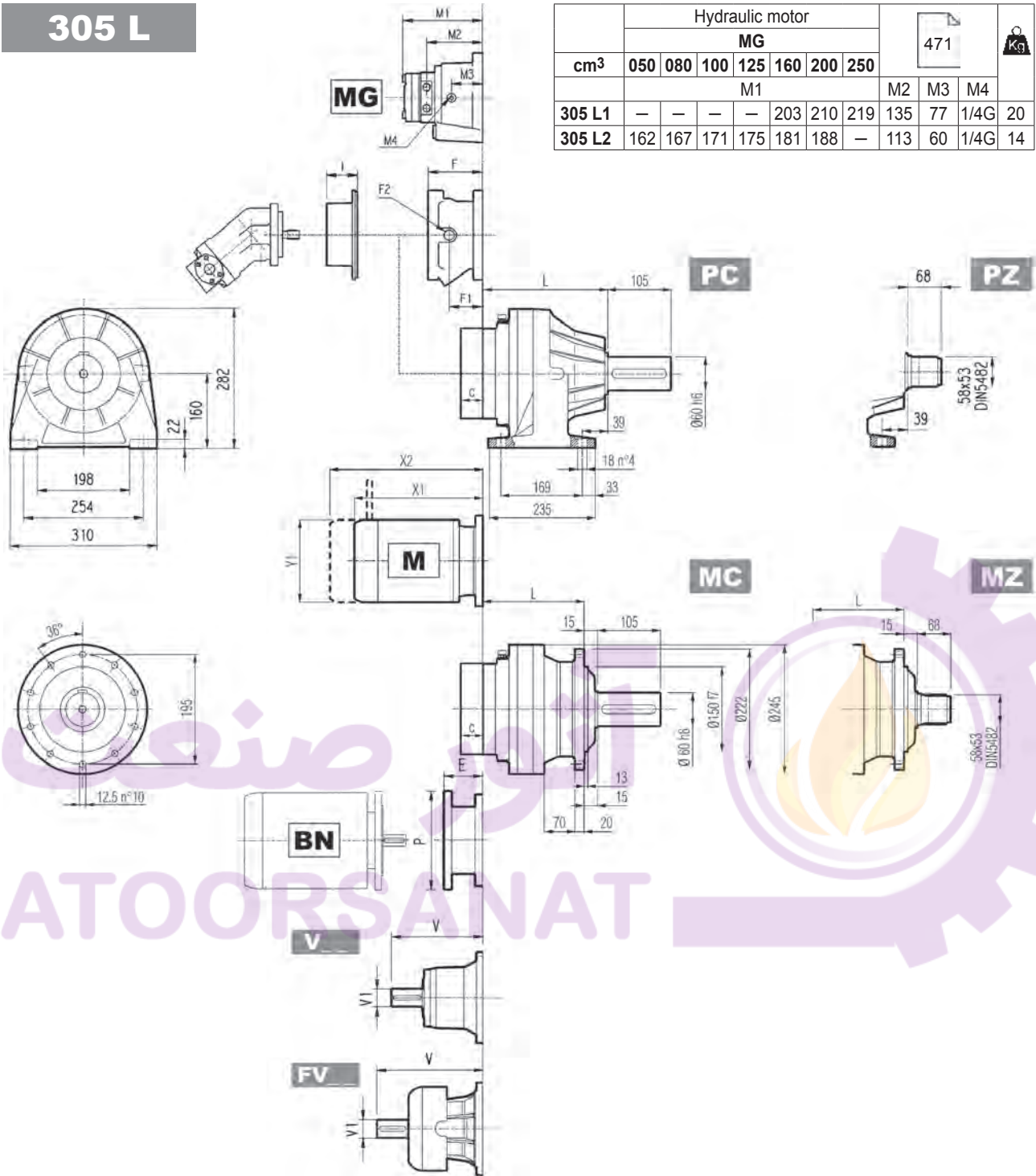
## 304 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





**305 L**

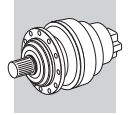


|                 |  | Hydraulic motor |     |     |     |     |     | 471 |     |    | Kg   |    |
|-----------------|--|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 |  | MG              |     |     |     |     |     |     |     |    |      |    |
| cm <sup>3</sup> |  | 050             | 080 | 100 | 125 | 160 | 200 | 250 | M2  | M3 | M4   |    |
|                 |  | M1              |     |     |     |     |     | M2  | M3  | M4 |      |    |
| 305 L1          |  | —               | —   | —   | —   | 203 | 210 | 219 | 135 | 77 | 1/4G | 20 |
| 305 L2          |  | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G | 14 |

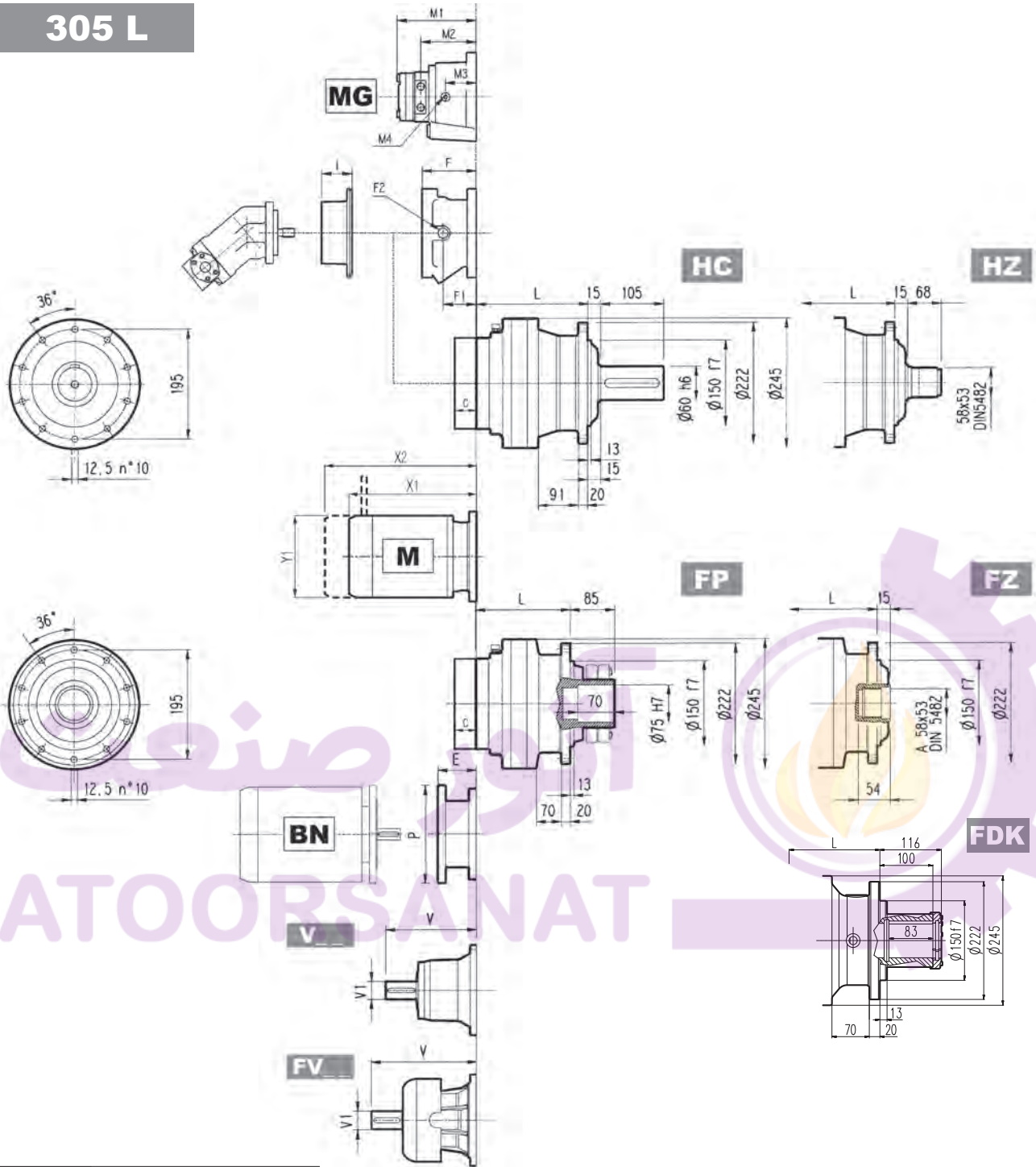
|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 305 L1 | 143     | 183     | 168     | 143           | 36      | 45      | 40      | 36            |
| 305 L2 | 208     | 248     | 233     | 208           | 43      | 52      | 47      | 43            |
| 305 L3 | 261     | 301     | 286     | 261           | 47      | 56      | 51      | 47            |
| 305 L4 | 314     | 354     | 339     | 314           | 51      | 60      | 55      | 51            |

|        | V     |    |    | Kg  |    |    | V   |    |    | Kg |    |    | C  | Input | I   | F   |    |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1 | F2    |      |       |    |
| 305 L1 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | —   | 145 | 95 | 1/4 G | 5    | A     | 16 |
| 305 L2 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 305 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 305 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |





# 305 L



**FP**  $M_{2max} = 7500 \text{ Nm}$

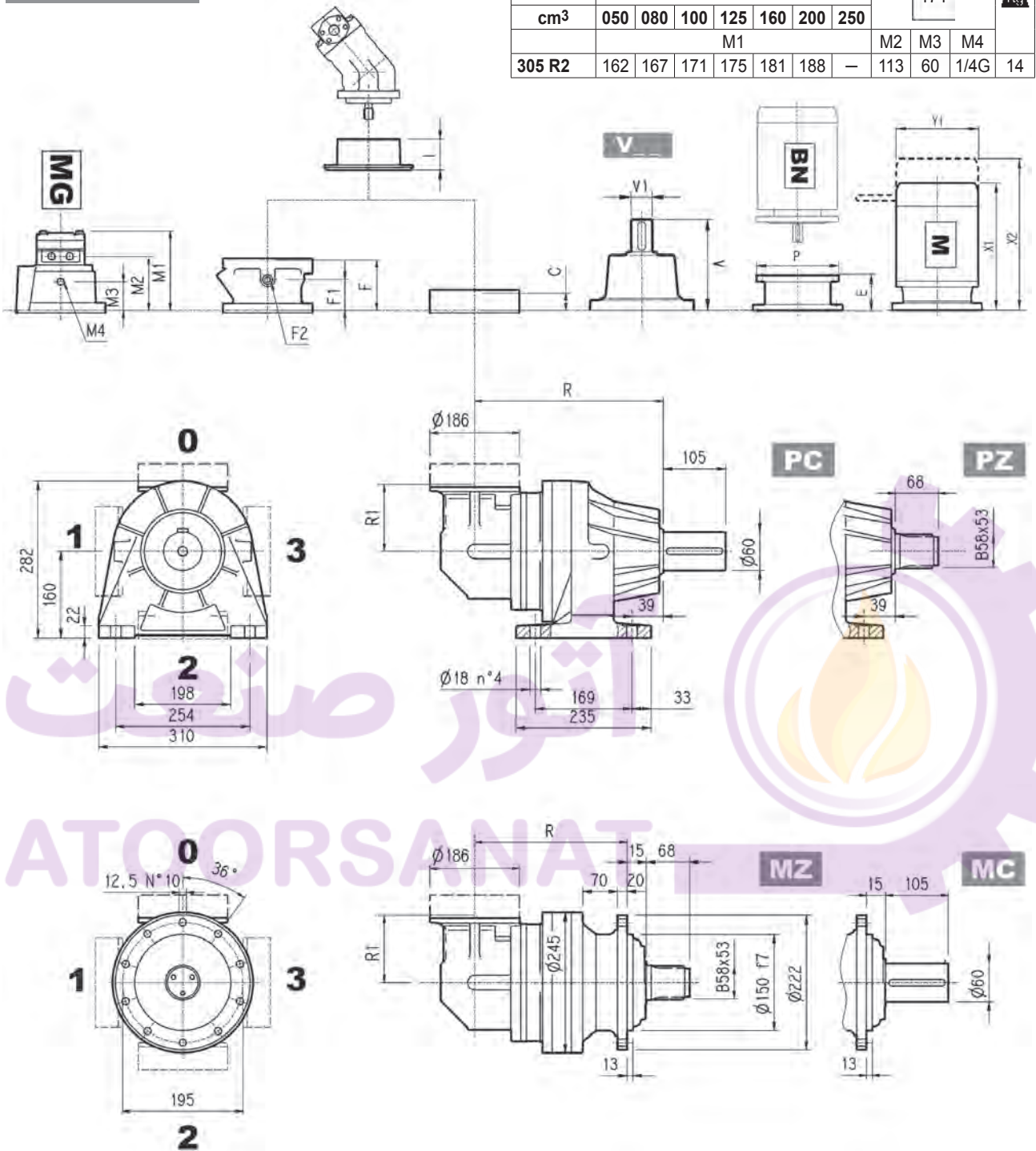
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 305 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 305 L2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 305 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 305 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 305 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 305 L2 | —       | —   | —   | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 305 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 305 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |



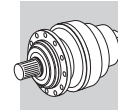
**305 R**

| cm <sup>3</sup> | Hydraulic motor |     |     |     |     |     |     | 471 | Kg |      |    |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 | MG              |     |     |     |     |     |     |     |    |      |    |
|                 | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 | M1              |     |     |     |     |     |     | M2  | M3 | M4   |    |
| <b>305 R2</b>   | 162             | 167 | 171 | 175 | 181 | 188 | —   | 113 | 60 | 1/4G | 14 |

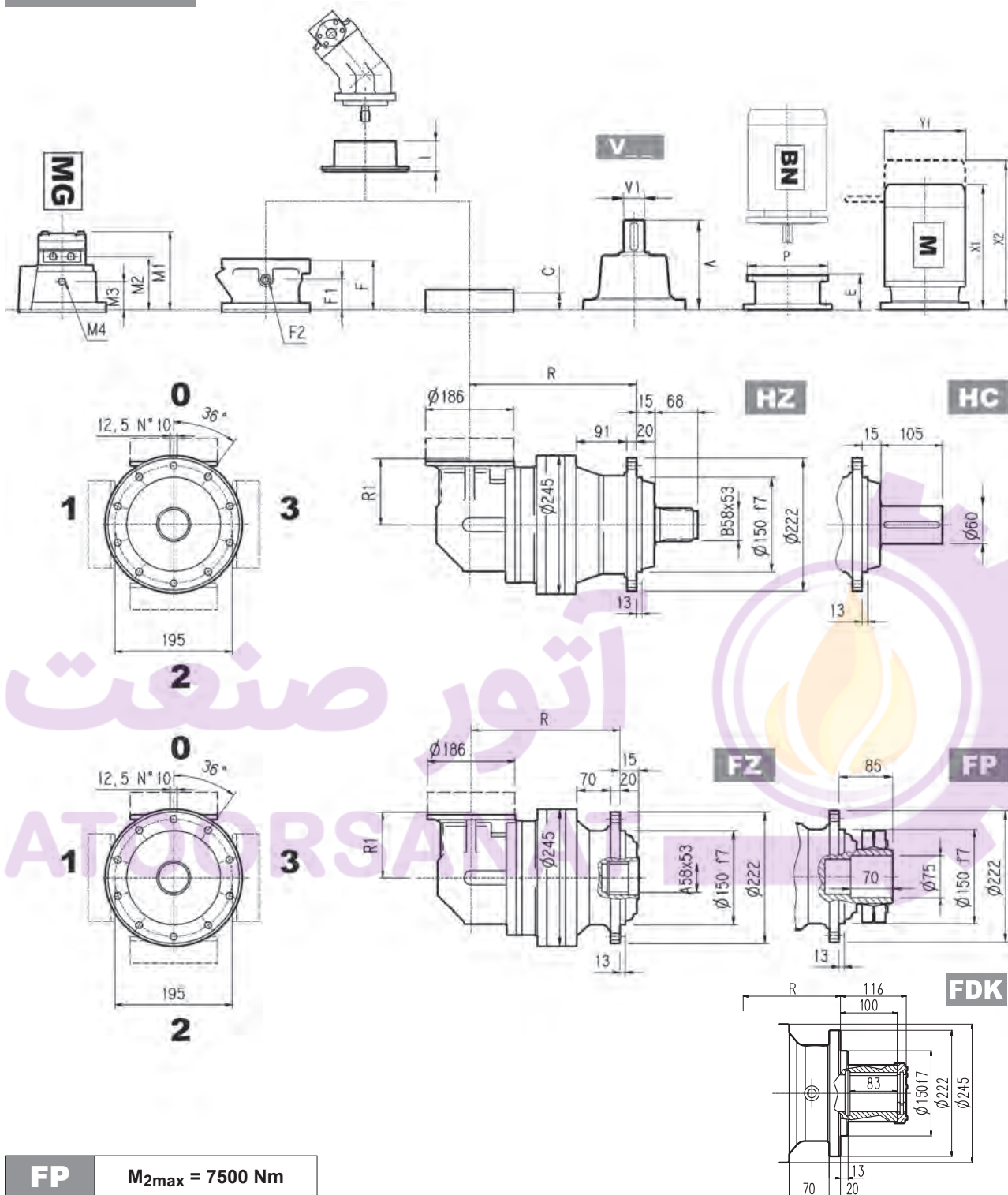


|               | R       |         |         |               | R1  | Kg      |         |         |               |
|---------------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|               | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| <b>305 R2</b> | 235     | 375     | 260     | 235           | 140 | 56      | 65      | 60      | 56            |
| <b>305 R3</b> | 300     | 340     | 325     | 300           | 122 | 57      | 66      | 61      | 57            |
| <b>305 R4</b> | 353     | 393     | 378     | 353           | 122 | 61      | 70      | 65      | 61            |

|               | V     |    |    |     |    |    | C  | Input | I   | Type |    |       |      |       |    |
|---------------|-------|----|----|-----|----|----|----|-------|-----|------|----|-------|------|-------|----|
|               | V     | V1 | Kg | V   | V1 | Kg |    |       |     | F    | F1 | F2    | Type | Input | Kg |
| <b>305 R2</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |
| <b>305 R3</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |
| <b>305 R4</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |



# 305 R

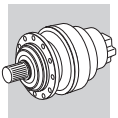


**FP**  $M_{2max} = 7500 \text{ Nm}$

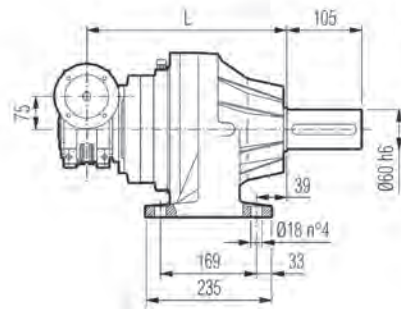
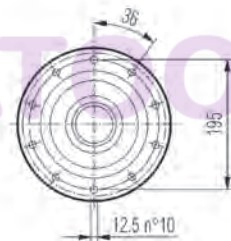
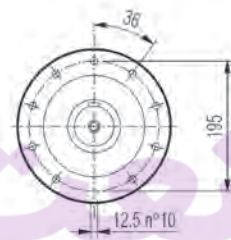
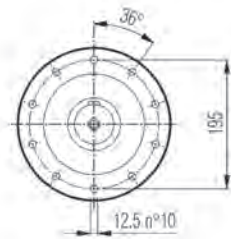
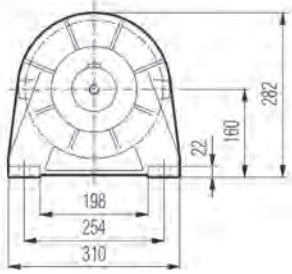
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 305 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 305 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 305 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 305 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 305 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 305 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |

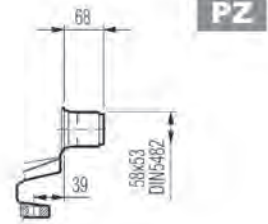




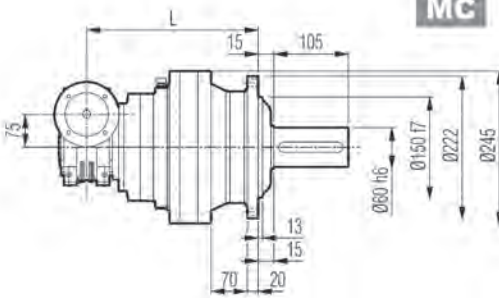
**3/V 05 L3**



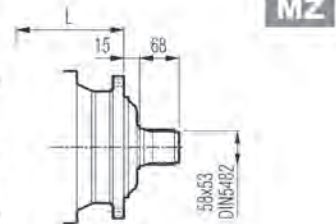
**PC**



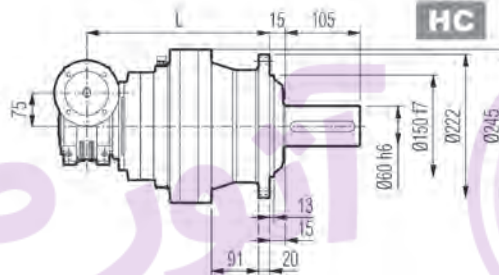
**PZ**



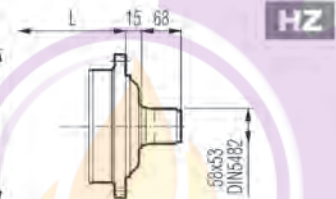
**MC**



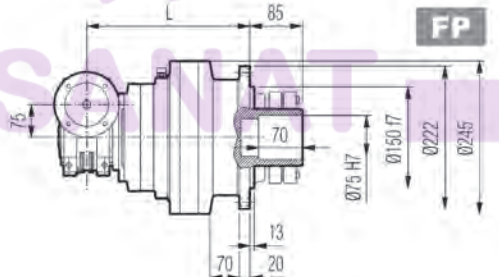
**MZ**



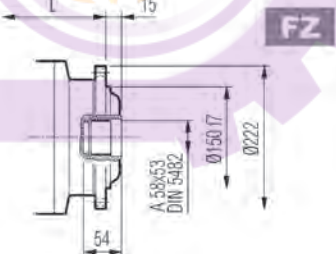
**HC**



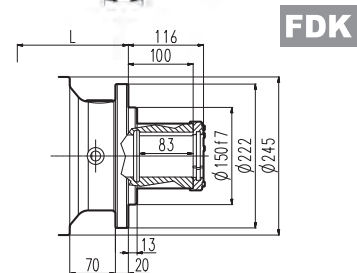
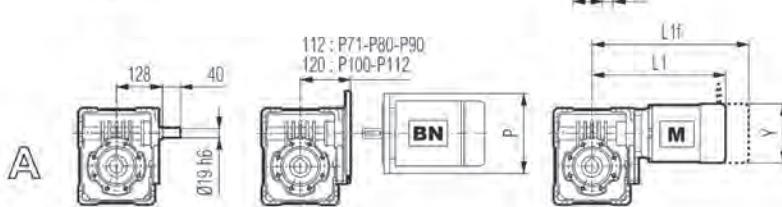
**HZ**



**FP**



**FZ**



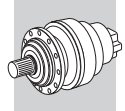
**FDK**

**FP**  $M_{2max} = 7500 \text{ Nm}$

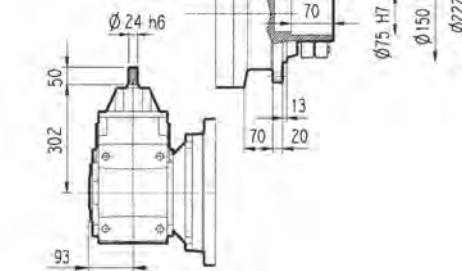
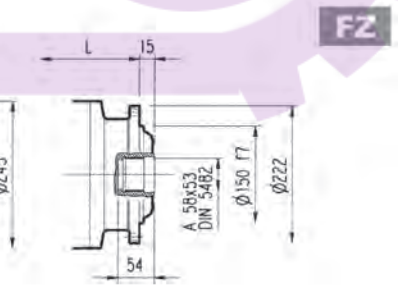
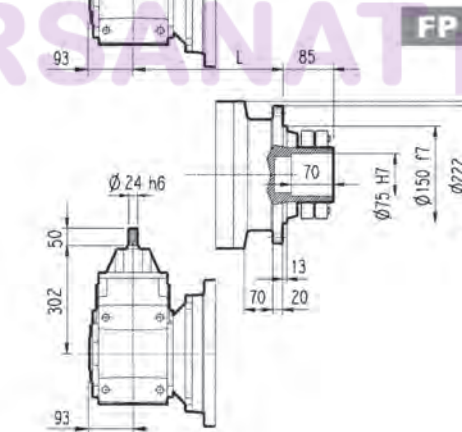
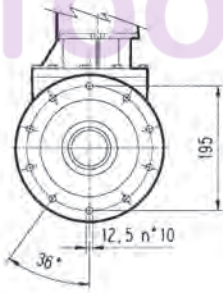
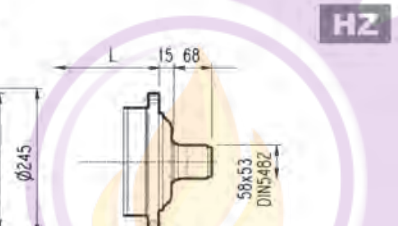
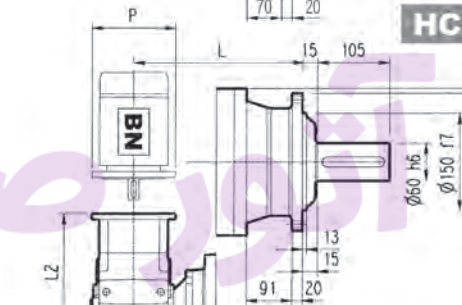
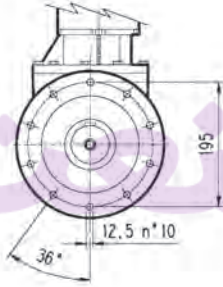
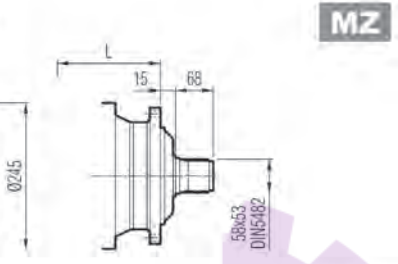
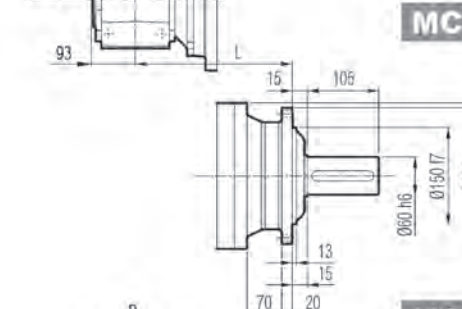
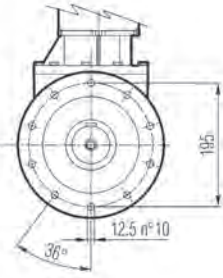
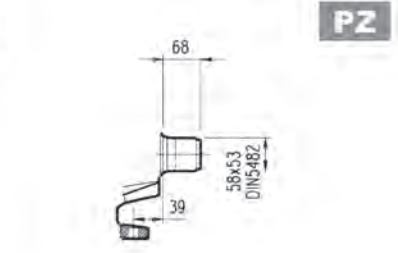
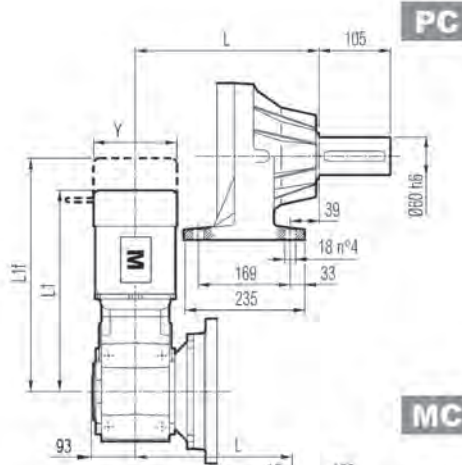
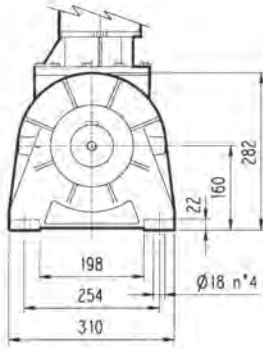
|           | L       |         |         |               | Kg | P71 | P80 | P90 | P100 |
|-----------|---------|---------|---------|---------------|----|-----|-----|-----|------|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |    |     |     |     |      |
| 3/V 05 L3 | 323     | 363     | 348     | 323           | 51 | 160 | 200 | 200 | 250  |

|           | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|-----------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | L1      | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 05 L3 | 308     | 369 | 138 | 333      | 409 | 156 | 376      | 472 | 193 | 408      | 499 | 193 |





3/A 05 L2



**FP** M<sub>2max</sub> = 7500 Nm

| 3/A 05 L2 | L       |     |         |          |         |     |               |     | Kg      |           |       |         |         |               |     |  |
|-----------|---------|-----|---------|----------|---------|-----|---------------|-----|---------|-----------|-------|---------|---------|---------------|-----|--|
|           | MC - MZ |     | PC - PZ |          | HC - HZ |     | FP - FZ - FDK |     | MC - MZ | PC - PZ   |       | HC - HZ |         | FP - FZ - FDK |     |  |
| 3/A 05 L2 | 276     | 316 | 301     | 276      | 90      | 105 | 100           | 90  |         |           |       |         |         |               |     |  |
| 3/A 05 L2 | P63     |     | P71     |          | P80     |     | P90           |     | P100    |           | P112  |         | P132    |               |     |  |
|           | L2      | P   | L2      | P        | L2      | P   | L2            | P   | L2      | P         | L2    | P       | L2      | P             |     |  |
| 3/A 05 L2 | 263     | 140 | 263     | 160      | 282.5   | 200 | 282.5         | 200 | 292.5   | 250       | 292.5 | 250     | 329     | 457           |     |  |
| 3/A 05 L2 | S1 + M1 |     |         | S2 + M2S |         |     | S3 + M3SA     |     |         | S3 + M3LA |       |         | S4 + M4 |               |     |  |
|           | L1      | L1f | Y       | L1       | L1f     | Y   | L1            | L1f | Y       | L1        | L1f   | Y       | L1      | L1f           | Y   |  |
| 3/A 05 L2 | 418     | 439 | 138     | 447      | 517     | 156 | 490           | 487 | 195     | 522       | 538   | 195     | 630     | 738           | 258 |  |



305 L

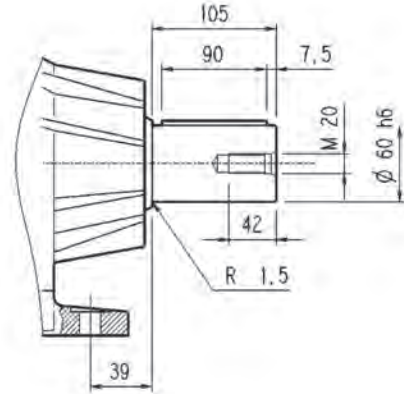
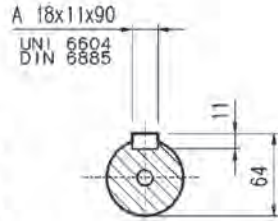
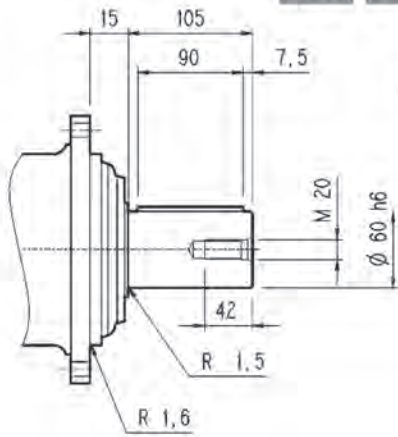
305 R

3/V 05 L3

3/A 05 L2

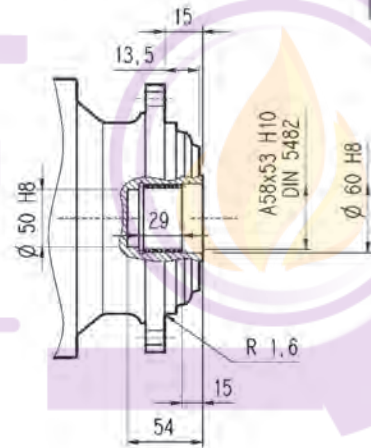
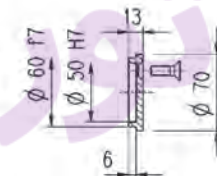
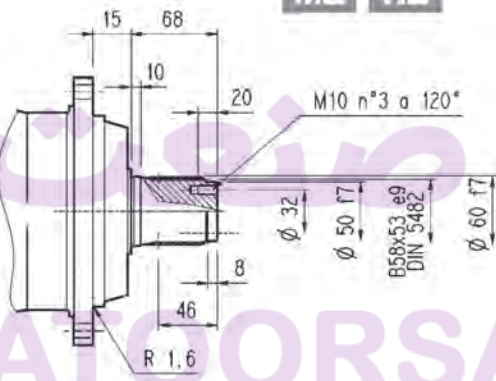
MC HC

PC



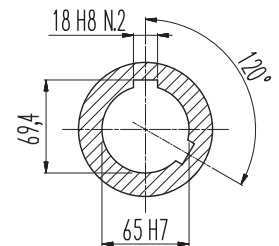
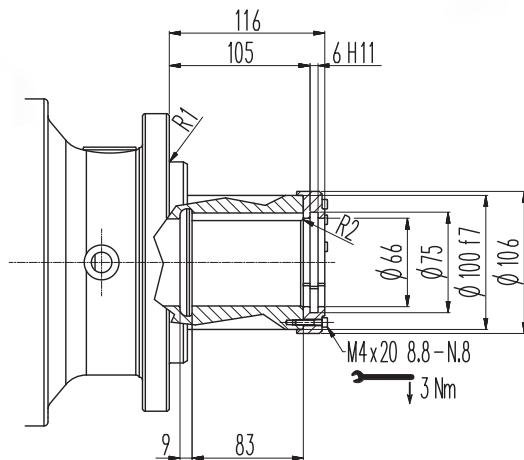
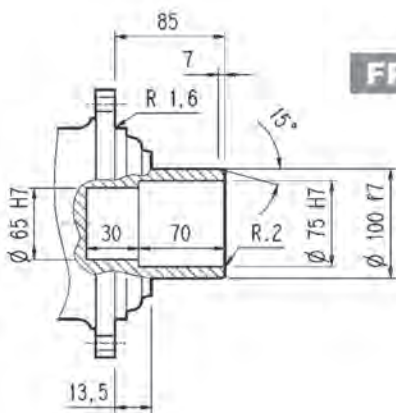
MZ HZ

FZ



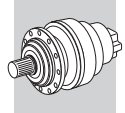
FP

FDK



FP

$M_{2max} = 7500 \text{ Nm}$



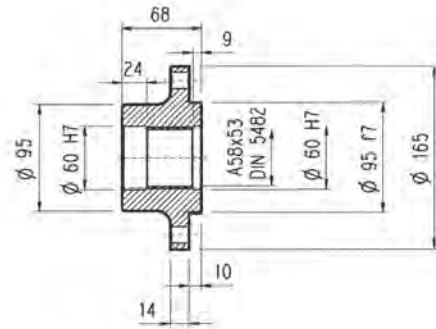
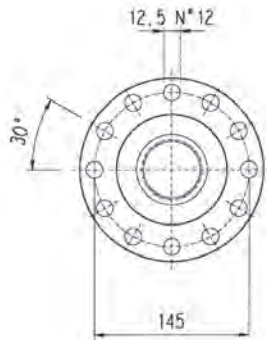
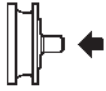
305 L

305 R

3/V 05 L3

3/A 05 L2

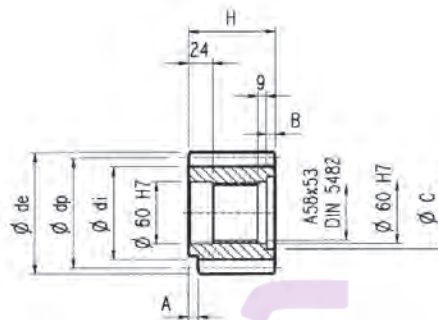
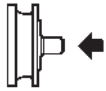
Flange



W0A

Material: Steel C40

Pinions

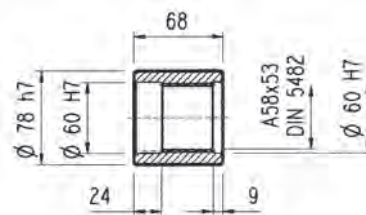
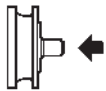


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di   | de    | H  | A  | B  | C  | Material                              |
|------|----|----|-------|-----|------|-------|----|----|----|----|---------------------------------------|
| PCL1 | 5  | 19 | —     | 95  | 82   | 104   | 77 | 12 | 9  | 72 | Steel 39NiCrMo3 hardened and tempered |
| PCL2 | 5  | 19 | —     | 95  | 82   | 104   | 68 | —  | —  | —  |                                       |
| PCM  | 5  | 20 | —     | 100 | 87.5 | 110   | 68 | 18 | —  | —  | Steel 18NiCrMo5 case hardened         |
| PCP  | 5  | 22 | —     | 110 | 97.5 | 120   | 68 | 18 | —  | —  |                                       |
| PDE  | 6  | 14 | 0.500 | 84  | 75   | 99.6  | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PDI  | 6  | 18 | 0.500 | 108 | 99   | 123.6 | 68 | —  | —  | —  |                                       |
| PDM  | 6  | 20 | 0.833 | 120 | 115  | 140   | 68 | —  | —  | —  |                                       |
| PFD  | 8  | 13 | 0.675 | 104 | 95   | 127.6 | 68 | —  | —  | —  |                                       |
| PFE1 | 8  | 14 | —     | 112 | 92   | 126   | 68 | —  | —  | —  | Steel 18NiCrMo5 case hardened         |
| PFE2 | 8  | 14 | —     | 112 | 92   | 126   | 80 | —  | 12 | 72 |                                       |
| PFF  | 8  | 15 | —     | 120 | 100  | 136   | 68 | —  | —  | —  | Steel 39NiCrMo3 hardened and tempered |
| PFP  | 8  | 22 | —     | 176 | 156  | 190   | 77 | 12 | 10 | 71 |                                       |
| PHG  | 10 | 16 | 0.500 | 160 | 145  | 188   | 75 | —  | 7  | 72 |                                       |

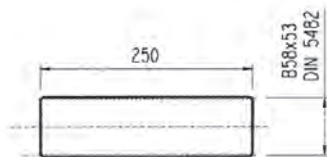
Sleeve coupling



MOA

Material: Steel 16CrNi4

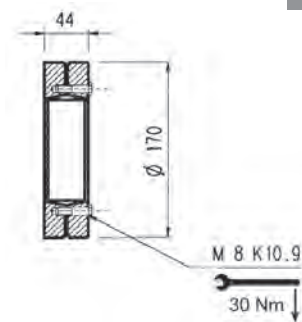
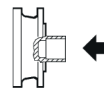
Splined bars



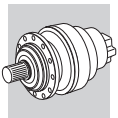
B0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

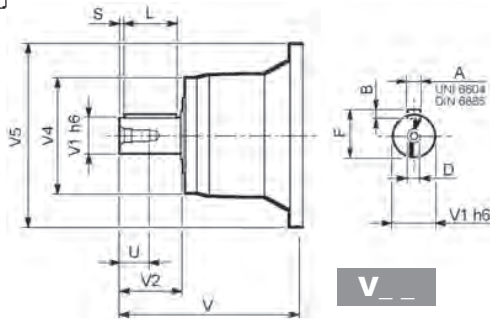


G0A

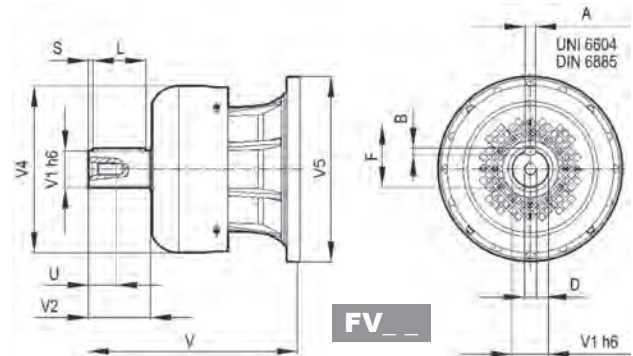


305 L

305 R



V \_\_

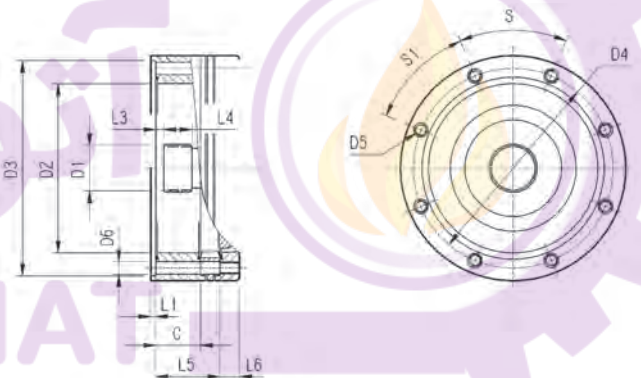


FV \_\_

|              |       | V     | V1 | V2 | V4    | V5  | A  | B | F    | L  | S | D   | U  |
|--------------|-------|-------|----|----|-------|-----|----|---|------|----|---|-----|----|
| 305 L1       | V05B  | 239   | 48 | 82 | 155   | 245 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
|              | FV05B | 276   | 48 | 82 | 219.5 | 244 | 14 | 9 | 51.5 | 70 | 6 | M16 | 36 |
| 305 L2       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 305 L3       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 305 L4       | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |
| 305 R2-R3-R4 | V01A  | 137.5 | 24 | 36 | 120   | 186 | 8  | 7 | 27   | 30 | 3 | M8  | 19 |
|              | V01B  | 158   | 38 | 58 | 120   | 186 | 10 | 8 | 41   | 50 | 4 | M12 | 28 |

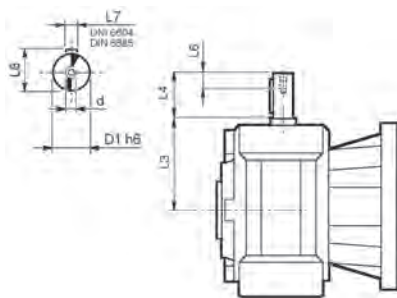
305 L

305 R



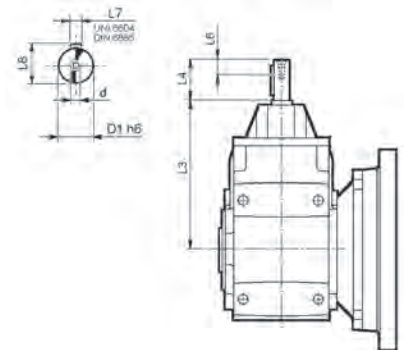
|              |      | C  | D1            | D2  | D3     | D4  | D5      | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1  | Input |
|--------------|------|----|---------------|-----|--------|-----|---------|----|----|----|----|----|-----|----|-----|-----|-------|
| 305 L1       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | —   | 18 | 45° | 45° | A     |
| 305 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 65  | 18 | 45° | 45° | A     |
| 305 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 118 | 18 | 45° | 45° | A     |
| 305 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 171 | 18 | 45° | 45° | A     |
| 305 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8 | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45° | A     |

3/V 05 L3



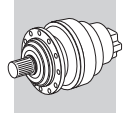
|              | D1 h6 | L3  | L4 | L6 | L7 | L8   | d  |
|--------------|-------|-----|----|----|----|------|----|
| 3/V 05 L3_HS | 19    | 128 | 40 | 16 | 6  | 21.5 | M6 |

3/A 05 L2



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/A 05 L2_HS | 24    | 302 | 50 | 19 | 8  | 27 | M8 |





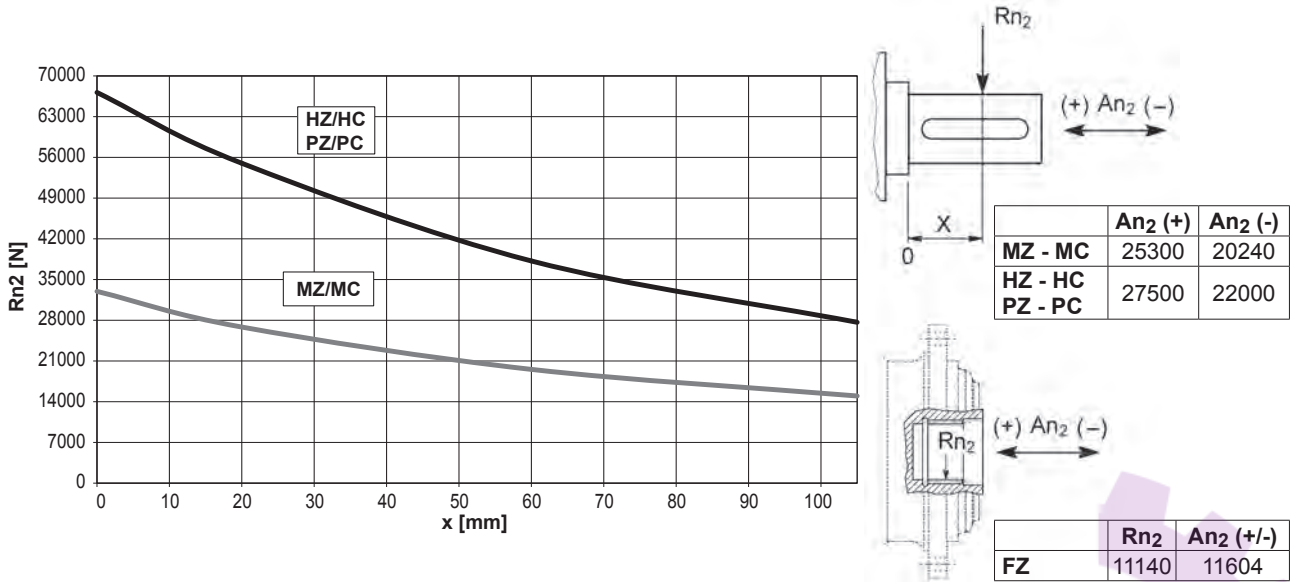
305 L

305 R

3/V 05 L3

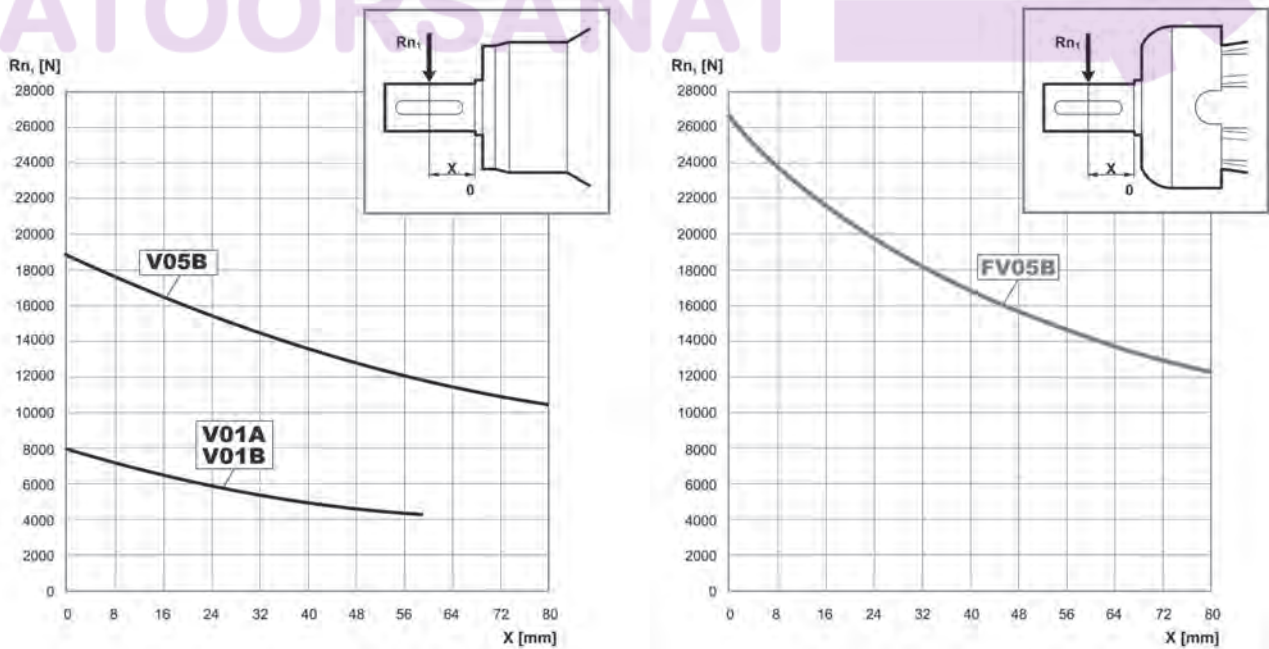
3/A 05 L2

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $f_{h2}$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |         |                   |        |        |         |
|--|------------------------|-------|---------|-------------------|--------|--------|---------|
|  |                        | 10000 | 25000   | 50000             | 100000 | 500000 | 1000000 |
|  | $f_{h2}$               | FZ    | MZ - MC | HZ - HC - PZ - PC |        |        |         |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 1.48  | 1.48    | 1.23              | 1.00   | 0.62   | 0.50    |

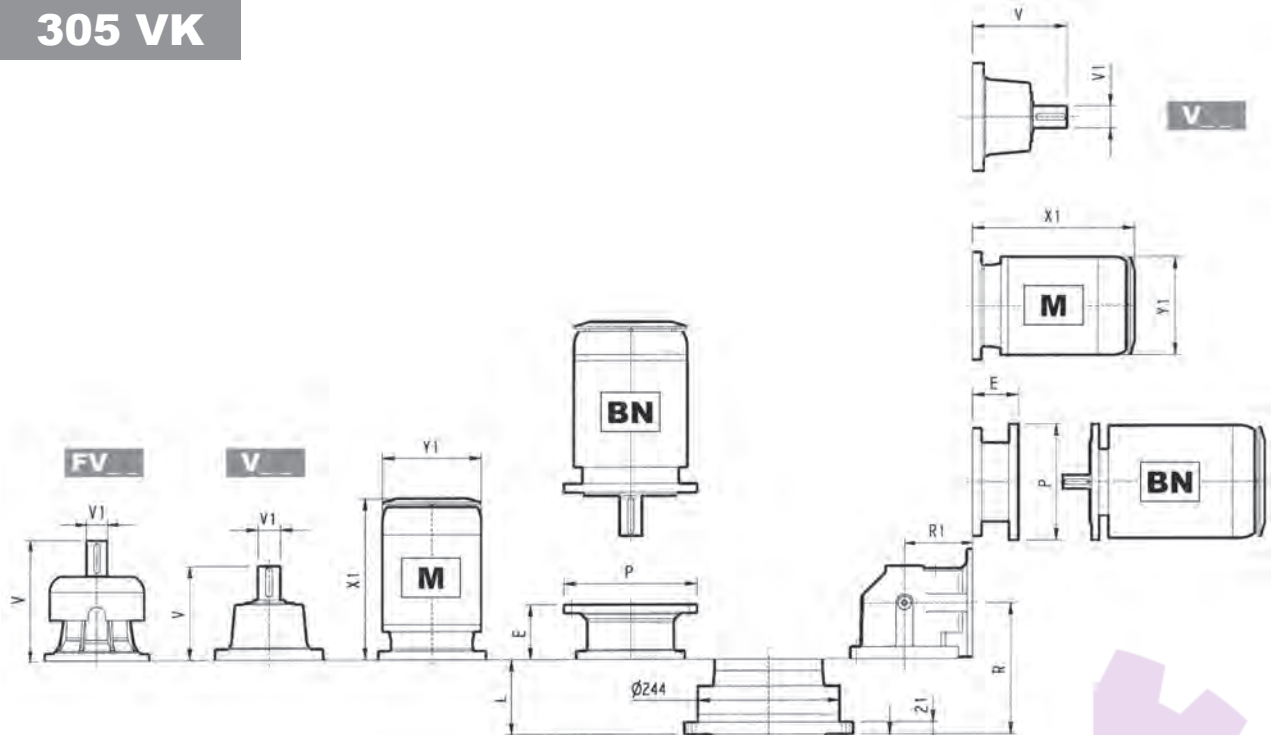
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $f_{h1}$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  | $f_{h1}$               | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



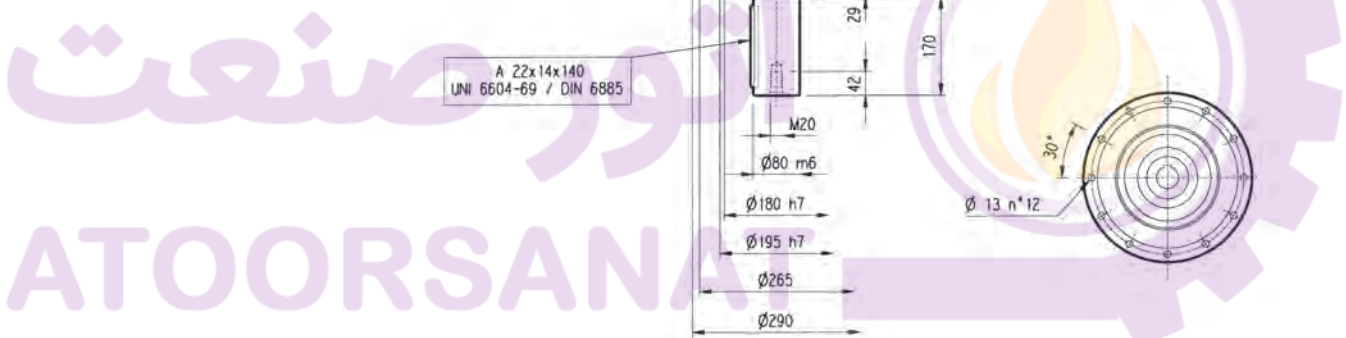
305 VK



305 L\_VK

305 R\_VK

A 22x14x140  
UNI 6604-69 / DIN 6885

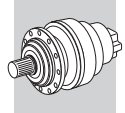


|        | L   | Kg | V     |    |    |     |    |    | P   |    |    |   |    |    | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |     |
|--------|-----|----|-------|----|----|-----|----|----|-----|----|----|---|----|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|
|        |     |    | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg | V   | V1  | Kg  | E   | P   | E   | P    | E   | P    | E   | P    | E   | P    | E   | P    | E   | P    | E   | P   |
| 305 L1 | 69  | 70 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —  | —   | 65  | 160 | 84  | 200 | 84  | 200  | 94  | 250  | 94  | 250  | 114 | 300  | 144 | 350  | 144 | 350  | 174 | 400 |
| 305 L2 | 134 | 77 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |
| 305 L3 | 187 | 81 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |
| 305 L4 | 240 | 85 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |     |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 305 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 305 L2 | —       | —   | —   | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 305 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 305 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |

|        | R   | R1  | Kg | V     |    |    |     |    |    | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     |
|--------|-----|-----|----|-------|----|----|-----|----|----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|
|        |     |     |    | V     | V1 | Kg | V   | V1 | Kg | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   |
| 305 R2 | 161 | 140 | 90 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 305 R3 | 226 | 122 | 92 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |
| 305 R4 | 279 | 122 | 95 | 137.5 | 24 | 6  | 158 | 38 | 7  | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 |

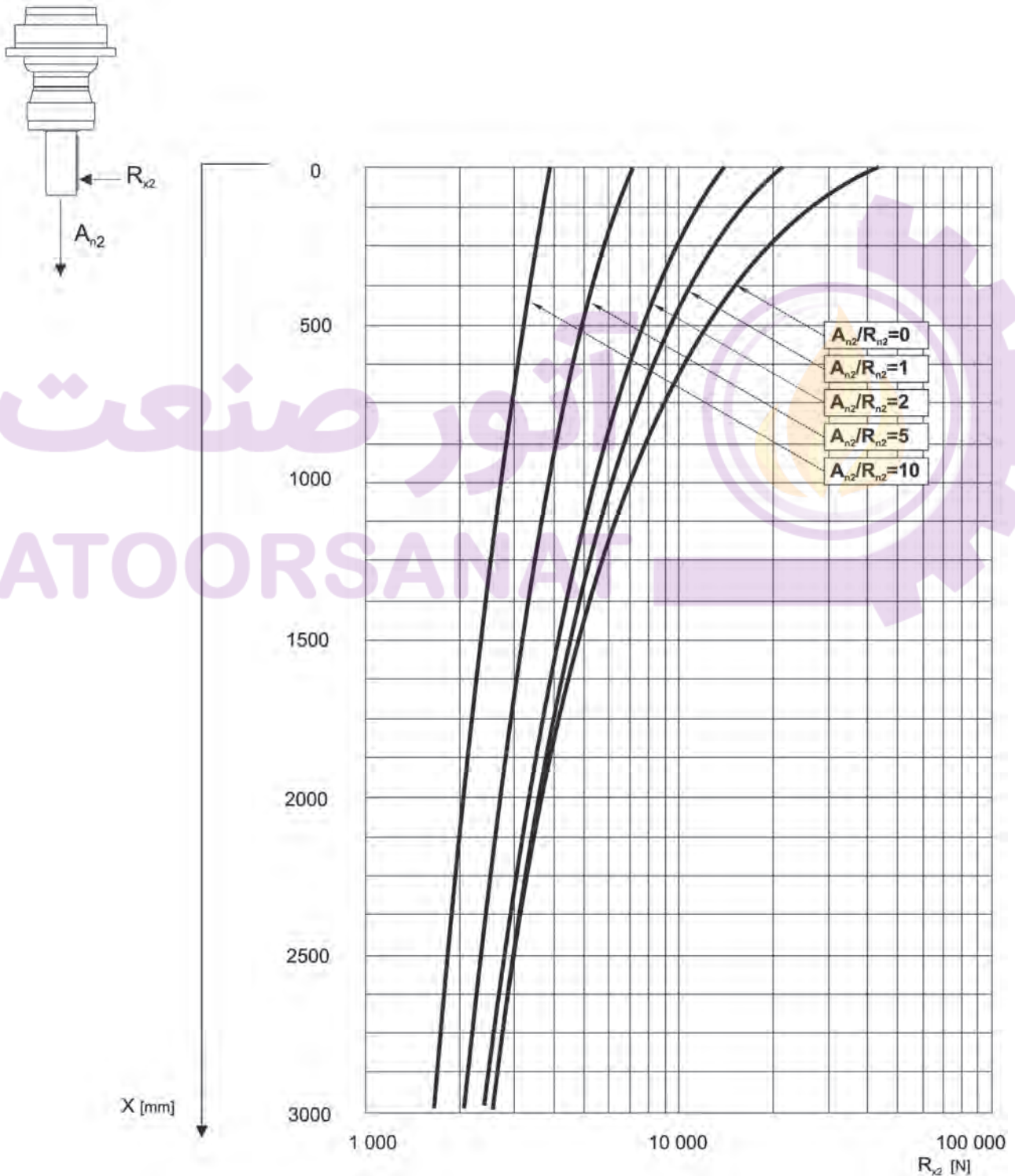
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 305 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 305 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 305 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |

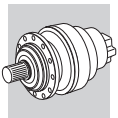


## 305 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder.

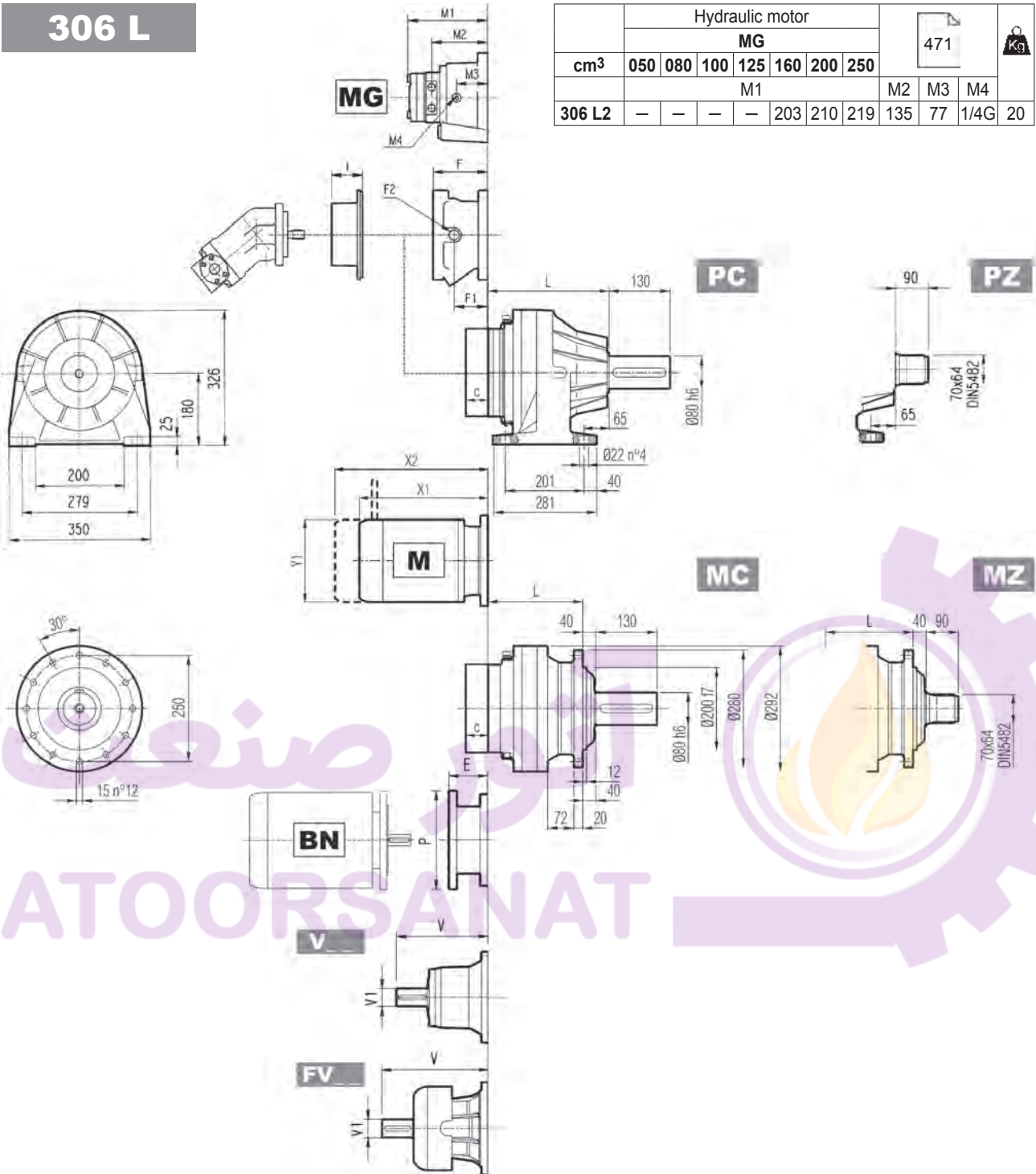
The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





**306 L**

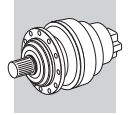
|                 |     |     |     |     |     |     |     |     |    |      |    |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|----|------|----|
| Hydraulic motor |     |     |     |     |     |     |     | 471 |    |      | Kg |
| MG              |     |     |     |     |     |     |     |     |    |      |    |
| cm <sup>3</sup> | 050 | 080 | 100 | 125 | 160 | 200 | 250 | M2  | M3 | M4   |    |
|                 | M1  |     |     |     |     |     |     |     |    |      |    |
| 306 L2          | -   | -   | -   | -   | 203 | 210 | 219 | 135 | 77 | 1/4G | 20 |



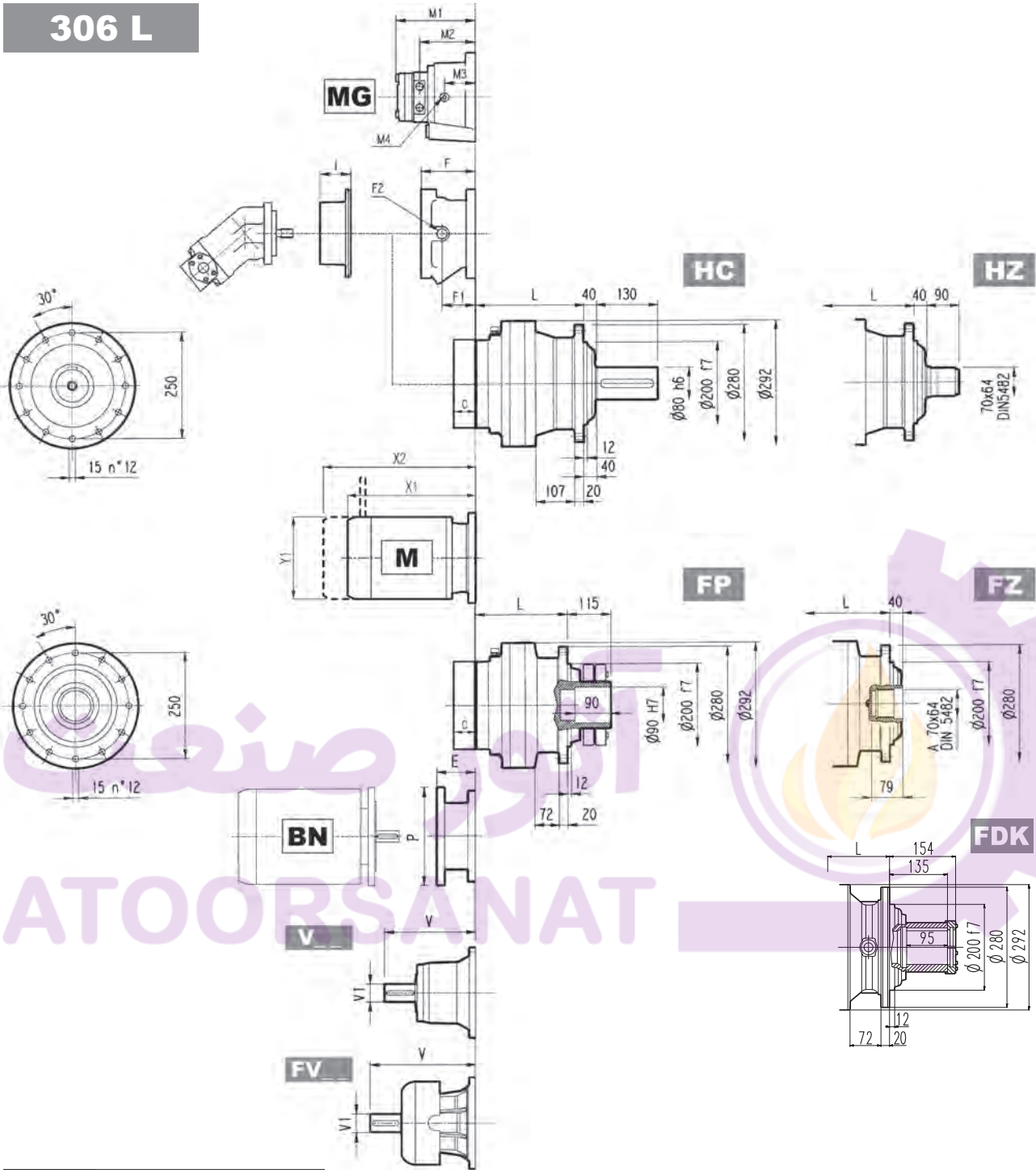
|        | L       |         |         |               | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 306 L1 | 160     | 235     | 195     | 160           | 65      | 85      | 70      | 65            |
| 306 L2 | 225     | 300     | 260     | 225           | 74      | 95      | 79      | 74            |
| 306 L3 | 278     | 353     | 313     | 278           | 78      | 98      | 83      | 78            |
| 306 L4 | 331     | 406     | 366     | 331           | 82      | 103     | 87      | 82            |

|        | V     |    |    | Kg  |    |    | V   |    |    | Kg |    |    | C  | Input | I   | F   |     |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1  | F2    |      |       |    |
| 306 L1 | 307   | 60 | 23 | -   | -  | -  | 357 | 60 | 28 | -  | -  | -  | 45 | B     |     | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 306 L2 | 239   | 48 | 15 | -   | -  | -  | 276 | 48 | 17 | -  | -  | -  | 37 | A     |     | 145 | 95  | 1/4 G | 5    | A     | 16 |
| 306 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | -   | -  | -  | -  | -  | -  | 37 | A     |     | 105 | 65  | 1/4 G | 4    | A     | 10 |
| 306 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | -   | -  | -  | -  | -  | -  | 37 | A     | 461 | 105 | 65  | 1/4 G | 4    | A     | 10 |





306 L



**FP**  $M_{2max} = 12000 \text{ Nm}$

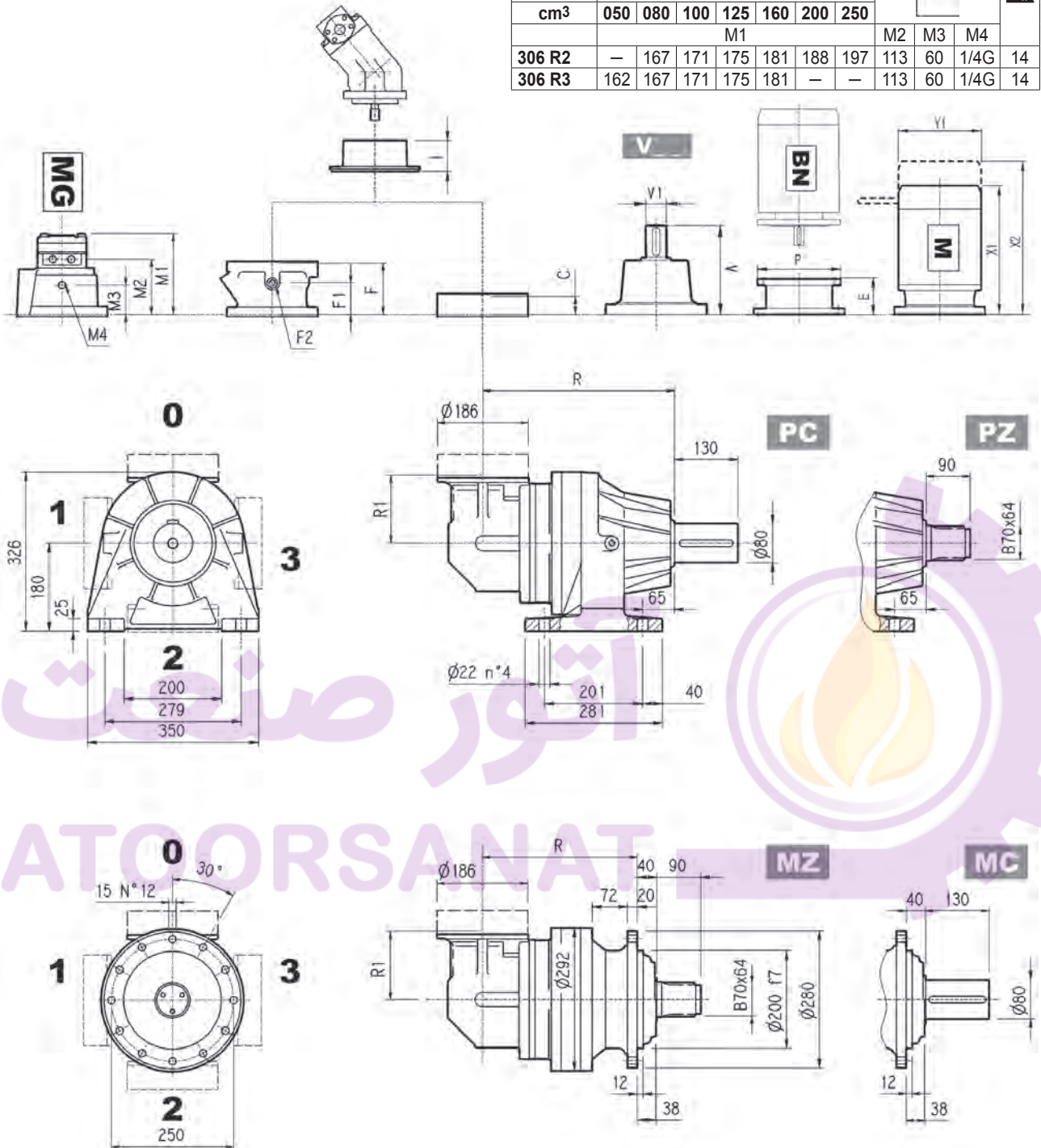
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 306 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | 144  | 350 | 153  | 350 | 183  | 400 | 212  | 450 | 193  | 550 |
| 306 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 306 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |
| 306 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |     |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|-----|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |     |     |     |
| 306 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | —        | —   | —   | —        | —   | —   |     |     |     |
| 306 L2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | 460      | 571 | 258 | 552      | 692 | 310 | 596 | 736 | 310 |
| 306 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   | —   | —   |     |
| 306 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   | —   | —   |     |



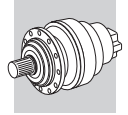
# 306 R

| cm <sup>3</sup> | Hydraulic motor |     |     |     |     |     |     | 471 |    |      | Kg |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|------|----|
|                 | MG              |     |     |     |     |     |     | M2  | M3 | M4   |    |
|                 | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |      |    |
|                 | M1              |     |     |     |     |     |     |     |    |      |    |
| 306 R2          | —               | 167 | 171 | 175 | 181 | 188 | 197 | 113 | 60 | 1/4G | 14 |
| 306 R3          | 162             | 167 | 171 | 175 | 181 | —   | —   | 113 | 60 | 1/4G | 14 |

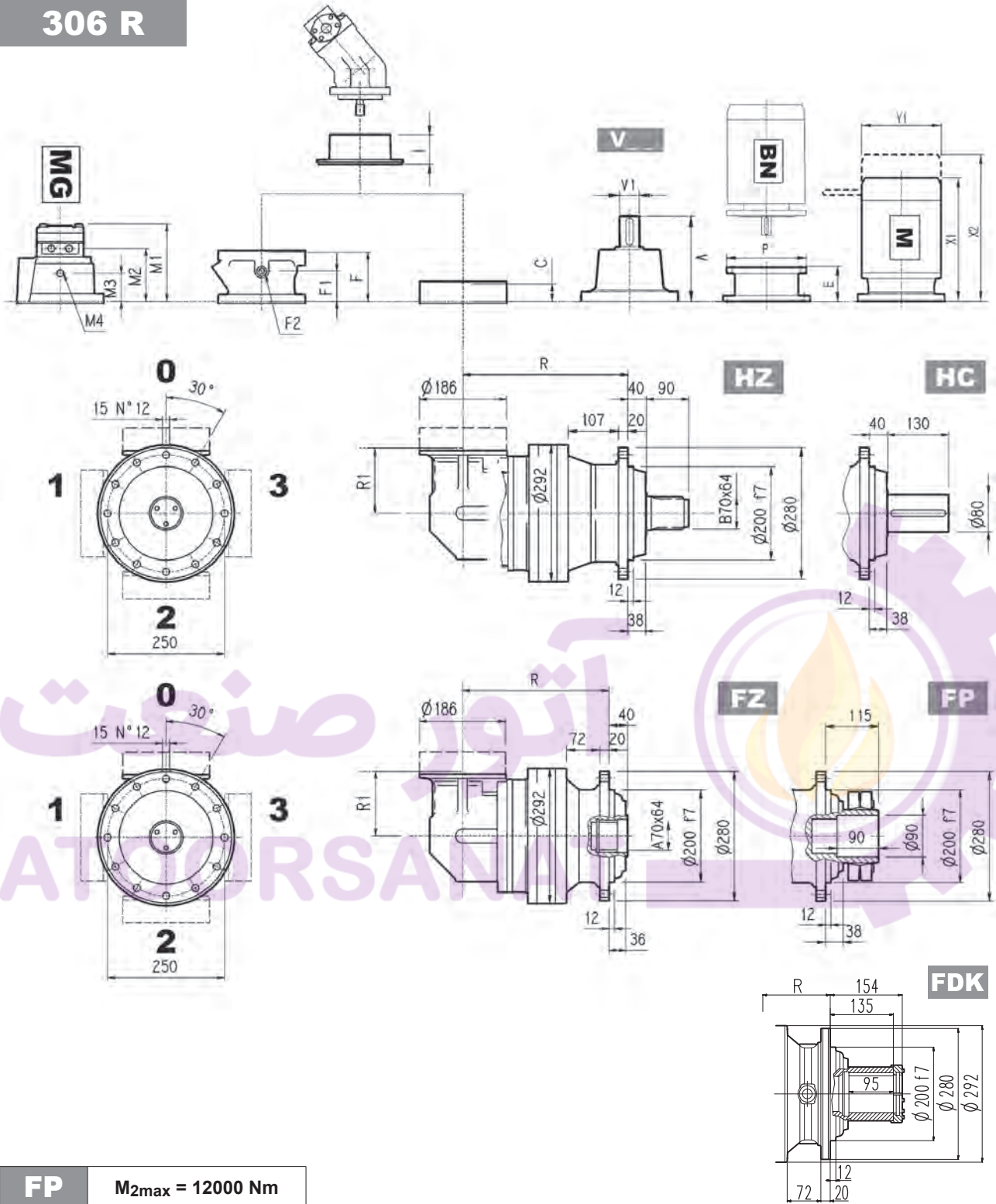


|        | R       |         |         |               | R1  | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|-----|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 306 R2 | 297     | 372     | 332     | 297           | 140 | 89      | 105     | 94      | 89            |
| 306 R3 | 317     | 392     | 352     | 317           | 140 | 85      | 100     | 90      | 85            |
| 306 R4 | 370     | 445     | 405     | 370           | 122 | 79      | 95      | 84      | 79            |

|        | V     |    |    |     |    |    | C  | Input | I   | Type |    |       |      |       |    | Kg |
|--------|-------|----|----|-----|----|----|----|-------|-----|------|----|-------|------|-------|----|----|
|        | V     | V1 | Kg | V   | V1 | Kg |    |       |     | F    | F1 | F2    | Type | Input |    |    |
| 306 R2 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |    |
| 306 R3 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |    |
| 306 R4 | 137.5 | 24 | 6  | 158 | 38 | 7  | 37 | A     | 461 | 105  | 65 | 1/4 G | 4    | A     | 10 |    |



# 306 R



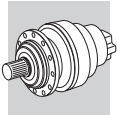
**FP**

$M_{2max} = 12000 \text{ Nm}$

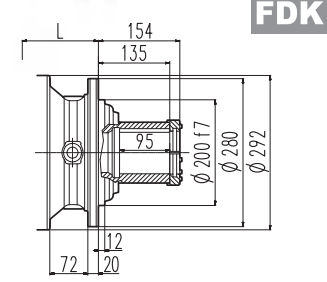
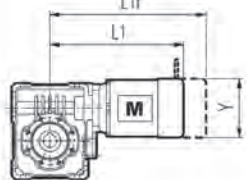
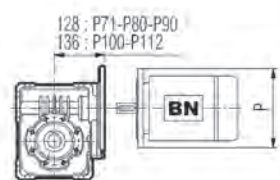
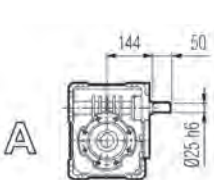
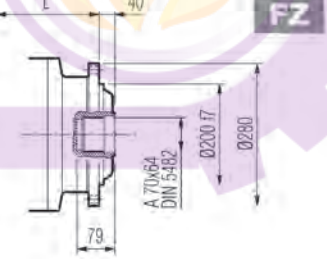
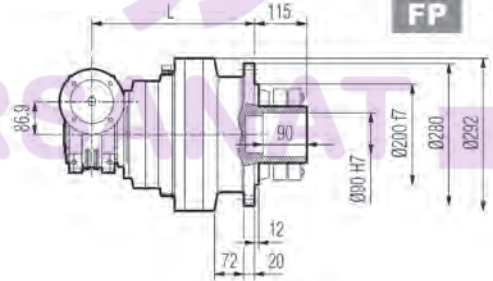
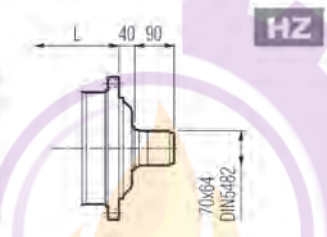
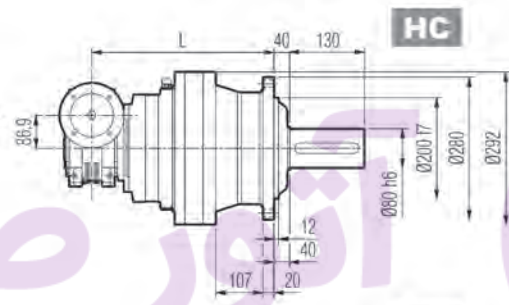
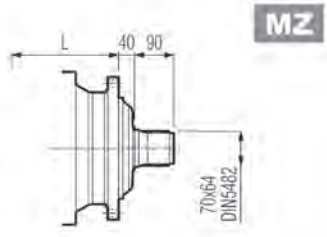
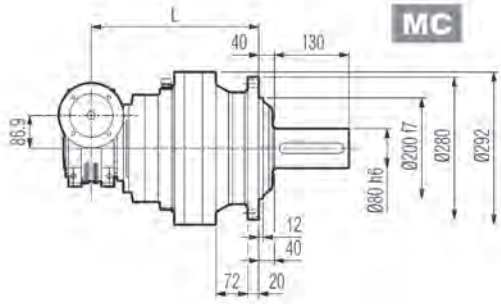
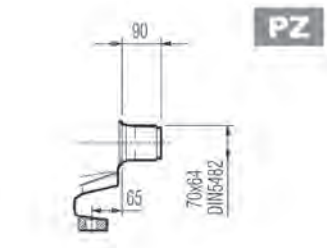
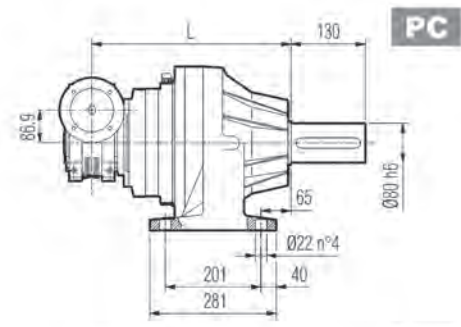
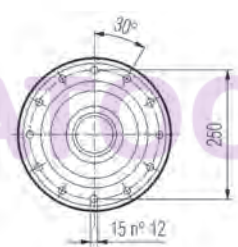
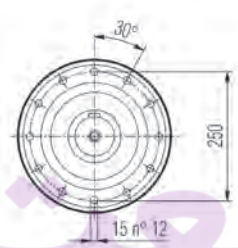
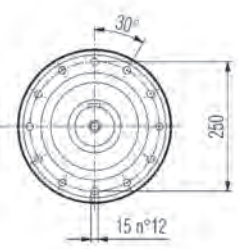
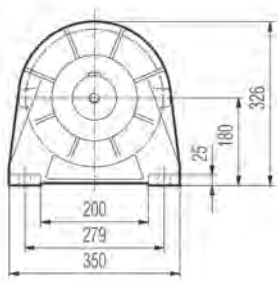
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 306 R2 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |
| 306 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |
| 306 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 306 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 306 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 306 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |





**3/V 06 L3**

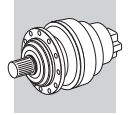


**FP**  $M_{2max} = 12000 \text{ Nm}$

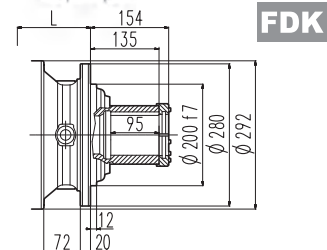
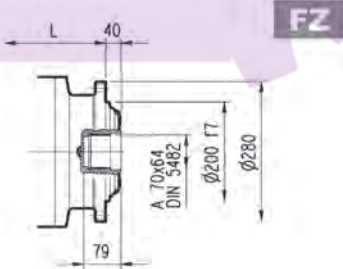
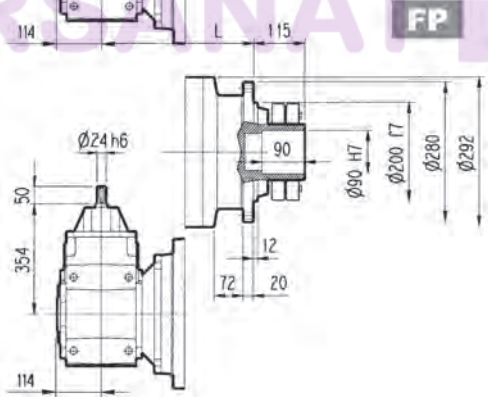
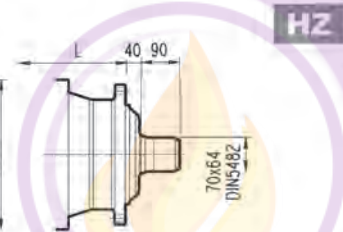
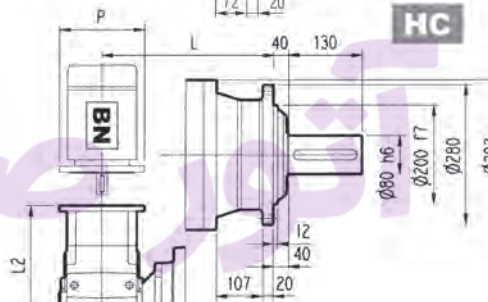
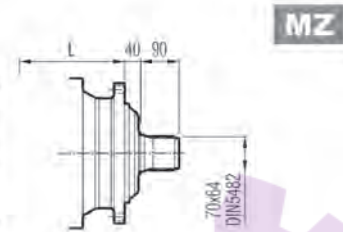
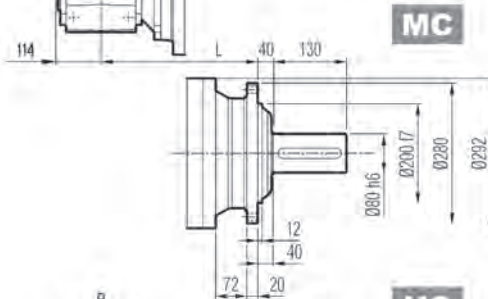
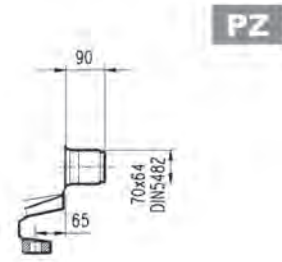
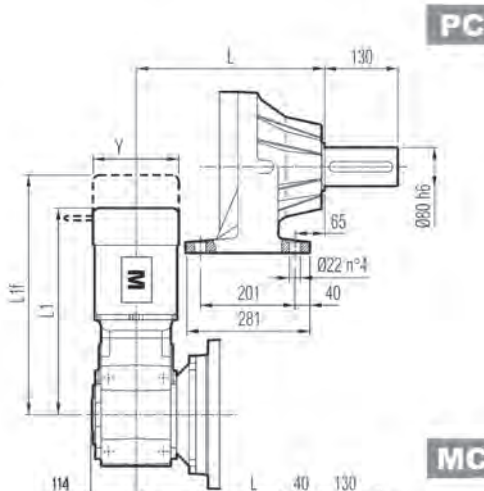
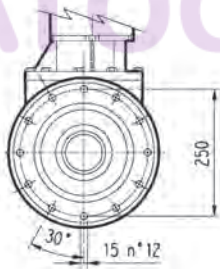
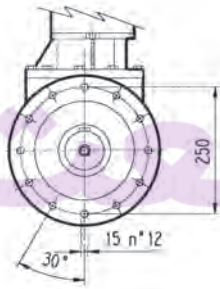
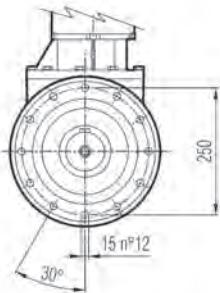
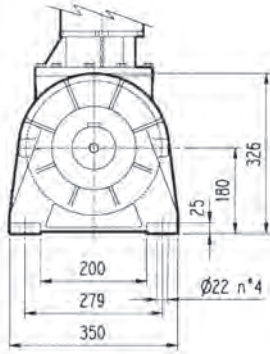
|           | L       |         |         |               | $\overset{\circ}{\text{Kg}}$ |         |         |               | P71 | P80 | P90 | P100 | P112 |
|-----------|---------|---------|---------|---------------|------------------------------|---------|---------|---------------|-----|-----|-----|------|------|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ                      | PC - PZ | HC - HZ | FP - FZ - FDK | P   | P   | P   | P    | P    |
| 3/V 06 L3 | 370     | 445     | 405     | 370           | 80                           | 111     | 95      | 80            | 160 | 200 | 200 | 250  | 250  |

|           | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|-----------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | L1      | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 06 L3 | 324     | 385 | 138 | 349      | 425 | 156 | 392      | 477 | 193 | 424      | 515 | 193 |



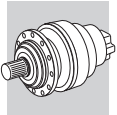


**3/A 06 L2**



**FP** M<sub>2max</sub> = 12000 Nm

| 3/A 06 L2 | L       |     |         |          |         |     |               |     |         |           |         |     | Kg      |         |      |               |      |     |
|-----------|---------|-----|---------|----------|---------|-----|---------------|-----|---------|-----------|---------|-----|---------|---------|------|---------------|------|-----|
|           | MC - MZ |     | PC - PZ |          | HC - HZ |     | FP - FZ - FDK |     | MC - MZ |           | PC - PZ |     |         | HC - HZ |      | FP - FZ - FDK |      |     |
|           | P63     |     | P71     |          | P80     |     | P90           |     | P100    |           | P112    |     | P132    |         | P160 |               | P180 |     |
|           | L2      | P   | L2      | P        | L2      | P   | L2            | P   | L2      | P         | L2      | P   | L2      | P       | L2   | P             | L2   | P   |
| 3/A 06 L2 | 314.5   | 140 | 314.5   | 160      | 334     | 200 | 334           | 200 | 344     | 250       | 344     | 250 | 380.5   | 300     | 431  | 350           | 431  | 350 |
|           | S1 + M1 |     |         | S2 + M2S |         |     | S3 + M3SA     |     |         | S3 + M3LA |         |     | S4 + M4 |         |      |               |      |     |
|           | L1      | L1f | Y       | L1       | L1f     | Y   | L1            | L1f | Y       | L1        | L1f     | Y   | L1      | L1f     | Y    | L1            | L1f  | Y   |
| 3/A 06 L2 | 445     | 508 | 138     | 568      | 517     | 156 | 541           | 637 | 195     | 572       | 665     | 195 | 678     | 789     | 258  |               |      |     |

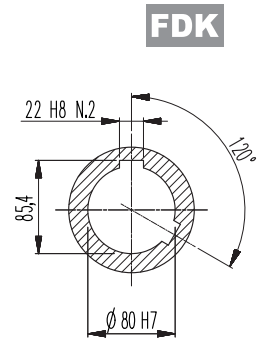
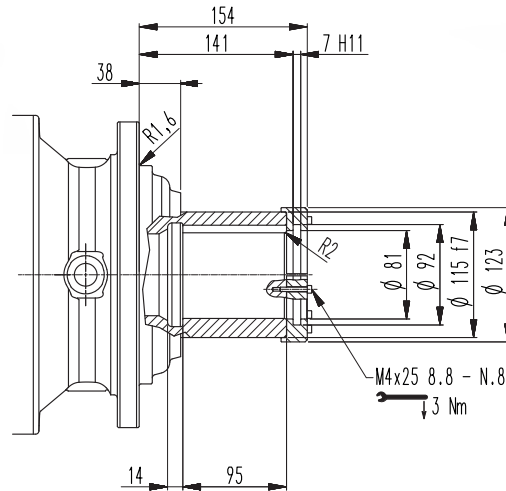
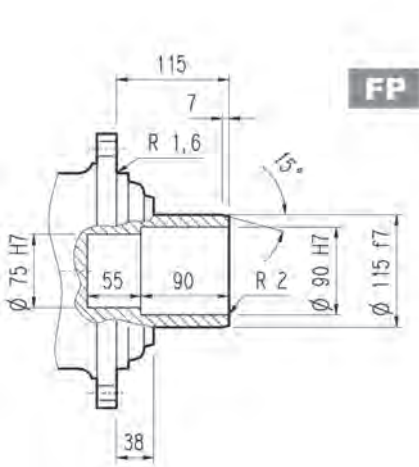
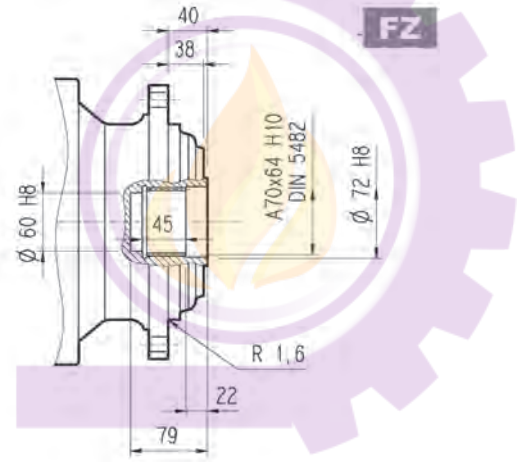
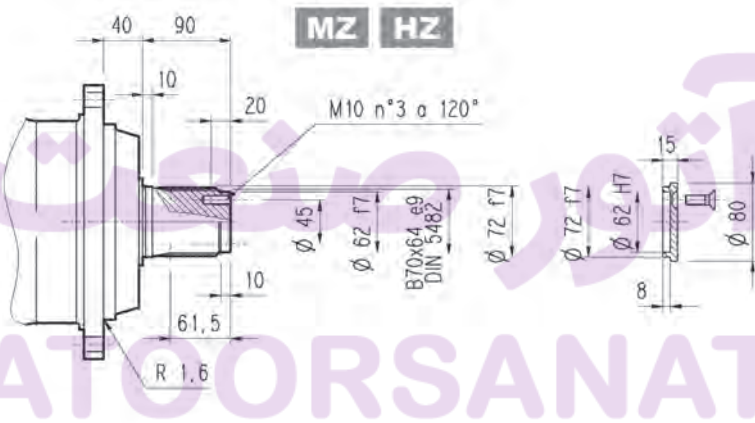
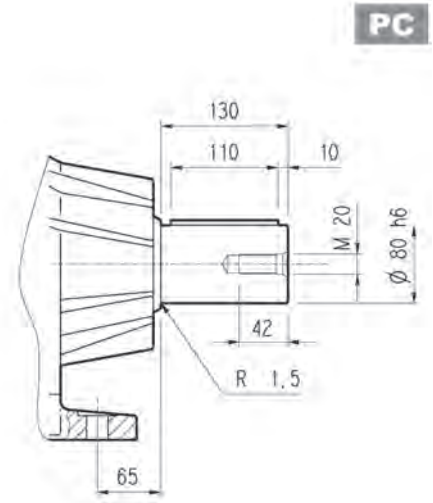
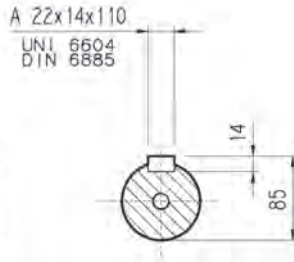
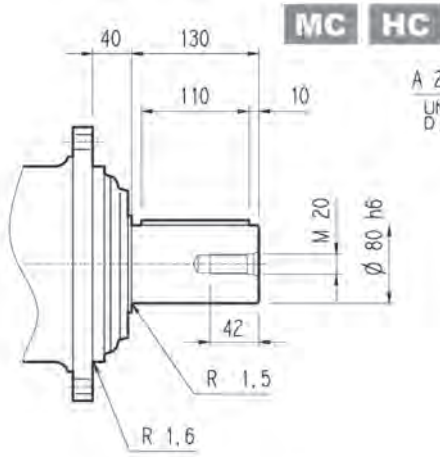


306 L

306 R

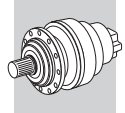
3/V 06 L3

3/A 06 L2



**FP**

$M_{2max} = 12000 \text{ Nm}$



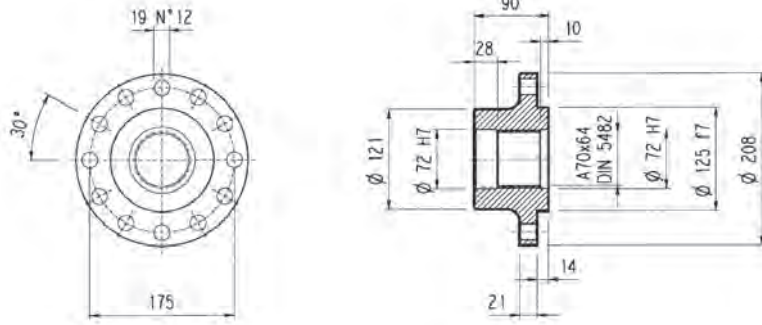
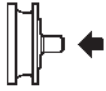
306 L

306 R

3/V 06 L3

3/A 06 L2

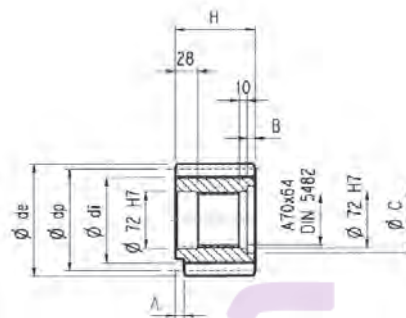
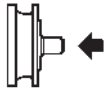
Flange



W0A

Material: Steel C40

Pinions

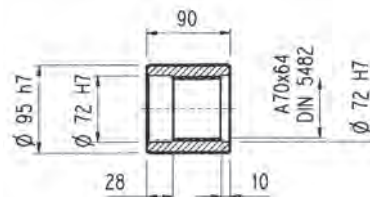
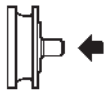


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di  | de    | H  | A  | B | C | Material                              |
|------|----|----|-------|-----|-----|-------|----|----|---|---|---------------------------------------|
| PFF1 | 8  | 15 | —     | 120 | 100 | 134   | 90 | —  | — | — | Steel 39NiCrMo3 hardened and tempered |
| PFF2 | 8  | 15 | 0.500 | 120 | 108 | 141   | 90 | —  | — | — |                                       |
| PHB  | 10 | 11 | 0.500 | 110 | 95  | 136   | 90 | 10 | — | — |                                       |
| PHC1 | 10 | 12 | 0.450 | 120 | 104 | 145   | 90 | —  | — | — |                                       |
| PHC2 | 10 | 12 | 0.320 | 120 | 100 | 144.2 | 90 | —  | — | — |                                       |
| PHC3 | 10 | 12 | 0.350 | 120 | 101 | 144   | 90 | —  | — | — |                                       |
| PHD1 | 10 | 13 | 0.950 | 130 | 124 | 165   | 90 | —  | — | — |                                       |
| PHD2 | 10 | 13 | 0.500 | 130 | 115 | 159   | 90 | —  | — | — |                                       |
| PHE1 | 10 | 14 | —     | 140 | 115 | 160   | 90 | —  | — | — |                                       |
| PHE2 | 10 | 14 | 0.500 | 140 | 125 | 166   | 90 | —  | — | — |                                       |
| PHF  | 10 | 15 | —     | 150 | 127 | 167   | 90 | 24 | — | — | Steel 39NiCrMo3 hardened and tempered |
| PHH  | 10 | 17 | 0.480 | 170 | 154 | 197.5 | 90 | 10 | — | — | Steel 18NiCrMo5 case hardened         |
| PHM  | 10 | 20 | —     | 200 | 175 | 220   | 90 | 10 | — | — |                                       |

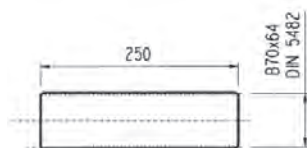
Sleeve coupling



M0A

Material: Steel 16CrNi4

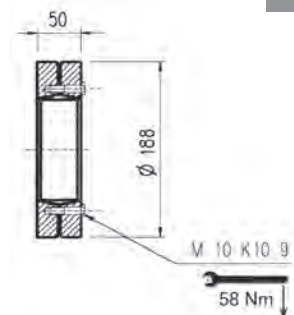
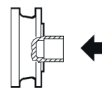
Splined bars



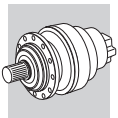
B0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

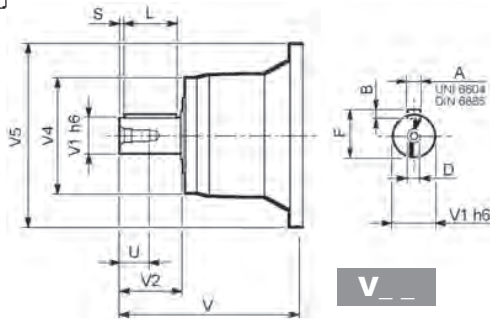


G0A

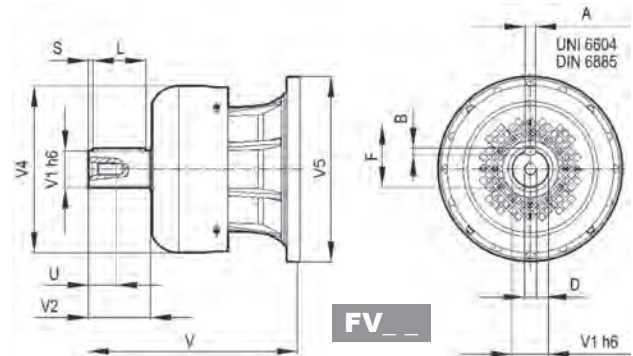


306 L

306 R



V \_\_

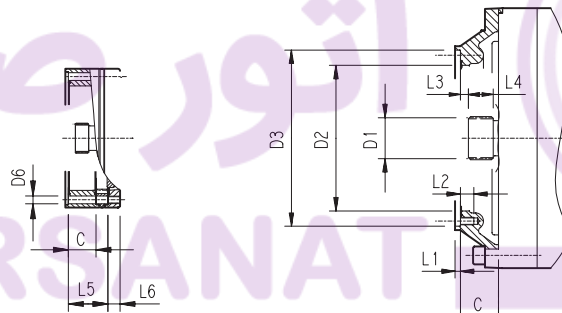


FV \_\_

|              |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L  | S   | D   | U  |
|--------------|-------|-------|----|-----|-------|-----|----|----|------|----|-----|-----|----|
| 306 L1       | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90 | 7.5 | M16 | 36 |
|              | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90 | 7.5 | M16 | 36 |
| 306 L2       | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70 | 6   | M16 | 36 |
|              | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70 | 6   | M16 | 36 |
| 306 L3       | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30 | 3   | M8  | 19 |
|              | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50 | 4   | M12 | 28 |
| 306 L4       | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30 | 3   | M8  | 19 |
|              | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50 | 4   | M12 | 28 |
| 306 R2-R3-R4 | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30 | 3   | M8  | 19 |
|              | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50 | 4   | M12 | 28 |

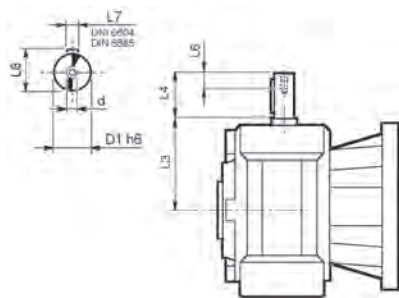
306 L

306 R



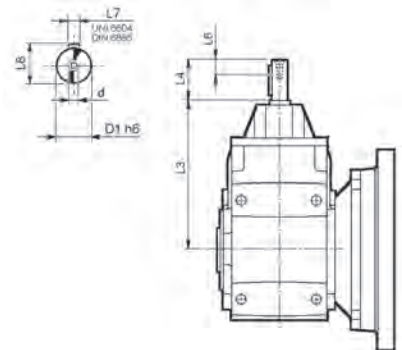
|              |      | C  | D1            | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1    | Input |
|--------------|------|----|---------------|-----|--------|-----|----------|----|----|----|----|----|-----|----|-----|-------|-------|
| 306 L1       | V9AB | 45 | 58x53 DIN5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —   | —  | 45° | 22.5° | B     |
| 306 L2       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9  | 18 | —   | —  | 45° | 45°   | A     |
| 306 L3       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 53  | 18 | 45° | 45°   | A     |
| 306 L4       | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 106 | 18 | 45° | 45°   | A     |
| 306 R2-R3-R4 | V9AA | 37 | 40x36 DIN5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45°   | A     |

3/V 06 L3



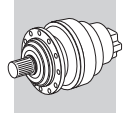
|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/V 06 L3_HS | 25    | 144 | 50 | 19 | 8  | 28 | M8 |

3/A 06 L2



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/A 06 L2_HS | 24    | 354 | 50 | 19 | 8  | 27 | M8 |





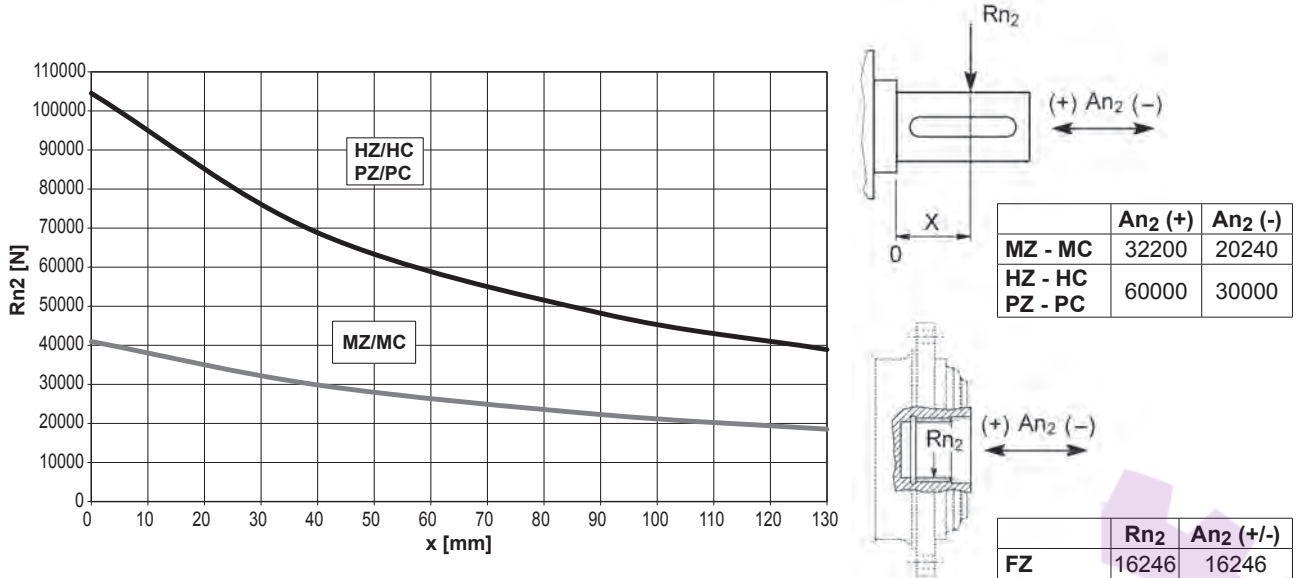
306 L

306 R

3/V 06 L3

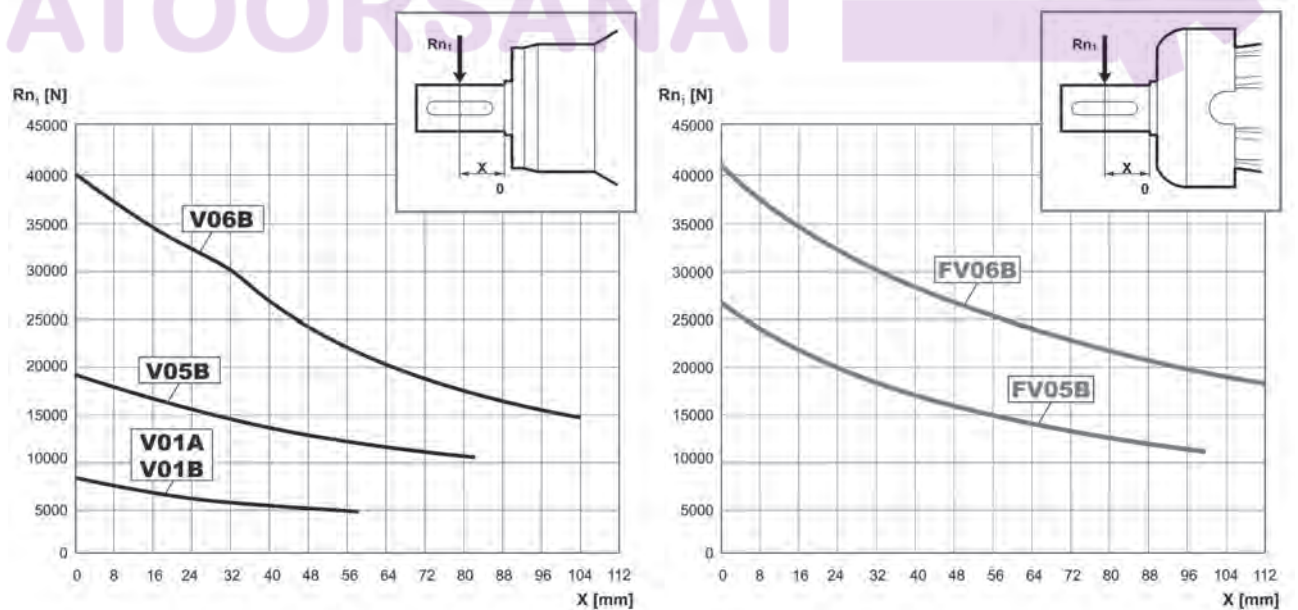
3/A 06 L2

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |         |                   |        |        |         |
|--|------------------------|-------|---------|-------------------|--------|--------|---------|
|  |                        | 10000 | 25000   | 50000             | 100000 | 500000 | 1000000 |
|  | $fh_2$                 | FZ    | MZ - MC | HZ - HC - PZ - PC |        |        |         |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 2.15  | 1.59    | 1.26              | 1.00   | 0.58   | 0.46    |
|  |                        | 1.34  | 1.34    | 1.23              | 1.00   | 0.62   | 0.50    |

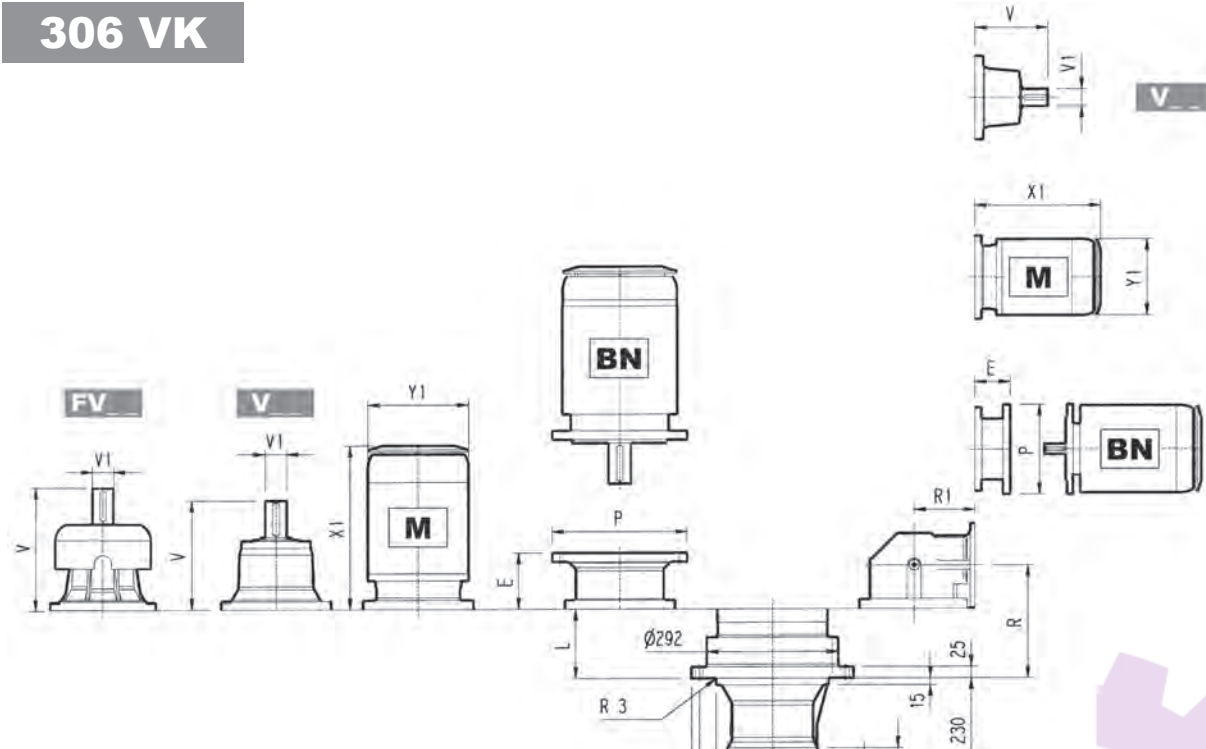
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  | $fh_1$                 | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |

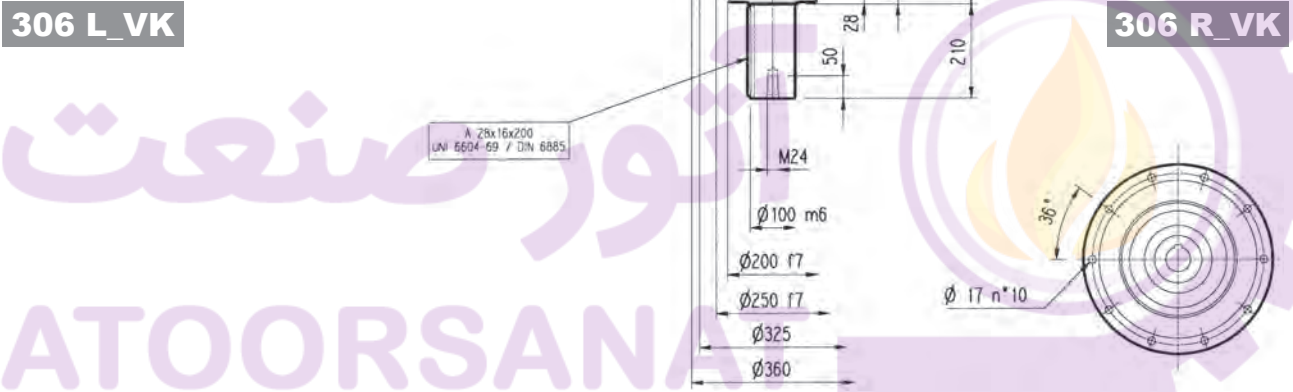


### 306 VK



### 306 L\_VK

### 306 R\_VK

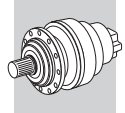


|        | L   |     | V     |    | V1 |     | K <sub>G</sub> |   | V   |    | V1 |   | K <sub>G</sub> |   | V |   | V1 |   | K <sub>G</sub> |   | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |   | P200 |   | P225 |   | P250 |   |   |   |
|--------|-----|-----|-------|----|----|-----|----------------|---|-----|----|----|---|----------------|---|---|---|----|---|----------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|---|------|---|------|---|------|---|---|---|
|        |     |     |       |    |    |     |                |   |     |    |    |   |                |   |   |   |    |   |                |   |     | E   | P   | E   | P   | E   | P    | E   | P    | E   | P    | E   | P    | E   | P    | E | P    | E | P    |   |      |   |   |   |
| 306 L1 | 75  | 110 | 307   | 60 | 23 | —   | —              | — | 357 | 60 | 28 | — | —              | — | — | — | —  | — | —              | — | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | — | —    | — | —    | — | —    | — |   |   |
| 306 L2 | 140 | 120 | 239   | 48 | 15 | —   | —              | — | 276 | 48 | 17 | — | —              | — | — | — | —  | — | —              | — | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | — | —    | — | —    | — | —    | — | — |   |
| 306 L3 | 193 | 125 | 137.5 | 24 | 6  | 158 | 38             | 7 | —   | —  | —  | — | —              | — | — | — | —  | — | —              | — | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | — | —    | — | —    | — | —    | — | — | — |
| 306 L4 | 246 | 130 | 137.5 | 24 | 6  | 158 | 38             | 7 | —   | —  | —  | — | —              | — | — | — | —  | — | —              | — | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | — | —    | — | —    | — | —    | — | — | — |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 306 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | —        | —   | —   | —        | —   | —   |
| 306 L2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | —        | —   | —   | —        | —   | —   |
| 306 L3 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 306 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |

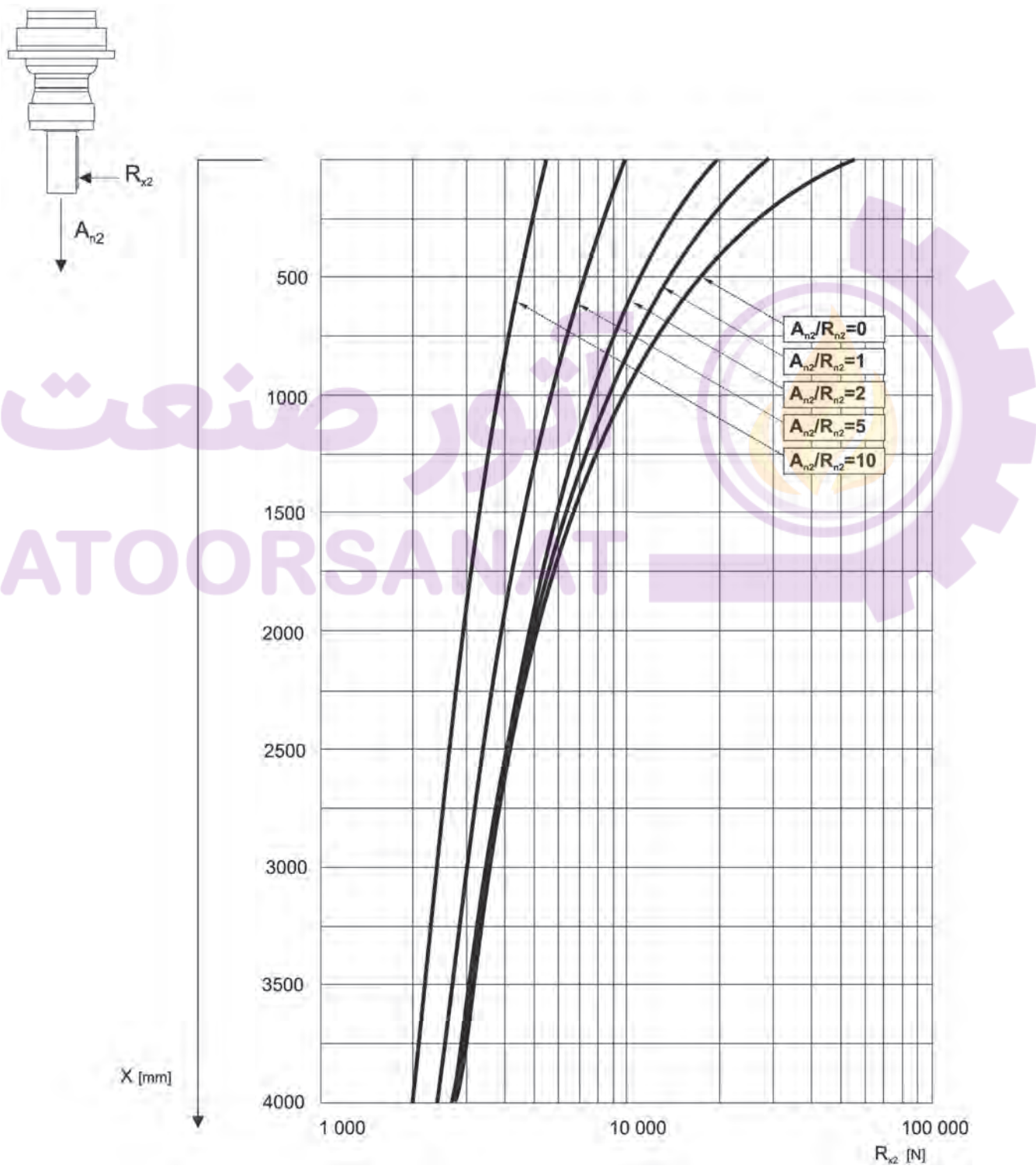
|        | R   | R1  | K <sub>G</sub> | V     |    | V1 |     | K <sub>G</sub> |   | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     |
|--------|-----|-----|----------------|-------|----|----|-----|----------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|
|        |     |     |                | V     | V1 | V  | V1  | K <sub>G</sub> | E | P   | E   | P   | E   | P   | E   | P    | E   | P    | E   | P    | E   | P    |     |
| 306 R2 | 212 | 140 | 90             | 137.5 | 24 | 6  | 158 | 38             | 7 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |
| 306 R3 | 232 | 140 | 92             | 137.5 | 24 | 6  | 158 | 38             | 7 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |
| 306 R4 | 285 | 122 | 95             | 137.5 | 24 | 6  | 158 | 38             | 7 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 |

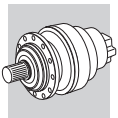
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  |
| 306 R2 | —       | —   | —   | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 306 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |
| 306 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 |



**306 VK**

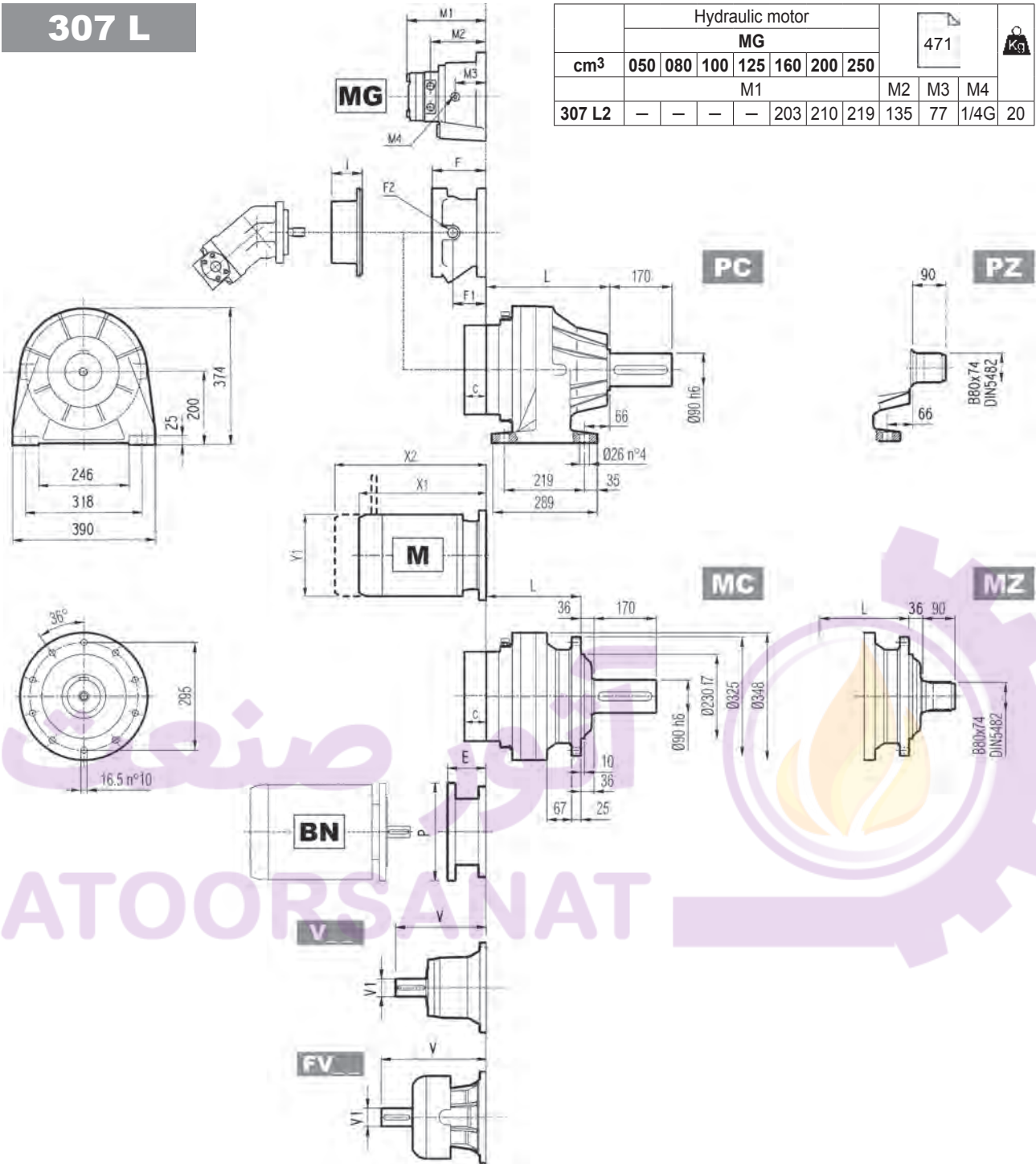
The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





**307 L**

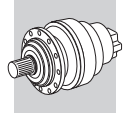
|                       |            |                 |            |            |            |            |            |           |           |           |    |
|-----------------------|------------|-----------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|----|
|                       |            | Hydraulic motor |            |            |            |            |            | 471       |           |           | Kg |
|                       |            | <b>MG</b>       |            |            |            |            |            |           |           |           |    |
| <b>cm<sup>3</sup></b> | <b>050</b> | <b>080</b>      | <b>100</b> | <b>125</b> | <b>160</b> | <b>200</b> | <b>250</b> |           |           |           |    |
|                       |            | <b>M1</b>       |            |            |            |            |            | <b>M2</b> | <b>M3</b> | <b>M4</b> |    |
| <b>307 L2</b>         | -          | -               | -          | -          | 203        | 210        | 219        | 135       | 77        | 1/4G      | 20 |



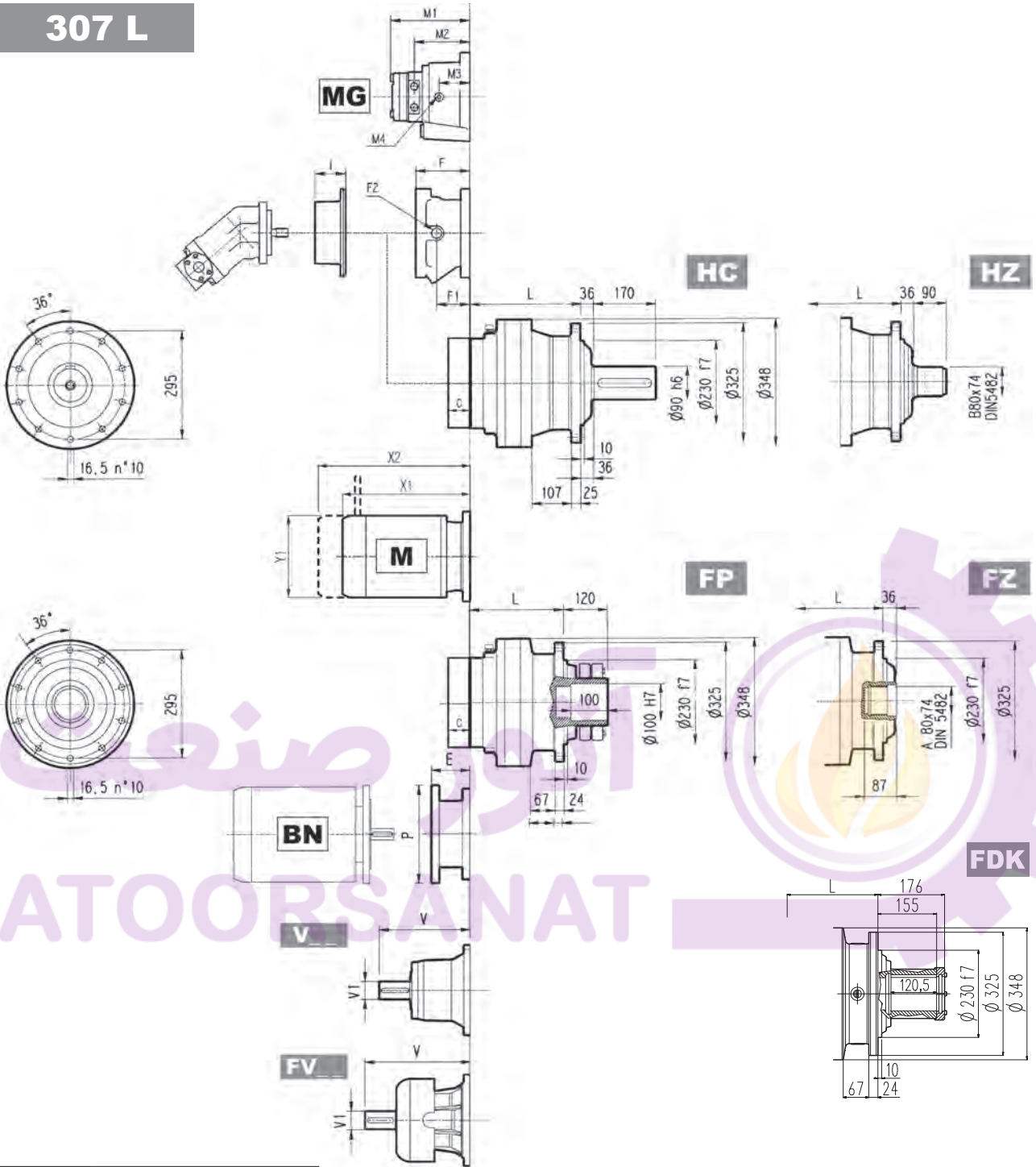
|               | L       |         |         |               | Kg      |         |         |               |
|---------------|---------|---------|---------|---------------|---------|---------|---------|---------------|
|               | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| <b>307 L1</b> | 165     | 246     | 210     | 165           | 85      | 120     | 105     | 85            |
| <b>307 L2</b> | 254     | 335     | 299     | 254           | 97      | 132     | 117     | 97            |
| <b>307 L3</b> | 319     | 400     | 364     | 319           | 104     | 139     | 124     | 104           |
| <b>307 L4</b> | 372     | 453     | 417     | 372           | 108     | 143     | 128     | 108           |

|               | V     |    |    | Kg  |    |    | V   |    |    | Kg  |    |    | C  | Input | I   | F   |     |       | Type | Input | Kg |
|---------------|-------|----|----|-----|----|----|-----|----|----|-----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|               | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |    |       |     | F   | F1  | F2    |      |       |    |
| <b>307 L1</b> | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51 | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |
| <b>307 L2</b> | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37 | A     | —   | 145 | 95  | 1/4 G | 5    | A     | 16 |
| <b>307 L3</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | —   | 105 | 65  | 1/4 G | 4    | A     | 10 |
| <b>307 L4</b> | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | —   | 105 | 65  | 1/4 G | 4    | A     | 10 |





307 L



**FP**  $M_{2max} = 18200 \text{ Nm}$

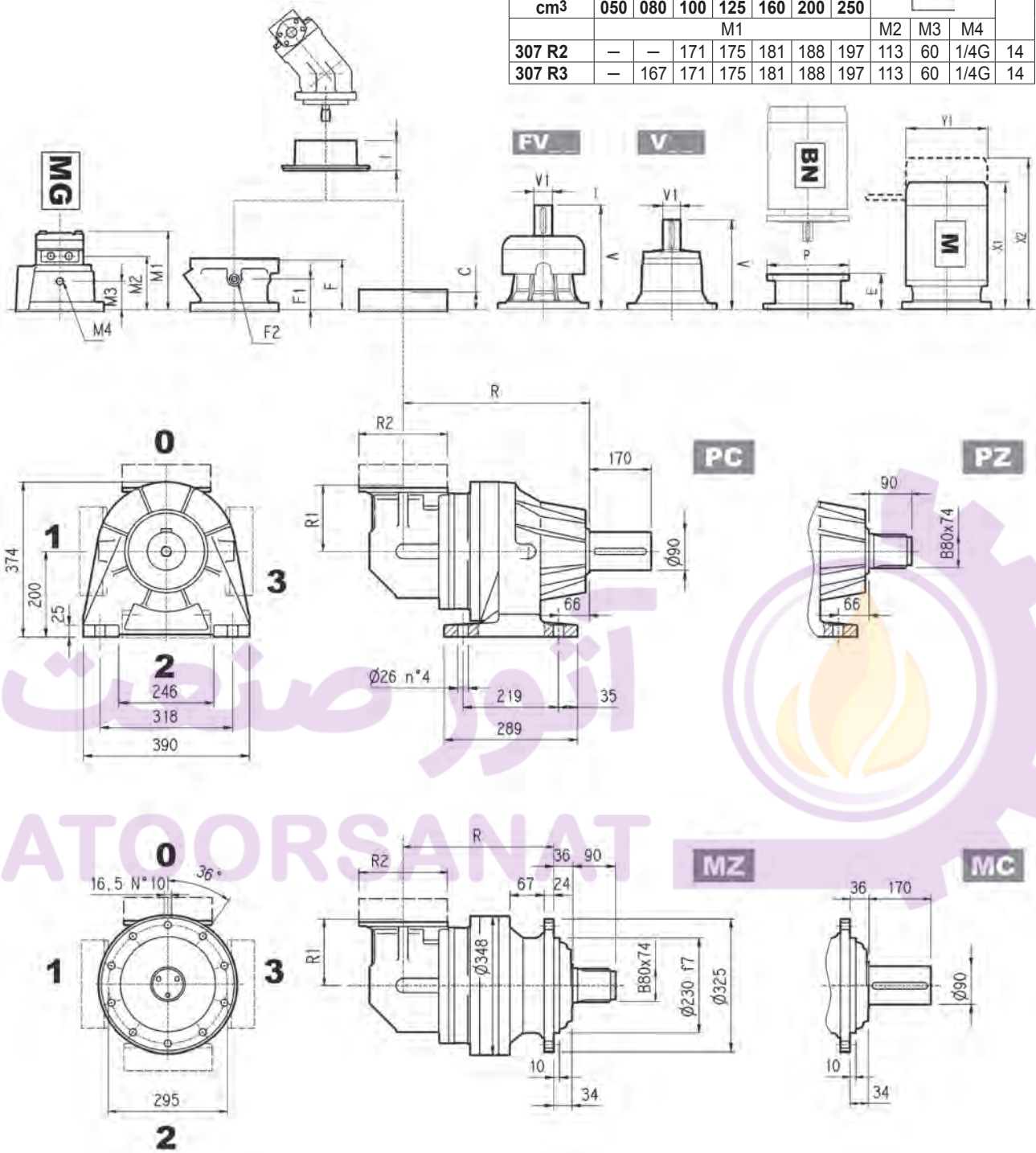
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 307 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 215  | 550 |
| 307 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 307 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |
| 307 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |     |
| 307 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | —        | —   | —   | —        | —   | —   |     |
| 307 L2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | 460 | 571 | 258      | 552 | 692 | 310      | 596 | 736 | 310 |
| 307 L3 | —       | —   | —   | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   | —   |
| 307 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   | —   |



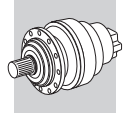
# 307 R

| cm <sup>3</sup> | Hydraulic motor |     |     |     |     |     |     | 471 | Kg |         |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|---------|
|                 | MG              |     |     |     |     |     |     |     |    |         |
|                 | 050             | 080 | 100 | 125 | 160 | 200 | 250 |     |    |         |
|                 | M1              |     |     |     |     |     |     | M2  | M3 | M4      |
| 307 R2          | —               | —   | 171 | 175 | 181 | 188 | 197 | 113 | 60 | 1/4G 14 |
| 307 R3          | —               | 167 | 171 | 175 | 181 | 188 | 197 | 113 | 60 | 1/4G 14 |

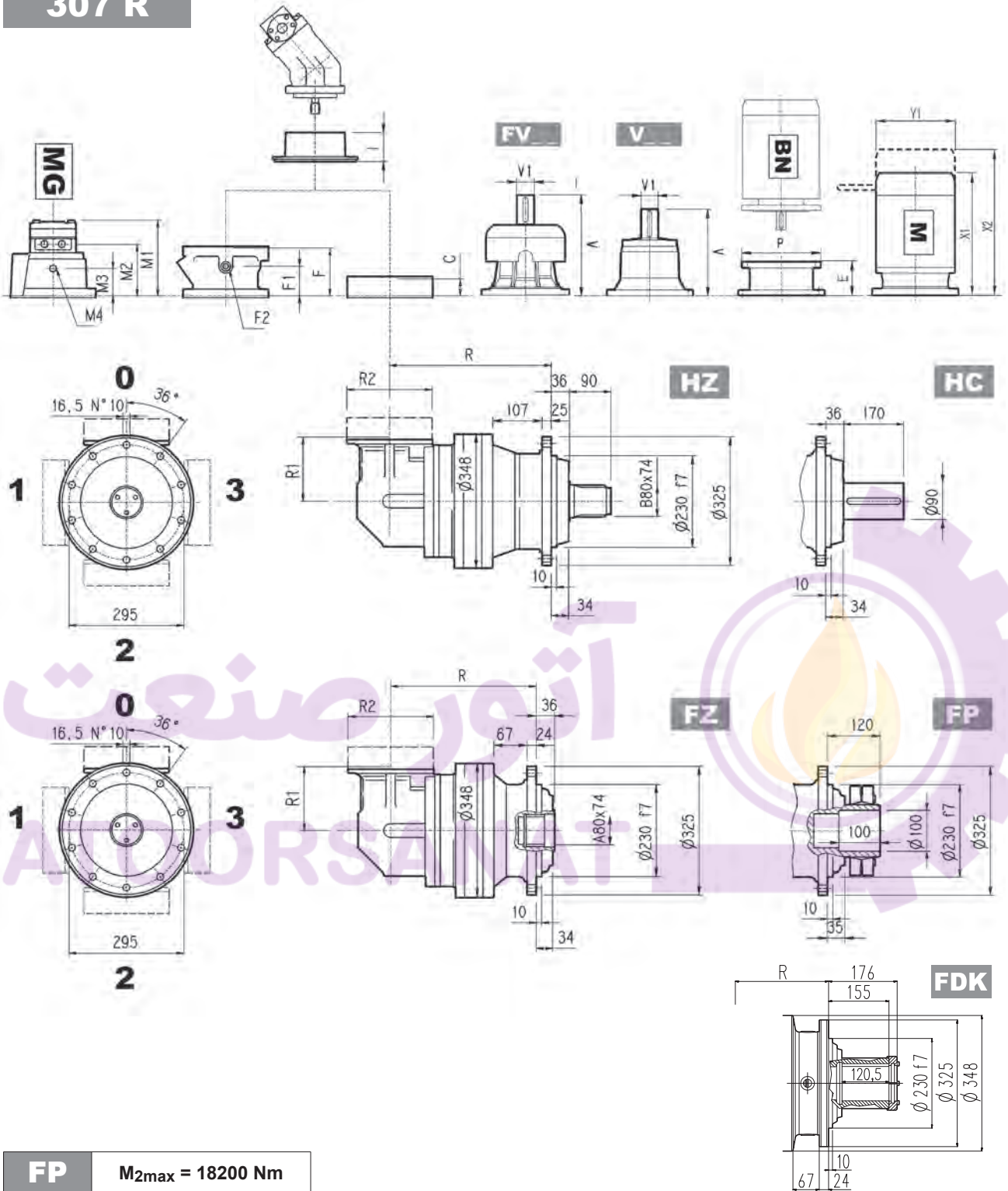


|        | R       |         |         |               | R1  | R2  | Kg      |         |         |               |
|--------|---------|---------|---------|---------------|-----|-----|---------|---------|---------|---------------|
|        | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |     |     | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK |
| 307 R2 | 284     | 365     | 329     | 284           | 225 | 245 | 135     | 170     | 155     | 135           |
| 307 R3 | 346     | 427     | 391     | 346           | 140 | 186 | 117     | 152     | 137     | 117           |
| 307 R4 | 411     | 492     | 456     | 411           | 122 | 186 | 118     | 153     | 138     | 118           |

|        | V     |    |    |     |    |    | V   |    |    |   |    |    | C  |       | F   |     |    |       |      |       |    |
|--------|-------|----|----|-----|----|----|-----|----|----|---|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg | C  | Input | I   | F   | F1 | F2    | Type | Input | Kg |
| 307 R2 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —  | 37 | A     | —   | 145 | 95 | 1/4 G | 5    | A     | 16 |
| 307 R3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 307 R4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |



# 307 R

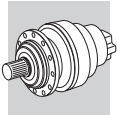


**FP**  $M_{2max} = 18200 \text{ Nm}$

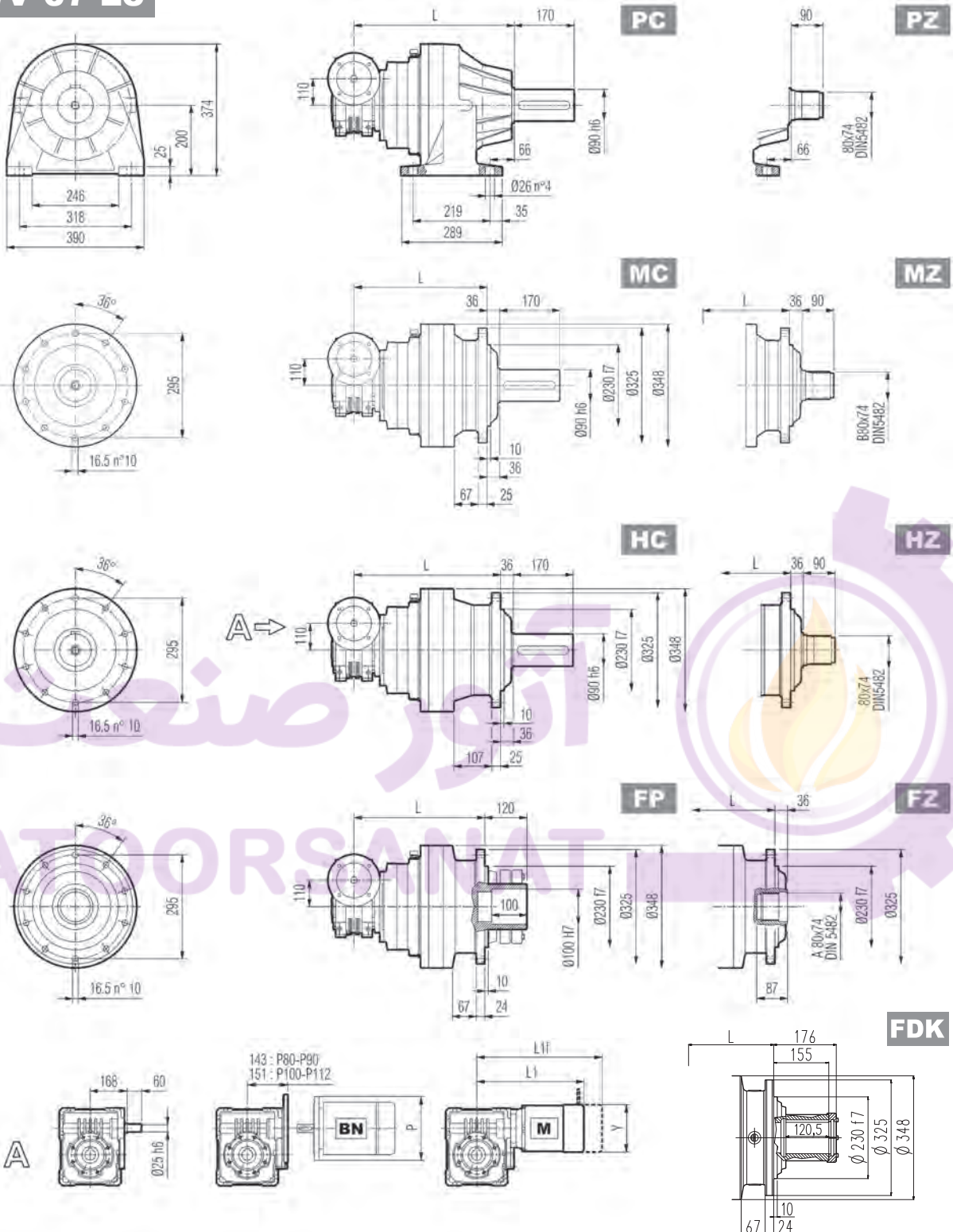
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 307 R2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 307 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 307 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 307 R2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 508     | 619 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 307 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 | —        | —   | —   | —        | —   | —   |
| 307 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 | —        | —   | —   | —        | —   | —   |





**3/V 07 L3**



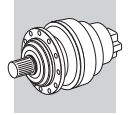
**FP**  $M_{2max} = 18200 \text{ Nm}$

|           | L       |         |         |               | $\text{Kg}$ |         |         |               | P80 | P90 | P100 | P112 |
|-----------|---------|---------|---------|---------------|-------------|---------|---------|---------------|-----|-----|------|------|
|           | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | MC - MZ     | PC - PZ | HC - HZ | FP - FZ - FDK | P   | P   | P    | P    |
| 3/V 07 L3 | 414     | 495     | 459     | 414           | 130         | 165     | 150     | 130           | 200 | 200 | 250  | 250  |

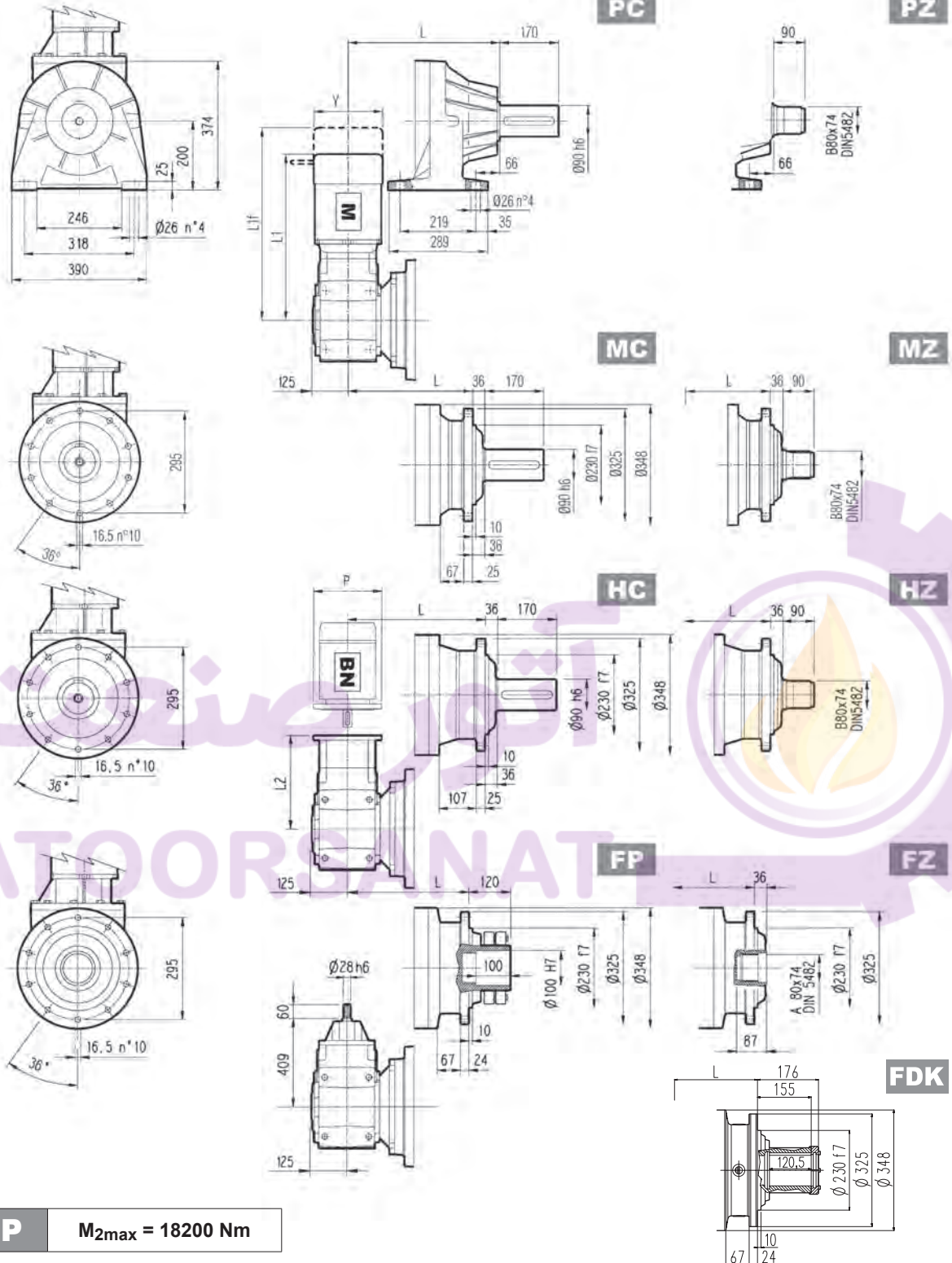
  

|           | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|-----------|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 07 L3 | 364      | 440 | 156 | 407      | 503 | 193 | 439      | 530 | 193 |





3/A 07 L2



**FP**  $M_{2max} = 18200 \text{ Nm}$

|           | L        |     |         |           |         |     |               |       | Kg      |         |         |               |          |      |     |          |      |     |      |     |      |     |      |     |      |     |
|-----------|----------|-----|---------|-----------|---------|-----|---------------|-------|---------|---------|---------|---------------|----------|------|-----|----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | MC - MZ  |     | PC - PZ |           | HC - HZ |     | FP - FZ - FDK |       | MC - MZ | PC - PZ | HC - HZ | FP - FZ - FDK | P80      |      | P90 |          | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     |
| 3/A 07 L2 | 336      |     | 417     |           | 381     |     | 336           |       | 200     | 230     | 210     | 200           | L2       | P    | L2  | P        | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/A 07 L2 | 371      | 200 | 371     | 200       | 381     | 250 | 381           | 250   | 416.5   | 300     | 468     | 350           | 468      | 350  | 468 | 350      | 468  | 350 | 468  | 350 | 468  | 350 | 468  | 350 | 468  | 350 |
| 3/A 07 L2 | S2 + M2S |     |         | S3 + M3SA |         |     | S3 + M3LA     |       |         | S4 + M4 |         |               | S5 + M5S |      |     | S5 + M5L |      |     |      |     |      |     |      |     |      |     |
|           | L1       | L1f | Y       | L1        | L1f     | Y   | L1            | L1f   | Y       | L1      | L1f     | Y             | L1       | L1f  | Y   | L1       | L1f  | Y   |      |     |      |     |      |     |      |     |
| 3/A 07 L2 | 535      | 605 | 156     | 578.5     | 674.5   | 195 | 610.5         | 701.5 | 195     | 718.5   | 827.5   | 258           | 970      | 1110 | —   | 1014     | 1154 | —   |      |     |      |     |      |     |      |     |

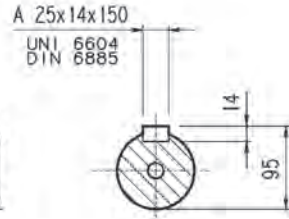
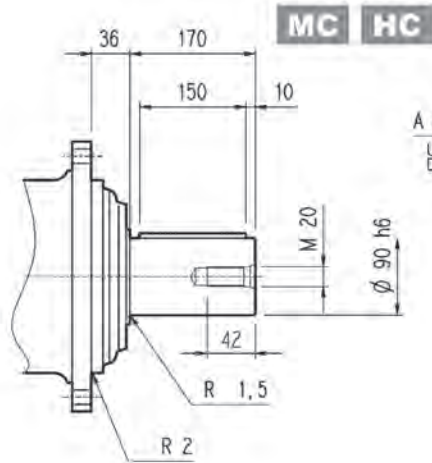


307 L

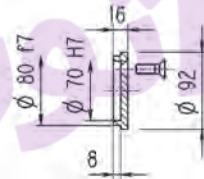
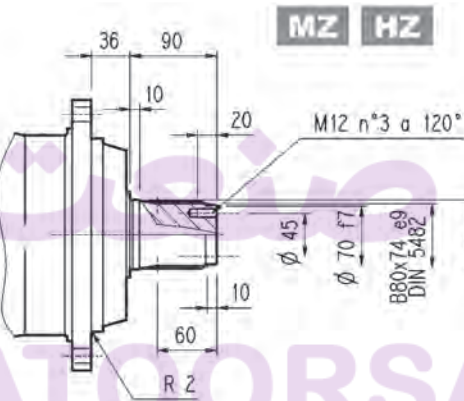
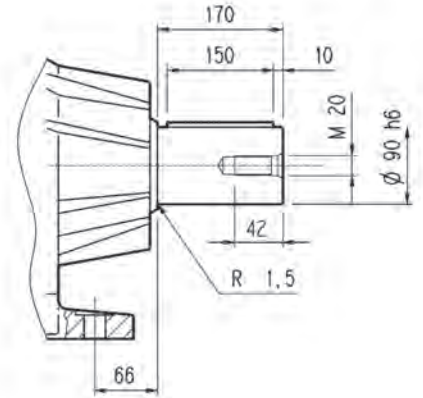
307 R

3/V 07 L3

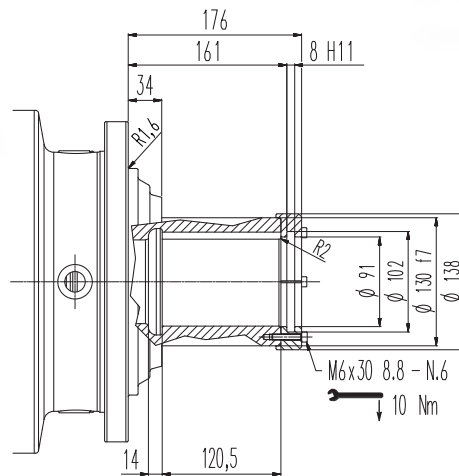
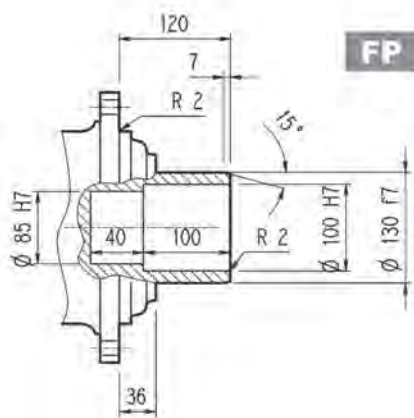
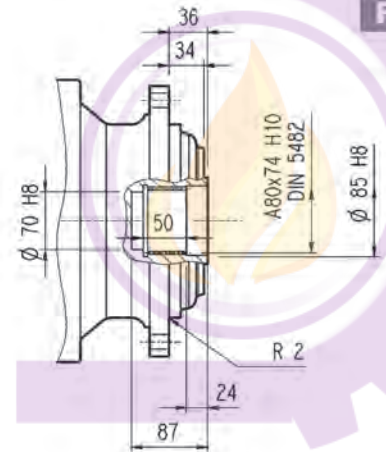
3/A 07 L2



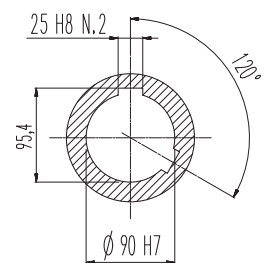
**PC**



**FZ**

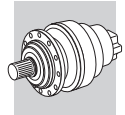


**FDK**



**FP**

$M_{2max} = 18200 \text{ Nm}$



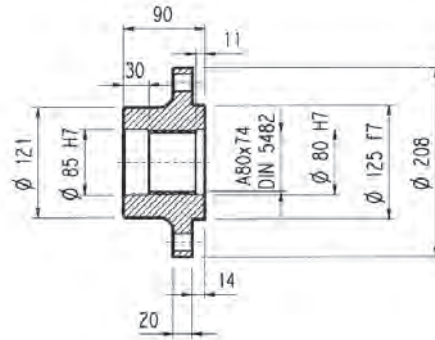
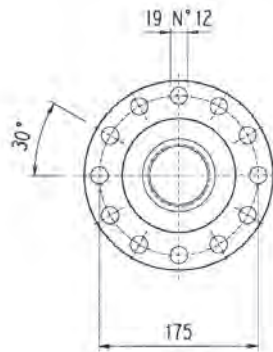
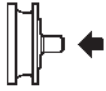
307 L

307 R

3/V 07 L3

3/A 07 L2

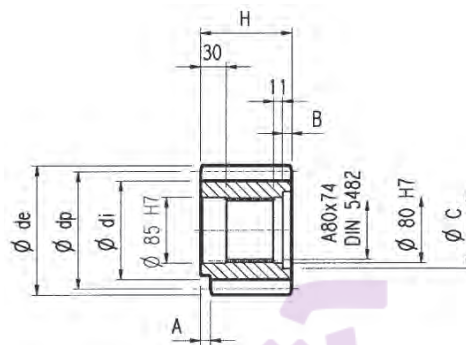
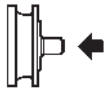
Flange



W0A

Material: Steel C40

Pinions

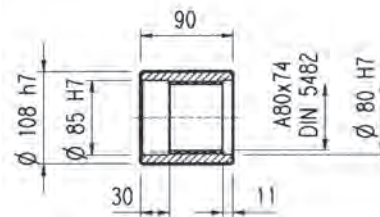
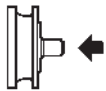


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di  | de    | H   | A  | B  | C   | Material                              |
|------|----|----|-------|-----|-----|-------|-----|----|----|-----|---------------------------------------|
| PFG  | 8  | 16 | 0.500 | 128 | 117 | 149.5 | 90  | —  | —  | —   | Steel 39NiCrMo3 hardened and tempered |
| PHC  | 10 | 12 | 0.450 | 120 | 104 | 145   | 90  | —  | —  | —   |                                       |
| PHE  | 10 | 14 | 0.320 | 140 | 121 | 165   | 116 | 13 | 26 | 95  |                                       |
| PHF  | 10 | 15 | 0.150 | 150 | 130 | 171.5 | 107 | 20 | 17 | 100 |                                       |
| PHG  | 10 | 16 | 0.500 | 160 | 145 | 186   | 90  | —  | —  | —   | Steel 18NiCrMo5 case hardened         |
| PHH1 | 10 | 17 | —     | 170 | 145 | 189   | 90  | —  | —  | —   |                                       |
| PHH2 | 10 | 17 | 0.500 | 170 | 154 | 198   | 90  | —  | —  | —   |                                       |
| PLD  | 12 | 13 | 0.500 | 156 | 138 | 192   | 102 | —  | 12 | 95  | Steel 39NiCrMo3 hardened and tempered |
| PLE  | 12 | 14 | 0.500 | 168 | 150 | 199.2 | 90  | —  | —  | —   |                                       |
| PLI  | 12 | 18 | 0.500 | 216 | 198 | 249.6 | 107 | 7  | 17 | 95  |                                       |
| PLT  | 12 | 26 | —     | 312 | 282 | 336   | 90  | 10 | —  | —   |                                       |

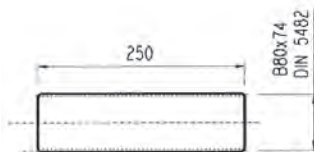
Sleeve coupling



M0A

Material: Steel 16CrNi4

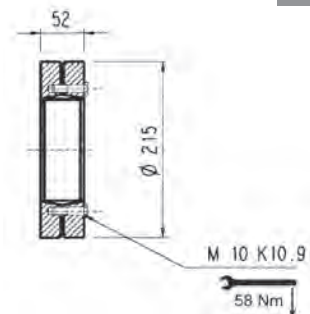
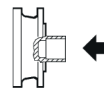
Splined bars



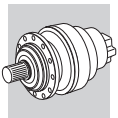
B0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

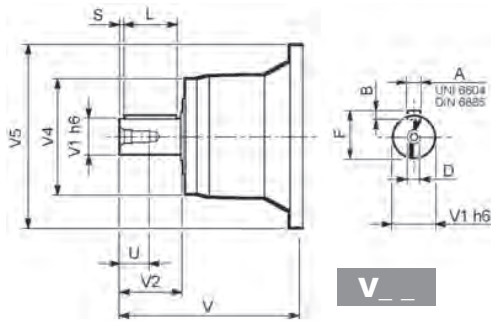


G0A

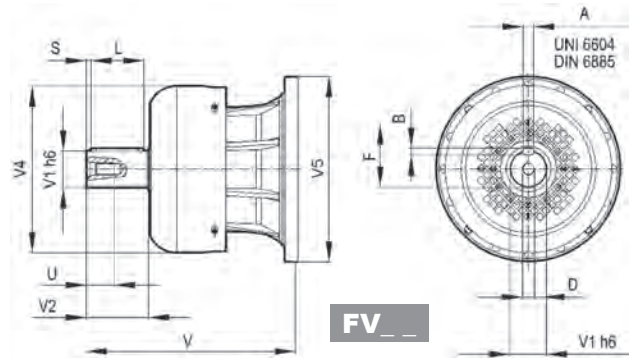


### 307 L

### 307 R



V \_ \_

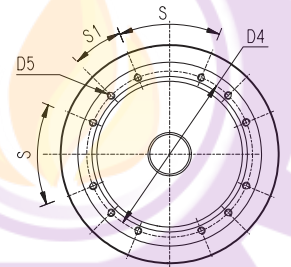
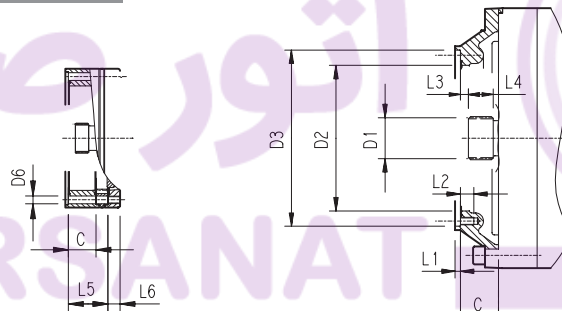


FV \_ \_

|           |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|-----------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 307 L1    | V07B  | 315   | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|           | FV07B | 375   | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|           | V07A  | 313   | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|           | FV07A | 363   | 60 | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 307 L2    | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|           | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 307 L3    | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|           | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
| 307 L4    | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|           | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
| 307 R2    | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|           | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 307 R3-R4 | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|           | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

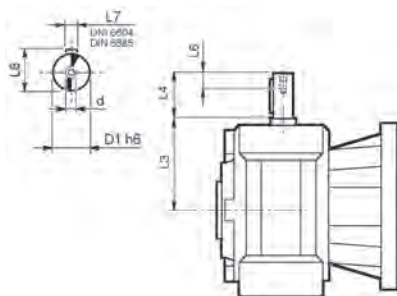
### 307 L

### 307 R

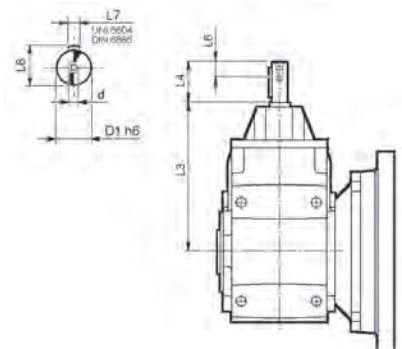


|           |      | C  | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1    | Input |
|-----------|------|----|----------------|-----|--------|-----|----------|----|----|----|----|----|-----|----|-----|-------|-------|
| 307 L1    | V9AB | 51 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —   | —  | 45° | 22.5° | B     |
| 307 L2    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9  | 18 | —   | —  | 45° | 45°   | A     |
| 307 L3    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 65  | 18 | 45° | 45°   | A     |
| 307 L4    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 118 | 18 | 45° | 45°   | A     |
| 307 R2    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9  | 18 | —   | —  | 45° | 45°   | A     |
| 307 R3-R4 | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45°   | A     |

### 3/V 07 L3



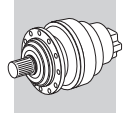
### 3/A 07 L2



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/V 07 L3_HS | 25    | 168 | 60 | 19 | 8  | 28 | M8 |

|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d   |
|--------------|-------|-----|----|----|----|----|-----|
| 3/A 07 L2_HS | 28    | 409 | 60 | 22 | 8  | 31 | M10 |





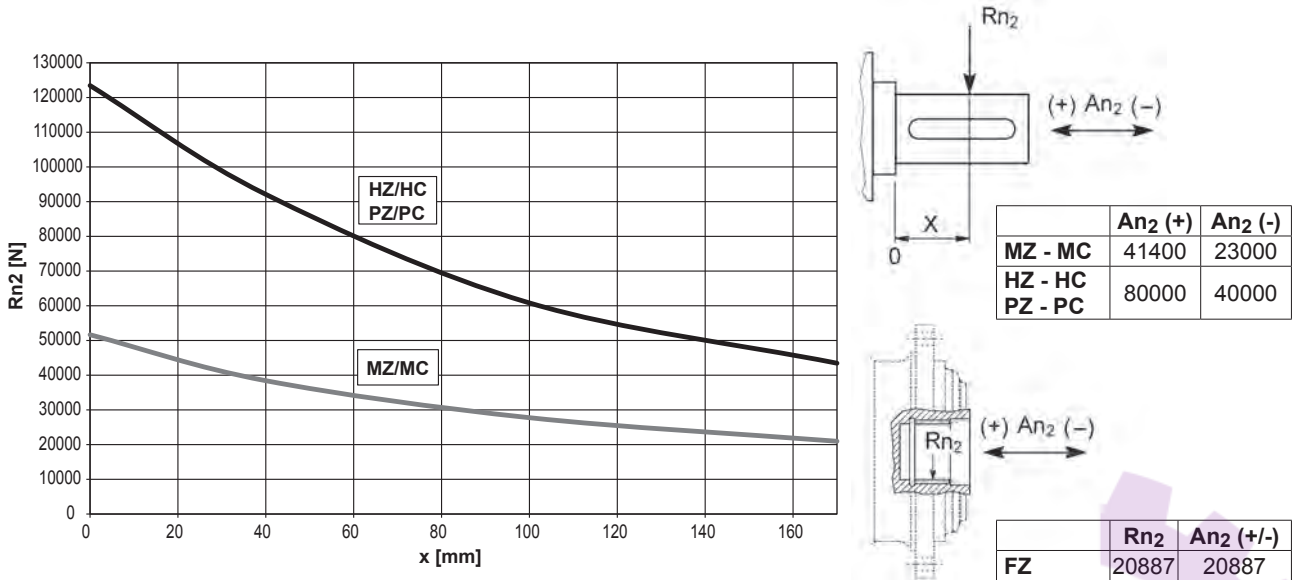
**307 L**

**307 R**

**3/V 07 L3**

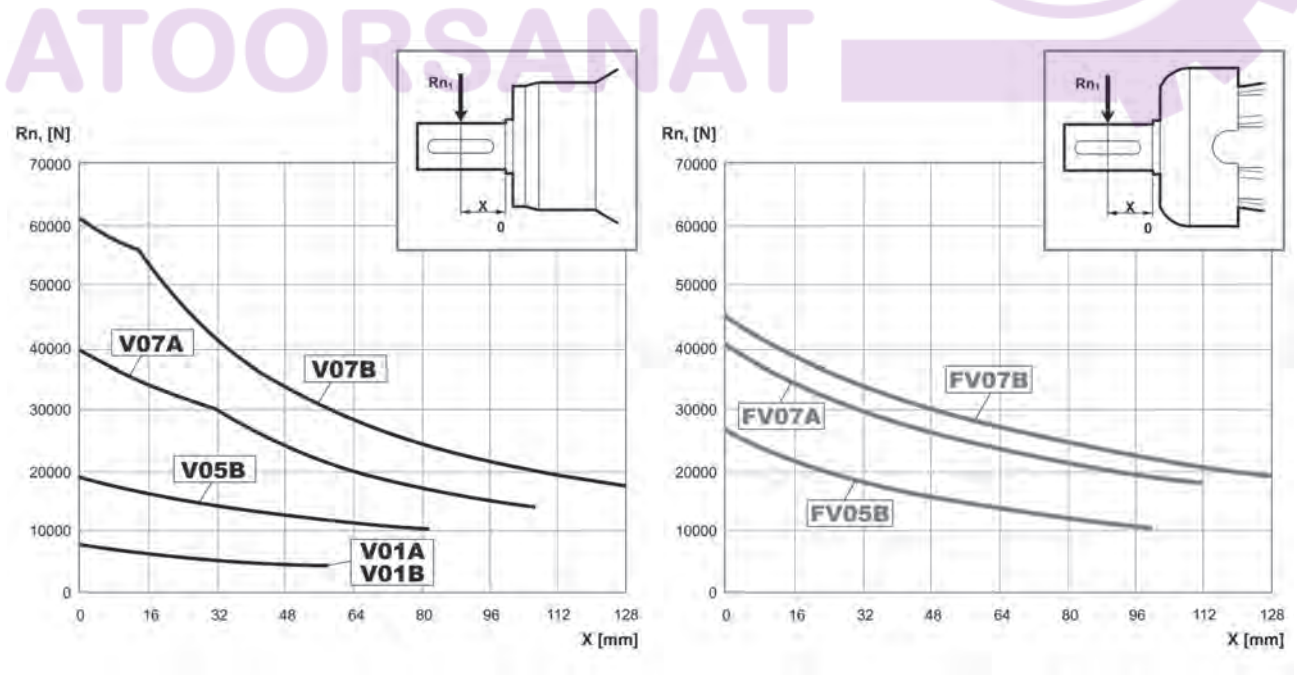
**3/A 07 L2**

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$<br>on shafts | $F_{h2} = n_2 \cdot h$ |       |       |       |        |        |         |
|--|------------------------|-------|-------|-------|--------|--------|---------|
|  |                        | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|  | $fh_2$                 | FZ    | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    |
|  | MZ - MC                | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |
|  | HZ - HC - PZ - PC      | 1.49  | 1.49  | 1.23  | 1.00   | 0.62   | 0.50    |

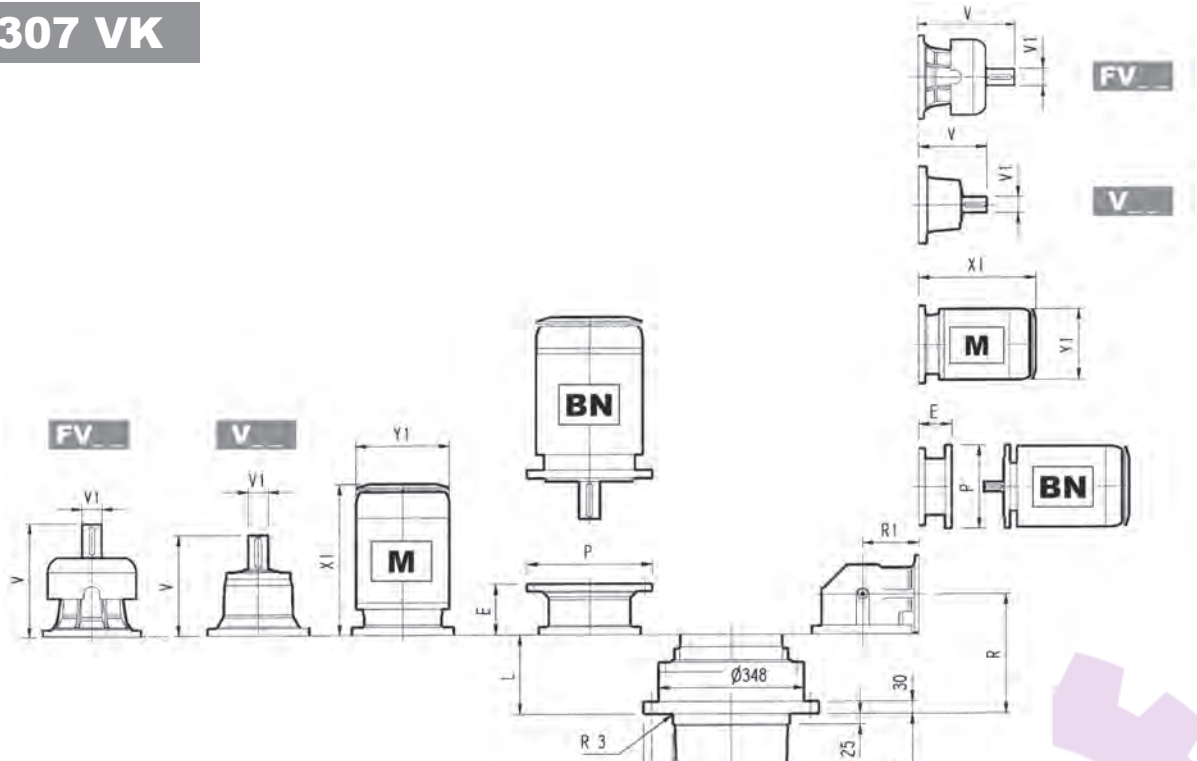
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $F_{h1} = n_1 \cdot h$ |        |        |         |         |         |          |
|--|------------------------|--------|--------|---------|---------|---------|----------|
|  |                        | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
| $fh_1$                                     |                        | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



### 307 VK



### 307 L\_VK

### 307 R\_VK

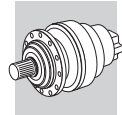
آتور صنعت  
ATOORSANAT

|        | L   |     |       |    |    |     |    |    |     |    |    |     |    | P71 |    | P80 |    | P90 |    | P100 |    | P112 |    | P132 |     | P160 |     | P180 |   | P200 |   | P225 |   | P250 |   |   |
|--------|-----|-----|-------|----|----|-----|----|----|-----|----|----|-----|----|-----|----|-----|----|-----|----|------|----|------|----|------|-----|------|-----|------|---|------|---|------|---|------|---|---|
|        |     | Kg  | V     | VI | Kg | V   | VI | Kg | V   | VI | Kg | V   | VI | Kg  | V  | VI  | Kg | V   | VI | Kg   | V  | VI   | Kg | V    | VI  | E    | P   | E    | P | E    | P | E    | P | E    | P |   |
| 307 L1 | 80  | 145 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34  | —  | —   | —  | —   | —  | —    | —  | —    | —  | —    | —   | —    | —   | —    | — | —    | — | —    | — | —    | — |   |
| 307 L2 | 169 | 160 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —   | —  | —   | —  | —   | —  | —    | —  | —    | —  | —    | —   | —    | —   | —    | — | —    | — | —    | — | —    | — | — |
| 307 L3 | 234 | 170 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —   | 65 | 160 | 84 | 200 | 84 | 200  | 94 | 250  | 94 | 250  | 114 | 300  | 144 | 350  | — | —    | — | —    | — | —    | — | — |
| 307 L4 | 287 | 175 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —   | 65 | 160 | 84 | 200 | 84 | 200  | 94 | 250  | 94 | 250  | 114 | 300  | 144 | 350  | — | —    | — | —    | — | —    | — | — |

|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 307 L1 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | —       | —   | —   | —        | —   | —   | —        | —   | —   |
| 307 L2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 460     | 571 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 307 L3 | —       | —   | —   | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |
| 307 L4 | 253     | 314 | 138 | 280      | 352 | 156 | 325      | 421 | 195 | 357      | 449 | 195 | 460     | 571 | 258 | —        | —   | —   | —        | —   | —   |

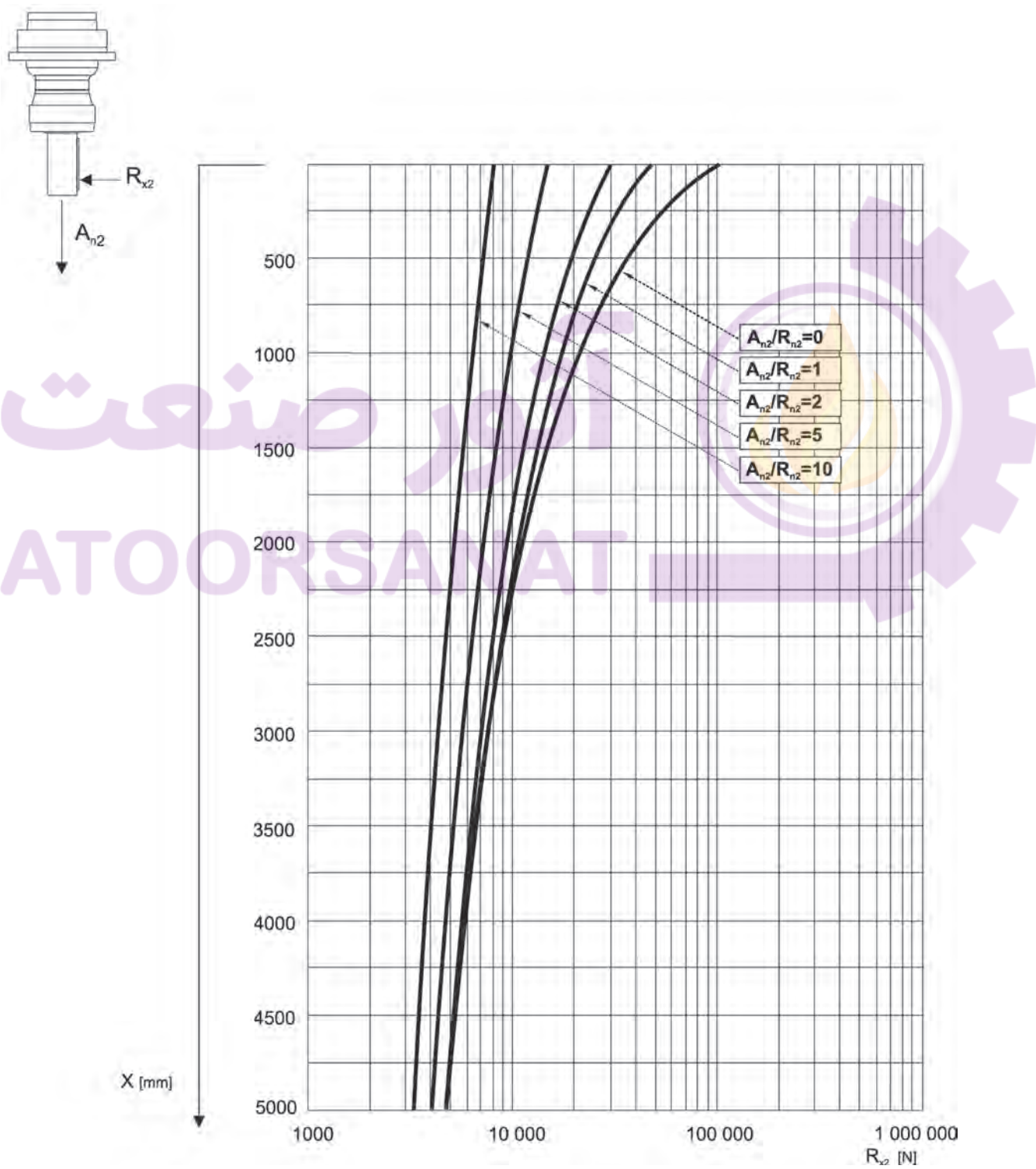
|        | R   | R1  |     |       |    |    |     |    |    |     |    |    |   |    | P71 |    | P80 |    | P90 |    | P100 |    | P112 |    | P132 |     | P160 |     | P180 |   | P200 |   |   |   |   |
|--------|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|---|----|-----|----|-----|----|-----|----|------|----|------|----|------|-----|------|-----|------|---|------|---|---|---|---|
|        |     |     | Kg  | V     | VI | Kg | V   | VI | Kg | V   | VI | Kg | V | VI | Kg  | V  | VI  | Kg | V   | VI | Kg   | V  | VI   | Kg | V    | VI  | E    | P   | E    | P | E    | P | E | P |   |
| 307 R2 | 199 | 225 | 180 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —   | —  | —   | —  | —   | —  | —    | —  | —    | —  | —    | —   | —    | —   | —    | — | —    | — | — | — |   |
| 307 R3 | 261 | 140 | 170 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —   | 65 | 160 | 84 | 200 | 84 | 200  | 94 | 250  | 94 | 250  | 114 | 300  | 144 | 350  | — | —    | — | — | — |   |
| 307 R4 | 326 | 122 | 175 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —   | 65 | 160 | 84 | 200 | 84 | 200  | 94 | 250  | 94 | 250  | 114 | 300  | 144 | 350  | — | —    | — | — | — | — |

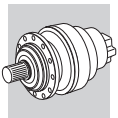
|        | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     | S4 + M4 |     |     | S5 + M5S |     |     | S5 + M5L |     |     |
|--------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|---------|-----|-----|----------|-----|-----|----------|-----|-----|
|        | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  | X1      | X2  | Y1  | X1       | X2  | Y1  | X1       | X2  | Y1  |
| 307 R2 | —       | —   | —   | —        | —   | —   | —        | —   | —   | —        | —   | —   | 508     | 619 | 258 | 552      | 692 | 310 | 596      | 736 | 310 |
| 307 R3 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 | —        | —   | —   | —        | —   | —   |
| 307 R4 | 253     | 314 | 138 | 328      | 400 | 156 | 373      | 469 | 195 | 405      | 497 | 195 | 508     | 619 | 258 | —        | —   | —   | —        | —   | —   |



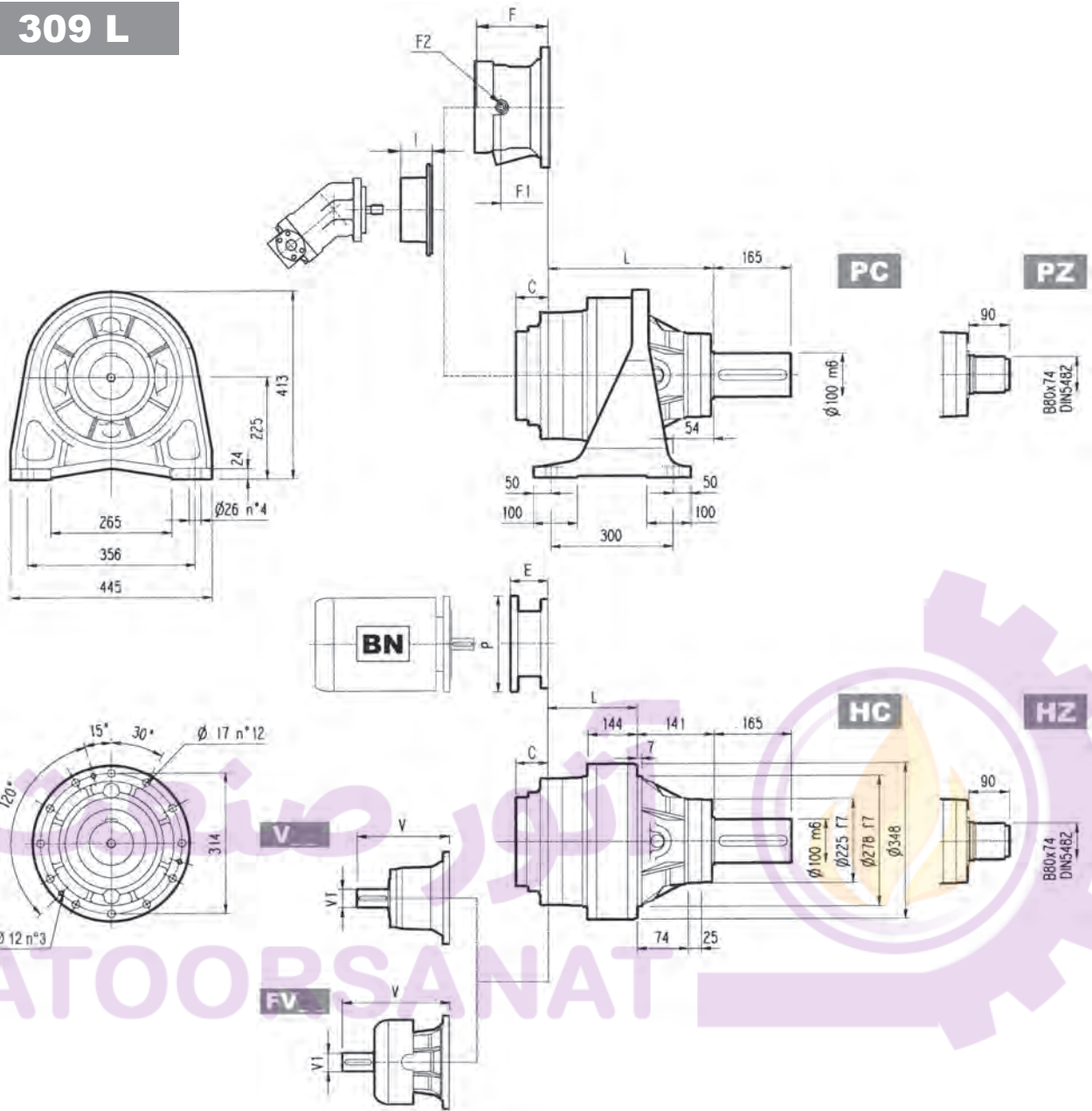
**307 VK**

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





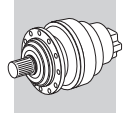
# 309 L



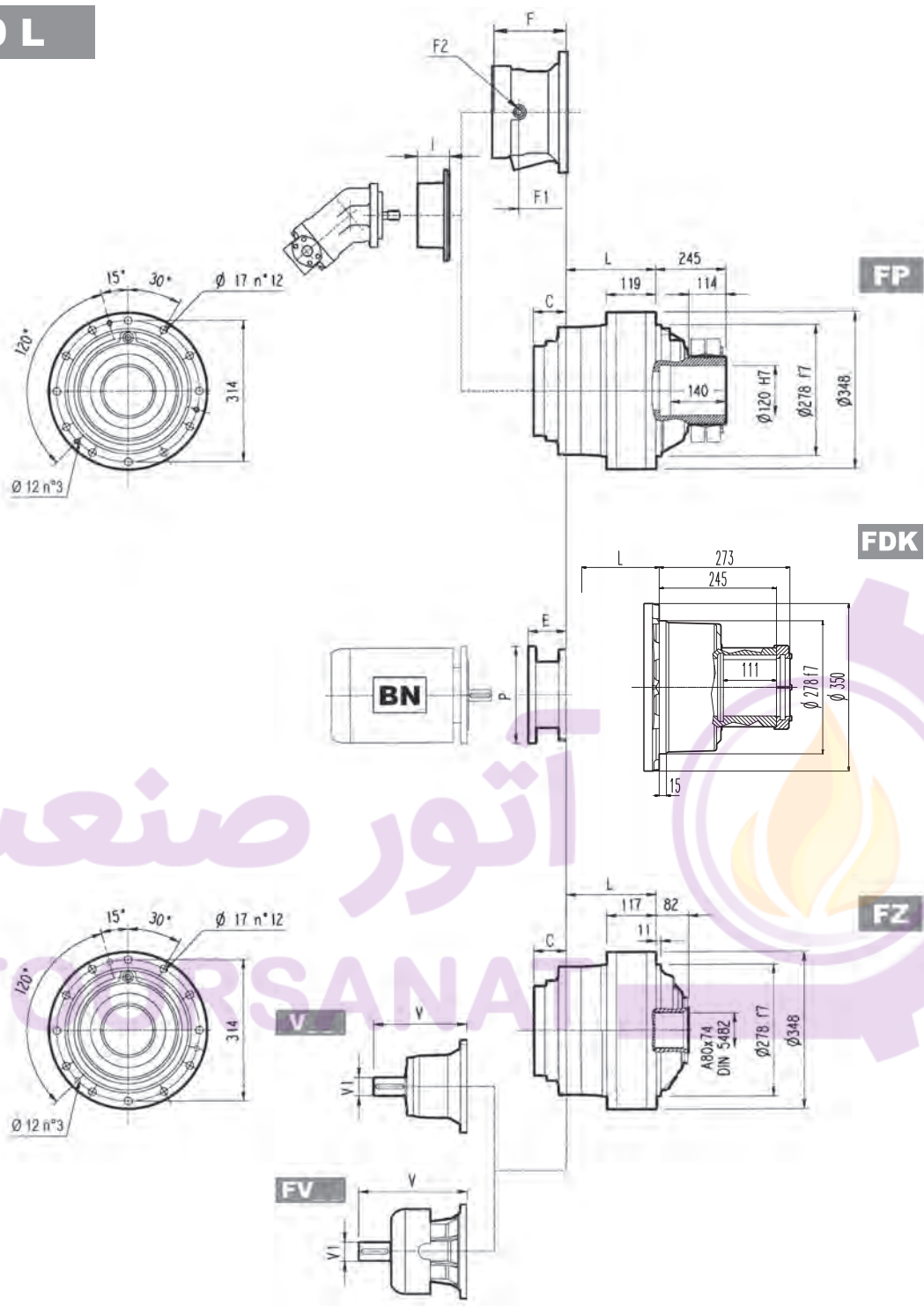
|        | L       |         |     |          | Kg      |         |     |          |
|--------|---------|---------|-----|----------|---------|---------|-----|----------|
|        | PC - PZ | HC - HZ | FZ  | FP - FDK | PC - PZ | HC - HZ | FZ  | FP - FDK |
| 309 L1 | 267     | 126     | 99  | 101      | 130     | 115     | 95  | 100      |
| 309 L2 | 356     | 215     | 188 | 190      | 142     | 127     | 107 | 112      |
| 309 L3 | 421     | 280     | 253 | 255      | 149     | 134     | 114 | 119      |
| 309 L4 | 474     | 333     | 306 | 308      | 153     | 138     | 118 | 123      |

|        | V     |    |    | V1  |    |    | V   |    |    | V1  |    |    | C  | Input | I   | F   |     |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|-----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |    |       |     | F   | F1  | F2    |      |       |    |
| 309 L1 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51 | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |
| 309 L2 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37 | A     | —   | 145 | 95  | 1/4 G | 5    | A     | 16 |
| 309 L3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | —   | 105 | 65  | 1/4 G | 4    | A     | 10 |
| 309 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | —   | 105 | 65  | 1/4 G | 4    | A     | 10 |





**309 L**

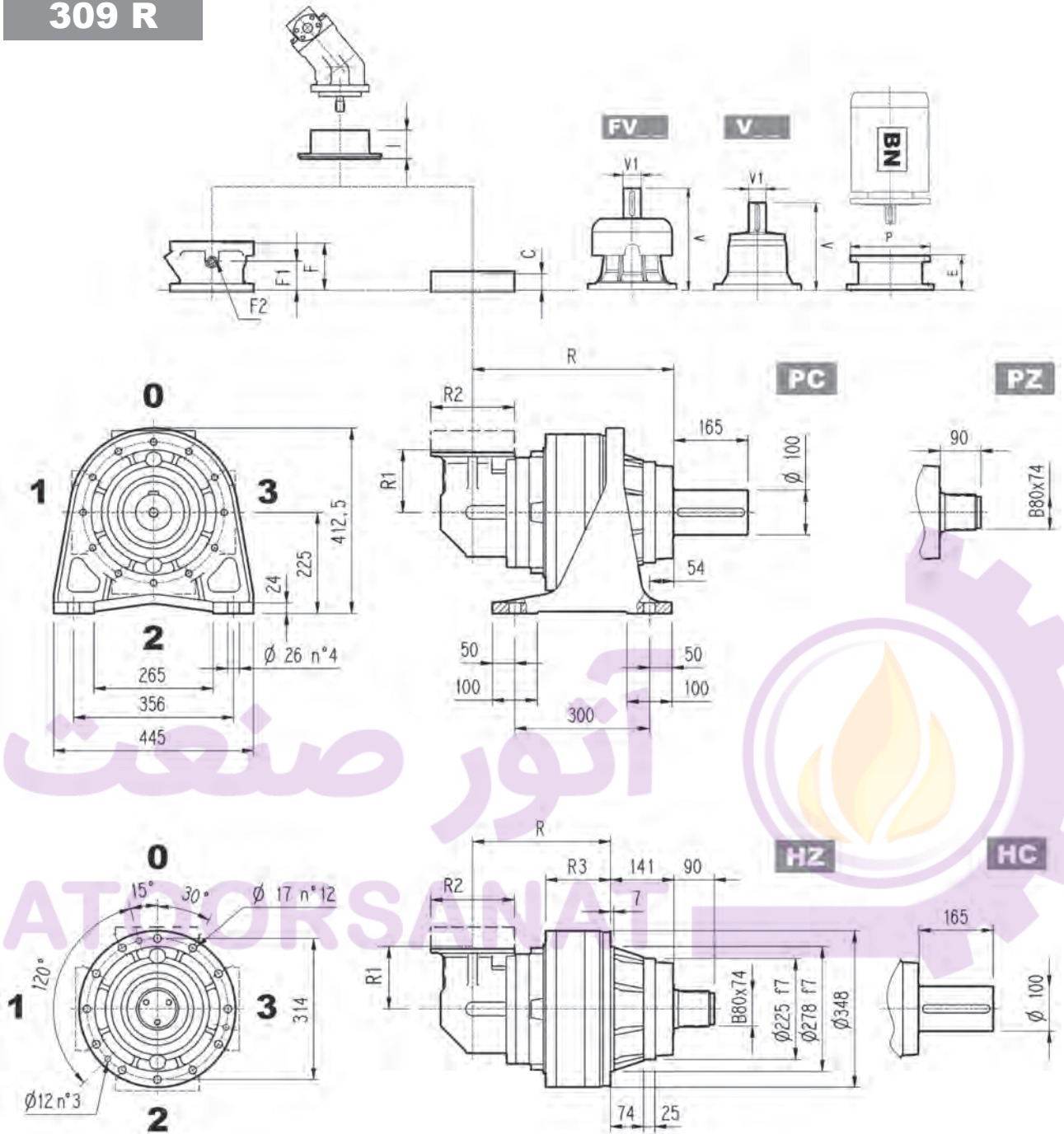


**FP**  $M_{2max} = 29000 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 309 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |
| 309 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 309 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |
| 309 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

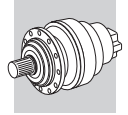


# 309 R

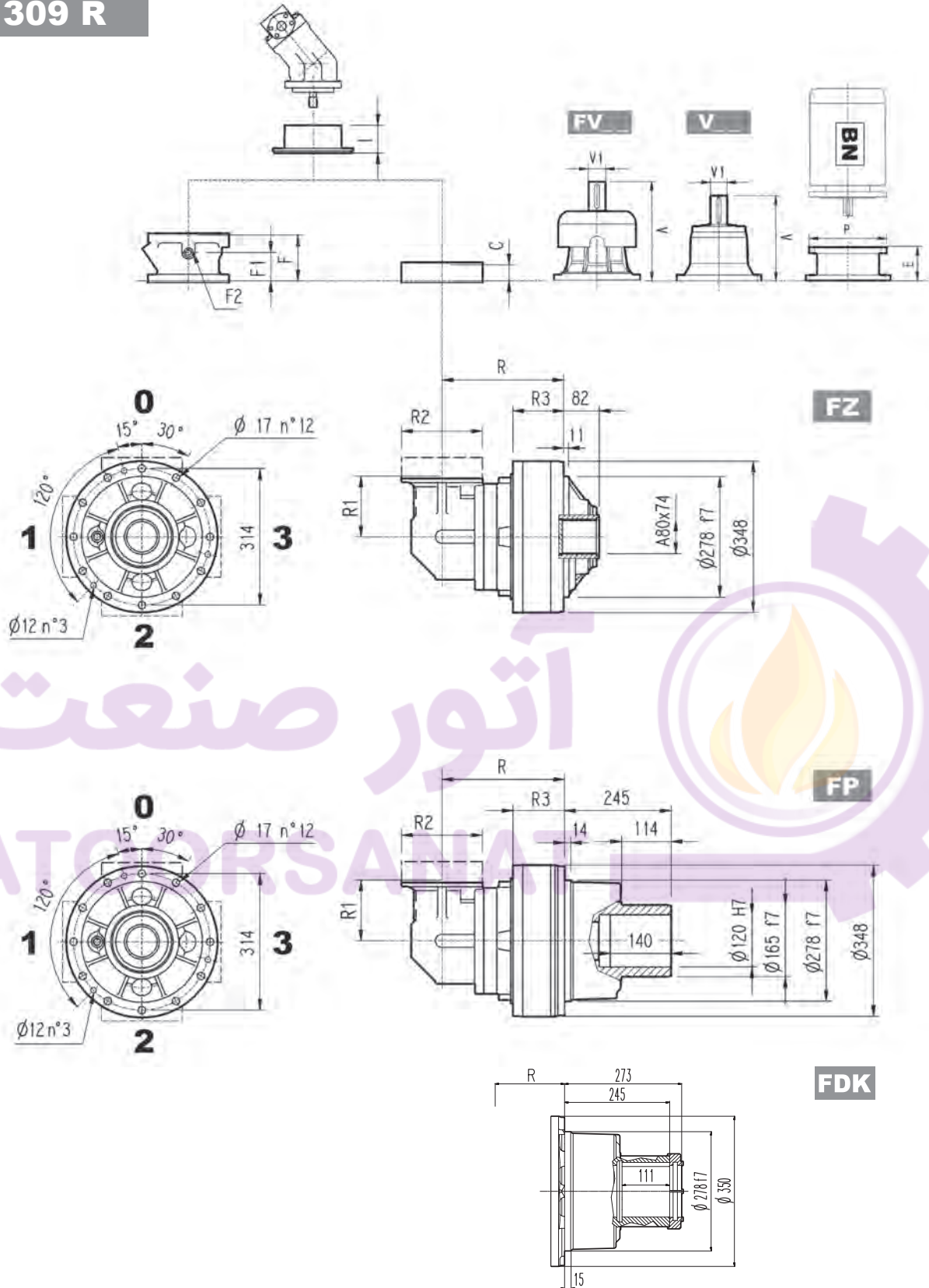


|        | R     |       |     |          | R1  | R2  | R3    |     |     | Kg    |       |     |          |
|--------|-------|-------|-----|----------|-----|-----|-------|-----|-----|-------|-------|-----|----------|
|        | PC-PZ | HC-HZ | FZ  | FP - FDK |     |     | HC-HZ | FZ  | FP  | PC-PZ | HC-HZ | FZ  | FP - FDK |
| 309 R2 | 386   | 245   | 218 | 220      | 225 | 245 | 168   | 141 | 143 | 180   | 165   | 145 | 150      |
| 309 R3 | 448   | 307   | 280 | 282      | 140 | 186 | 144   | 117 | 119 | 162   | 147   | 127 | 132      |
| 309 R4 | 513   | 372   | 345 | 347      | 122 | 186 | 144   | 117 | 119 | 163   | 148   | 128 | 133      |

|        | V     |    |    |     |    |    | V   |    |    |   |    |    | C  | Input | I   | F   | F1 | F2    | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|---|----|----|----|-------|-----|-----|----|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg |    |       |     |     |    |       |      |       |    |
| 309 R2 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —  | 37 | A     | —   | 145 | 95 | 1/4 G | 5    | A     | 16 |
| 309 R3 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | —   | 105 | 65 | 1/4 G | 4    | A     | 10 |
| 309 R4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | 461 | 105 | 65 | 1/4 G | 4    | A     | 10 |

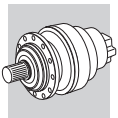


309 R

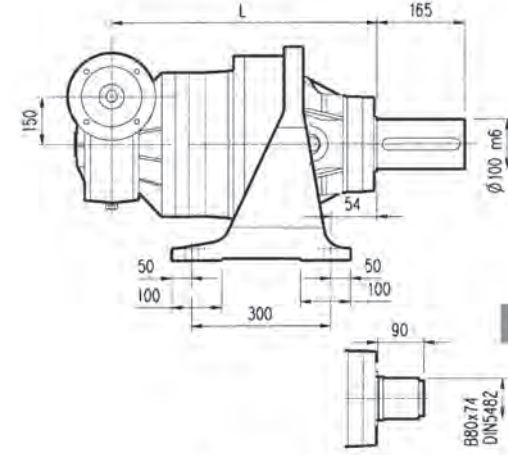
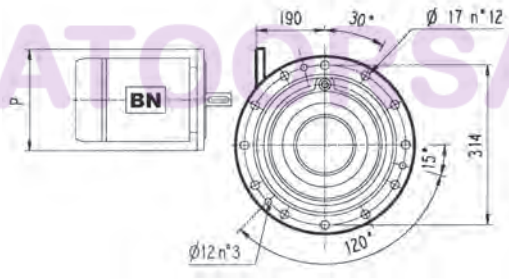
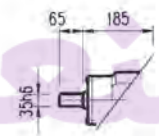
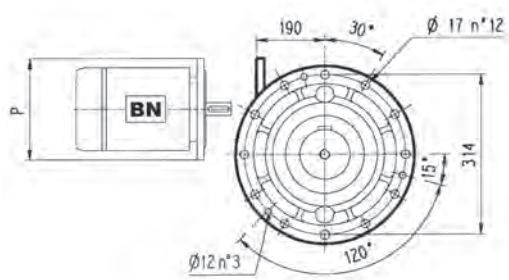
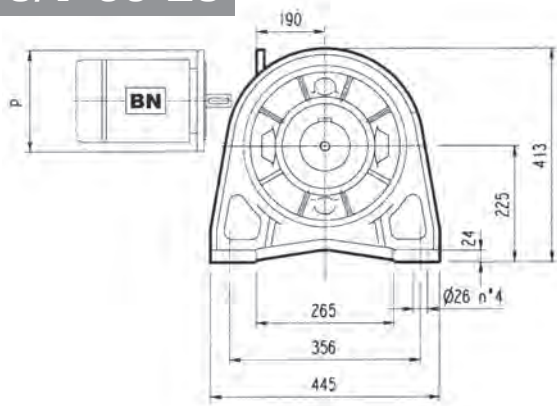


**FP**  $M_{2max} = 29000 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 309 R2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 309 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 309 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |

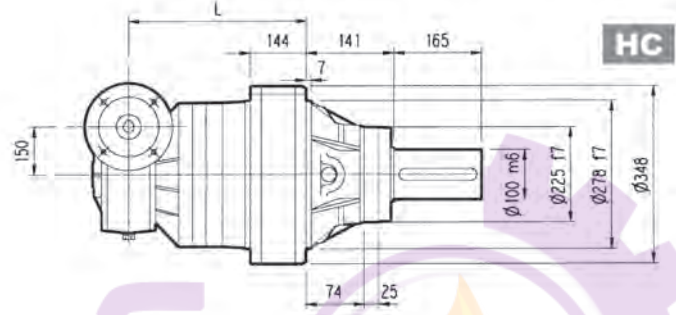
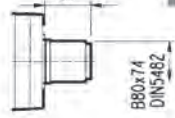


**3/V 09 L3**

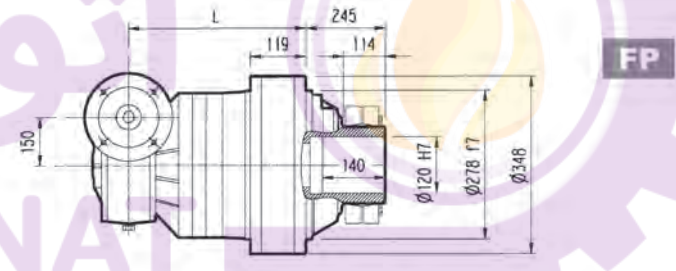


**PC**

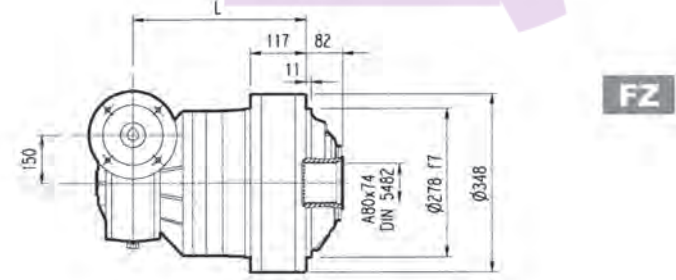
**HZ PZ**



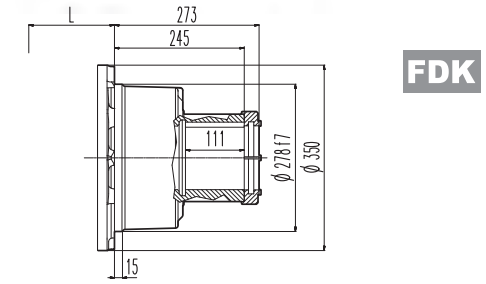
**HC**



**FP**



**FZ**

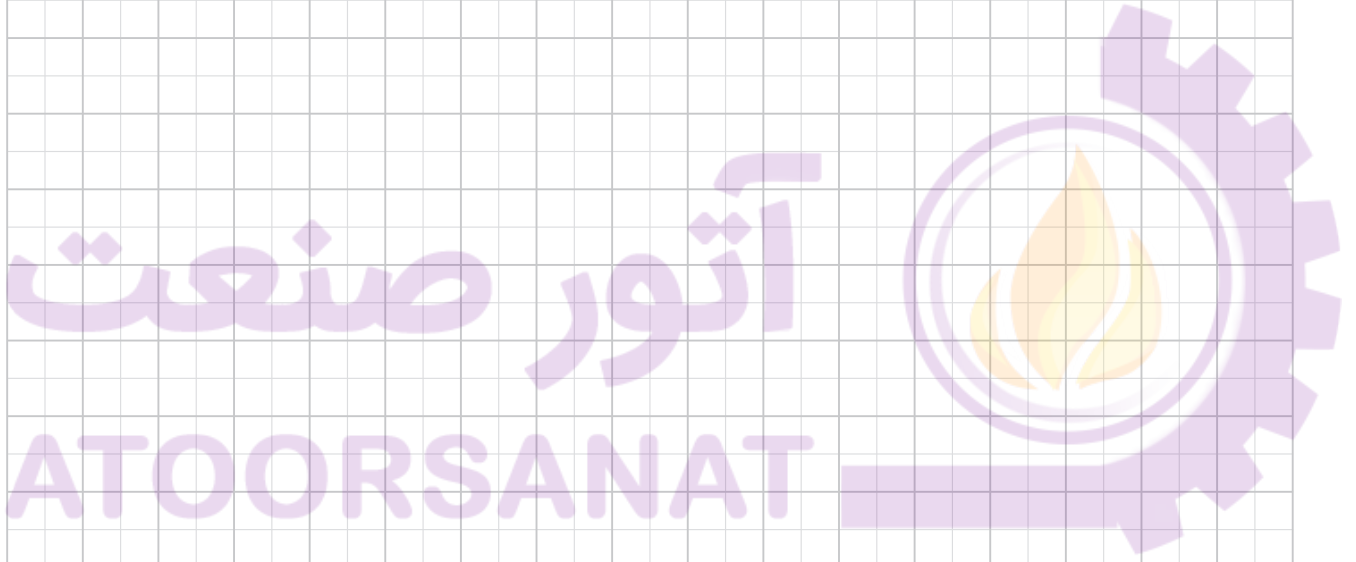
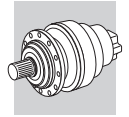


**FDK**

**FP**  $M_{2max} = 29000 \text{ Nm}$

|           | L       |         |     |          | Kg      |         |     |          | P100 | P112 | P132 | P160 |
|-----------|---------|---------|-----|----------|---------|---------|-----|----------|------|------|------|------|
|           | PC - PZ | HC - HZ | FZ  | FP - FDK | PC - PZ | HC - HZ | FZ  | FP - FDK |      |      |      |      |
| 3/V 09 L3 | 530     | 389     | 362 | 364      | 202     | 187     | 167 | 172      | P    | P    | P    | P    |
|           |         |         |     |          |         |         |     |          | 250  | 250  | 300  | 350  |



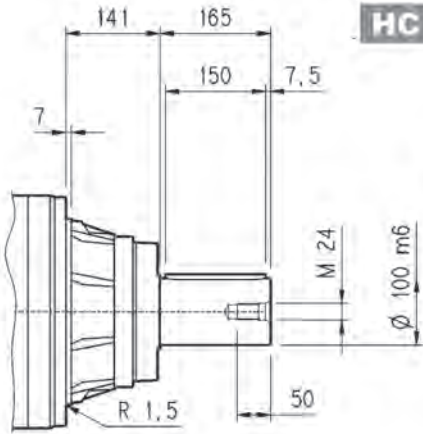




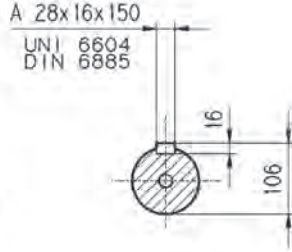
**309 L**

**309 R**

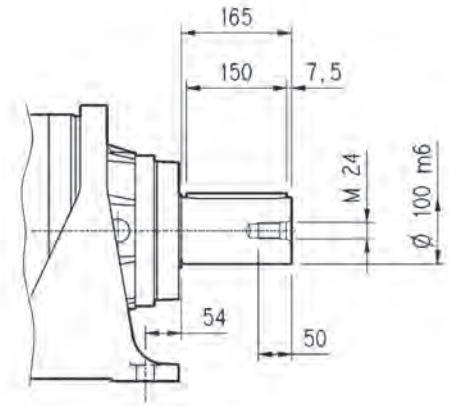
**3/V 09 L3**



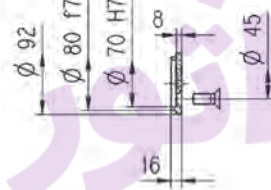
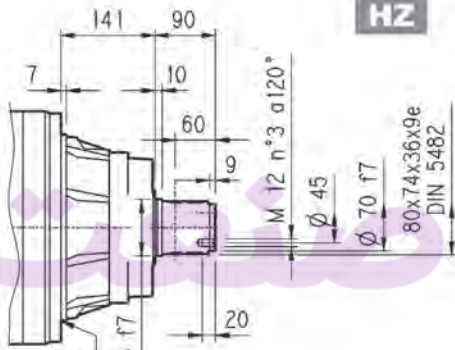
**HC**



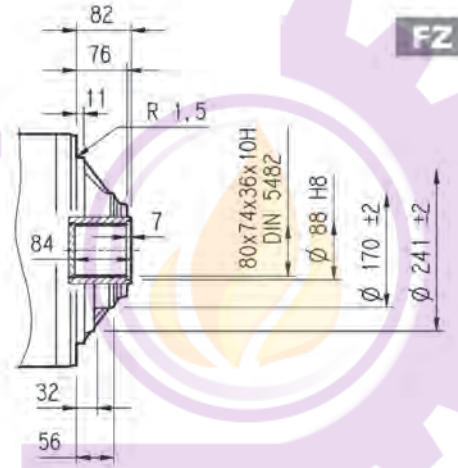
**PC**



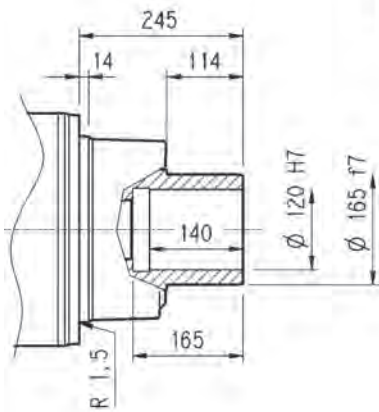
**HZ**



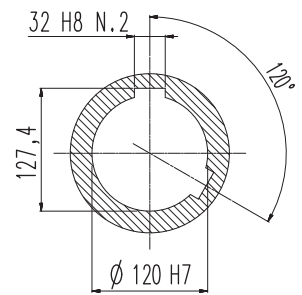
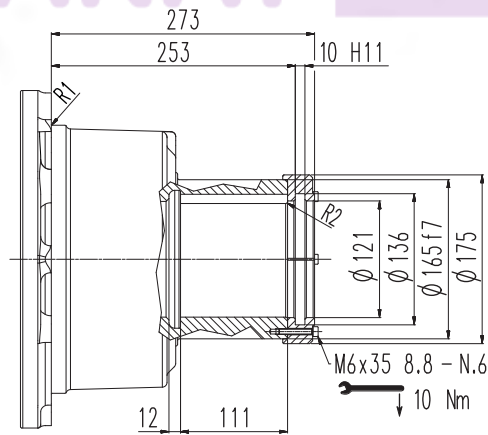
**FZ**



**FP**

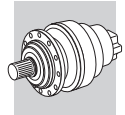


**FDK**



**FP**

$M_{2max} = 29000\text{ Nm}$

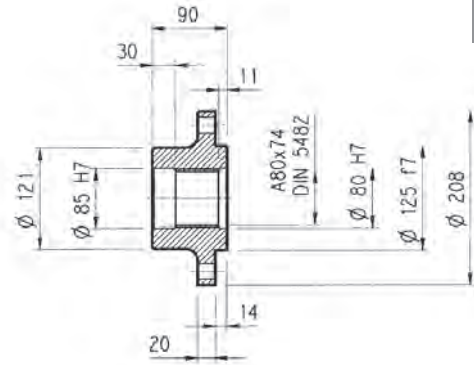
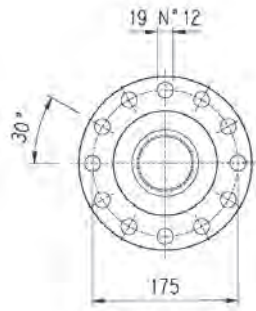
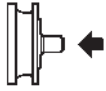


309 L

309 R

3/V 09 L3

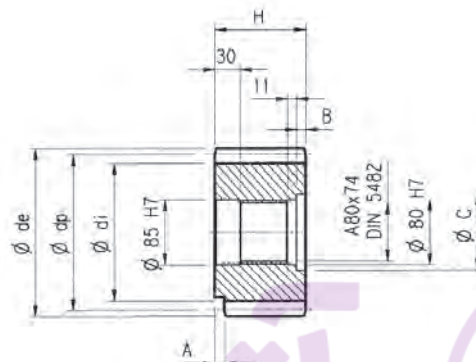
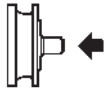
Flange



W0A

Material: Steel C40

Pinions

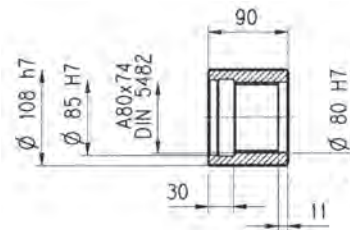
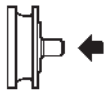


P...

$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di  | de    | H   | A  | B  | C   | Material                              |
|------|----|----|-------|-----|-----|-------|-----|----|----|-----|---------------------------------------|
| PFG  | 8  | 16 | 0.500 | 128 | 117 | 149.5 | 90  | —  | —  | —   | Steel 39NiCrMo3 hardened and tempered |
| PHC  | 10 | 12 | 0.450 | 120 | 104 | 145   | 90  | —  | —  | —   |                                       |
| PHE  | 10 | 14 | 0.320 | 140 | 121 | 165   | 116 | 13 | 26 | 95  |                                       |
| PHF  | 10 | 15 | 0.150 | 150 | 130 | 171.5 | 107 | 20 | 17 | 100 |                                       |
| PHG  | 10 | 16 | 0.500 | 160 | 145 | 186   | 90  | —  | —  | —   | Steel 18NiCrMo5 case hardened         |
| PHH1 | 10 | 17 | —     | 170 | 145 | 189   | 90  | —  | —  | —   |                                       |
| PHH2 | 10 | 17 | 0.500 | 170 | 154 | 198   | 90  | —  | —  | —   | Steel 39NiCrMo3 hardened and tempered |
| PLD  | 12 | 13 | 0.500 | 156 | 138 | 192   | 102 | —  | 12 | 95  |                                       |
| PLE  | 12 | 14 | 0.500 | 168 | 150 | 199.2 | 90  | —  | —  | —   |                                       |
| PLI  | 12 | 18 | 0.500 | 216 | 198 | 249.6 | 107 | 7  | 17 | 95  | Steel 18NiCrMo5 case hardened         |
| PLT  | 12 | 26 | —     | 312 | 282 | 336   | 90  | 10 | —  | —   |                                       |

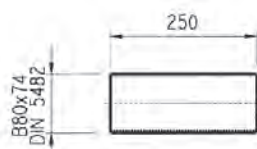
Sleeve coupling



MOA

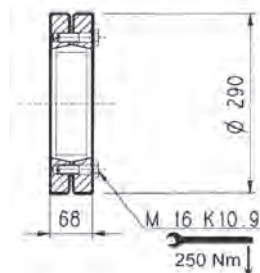
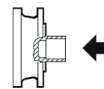
Material: Steel 16CrNi4

Splined bars



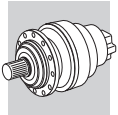
B0A

Shrink disc



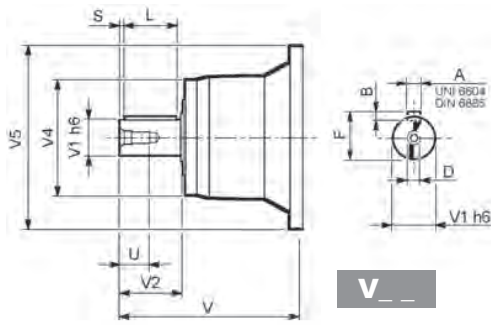
G0A

Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

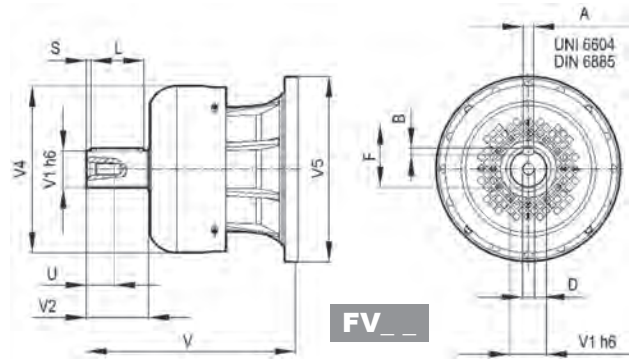


309 L

309 R



V \_ \_

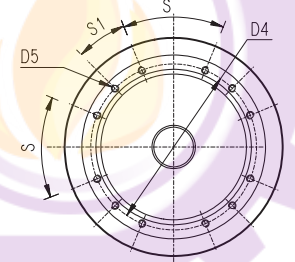
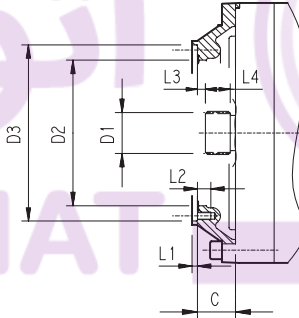
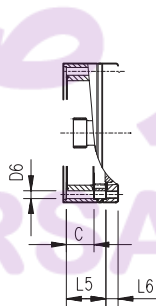


FV \_ \_

|           |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|-----------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 309 L1    | V07B  | 315   | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|           | FV07B | 375   | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|           | V07A  | 313   | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 309 L2    | FV07A | 363   | 60 | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|           | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 309 L3    | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|           | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
| 309 L4    | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
|           | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
| 309 R2    | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
|           | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 309 R3-R4 | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|           | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
| 309 R3-R4 | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

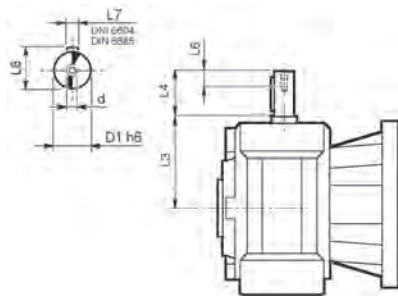
309 L

309 R



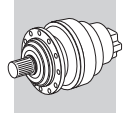
|           |      | C  | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3 | L4 | L5  | L6 | S   | S1    | Input |
|-----------|------|----|----------------|-----|--------|-----|----------|----|----|----|----|----|-----|----|-----|-------|-------|
| 309 L1    | V9AB | 51 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —   | —  | 45° | 22.5° | B     |
| 309 L2    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9  | 18 | —   | —  | 45° | 45°   | A     |
| 309 L3    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 65  | 18 | 45° | 45°   | A     |
| 309 L4    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 118 | 18 | 45° | 45°   | A     |
| 309 R2    | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9  | 18 | —   | —  | 45° | 45°   | A     |
| 309 R3-R4 | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 37  | 18 | 45° | 45°   | A     |

3/V 09 L3



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/V 09 L3_HS | 35    | 185 | 65 | 20 | 10 | 38 | M8 |



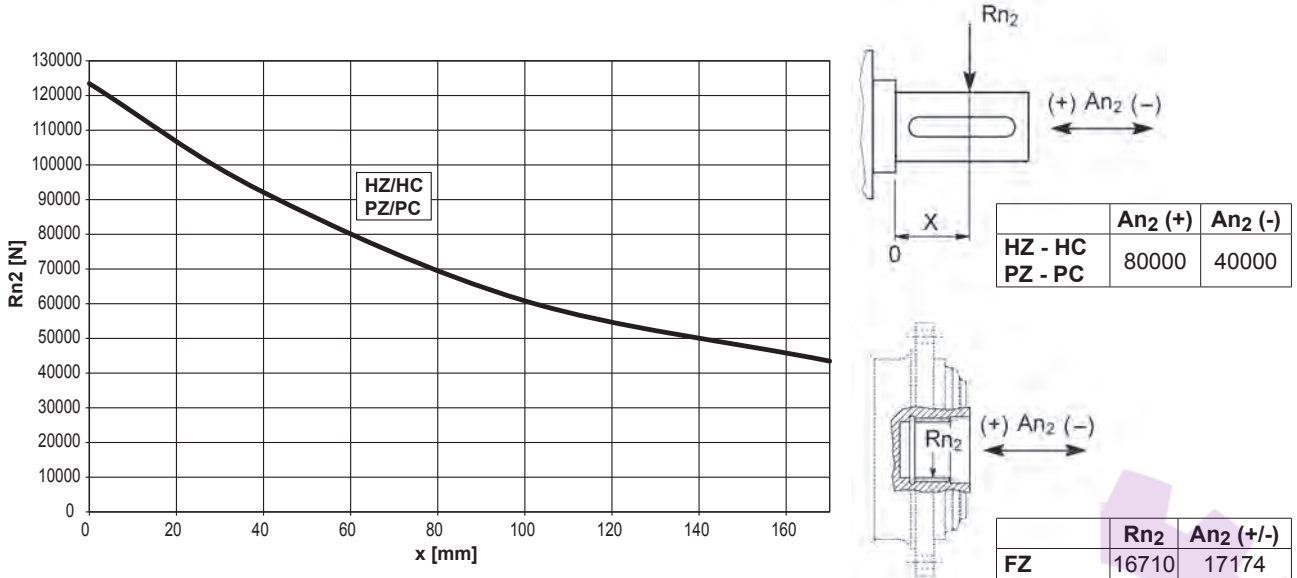


**309 L**

**309 R**

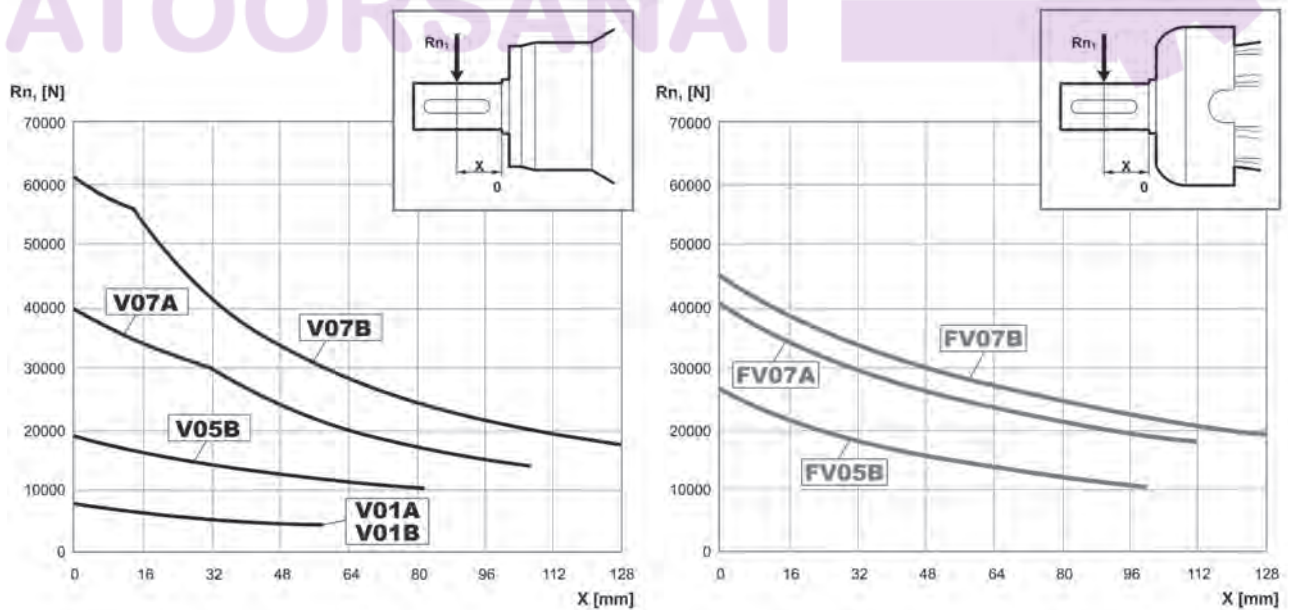
**3/V 09 L3**

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$ on shafts | $Fh_2 = n_2 \cdot h$     |         |         |          |          |           |      |
|---|--------------------------|---------|---------|----------|----------|-----------|------|
|   | $10000$                  | $25000$ | $50000$ | $100000$ | $500000$ | $1000000$ |      |
| $fh_2$                                  | <b>FZ</b>                | 2.15    | 1.59    | 1.26     | 1.00     | 0.58      | 0.46 |
|   | <b>HZ - HC - PZ - PC</b> | 1.49    | 1.49    | 1.23     | 1.00     | 0.62      | 0.50 |

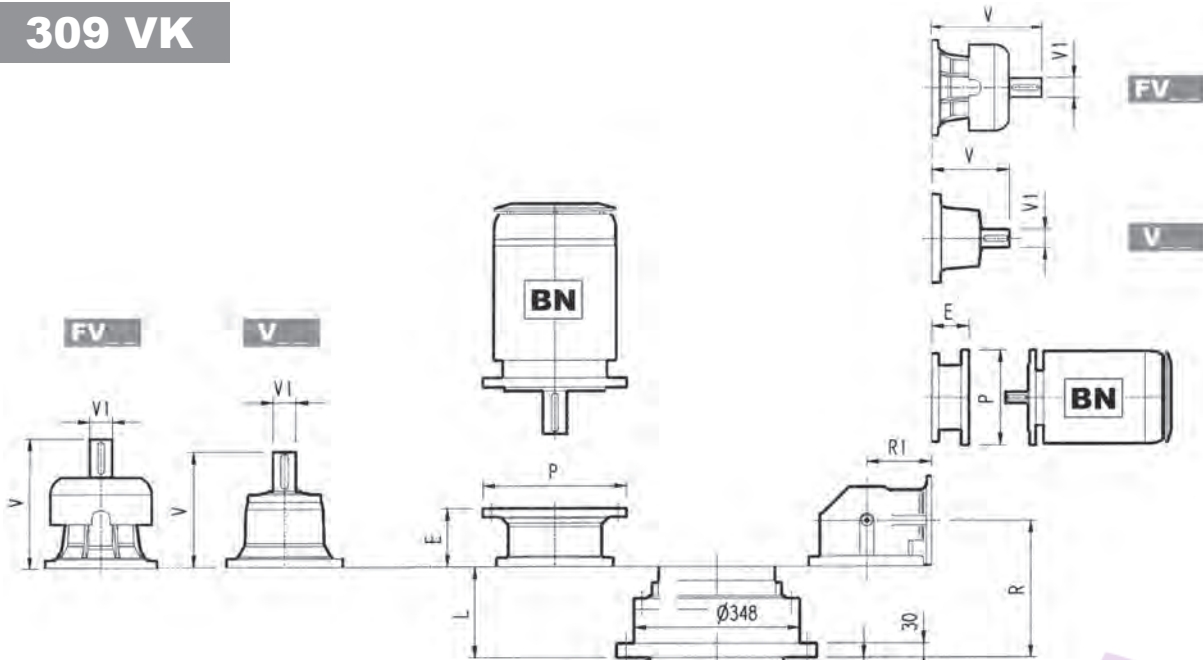
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $Fh_1 = n_1 \cdot h$ |          |           |           |           |            |  |
|---|----------------------|----------|-----------|-----------|-----------|------------|--|
|   | $250000$             | $500000$ | $1000000$ | $2000000$ | $5000000$ | $10000000$ |  |
| $fh_1$                                  | 1                    | 0.79     | 0.63      | 0.50      | 0.37      | 0.29       |  |



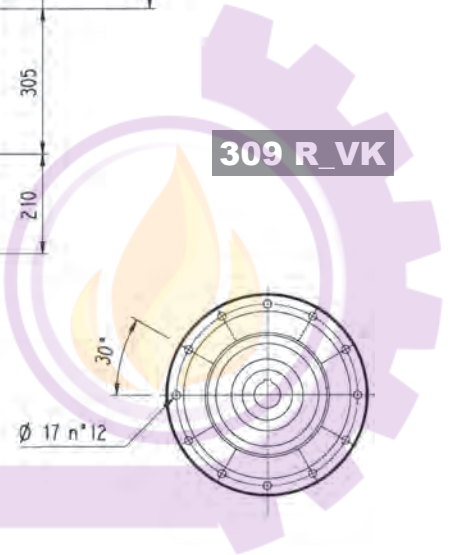
### 309 VK



### 309 L\_VK

A 32x18x200  
UNI 6604-69 / DIN 6885

### 309 R\_VK

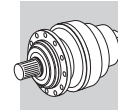


|        | L   | Kg  |       |    |    |     |    |    |     |    |    |     |    |    |
|--------|-----|-----|-------|----|----|-----|----|----|-----|----|----|-----|----|----|
|        |     |     | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |
| 309 L1 | 102 | 165 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 |
| 309 L2 | 191 | 180 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  |
| 309 L3 | 256 | 190 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  |    |
| 309 L4 | 309 | 195 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  |    |

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 309 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 450 |
| 309 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 309 L3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |
| 309 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

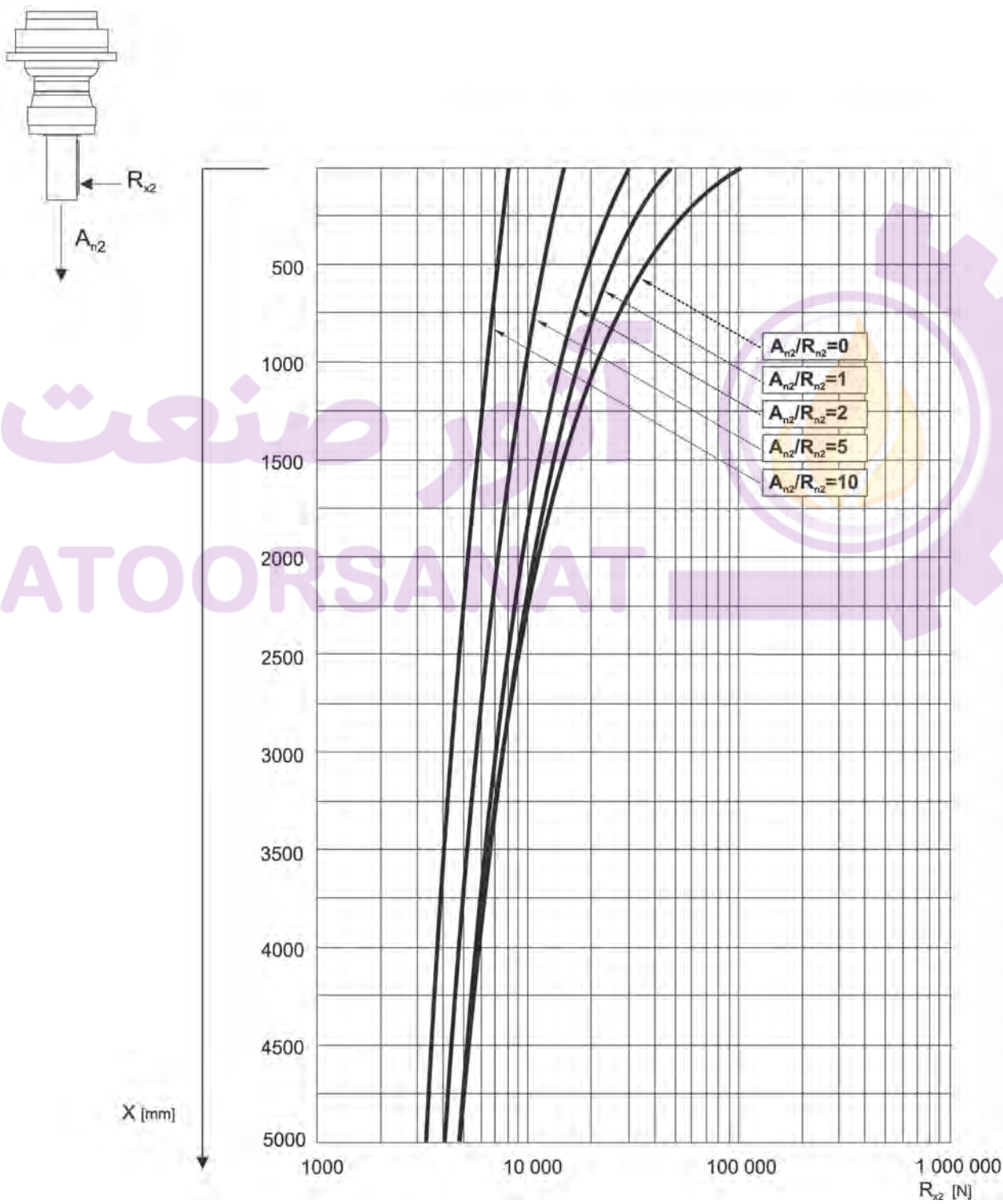
|        | R   | R1  | Kg  |       |    |    |     |    |    |   |     |    |    |    |    |   |   |   |   |   |   |
|--------|-----|-----|-----|-------|----|----|-----|----|----|---|-----|----|----|----|----|---|---|---|---|---|---|
|        |     |     |     | V     | V1 | Kg | V   | V1 | Kg | V | V1  | Kg | V  | V1 | Kg |   |   |   |   |   |   |
| 309 R2 | 221 | 225 | 200 | 239   | 48 | 15 | —   | —  | —  | — | 276 | 48 | 17 | —  | —  | — | — | — | — | — | — |
| 309 R3 | 283 | 140 | 190 | 137.5 | 24 | 6  | 158 | 38 | 7  | — | —   | —  | —  | —  | —  | — | — | — | — | — | — |
| 309 R4 | 348 | 122 | 195 | 137.5 | 24 | 6  | 158 | 38 | 7  | — | —   | —  | —  | —  | —  | — | — | — | — | — | — |

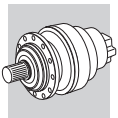
|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 309 R2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 |
| 309 R3 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |
| 309 R4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   |



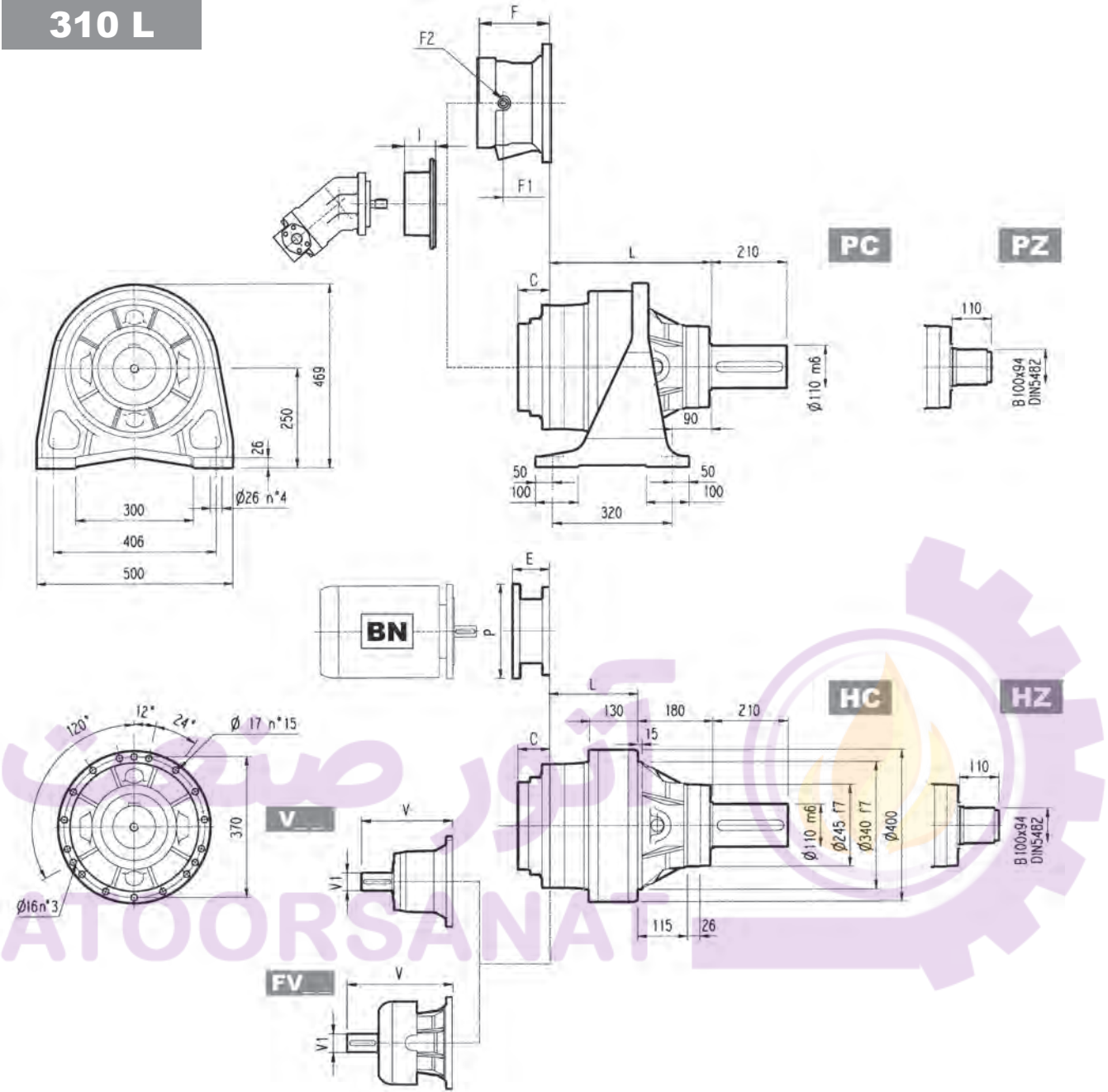
### 309 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





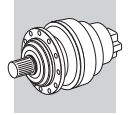
**310 L**



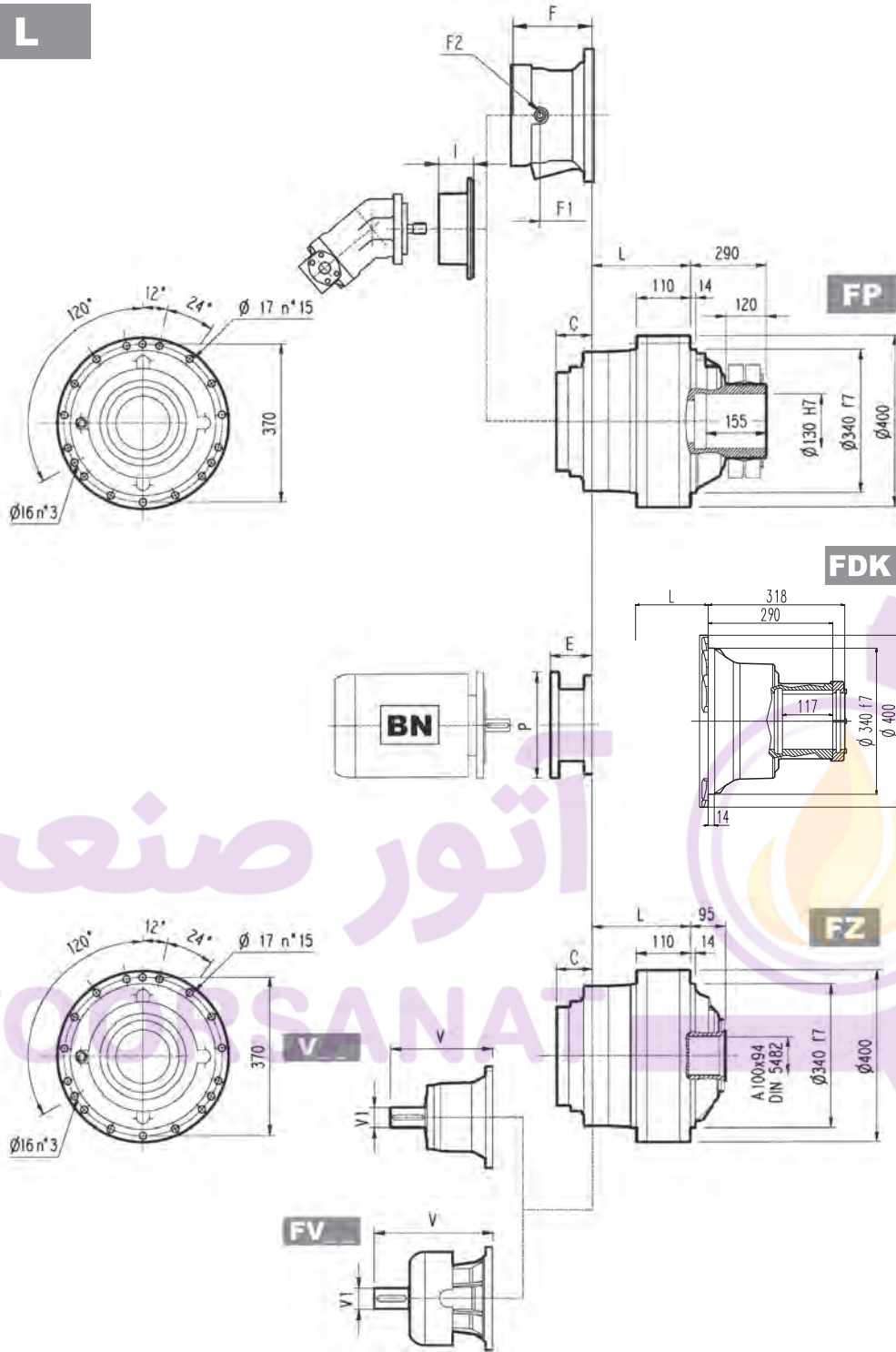
|        | L       |         |     |          | Kg      |         |     |          |
|--------|---------|---------|-----|----------|---------|---------|-----|----------|
|        | PC - PZ | HC - HZ | FZ  | FP - FDK | PC - PZ | HC - HZ | FZ  | FP - FDK |
| 310 L1 | 288     | 108     | 88  | 88       | 155     | 135     | 110 | 115      |
| 310 L2 | 424     | 244     | 224 | 224      | 185     | 165     | 140 | 145      |
| 310 L3 | 489     | 309     | 289 | 289      | 194     | 174     | 149 | 154      |
| 310 L4 | 542     | 362     | 342 | 342      | 198     | 178     | 153 | 158      |

|        | V     |    |    | V1  |    |    | V   |    |    | V1 |    |    | C  | Input | I   | F   |       |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-------|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1    | F2    |      |       |    |
| 310 L1 | 377   | 80 | 50 | —   | —  | —  | 457 | 80 | 63 | —  | —  | —  | 88 | C     | —   | —   | —     | —     | —    | —     | —  |
| 310 L2 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | 195 | 147 | 1/4 G | 6     | B    | 28    |    |
| 310 L3 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | 145 | 95  | 1/4 G | 5     | A    | 16    |    |
| 310 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | 461 | 105 | 65    | 1/4 G | 4    | A     | 10 |





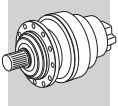
310 L



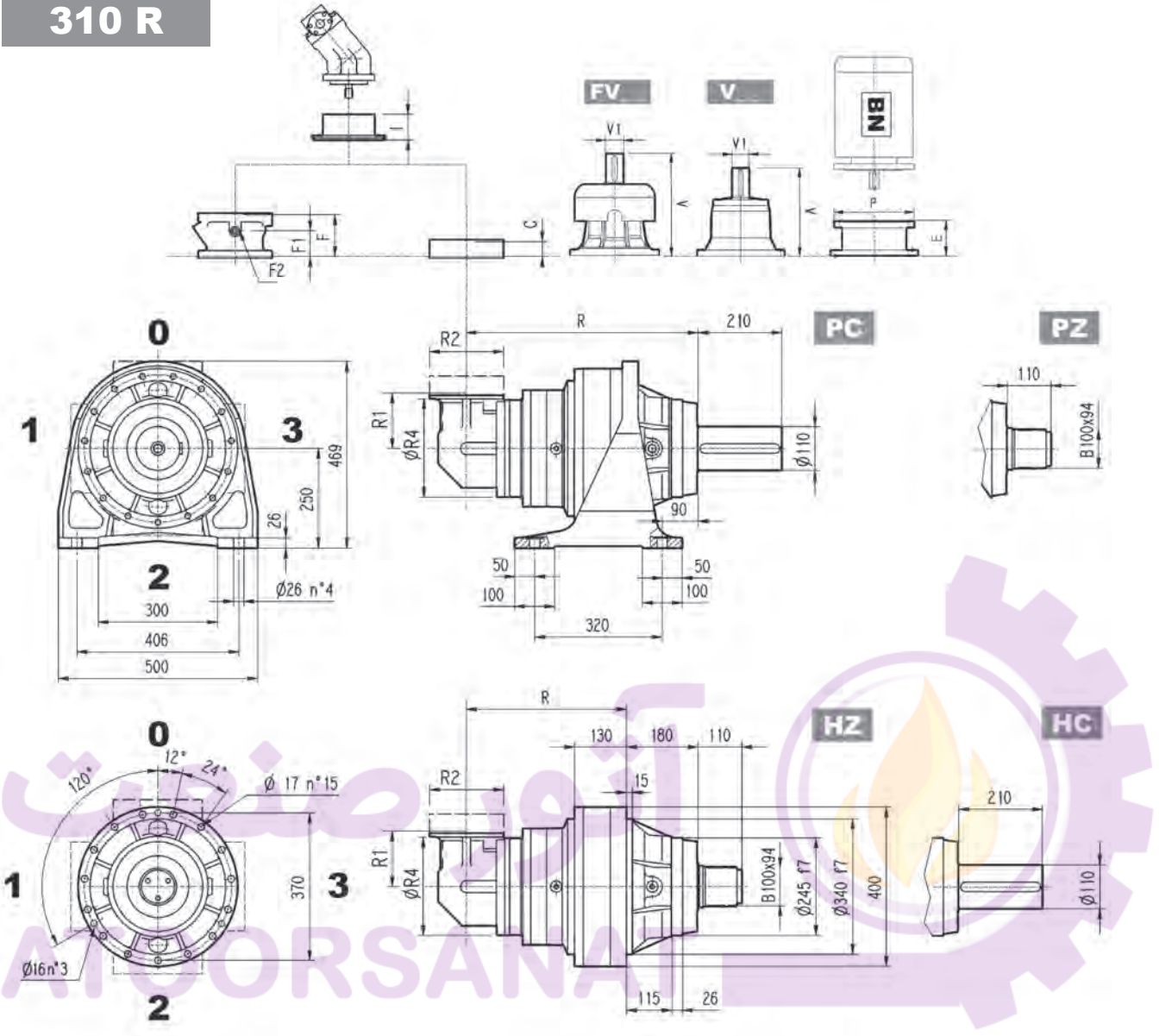
FP

$M_{2max} = 44000 \text{ Nm}$

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 310 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | —   | 271  | 400 | 301  | 450 | 281  | 550 |
| 310 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 153  | 350 | 183  | 400 | 212  | 450 | 193  | 550 |
| 310 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | 114 | 300  | 144 | 350  | 144 | 350  | 174 | 400  | —   | —    | —   | —    | —   |
| 310 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

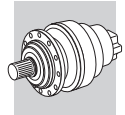


**310 R**

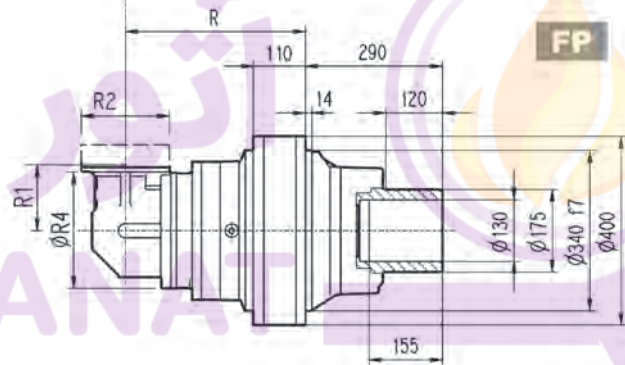
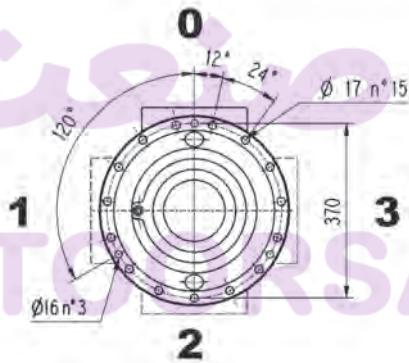
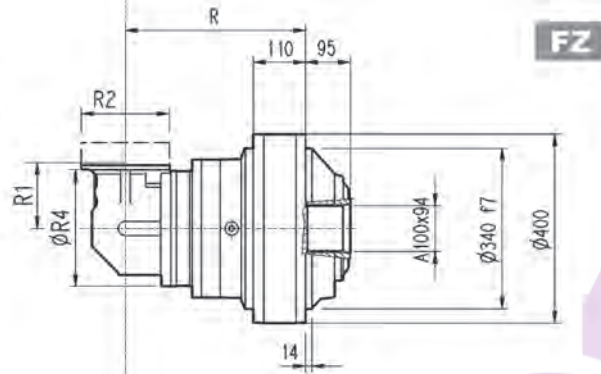
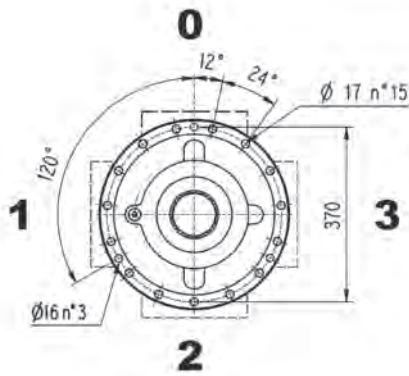
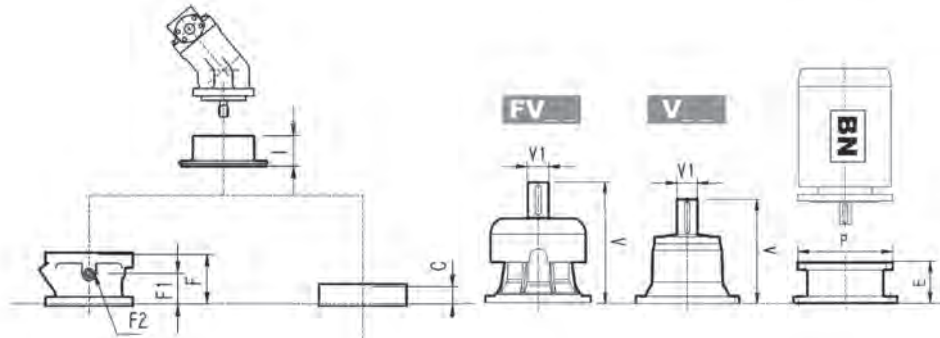


|                   | R     |       |     |          | R1  | R2  | R4  | Kg    |       |     |          |
|-------------------|-------|-------|-----|----------|-----|-----|-----|-------|-------|-----|----------|
|                   | PC-PZ | HC-HZ | FZ  | FP - FDK |     |     |     | PC-PZ | HC-HZ | FZ  | FP - FDK |
| <b>310 R2 (B)</b> | 495   | 315   | 295 | 295      | 345 | 292 | 400 | 280   | 260   | 240 | 250      |
| <b>310 R2 (C)</b> | 513   | 333   | 313 | 313      | 390 | 292 | 480 | 300   | 280   | 260 | 270      |
| <b>310 R3</b>     | 561   | 381   | 361 | 361      | 140 | 186 | 244 | 209   | 189   | 164 | 169      |
| <b>310 R4</b>     | 581   | 401   | 381 | 381      | 140 | 186 | 244 | 214   | 194   | 169 | 174      |

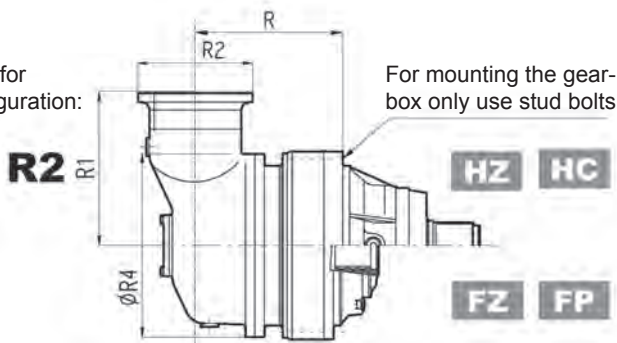
|                   | V     |    | Kg | V   |    | Kg | V   |    | Kg | V |    | Kg | C  | Input | I   | Kg  |     |       |      |       |    |
|-------------------|-------|----|----|-----|----|----|-----|----|----|---|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|                   | V     | V1 |    | V   | V1 |    | V   | V1 |    | V | V1 |    |    |       |     | F   | F1  | F2    | Type | Input | Kg |
| <b>310 R2 (B)</b> | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| <b>310 R2 (C)</b> | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| <b>310 R3</b>     | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | —   | 145 | 95  | 1/4 G | 5    | A     | 16 |
| <b>310 R4</b>     | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     | 461 | 105 | 65  | 1/4 G | 4    | A     | 10 |



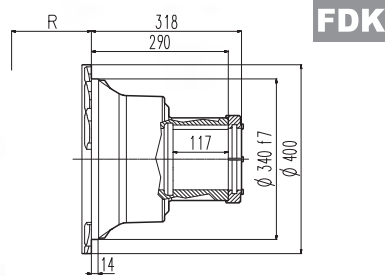
**310 R**



Only for configuration:



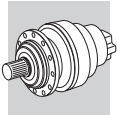
For mounting the gear-box only use stud bolts



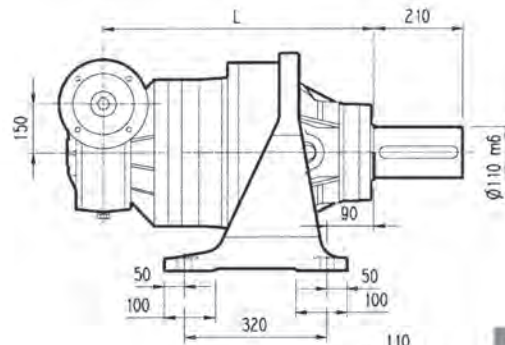
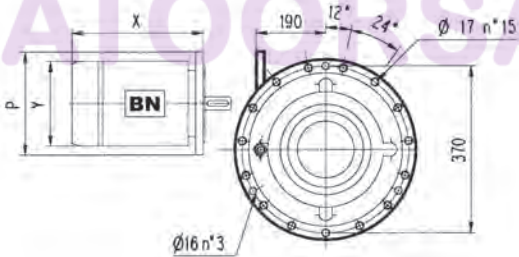
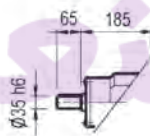
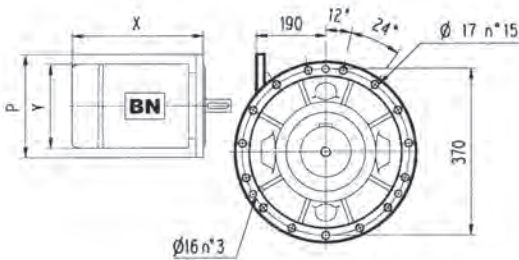
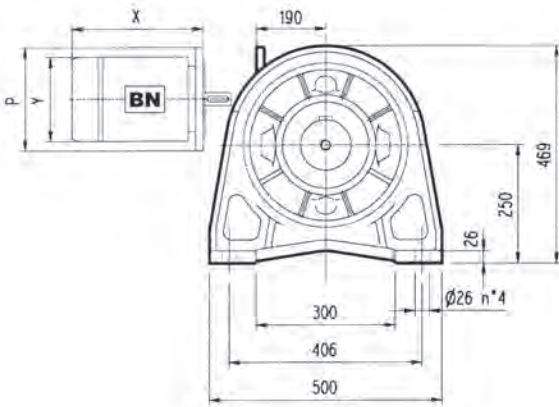
**FP** M<sub>2max</sub> = 44000 Nm

|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 310 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 152  | 350 | 182  | 400 | 212  | 450 |
| 310 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 152  | 350 | 182  | 400 | 212  | 450 |
| 310 R3     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   |
| 310 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   |

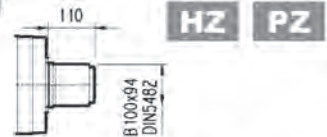




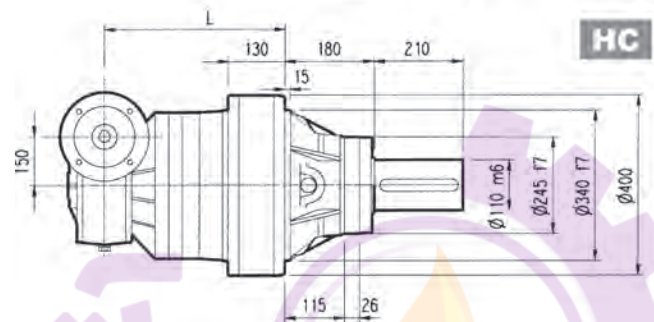
### 3/V 10 L3



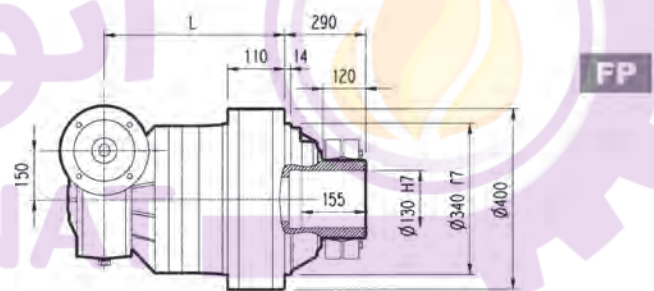
PC



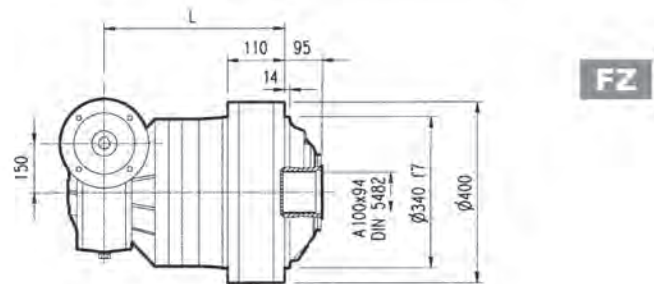
HZ PZ



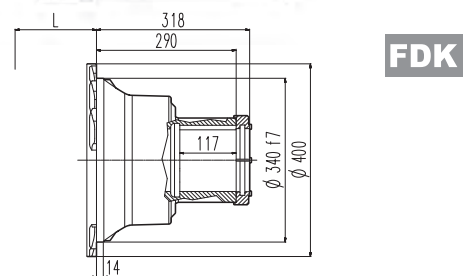
HC



FP



FZ

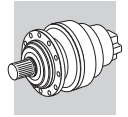


FDK

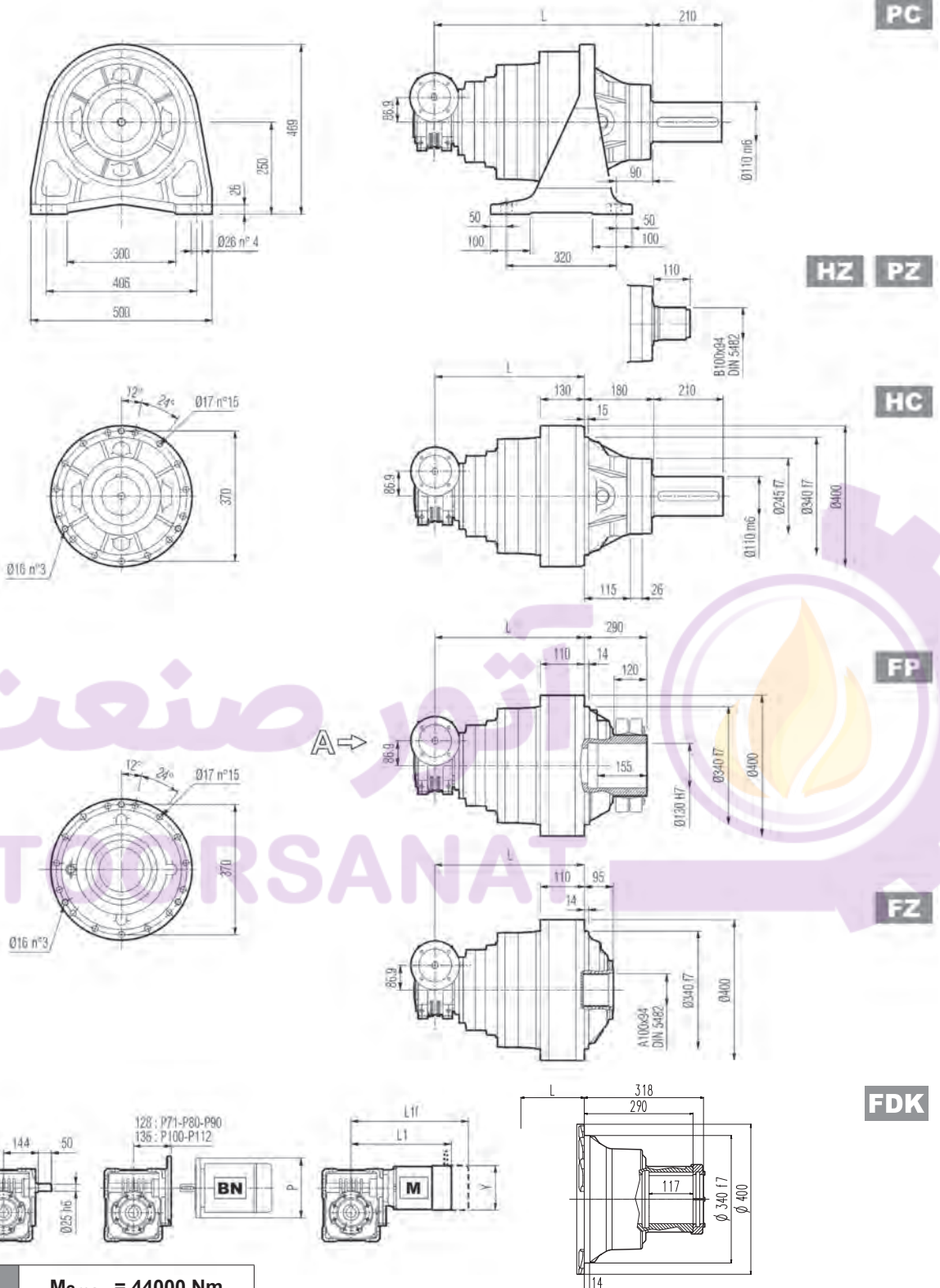
**FP** M<sub>2max</sub> = 44000 Nm

|           | L       |         |     |     | Kg      |         |     |     | P71 | P80 | P90 | P100 | P112 | P132 | P160 |
|-----------|---------|---------|-----|-----|---------|---------|-----|-----|-----|-----|-----|------|------|------|------|
|           | PC - PZ | HC - HZ | FZ  | FP  | PC - PZ | HC - HZ | FZ  | FP  | P   | P   | P   | P    | P    | P    | P    |
| 3/V 10 L3 | 608     | 428     | 408 | 408 | 245     | 225     | 200 | 205 | —   | —   | —   | 250  | 250  | 300  | 300  |





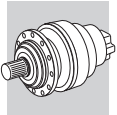
3/V 10 L4



**FP**  $M_{2max} = 44000 \text{ Nm}$

|           | L       |         |     |          | Kg      |         |     |          |
|-----------|---------|---------|-----|----------|---------|---------|-----|----------|
|           | PC - PZ | HC - HZ | FZ  | FP - FDK | PC - PZ | HC - HZ | FZ  | FP - FDK |
| 3/V 10 L4 | 634     | 454     | 434 | 434      | 210     | 190     | 165 | 170      |

|           | P71 | P80 | P90 | P100 | P112 | S1 + M1 |     |     | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|-----------|-----|-----|-----|------|------|---------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | P   | P   | P   | P    | P    | L1      | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 10 L4 | 160 | 200 | 200 | 250  | 250  | 324     | 385 | 138 | 349      | 425 | 156 | 392      | 477 | 193 | 424      | 515 | 193 |

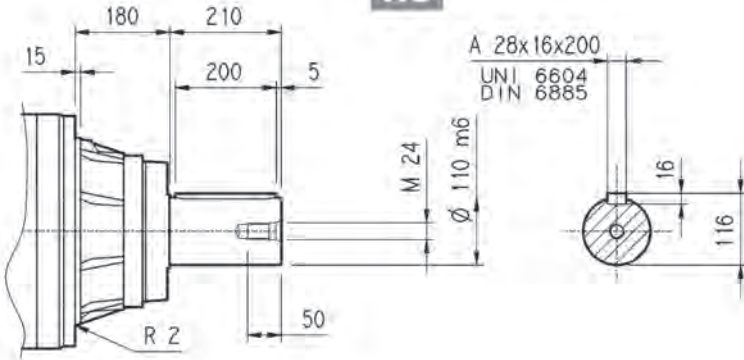


310 L

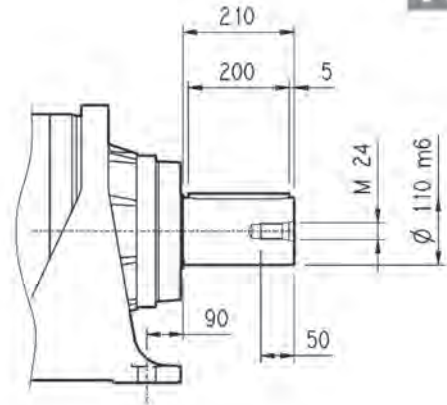
310 R

3/V 10 L

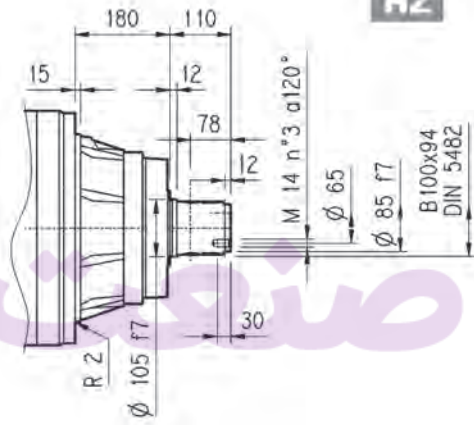
HC



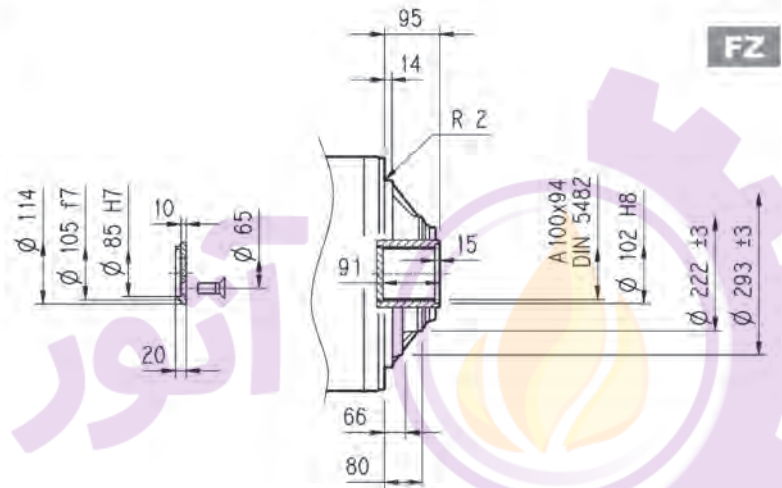
PC



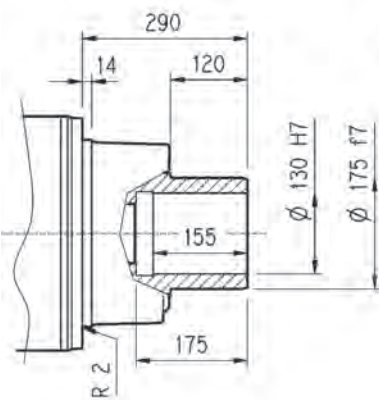
HZ



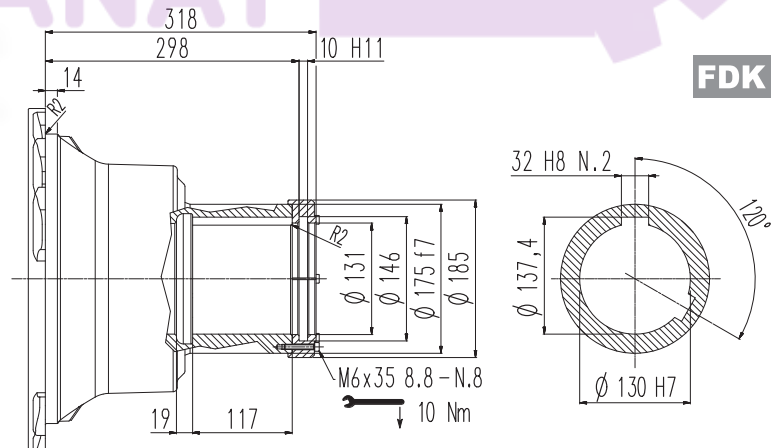
FZ



FP

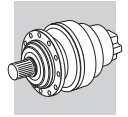


FDK



FP

M<sub>2max</sub> = 44000 Nm



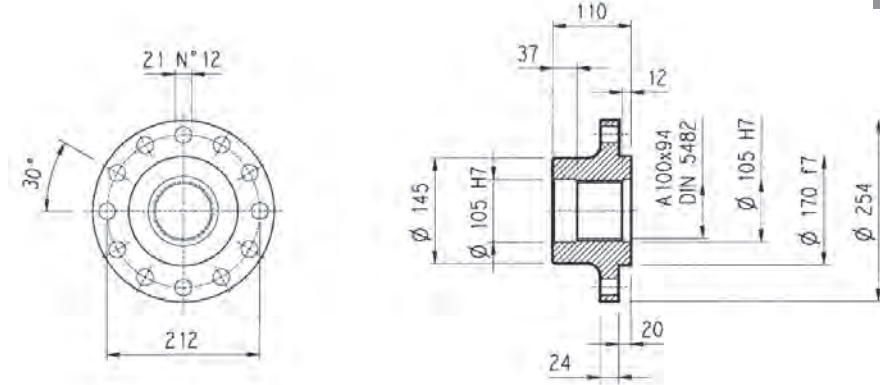
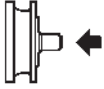
310 L

310 R

3/V 10 L

Flange

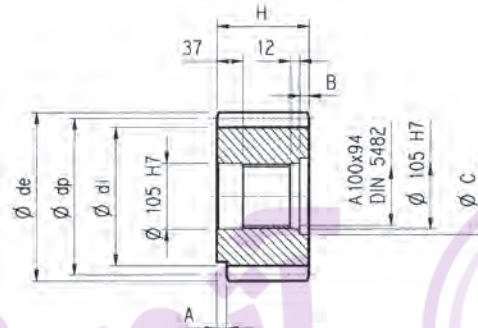
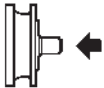
W0A



Material: Steel C40

Pinions

P...

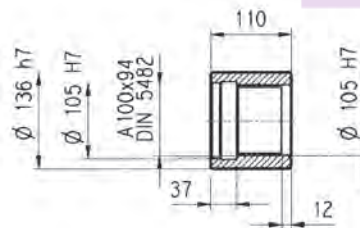
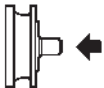


$\alpha = 20^\circ$

|     | m  | z  | x     | dp  | di  | de    | H   | A | B  | C   | Material                              |
|-----|----|----|-------|-----|-----|-------|-----|---|----|-----|---------------------------------------|
| PLQ | 12 | 23 | —     | 276 | 246 | 300   | 110 | — | —  | —   | Steel 18NiCrMo5 case hardened         |
| PPD | 16 | 13 | 0.500 | 208 | 184 | 252.5 | 145 | — | 35 | 116 | Steel 39NiCrMo3 hardened and tempered |
| PPF | 16 | 15 | 0.450 | 240 | 215 | 280   | 125 | — | 15 | 120 |                                       |

Sleeve coupling

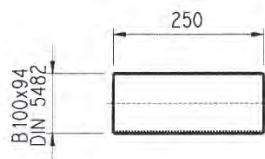
M0A



Material: Steel 16CrNi4

Splined bars

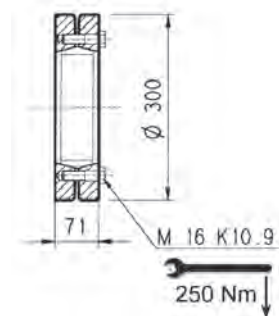
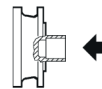
B0A

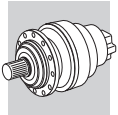


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

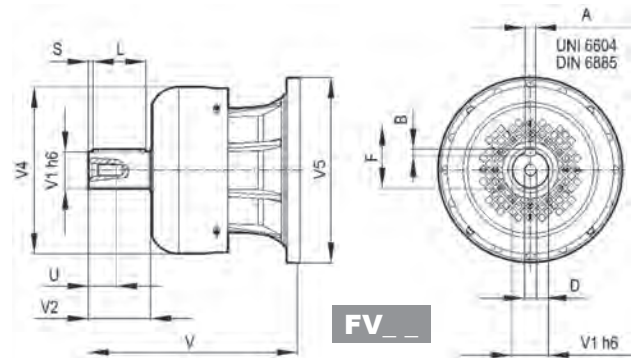
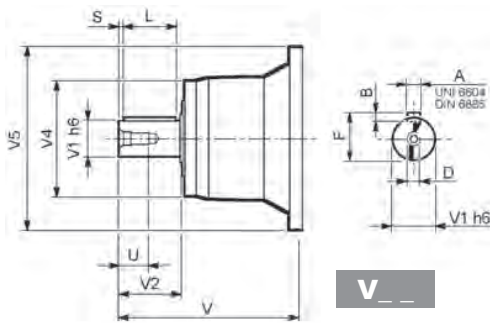
G0A





310 L

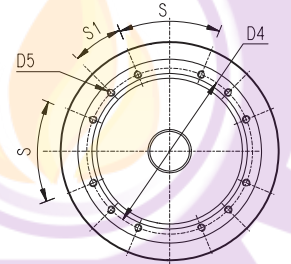
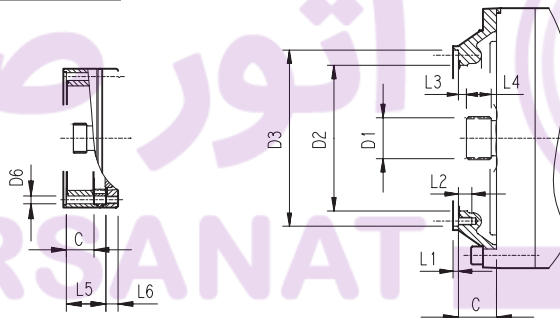
310 R



|                |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 310 L1         | V10B  | 377   | 80 | 130 | 200   | 400 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV10B | 457   | 80 | 130 | 347.5 | 400 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 310 L2         | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 310 L3         | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 310 L4         | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|                | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
| 310 R2 (B) (C) | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 310 R3-R4      | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|                | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

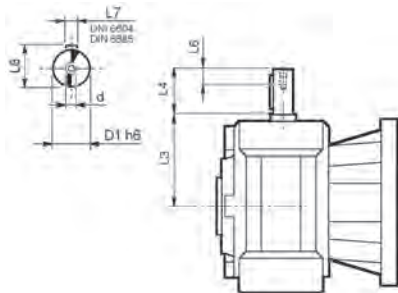
310 L

310 R



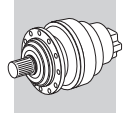
|                |      | C  | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3 | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|----|----------------|-----|--------|-----|----------|----|----|----|----|----|----|----|-----|-------|-------|
| 310 L1         | V9AC | 88 | 70x64 DIN 5482 | 200 | 282 H7 | 266 | M12 n°12 | —  | 4  | 22 | 11 | 32 | —  | —  | 45° | 45°   | C     |
| 310 L2         | V9AB | 45 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —  | —  | 45° | 22.5° | B     |
| 310 L3         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9  | 18 | —  | —  | 45° | 45°   | A     |
| 310 L4         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 53 | 18 | 45° | 45°   | A     |
| 310 R2 (B) (C) | V9AA | 45 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —  | —  | 45° | 22.5° | B     |
| 310 R3-R4      | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 37 | 18 | 45° | 45°   | A     |

3/V 10 L



|              | D1 h6 | L3  | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-----|----|----|----|----|----|
| 3/V 10 L3_HS | 35    | 185 | 65 | 20 | 10 | 38 | M8 |
| 3/V 10 L4_HS | 25    | 144 | 50 | 19 | 8  | 28 | M8 |



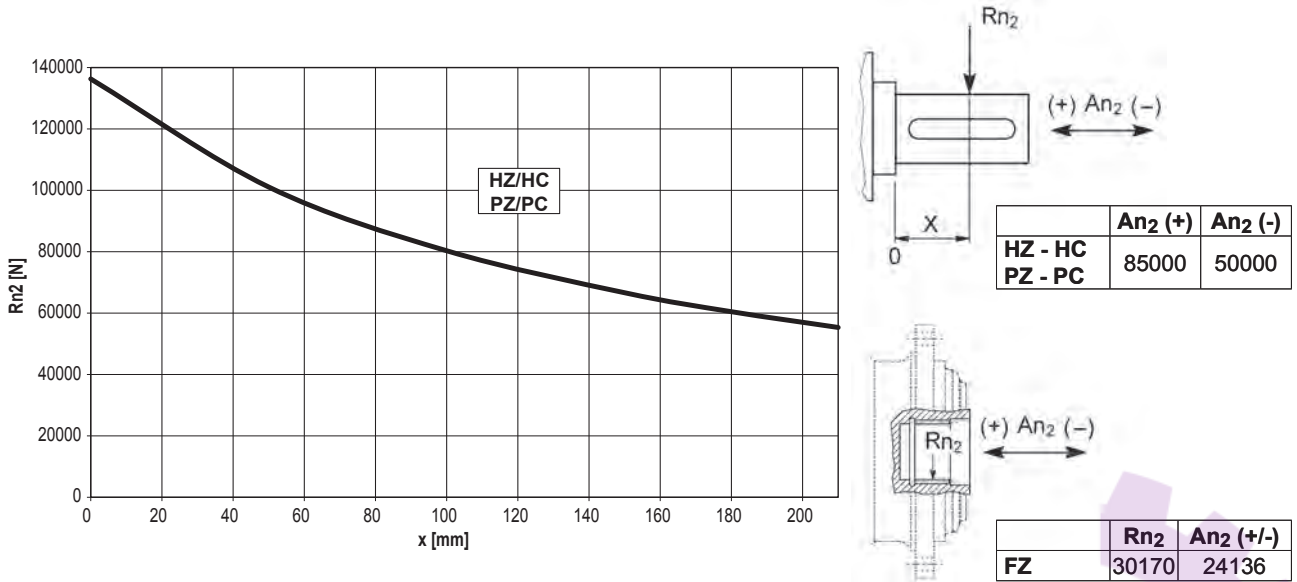


**310 L**

**310 R**

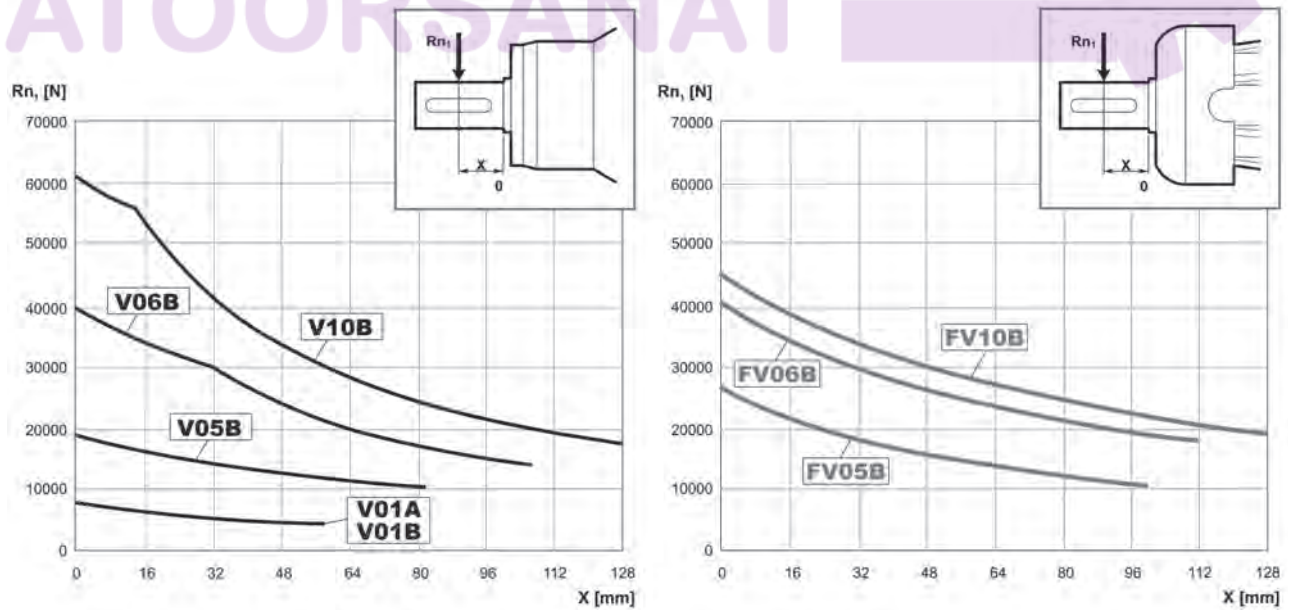
**3/V 10 L**

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor fh2 on shafts | Fh2 = n2 · h      |       |       |        |        |         |      |
|--------------------------------------|-------------------|-------|-------|--------|--------|---------|------|
|                                      | 10000             | 25000 | 50000 | 100000 | 500000 | 1000000 |      |
| fh2                                  | FZ                | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    | 0.46 |
|                                      | HZ - HC - PZ - PC | 1.27  | 1.27  | 1.23   | 1.00   | 0.62    | 0.50 |

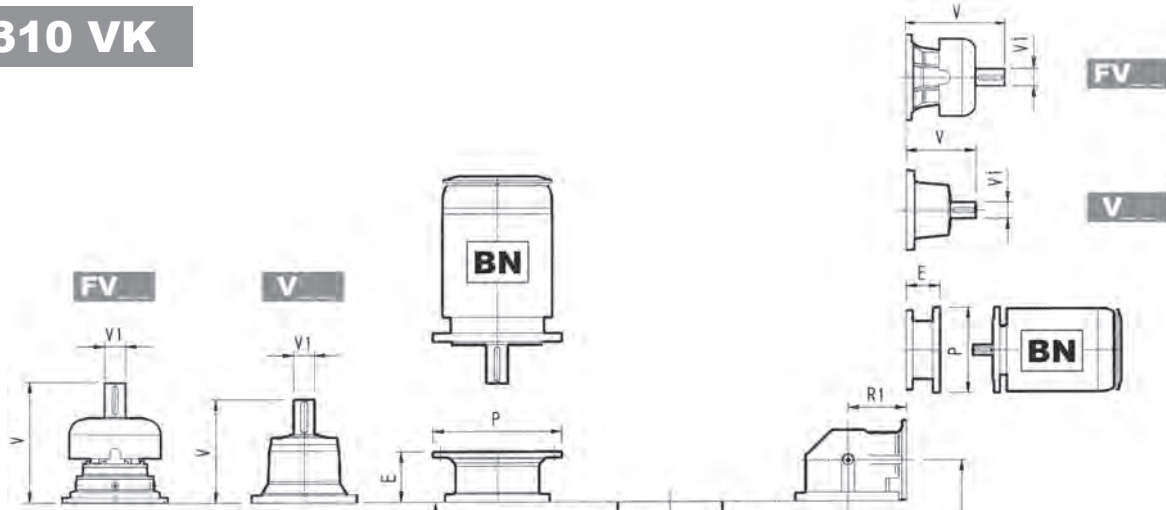
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor fh1 on shafts | Fh1 = n1 · h |        |         |         |         |          |  |
|--------------------------------------|--------------|--------|---------|---------|---------|----------|--|
|                                      | 250000       | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |  |
| fh1                                  | 1            | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |  |



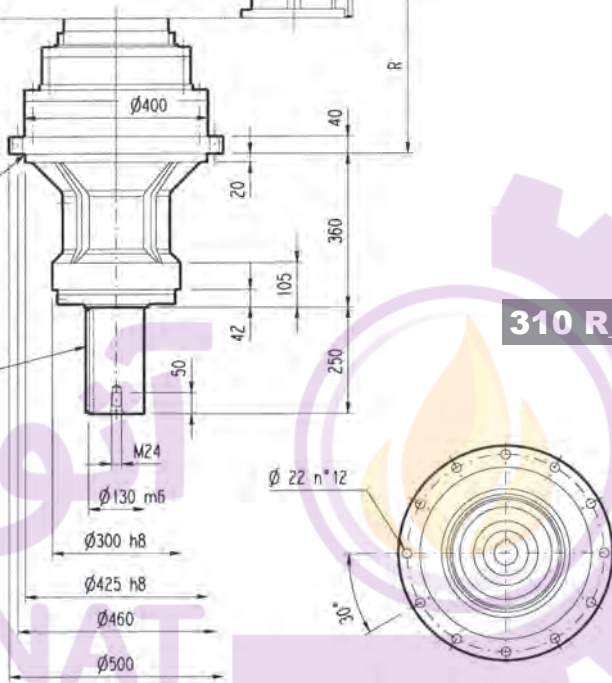
### 310 VK



### 310 L\_VK

A 32x18x240  
UNI 5604-ES / DIN 6885

### 310 R\_VK

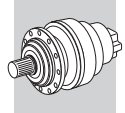


|        | L   | Kg  |       |    |    |     |    |    |     |    |    |   |    |    |
|--------|-----|-----|-------|----|----|-----|----|----|-----|----|----|---|----|----|
|        |     |     | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg |
| 310 L1 | 107 | 200 | 377   | 80 | 50 | —   | —  | —  | 457 | 80 | 63 | — | —  | —  |
| 310 L2 | 243 | 230 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  |
| 310 L3 | 308 | 240 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —  |
| 310 L4 | 361 | 245 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  |

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 310 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | —   | 271  | 400 | 301  | 450 | 281  | 550 |
| 310 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 153  | 350 | 183  | 400 | 212  | 450 | 193  | 550 |
| 310 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 310 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

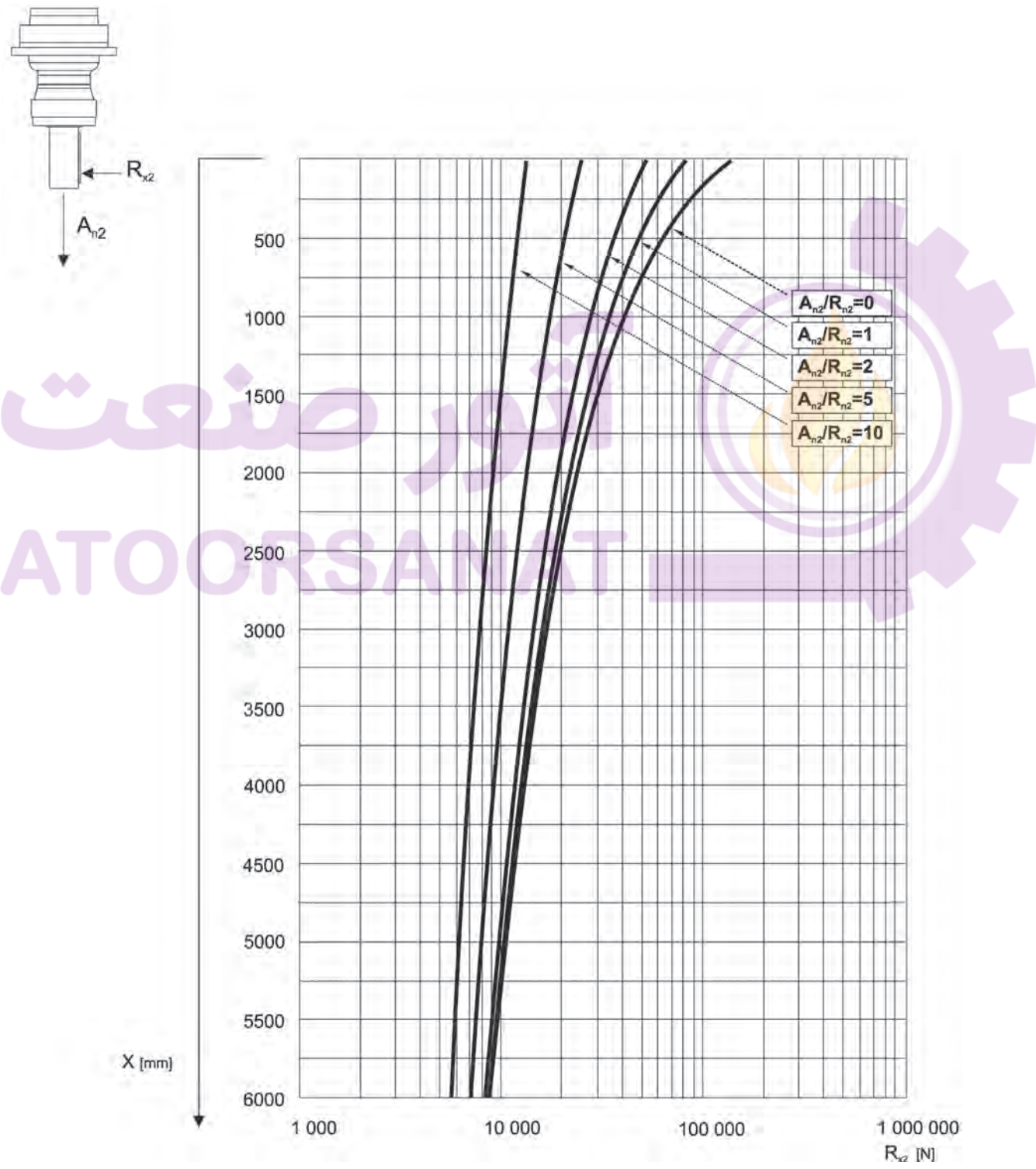
|            | R   | R1  | Kg  |       |    |    |     |    |    |     |    |    |   |    |    |
|------------|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|---|----|----|
|            |     |     |     | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg |
| 310 R2 (B) | 315 | 345 | 320 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  |
| 310 R2 (C) | 333 | 390 | 340 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  |
| 310 R3     | 380 | 140 | 250 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  |    |
| 310 R4     | 400 | 140 | 260 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  |    |

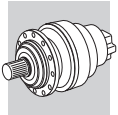
|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 310 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 |
| 310 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 152  | 350 | 152  | 350 | 182  | 400 | 212  | 450 |
| 310 R3     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   |
| 310 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   |



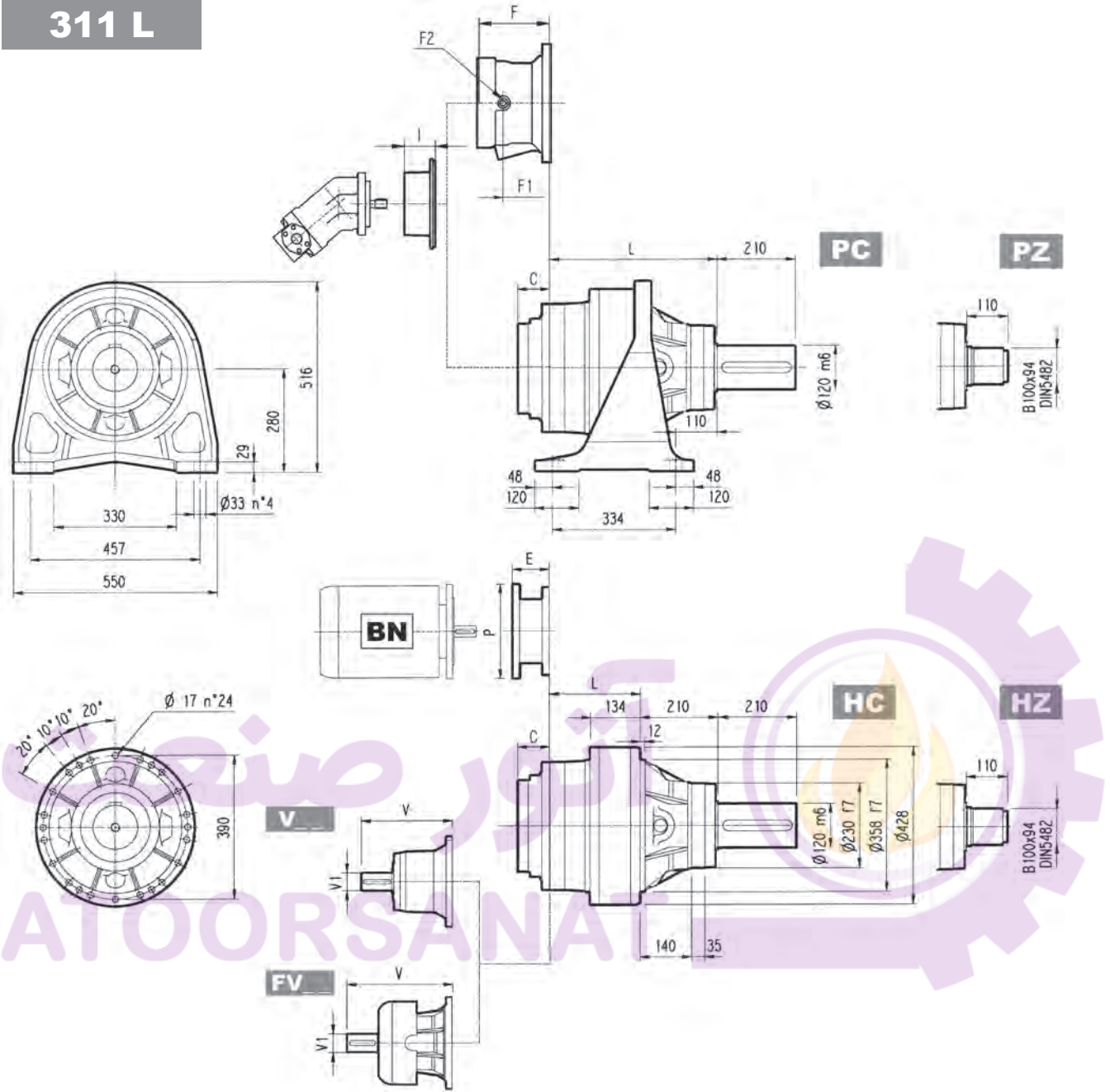
# 310 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





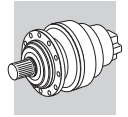
# 311 L



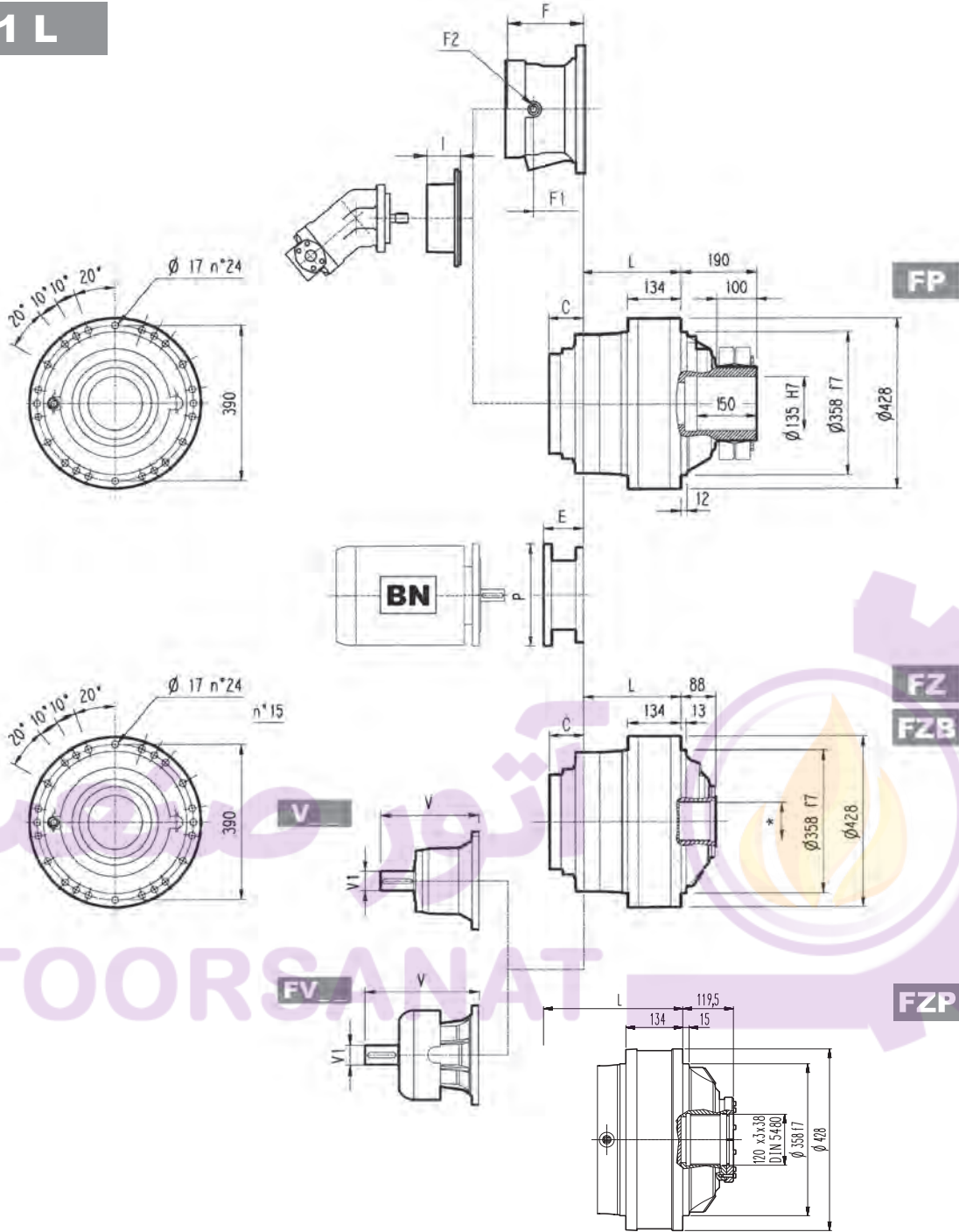
|        | L       |         |          |     | Kg      |         |          |     |
|--------|---------|---------|----------|-----|---------|---------|----------|-----|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 311 L1 | 325     | 115     | 115      | 115 | 250     | 180     | 160      | 170 |
| 311 L2 | 458     | 248     | 248      | 248 | 295     | 225     | 205      | 215 |
| 311 L3 | 547     | 337     | 337      | 337 | 307     | 237     | 217      | 227 |
| 311 L4 | 612     | 402     | 402      | 402 | 314     | 244     | 224      | 234 |

|        | V     |    |    | Kg  |    |    | V   |    |    | Kg  |    |    | C  | Input | I   | F   | F1    | F2 | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|-----|----|----|----|-------|-----|-----|-------|----|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |    |       |     |     |       |    |      |       |    |
| 311 L1 | 348   | 80 | 55 | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  | 81 | D     | —   | —   | —     | —  | —    | —     | —  |
| 311 L2 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51 | B     | 201 | 153 | 1/4 G | 6  | B    | 28    |    |
| 311 L3 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37 | A     | 145 | 95  | 1/4 G | 5  | A    | 16    |    |
| 311 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | 105 | 65  | 1/4 G | 4  | A    | 10    |    |





311 L



**FZB**  $M_{2max} = 66900 \text{ Nm}$

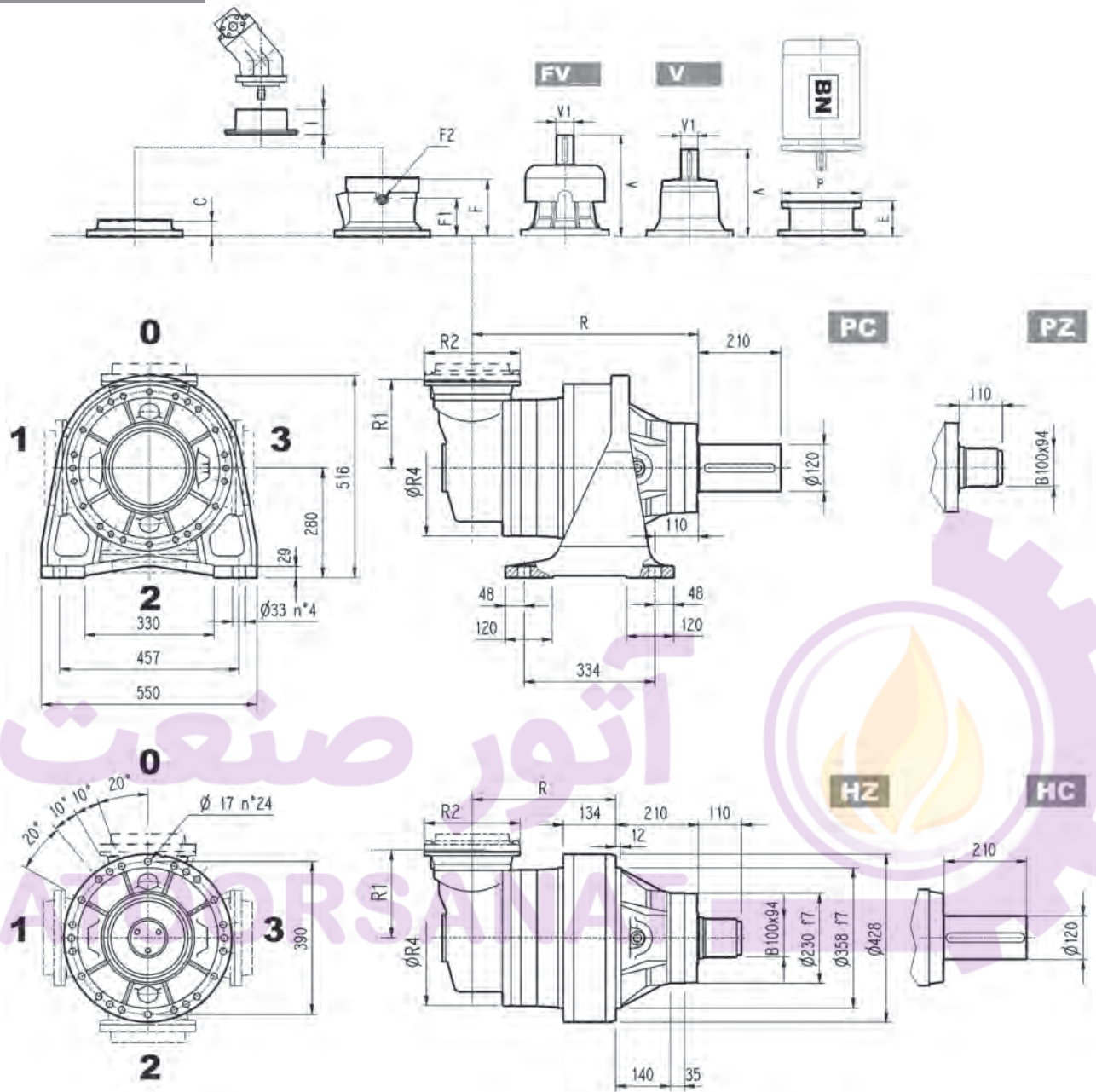
**FP**  $M_{2max} = 55000 \text{ Nm}$

\* For dimensions refer to page 354

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 311 L1 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | —   | 267  | 400 | 297  | 450 | 297  | 550 |
| 311 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |
| 311 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 311 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

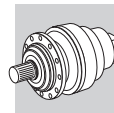


# 311 R

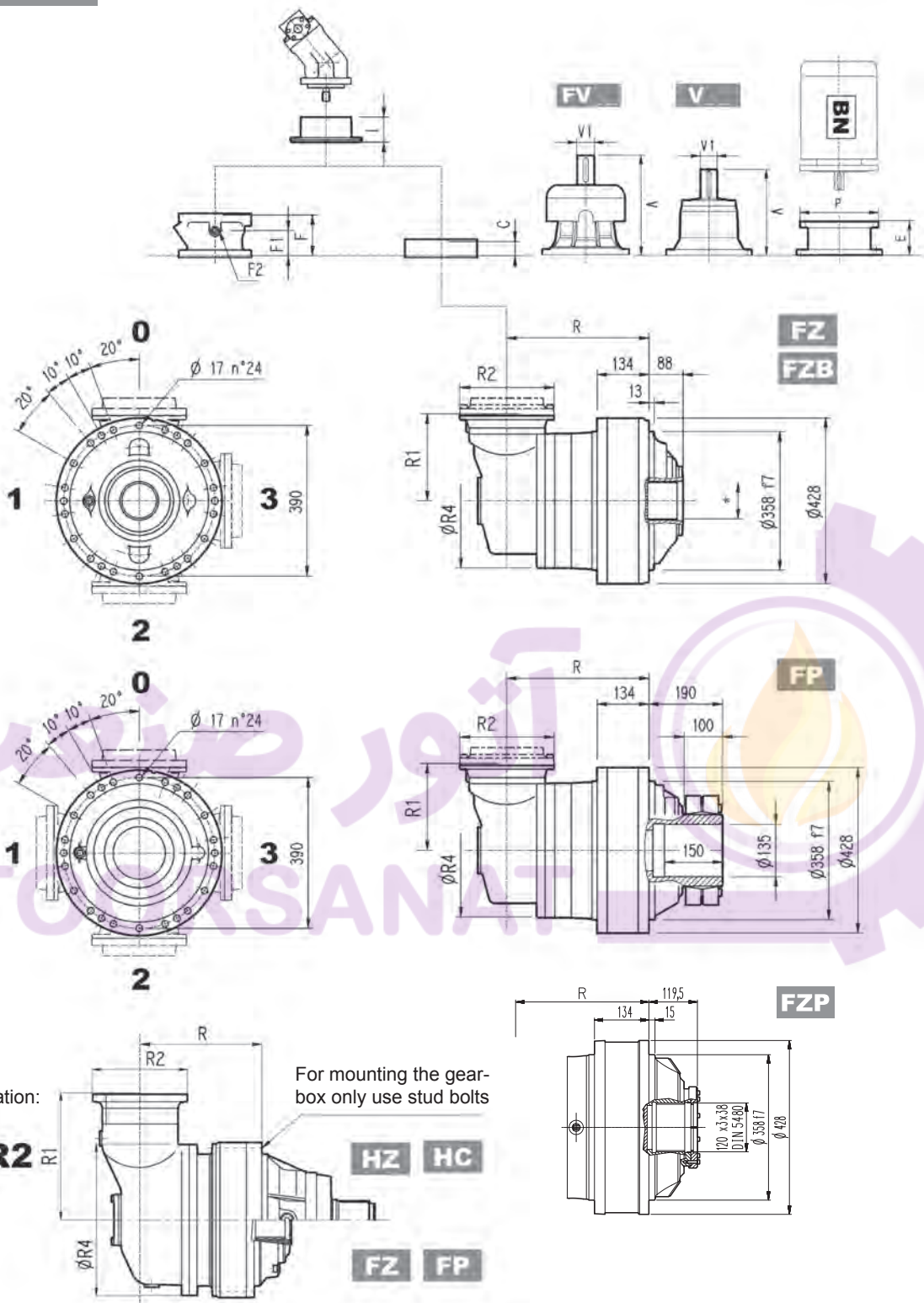


|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |     |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|-----|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP  |
| 311 R2 (B) | 550   | 340   | 340      | 340 | 345 | 292 | 400 | 380   | 310   | 290      | 300 |
| 311 R2 (C) | 550   | 340   | 340      | 340 | 390 | 292 | 480 | 390   | 320   | 300      | 310 |
| 311 R3     | 577   | 367   | 367      | 367 | 225 | 245 | 375 | 345   | 275   | 255      | 265 |
| 311 R4     | 639   | 429   | 429      | 429 | 140 | 186 | 244 | 327   | 257   | 237      | 247 |

|            | V     |    |    | V1  |    |    | V   |    |    | V1 |    |    | C  | Input | I   | F   |     |       | Type | Input | Kg |
|------------|-------|----|----|-----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|            | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     | F   | F1  | F2    |      |       |    |
| 311 R2 (B) | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 311 R2 (C) | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 311 R3     | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | —   | 145 | 95  | 1/4 G | 5    | A     | 16 |
| 311 R4     | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —  | —  | —  | 37 | A     | 461 | 105 | 65  | 1/4 G | 4    | A     | 10 |



# 311 R



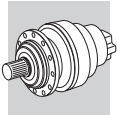
**FZB**  $M_{2max} = 66900 \text{ Nm}$

**FP**  $M_{2max} = 55000 \text{ Nm}$

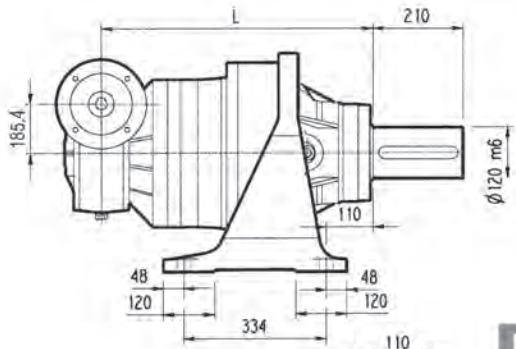
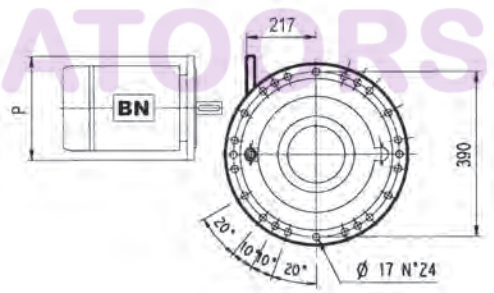
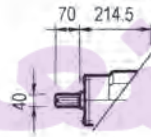
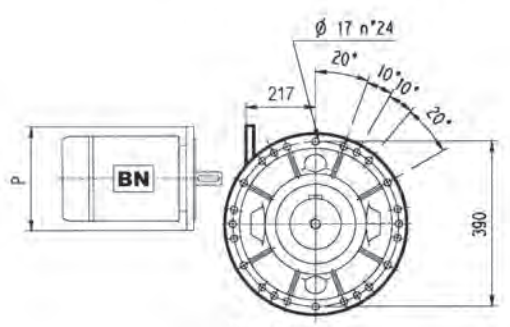
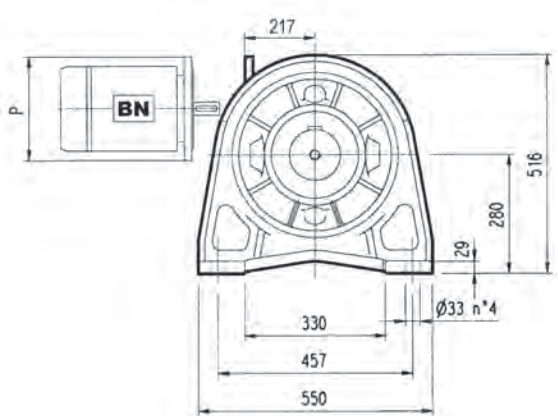
\* For dimensions refer to page 354

|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |   |   |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|---|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P |   |
| 311 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | 152 | 350  | 182 | 400  | 212 | 450  | 193 | 550  | — | — |
| 311 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | 152 | 350  | 182 | 400  | 212 | 450  | 193 | 550  | — | — |
| 311 R3     | —   | —   | —   | —   | —   | —   | —    | —   | —    | 114 | 300  | 144 | 350  | 144 | 350  | 174 | 400  | —   | —    | —   | —    | — | — |
| 311 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | — |   |

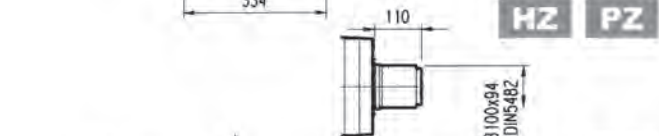




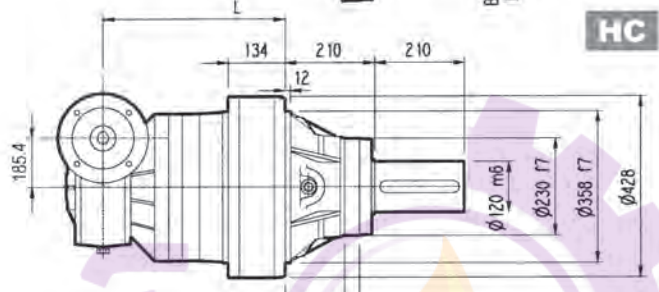
**3/V 11 L3**



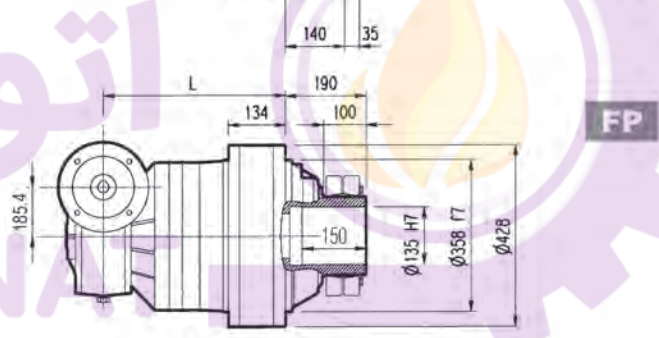
**PC**



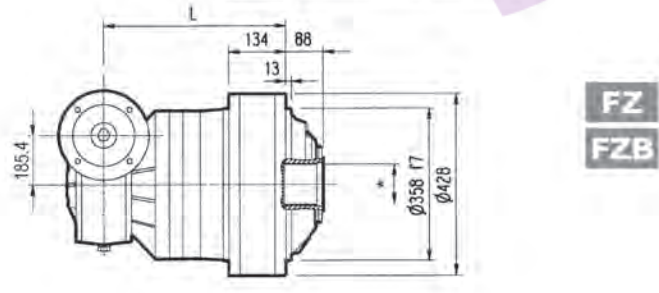
**HZ PZ**



**HC**

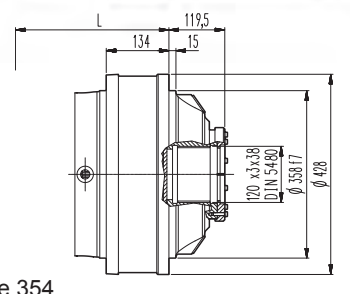


**FP**



**FZ**

**FZB**



**FZP**

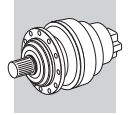
**FZB**  $M_{2max} = 66900 \text{ Nm}$

**FP**  $M_{2max} = 55000 \text{ Nm}$

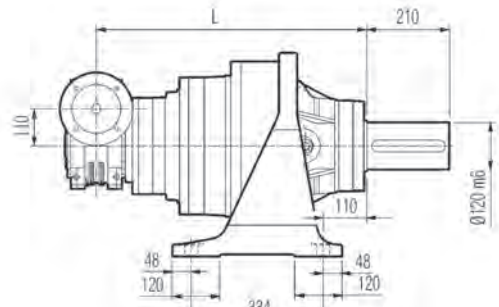
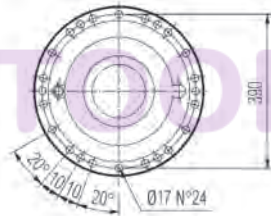
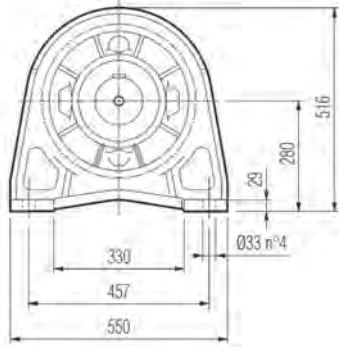
\* For dimensions refer to page 354

|           | L       |         |     |     | Kg      |         |     |     | P80 | P90 | P100 | P112 | P132 | P160 | P180 |
|-----------|---------|---------|-----|-----|---------|---------|-----|-----|-----|-----|------|------|------|------|------|
|           | PC - PZ | HC - HZ | FZ  | FP  | PC - PZ | HC - HZ | FZ  | FP  |     |     |      |      |      |      |      |
| 3/V 11 L3 | 659     | 449     | 449 | 449 | 390     | 320     | 300 | 310 | —   | —   | 250  | 250  | 300  | 350  | 350  |

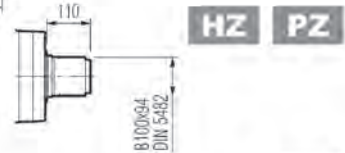




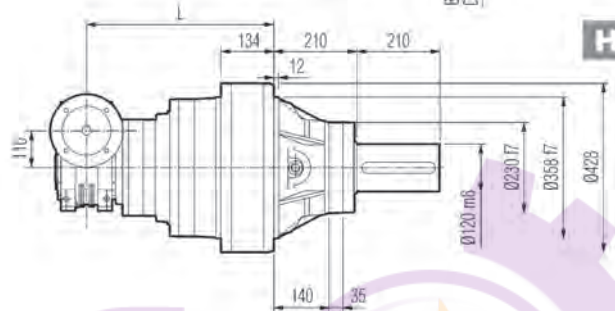
**3/V 11 L4**



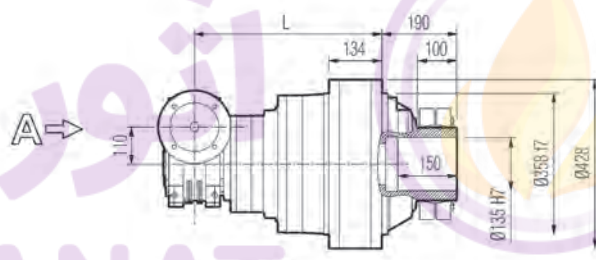
**PC**



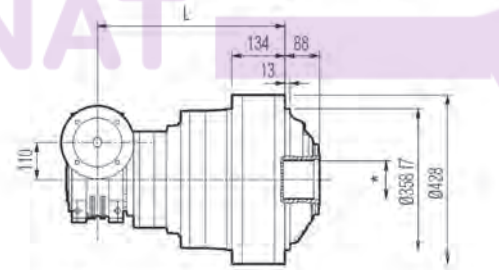
**HZ PZ**



**HC**

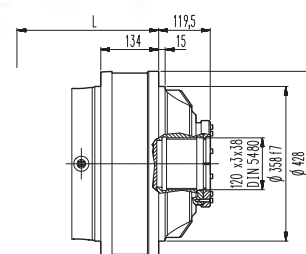
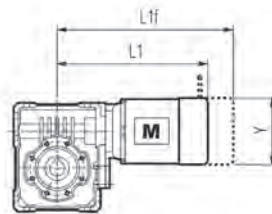
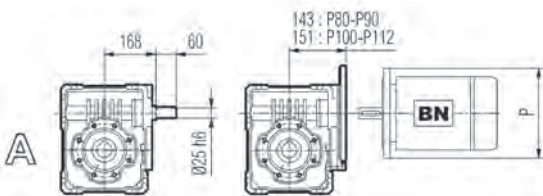


**FP**



**FZ**

**FZB**



**FZP**

**FZB** M<sub>2max</sub> = 66900 Nm

**FP** M<sub>2max</sub> = 55000 Nm

\* For dimensions refer to page 354

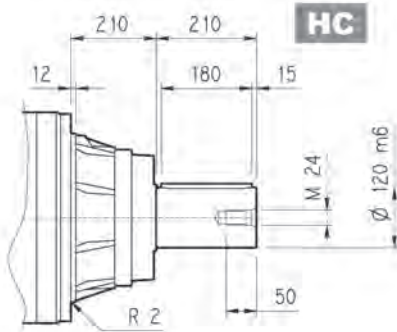
|           | L       |     |         |      |          |     |     |          | Kg  |     |          |     |     |
|-----------|---------|-----|---------|------|----------|-----|-----|----------|-----|-----|----------|-----|-----|
|           | PC - PZ |     | HC - HZ |      | FZ - FZP |     | FP  |          |     |     |          |     |     |
| 3/V 11 L4 | 707     |     | 497     |      | 497      |     | 497 |          | 340 | 270 | 250      | 260 |     |
|           | P80     | P90 | P100    | P112 | S2 + M2S |     |     | S3 + M3S |     |     | S3 + M3L |     |     |
|           | P       | P   | P       | P    | L1       | L1f | Y   | L1       | L1f | Y   | L1       | L1f | Y   |
| 3/V 11 L4 | 200     | 200 | 250     | 250  | 364      | 440 | 156 | 407      | 503 | 193 | 439      | 530 | 193 |



311 L

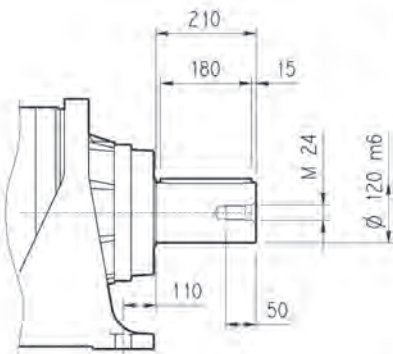
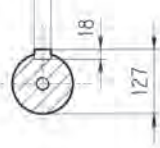
311 R

3/V 11 L

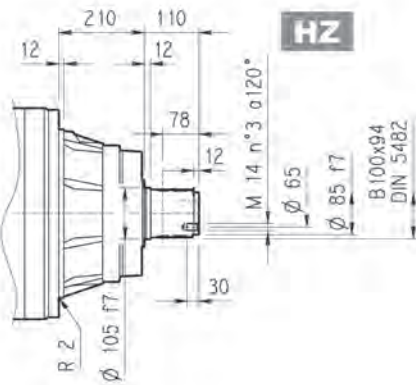


HC

A 32x18x180  
UNI 6604  
DIN 6885



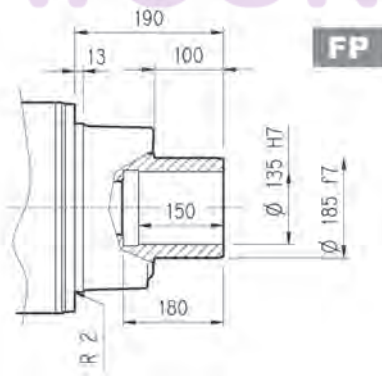
PC



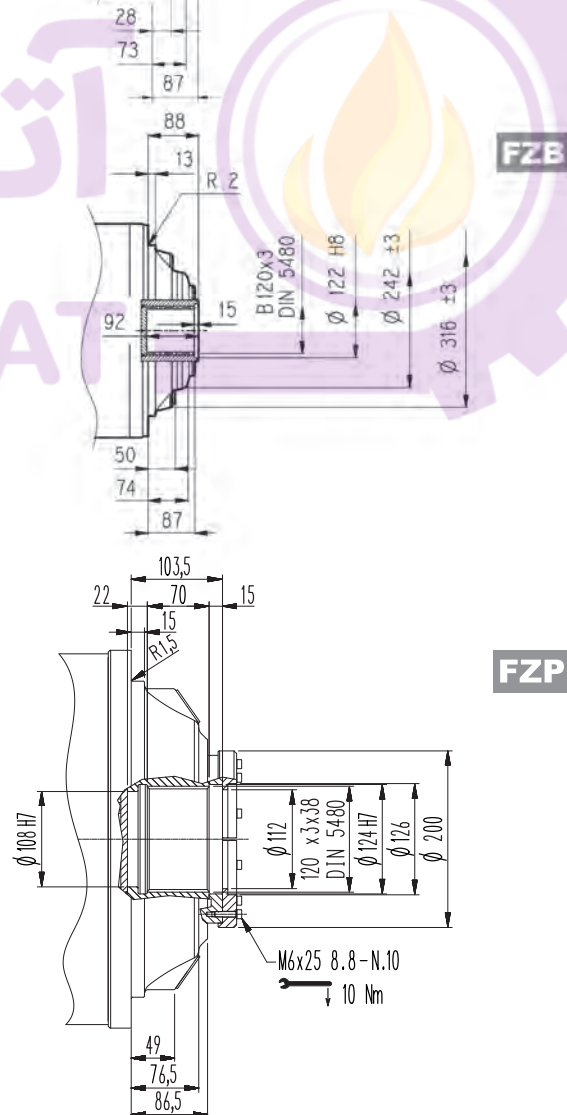
HZ



FZ



FP



FZB

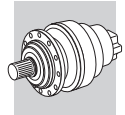
FZP

FZB

$M_{2max} = 66900\ Nm$

FP

$M_{2max} = 55000\ Nm$



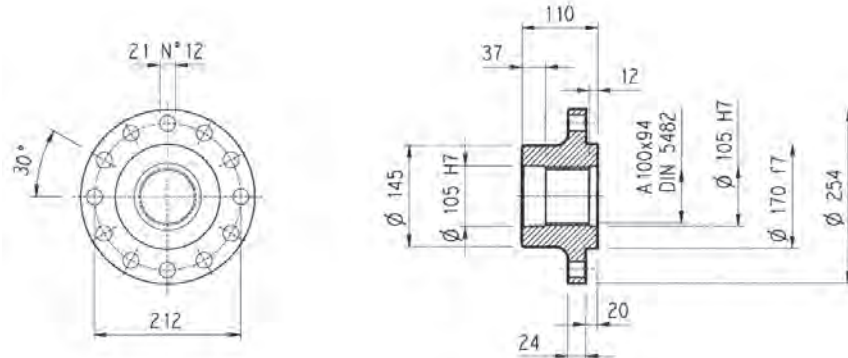
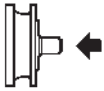
311 L

311 R

3/V 11 L

Flange

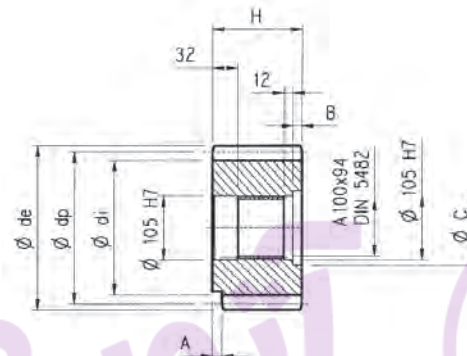
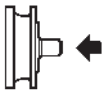
W0A



Material: Steel C40

Pinions

P...

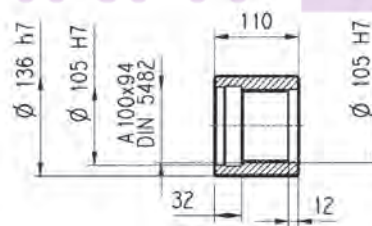
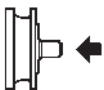


$\alpha = 20^\circ$

|     | m  | z  | x     | dp  | di  | de    | H   | A | B  | C   | Material                              |
|-----|----|----|-------|-----|-----|-------|-----|---|----|-----|---------------------------------------|
| PLQ | 12 | 23 | —     | 276 | 246 | 300   | 110 | — | —  | —   | Steel 18NiCrMo5 case hardened         |
| PPD | 16 | 13 | 0.500 | 208 | 184 | 252.5 | 145 | — | 35 | 116 | Steel 39NiCrMo3 hardened and tempered |
| PPF | 16 | 15 | 0.450 | 240 | 215 | 280   | 125 | — | 15 | 120 |                                       |

Sleeve coupling

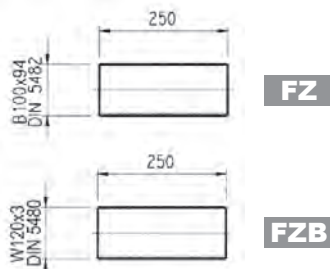
M0A



Material: Steel 16CrNi4

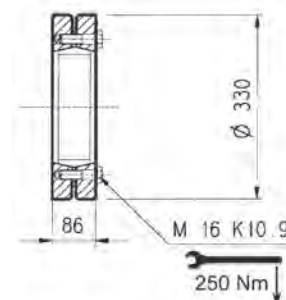
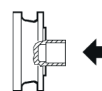
Splined bars

B0A

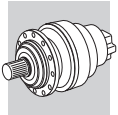


Shrink disc

G0A

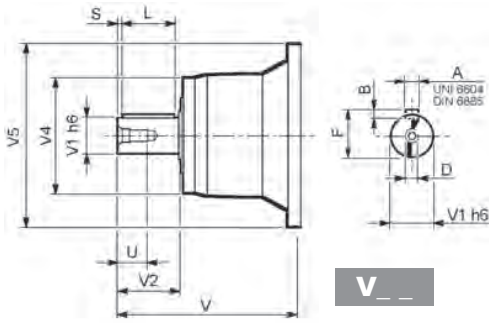


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

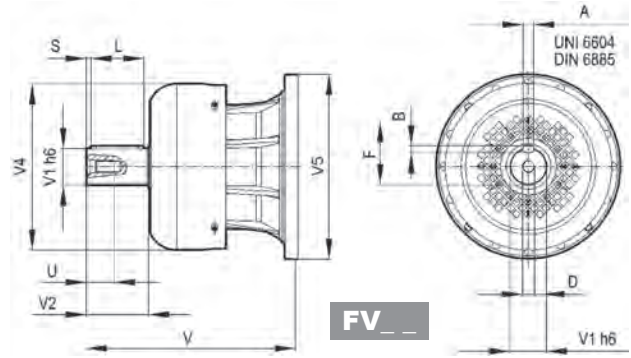


311 L

311 R



V \_ \_

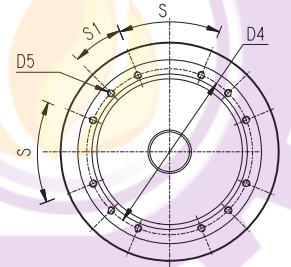
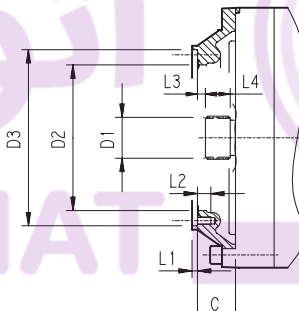
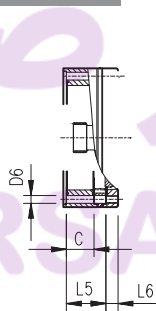


FV \_ \_

|               |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|---------------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 311 L1        | V11B  | 348   | 80 | 130 | 200   | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|               | FV11B | 456   | 80 | 130 | 347.5 | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 311 L2        | V07B  | 315   | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|               | FV07B | 375   | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 311 L3        | V07A  | 313   | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|               | FV07A | 363   | 60 | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 311 L3        | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|               | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 311 L4        | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|               | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
| 311 R2 (B)(C) | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|               | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 311 R3        | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|               | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 311 R4        | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|               | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

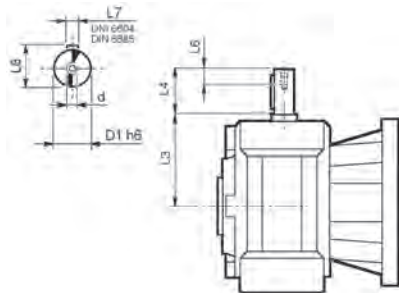
311 L

311 R



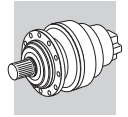
|               |      | C  | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|---------------|------|----|----------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 311 L1        | V9AD | 81 | 80x74 DIN 5482 | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30°   | D     |
| 311 L2        | V9AB | 51 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 311 L3        | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 311 L4        | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9   | 18 | 65 | 18 | 45° | 45°   | A     |
| 311 R3        | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 311 R2 (B)(C) | V9AB | 45 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 311 R4        | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9   | 18 | 37 | 18 | 45° | 45°   | A     |

3/V 11 L



|              | D1 h6 | L3    | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-------|----|----|----|----|----|
| 3/V 11 L3_HS | 40    | 214.5 | 70 | 20 | 12 | 43 | M8 |
| 3/V 11 L4_HS | 25    | 168   | 60 | 19 | 8  | 28 | M8 |



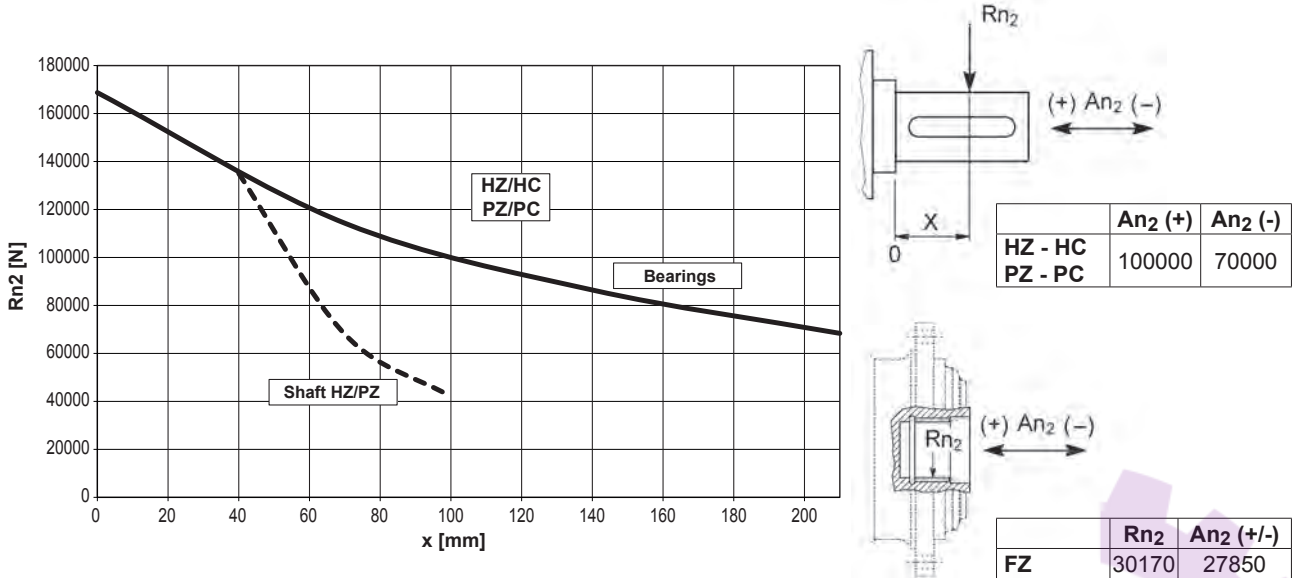


311 L

311 R

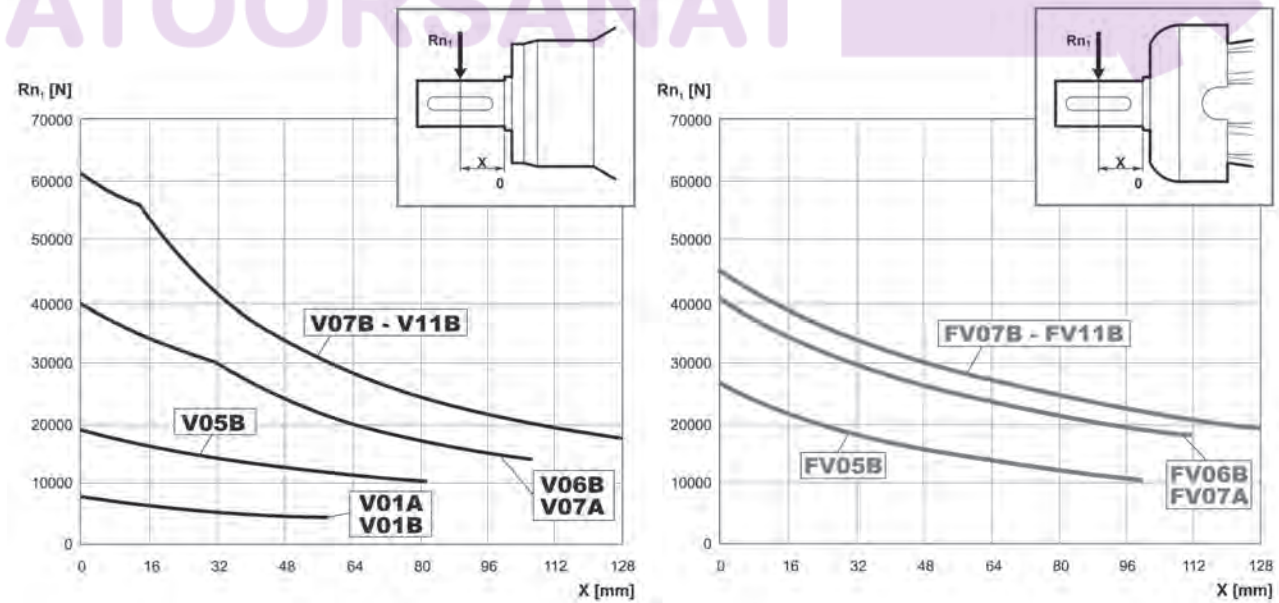
3/V 11 L

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$<br>on shafts | $Fh_2 = n_2 \cdot h$ |         |       |       |        |        |         |      |
|--|----------------------|---------|-------|-------|--------|--------|---------|------|
|  |                      | 10000   | 25000 | 50000 | 100000 | 500000 | 1000000 |      |
|  | $fh_2$               | FZ      | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    | 0.46 |
|  |                      | HC - PC | 1.93  | 1.52  | 1.23   | 1.00   | 0.62    | 0.50 |
|  |                      | HZ - PZ | 1.24  | 1.00  | 1.00   | 1.00   | 0.62    | 0.50 |

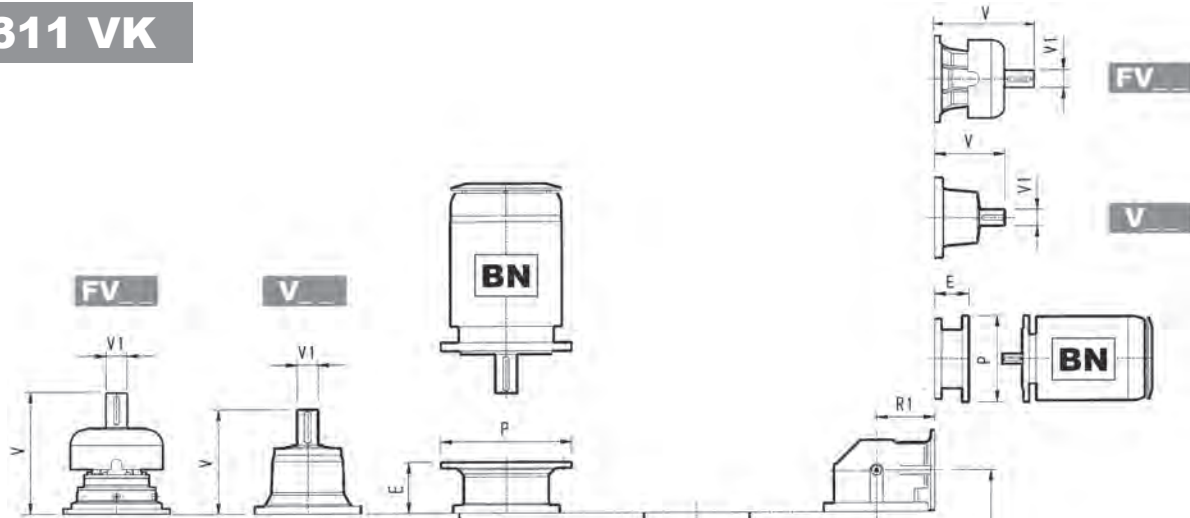
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $Fh_1 = n_1 \cdot h$ |        |        |         |         |         |          |
|--|----------------------|--------|--------|---------|---------|---------|----------|
|  |                      | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
| $fh_1$                                     |                      | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



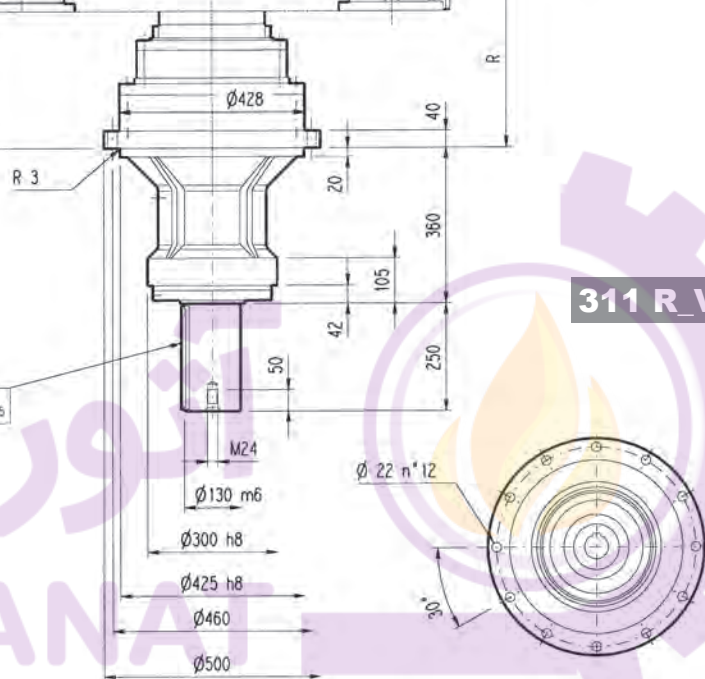
### 311 VK



### 311 L\_VK

A 32x18x240  
UNI 6504-69 / DIN 6865

### 311 R\_VK

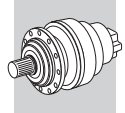


|        | L   |     |     | V     |    |    |     |    |    | V1  |    |    |     |    |    |
|--------|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|-----|----|----|
|        | E   | P   | kg  | E     | P  | kg | E   | P  | kg | E   | P  | kg | E   | P  | kg |
| 311 L1 | 129 | 295 | 295 | 348   | 80 | 55 | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  |
| 311 L2 | 262 | 340 | 340 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 |
| 311 L3 | 351 | 350 | 350 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  |
| 311 L4 | 416 | 360 | 360 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  |

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |   |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |   |
| 311 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 | — |
| 311 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   | — |
| 311 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   | — |

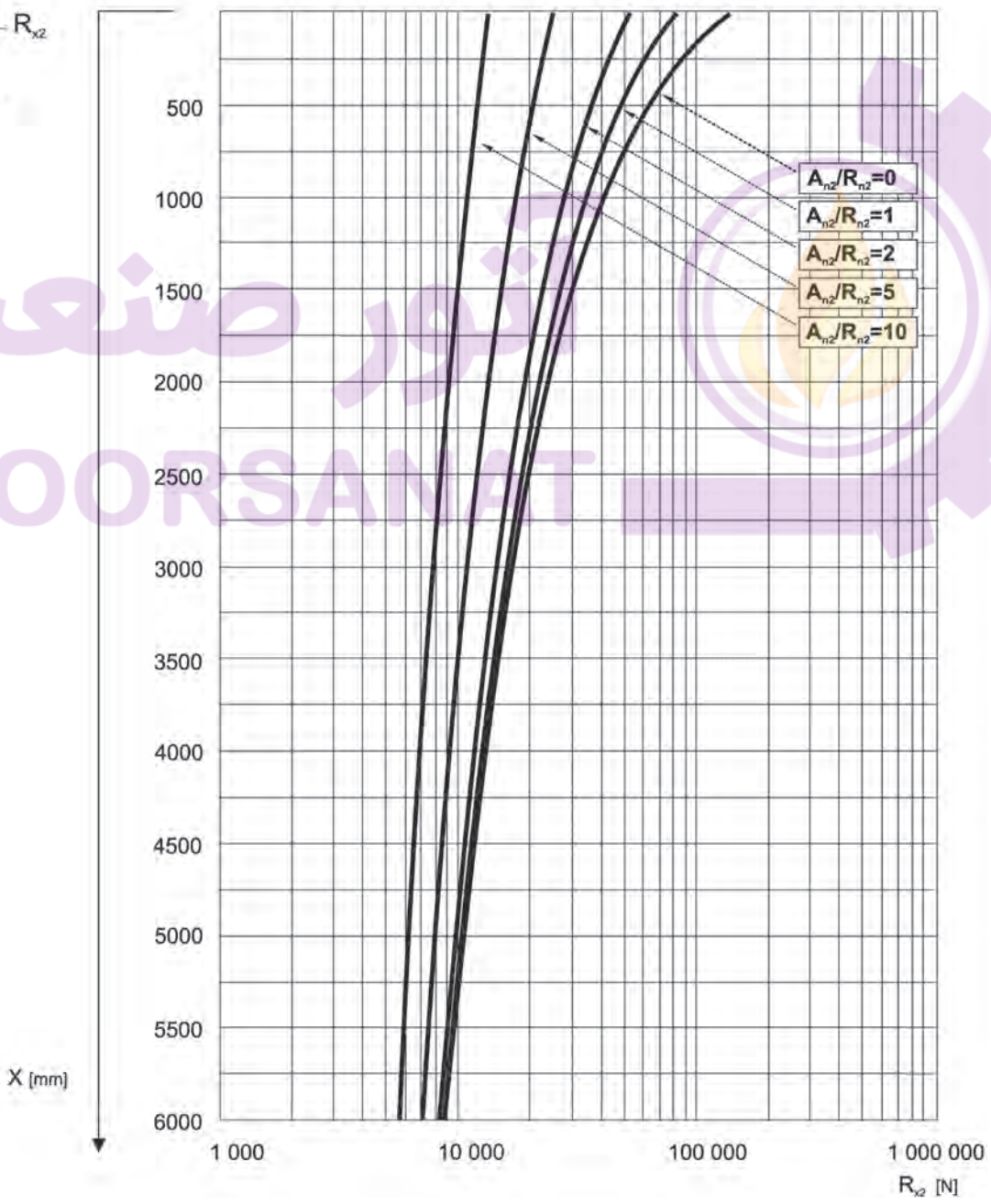
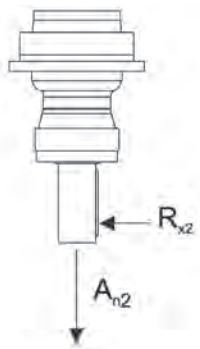
|            | R   |     | R1  |     | V     |    |    |     |    |    | V1  |    |    |   |   |    |   |   |    |   |   |    |   |
|------------|-----|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|---|---|----|---|---|----|---|---|----|---|
|            | E   | P   | E   | P   | E     | P  | kg | E   | P  | kg | E   | P  | kg | E | P | kg | E | P | kg | E | P | kg |   |
| 311 R2 (B) | 354 | 345 | 345 | 420 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | — | —  | — | — | —  | — | — | —  | — |
| 311 R2 (C) | 354 | 390 | 390 | 430 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | — | —  | — | — | —  | — | — | —  | — |
| 311 R3     | 381 | 225 | 225 | 385 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | — | —  | — | — | —  | — | — | —  | — |
| 311 R4     | 443 | 140 | 140 | 360 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | — | —  | — | — | —  | — | — | —  | — |

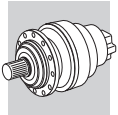
|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |   |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |   |
| 311 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 | — |
| 311 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 | — |
| 311 R3     | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   | — |
| 311 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   | — |



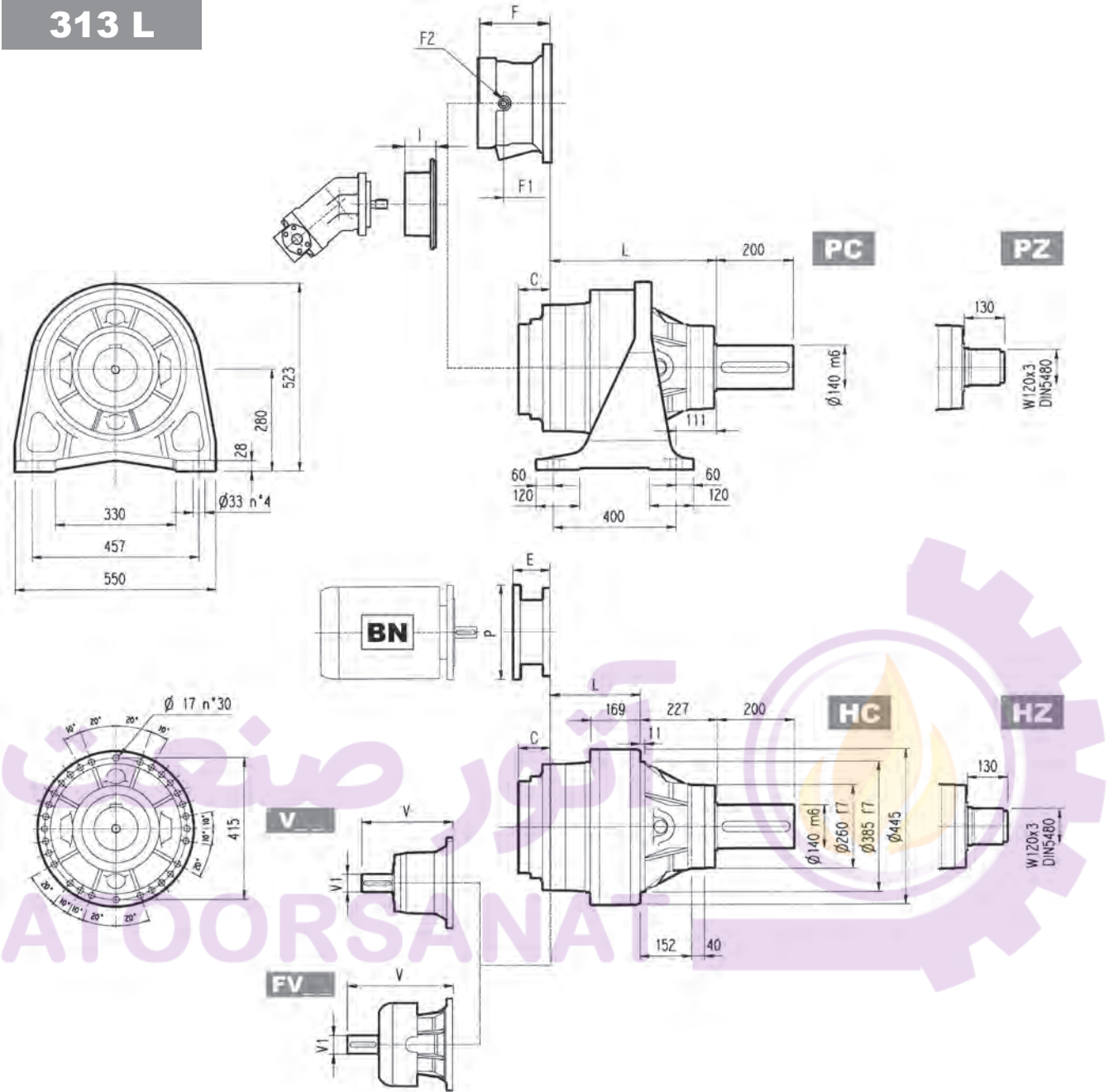
# 311 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





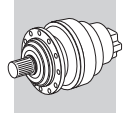
**313 L**



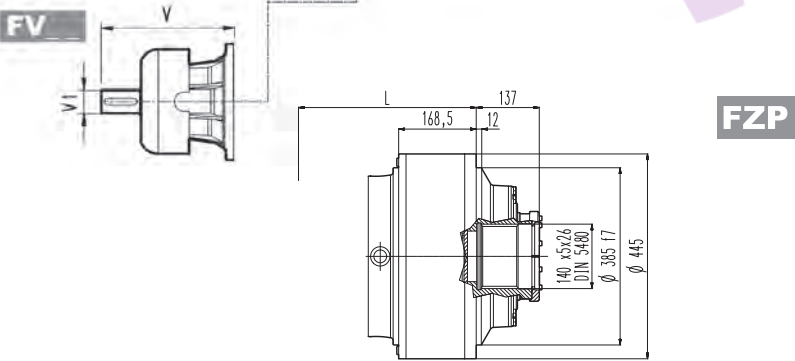
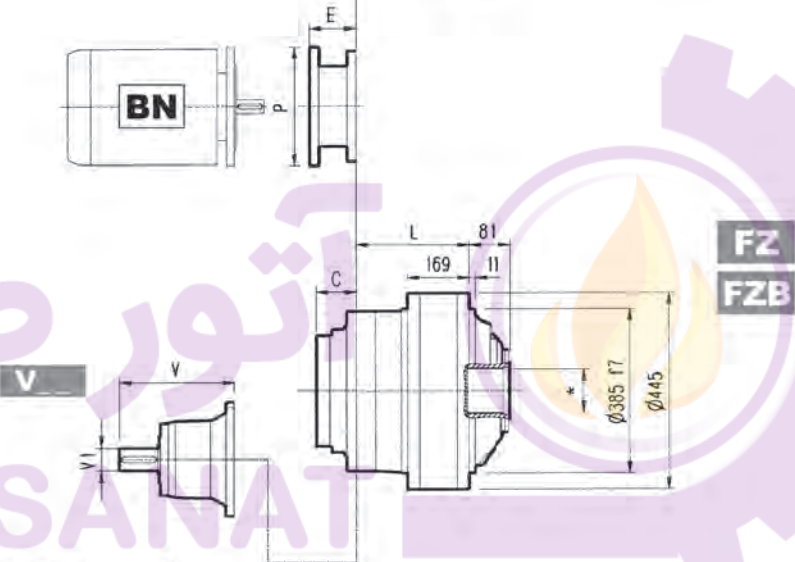
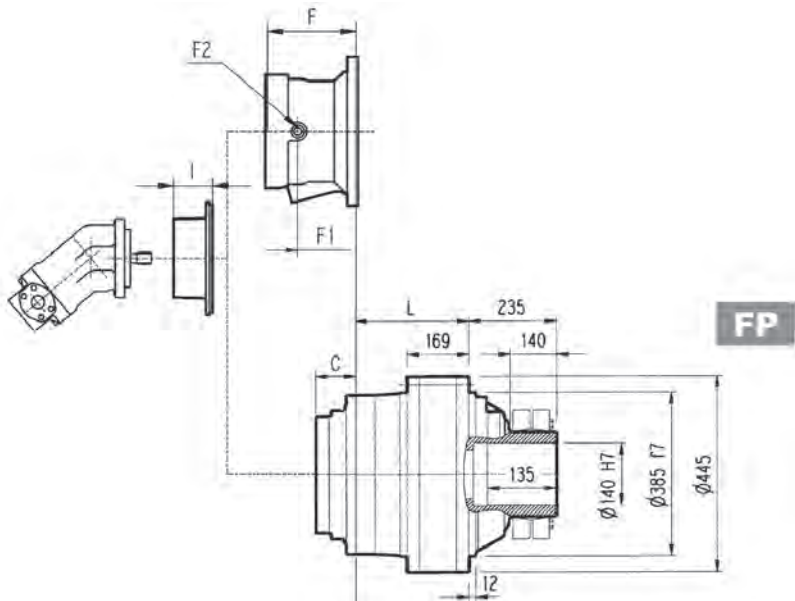
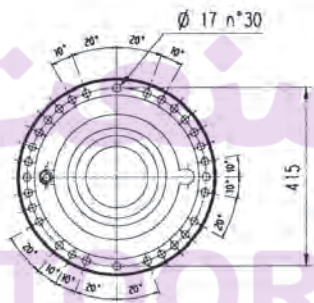
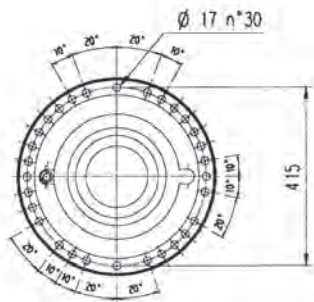
|        | L       |         |          |     | Kg      |         |          |     |
|--------|---------|---------|----------|-----|---------|---------|----------|-----|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 313 L1 | 381     | 154     | 154      | 154 | 320     | 230     | 200      | 200 |
| 313 L2 | 531     | 304     | 304      | 304 | 380     | 290     | 260      | 280 |
| 313 L3 | 620     | 393     | 393      | 393 | 392     | 302     | 272      | 292 |
| 313 L4 | 685     | 458     | 458      | 458 | 399     | 309     | 279      | 299 |

|        | V     |    |    | V1  |    |    | V   |    |    | V1  |    |    | C  | Input | I   | F   |       |       | Type | Input | Kg |
|--------|-------|----|----|-----|----|----|-----|----|----|-----|----|----|----|-------|-----|-----|-------|-------|------|-------|----|
|        | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |    |       |     | F   | F1    | F2    |      |       |    |
| 313 L1 | 343   | 80 | 55 | —   | —  | —  | 451 | 80 | 71 | —   | —  | —  | 76 | D     | —   | —   | —     | —     | —    | —     | —  |
| 313 L2 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51 | B     | 201 | 153 | 1/4 G | 6     | B    | 28    |    |
| 313 L3 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37 | A     | 145 | 95  | 1/4 G | 5     | A    | 16    |    |
| 313 L4 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  | 37 | A     | 461 | 105 | 65    | 1/4 G | 4    | A     | 10 |





**313 L**



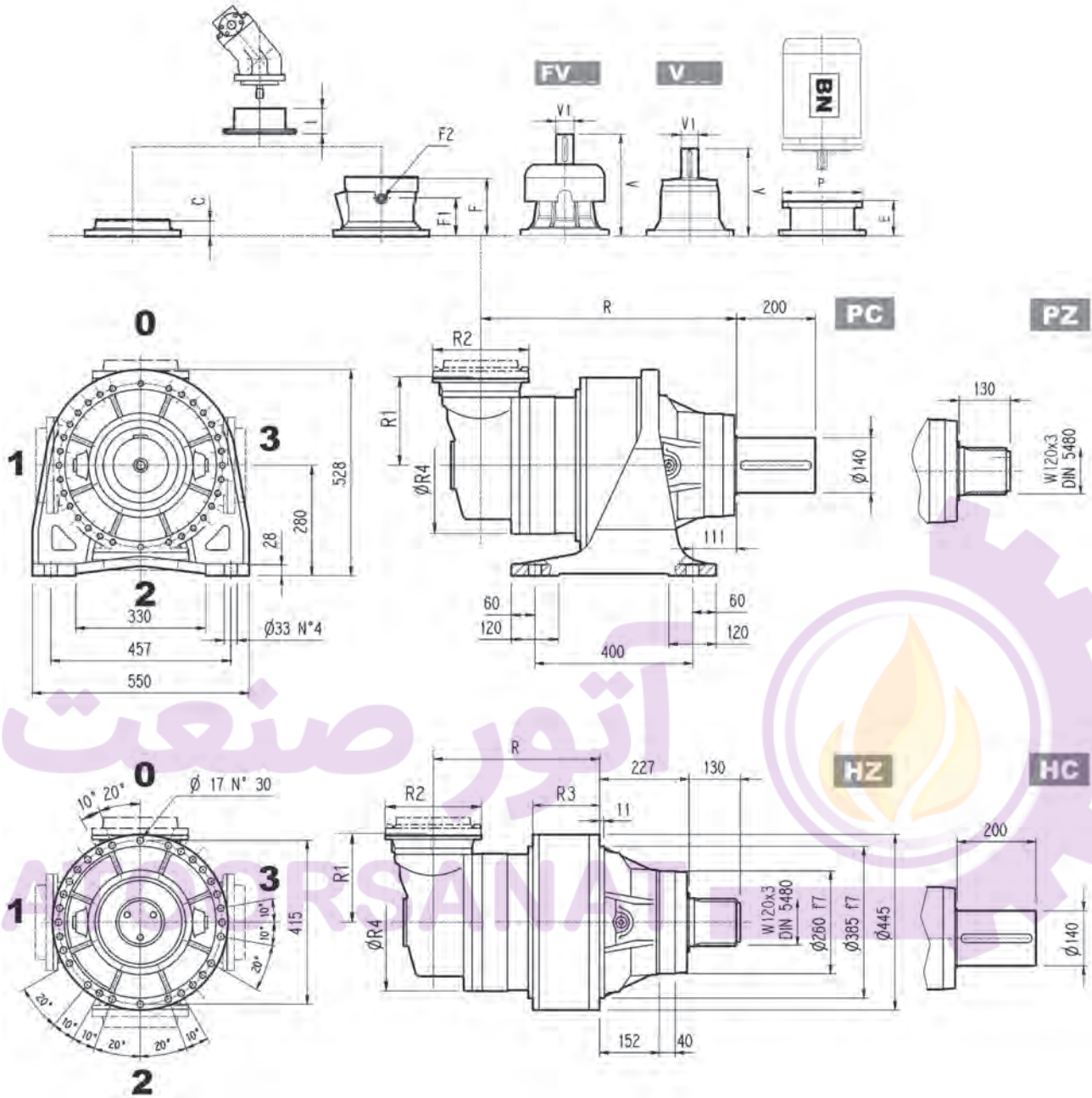
**FP**  $M_{2max} = 79000 \text{ Nm}$

\* For dimensions refer to page 366

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 313 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |
| 313 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 313 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

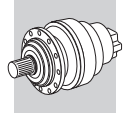


# 313 R

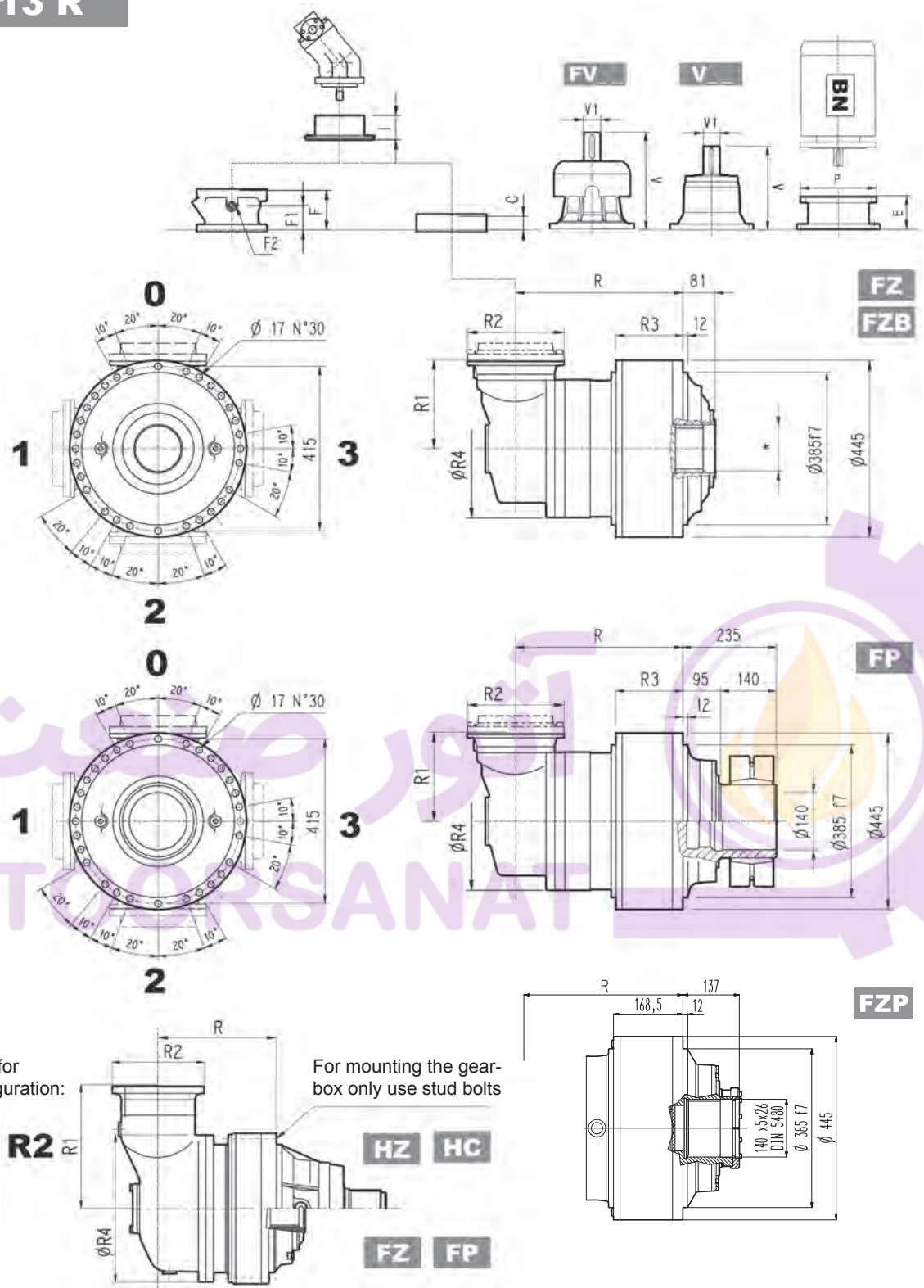


|            | R     |       |          |     | R1  | R2  | R3    |     |     | R4  | Kg    |       |          |     |
|------------|-------|-------|----------|-----|-----|-----|-------|-----|-----|-----|-------|-------|----------|-----|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     | HC-HZ | FZ  | FP  |     | PC-PZ | HC-HZ | FZ - FZP | FP  |
| 313 R2 (B) | 611   | 384   | 384      | 384 | 345 | 292 | 199   | 199 | 199 | 400 | 450   | 360   | 330      | 350 |
| 313 R2 (C) | 611   | 384   | 384      | 384 | 390 | 292 | 168   | 168 | 168 | 480 | 460   | 370   | 340      | 360 |
| 313 R3     | 650   | 423   | 423      | 423 | 225 | 245 | 169   | 169 | 169 | 345 | 430   | 340   | 310      | 330 |
| 313 R4     | 712   | 485   | 485      | 485 | 140 | 186 | 169   | 169 | 169 | 244 | 412   | 322   | 292      | 312 |

|            | Input |    |    |     |    |    | Output |    |    |   |    |    | Type |       |     |     |     |       |      |       |    |
|------------|-------|----|----|-----|----|----|--------|----|----|---|----|----|------|-------|-----|-----|-----|-------|------|-------|----|
|            | V     | V1 | Kg | V   | V1 | Kg | V      | V1 | Kg | V | V1 | Kg | C    | Input | I   | F   | F1  | F2    | Type | Input | Kg |
| 313 R2 (B) | 307   | 60 | 23 | —   | —  | —  | 357    | 60 | 28 | — | —  | —  | 45   | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 313 R2 (C) | 307   | 60 | 23 | —   | —  | —  | 357    | 60 | 28 | — | —  | —  | 45   | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 313 R3     | 239   | 48 | 15 | —   | —  | —  | 276    | 48 | 17 | — | —  | —  | 37   | A     | —   | 145 | 95  | 1/4 G | 5    | A     | 16 |
| 313 R4     | 137.5 | 24 | 6  | 158 | 38 | 7  | —      | —  | —  | — | —  | —  | 37   | A     | 461 | 105 | 65  | 1/4 G | 4    | A     | 10 |



**313 R**

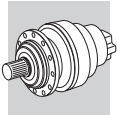


**FP**  $M_{2max} = 79000 \text{ Nm}$

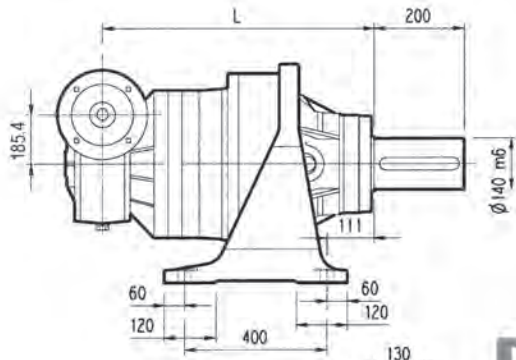
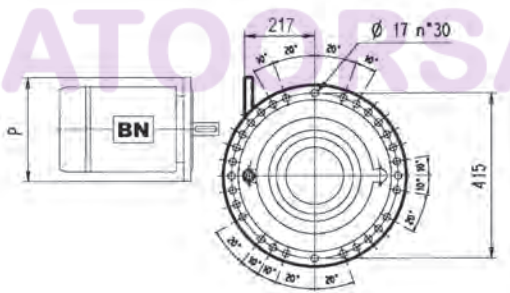
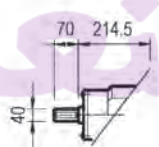
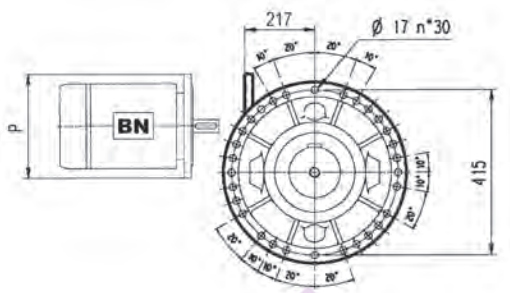
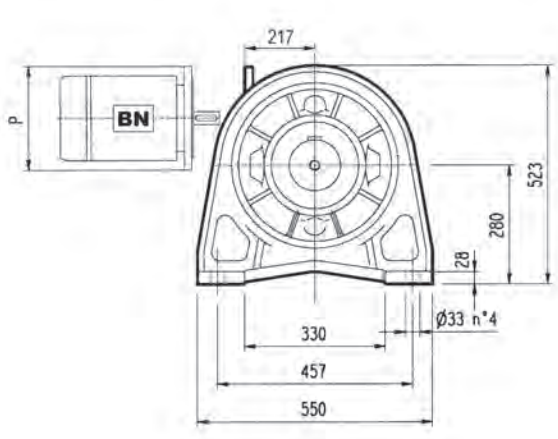
\* For dimensions refer to page 366

|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 313 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 313 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 313 R3     | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |
| 313 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |

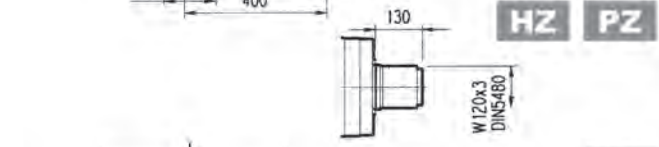




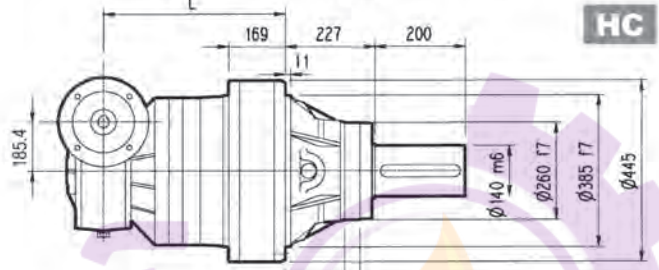
**3/V 13 L3**



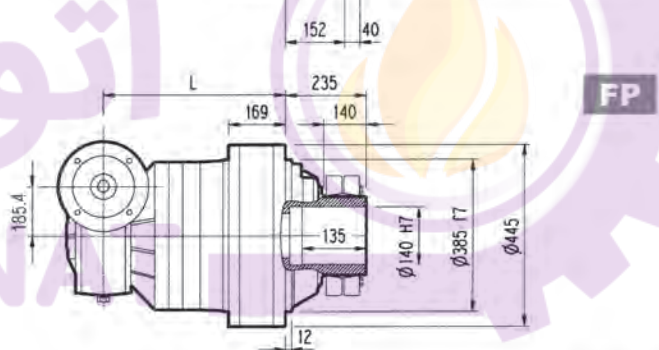
**PC**



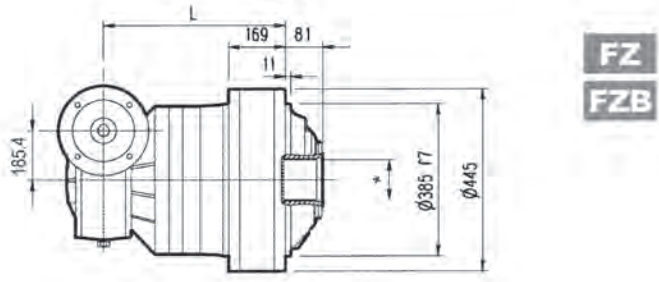
**HZ PZ**



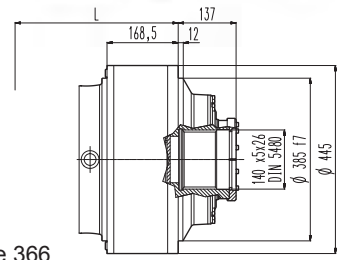
**HC**



**FP**



**FZ FZB**

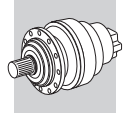


**FP**  $M_{2max} = 79000 \text{ Nm}$

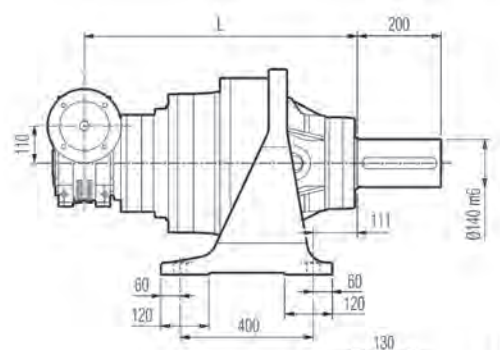
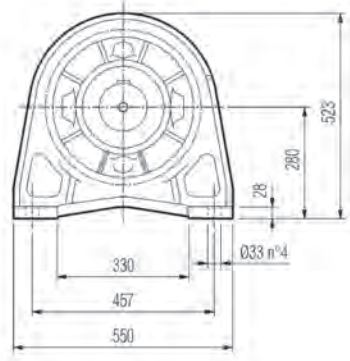
\* For dimensions refer to page 366

|           | L       |         |          |     | Kg      |         |          |     | P80 | P90 | P100 | P112 | P132 | P160 | P180 |
|-----------|---------|---------|----------|-----|---------|---------|----------|-----|-----|-----|------|------|------|------|------|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  | P   | P   | P    | P    | P    | P    | P    |
| 3/V 13 L3 | 732     | 505     | 505      | 505 | 475     | 385     | 355      | 375 | —   | —   | 250  | 250  | 300  | 350  | 350  |

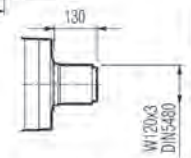




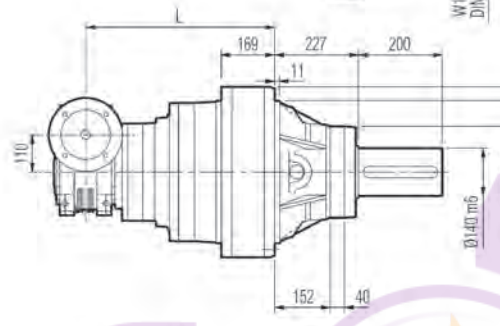
**3/V 13 L4**



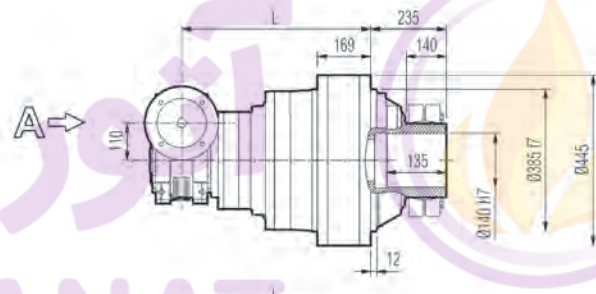
**PC**



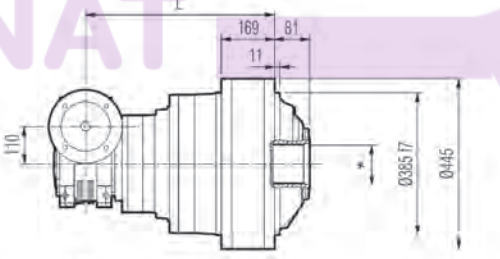
**HZ PZ**



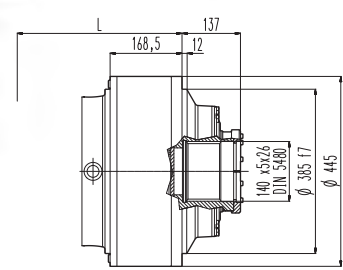
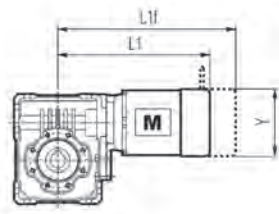
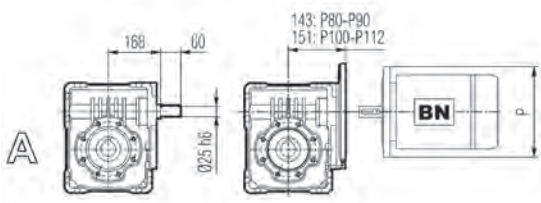
**HC**



**FP**



**FZ FZB**



**FZP**

**FP**  $M_{2max} = 79000 \text{ Nm}$

\* For dimensions refer to page 366

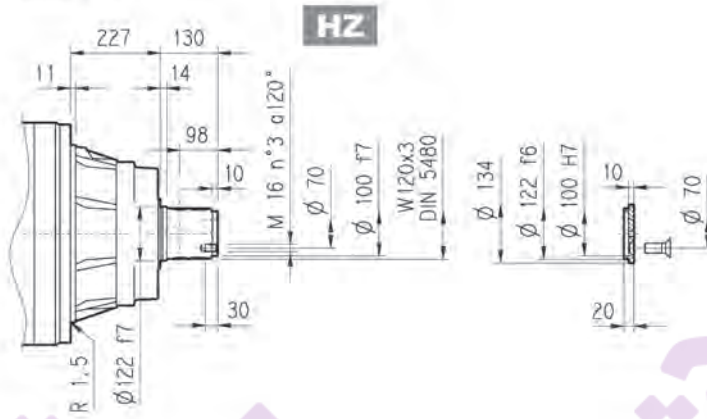
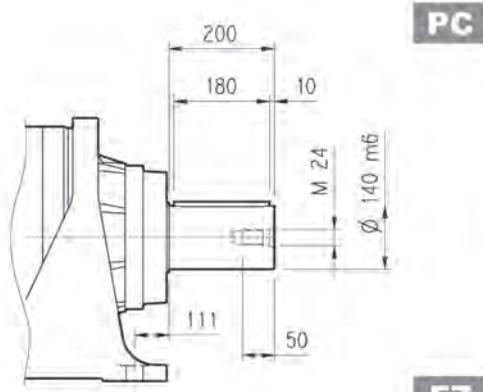
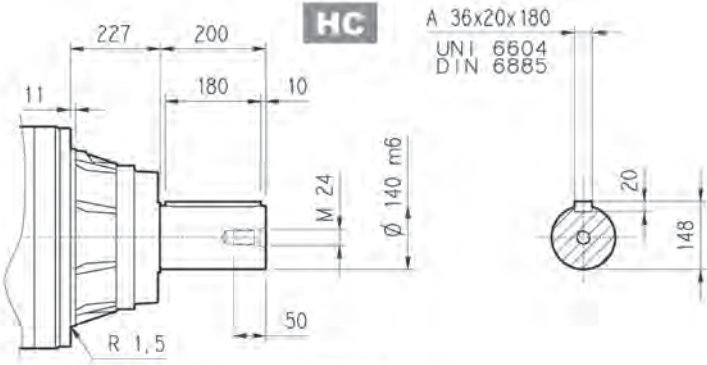
|           | L       |     |         |      |          |     |     | Kg       |     |         |          |          |     |     |
|-----------|---------|-----|---------|------|----------|-----|-----|----------|-----|---------|----------|----------|-----|-----|
|           | PC - PZ |     | HC - HZ |      | FZ - FZP |     | FP  | PC - PZ  |     | HC - HZ |          | FZ - FZP |     | FP  |
| 3/V 13 L4 | 780     |     | 553     |      | 553      |     | 553 | 425      |     | 335     |          | 305      |     | 325 |
|           | P80     | P90 | P100    | P112 | S2 + M2S |     |     | S3 + M3S |     |         | S3 + M3L |          |     |     |
|           | P       | P   | P       | P    | L1       | L1f | Y   | L1       | L1f | Y       | L1       | L1f      | Y   |     |
| 3/V 13 L4 | 200     | 200 | 250     | 250  | 364      | 440 | 156 | 407      | 503 | 193     | 439      | 530      | 193 |     |



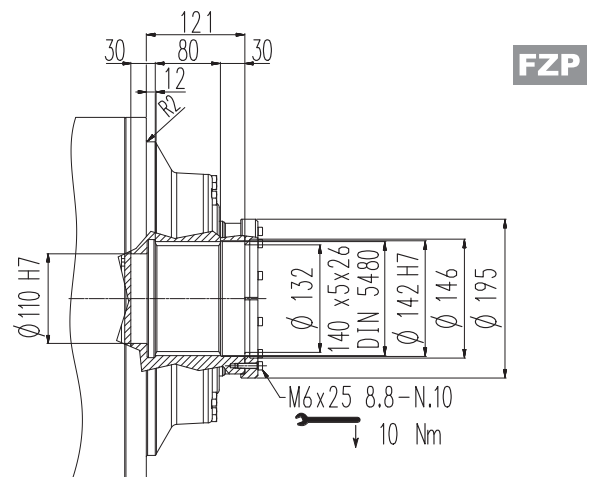
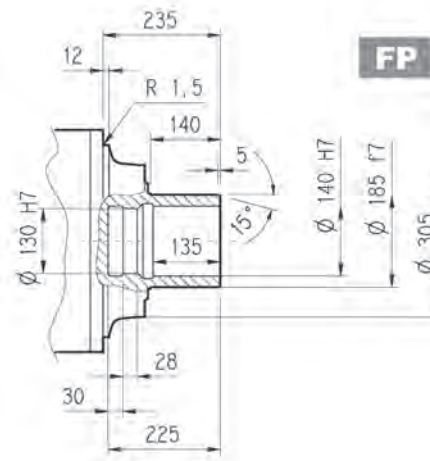
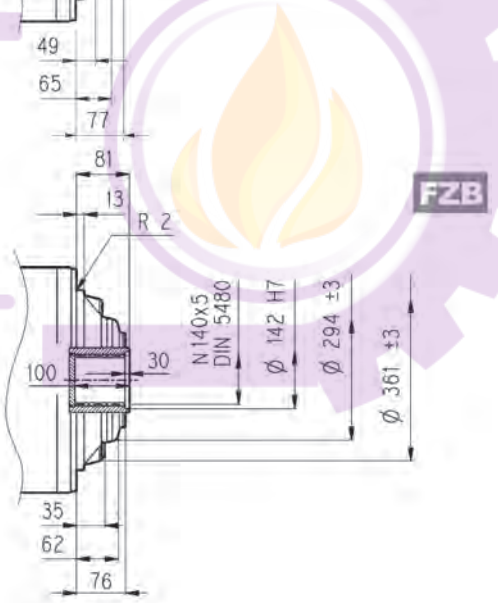
313 L

313 R

3/V 13 L

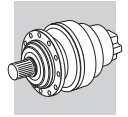


آتور صنعت  
ATOORSANAT



**FP**

$M_{2max} = 79000 \text{ Nm}$



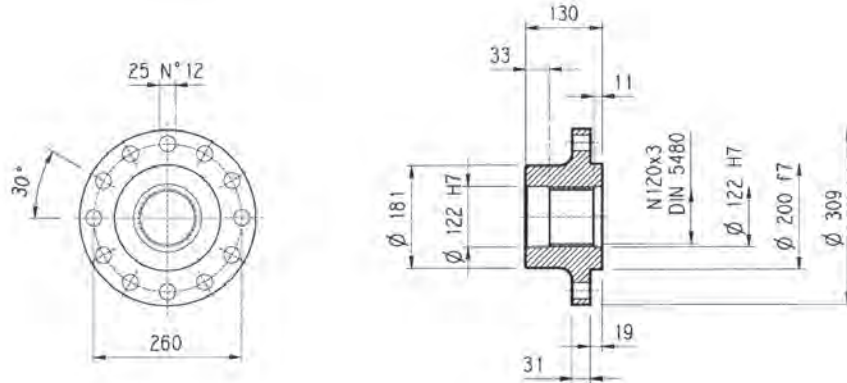
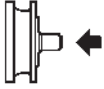
313 L

313 R

3/V 13 L

Flange

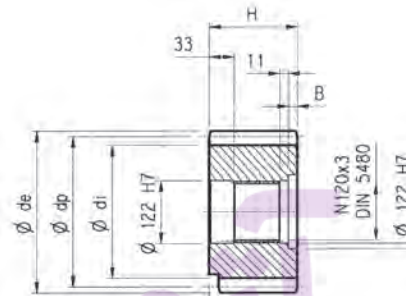
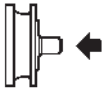
W0A



Material: Steel C40

Pinions

P...

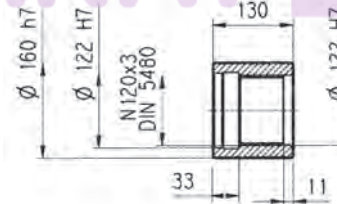
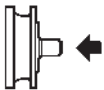


$\alpha = 20^\circ$

|     | m  | z  | x     | dp  | di  | de  | H   | A | B  | C   | Material                              |
|-----|----|----|-------|-----|-----|-----|-----|---|----|-----|---------------------------------------|
| PPH | 16 | 17 | 0.500 | 272 | 247 | 315 | 135 | — | 5  | 136 | Steel 39NiCrMo3 hardened and tempered |
| PRI | 18 | 18 | 0.333 | 324 | 294 | 365 | 140 | — | 10 | 140 |                                       |

Sleeve coupling

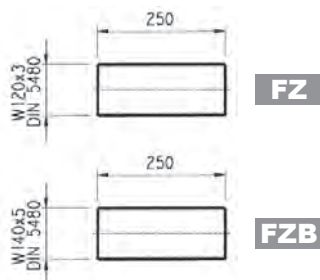
M0A



Material: Steel 16CrNi4

Splined bars

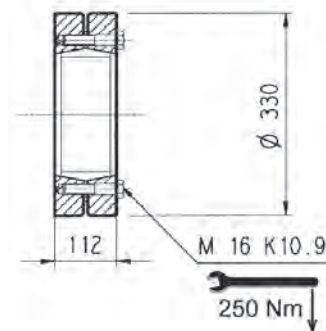
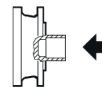
B0A

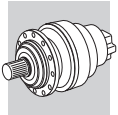


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

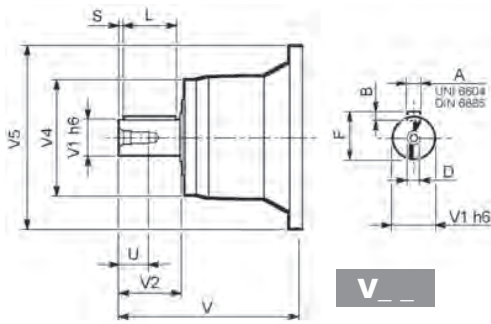
G0A



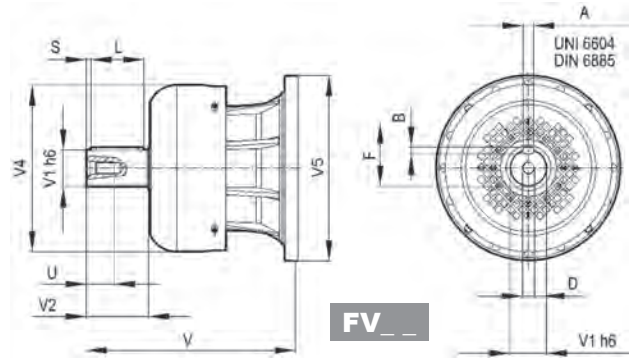


313 L

313 R



V \_\_

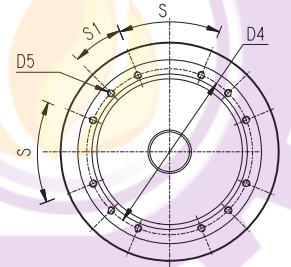
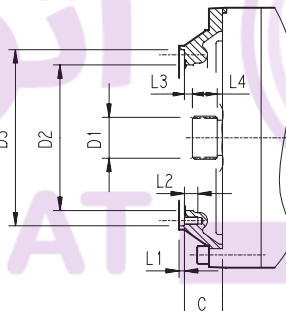
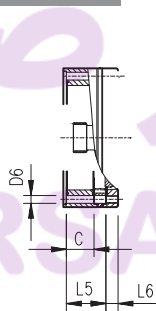


FV \_\_

|                |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 313 L1         | V11B  | 343   | 80 | 130 | 200   | 445 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV11B | 451   | 80 | 130 | 347.5 | 445 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 313 L2         | V07B  | 315   | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV07B | 375   | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | V07A  | 313   | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 313 L3         | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 313 L4         | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|                | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |
| 313 R2 (B) (C) | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 313 R3         | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 313 R4         | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|                | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

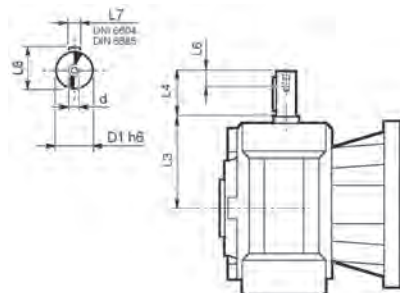
313 L

313 R



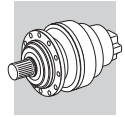
|                |      | C  | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|----|----------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 313 L1         | V9AD | 75 | 80x74 DIN 5482 | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 9.5 | 40 | —  | —  | 60° | 30°   | D     |
| 313 L2         | V9AB | 51 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 313 L3         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 313 L4         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9   | 18 | 65 | 18 | 45° | 45°   | A     |
| 313 R3         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 313 R2 (B) (C) | V9AB | 45 | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 313 R4         | V9AA | 37 | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9   | 18 | 37 | 18 | 45° | 45°   | A     |

3/V 13 L



|              | D1 h6 | L3    | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-------|----|----|----|----|----|
| 3/V 13 L3_HS | 40    | 214.5 | 70 | 20 | 12 | 43 | M8 |
| 3/V 13 L4_HS | 25    | 168   | 60 | 19 | 8  | 28 | M8 |



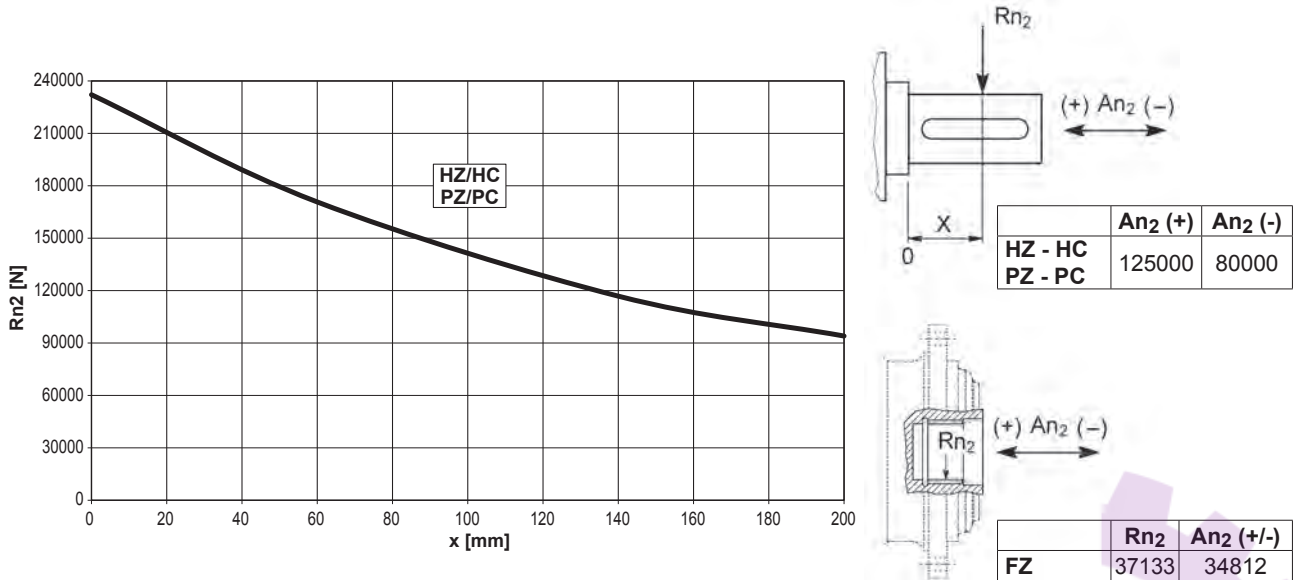


313 L

313 R

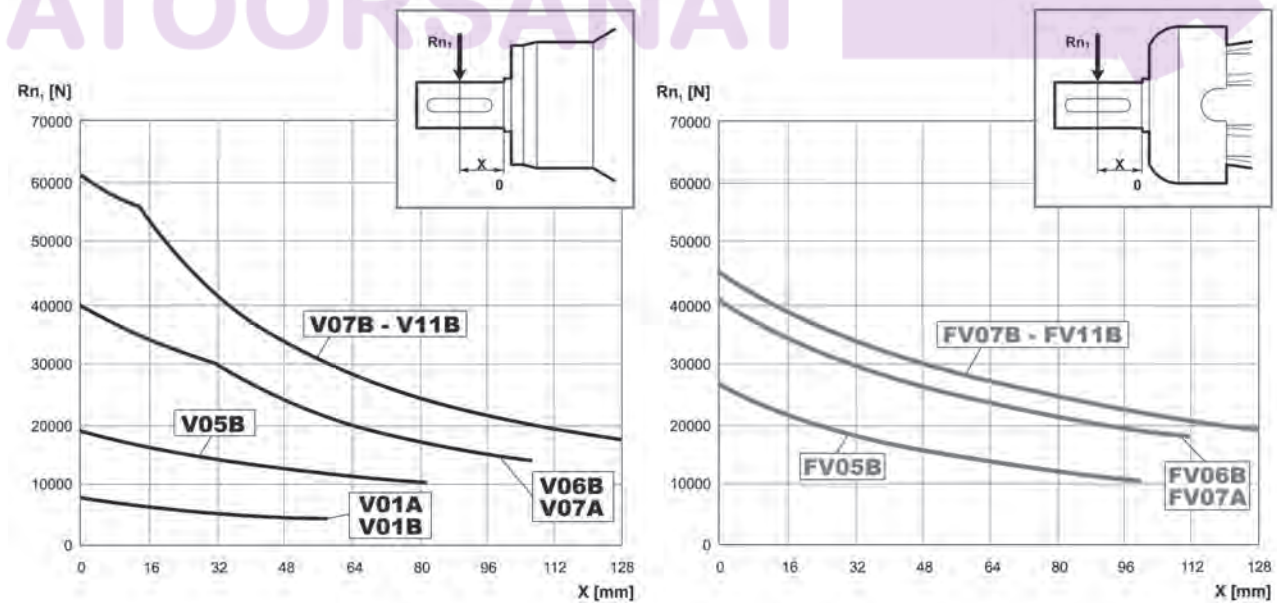
3/V 13 L

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$ on shafts | $Fh_2 = n_2 \cdot h$ |    | 10000             | 25000 | 50000 | 100000 | 500000 | 1000000 |
|---|----------------------|----|-------------------|-------|-------|--------|--------|---------|
|   | $fh_2$               | FZ | HZ - HC - PZ - PC | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    |
|   |                      |    | 1.32              | 1.20  | 1.20  | 1.00   | 0.62   | 0.50    |

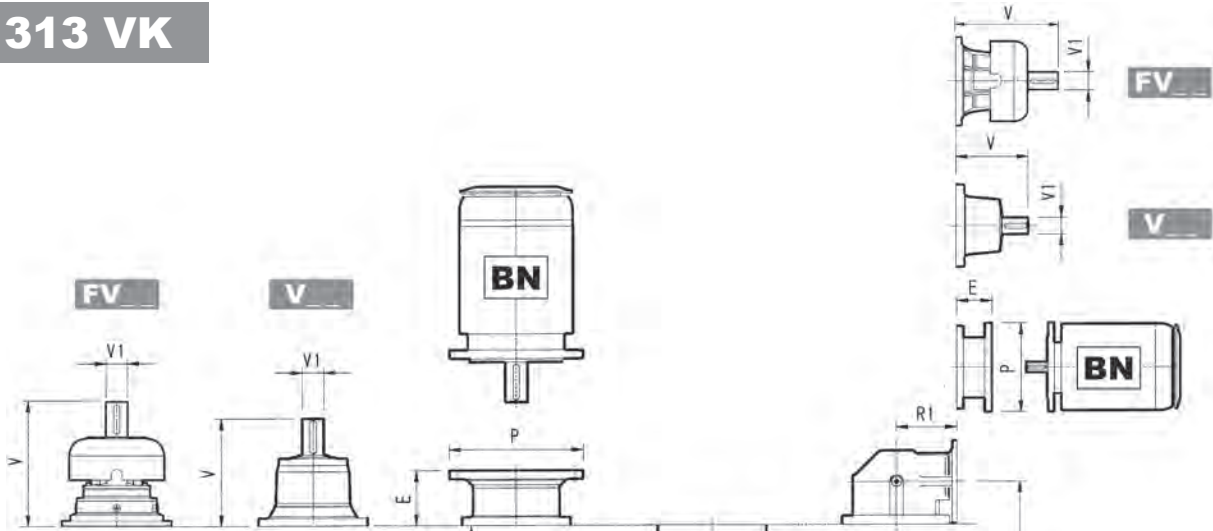
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $Fh_1 = n_1 \cdot h$ |  | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|---|----------------------|--|--------|--------|---------|---------|---------|----------|
|   | $fh_1$               |  |        | 1      | 0.79    | 0.63    | 0.50    | 0.37     |



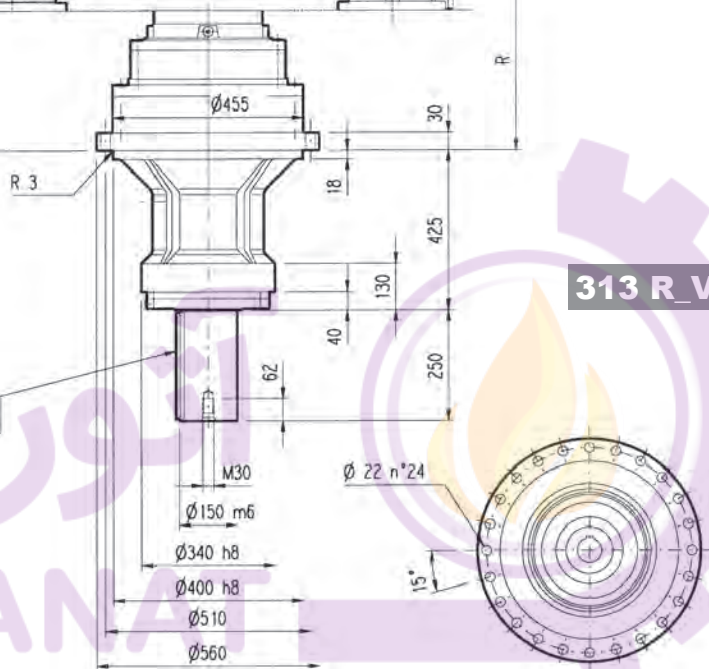
### 313 VK



### 313 L\_VK

A 35x20x240  
UNI 5504-65 / DIN 6885

### 313 R\_VK

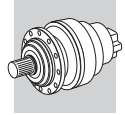


|        | L   |     |     | V     |    |    |     |    |    | V1  |    |    |     |    |    |
|--------|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|-----|----|----|
|        | E   | P   | kg  | E     | P  | kg | E   | P  | kg | E   | P  | kg | E   | P  | kg |
| 313 L1 | 158 | 380 | 380 | 343   | 80 | 55 | —   | —  | —  | 451 | 80 | 71 | —   | —  | —  |
| 313 L2 | 308 | 440 | 440 | 315   | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 |
| 313 L3 | 397 | 450 | 450 | 239   | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  |
| 313 L4 | 462 | 460 | 460 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | —   | —  | —  |

|        | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |   |   |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---|---|
|        | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |   |   |
| 313 L2 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 | — | — |
| 313 L3 | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   | — | — |
| 313 L4 | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   | — | — |

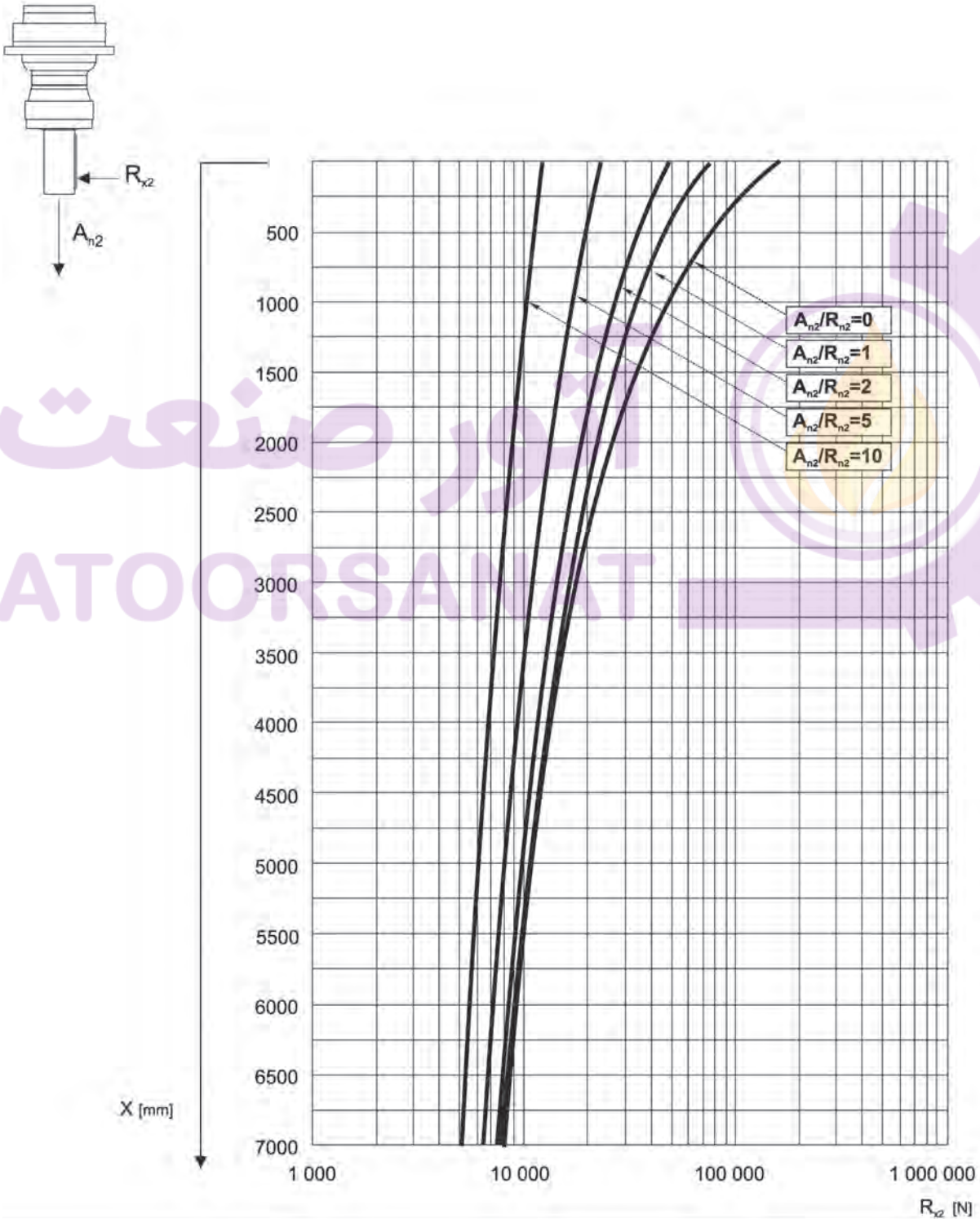
|            | R   |     | V   |       |    | V1 |     |    | V |     |    | V1 |   |    |   |   |    |   |
|------------|-----|-----|-----|-------|----|----|-----|----|---|-----|----|----|---|----|---|---|----|---|
|            | R   | R1  | E   | P     | kg | E  | P   | kg | E | P   | kg | E  | P | kg | E | P | kg |   |
| 313 R2 (B) | 388 | 345 | 510 | 307   | 60 | 23 | —   | —  | — | 357 | 60 | 28 | — | —  | — | — | —  | — |
| 313 R2 (C) | 388 | 390 | 520 | 307   | 60 | 23 | —   | —  | — | 357 | 60 | 28 | — | —  | — | — | —  | — |
| 313 R3     | 427 | 225 | 490 | 239   | 48 | 15 | —   | —  | — | —   | —  | —  | — | —  | — | — | —  | — |
| 313 R4     | 489 | 140 | 470 | 137.5 | 24 | 6  | 158 | 38 | 7 | —   | —  | —  | — | —  | — | — | —  | — |

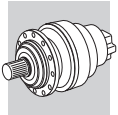
|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |   |   |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---|---|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |   |   |
| 313 R2 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 | — | — |
| 313 R2 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 | — | — |
| 313 R3     | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   | — | — |
| 313 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   | — | — |



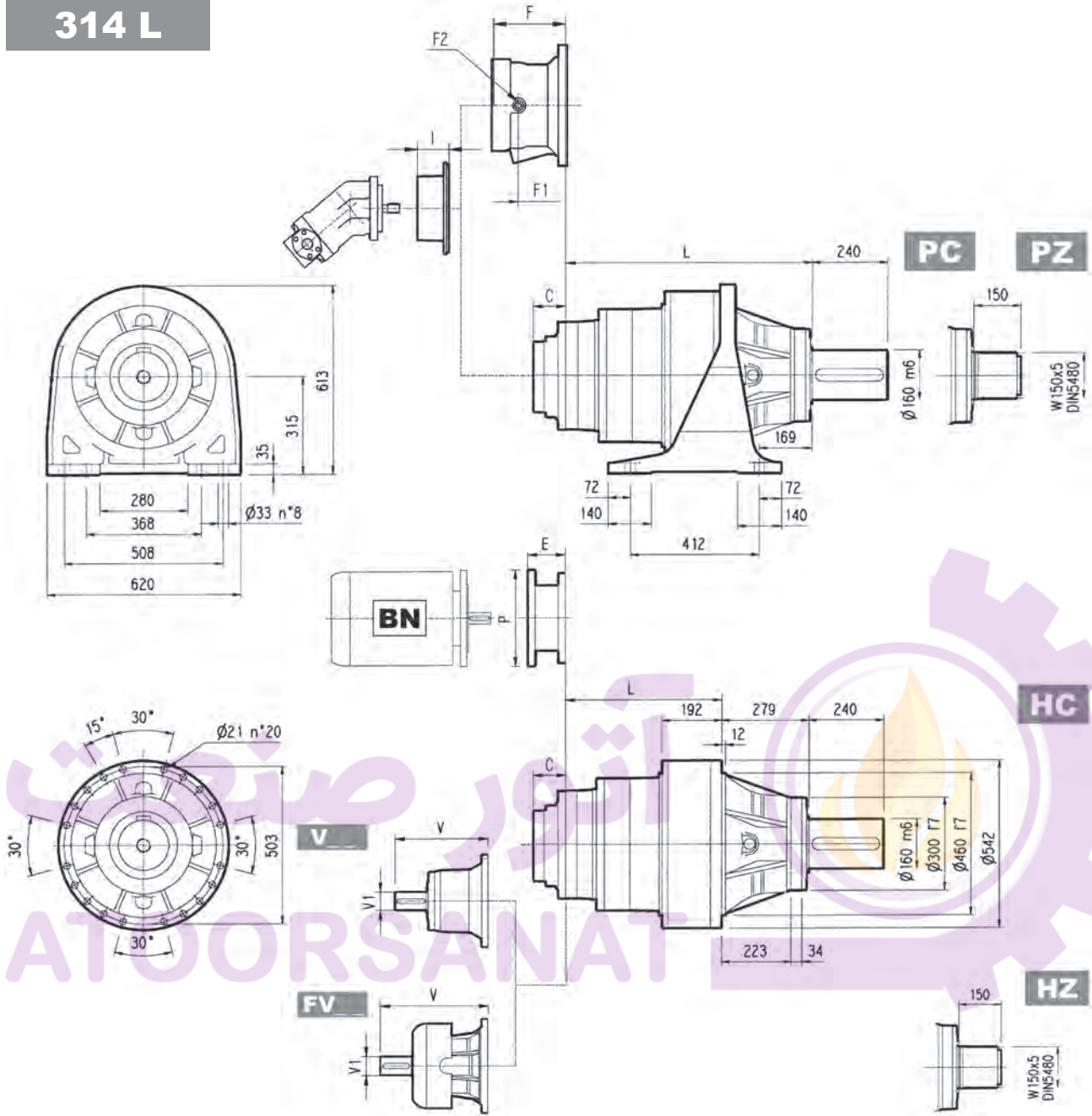
**313 VK**

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





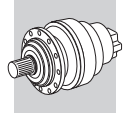
# 314 L



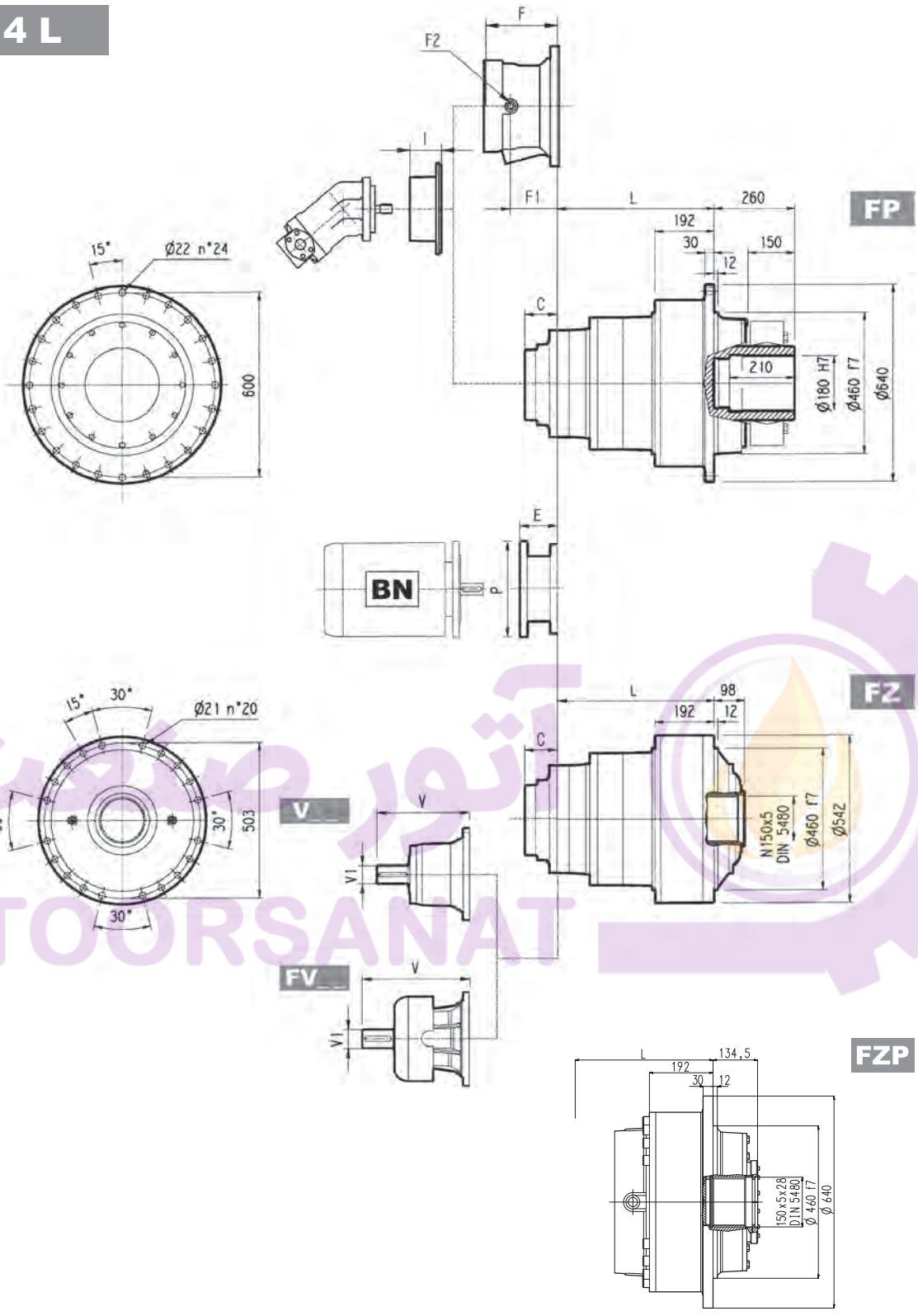
|        | L       |         |          |     | Kg      |         |          |     |
|--------|---------|---------|----------|-----|---------|---------|----------|-----|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 314 L1 | 453     | 174     | 174      | 174 | 500     | 370     | 280      | 330 |
| 314 L2 | 641     | 362     | 362      | 362 | 545     | 415     | 325      | 375 |
| 314 L3 | 777     | 498     | 498      | 498 | 590     | 460     | 370      | 420 |
| 314 L4 | 842     | 563     | 563      | 563 | 600     | 470     | 380      | 430 |

|        | V   |    |    | V1 |    |    | V   |    |    | V1 |    |    | C   | Input | I   | F   | F1    | F2 | Type | Input | Kg |
|--------|-----|----|----|----|----|----|-----|----|----|----|----|----|-----|-------|-----|-----|-------|----|------|-------|----|
|        | V   | V1 | Kg | V  | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |     |       |     |     |       |    |      |       |    |
| 314 L1 | —   | —  | —  | —  | —  | —  | —   | —  | —  | —  | —  | —  | 120 | L     | —   | —   | —     | —  | —    | —     | —  |
| 314 L2 | 377 | 80 | 50 | —  | —  | —  | 457 | 80 | 63 | —  | —  | —  | 88  | C     | 195 | 147 | 1/4 G | 6  | B    | 28    |    |
| 314 L3 | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45  | B     | 145 | 95  | 1/4 G | 5  | B    | 16    |    |
| 314 L4 | 239 | 48 | 15 | —  | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37  | A     | 105 | 65  | 1/4 G | 5  | A    | 10    |    |





**314 L**

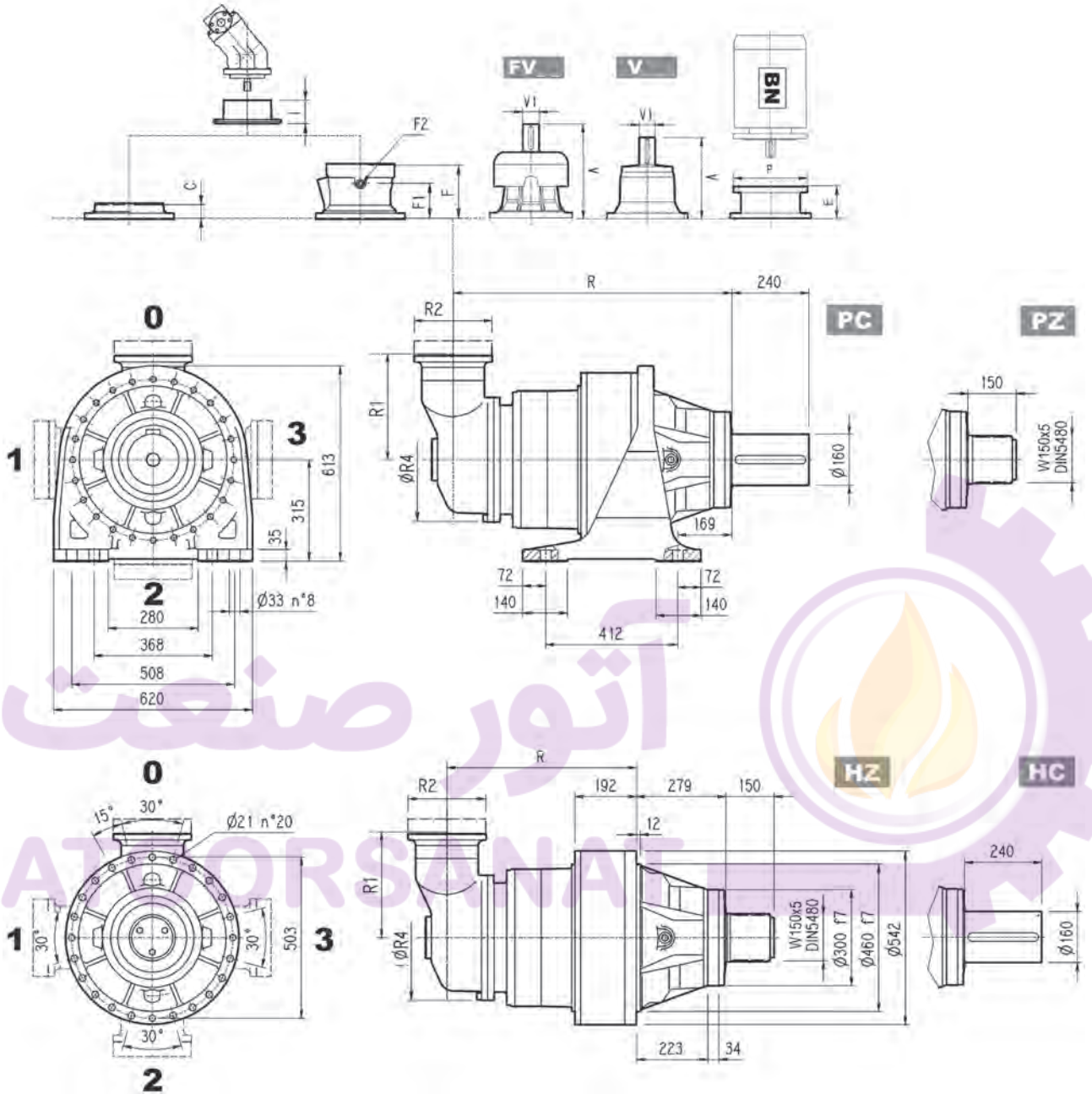


**FP**  $M_{2max} = 115000 \text{ Nm}$

|        | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 314 L2 | —    | —   | —    | —   | —    | —   | 271  | 400 | 301  | 450 | 281  | 550 |
| 314 L3 | —    | —   | 153  | 350 | 153  | 350 | 183  | 400 | 213  | 450 | 193  | 550 |
| 314 L4 | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |

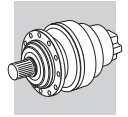


# 314 R

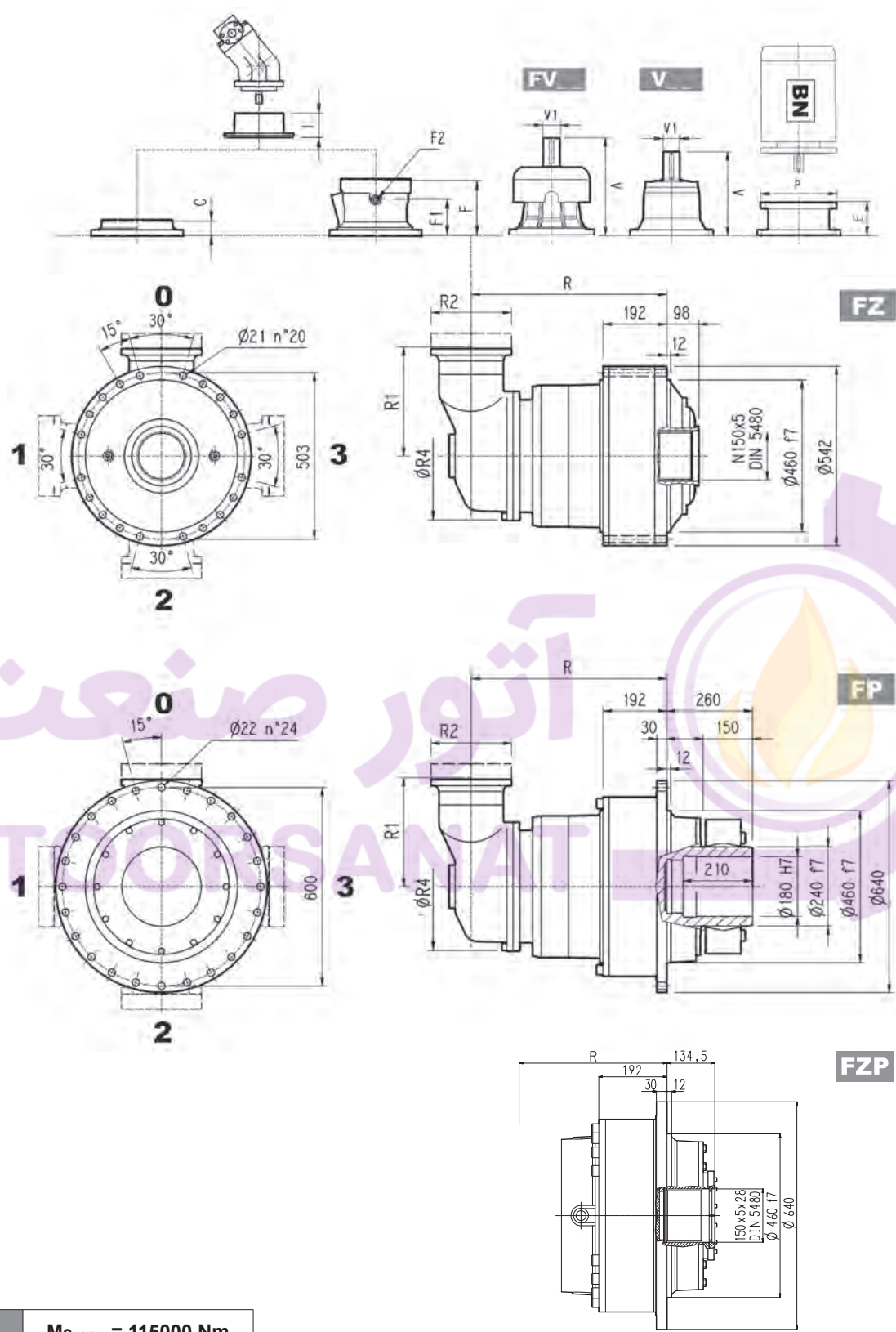


|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |     |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|-----|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP  |
| 314 R3 (B) | 848   | 569   | 569      | 569 | 345 | 292 | 400 | 720   | 590   | 500      | 550 |
| 314 R3 (C) | 856   | 587   | 587      | 587 | 390 | 292 | 480 | 730   | 600   | 510      | 560 |
| 314 R4     | 914   | 635   | 635      | 635 | 140 | 186 | 244 | 680   | 550   | 460      | 510 |

|            | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg | C  | Input | I | F   | F1  | F2    | Type | Input | Kg |
|------------|-------|----|----|-----|----|----|-----|----|----|---|----|----|----|-------|---|-----|-----|-------|------|-------|----|
| 314 R3 (B) | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  | 45 | B     |   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 314 R3 (C) | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  | 45 | B     |   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 314 R4     | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  | —  | 37 | A     |   | 105 | 65  | 1/4 G | 4    | A     | 10 |



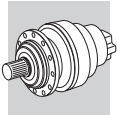
**314 R**



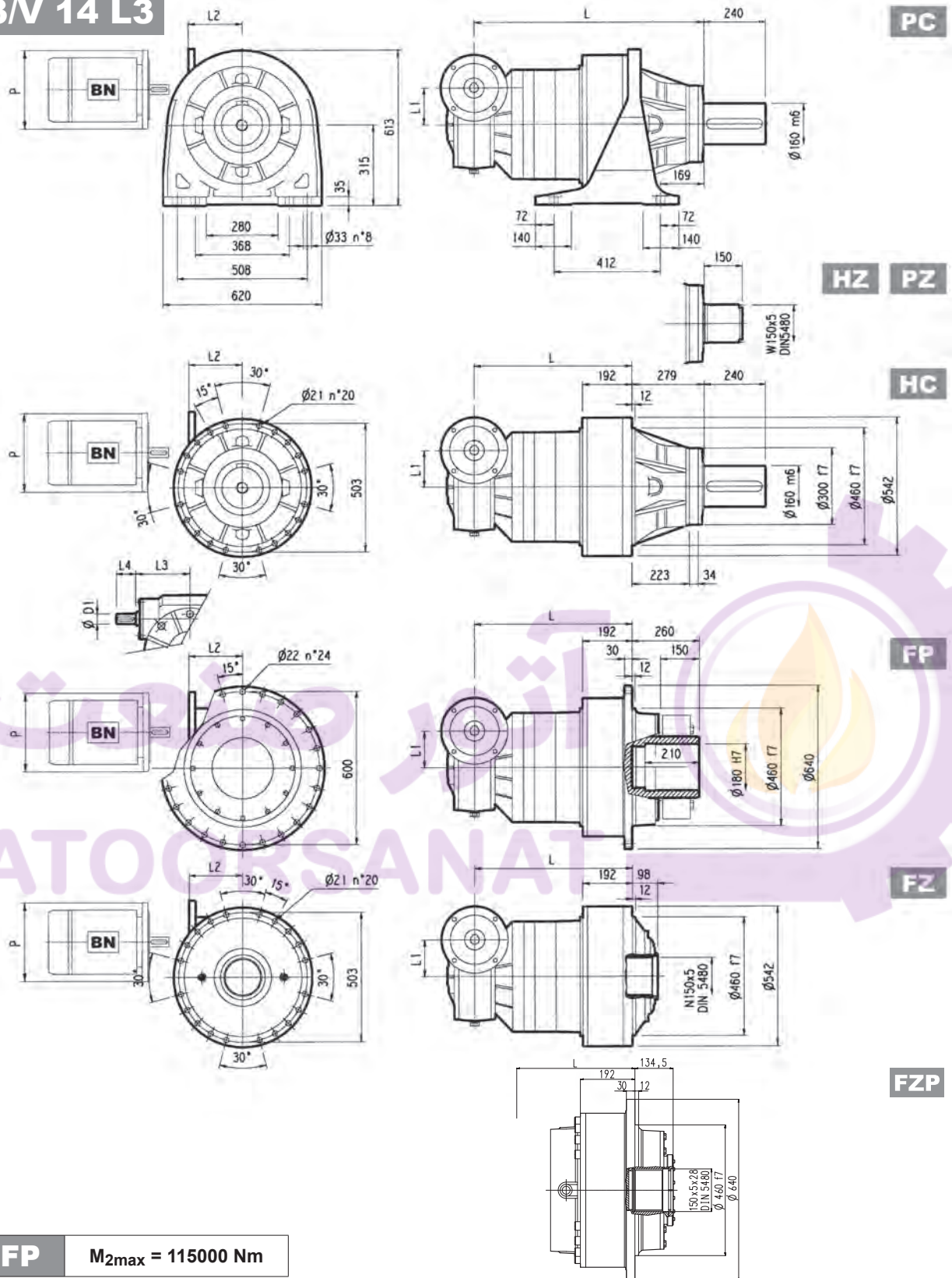
**FP**  $M_{2max} = 115000 \text{ Nm}$

|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 314 R3 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 314 R3 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 314 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |





**3/V 14 L3**

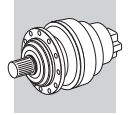


**FP**  $M_{2max} = 115000 \text{ Nm}$

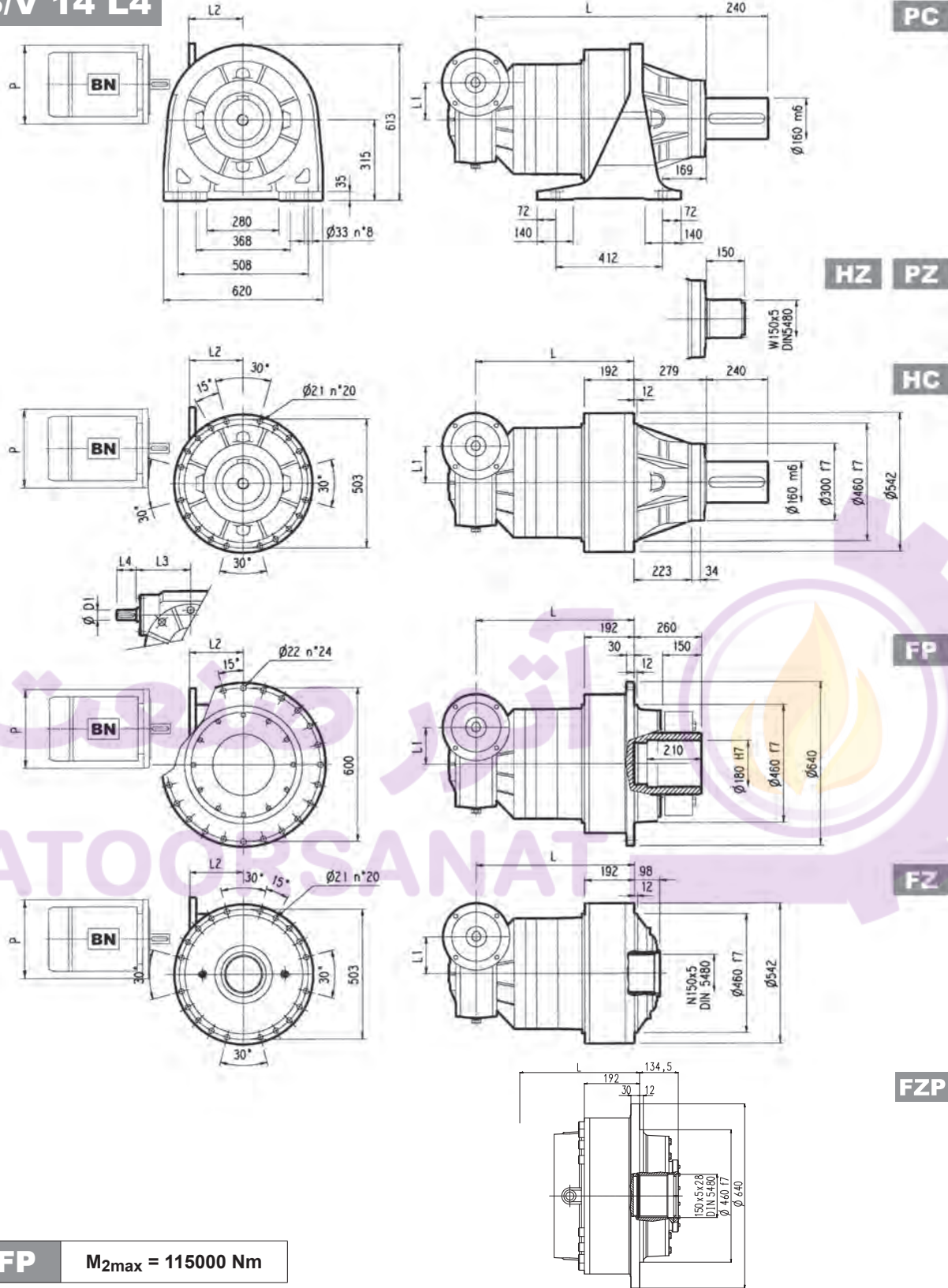
|           | L       |         |          |     | L1  | L2  | D1 | L3    | L4 | Kg |         |         |          |     |
|-----------|---------|---------|----------|-----|-----|-----|----|-------|----|----|---------|---------|----------|-----|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |     |    |       |    |    | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 3/V 14 L3 | 920     | 641     | 641      | 641 | 185 | 217 | 40 | 214.5 | 70 |    | 665     | 535     | 445      | 495 |

|           | P100 | P112 | P132 |     | P160 |     | P180 |     |
|-----------|------|------|------|-----|------|-----|------|-----|
|           | P    | P    | L2   | P   | L2   | P   | L2   | P   |
| 3/V 14 L3 | 250  | 250  | —    | 300 | —    | 350 | —    | 350 |





### 3/V 14 L4



**FP**  $M_{2max} = 115000 \text{ Nm}$

|           | L       |         |          |     | L1  | L2  | D1 | L3  | L4 | Kg      |         |          |     |
|-----------|---------|---------|----------|-----|-----|-----|----|-----|----|---------|---------|----------|-----|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |     |    |     |    | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 3/V 14 L4 | 961     | 682     | 682      | 682 | 150 | 190 | 35 | 185 | 65 | 690     | 560     | 470      | 520 |

|           | P100 | P112 | P132 |     | P160 |     | P180 |   |
|-----------|------|------|------|-----|------|-----|------|---|
|           | P    | P    | L2   | P   | L2   | P   | L2   | P |
| 3/V 14 L4 | 250  | 250  | —    | 300 | —    | 350 | —    | — |

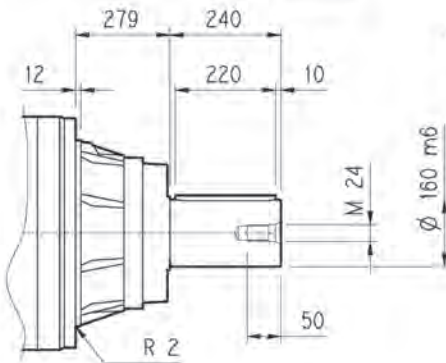


**314 L**

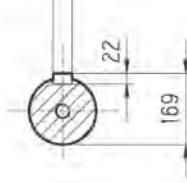
**314 R**

**3/V 14 L**

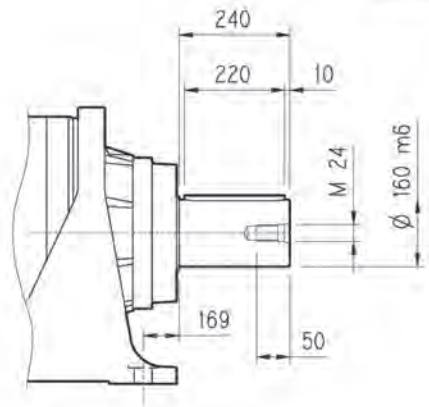
**HC**



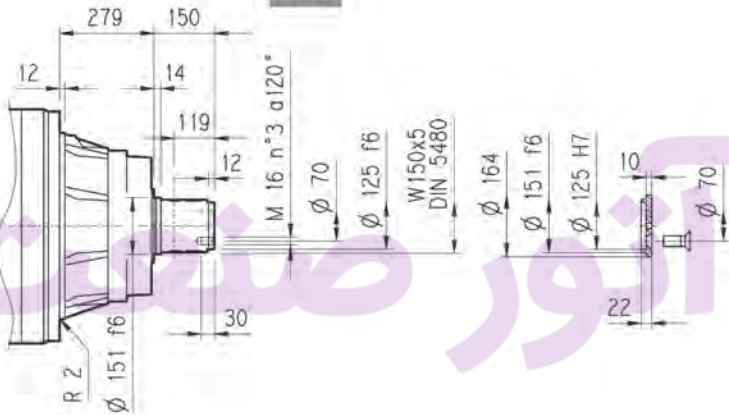
A 40x22x220  
UNI 6604  
DIN 6885



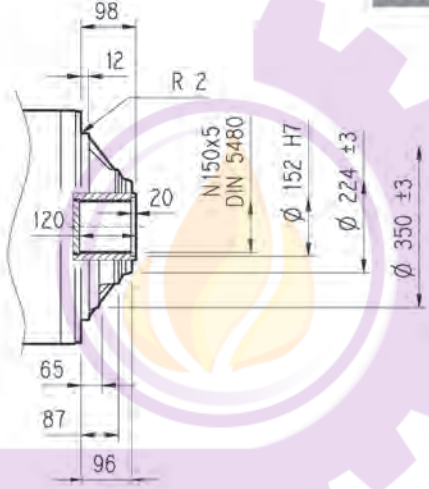
**PC**



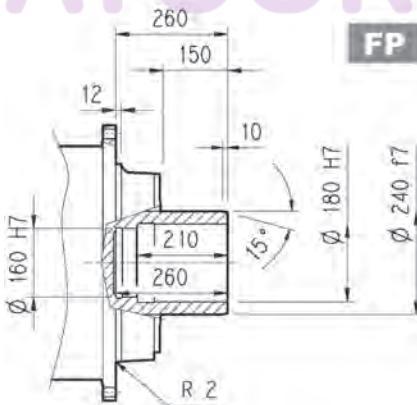
**HZ**



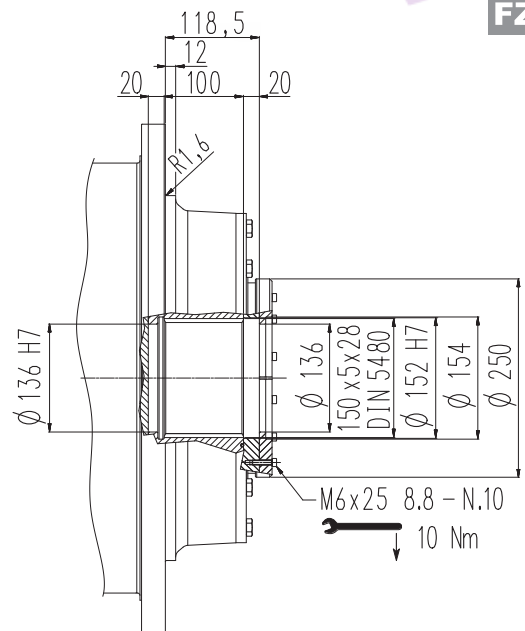
**FZ**



**FP**

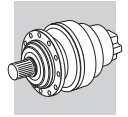


**FZP**



**FP**

$M_{2max} = 115000 \text{ Nm}$



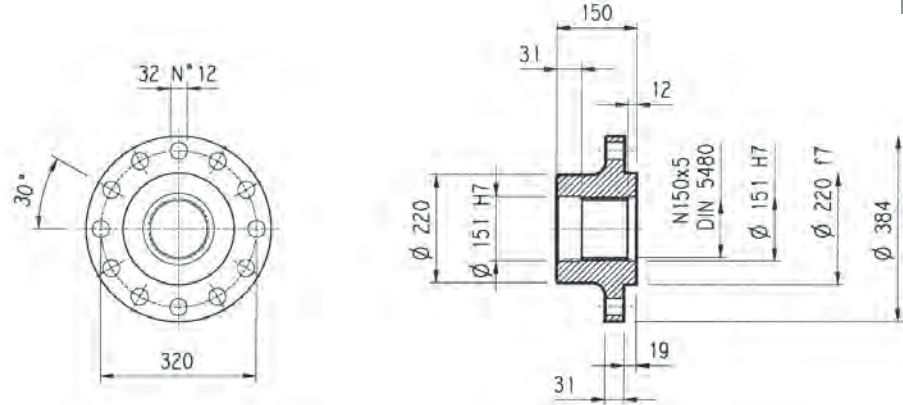
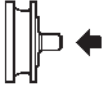
**314 L**

**314 R**

**3/V 14 L**

**Flange**

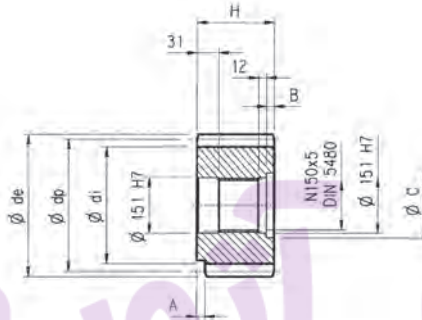
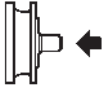
**W0A**



Material: Steel C40

**Pinions**

**P...**

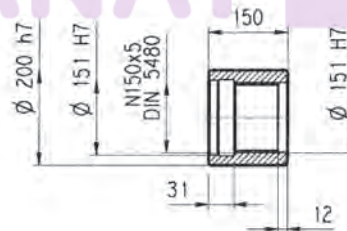
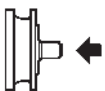


$\alpha = 20^\circ$

|             | m  | z  | x     | dp  | di  | de  | H   | A  | B  | C   | Material                              |
|-------------|----|----|-------|-----|-----|-----|-----|----|----|-----|---------------------------------------|
| <b>PRG1</b> | 18 | 16 | 0.500 | 288 | 261 | 342 | 160 | —  | 10 | 166 | Steel 18NiCrMo5 case hardened         |
| <b>PRG2</b> | 18 | 16 | 0.617 | 288 | 271 | 339 | 150 | 30 | —  | —   | Steel 39NiCrMo3 hardened and tempered |

**Sleeve coupling**

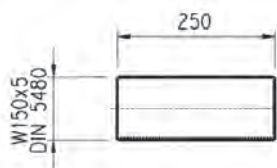
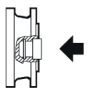
**M0A**



Material: Steel 16CrNi4

**Splined bars**

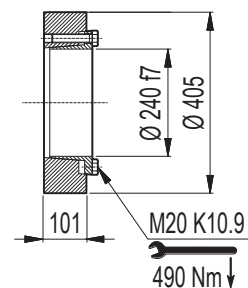
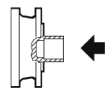
**B0A**

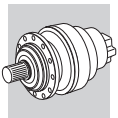


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

**Shrink disc**

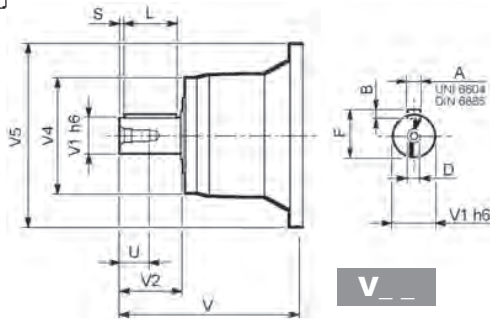
**G0A**



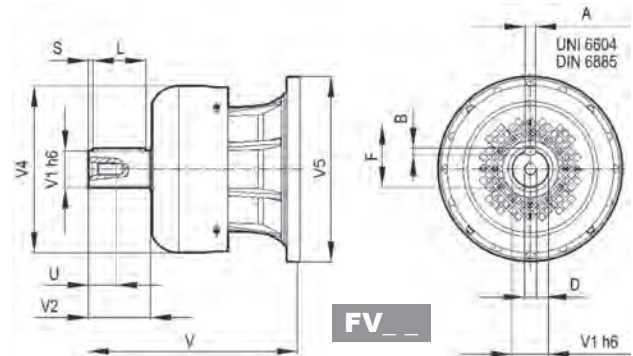


314 L

314 R



V \_\_

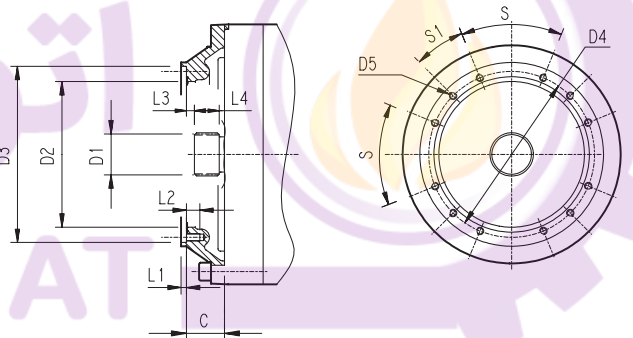
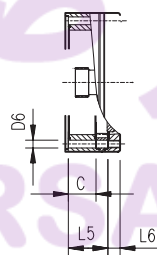


FV \_\_

|                |       | V     | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-------|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 314 L2         | V10B  | 377   | 80 | 130 | 200   | 400 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV10B | 457   | 80 | 130 | 347.5 | 400 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 314 L3         | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 314 L4         | V05B  | 239   | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276   | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 314 R3 (B) (C) | V06B  | 307   | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357   | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 314 R4         | V01A  | 137.5 | 24 | 36  | 120   | 186 | 8  | 7  | 27   | 30  | 3   | M8  | 19 |
|                | V01B  | 158   | 38 | 58  | 120   | 186 | 10 | 8  | 41   | 50  | 4   | M12 | 28 |

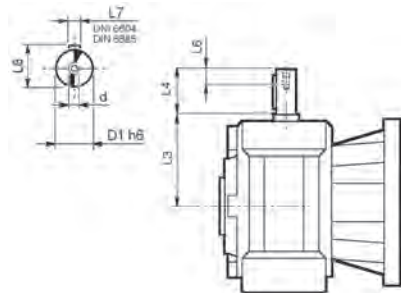
314 L

314 R



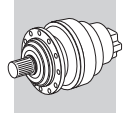
|                |      | C   | D1              | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3 | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|-----------------|-----|--------|-----|----------|----|----|----|----|----|----|----|-----|-------|-------|
| 314 L1         | V9AL | 120 | 100x94 DIN 5482 | 295 | 336 H7 | 370 | M16 n°15 | —  | 8  | 21 | 13 | 55 | —  | —  | 24° | 24°   | L     |
| 314 L2         | V9AC | 88  | 70x64 DIN 5482  | 200 | 282 H7 | 266 | M12 n°12 | —  | 4  | 22 | 11 | 32 | —  | —  | 45° | 45°   | C     |
| 314 L3         | V9AB | 45  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —  | —  | 45° | 22.5° | B     |
| 314 L4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9  | 18 | —  | —  | 45° | 45°   | A     |
| 314 R3 (B) (C) | V9AB | 45  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11 | 22 | —  | —  | 45° | 22.5° | B     |
| 314 R4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | —  | 9  | 18 | 37 | 18 | 45° | 45°   | A     |

3/V 14 L



|              | D1 h6 | L3    | L4 | L6 | L7 | L8 | d  |
|--------------|-------|-------|----|----|----|----|----|
| 3/V 14 L3_HS | 40    | 214.5 | 70 | 20 | 12 | 43 | M8 |
| 3/V 14 L4_HS | 35    | 185   | 65 | 20 | 10 | 38 | M8 |



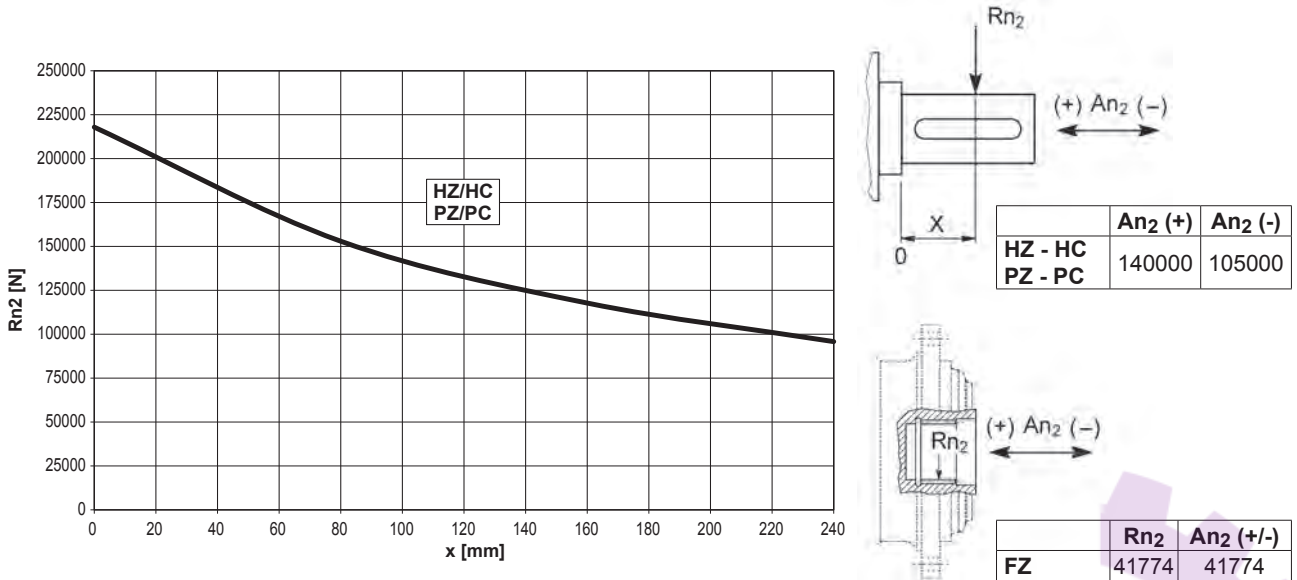


**314 L**

**314 R**

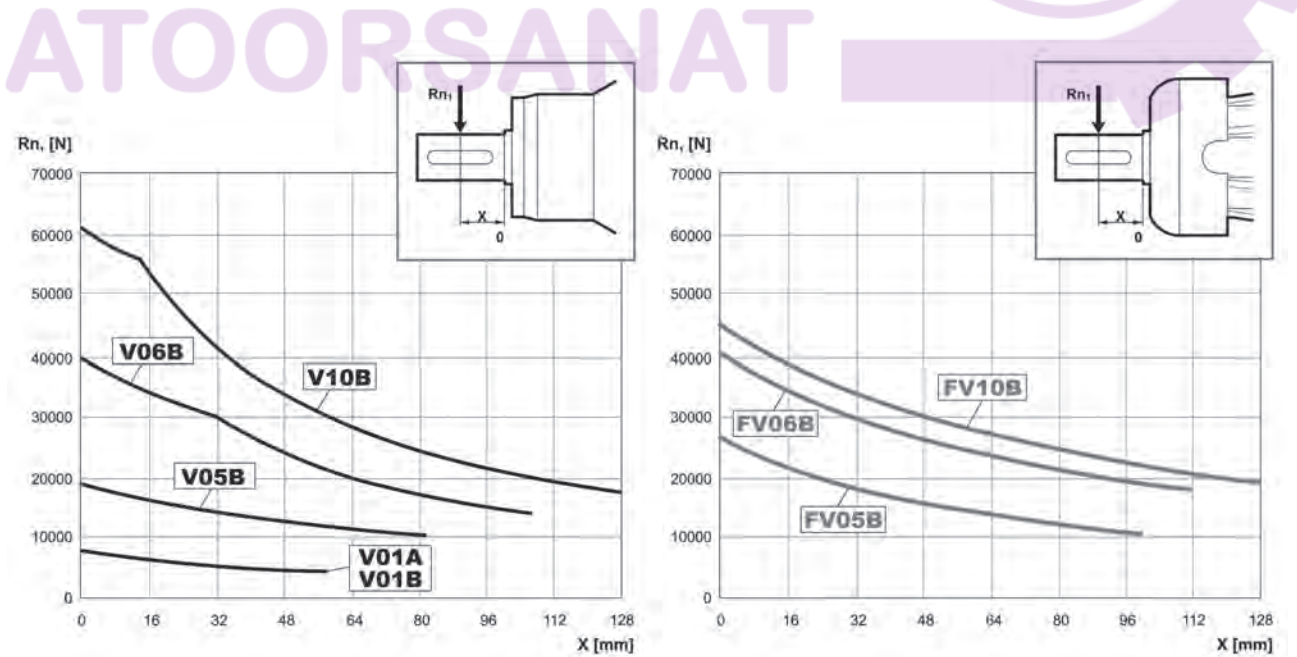
**3/V 14 L**

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$ on shafts | $Fh_2 = n_2 \cdot h$ |       |       |       |        |        |         |
|---|----------------------|-------|-------|-------|--------|--------|---------|
|   | $fh_2$               | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|   | FZ                   | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |
|   | HZ - HC - PZ - PC    | 2.00  | 1.52  | 1.23  | 1.00   | 0.62   | 0.50    |

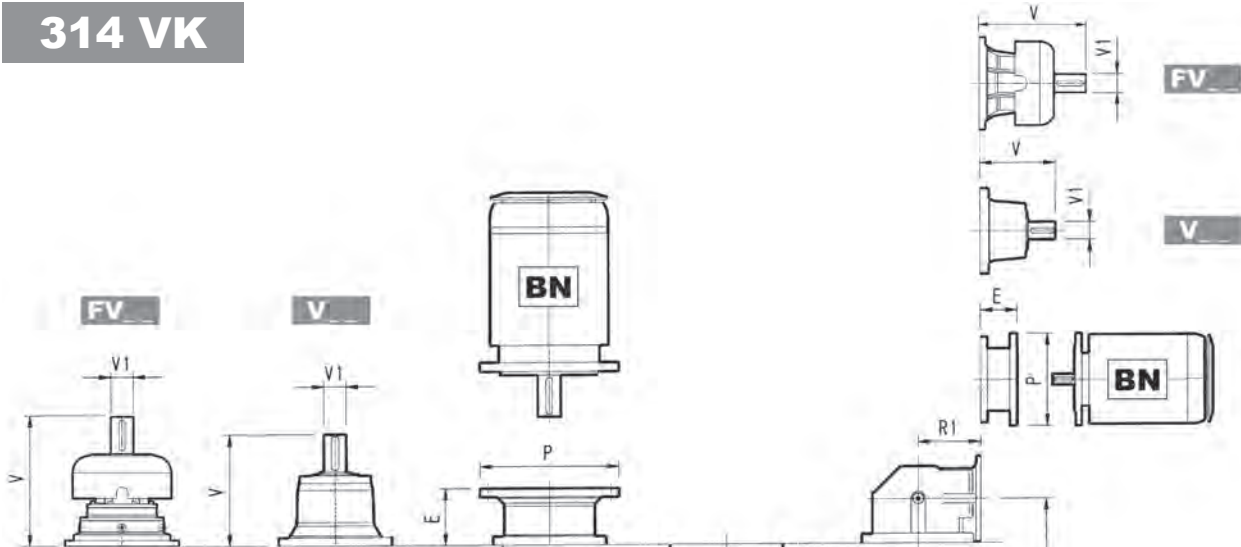
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $Fh_1 = n_1 \cdot h$ |        |        |         |         |         |          |
|---|----------------------|--------|--------|---------|---------|---------|----------|
|   | $fh_1$               | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|   |                      | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |

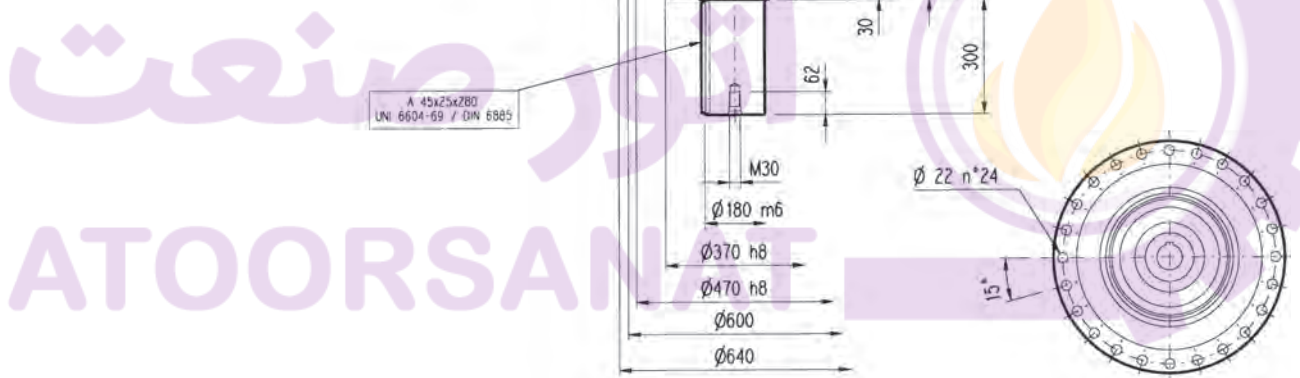


### 314 VK



### 314 L\_VK

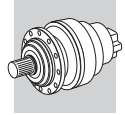
### 314 R\_VK



|        | L   | Kg  | V   |    |    |     |    |    | P   |    |    |   |    |    | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |   |
|--------|-----|-----|-----|----|----|-----|----|----|-----|----|----|---|----|----|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|
|        |     |     | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P |
| 314 L2 | 386 | 650 | 348 | 80 | 55 | —   | —  | —  | 457 | 80 | 63 | — | —  | —  | —    | —   | —    | —   | —    | 271 | 400  | 301 | 450  | 281 | 550  |   |
| 314 L3 | 519 | 700 | 315 | 80 | 35 | 313 | 60 | 28 | 357 | 60 | 28 | — | —  | —  | 153  | 350 | 153  | 350 | 183  | 400 | 213  | 450 | 193  | 550 |      |   |
| 314 L4 | 608 | 710 | 239 | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | — | —  | —  | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   |      |   |

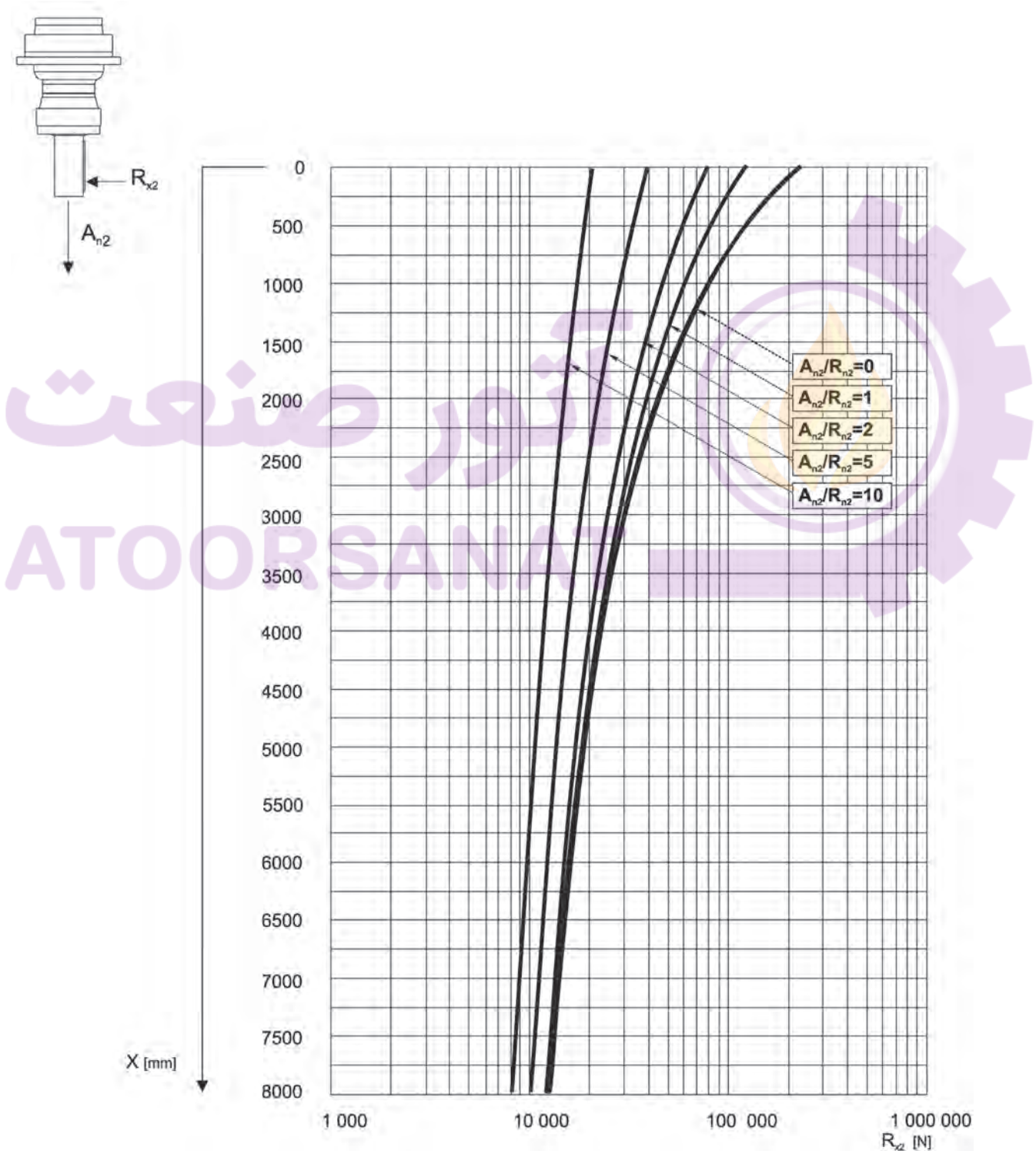
|            | R   | R1  | Kg  | V     |    |    |     |    |    | P   |    |    |   |    |    |
|------------|-----|-----|-----|-------|----|----|-----|----|----|-----|----|----|---|----|----|
|            |     |     |     | V     | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V | V1 | Kg |
| 314 R3 (B) | 611 | 345 | 720 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  |
| 314 R3 (C) | 611 | 390 | 730 | 307   | 60 | 23 | —   | —  | —  | 357 | 60 | 28 | — | —  | —  |
| 314 R4     | 638 | 225 | 690 | 137.5 | 24 | 6  | 158 | 38 | 7  | —   | —  | —  | — | —  |    |

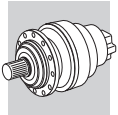
|            | P71 |     | P80 |     | P90 |     | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E   | P   | E   | P   | E   | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 314 R3 (B) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 314 R3 (C) | —   | —   | —   | —   | —   | —   | —    | —   | —    | —   | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 314 R4     | 65  | 160 | 84  | 200 | 84  | 200 | 94   | 250 | 94   | 250 | 114  | 300 | 144  | 350 | —    | —   | —    | —   | —    | —   | —    | —   |



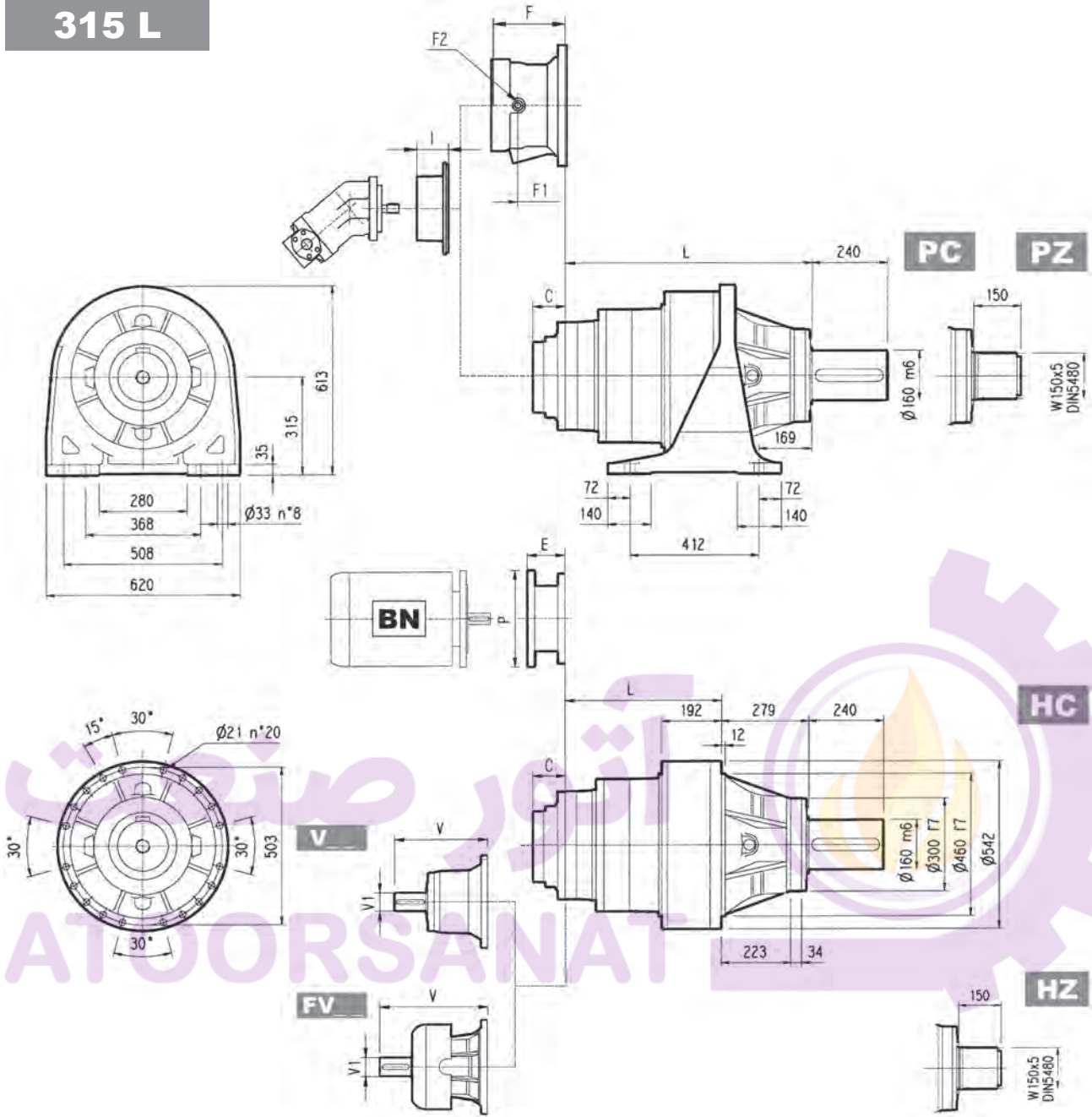
# 314 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





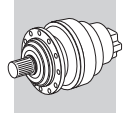
# 315 L



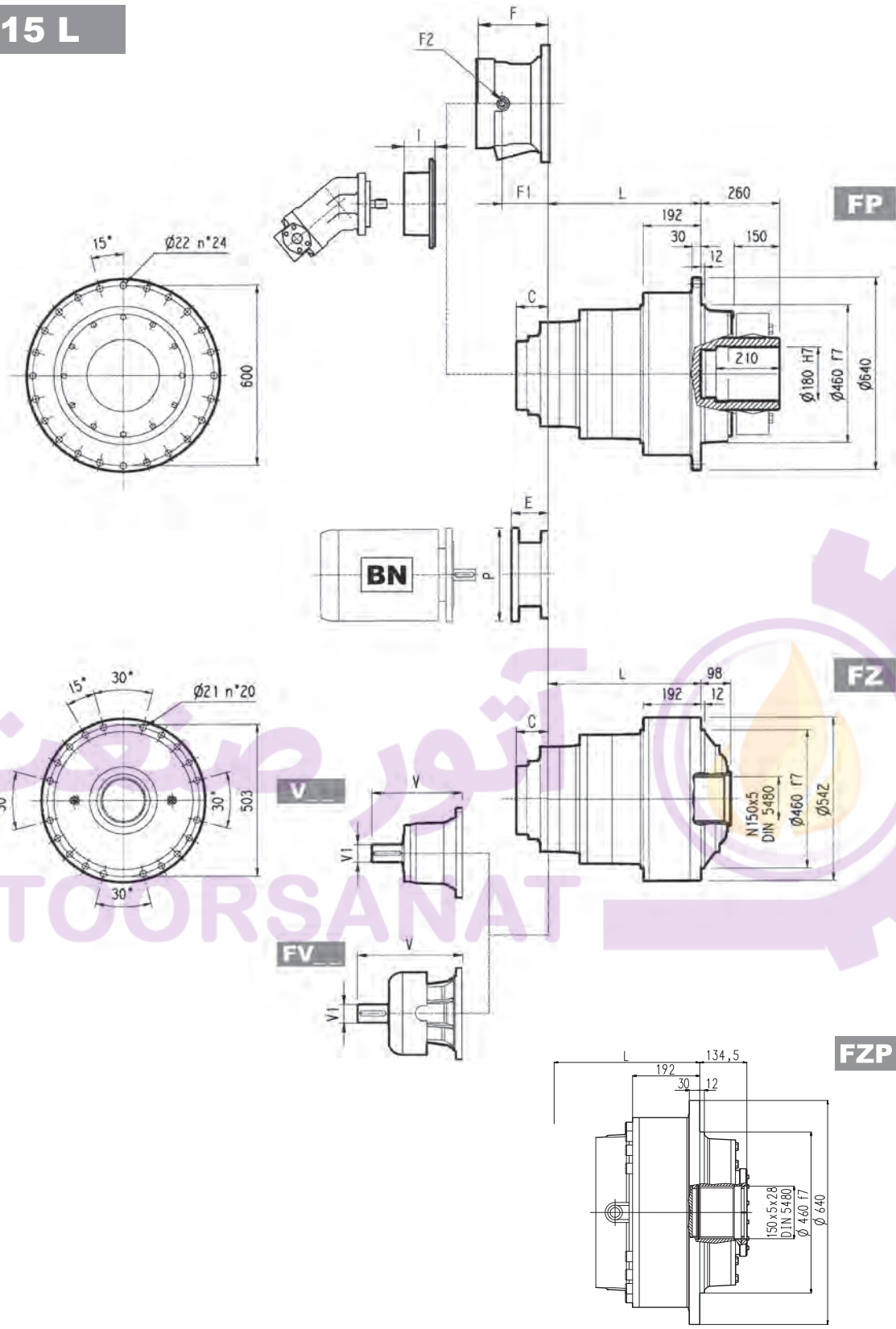
|        | L       |         |          |     | Kg      |         |          |     |
|--------|---------|---------|----------|-----|---------|---------|----------|-----|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 315 L1 | 453     | 174     | 174      | 174 | 500     | 370     | 280      | 330 |
| 315 L2 | 665     | 386     | 386      | 386 | 585     | 455     | 365      | 415 |
| 315 L3 | 798     | 519     | 519      | 519 | 630     | 500     | 410      | 460 |
| 315 L4 | 887     | 608     | 608      | 608 | 642     | 512     | 422      | 472 |

|        | V   |     |     | Kg  |    |    | V   |    |    | Kg  |    |     | C | Input | I   | F     | F1 | F2 | Type | Input | Kg |
|--------|-----|-----|-----|-----|----|----|-----|----|----|-----|----|-----|---|-------|-----|-------|----|----|------|-------|----|
|        | V   | V1  | Kg  | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg  |   |       |     |       |    |    |      |       |    |
| 315 L1 | 556 | 120 | 125 | —   | —  | —  | —   | —  | —  | —   | —  | 116 | E | —     | —   | —     | —  | —  | —    | —     | —  |
| 315 L2 | 348 | 80  | 55  | —   | —  | —  | 456 | 80 | 85 | —   | —  | 81  | D | 232   | 185 | 1/4 G | 6  | B  | 35   | —     |    |
| 315 L3 | 315 | 80  | 35  | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34  | B | 201   | 153 | 1/4 G | 6  | B  | 28   | —     |    |
| 315 L4 | 239 | 48  | 15  | —   | —  | —  | 276 | 48 | 17 | —   | —  | 37  | A | 145   | 95  | 1/4 G | 5  | A  | 16   | —     |    |





**315 L**

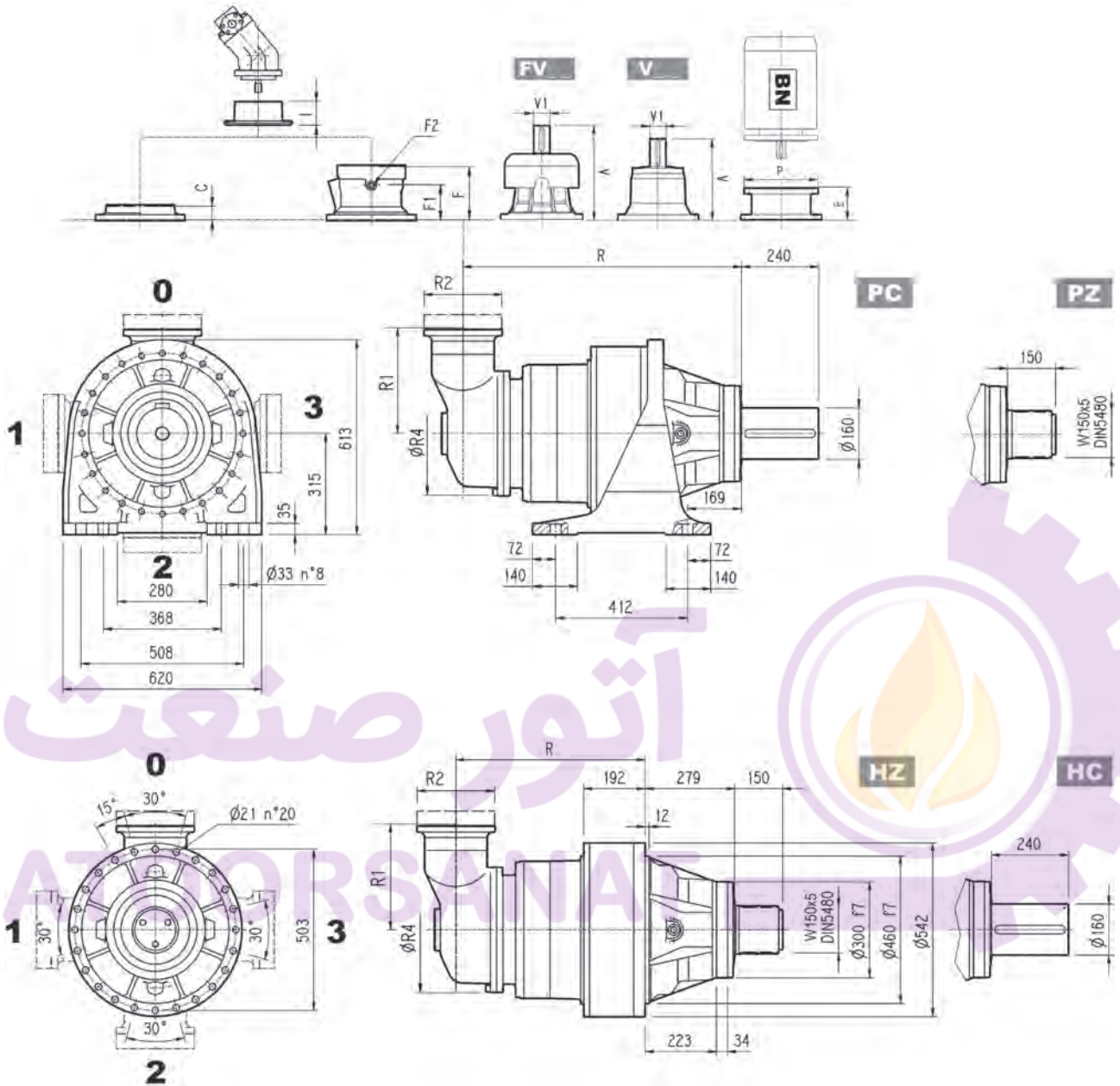


**FP**  $M_{2max} = 135000 \text{ Nm}$

|        | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 315 L2 | —    | —   | —    | —   | —    | —   | 267  | 400 | 297  | 450 | 297  | 550 |
| 315 L3 | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 215  | 550 |
| 315 L4 | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |

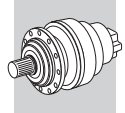


# 315 R

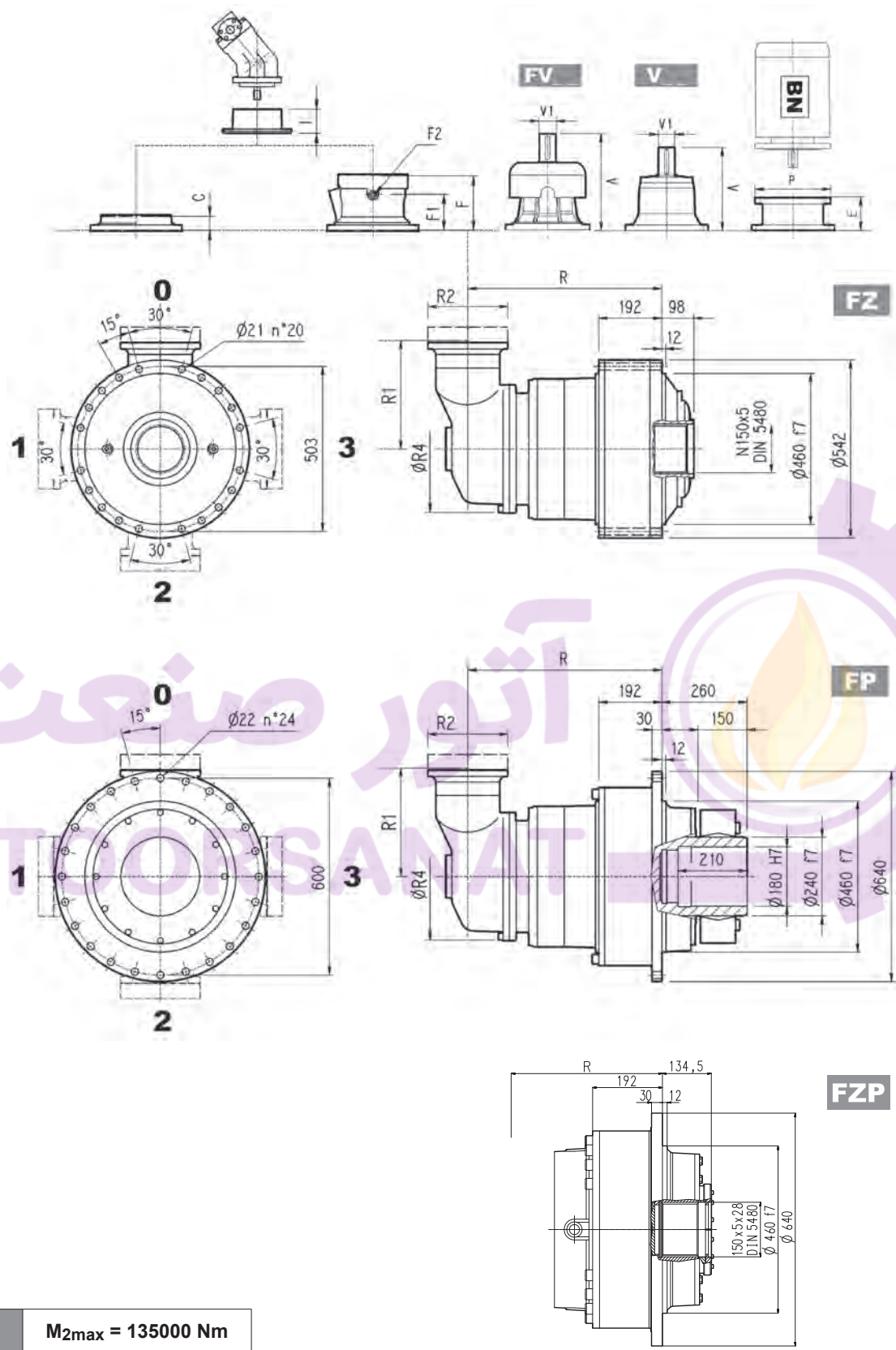


|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |     |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|-----|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP  |
| 315 R3 (B) | 890   | 611   | 611      | 611 | 345 | 292 | 400 | 720   | 590   | 500      | 550 |
| 315 R3 (C) | 890   | 611   | 611      | 611 | 390 | 292 | 480 | 730   | 600   | 510      | 560 |
| 315 R4     | 917   | 638   | 638      | 638 | 225 | 245 | 345 | 680   | 550   | 460      | 510 |

|            | V   |    |    | V1 |    |    | V   |    |    | V1 |    |    | C  | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|            | V   | V1 | Kg | V  | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     |     |     |       |      |       |    |
| 315 R3 (B) | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 315 R3 (C) | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 315 R4     | 239 | 48 | 15 | —  | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | 461 | 145 | 95  | 1/4 G | 5    | A     | 16 |



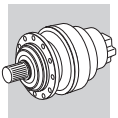
**315 R**



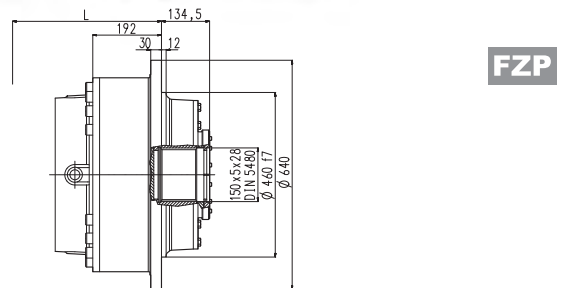
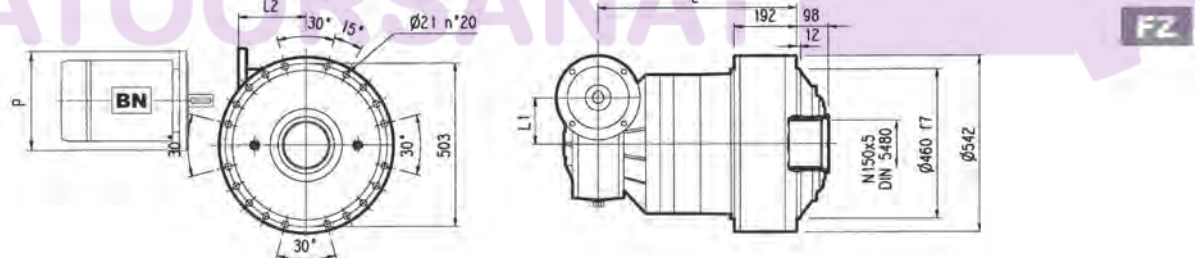
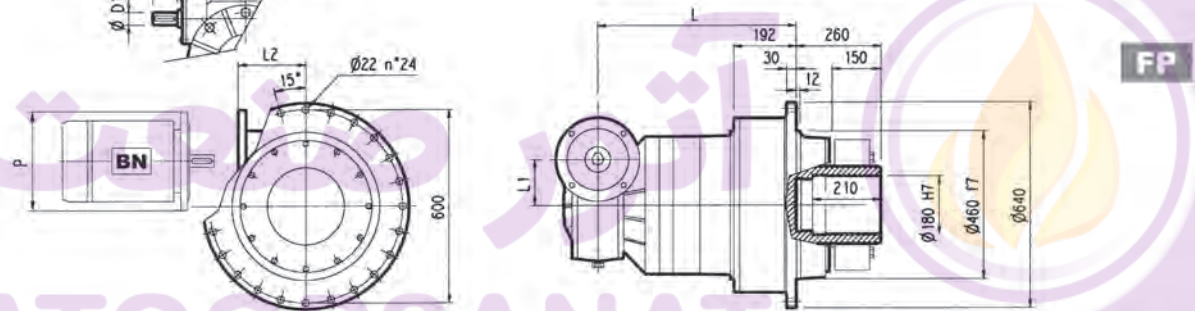
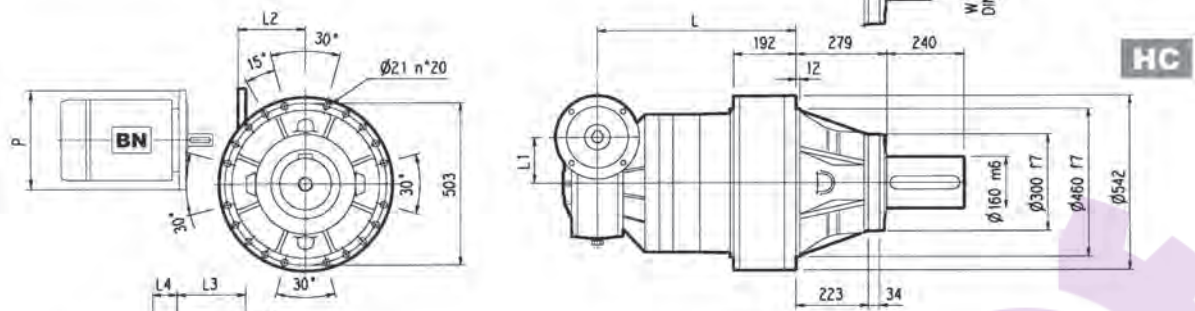
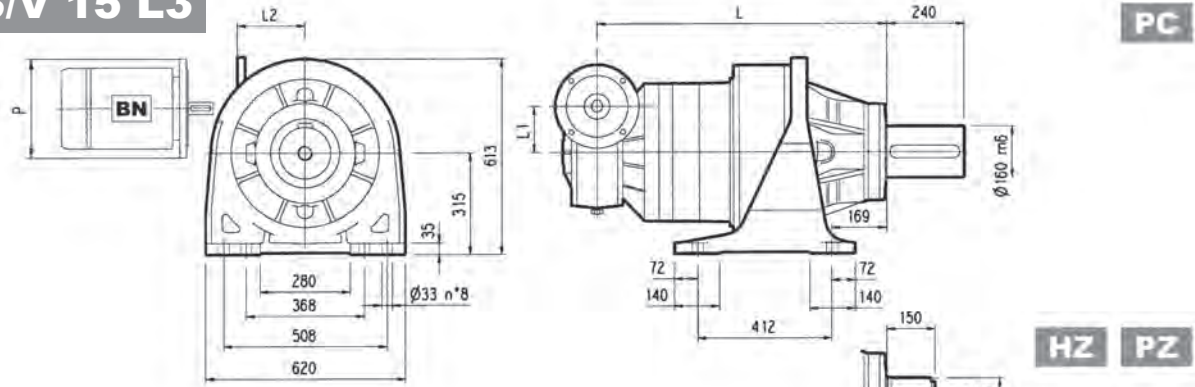
**FP**  $M_{2max} = 135000 \text{ Nm}$

|            | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 315 R3 (B) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 315 R3 (C) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 315 R4     | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |





**3/V 15 L3**

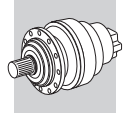


**FP** M<sub>2max</sub> = 135000 Nm

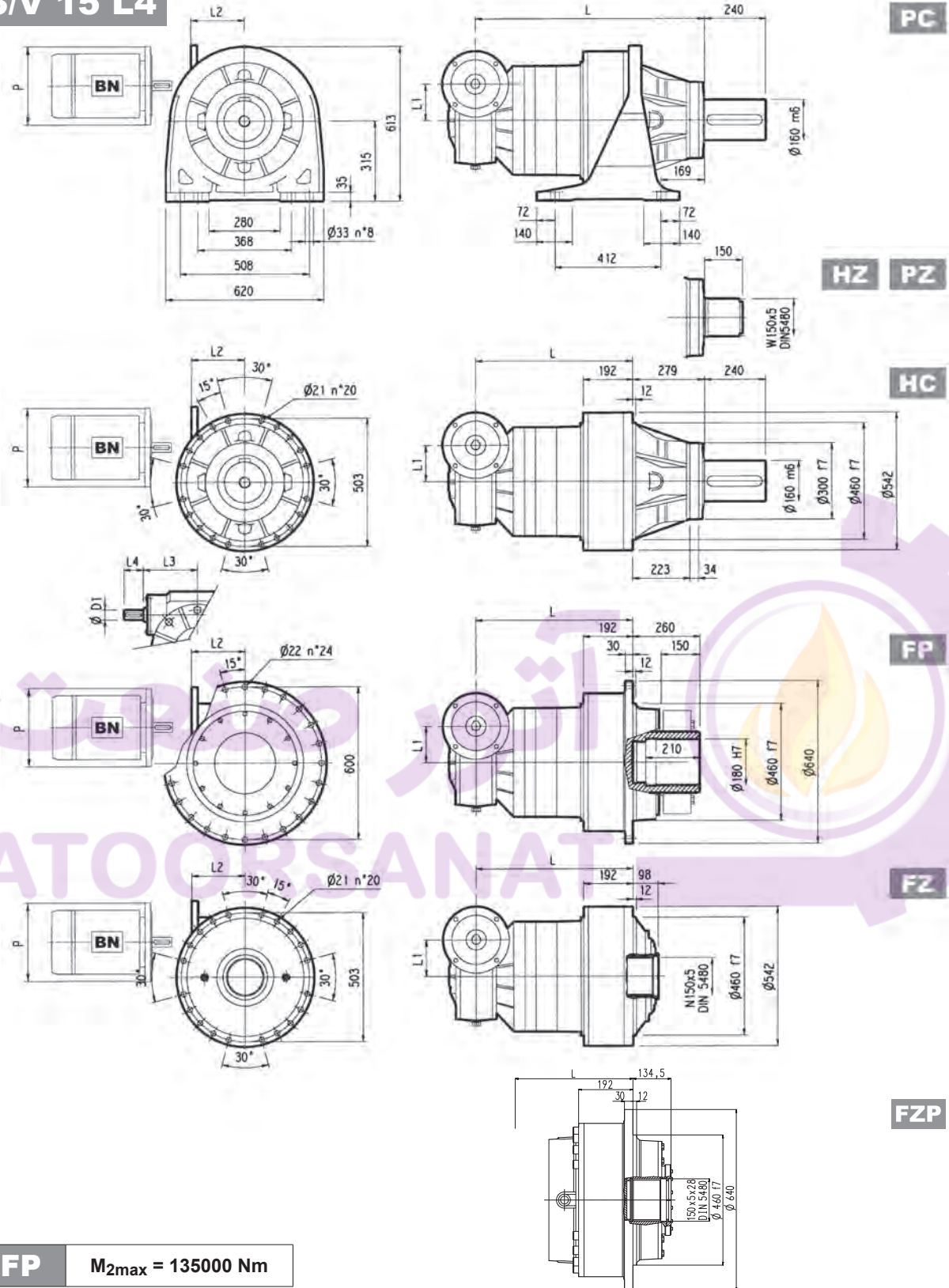
|           | L       |         |          |     | L1  | L2 | D1 | L3  | L4  | Kg      |         |          |     |
|-----------|---------|---------|----------|-----|-----|----|----|-----|-----|---------|---------|----------|-----|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |    |    |     |     | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 3/V 15 L3 | 885     | 606     | 606      | 606 | 210 | —  | 48 | 230 | 110 | 800     | 670     | 575      | 625 |

|           | P100 |   | P112 |     | P132 |     | P160 |     | P180 |     | P200 |     | P225 |   |
|-----------|------|---|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|
|           | P    | P | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P |
| 3/V 15 L3 | —    | — | 485  | 300 | 460  | 350 | 460  | 350 | 485  | 400 | 490  | 450 |      |   |





**3/V 15 L4**



**FP**  $M_{2max} = 135000 \text{ Nm}$

|           | L       |         |          |     | L1  | L2  | D1 | L3  | L4 | Kg      |         |          |     |
|-----------|---------|---------|----------|-----|-----|-----|----|-----|----|---------|---------|----------|-----|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |     |    |     |    | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 3/V 15 L4 | 989     | 710     | 710      | 710 | 150 | 190 | 35 | 185 | 65 | 690     | 560     | 470      | 520 |

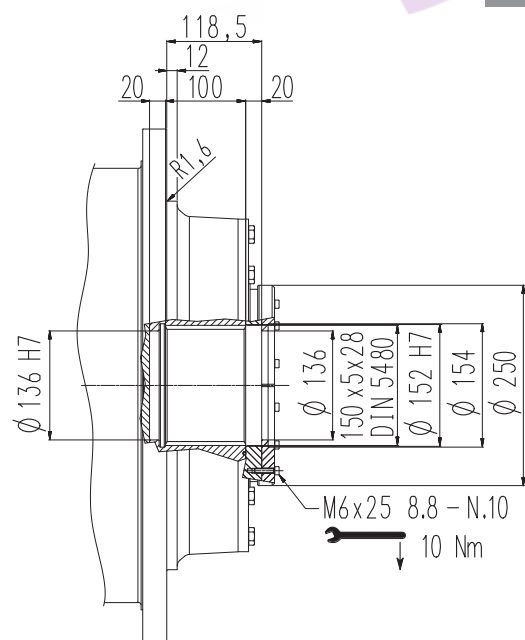
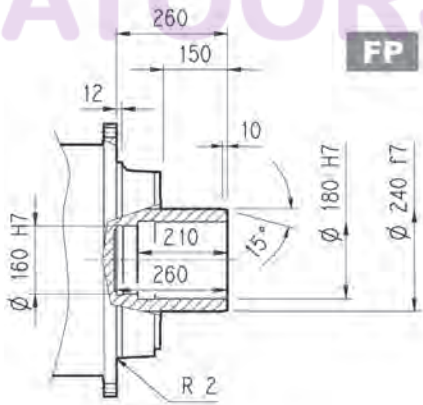
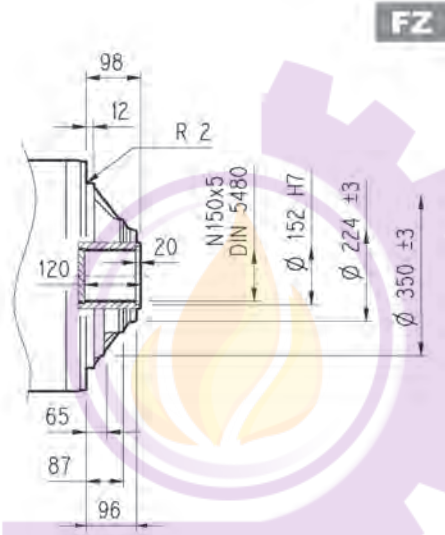
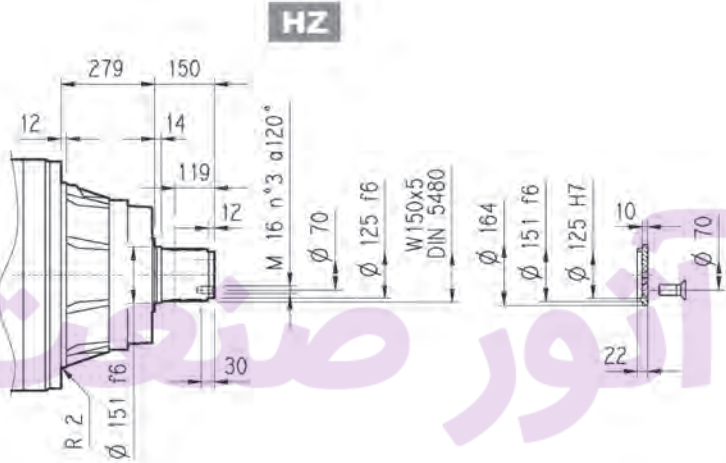
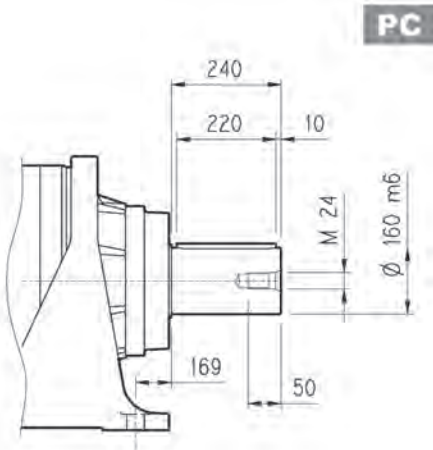
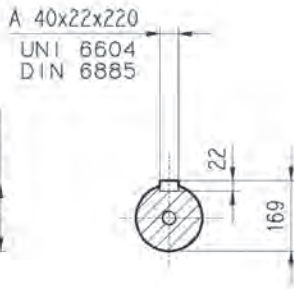
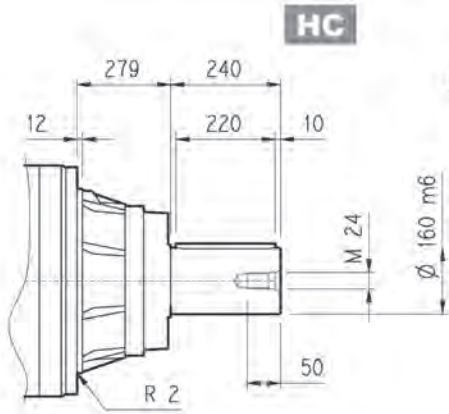
|           | P100 |    | P112 |    | P132 |    | P160 |    | P180 |    | P200 |    | P225 |    |
|-----------|------|----|------|----|------|----|------|----|------|----|------|----|------|----|
|           | P    | L2 | P    | L2 | P    | L2 | P    | L2 | P    | L2 | P    | L2 | P    | L2 |
| 3/V 15 L4 | 250  | —  | 250  | —  | 300  | —  | 350  | —  | —    | —  | —    | —  | —    | —  |



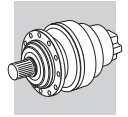
**315 L**

**315 R**

**3/V 15 L**



**FP**  $M_{2max} = 135000\ Nm$



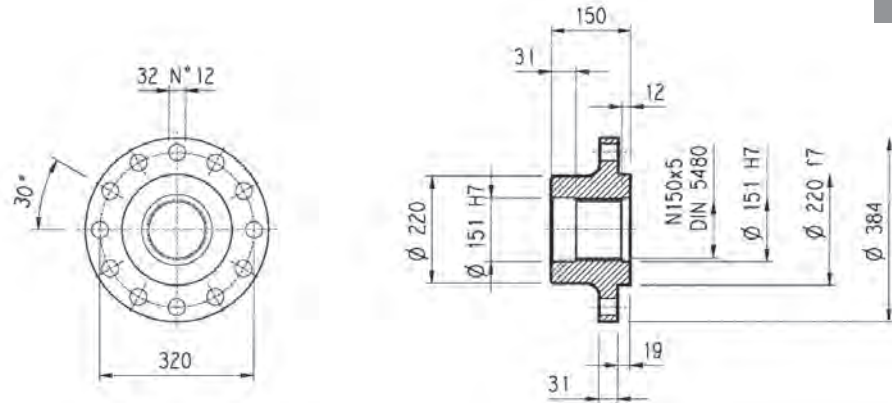
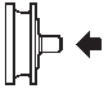
315 L

315 R

3/V 15 L

Flange

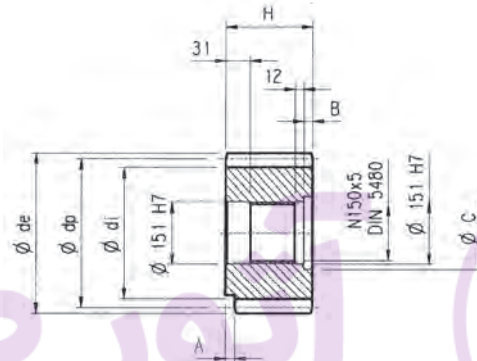
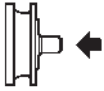
W0A



Material: Steel C40

Pinions

P...

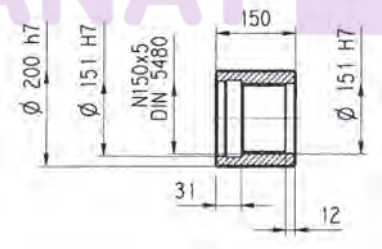
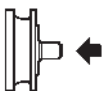


$\alpha = 20^\circ$

|      | m  | z  | x     | dp  | di  | de  | H   | A  | B  | C   | Material                              |
|------|----|----|-------|-----|-----|-----|-----|----|----|-----|---------------------------------------|
| PRG1 | 18 | 16 | 0.500 | 288 | 261 | 342 | 160 | —  | 10 | 166 | Steel 18NiCrMo5 case hardened         |
| PRG2 | 18 | 16 | 0.617 | 288 | 271 | 339 | 150 | 30 | —  | —   | Steel 39NiCrMo3 hardened and tempered |

Sleeve coupling

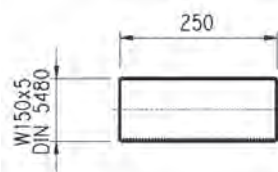
M0A



Material: Steel 16CrNi4

Splined bars

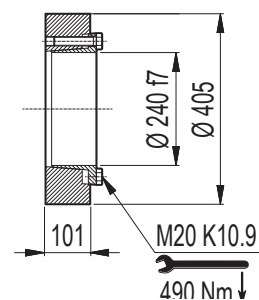
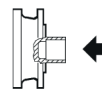
B0A

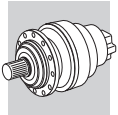


Material: Case hardening steel 18NiCrMo5 UNI 5331 must be case hardened 50-55 HRC

Shrink disc

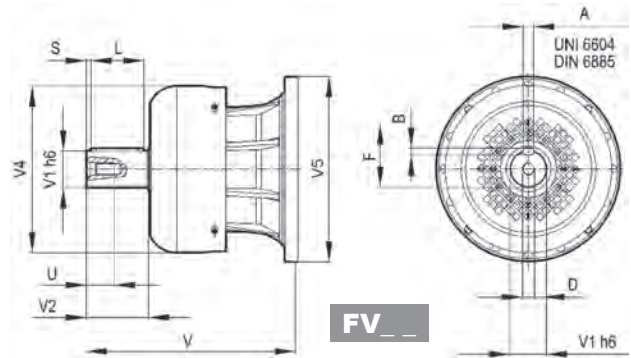
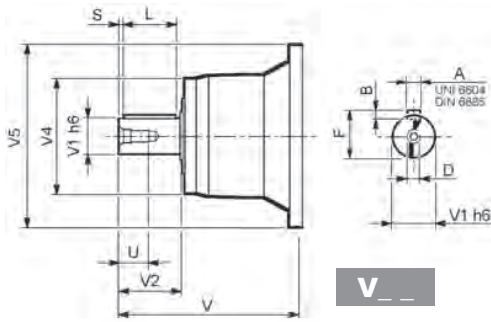
G0A





315 L

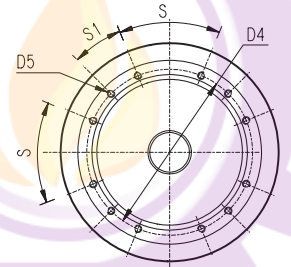
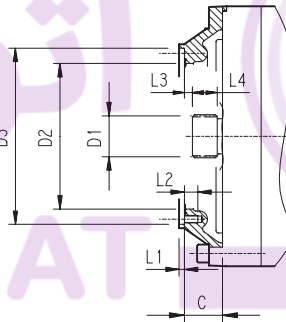
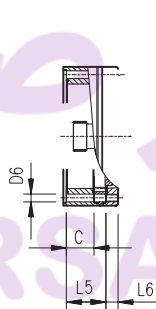
315 R



|                |       | V   | V1  | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-----|-----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 315 L1         | V15B  | 556 | 120 | 210 | 230   | 542 | 32 | 18 | 127  | 180 | 15  | M24 | 50 |
| 315 L2         | V11B  | 348 | 80  | 130 | 200   | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV11B | 456 | 80  | 130 | 347.5 | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 315 L3         | V07B  | 315 | 80  | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80  | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60  | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV07A | 363 | 60  | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 315 L4         | V05B  | 239 | 48  | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276 | 48  | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 315 R3 (B) (C) | V06B  | 307 | 60  | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357 | 60  | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 315 R4         | V05B  | 239 | 48  | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276 | 48  | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |

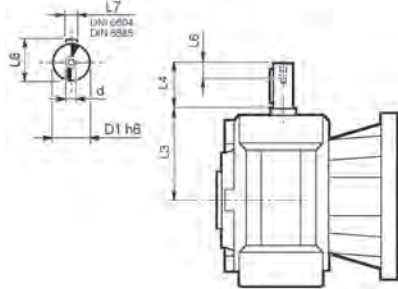
315 L

315 R



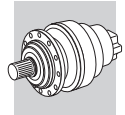
|                |      | C   | D1              | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|-----------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 315 L1         | V9AE | 116 | 100x94 DIN 5482 | 340 | 412 H7 | 390 | M16 n°18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20°   | E     |
| 315 L2         | V9AD | 81  | 80x74 DIN 5482  | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30°   | D     |
| 315 L3         | V9AB | 51  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 315 L4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 315 R4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 315 R3 (B) (C) | V9AB | 45  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |

3/V 15 L



|              | D1 h6 | L3  | L4  | L6 | L7 | L8   | d   |
|--------------|-------|-----|-----|----|----|------|-----|
| 3/V 15 L3_HS | 48    | 230 | 110 | 40 | 14 | 51.5 | M16 |
| 3/V 15 L4_HS | 35    | 185 | 65  | 20 | 10 | 38   | M8  |



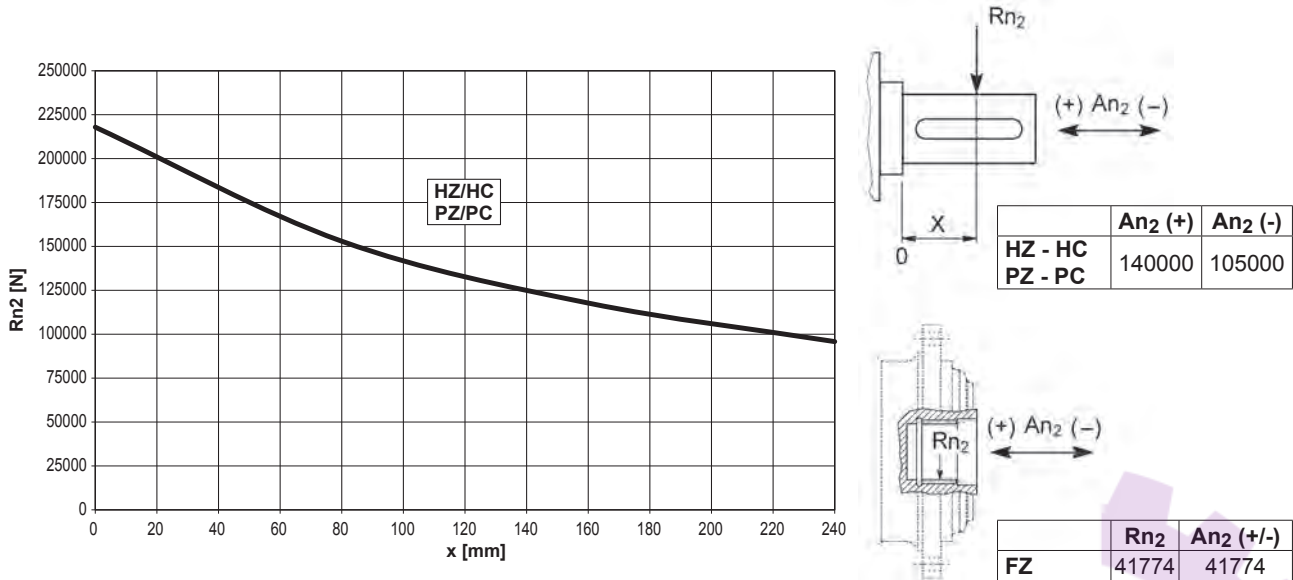


315 L

315 R

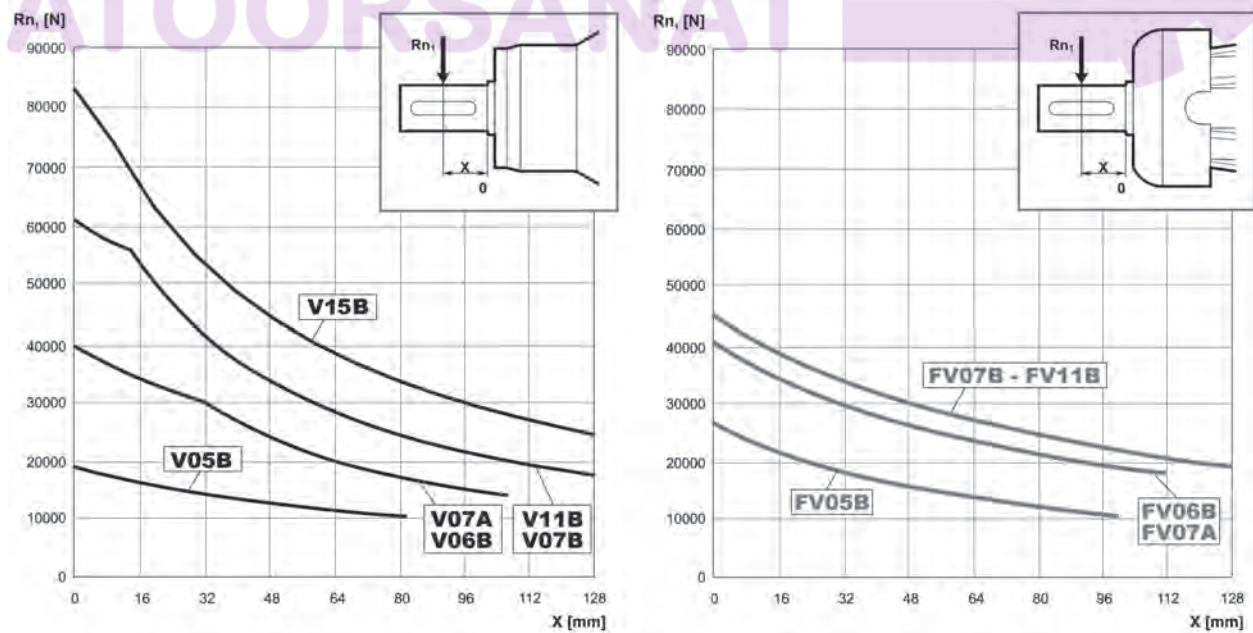
3/V 15 L

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $f_{h2}$ on shafts | $F_{h2} = n_2 \cdot h$ | 10000    | 25000      | 50000 | 100000 | 500000 | 1000000 |
|---|------------------------|----------|------------|-------|--------|--------|---------|
|   |                        | $f_{h2}$ | FZ<br>2.15 | 1.59  | 1.26   | 1.00   | 0.58    |
|   | HZ - HC - PZ - PC      | 2.00     | 1.52       | 1.23  | 1.00   | 0.62   | 0.50    |

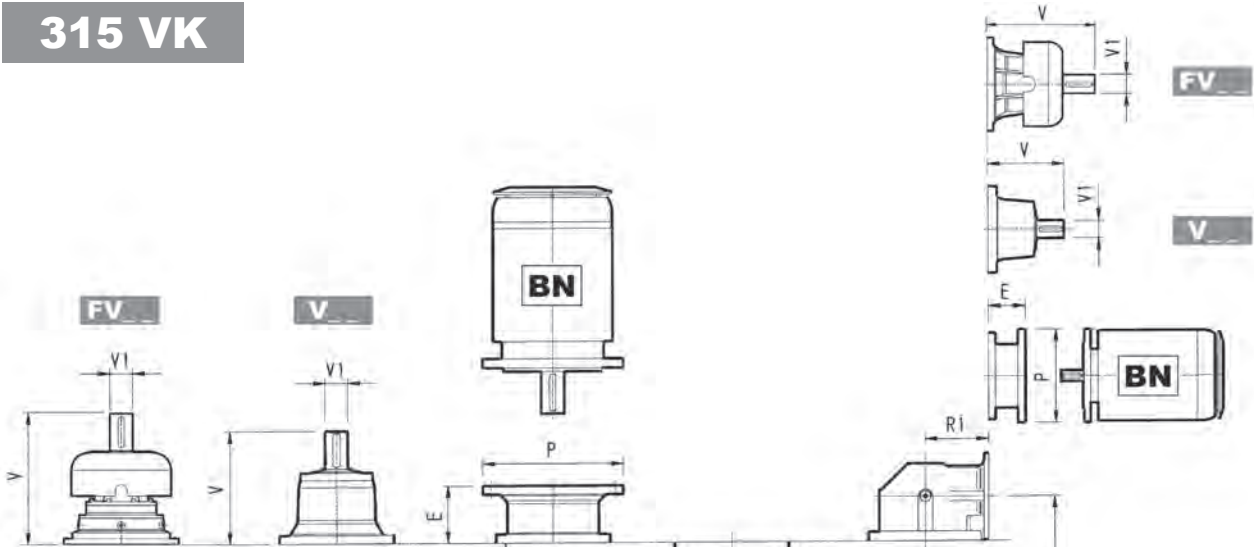
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $f_{h1}$ on shafts | $F_{h1} = n_1 \cdot h$ | 250000   | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|---|------------------------|----------|--------|---------|---------|---------|----------|
|   |                        | $f_{h1}$ | 1      | 0.79    | 0.63    | 0.50    | 0.37     |

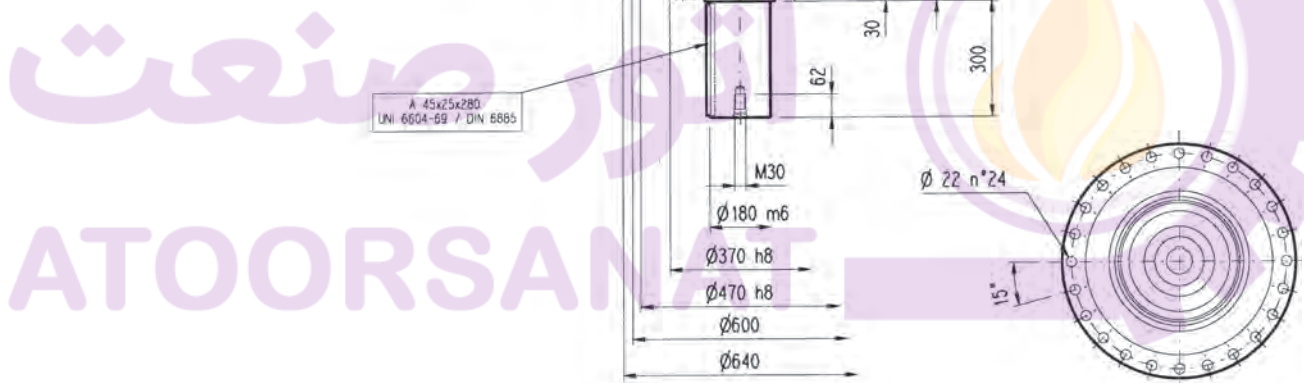


### 315 VK



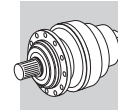
### 315 L\_VK

### 315 R\_VK



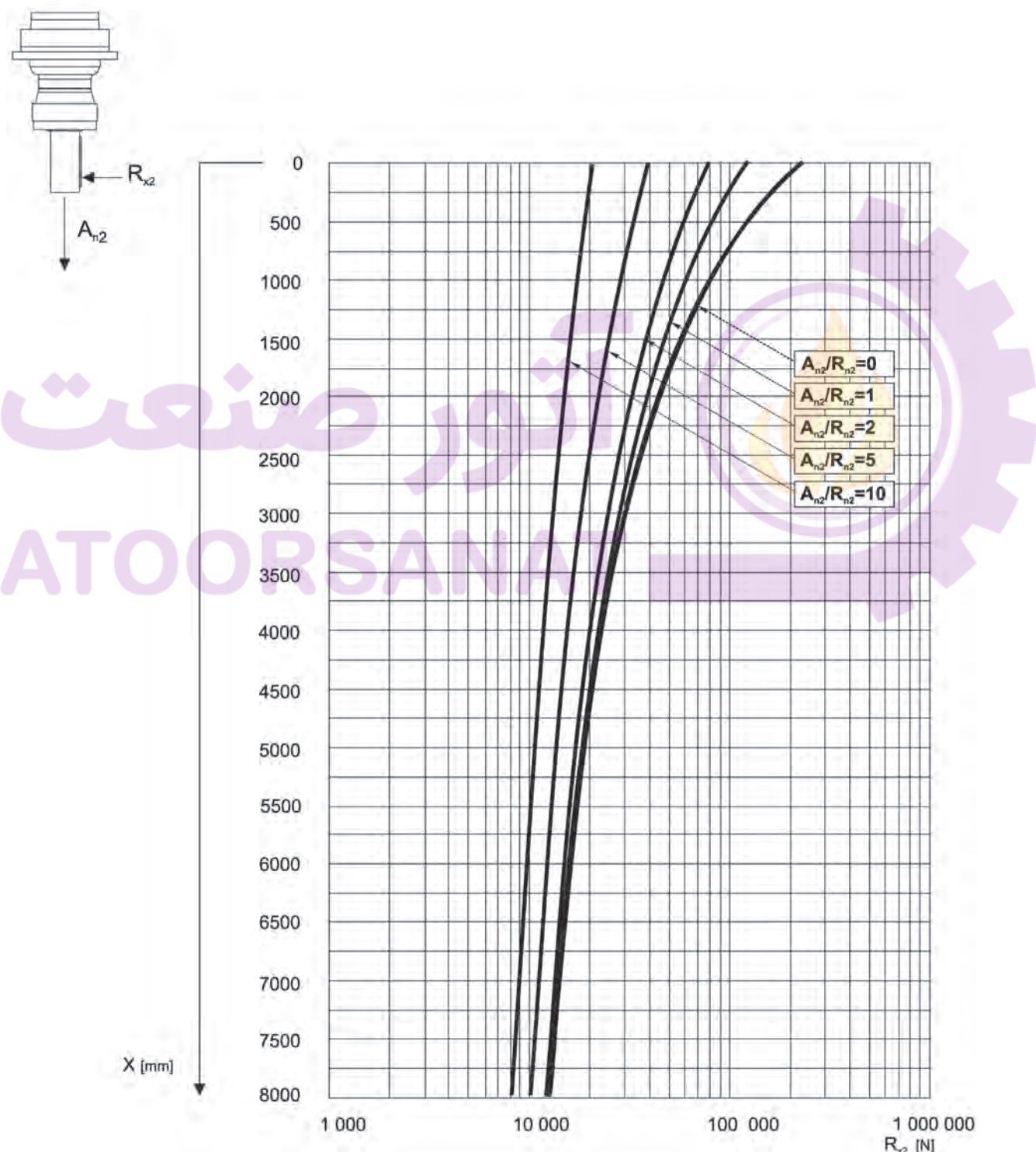
|        | L   | Kg  | V   |    |    |     |    |    | V1  |    |    |     |    |    | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |   |
|--------|-----|-----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|
|        |     |     | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P |
| 315 L2 | 386 | 650 | 348 | 80 | 55 | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  | —    | —   | —    | —   | —    | —   | —    | —   | —    | —   | —    | — |
| 315 L3 | 519 | 700 | 315 | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | —    | —   | —    | 195 | 350  | 186 | 400  | 216 | 450  | 215 | 550  |   |
| 315 L4 | 608 | 710 | 239 | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | — |

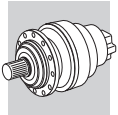
|            | R   | R1  | Kg  | V   |    |    |   |    |    | V1  |    |    |   |    |    | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |   |
|------------|-----|-----|-----|-----|----|----|---|----|----|-----|----|----|---|----|----|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|
|            |     |     |     | V   | V1 | Kg | V | V1 | Kg | V   | V1 | Kg | V | V1 | Kg | V    | V1  | Kg   | E   | P    | E   | P    | E   | P    | E   | P    | E |
| 315 R3 (B) | 611 | 345 | 720 | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —  | —  | —    | —   | —    | 152 | 350  | 182 | 400  | 212 | 450  | 193 | 550  |   |
| 315 R3 (C) | 611 | 390 | 730 | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —  | —  | —    | —   | —    | 152 | 350  | 182 | 400  | 212 | 450  | 193 | 550  |   |
| 315 R4     | 638 | 225 | 690 | 239 | 48 | 15 | — | —  | —  | 276 | 48 | 17 | — | —  | —  | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | — |



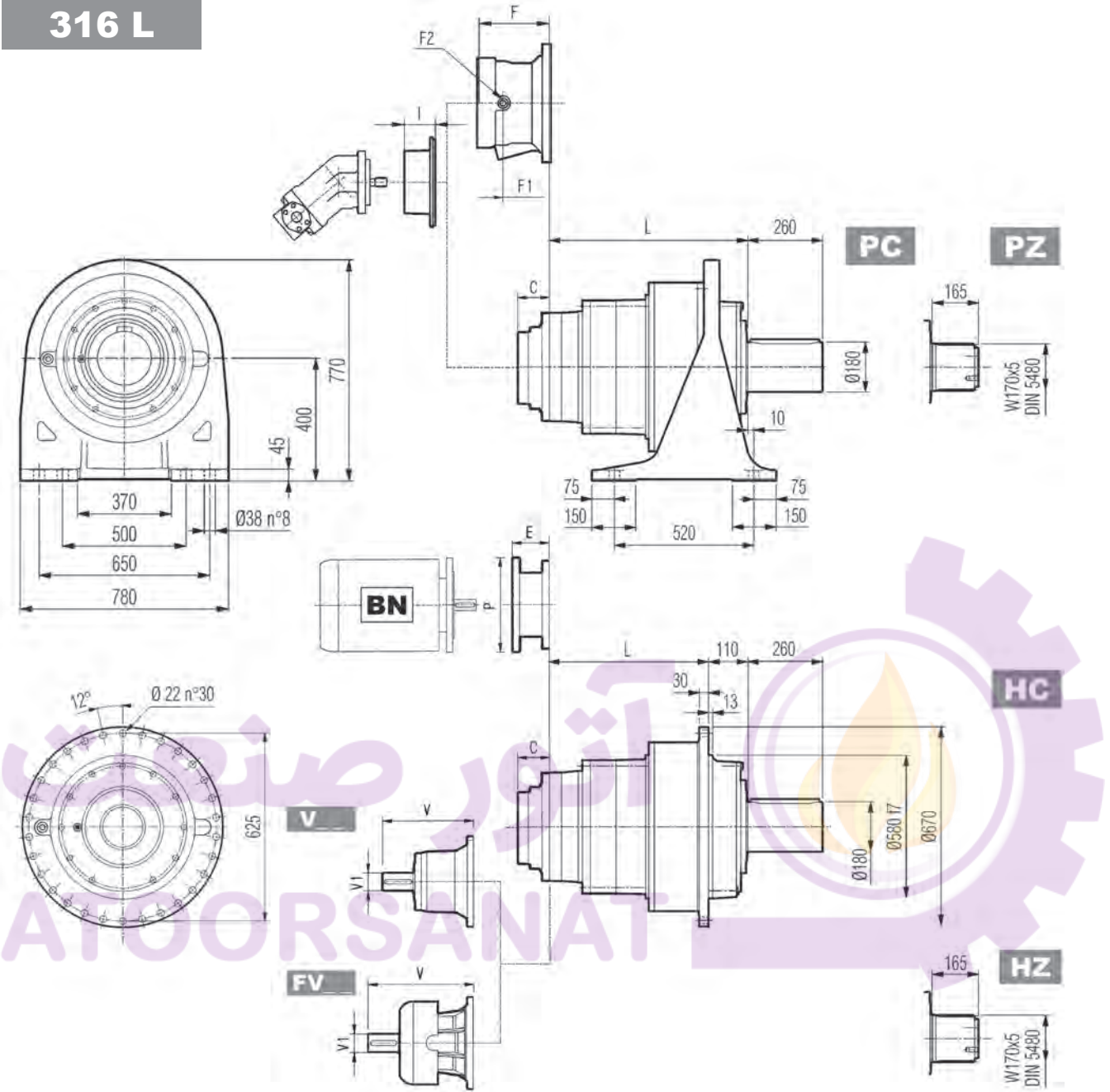
# 315 VK

The diagram below allows the calculation of permitted overhung load  $R_{x2}$  on the output shaft of gearbox, with radial force applying at a distance  $x$  from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load  $A_{n2}$  to radial load  $R_{n2}$ , based on  $n_2 = 10 \text{ min}^{-1}$  and 10000 hrs theoretical lifetime.





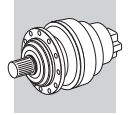
# 316 L



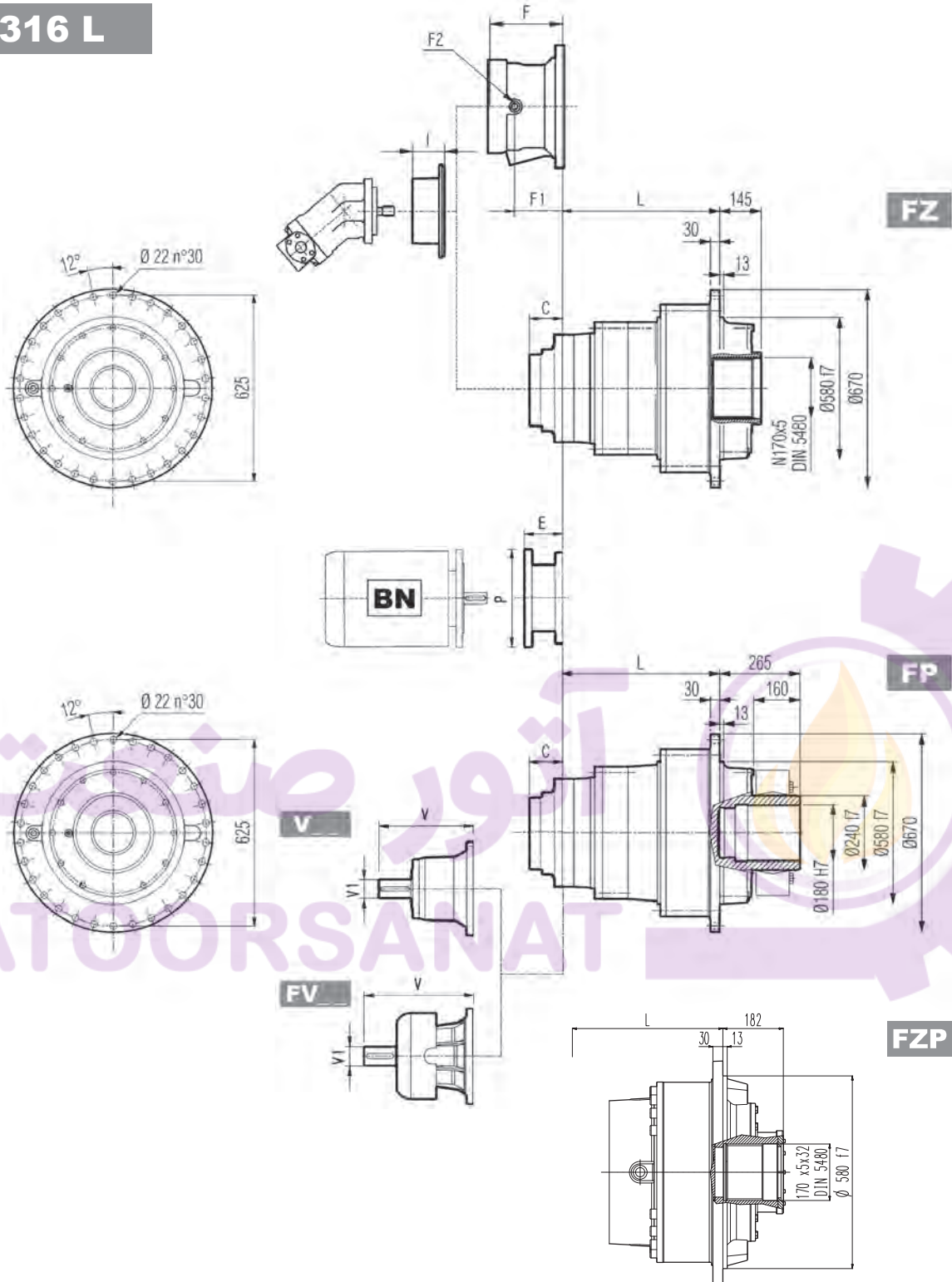
|        | L       |         |          |     | Kg      |         |          |     |
|--------|---------|---------|----------|-----|---------|---------|----------|-----|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP  |
| 316 L1 | 289     | 179     | 179      | 179 | 700     | 500     | 430      | 450 |
| 316 L2 | 541     | 431     | 431      | 431 | 790     | 590     | 520      | 540 |
| 316 L3 | 674     | 564     | 564      | 564 | 840     | 640     | 570      | 590 |
| 316 L4 | 763     | 653     | 653      | 653 | 860     | 660     | 590      | 610 |

|        | V   |    |    | V1  |    |    | V   |    |    | V1  |    |    | C   | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|--------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|-------|-----|-----|-----|-------|------|-------|----|
|        | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |     |       |     |     |     |       |      |       |    |
| 316 L1 | —   | —  | —  | —   | —  | —  | —   | —  | —  | —   | —  | —  | 156 | E     | —   | —   | —   | —     | —    | —     | —  |
| 316 L2 | 348 | 80 | 55 | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  | 81  | D     | —   | —   | —   | —     | —    | —     | —  |
| 316 L3 | 315 | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51  | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |
| 316 L4 | 239 | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37  | A     | 461 | 145 | 95  | 1/4 G | 5    | A     | 16 |





# 316 L

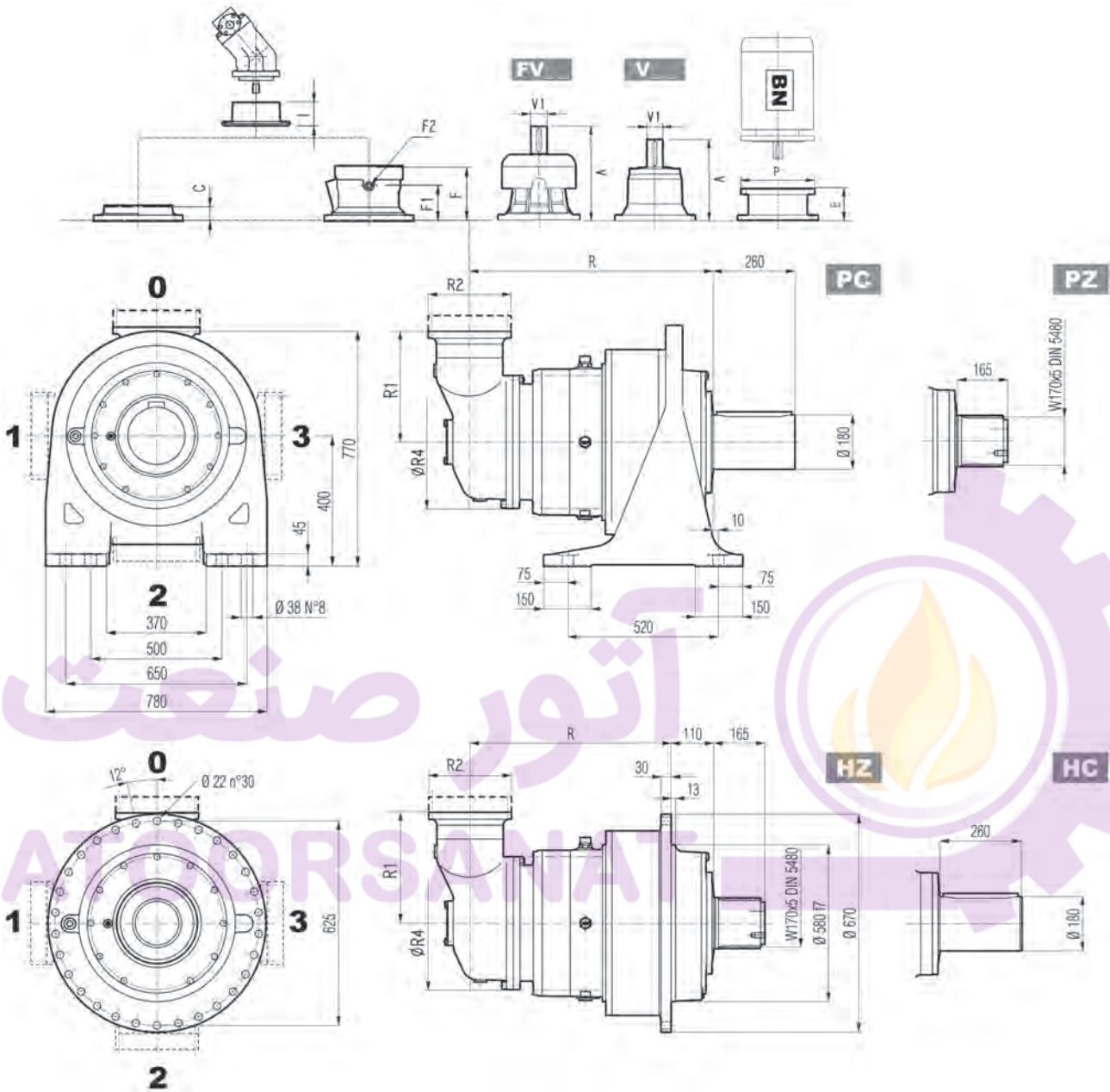


**FP**  $M_{2max} = 178000 \text{ Nm}$

|        | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 316 L2 | —    | —   | —    | —   | —    | —   | 267  | 400 | 297  | 450 | 297  | 550 |
| 316 L3 | —    | —   | —    | —   | 195  | 350 | 186  | 400 | 216  | 450 | 215  | 550 |
| 316 L4 | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |

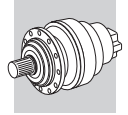


# 316 R

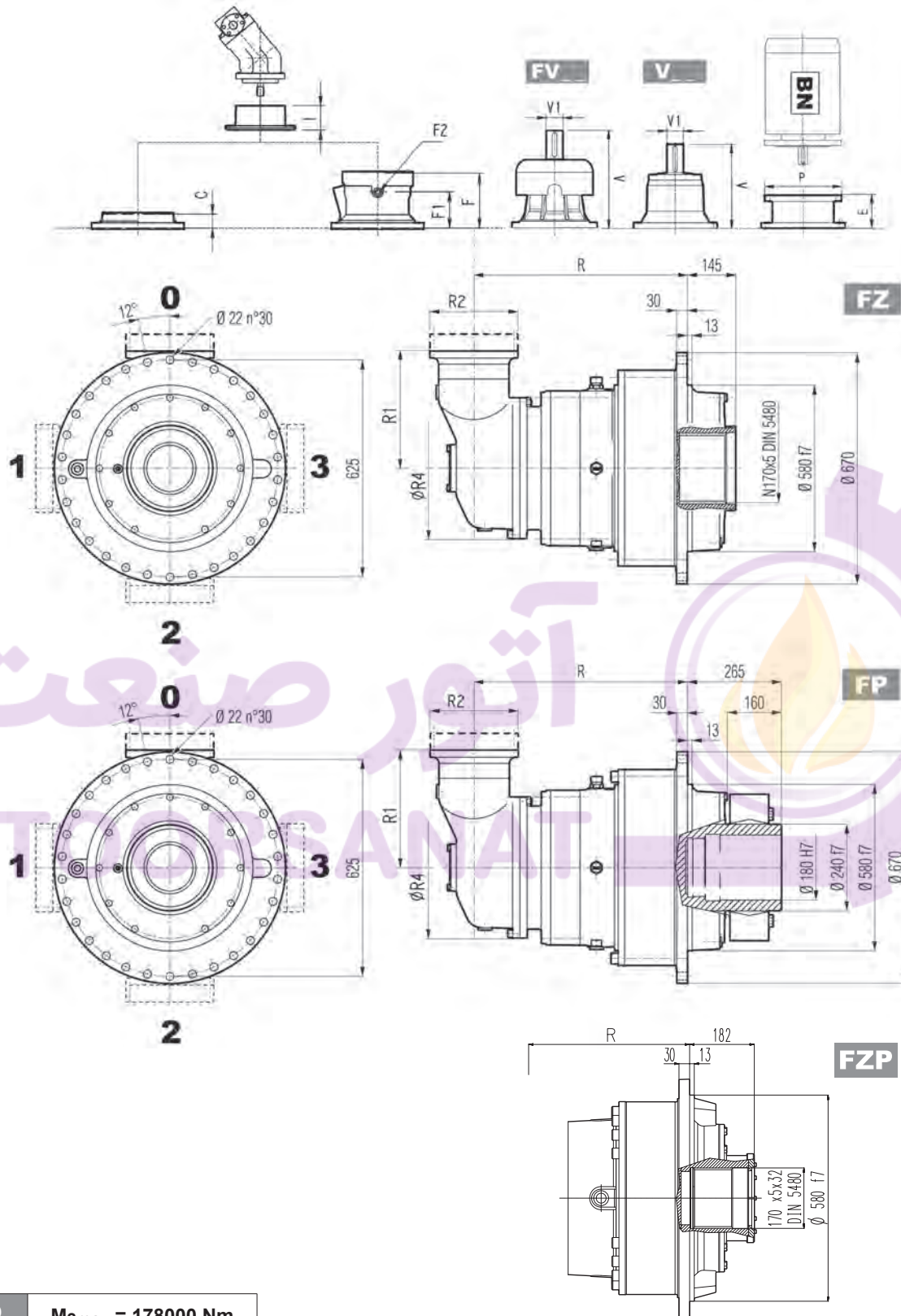


|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |     |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|-----|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP  |
| 316 R3 (B) | 766   | 656   | 656      | 656 | 345 | 292 | 400 | 910   | 710   | 640      | 660 |
| 316 R3 (C) | 766   | 656   | 656      | 656 | 390 | 292 | 480 | 920   | 720   | 650      | 670 |
| 316 R4     | 793   | 683   | 683      | 683 | 225 | 245 | 345 | 890   | 690   | 620      | 640 |

|            | V   |    |    | V1 |    |    | V   |    |    | V1 |    |    | C  | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|            | V   | V1 | Kg | V  | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     |     |     |       |      |       |    |
| 316 R3 (B) | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 316 R3 (C) | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | —   | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 316 R4     | 239 | 48 | 15 | —  | —  | —  | 276 | 48 | 17 | —  | —  | —  | 37 | A     | 461 | 145 | 95  | 1/4 G | 5    | A     | 16 |



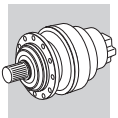
# 316 R



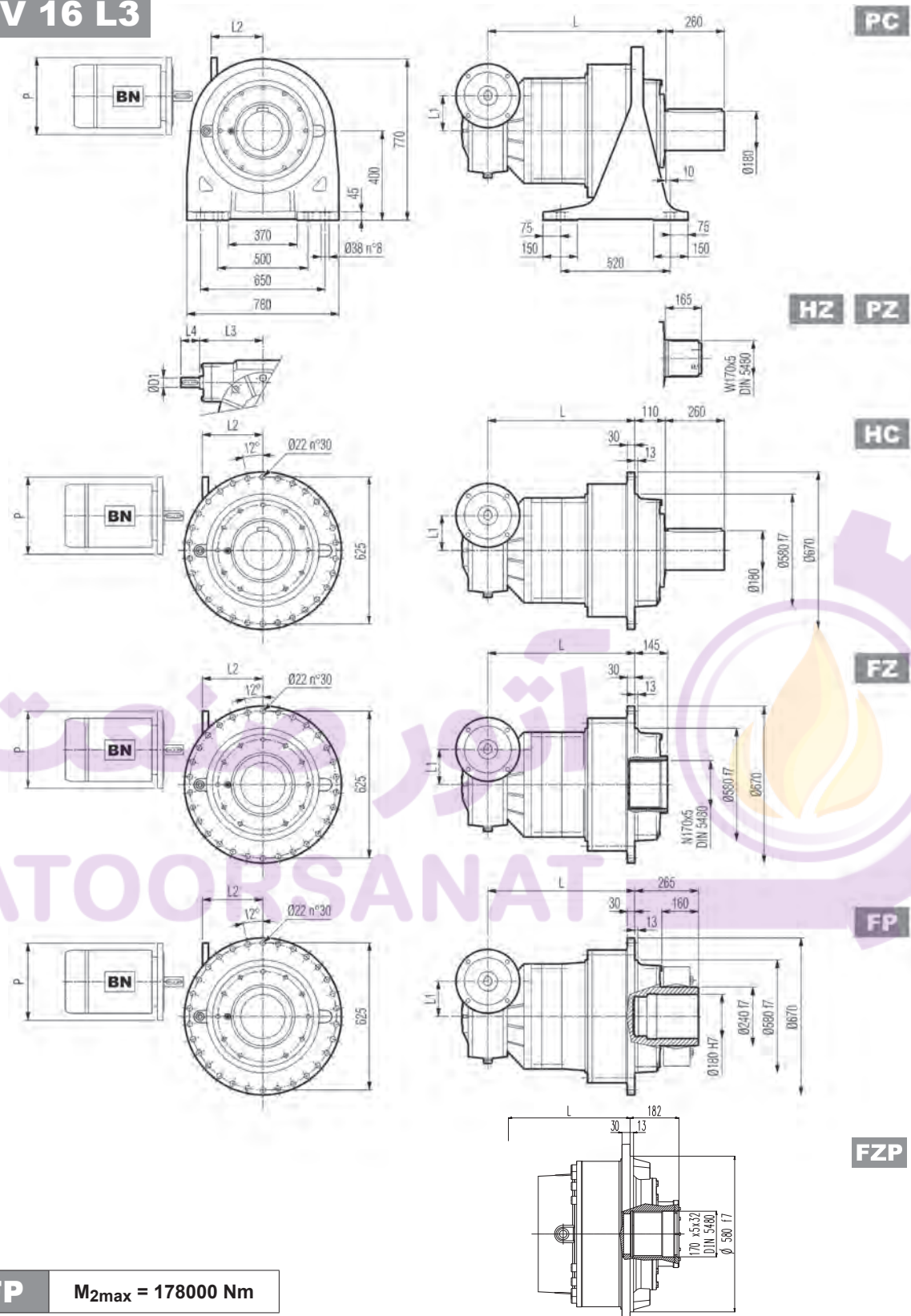
**FP**  $M_{2max} = 178000 \text{ Nm}$

|            | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 316 R3 (B) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 316 R3 (C) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 316 R4     | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |





**3/V 16 L3**

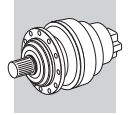


**FP**  $M_{2max} = 178000 \text{ Nm}$

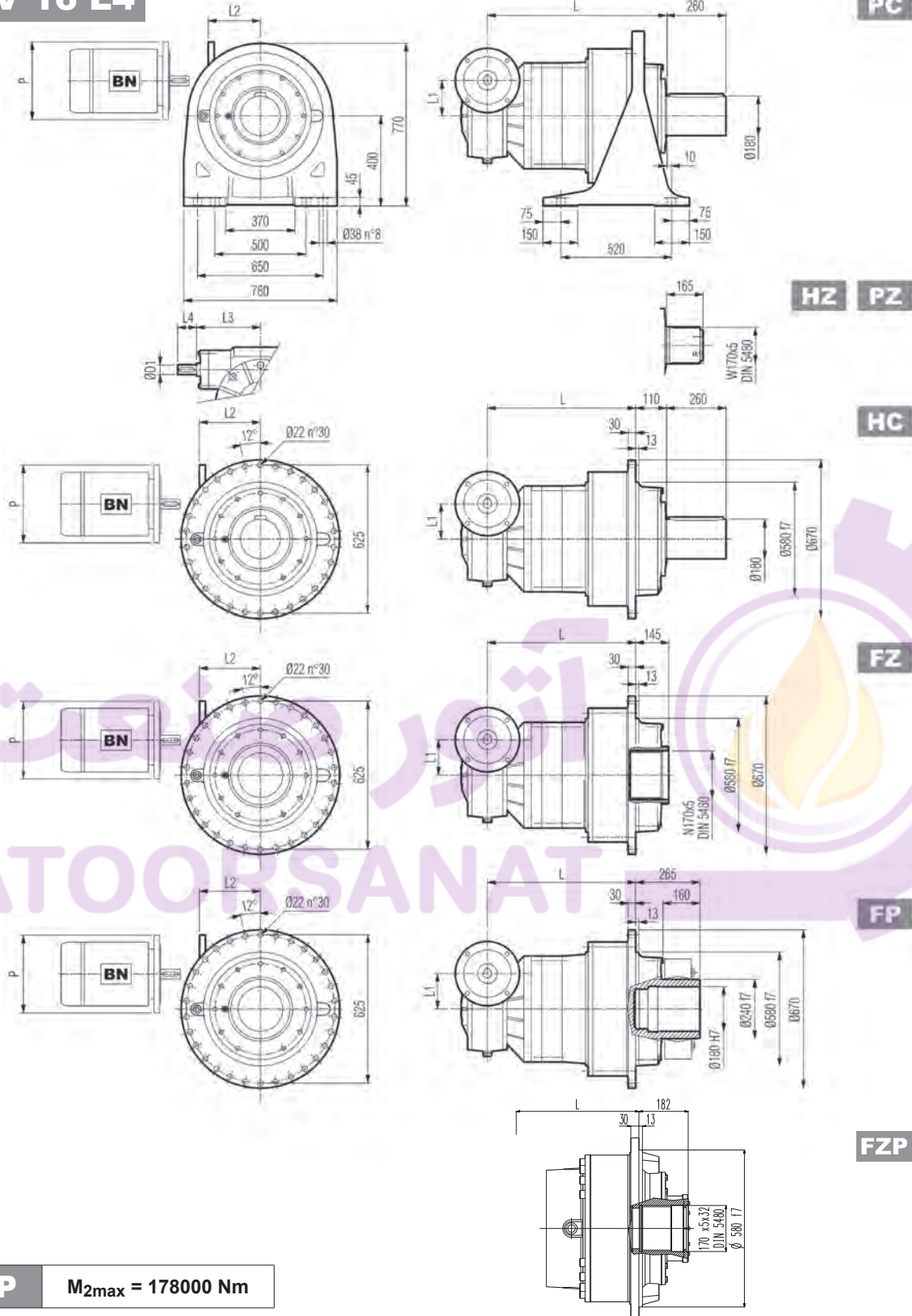
|           | L       |         |          |     | L1  | D1 | L3  | L4  | Kg   | PC - PZ | HC - HZ | FZ - FZP | FP |
|-----------|---------|---------|----------|-----|-----|----|-----|-----|------|---------|---------|----------|----|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |    |     |     |      |         |         |          |    |
| 3/V 16 L3 | 812     | 702     | 702      | 702 | 250 | 55 | 274 | 110 | 1100 | 900     | 830     | 850      |    |

|           | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/V 16 L3 | 531  | 300 | 506  | 350 | 506  | 350 | 531  | 400 | 536  | 450 |





3/V 16 L4



**FP**  $M_{2max} = 178000 \text{ Nm}$

|           | L       |         |     |     | L1  | D1 | L3  | L4 | Kg |         |         |     |     |
|-----------|---------|---------|-----|-----|-----|----|-----|----|----|---------|---------|-----|-----|
|           | PC - PZ | HC - HZ | FZ  | FP  |     |    |     |    |    | PC - PZ | HC - HZ | FZ  | FP  |
| 3/V 16 L4 | 865     | 755     | 755 | 755 | 150 | 35 | 185 | 65 |    | 900     | 700     | 630 | 650 |

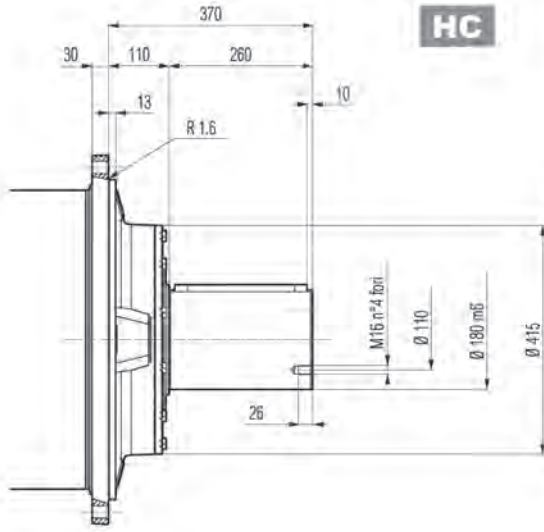
|           | P100 |     | P112 |     | P132 |     | P160 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|
|           | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/V 16 L4 | 190  | 250 | 190  | 250 | 190  | 300 | 190  | 350 |



316 L

316 R

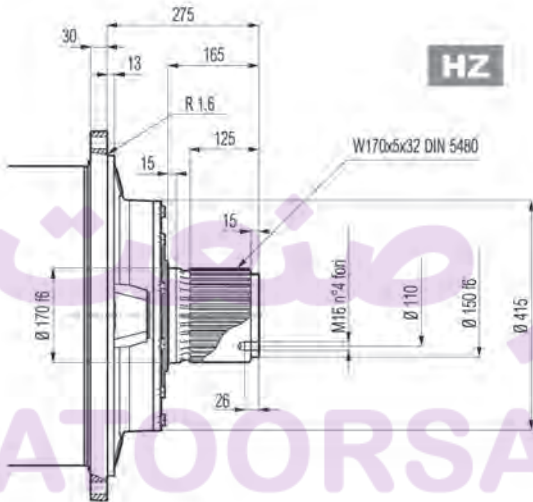
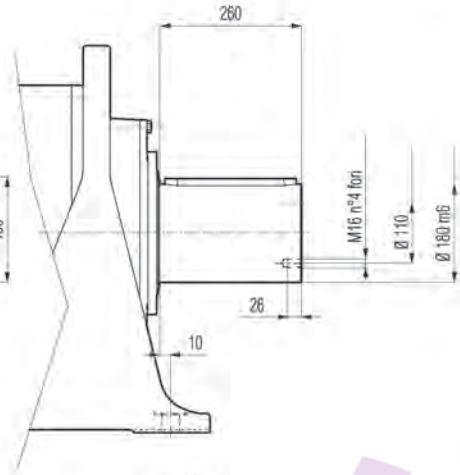
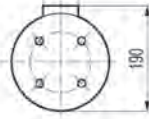
3/V 16 L



HC

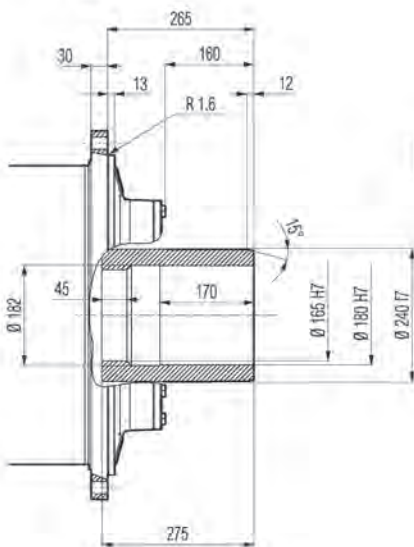
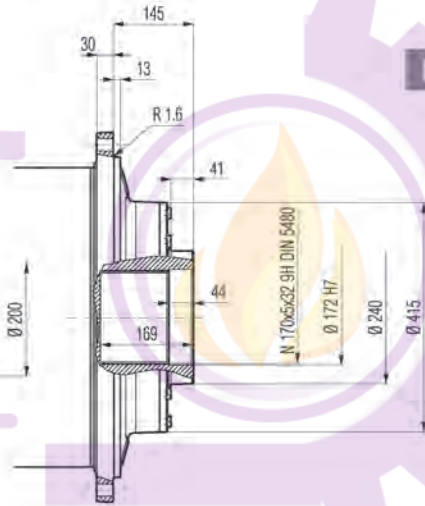
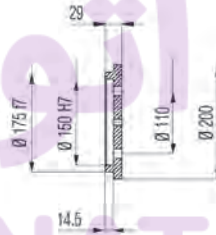
PC

A45x25x240  
UNI 6604  
DIN 6885



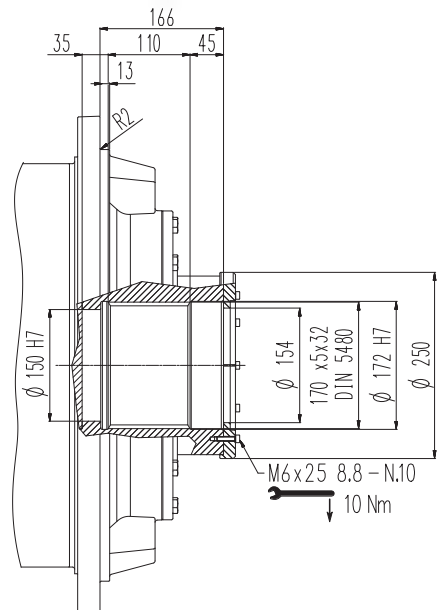
HZ

FZ



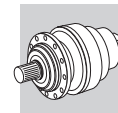
FP

FZP



FP

M<sub>2max</sub> = 178000 Nm



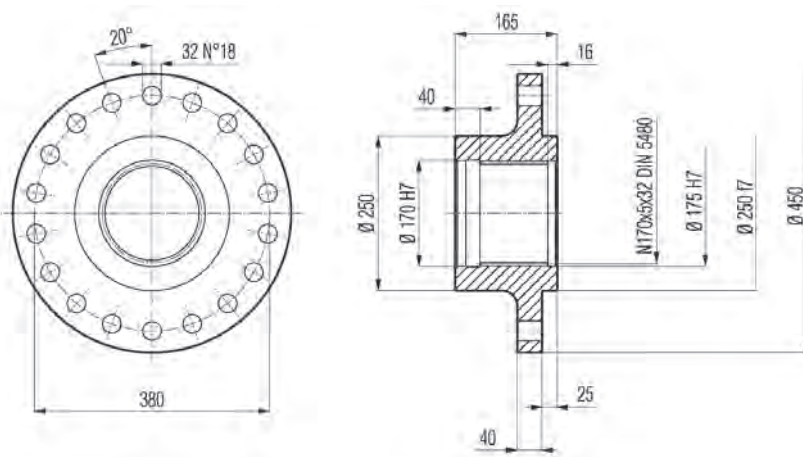
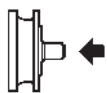
316 L

316 R

3/V 16 L

Flange

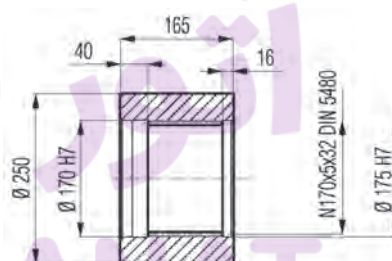
W0A



Material: Steel C40

Sleeve coupling

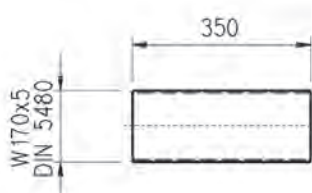
M0A



Material: Steel C40

Splined bars

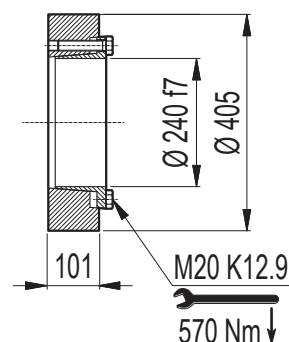
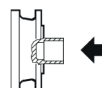
B0A

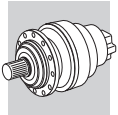


Material: Case hardening steel 18NiCrMo5 UNI 5331  
must be case hardened 50-55 HRC

Shrink disc

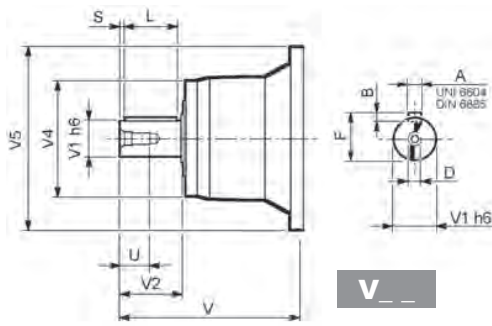
G0A



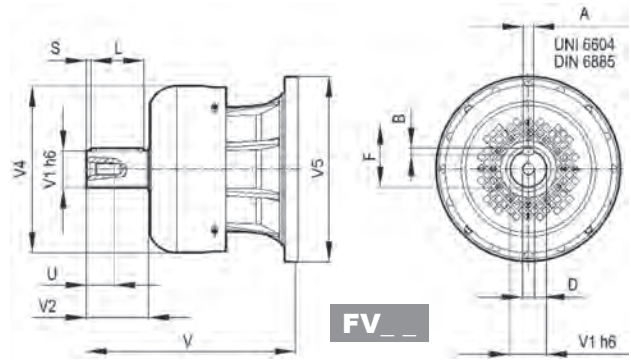


316 L

316 R



V

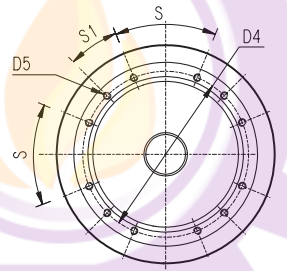
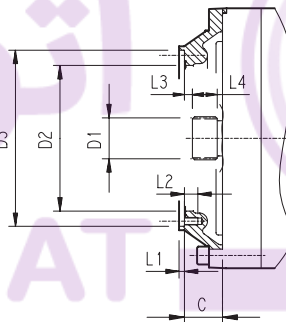
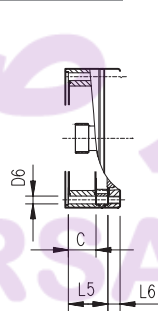


FV

|                |       | V   | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-----|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 316 L2         | V11B  | 348 | 80 | 130 | 200   | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV11B | 456 | 80 | 130 | 347.5 | 428 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 316 L3         | V07B  | 315 | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 316 L4         | FV07A | 363 | 60 | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | V05B  | 239 | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 316 R3 (B) (C) | FV05B | 276 | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | V06B  | 307 | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 316 R4         | FV06B | 357 | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | V05B  | 239 | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276 | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |

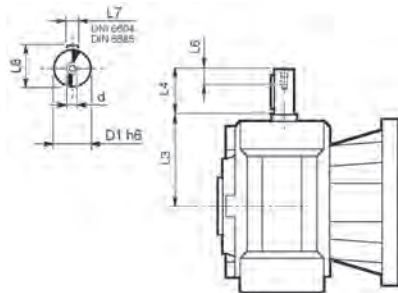
316 L

316 R



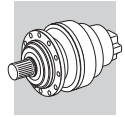
|                |      | C   | D1              | D2  | D3     | D4  | D5        | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|-----------------|-----|--------|-----|-----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 316 L1         | V9AE | 116 | 100x94 DIN 5482 | 340 | 412 H7 | 390 | M16 n° 18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20°   | E     |
| 316 L2         | V9AD | 81  | 80x74 DIN 5482  | 270 | 335 H7 | 314 | M16 n° 8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30°   | D     |
| 316 L3         | V9AB | 51  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n° 12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 316 L4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n° 8  | —  | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 316 R3 (B) (C) | V9AB | 45  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10° 12   | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 316 R4         | V9AA | 37  | 40x36 DIN 5482  | 140 | 178 H7 | 165 | M10 n° 8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |

3/V 16 L



|              | D1 h6 | L3  | L4  | L6 | L7 | L8 | d   |
|--------------|-------|-----|-----|----|----|----|-----|
| 3/V 16 L3_HS | 55    | 274 | 110 | 40 | 16 | 59 | M16 |
| 3/V 16 L4_HS | 35    | 185 | 65  | 20 | 10 | 38 | M8  |



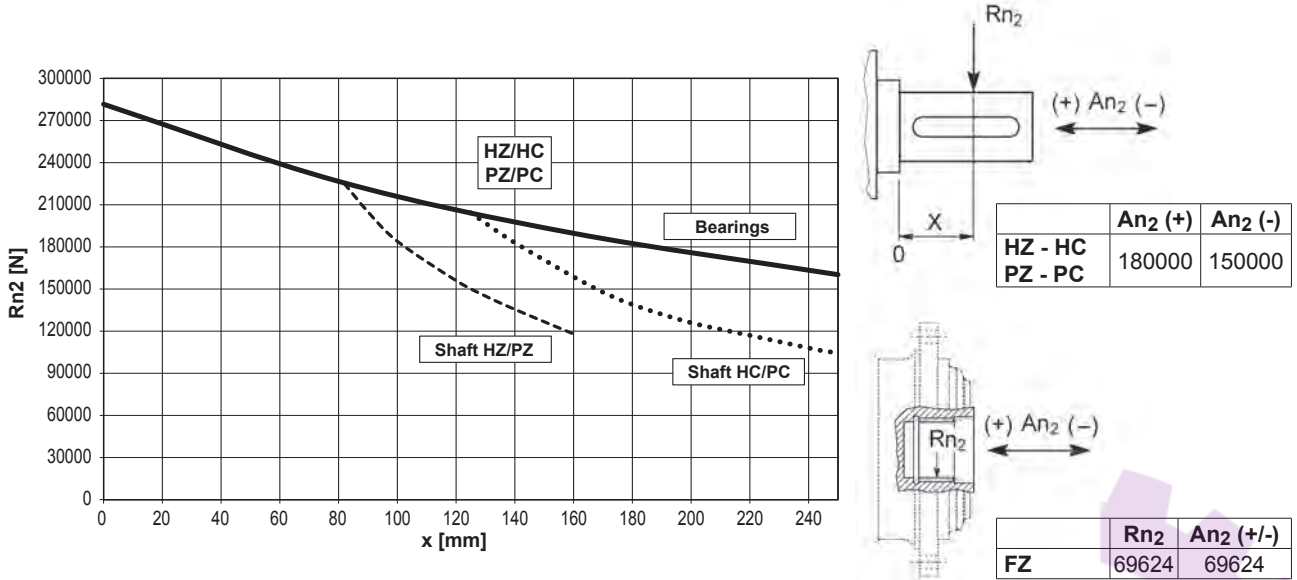


316 L

316 R

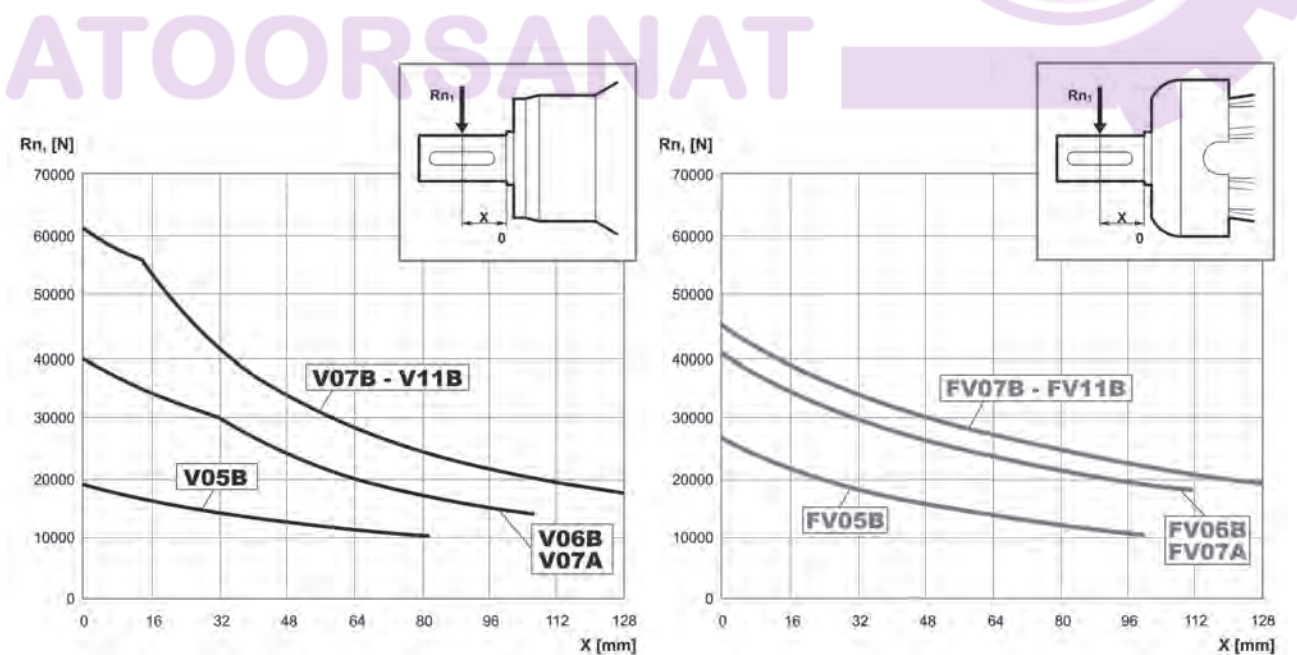
3/V 16 L

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$<br>on shafts | $Fh_2 = n_2 \cdot h$ | 10000  | 25000      | 50000 | 100000 | 500000 | 1000000 |
|--|----------------------|--------|------------|-------|--------|--------|---------|
|  |                      | $fh_2$ | FZ<br>2.15 | 1.59  | 1.26   | 1.00   | 0.58    |
|  | HC - PC              | 1.16   | 1.00       | 1.00  | 1.00   | 0.62   | 0.50    |
|  | HZ - PZ              | 1.19   | 1.02       | 1.02  | 1.00   | 0.62   | 0.50    |

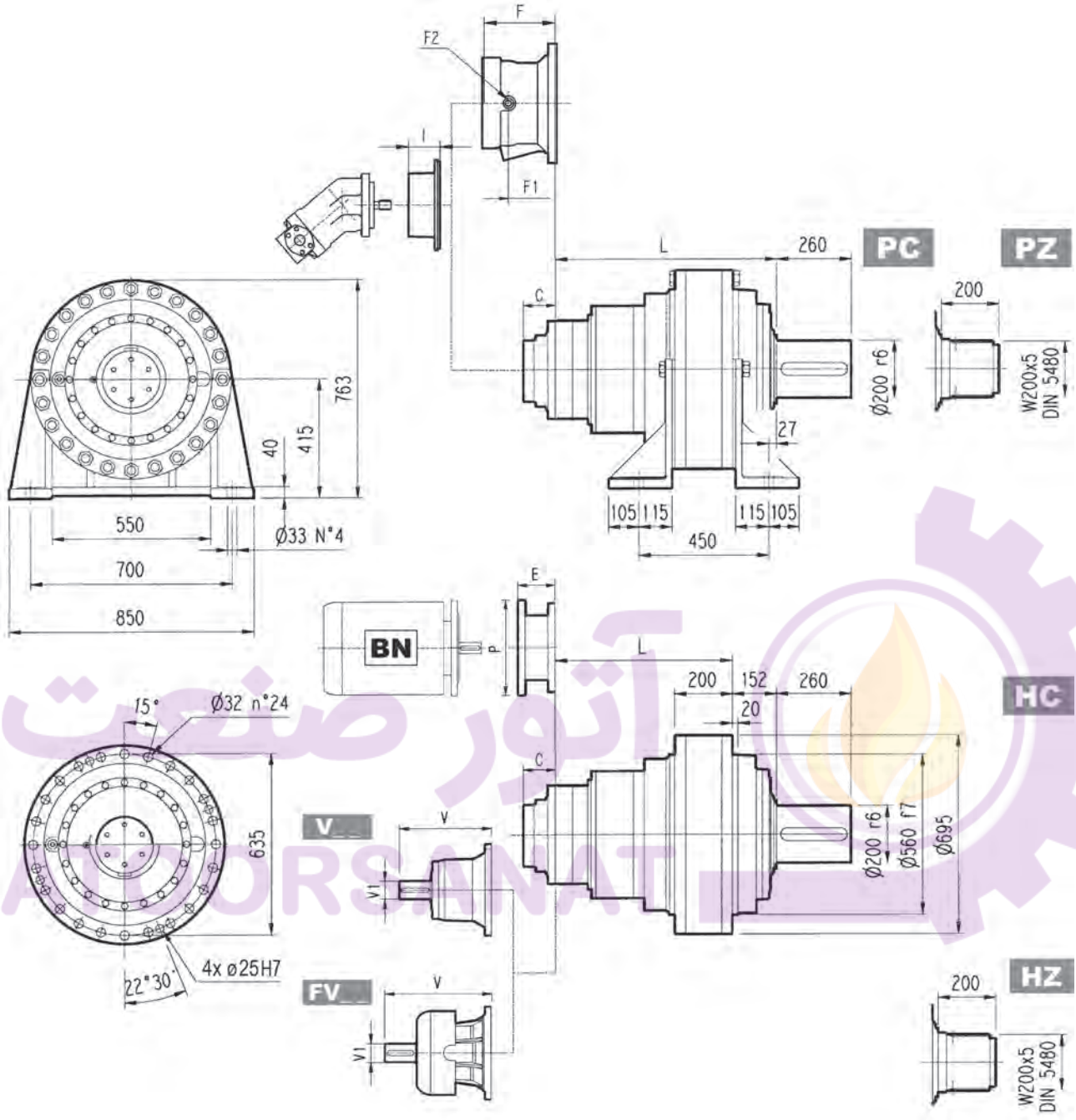
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $Fh_1 = n_1 \cdot h$ | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|--|----------------------|--------|--------|---------|---------|---------|----------|
|  |                      | $fh_1$ | 1      | 0.79    | 0.63    | 0.50    | 0.37     |

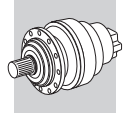


**317 L**

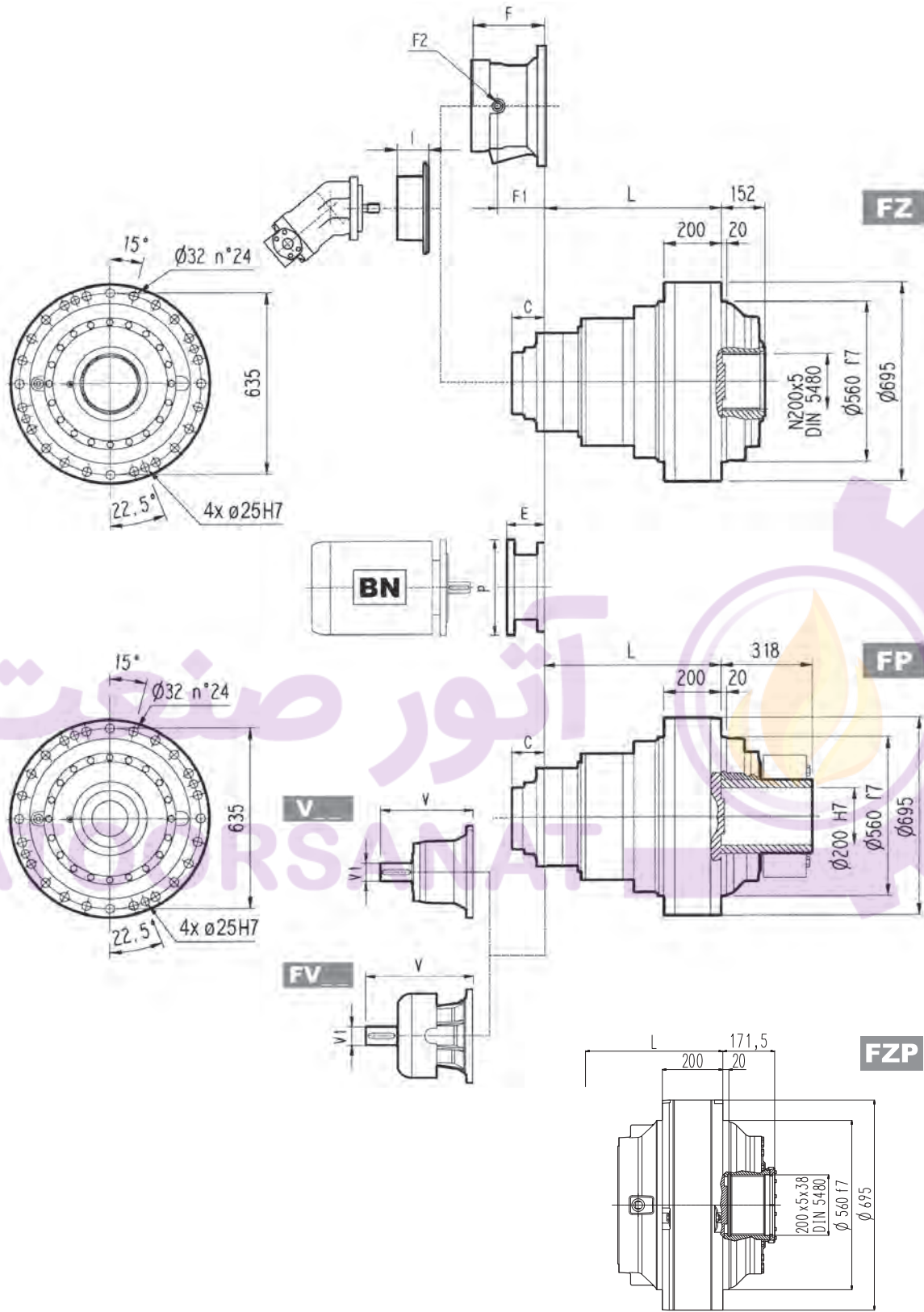


|        | L       |         |          |     | Kg      |         |          |      |
|--------|---------|---------|----------|-----|---------|---------|----------|------|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 317 L1 | 315     | 163     | 163      | 163 | 950     | 800     | 750      | 800  |
| 317 L2 | 624     | 472     | 472      | 472 | 1080    | 930     | 880      | 930  |
| 317 L3 | 774     | 622     | 622      | 622 | 1140    | 990     | 940      | 990  |
| 317 L4 | 862     | 710     | 710      | 710 | 1152    | 1000    | 952      | 1000 |

|        | V   |    |    | V1  |    |    | V   |    |    | V1  |    |    | C   | Input | I   | F   |     |       | Type | Input | Kg |
|--------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|-------|-----|-----|-----|-------|------|-------|----|
|        | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |     |       |     | F   | F1  | F2    |      |       |    |
| 317 L1 | —   | —  | —  | —   | —  | —  | —   | —  | —  | —   | —  | —  | 181 | F     | —   | —   | —   | —     | —    | —     | —  |
| 317 L2 | 343 | 80 | 55 | —   | —  | —  | 451 | 80 | 71 | —   | —  | —  | 75  | D     | —   | —   | —   | —     | —    | —     |    |
| 317 L3 | 315 | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51  | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |
| 317 L4 | 239 | 48 | 15 | —   | —  | —  | 276 | 48 | 17 | —   | —  | —  | 37  | A     | 461 | 145 | 95  | 1/4 G | 5    | A     | 16 |

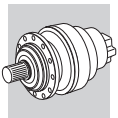


**317 L**

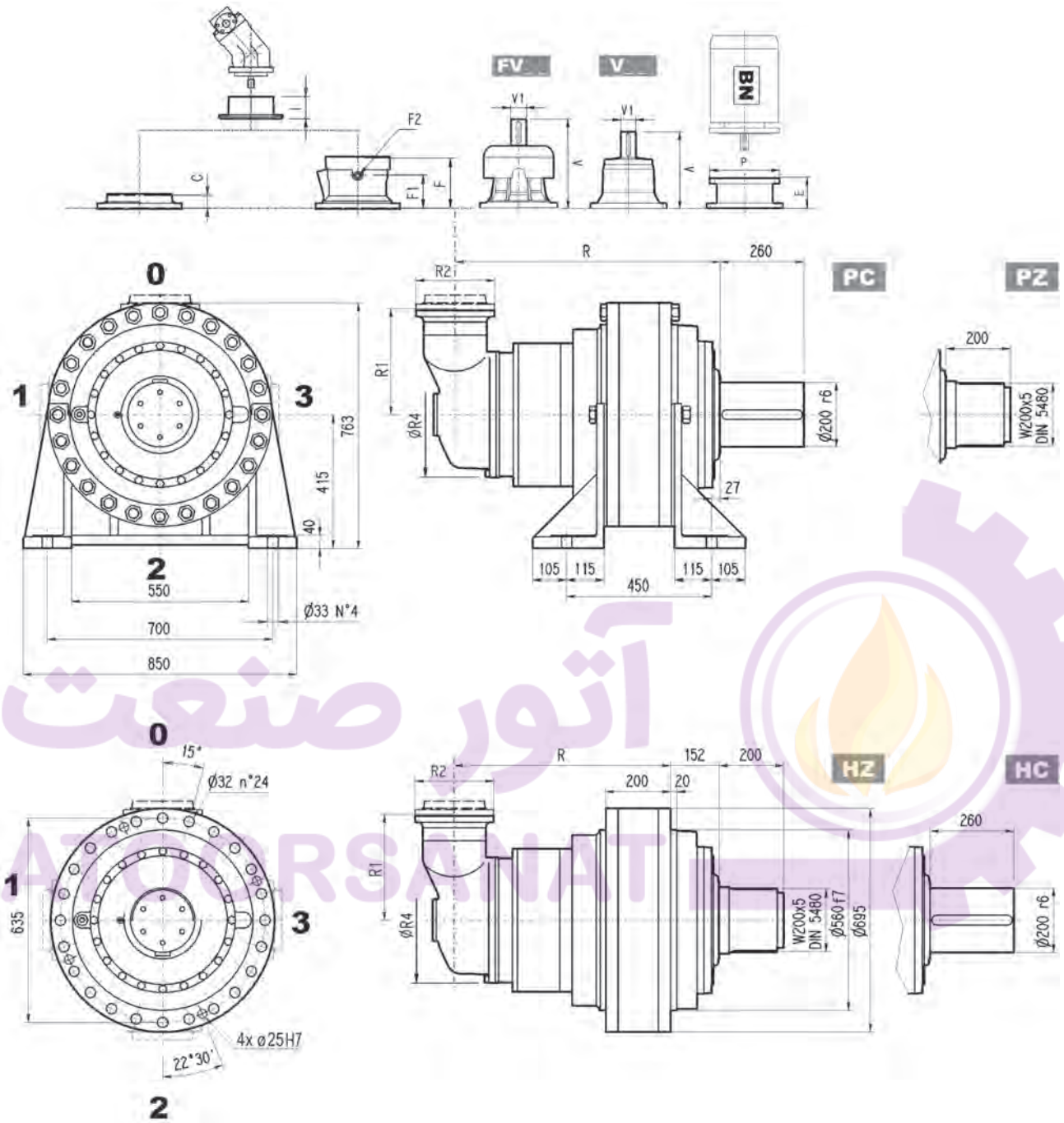


**FP**  $M_{2max} = 242000 \text{ Nm}$

|        | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 317 L3 | —    | —   | —    | —   | 196  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |
| 317 L4 | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |



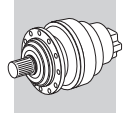
# 317 R



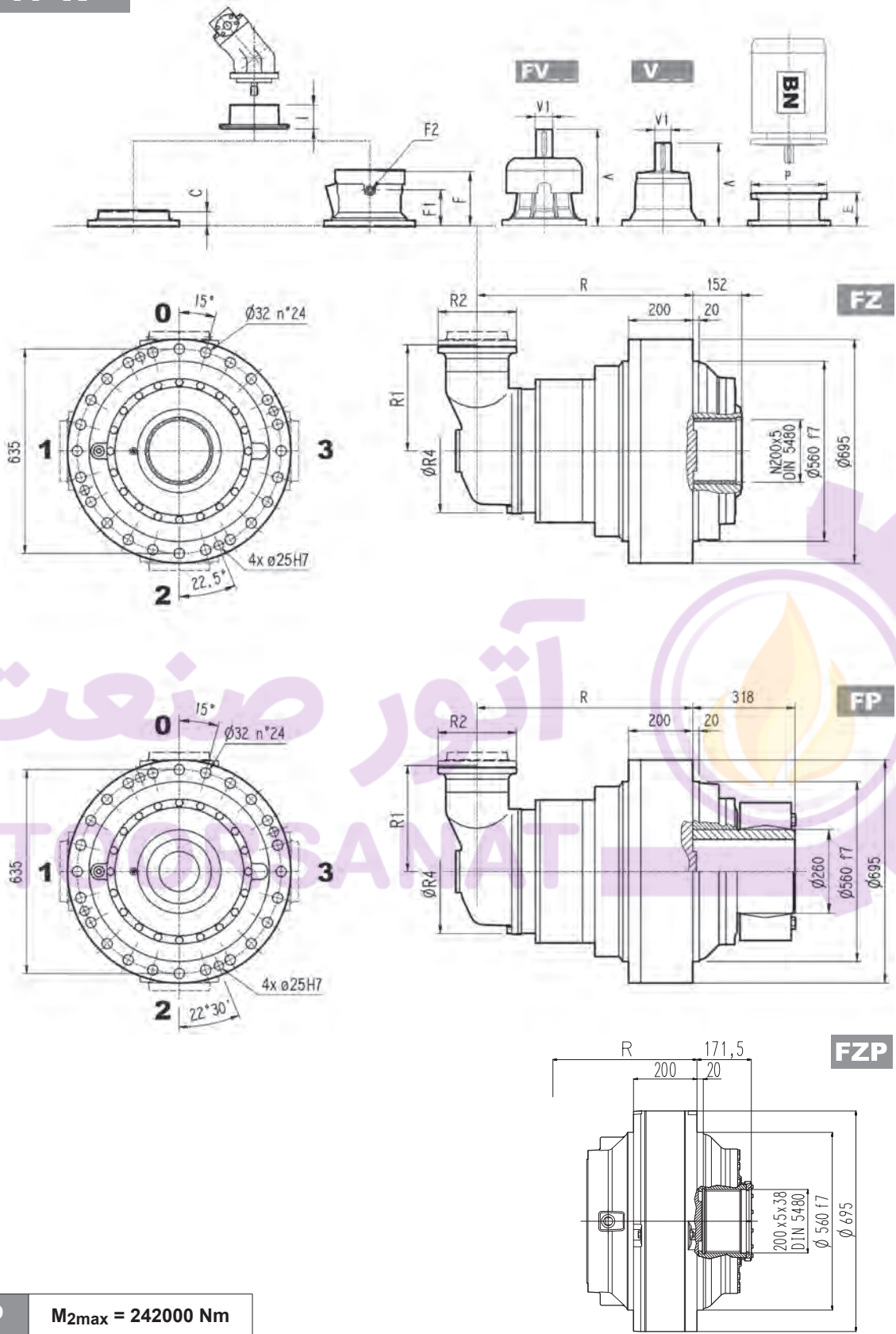
|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |      |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|------|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP   |
| 317 R3 (B) | 853   | 701   | 701      | 701 | 345 | 292 | 400 | 1210  | 1060  | 1010     | 1060 |
| 317 R3 (C) | 853   | 701   | 701      | 701 | 390 | 292 | 480 | 1220  | 1070  | 1020     | 1070 |
| 317 R4     | 892   | 740   | 740      | 740 | 225 | 245 | 345 | 1190  | 1040  | 990      | 1040 |

|            | V   |    |    | V |    |    | V   |    |    | C | Input | I | F  |    |     |      | Type  | Input | Kg |    |    |
|------------|-----|----|----|---|----|----|-----|----|----|---|-------|---|----|----|-----|------|-------|-------|----|----|----|
|            | V   | V1 | Kg | V | V1 | Kg | V   | V1 | Kg |   |       |   | F  | F1 | F2  | Type |       |       |    |    |    |
| 317 R3 (B) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 195 | 147  | 1/4 G | 6     | B  | 28 |    |
| 317 R3 (C) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 195 | 147  | 1/4 G | 6     | B  | 28 |    |
| 317 R4     | 239 | 48 | 15 | — | —  | —  | 276 | 48 | 17 | — | —     | — | 37 | A  | 461 | 105  | 65    | 1/4 G | 4  | A  | 10 |





**317 R**

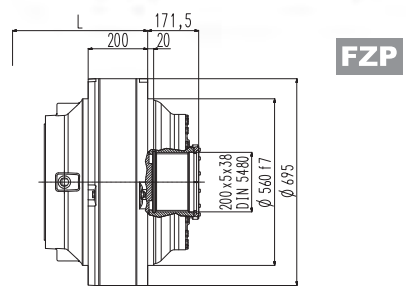
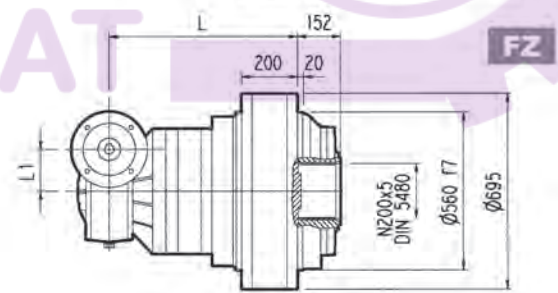
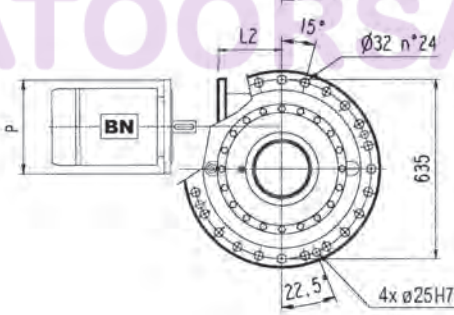
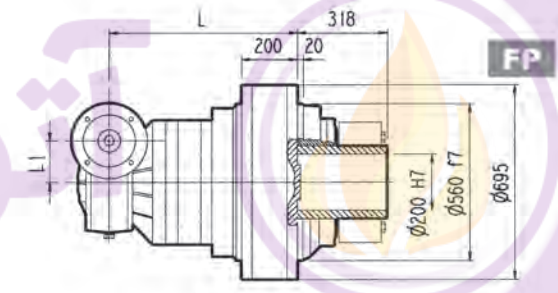
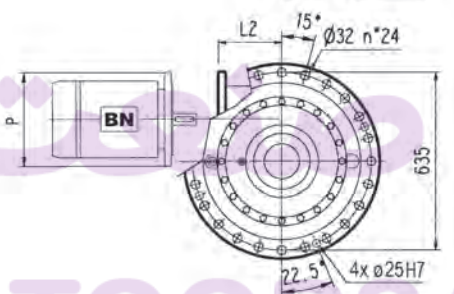
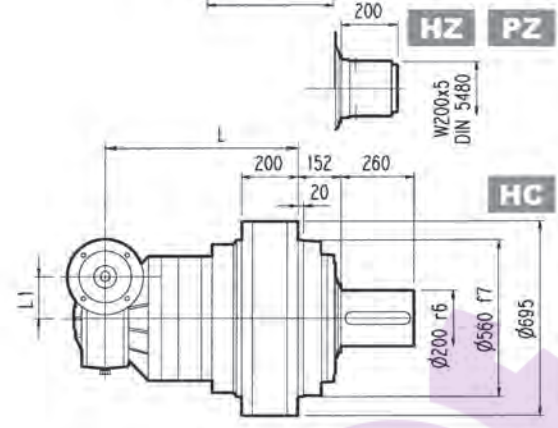
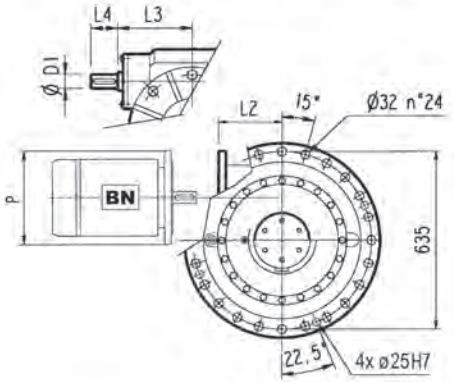
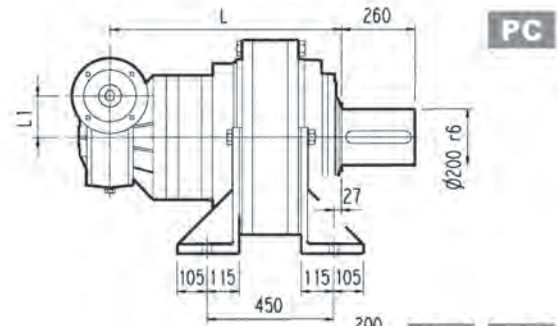
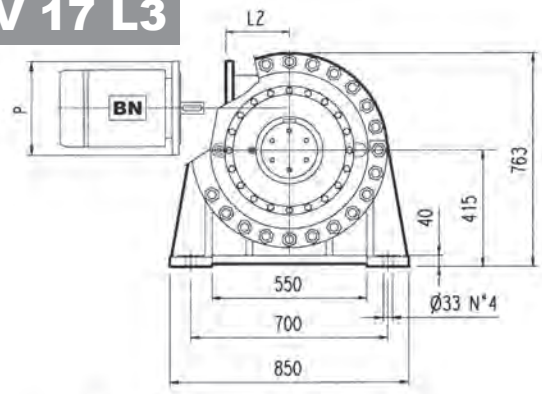


**FP**  $M_{2max} = 242000 \text{ Nm}$

|            | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|            | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   | E    | P   |
| 317 R3 (B) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 317 R3 (C) | —    | —   | —    | —   | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 317 R4     | 114  | 300 | 144  | 350 | 144  | 350 | 174  | 400 | —    | —   | —    | —   |



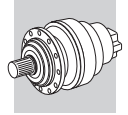
**3/V 17 L3**



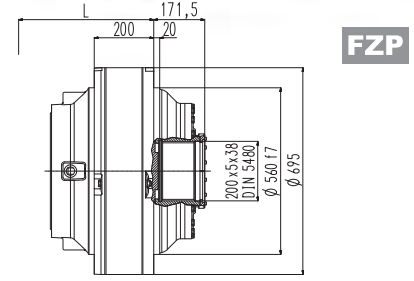
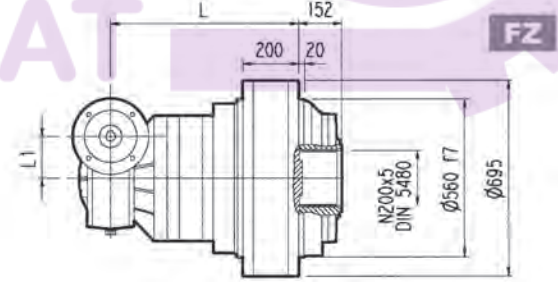
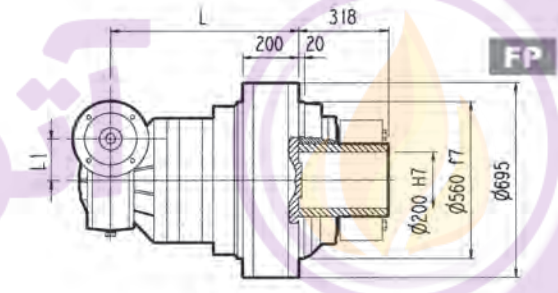
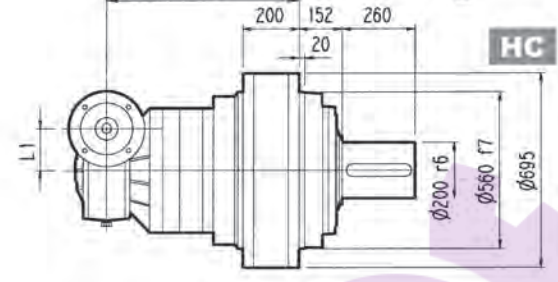
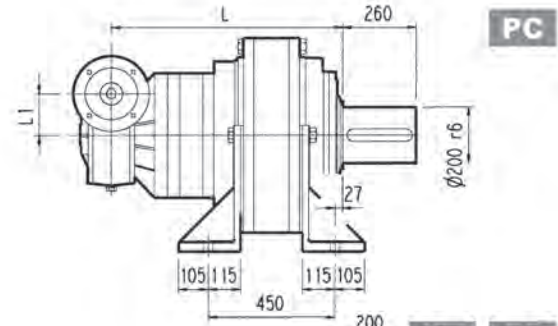
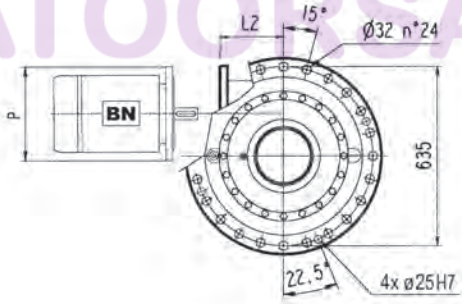
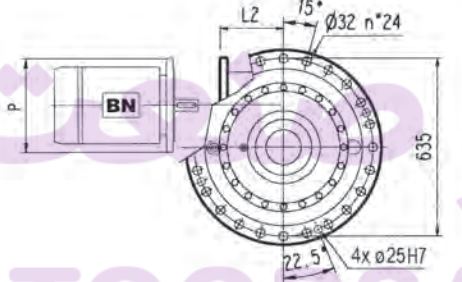
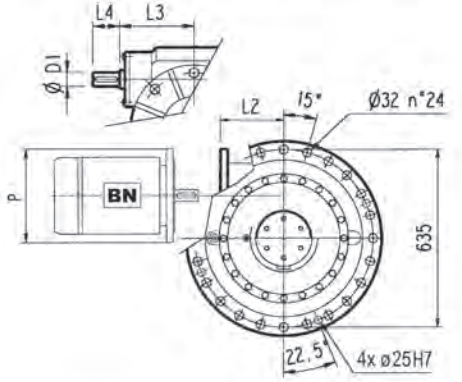
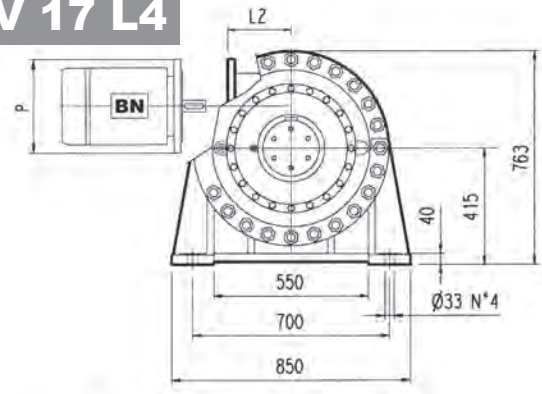
**FP** M<sub>2max</sub> = 242000 Nm

|           | L       |         |          |     | L1  | D1 | L3  | L4  | Kg |         |         |          |      |
|-----------|---------|---------|----------|-----|-----|----|-----|-----|----|---------|---------|----------|------|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |    |     |     |    | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 3/V 17 L3 | 894     | 745     | 745      | 745 | 250 | 55 | 276 | 110 |    | 1400    | 1250    | 1200     | 1250 |

|           | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/V 17 L3 | 531  | 300 | 506  | 350 | 506  | 350 | 531  | 400 | 536  | 450 |



**3/V 17 L4**

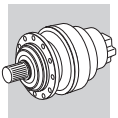


**FP** M<sub>2max</sub> = 242000 Nm

|           | L       |         |          |     | L1    | D1 | L3    | L4 | Kg |         |         |          |      |
|-----------|---------|---------|----------|-----|-------|----|-------|----|----|---------|---------|----------|------|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |       |    |       |    |    | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 3/V 17 L4 | 975     | 823     | 823      | 823 | 185.4 | 40 | 214.5 | 70 |    | 1250    | 1090    | 1040     | 1090 |

|           | P100 |     | P112 |     | P132 |     | P160 |     | P180 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | P    | L2  | P    | L2  | P    | L2  | P    | L2  | P    | L2  |
| 3/V 17 L4 | 250  | 217 | 250  | 217 | 300  | 217 | 350  | 217 | 350  | 217 |





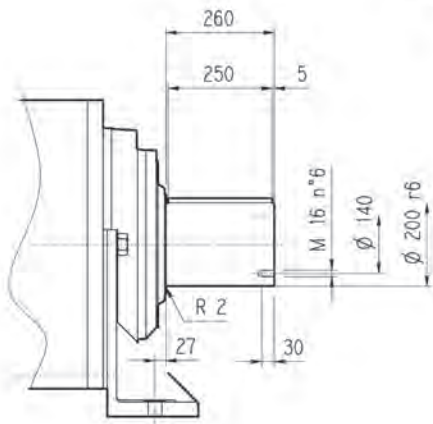
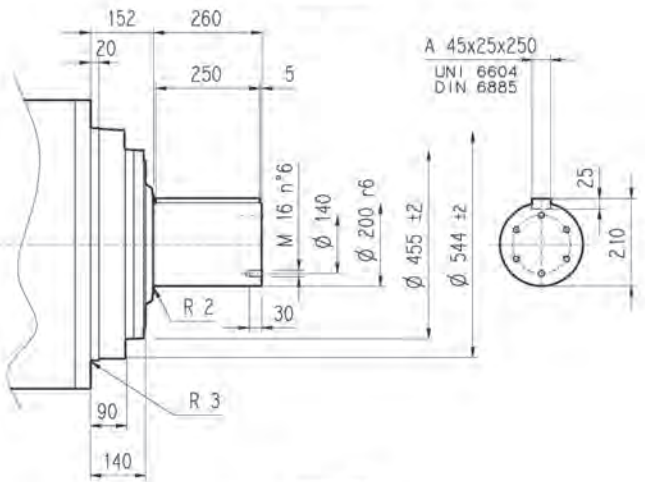
**317 L**

**317 R**

**3/V 17 L**

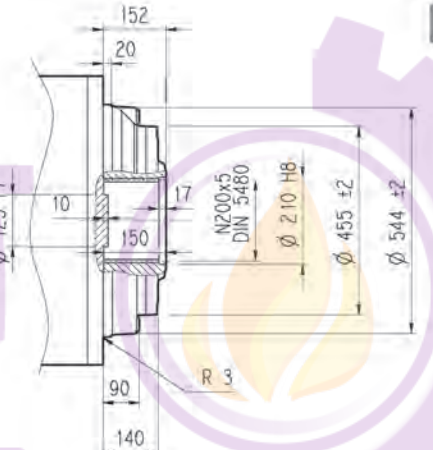
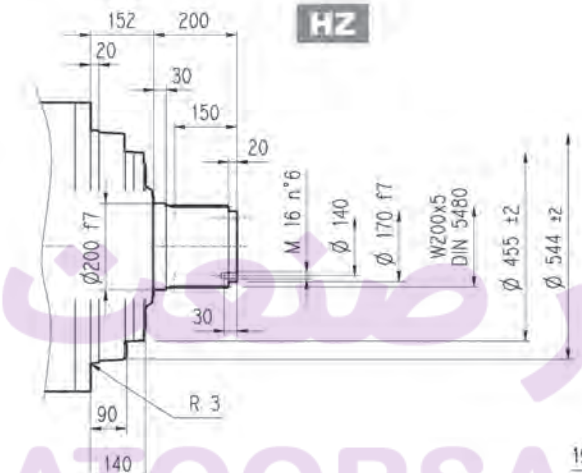
**HC**

**PC**



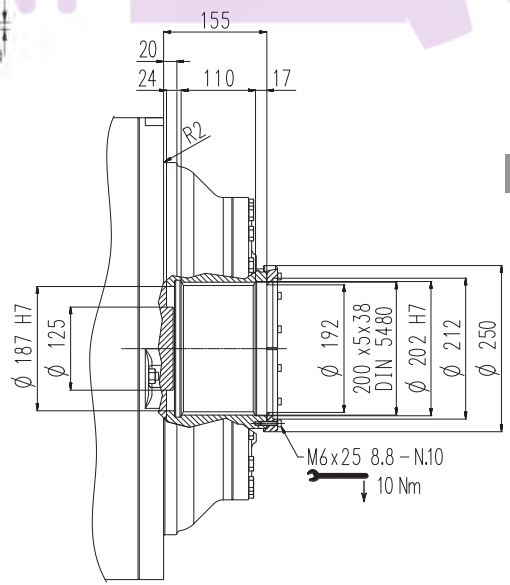
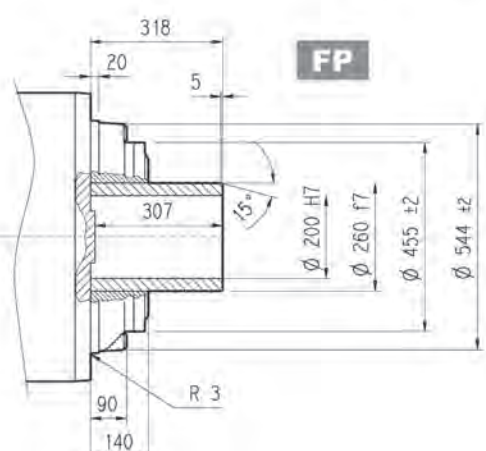
**HZ**

**FZ**



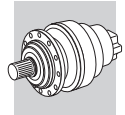
**FP**

**FZP**



**FP**  $M_{2max} = 242000 \text{ Nm}$





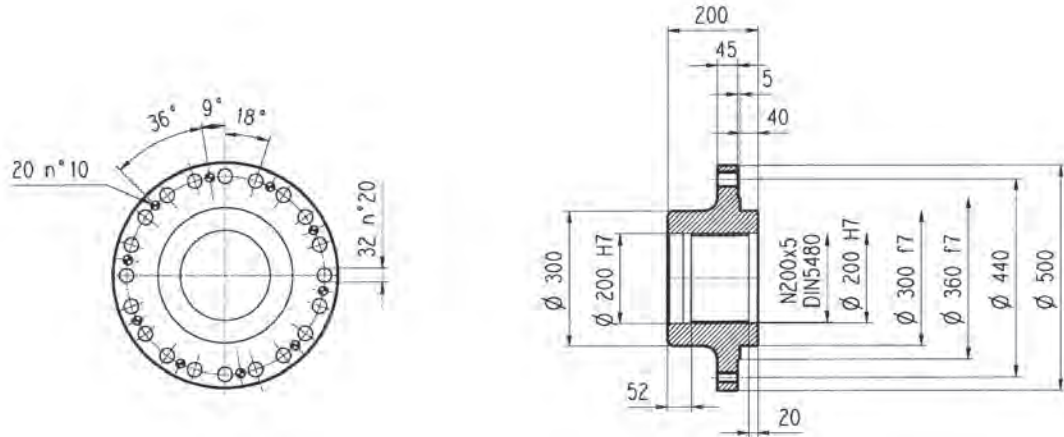
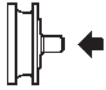
317 L

317 R

3/V 17 L

Flange

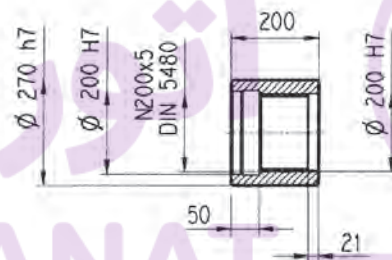
W0A



Material: Steel C40

Sleeve coupling

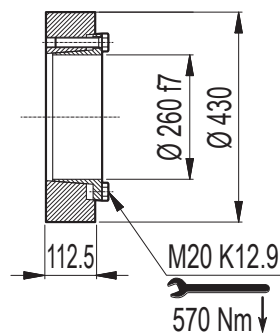
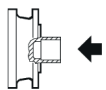
M0A



Material: Steel 16CrNi4

Shrink disc

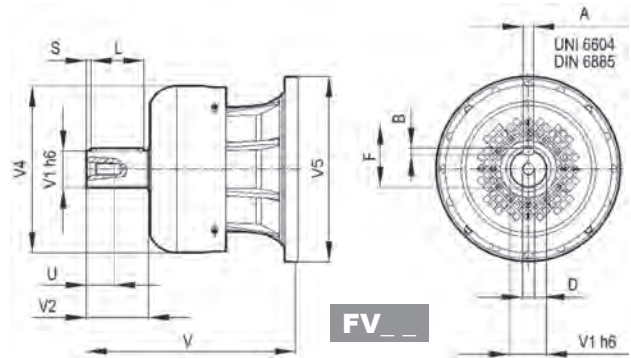
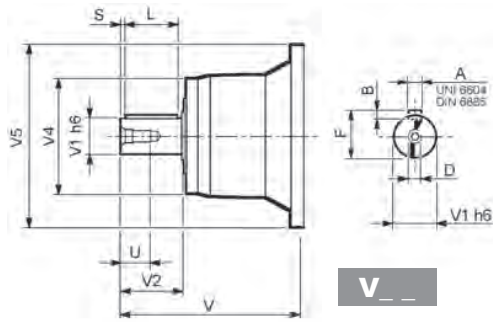
G0A





317 L

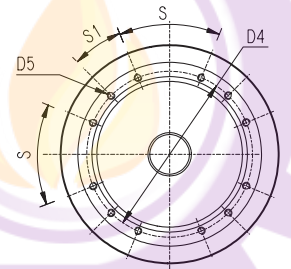
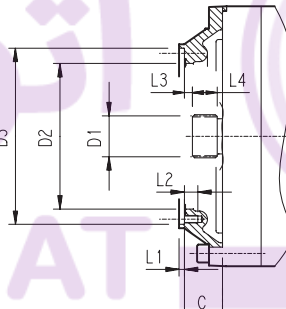
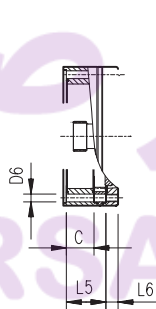
317 R



|                |       | V   | V1 | V2  | V4    | V5  | A  | B  | F    | L   | S   | D   | U  |
|----------------|-------|-----|----|-----|-------|-----|----|----|------|-----|-----|-----|----|
| 317 L2         | V11B  | 343 | 80 | 130 | 200   | 445 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV11B | 451 | 80 | 130 | 347.5 | 445 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
| 317 L3         | V07B  | 315 | 80 | 130 | 200   | 345 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80 | 130 | 347.5 | 348 | 22 | 14 | 85   | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60 | 105 | 155   | 345 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
|                | FV07A | 363 | 60 | 105 | 309   | 348 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 317 L4         | V05B  | 239 | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276 | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
| 317 R3 (B) (C) | V06B  | 307 | 60 | 105 | 155   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 40 |
|                | FV06B | 357 | 60 | 105 | 309   | 292 | 18 | 11 | 64   | 90  | 7.5 | M16 | 36 |
| 317 R4         | V05B  | 239 | 48 | 82  | 155   | 245 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |
|                | FV05B | 276 | 48 | 82  | 219.5 | 244 | 14 | 9  | 51.5 | 70  | 6   | M16 | 36 |

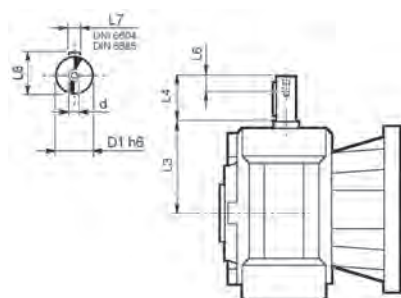
317 L

317 R

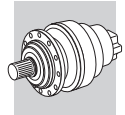


|                |      | C   | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|----------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 317 L1         | V9AF | 181 | 120x3 DIN 5480 | 365 | 390 g7 | 415 | M16 n°18 | —  | 4  | 30 | 3   | 65 | —  | —  | 20° | 20°   | F     |
| 317 L2         | V9AD | 75  | 80x74 DIN 5482 | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 9.5 | 40 | —  | —  | 60° | 30°   | D     |
| 317 L3         | V9AB | 51  | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 317 L4         | V9AA | 37  | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | —  | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 317 R4         | V9AA | 37  | 40x36 DIN 5482 | 140 | 178 H7 | 165 | M10 n°8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 317 R3 (B) (C) | V9AB | 45  | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |

3/V 17 L



|              | D1 h6 | L3    | L4  | L6 | L7 | L8 | d   |
|--------------|-------|-------|-----|----|----|----|-----|
| 3/V 17 L3_HS | 55    | 276   | 110 | 40 | 16 | 59 | M16 |
| 3/V 17 L4_HS | 40    | 214.5 | 70  | 20 | 12 | 43 | M8  |

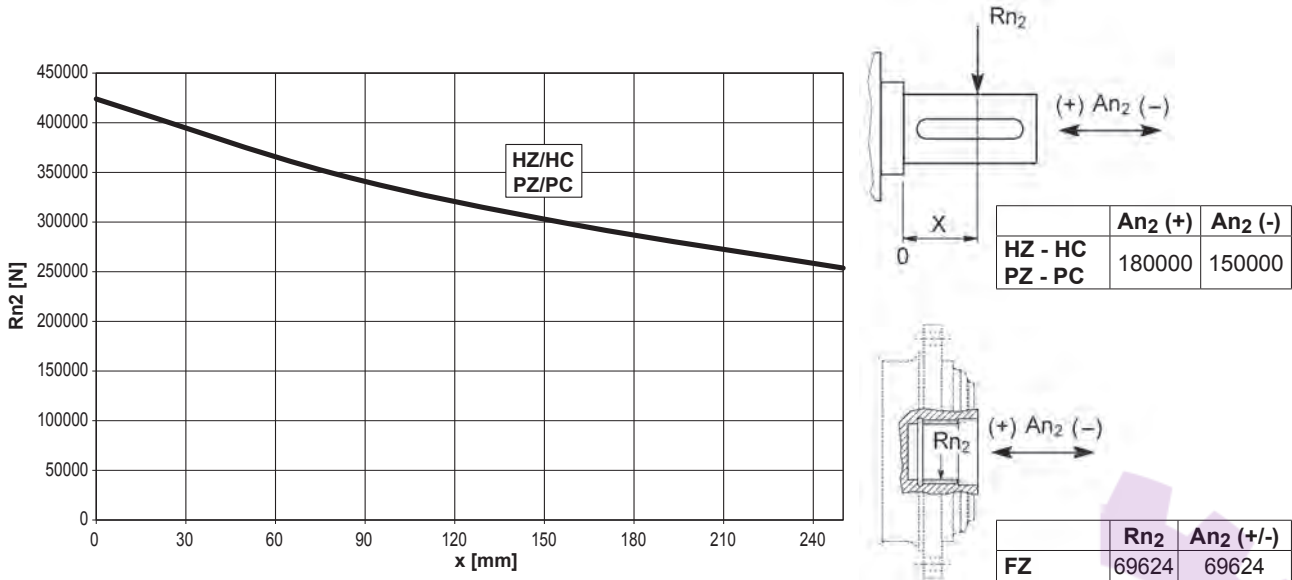


317 L

317 R

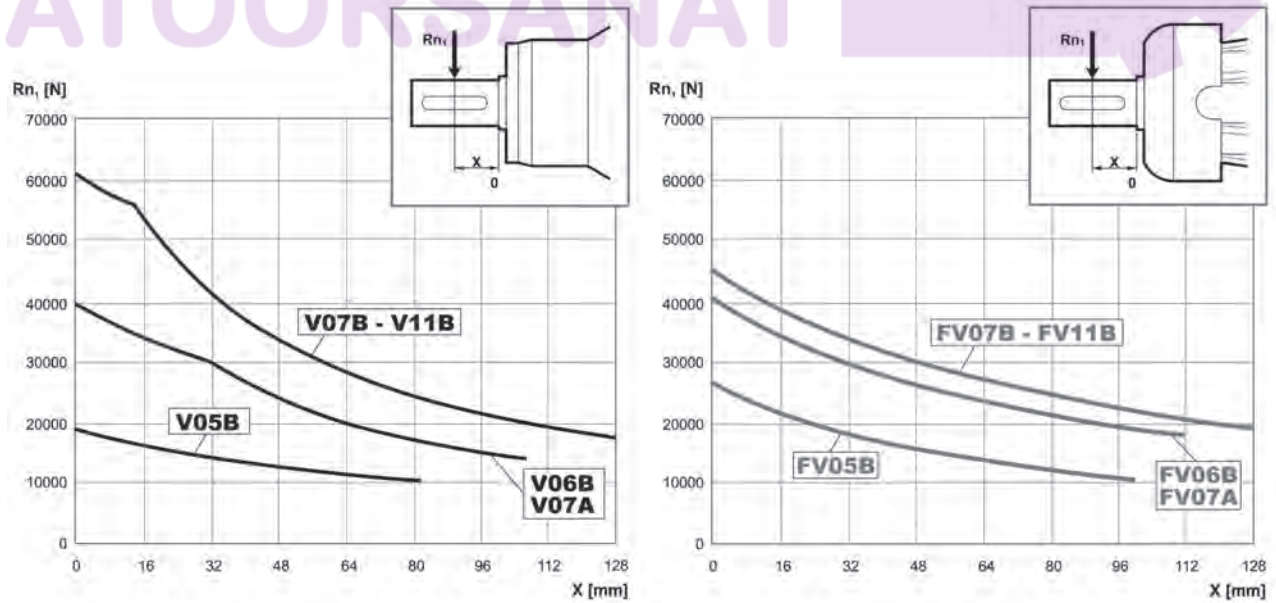
3/V 17 L

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$

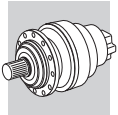


| Load corrective factor $fh_2$ on shafts | $F_{h2} = n_2 \cdot h$ | 10000  | 25000 | 50000 | 100000 | 500000 | 1000000 |
|---|------------------------|--------|-------|-------|--------|--------|---------|
|   |                        | $fh_2$ | FZ    | 2.15  | 1.59   | 1.26   | 1.00    |
|   | HZ - HC - PZ - PC      | 1.50   | 1.50  | 1.23  | 1.00   | 0.62   | 0.50    |

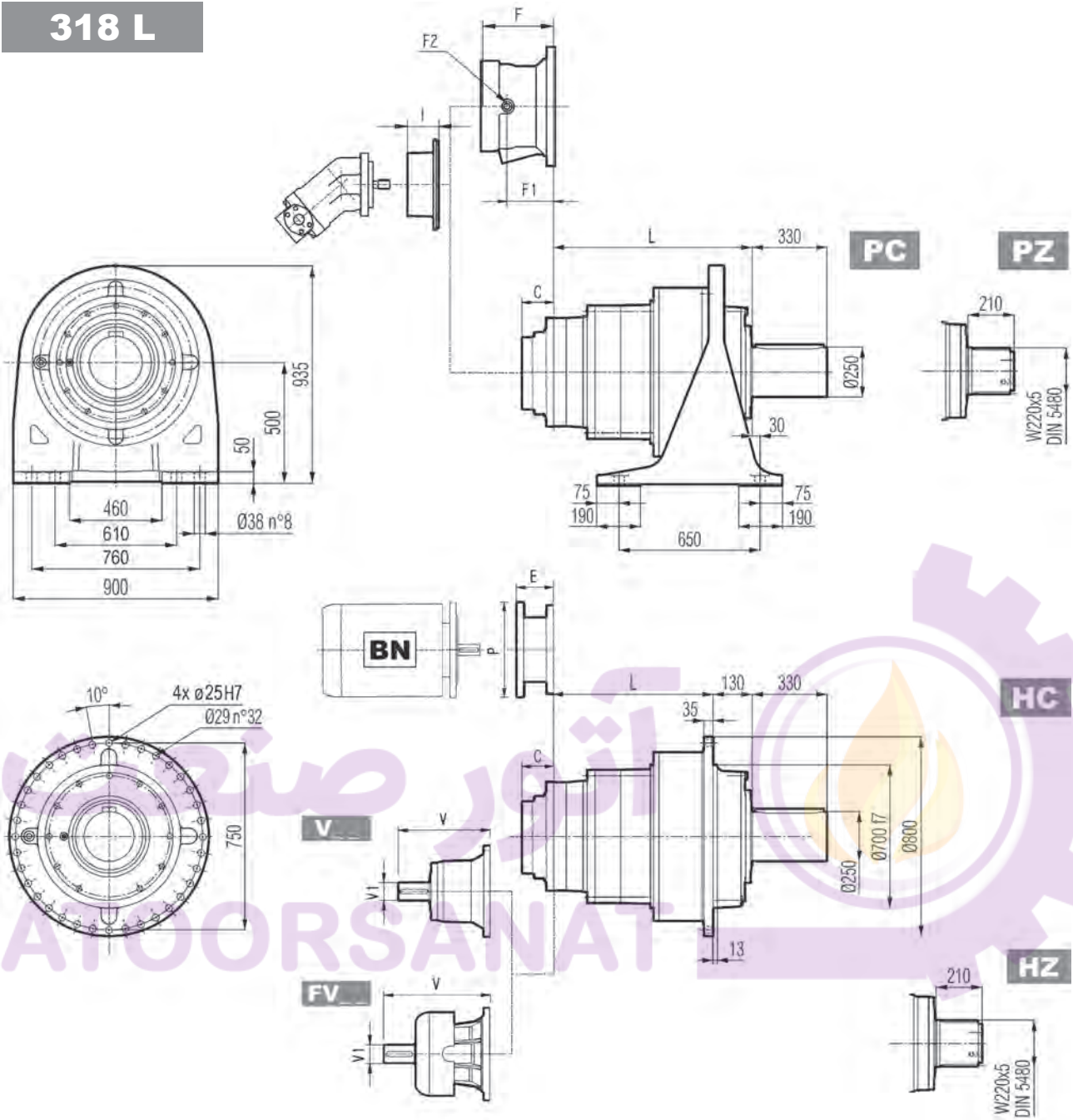
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $F_{h1} = n_1 \cdot h$ | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|---|------------------------|--------|--------|---------|---------|---------|----------|
|   |                        | $fh_1$ | 1      | 0.79    | 0.63    | 0.50    | 0.37     |



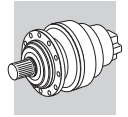
# 318 L



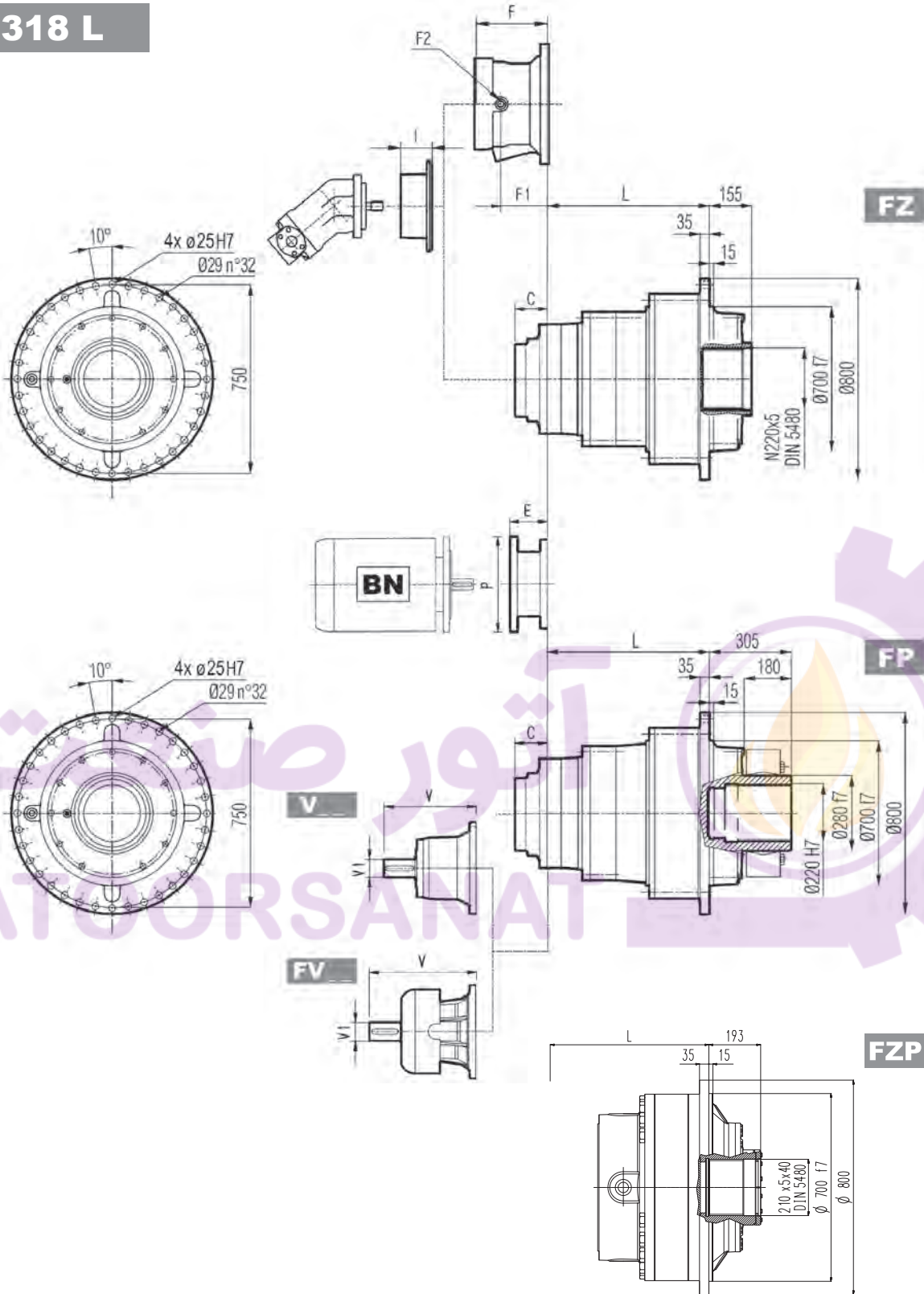
|        | L       |         |          |     | Kg      |         |          |      |
|--------|---------|---------|----------|-----|---------|---------|----------|------|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 318 L1 | 332     | 202     | 202      | 202 | 1250    | 950     | 800      | 830  |
| 318 L2 | 677     | 547     | 547      | 547 | 1500    | 1200    | 1050     | 1080 |
| 318 L3 | 889     | 759     | 759      | 759 | 1600    | 1300    | 1150     | 1180 |
| 318 L4 | 1022    | 892     | 892      | 892 | 1650    | 1350    | 1200     | 1230 |

|        | V   |     |     | V1  |    |    | V   |    |    | V1  |    |    | C   | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|--------|-----|-----|-----|-----|----|----|-----|----|----|-----|----|----|-----|-------|-----|-----|-----|-------|------|-------|----|
|        | V   | V1  | Kg  | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |     |       |     |     |     |       |      |       |    |
| 318 L1 | —   | —   | —   | —   | —  | —  | —   | —  | —  | —   | —  | —  | 208 | G     | —   | —   | —   | —     | —    | —     | —  |
| 318 L2 | 556 | 120 | 125 | —   | —  | —  | —   | —  | —  | —   | —  | —  | 116 | E     | —   | —   | —   | —     | —    | —     | —  |
| 318 L3 | 348 | 80  | 55  | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  | 81  | D     | 461 | 232 | 185 | 1/4 G | 6    | B     | 28 |
| 318 L4 | 315 | 80  | 35  | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51  | B     | —   | 201 | 153 | 1/4 G | 6    | B     | 28 |





318 L



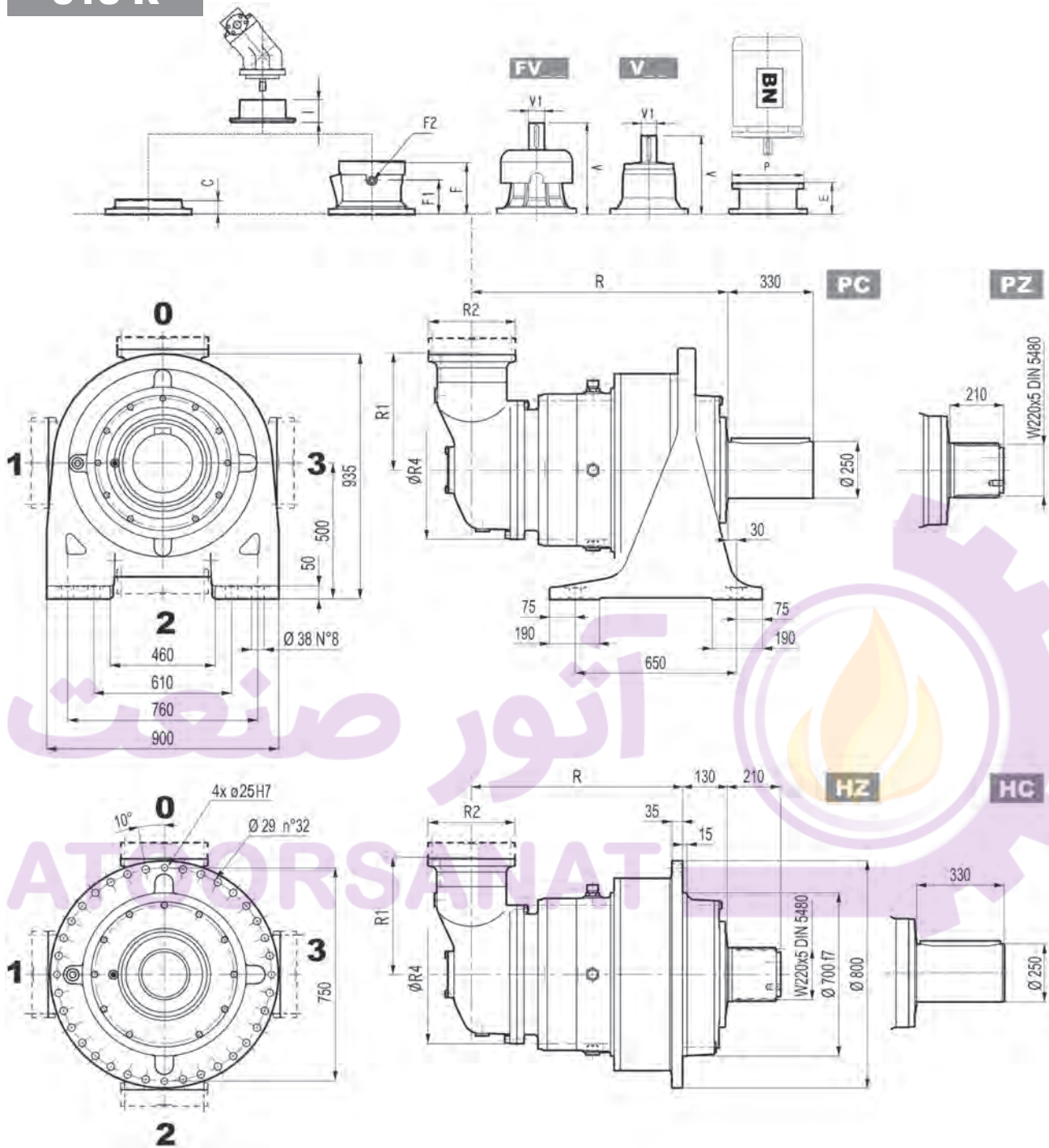
**FP**

$M_{2max} = 322000 \text{ Nm}$

|        | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   |
| 318 L3 | —    | —   | 267  | 400 | 297  | 450 | 297  | 550 |
| 318 L4 | 195  | 350 | 186  | 400 | 216  | 450 | 215  | 550 |

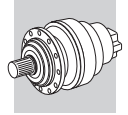


318 R

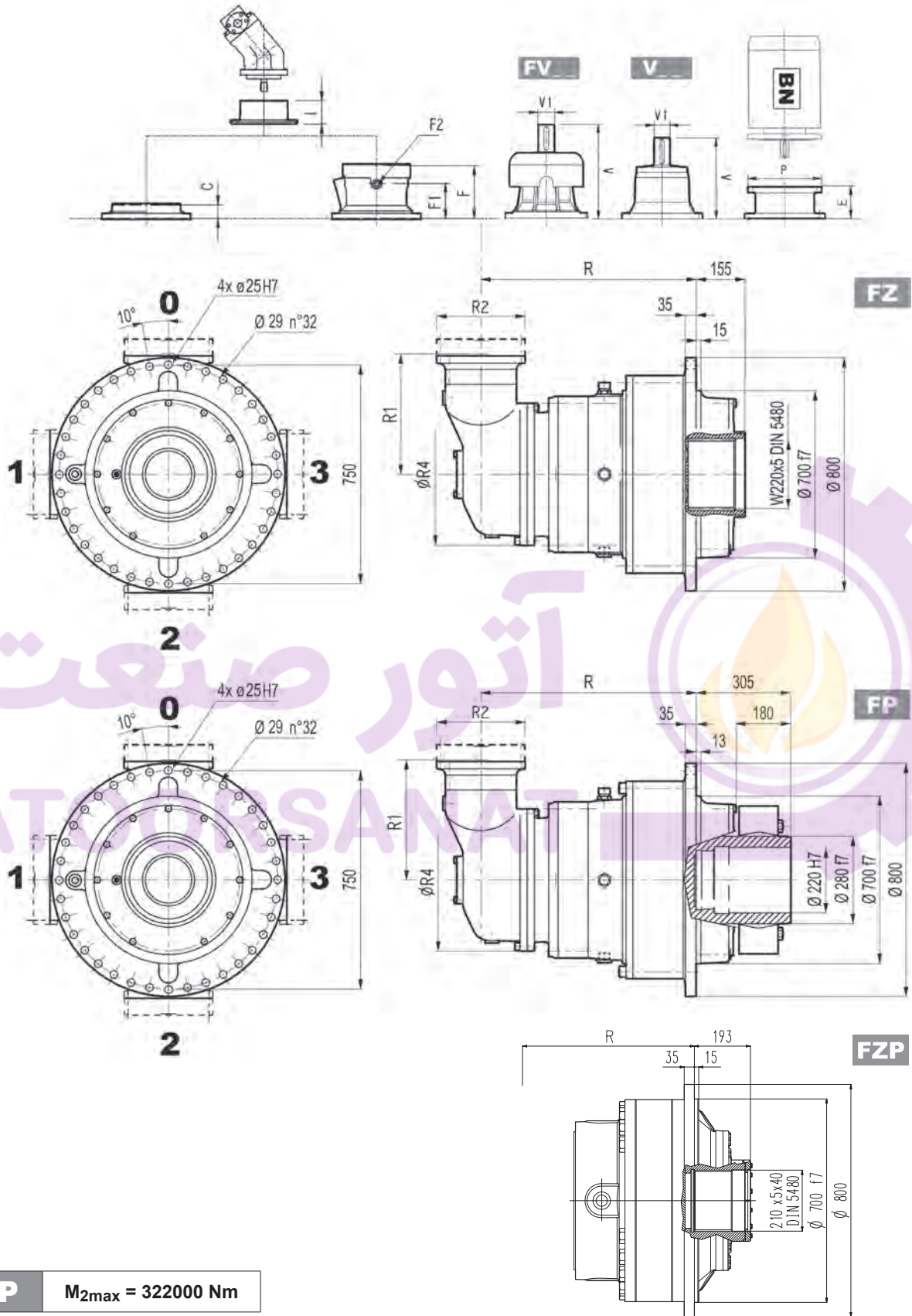


|            | R     |       |          |     | R1  | R2  | R4  | Kg    |       |          |      |
|------------|-------|-------|----------|-----|-----|-----|-----|-------|-------|----------|------|
|            | PC-PZ | HC-HZ | FZ - FZP | FP  |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP   |
| 318 R4 (B) | 1115  | 985   | 985      | 985 | 345 | 292 | 400 | 1720  | 1420  | 1270     | 1300 |
| 318 R4 (C) | 1115  | 985   | 985      | 985 | 390 | 292 | 480 | 1730  | 1430  | 1280     | 1310 |

|            | V   |    |    | V |    |    | V   |    |    | C | Input | I | F  | F1 | F2  | Type | Input | Kg    |   |    |    |
|------------|-----|----|----|---|----|----|-----|----|----|---|-------|---|----|----|-----|------|-------|-------|---|----|----|
|            | V   | V1 | Kg | V | V1 | Kg | V   | V1 | Kg |   |       |   |    |    |     |      |       |       |   |    |    |
| 318 R4 (B) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 195 | 147  | 1/4 G | 6     | B | 28 |    |
| 318 R4 (C) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 461 | 195  | 147   | 1/4 G | 6 | B  | 28 |



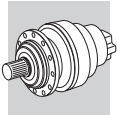
# 318 R



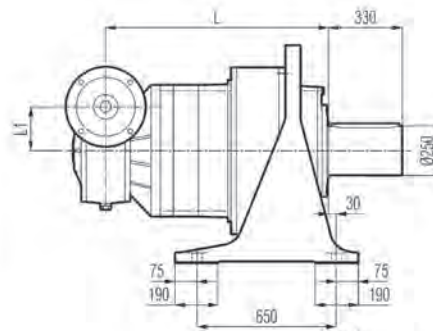
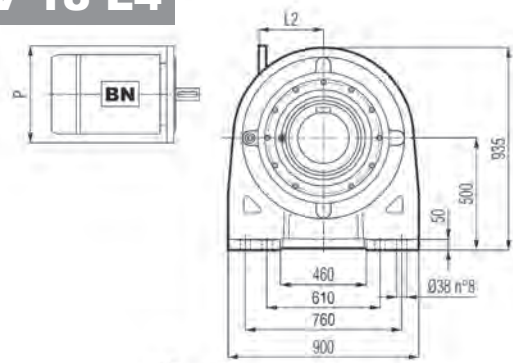
**FP**  $M_{2max} = 322000 \text{ Nm}$

|            | P132 |   | P160 |   | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|---|------|---|------|-----|------|-----|------|-----|------|-----|
|            | E    | P | E    | P | E    | P   | E    | P   | E    | P   | E    | P   |
| 318 R4 (B) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 318 R4 (C) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |

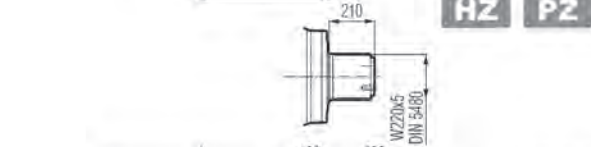
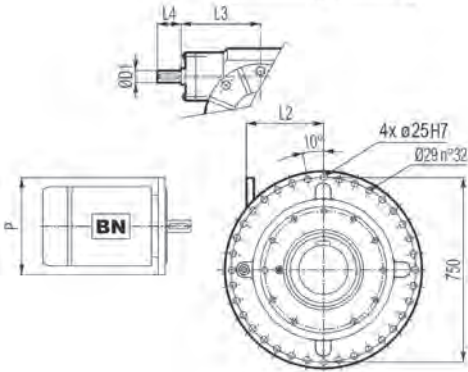




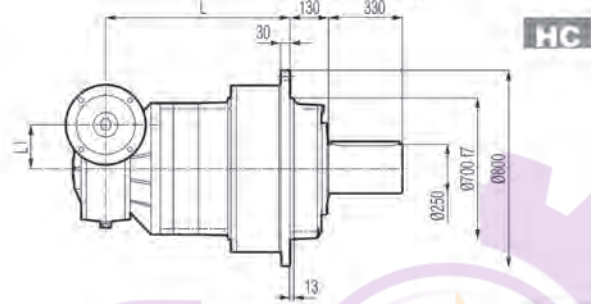
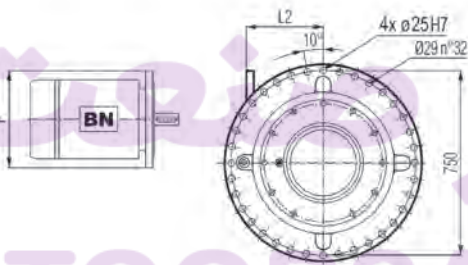
**3/V 18 L4**



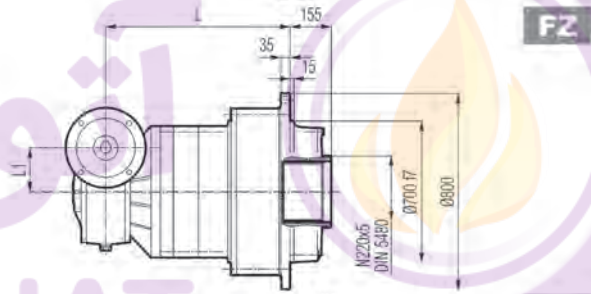
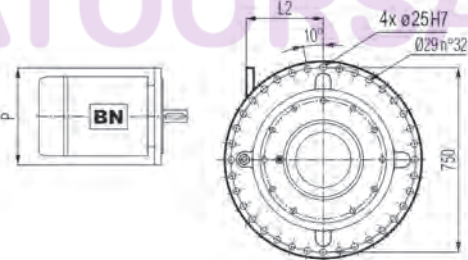
**PC**



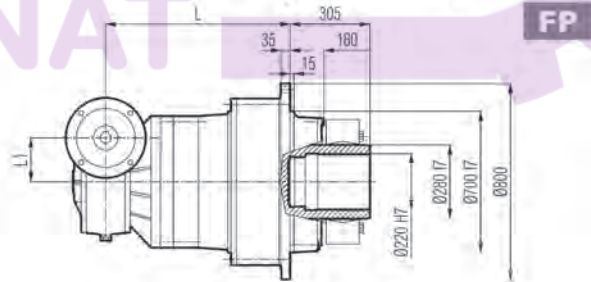
**HZ PZ**



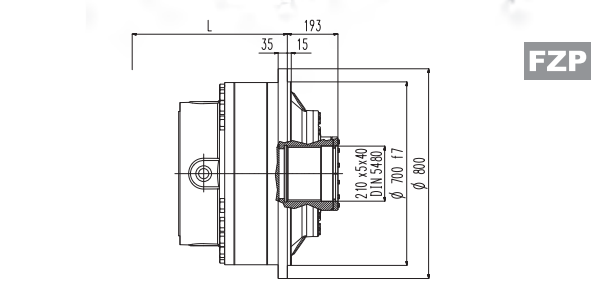
**HC**



**FZ**



**FP**



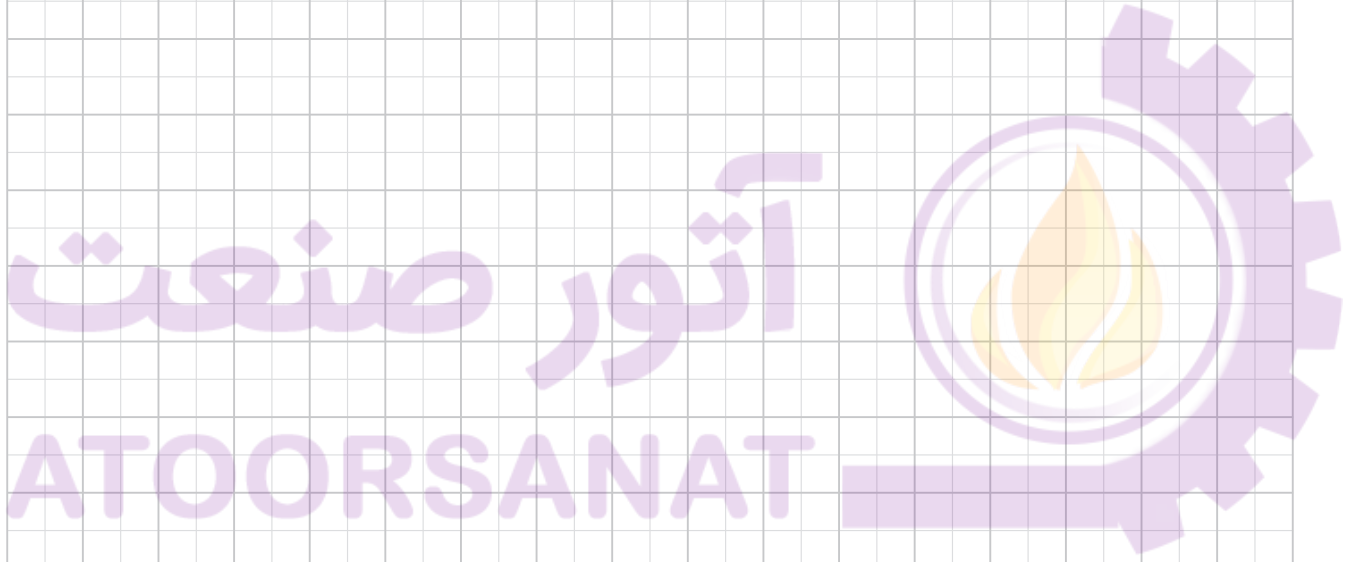
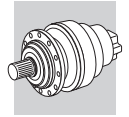
**FZP**

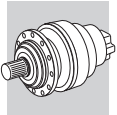
**FP**  $M_{2max} = 322000 \text{ Nm}$

|           | L       |         |          |     | L1  | D1 | L3  | L4  | Kg |         |         |          |      |
|-----------|---------|---------|----------|-----|-----|----|-----|-----|----|---------|---------|----------|------|
|           | PC - PZ | HC - HZ | FZ - FZP | FP  |     |    |     |     |    | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 3/V 18 L4 | 1114    | 984     | 984      | 984 | 210 | 48 | 230 | 110 |    | 1810    | 1510    | 1360     | 1390 |

|           | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/V 18 L4 | 485  | 300 | 460  | 350 | 460  | 350 | 485  | 400 | 490  | 450 |



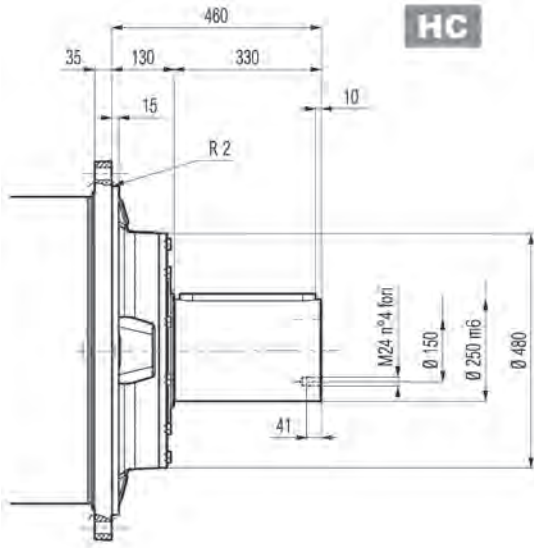




318 L

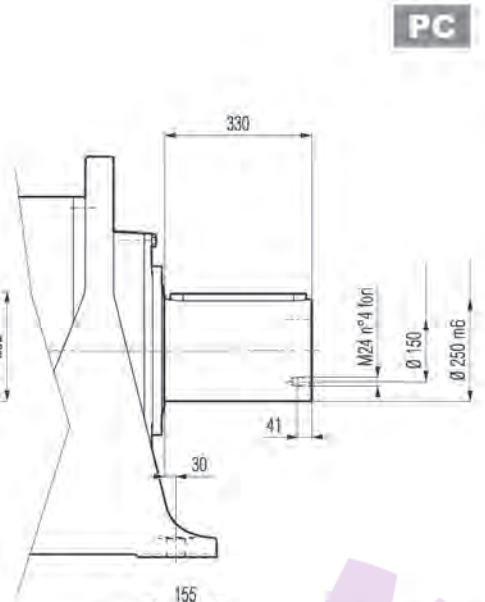
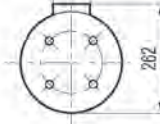
318 R

3/V 18 L4

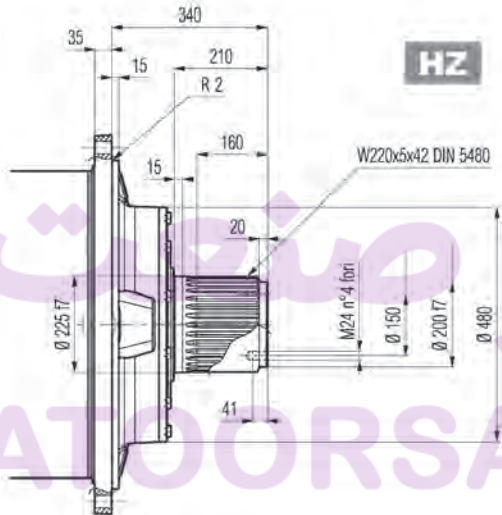


HC

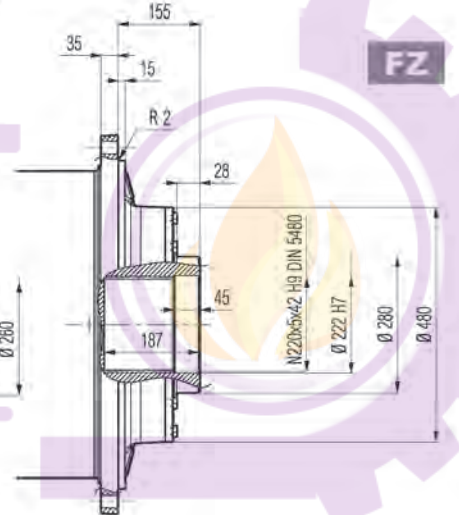
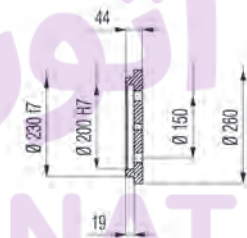
A56x32x310  
UNI 6604  
DIN 6885



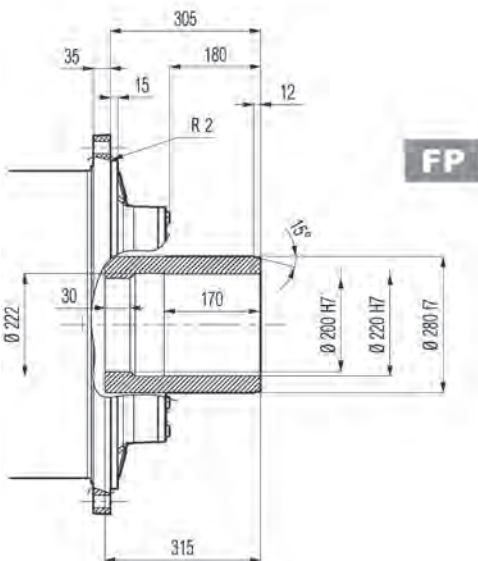
PC



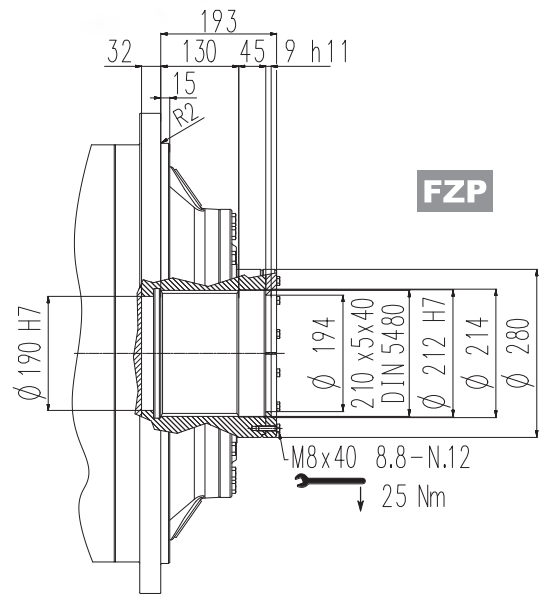
HZ



FZ

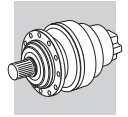


FP



FZP

FP  $M_{2max} = 322000 \text{ Nm}$

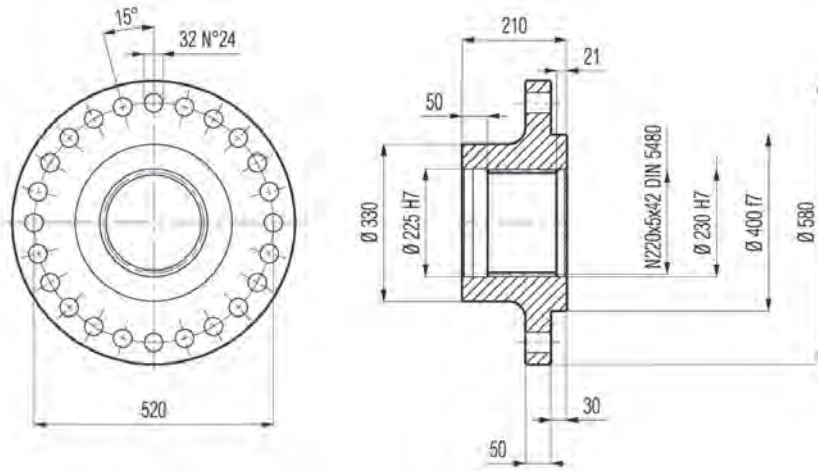
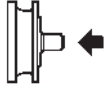


318 L

318 R

3/V 18 L4

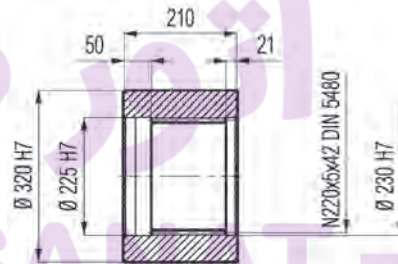
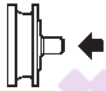
Flange



W0A

Material: Steel C40

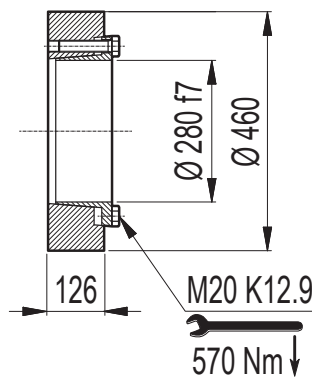
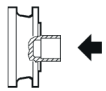
Sleeve coupling



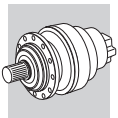
M0A

Material: Steel C40

Shrink disc

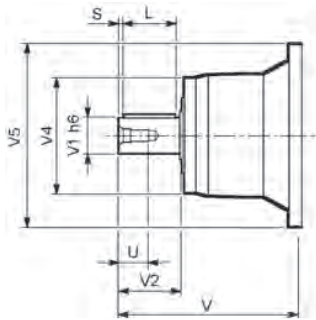


G0A

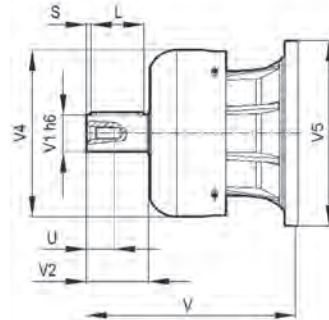


318 L

318 R



V \_\_



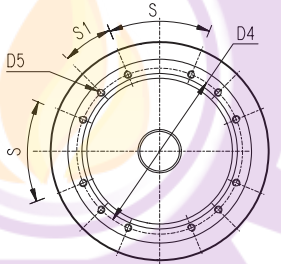
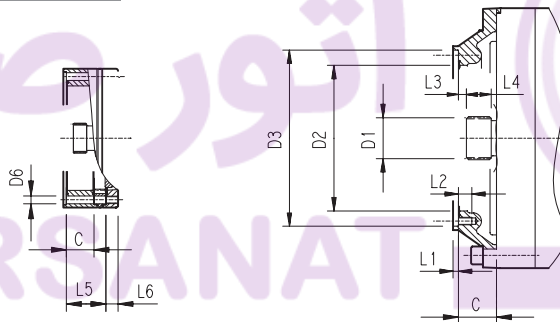
FV \_\_



|                |       | V   | V1  | V2  | V4    | V5  | A  | B  | F   | L   | S   | D   | U  |
|----------------|-------|-----|-----|-----|-------|-----|----|----|-----|-----|-----|-----|----|
| 318 L2         | V15B  | 556 | 120 | 210 | 230   | 542 | 32 | 18 | 127 | 180 | 15  | M24 | 50 |
| 318 L3         | V11B  | 348 | 80  | 130 | 200   | 428 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | FV11B | 456 | 80  | 130 | 347.5 | 428 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
| 318 L4         | V07B  | 315 | 80  | 130 | 200   | 345 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80  | 130 | 347.5 | 348 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60  | 105 | 155   | 345 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
|                | FV07A | 363 | 60  | 105 | 309   | 348 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
| 318 R4 (B) (C) | V06B  | 307 | 60  | 105 | 155   | 292 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357 | 60  | 105 | 309   | 292 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |

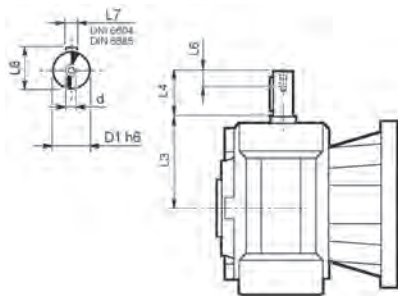
318 L

318 R



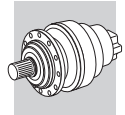
|                |      | C   | D1              | D2  | D3     | D4  | D5        | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|-----------------|-----|--------|-----|-----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 318 L1         |      |     |                 |     |        |     |           |    |    |    |     |    |    |    |     |       |       |
| 318 L2         | V9AE | 116 | 100x94 DIN 5482 | 340 | 412 H7 | 390 | M16 n° 18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20°   | E     |
| 318 L3         | V9AD | 81  | 80x74 DIN 5482  | 270 | 335 H7 | 314 | M16 n° 8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30°   | D     |
| 318 L4         | V9AB | 51  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M16 n° 12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 318 R4 (B) (C) | V9AB | 45  | 58x53 DIN 5482  | 195 | 236 H7 | 222 | M10 n° 10 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |

3/V 18 L4



|              | D1 h6 | L3  | L4  | L6 | L7 | L8   | d   |
|--------------|-------|-----|-----|----|----|------|-----|
| 3/V 18 L4_HS | 48    | 230 | 110 | 40 | 14 | 51.5 | M16 |



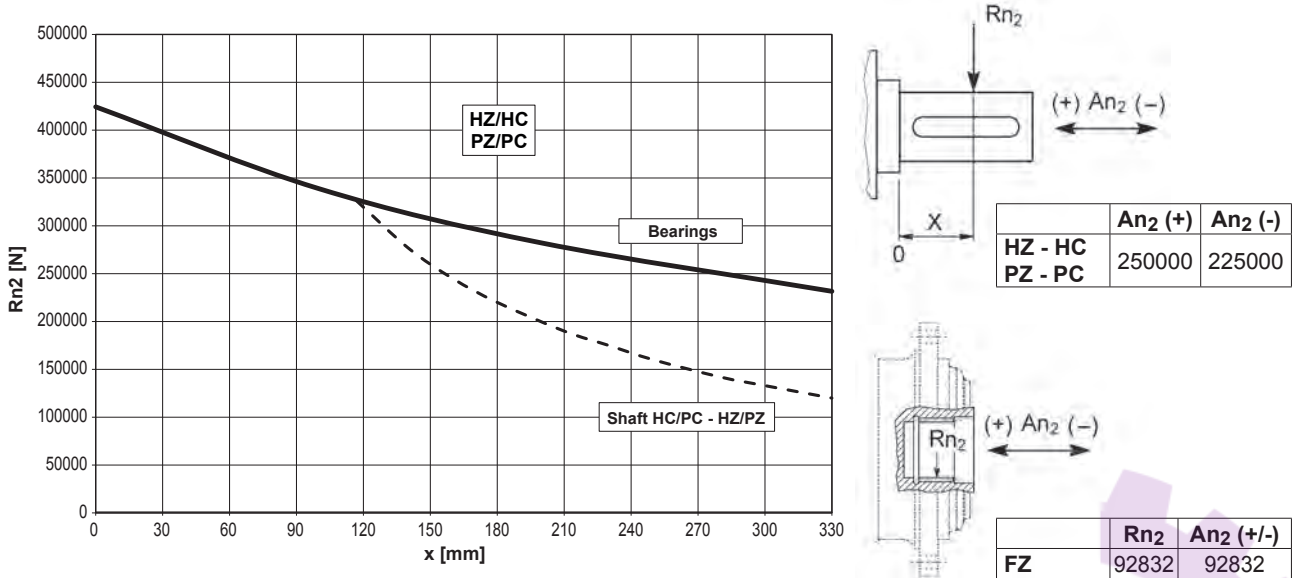


318 L

318 R

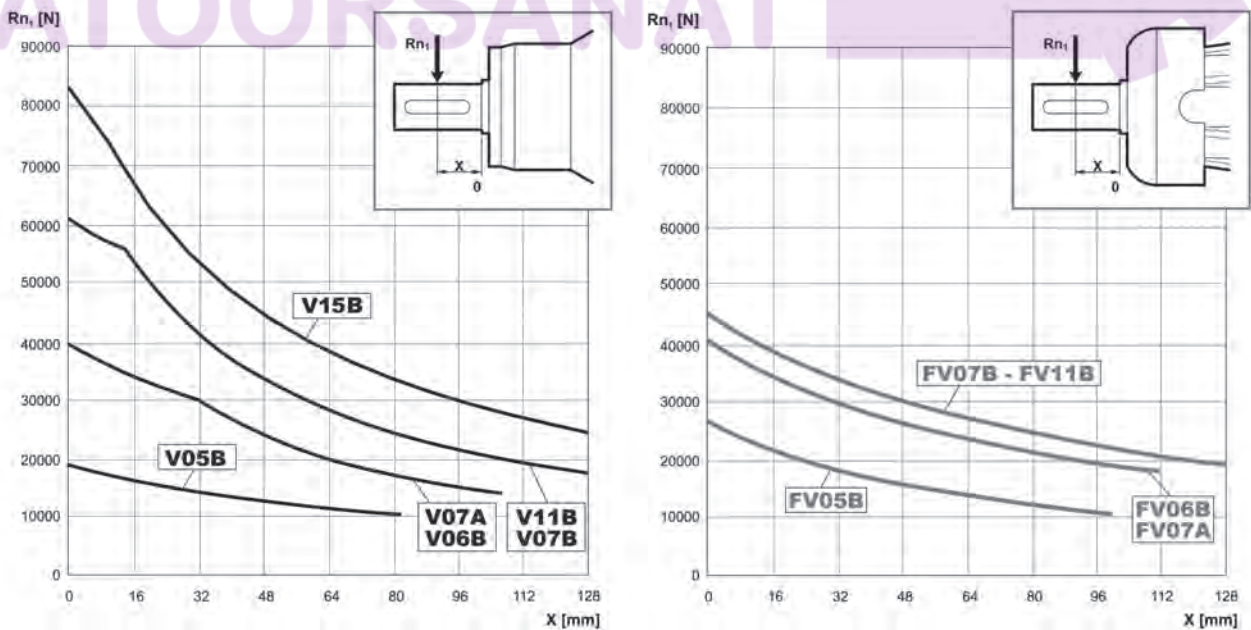
3/V 18 L4

Permissible radial and axial loads on output shaft with  $F_{h2} : n_2 \cdot h = 100000$



| Load corrective factor $f_{h2}$<br>on shafts | $F_{h2} = n_2 \cdot h$ | 10000    | 25000      | 50000 | 100000 | 500000 | 1000000 |
|--|------------------------|----------|------------|-------|--------|--------|---------|
|  |                        | $f_{h2}$ | FZ<br>2.15 | 1.59  | 1.26   | 1.00   | 0.58    |
|  | HC - PC                | 1.96     | 1.52       | 1.23  | 1.00   | 0.62   | 0.50    |
|  | HZ - PZ                | 1.15     | 1.00       | 1.00  | 1.00   | 0.62   | 0.50    |

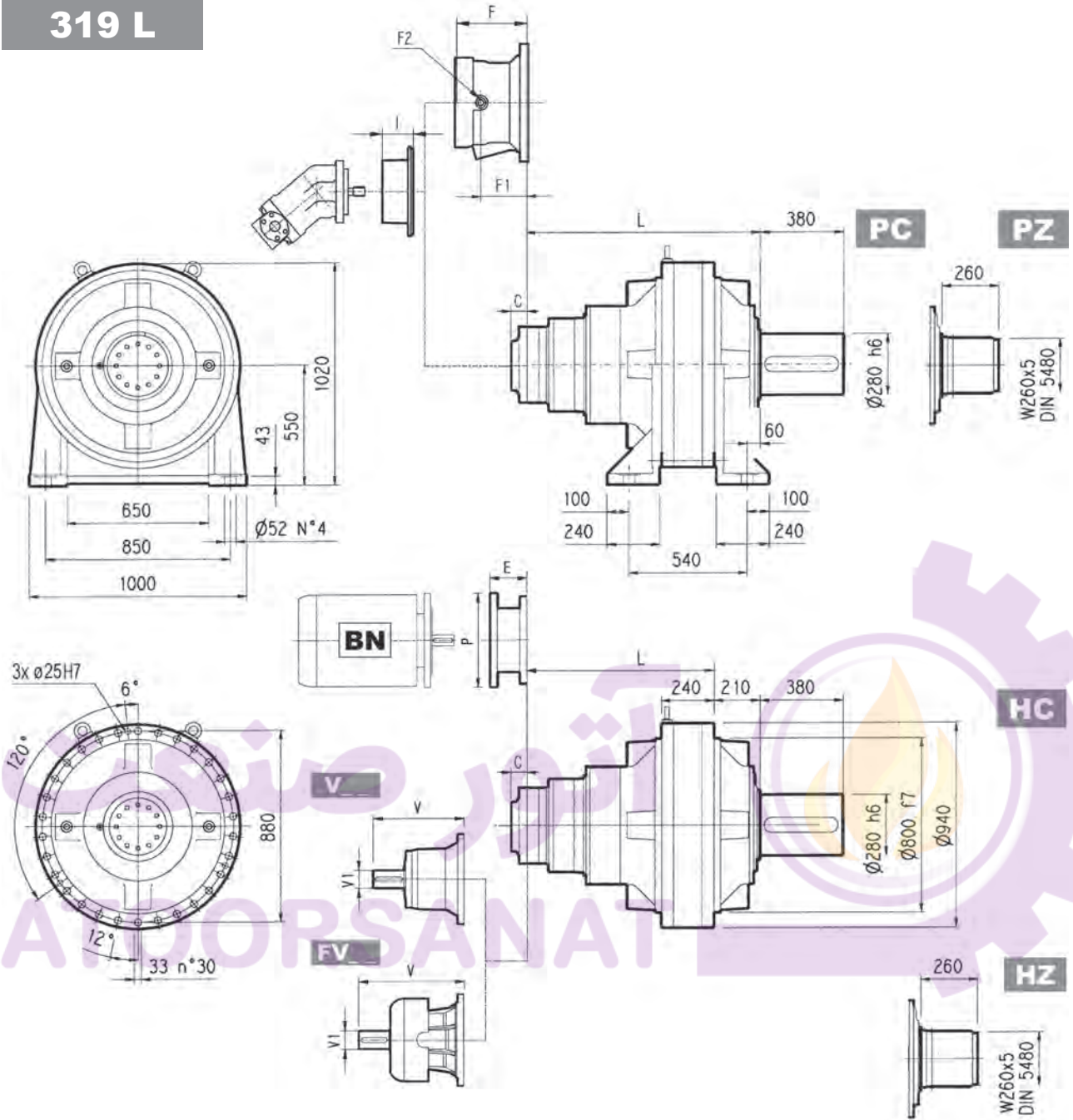
Permissible radial loads on input shaft with  $F_{h1} : n_1 \cdot h = 250000$



| Load corrective factor $f_{h1}$<br>on shafts | $F_{h1} = n_1 \cdot h$ | 250000   | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|--|------------------------|----------|--------|---------|---------|---------|----------|
|  |                        | $f_{h1}$ | 1      | 0.79    | 0.63    | 0.50    | 0.37     |

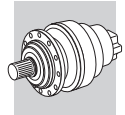


# 319 L

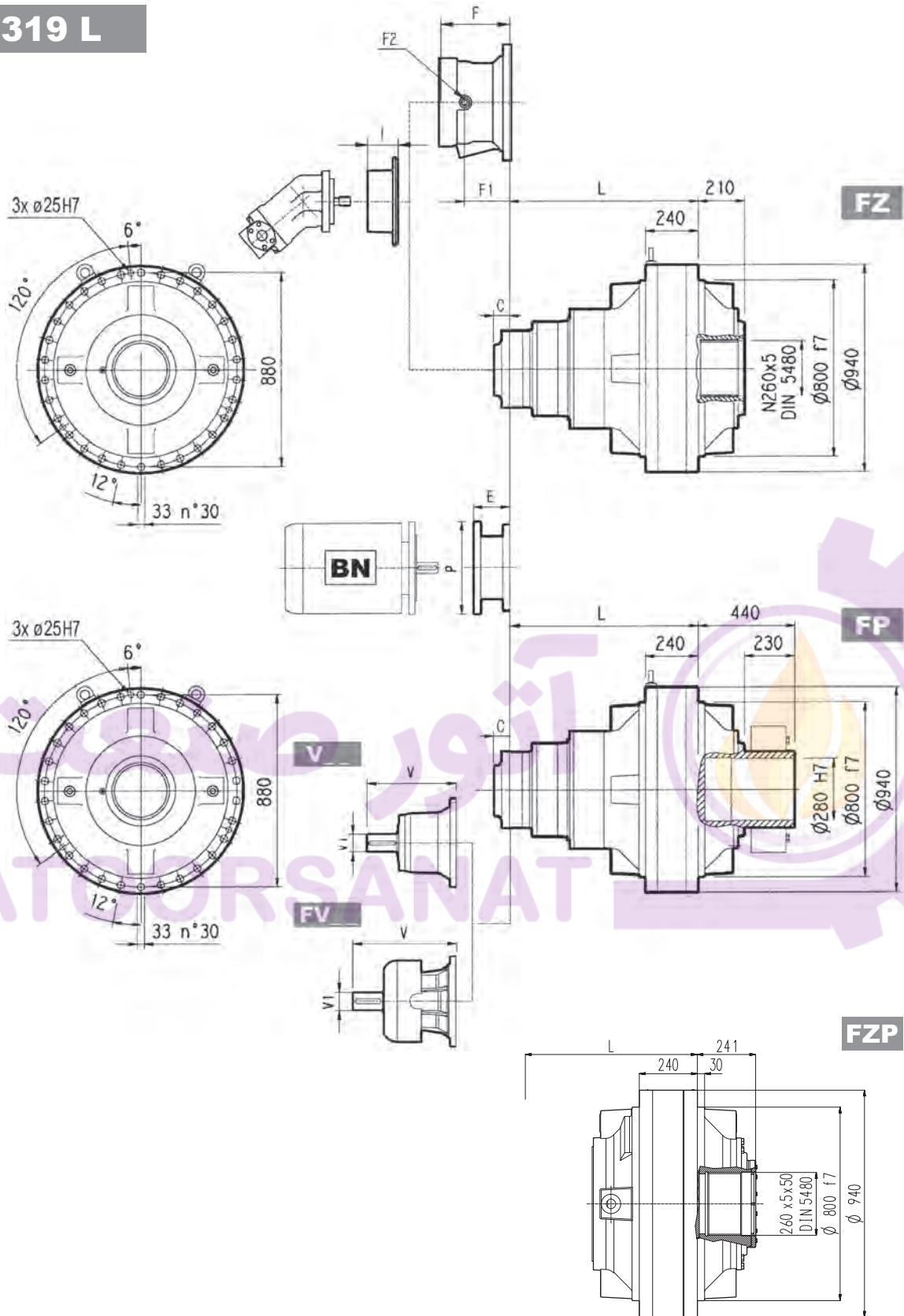


|        | L       |         |          |     | Kg      |         |          |      |
|--------|---------|---------|----------|-----|---------|---------|----------|------|
|        | PC - PZ | HC - HZ | FZ - FZP | FP  | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 319 L1 | 395     | 185     | 185      | 185 | 2100    | 1800    | 1700     | 1700 |
| 319 L2 | 778     | 568     | 568      | 568 | 2350    | 2050    | 1950     | 1950 |
| 319 L3 | 990     | 780     | 780      | 780 | 2435    | 2135    | 2035     | 2035 |
| 319 L4 | 1123    | 913     | 913      | 913 | 2480    | 2180    | 2080     | 2080 |

|        | V   |     |     | V1  |    |    | V   |    |    | V1  |    |    | C   | Input | I   | F   |     |       | Type | Input | Kg |
|--------|-----|-----|-----|-----|----|----|-----|----|----|-----|----|----|-----|-------|-----|-----|-----|-------|------|-------|----|
|        | V   | V1  | Kg  | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |     |       |     | F   | F1  | F2    |      |       |    |
| 319 L1 | —   | —   | —   | —   | —  | —  | —   | —  | —  | —   | —  | —  | 245 | G     | —   | —   | —   | —     | —    | —     | —  |
| 319 L2 | 556 | 120 | 125 | —   | —  | —  | —   | —  | —  | —   | —  | —  | 116 | E     | —   | —   | —   | —     | —    | —     | —  |
| 319 L3 | 348 | 80  | 55  | —   | —  | —  | 456 | 80 | 85 | —   | —  | —  | 81  | D     | 461 | 232 | 185 | 1/4 G | 6    | B     | 28 |
| 319 L4 | 315 | 80  | 35  | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51  | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |



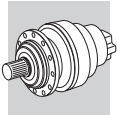
319 L



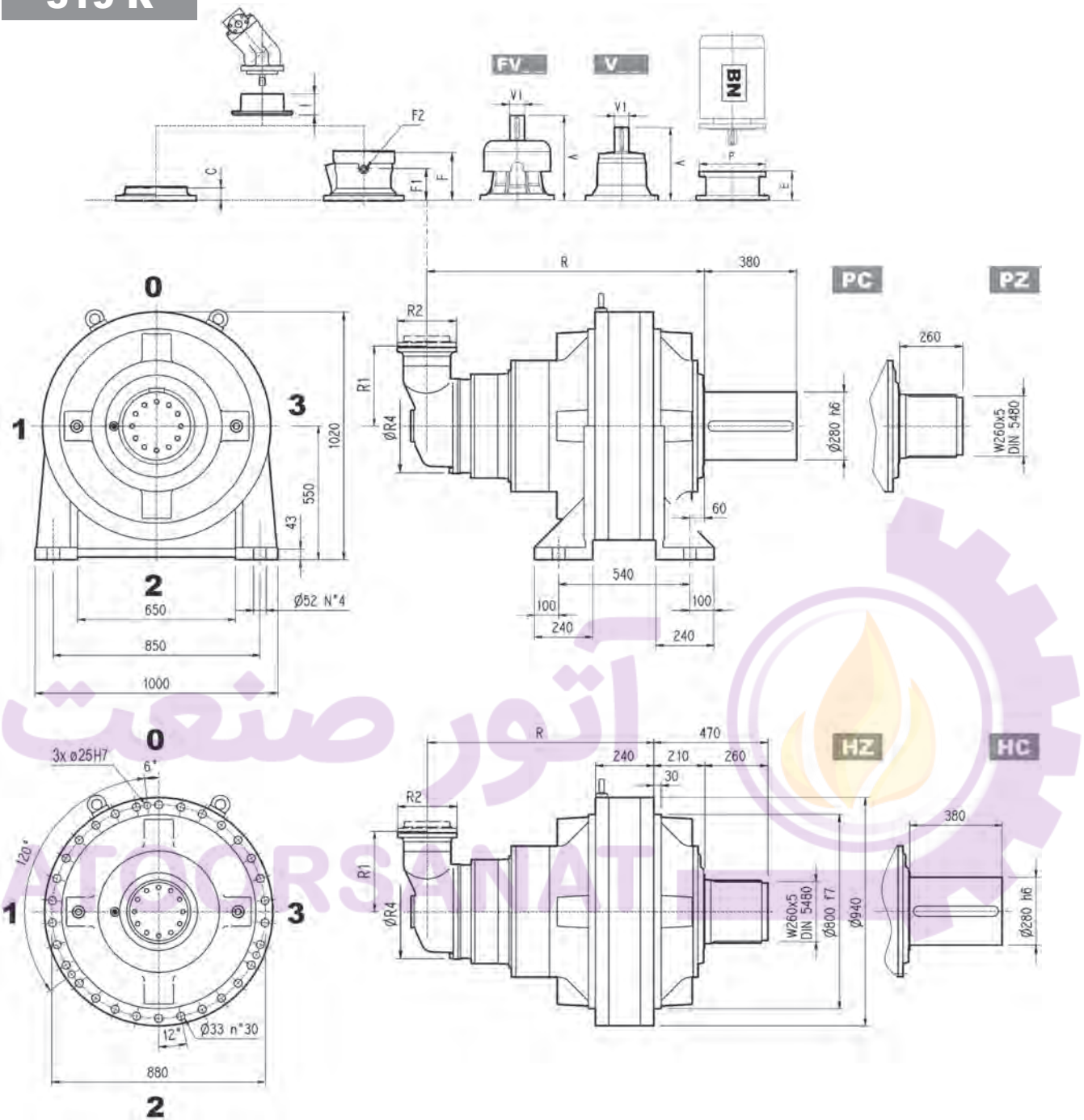
**FP**  $M_{2max} = 480000 \text{ Nm}$

|        | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   |
| 319 L3 | —    | —   | 267  | 400 | 297  | 450 | 297  | 550 |
| 319 L4 | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |





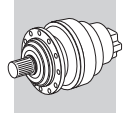
**319 R**



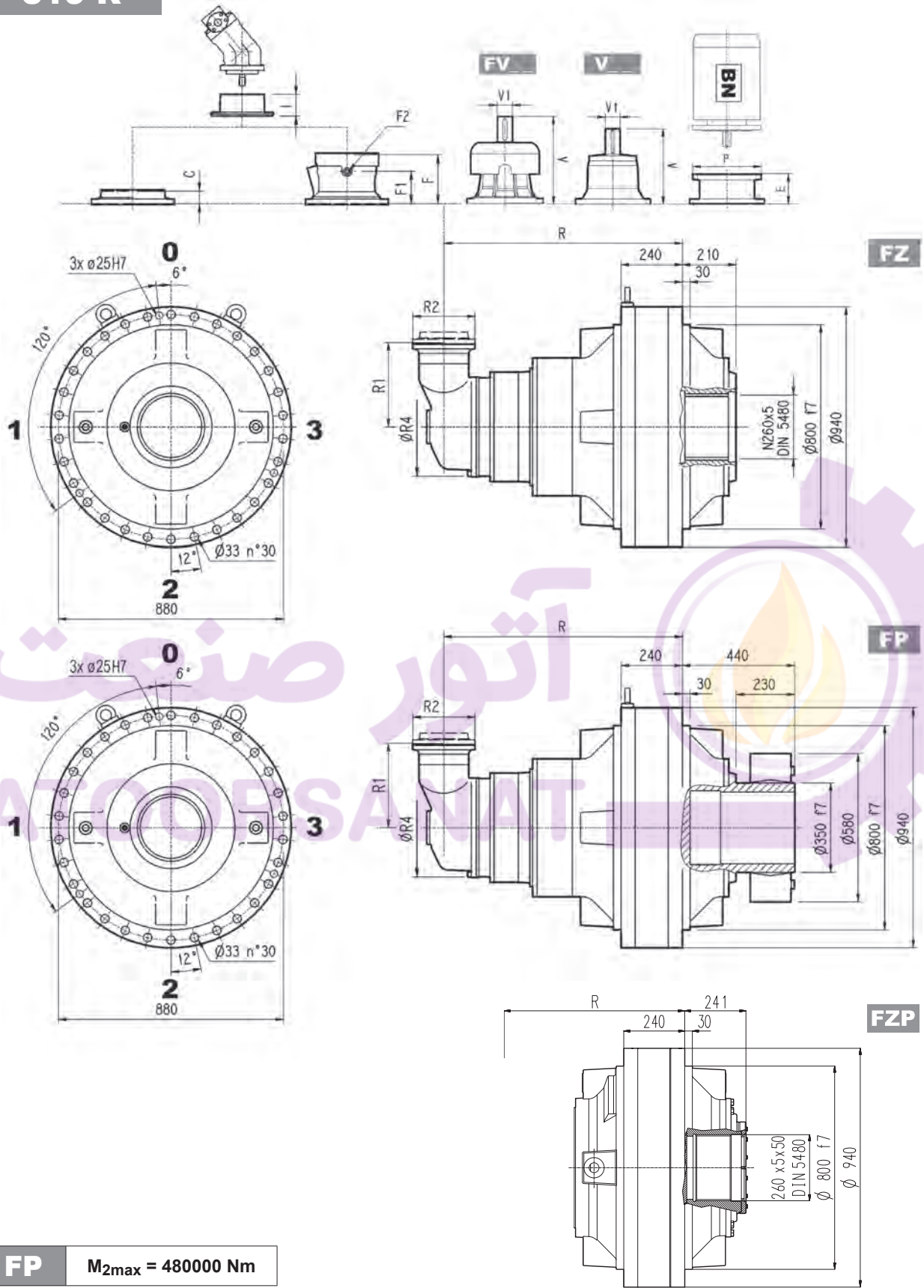
|                   | R     |       |          |      | R1  | R2  | R4  | Kg    |       |          |      |
|-------------------|-------|-------|----------|------|-----|-----|-----|-------|-------|----------|------|
|                   | PC-PZ | HC-HZ | FZ - FZP | FP   |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP   |
| <b>319 R4 (B)</b> | 1215  | 1005  | 1005     | 1005 | 345 | 292 | 400 | 2560  | 2260  | 2160     | 2160 |
| <b>319 R4 (C)</b> | 1215  | 1005  | 1005     | 1005 | 390 | 292 | 480 | 2580  | 2280  | 2180     | 2180 |

|                   | V   |    |    | Kg |    |    | V   |    |    | Kg |    |    | C  | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|-------------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|-------|-----|-----|-----|-------|------|-------|----|
|                   | V   | V1 | Kg | V  | V1 | Kg | V   | V1 | Kg | V  | V1 | Kg |    |       |     |     |     |       |      |       |    |
| <b>319 R4 (B)</b> | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | 461 | 195 | 147 | 1/4 G | 6    | B     | 28 |
| <b>319 R4 (C)</b> | 307 | 60 | 23 | —  | —  | —  | 357 | 60 | 28 | —  | —  | —  | 45 | B     | 461 | 195 | 147 | 1/4 G | 6    | B     | 28 |





319 R

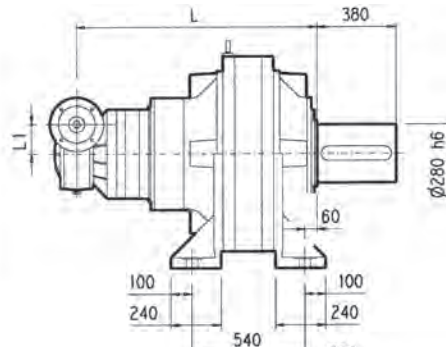
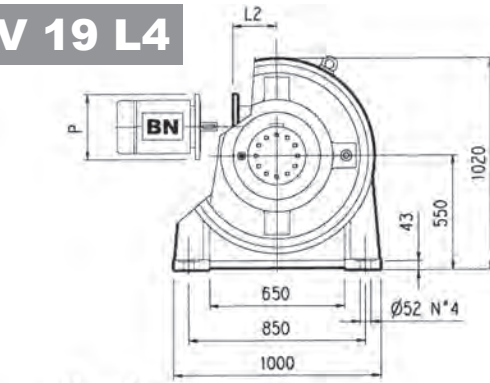


**FP**  $M_{2max} = 480000 \text{ Nm}$

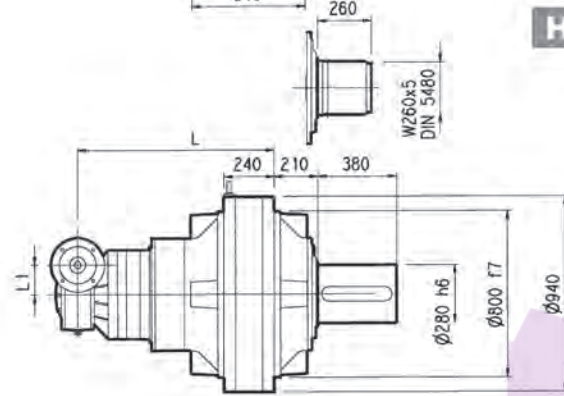
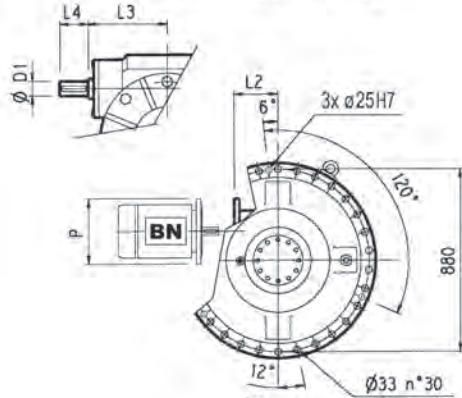
|            | P132 |   | P160 |   | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|---|------|---|------|-----|------|-----|------|-----|------|-----|
|            | E    | P | E    | P | E    | P   | E    | P   | E    | P   | E    | P   |
| 319 R4 (B) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 319 R4 (C) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |



**3/V 19 L4**



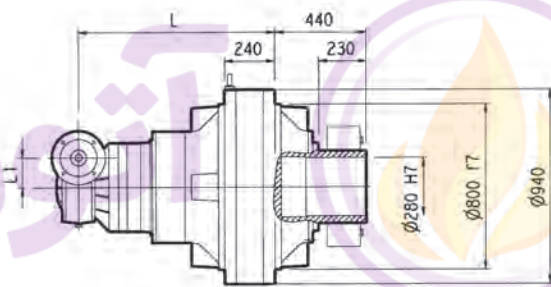
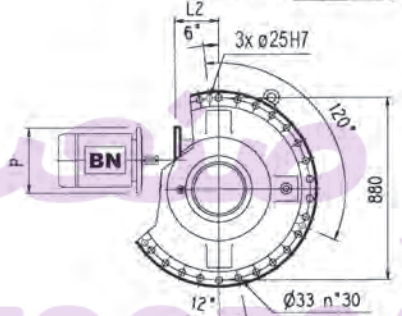
**PC**



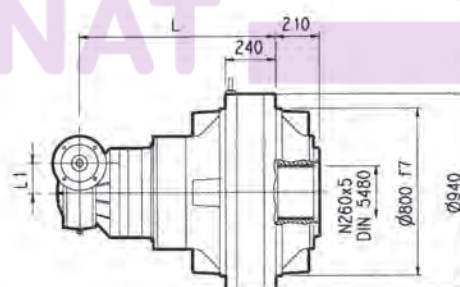
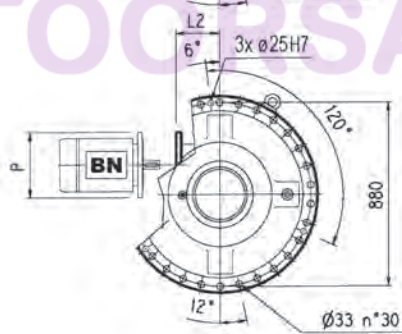
**HZ**

**PZ**

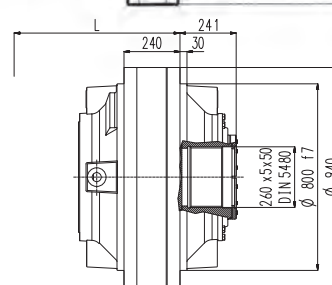
**HC**



**FP**



**FZ**

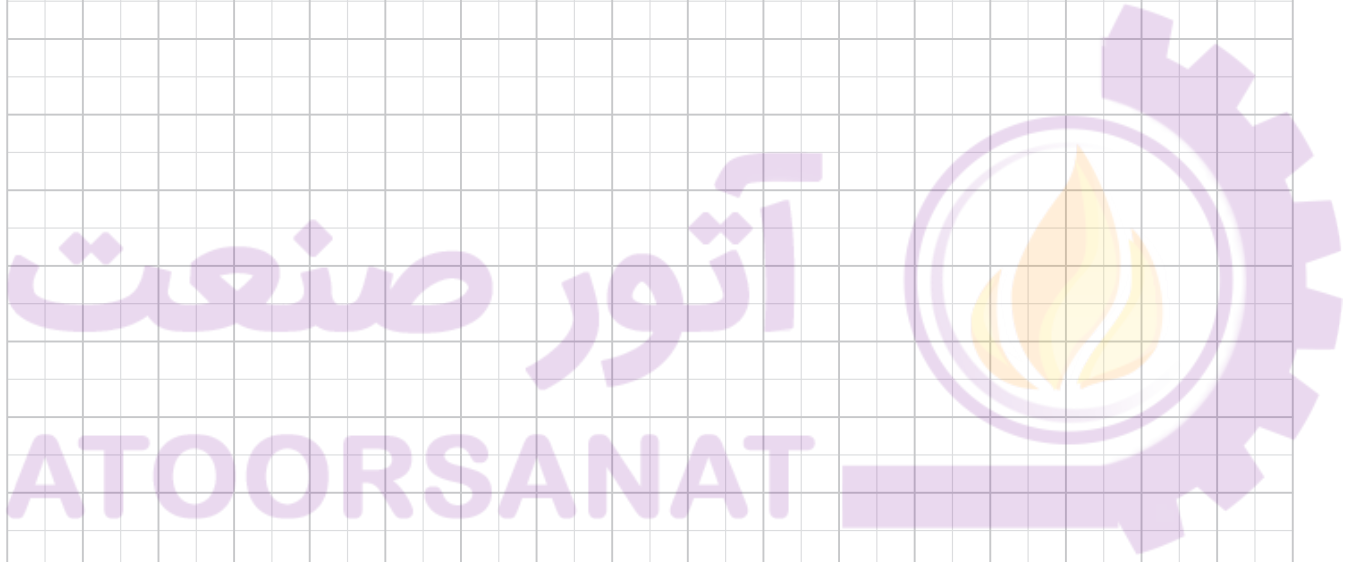
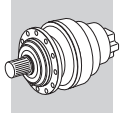


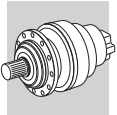
**FZP**

**FP** M<sub>2max</sub> = 480000 Nm

|                  | L       |         |          |      | L1  | D1 | L3  | L4  | Kg |         |         |          |      |
|------------------|---------|---------|----------|------|-----|----|-----|-----|----|---------|---------|----------|------|
|                  | PC - PZ | HC - HZ | FZ - FZP | FP   |     |    |     |     |    | PC - PZ | HC - HZ | FZ - FZP | FP   |
| <b>3/V 19 L4</b> | 1210    | 1000    | 1000     | 1000 | 210 | 48 | 230 | 110 |    | 2650    | 2350    | 2250     | 2250 |

|                  | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|------------------|------|-----|------|-----|------|-----|------|-----|------|-----|
|                  | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| <b>3/V 19 L4</b> | 485  | 300 | 460  | 350 | 460  | 350 | 485  | 400 | 490  | 450 |





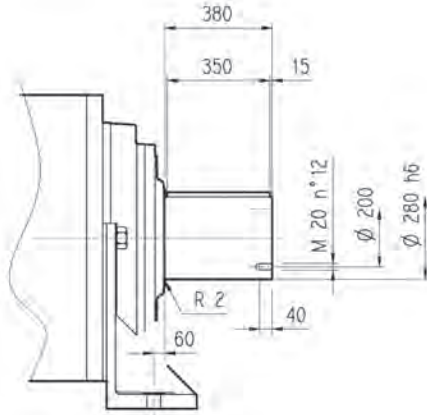
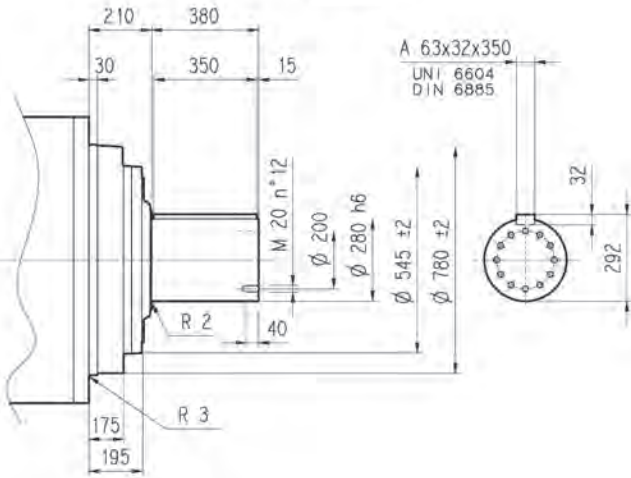
**319 L**

**319 R**

**3/V 19 L4**

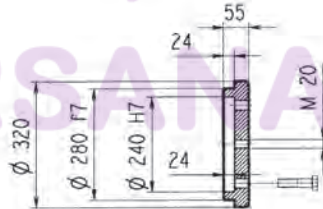
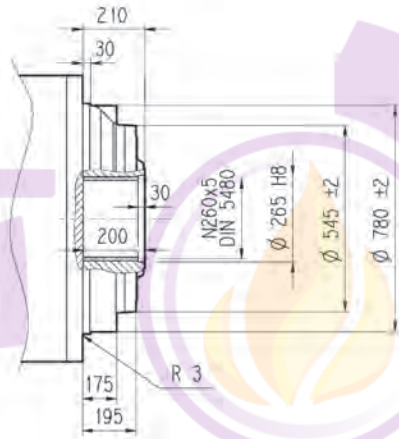
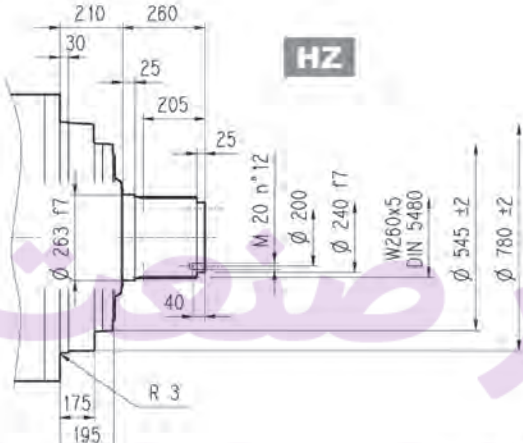
**HC**

**PC**



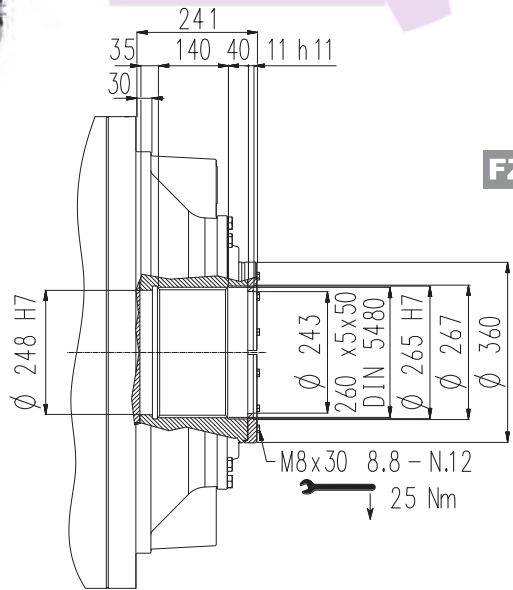
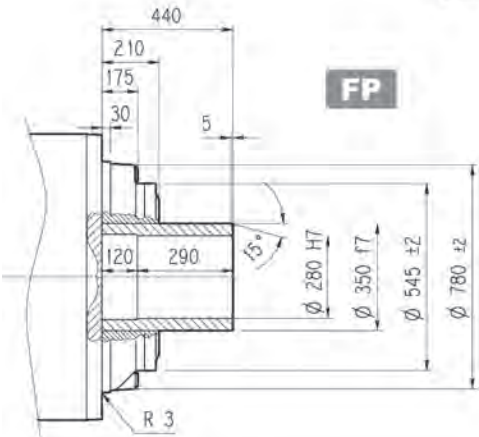
**HZ**

**FZ**



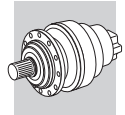
**FP**

**FZP**



**FP**  $M_{2max} = 480000 \text{ Nm}$





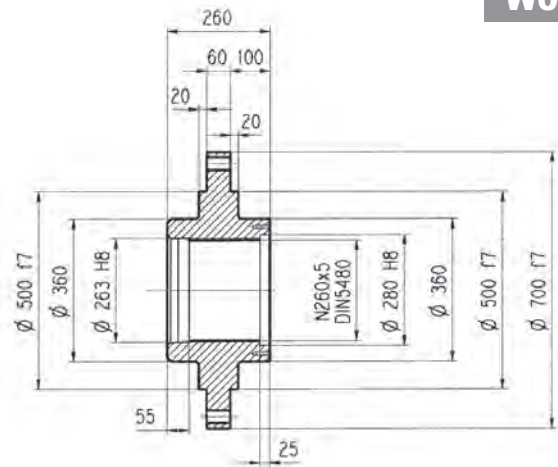
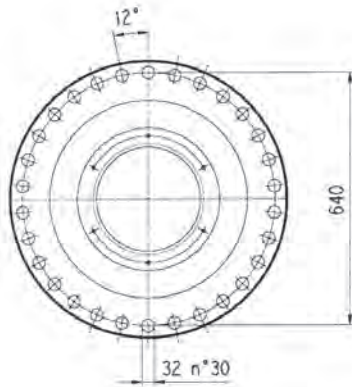
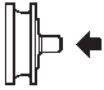
319 L

319 R

3/V 19 L4

Flange

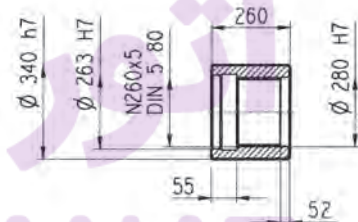
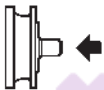
W0A



Material: Steel C40

Sleeve coupling

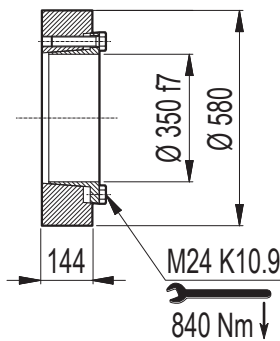
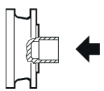
M0A



Material: Steel 16CrNi4

Shrink disc

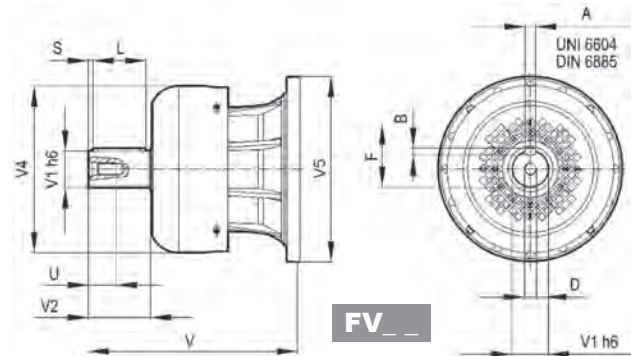
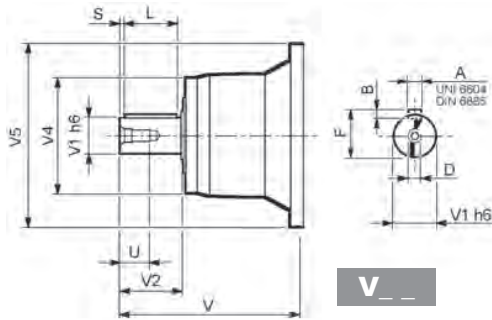
G0A





319 L

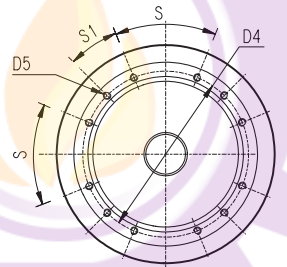
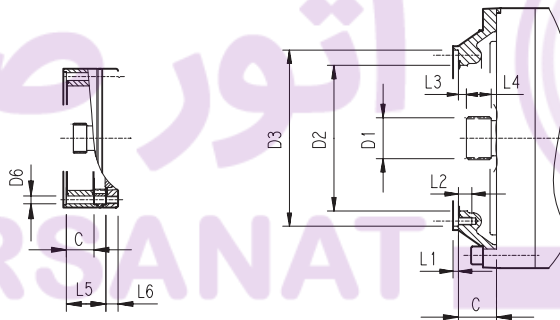
319 R



|                |       | V   | V1  | V2  | V4    | V5  | A  | B  | F   | L   | S   | D   | U  |
|----------------|-------|-----|-----|-----|-------|-----|----|----|-----|-----|-----|-----|----|
| 319 L2         | V15B  | 556 | 120 | 210 | 230   | 542 | 32 | 18 | 127 | 180 | 15  | M24 | 50 |
| 319 L3         | V11B  | 348 | 80  | 130 | 200   | 428 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | FV11B | 456 | 80  | 130 | 347.5 | 428 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
| 319 L4         | V07B  | 315 | 80  | 130 | 200   | 345 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80  | 130 | 347.5 | 348 | 22 | 14 | 85  | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60  | 105 | 155   | 345 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
| 319 R4 (B) (C) | FV07A | 363 | 60  | 105 | 309   | 348 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
|                | V06B  | 307 | 60  | 105 | 155   | 292 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357 | 60  | 105 | 309   | 292 | 18 | 11 | 64  | 90  | 7.5 | M16 | 36 |

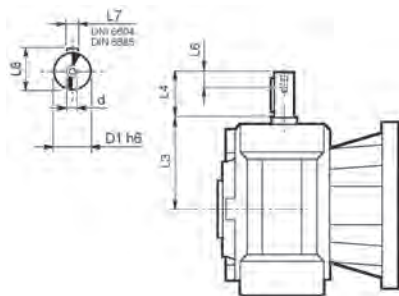
319 L

319 R

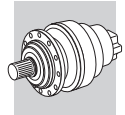


|                |      | C   | D1                | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|----------------|------|-----|-------------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 319 L1         | V9AG | 245 | 150x5x28 DIN 5480 | 444 | 474 g7 | 503 | M20 n°20 | 20 | 5  | 40 | 20  | 82 | —  | —  | 30° | 15°   | G     |
| 319 L2         | V9AE | 116 | 100x94 DIN 5482   | 340 | 412 H7 | 390 | M16 n°18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20°   | E     |
| 319 L3         | V9AD | 81  | 80x74 DIN 5482    | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30°   | D     |
| 319 L4         | V9AB | 51  | 58x53 DIN 5482    | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 319 R4         | V9AA | 37  | 40x36 DIN 5482    | 140 | 178 H7 | 165 | M12 n°8  | 11 | 4  | 18 | 9   | 18 | —  | —  | 45° | 45°   | A     |
| 319 R4 (B) (C) | V9AB | 45  | 58x53 DIN 5482    | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |

3/V 19 L4



|              | D1 h6 | L3  | L4  | L6 | L7 | L8   | d   |
|--------------|-------|-----|-----|----|----|------|-----|
| 3/V 19 L4_HS | 48    | 230 | 110 | 40 | 14 | 51.5 | M16 |

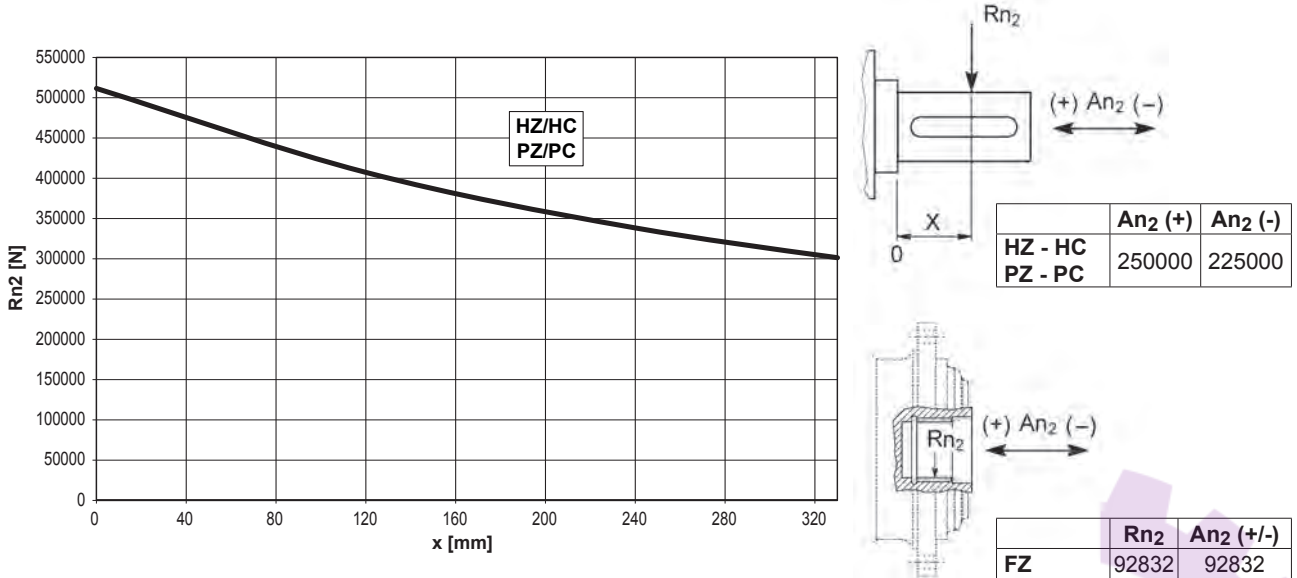


**319 L**

**319 R**

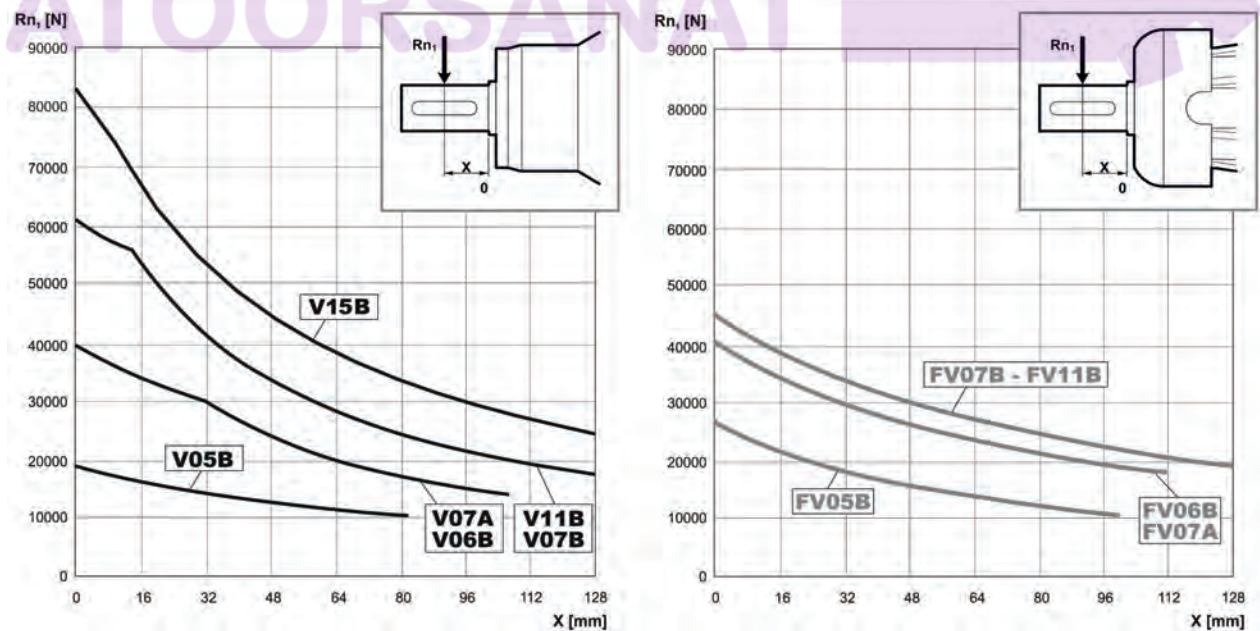
**3/V 19 L4**

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$

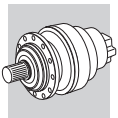


| Load corrective factor $fh_2$ on shafts | $Fh_2 = n_2 \cdot h$ | 10000  | 25000 | 50000 | 100000 | 500000 | 1000000 |
|---|----------------------|--------|-------|-------|--------|--------|---------|
|   |                      | $fh_2$ | FZ    | 2.15  | 1.59   | 1.26   | 1.00    |
|   | HZ - HC - PZ - PC    | 1.75   | 1.52  | 1.23  | 1.00   | 0.62   | 0.50    |

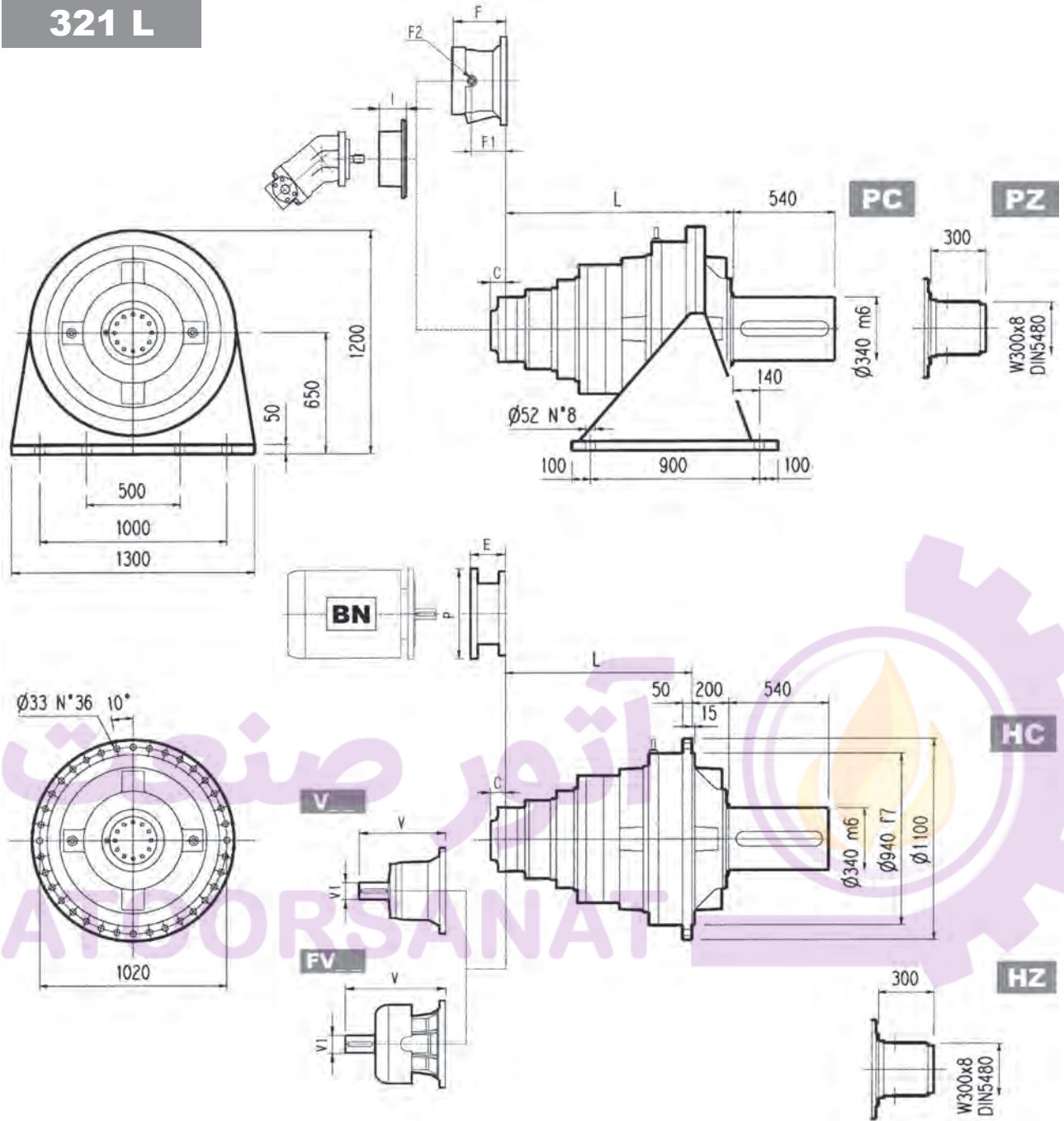
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $Fh_1 = n_1 \cdot h$ | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|---|----------------------|--------|--------|---------|---------|---------|----------|
|   |                      | $fh_1$ | 1      | 0.79    | 0.63    | 0.50    | 0.37     |



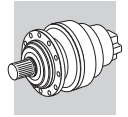
321 L



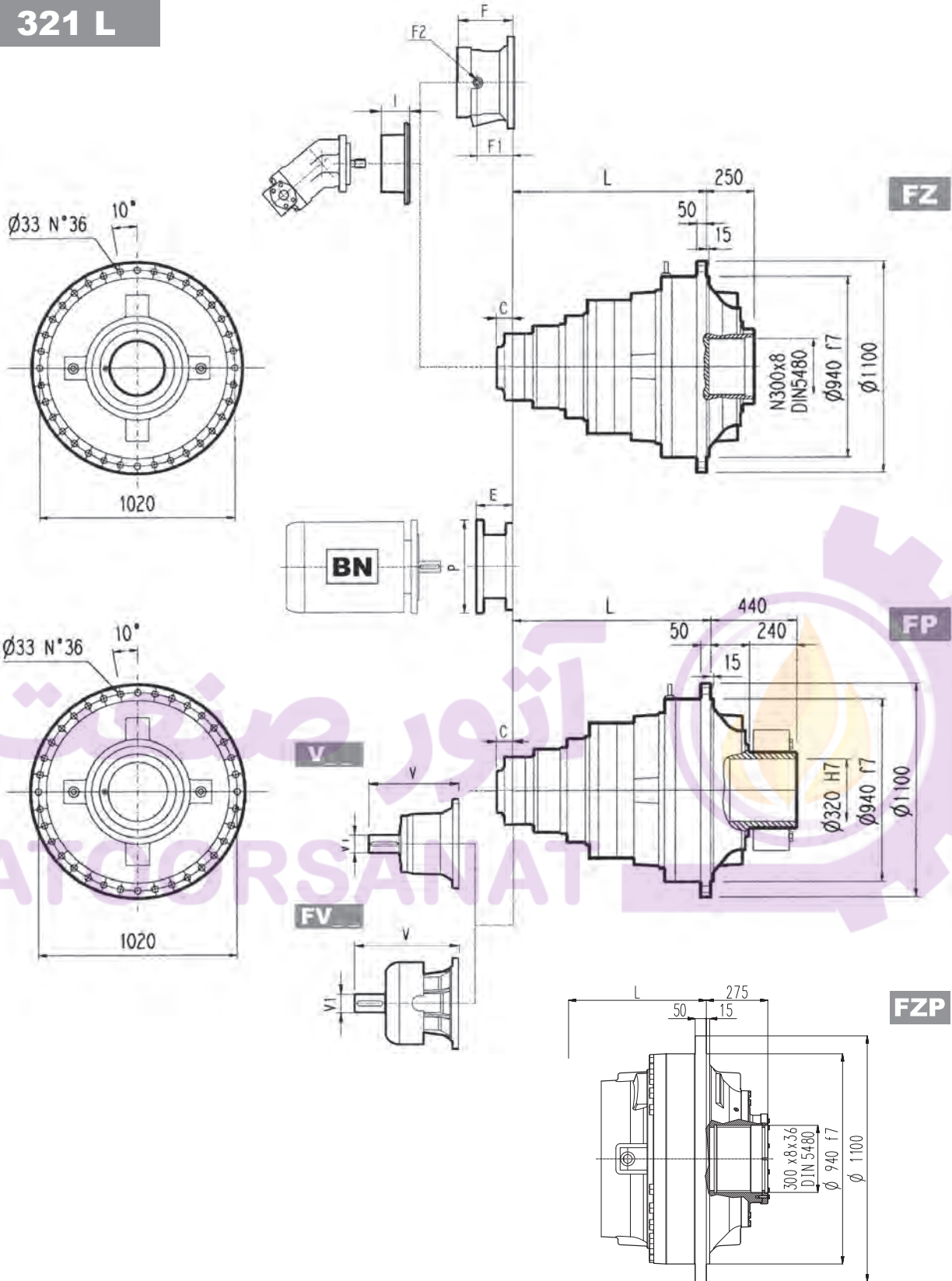
|        | L       |         |          |      | Kg      |         |          |      |
|--------|---------|---------|----------|------|---------|---------|----------|------|
|        | PC - PZ | HC - HZ | FZ - FZP | FP   | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 321 L2 | 795     | 595     | 595      | 595  | 3000    | 2700    | 2600     | 2600 |
| 321 L3 | 1104    | 904     | 904      | 904  | 3120    | 2820    | 2720     | 2720 |
| 321 L4 | 1253    | 1053    | 1053     | 1053 | 3180    | 2880    | 2780     | 2780 |

|        | V   |    |    | V1  |    |    | V   |    |    | V1  |    |    | C   | Input | I   | F   | F1  | F2    | Type | Input | Kg |
|--------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|-------|-----|-----|-----|-------|------|-------|----|
|        | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg | V   | V1 | Kg |     |       |     |     |     |       |      |       |    |
| 321 L2 | —   | —  | —  | —   | —  | —  | —   | —  | —  | —   | —  | —  | 181 | F     | —   | —   | —   | —     | —    | —     | —  |
| 321 L3 | 343 | 80 | 55 | —   | —  | —  | 451 | 80 | 71 | —   | —  | —  | 75  | D     | —   | —   | —   | —     | —    | —     |    |
| 321 L4 | 315 | 80 | 35 | 313 | 60 | 28 | 375 | 80 | 48 | 363 | 60 | 34 | 51  | B     | 461 | 201 | 153 | 1/4 G | 6    | B     | 28 |





321 L

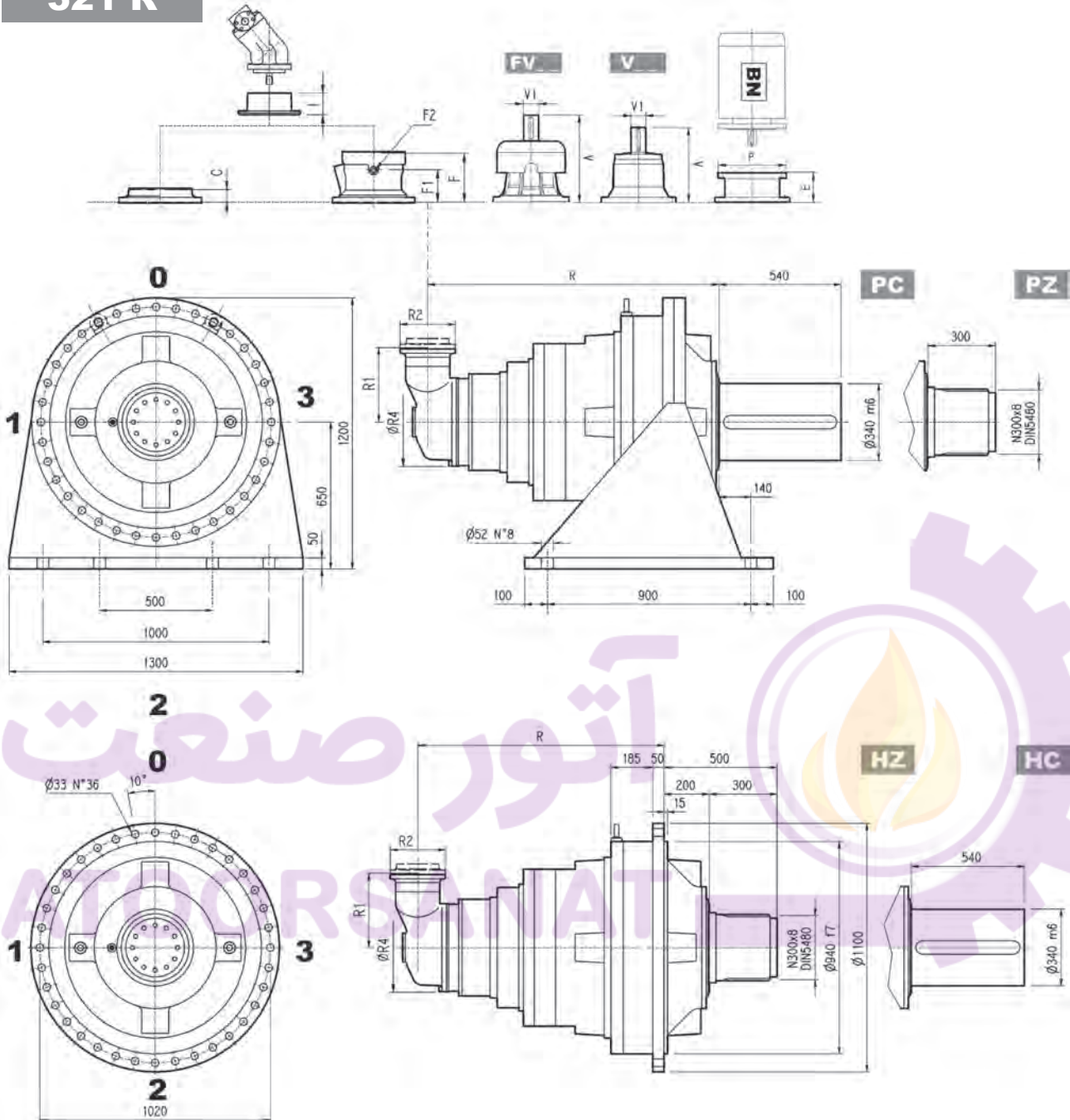


**FP**  $M_{2max} = 720000 \text{ Nm}$

|        | P180 |     | P200 |     | P225 |     | P250 |     |
|--------|------|-----|------|-----|------|-----|------|-----|
|        | E    | P   | E    | P   | E    | P   | E    | P   |
| 321 L4 | 195  | 350 | 186  | 400 | 216  | 450 | 216  | 550 |

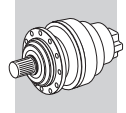


# 321 R

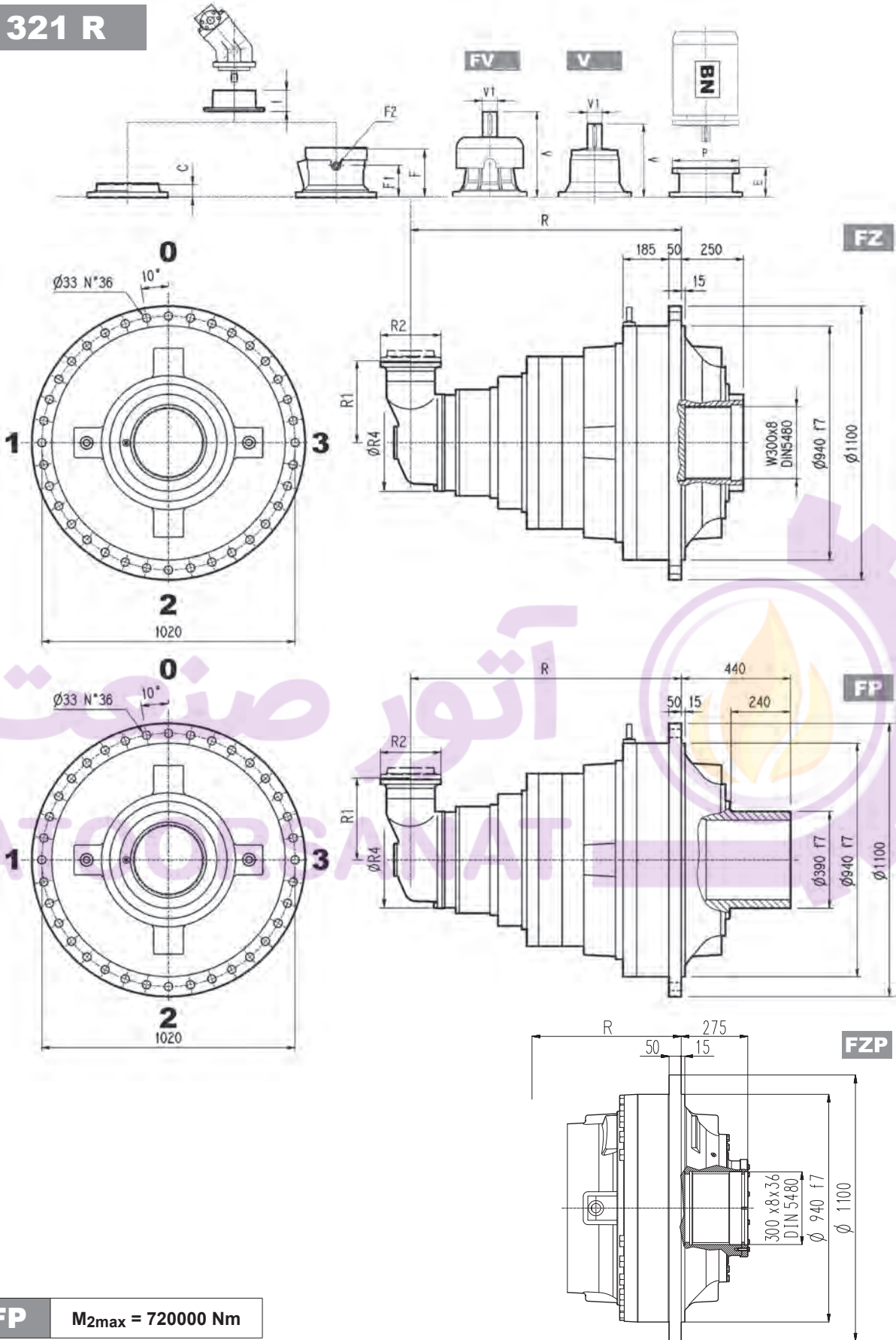


|            | R     |       |          |      | R1  | R2  | R4  | Kg    |       |          |      |
|------------|-------|-------|----------|------|-----|-----|-----|-------|-------|----------|------|
|            | PC-PZ | HC-HZ | FZ - FZP | FP   |     |     |     | PC-PZ | HC-HZ | FZ - FZP | FP   |
| 321 R4 (B) | 1334  | 1134  | 1134     | 1134 | 345 | 292 | 400 | 3250  | 2950  | 2850     | 2850 |
| 321 R4 (C) | 1334  | 1134  | 1134     | 1134 | 390 | 292 | 480 | 3260  | 2960  | 2860     | 2860 |

|            | V   |    |    | V |    |    | V   |    |    | C | Input | I | Kg |    |     |     |     |       |      |       |    |
|------------|-----|----|----|---|----|----|-----|----|----|---|-------|---|----|----|-----|-----|-----|-------|------|-------|----|
|            | V   | V1 | Kg | V | V1 | Kg | V   | V1 | Kg |   |       |   | V  | V1 | Kg  | F   | F1  | F2    | Type | Input | Kg |
| 321 R4 (B) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 461 | 195 | 147 | 1/4 G | 6    | B     | 28 |
| 321 R4 (C) | 307 | 60 | 23 | — | —  | —  | 357 | 60 | 28 | — | —     | — | 45 | B  | 461 | 195 | 147 | 1/4 G | 6    | B     | 28 |



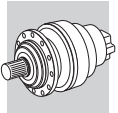
321 R



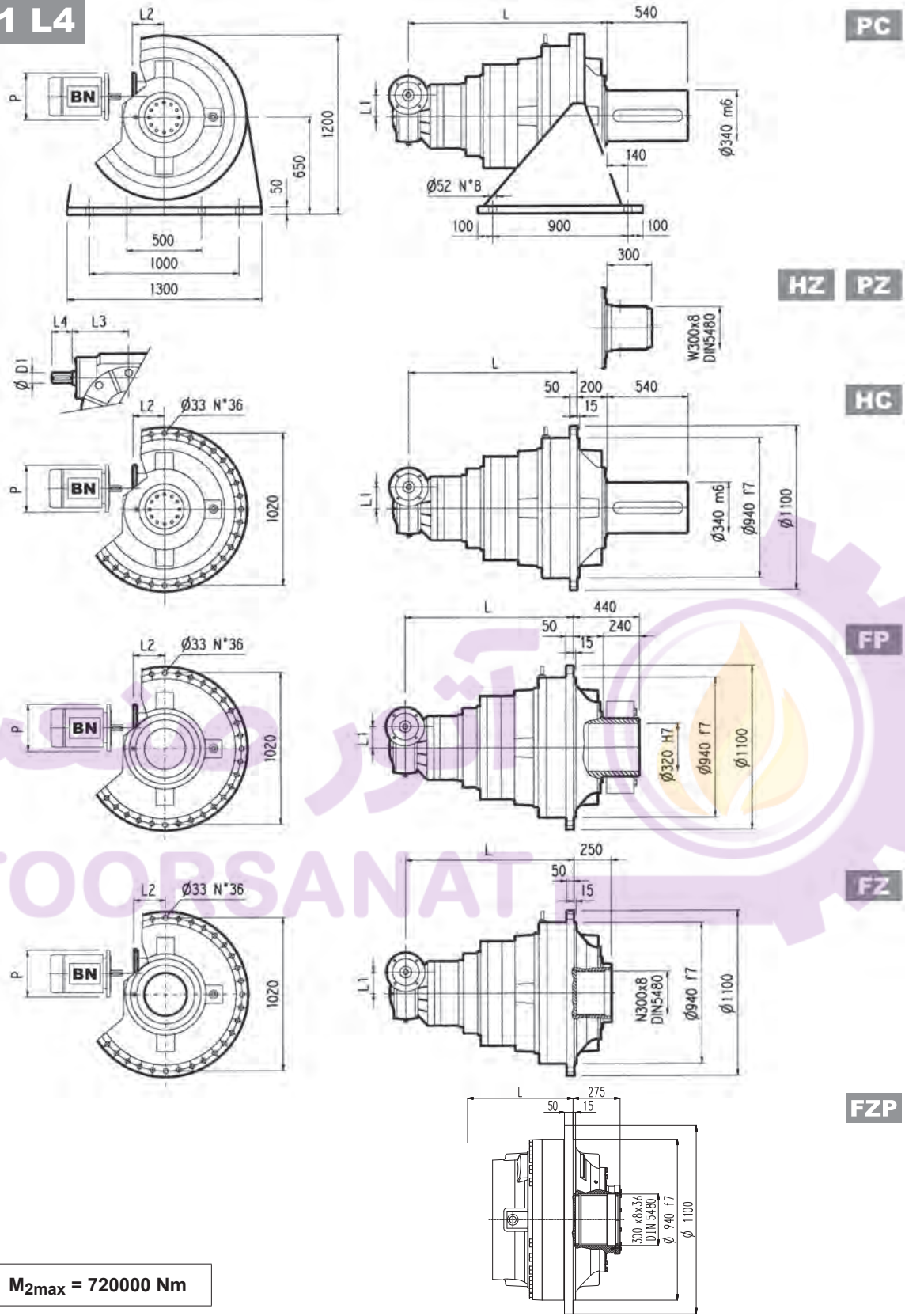
**FP**  $M_{2max} = 720000 \text{ Nm}$

|            | P132 |   | P160 |   | P180 |     | P200 |     | P225 |     | P250 |     |
|------------|------|---|------|---|------|-----|------|-----|------|-----|------|-----|
|            | E    | P | E    | P | E    | P   | E    | P   | E    | P   | E    | P   |
| 321 R4 (B) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |
| 321 R4 (C) | —    | — | —    | — | 152  | 350 | 182  | 400 | 212  | 450 | 193  | 550 |





**3/V 21 L4**

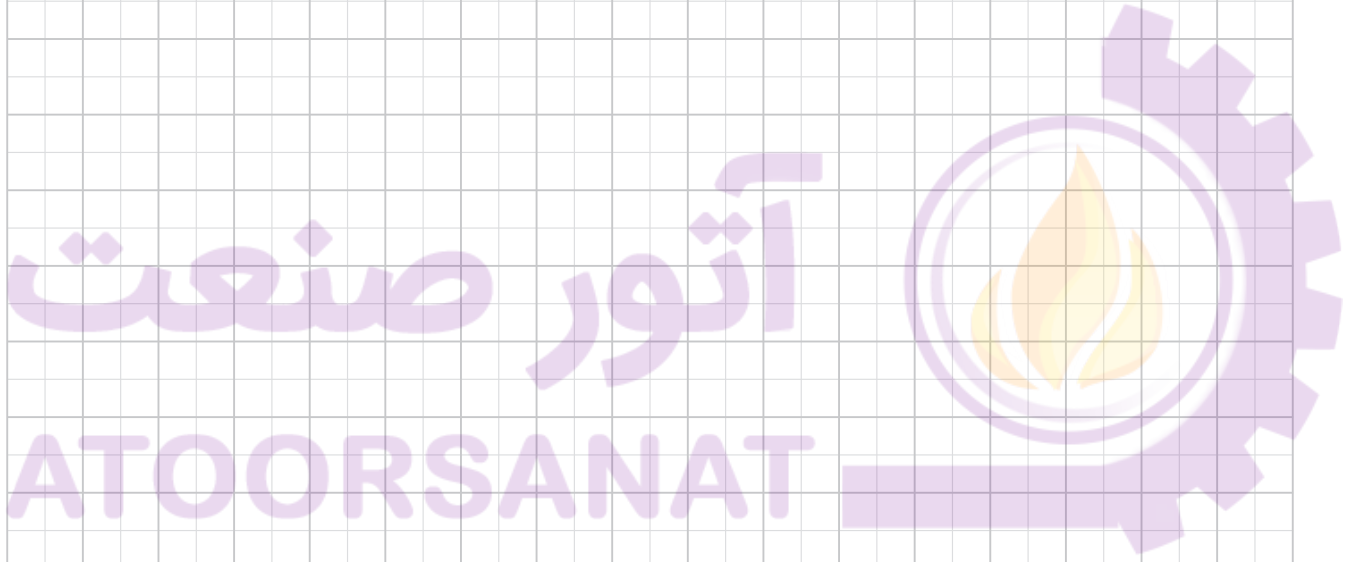
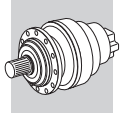


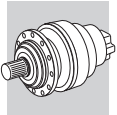
**FP**  $M_{2max} = 720000 \text{ Nm}$

|           | L       |         |          |      | L1  | L2 | D1 | L3  | L4  | Kg |         |         |          |      |
|-----------|---------|---------|----------|------|-----|----|----|-----|-----|----|---------|---------|----------|------|
|           | PC - PZ | HC - HZ | FZ - FZP | FP   |     |    |    |     |     |    | PC - PZ | HC - HZ | FZ - FZP | FP   |
| 3/V 21 L4 | 1374    | 1174    | 1174     | 1174 | 250 | —  | 55 | 276 | 110 |    | 3430    | 3130    | 3030     | 3030 |

|           | P132 |     | P160 |     | P180 |     | P200 |     | P225 |     |
|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|
|           | L2   | P   | L2   | P   | L2   | P   | L2   | P   | L2   | P   |
| 3/V 21 L4 | 531  | 300 | 506  | 350 | 506  | 350 | 531  | 400 | 536  | 450 |







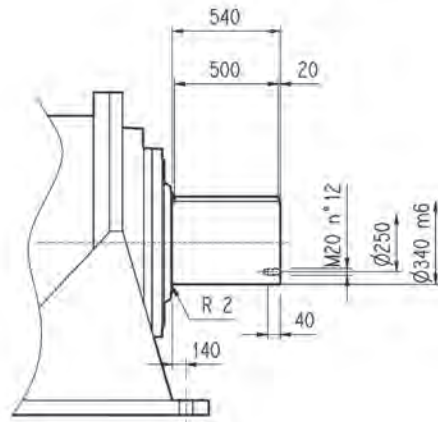
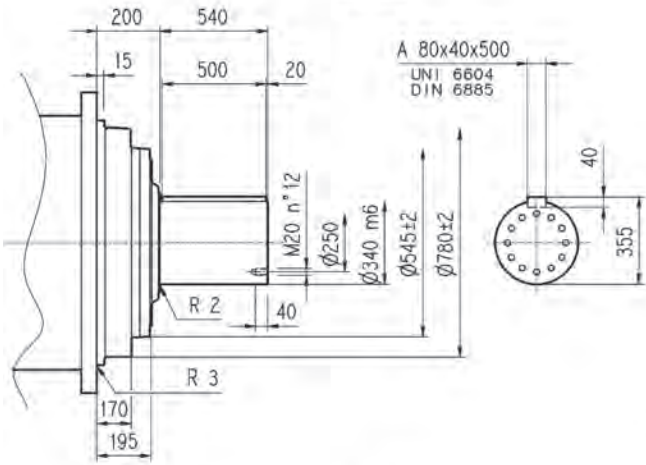
321 L

321 R

3/V 21 L4

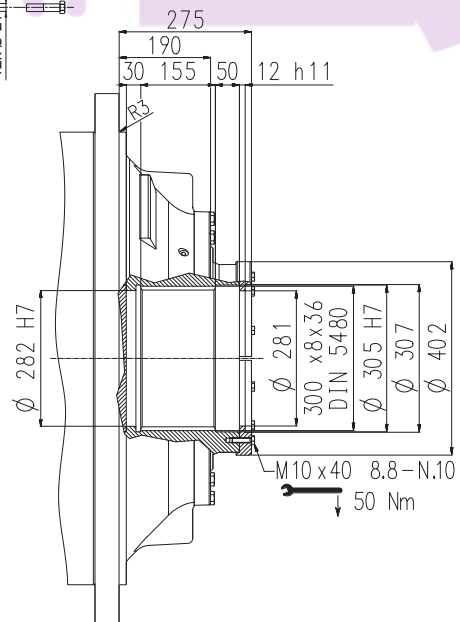
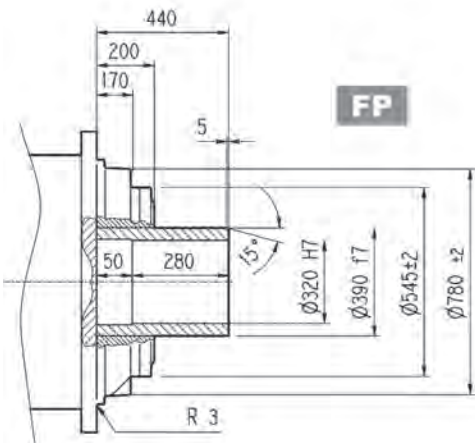
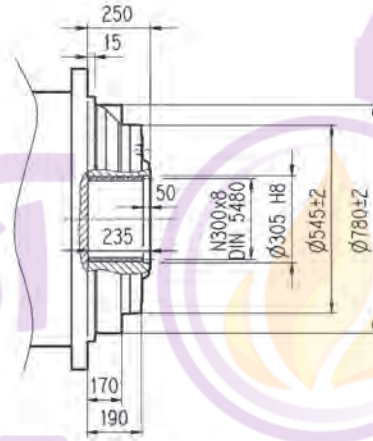
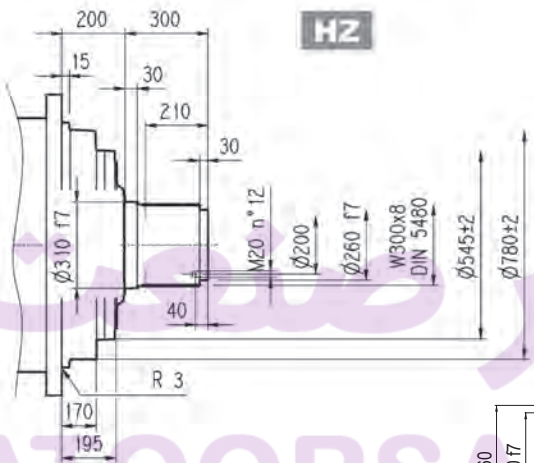
HC

PC



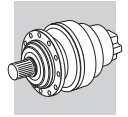
HZ

FZ



FP

$M_{2max} = 720000 \text{ Nm}$



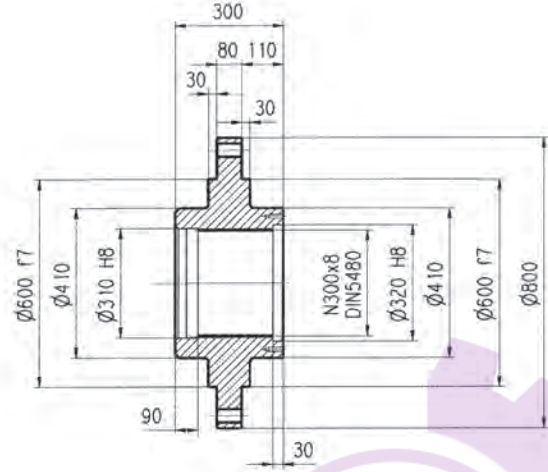
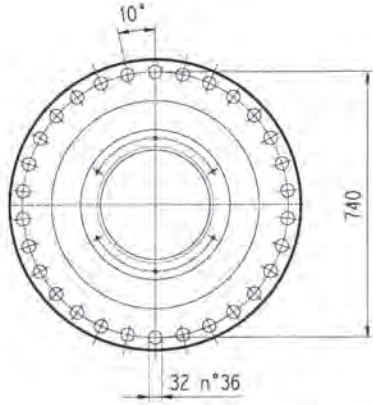
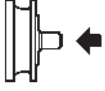
321 L

321 R

3/V 21 L4

Flange

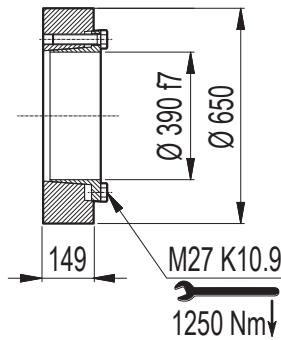
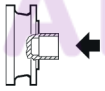
W0A

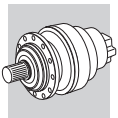


Material: Steel C40

Shrink disc

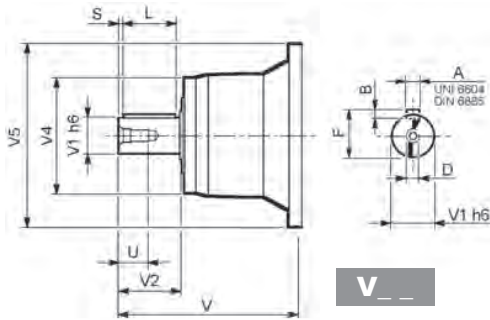
G0A



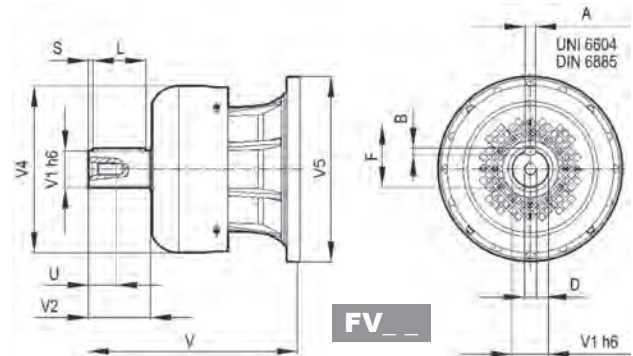


321 L

321 R



V \_ \_

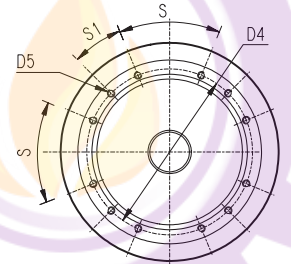
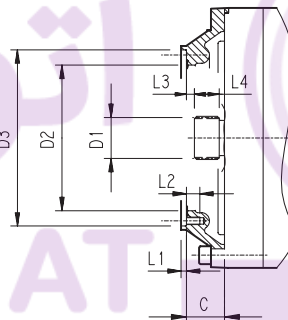
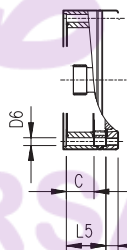


FV \_ \_

|                |       | V   | V1 | V2  | V4    | V5  | A  | B  | F  | L   | S   | D   | U  |
|----------------|-------|-----|----|-----|-------|-----|----|----|----|-----|-----|-----|----|
| 321 L3         | V11B  | 343 | 80 | 130 | 200   | 445 | 22 | 14 | 85 | 110 | 10  | M16 | 36 |
|                | FV11B | 451 | 80 | 130 | 347.5 | 445 | 22 | 14 | 85 | 110 | 10  | M16 | 36 |
| 321 L4         | V07B  | 315 | 80 | 130 | 200   | 345 | 22 | 14 | 85 | 110 | 10  | M16 | 36 |
|                | FV07B | 375 | 80 | 130 | 347.5 | 348 | 22 | 14 | 85 | 110 | 10  | M16 | 36 |
|                | V07A  | 313 | 60 | 105 | 155   | 345 | 18 | 11 | 64 | 90  | 7.5 | M16 | 36 |
| 321 R4 (B) (C) | FV07A | 363 | 60 | 105 | 309   | 348 | 18 | 11 | 64 | 90  | 7.5 | M16 | 36 |
|                | V06B  | 307 | 60 | 105 | 155   | 292 | 18 | 11 | 64 | 90  | 7.5 | M16 | 36 |
|                | FV06B | 357 | 60 | 105 | 309   | 292 | 18 | 11 | 64 | 90  | 7.5 | M16 | 36 |

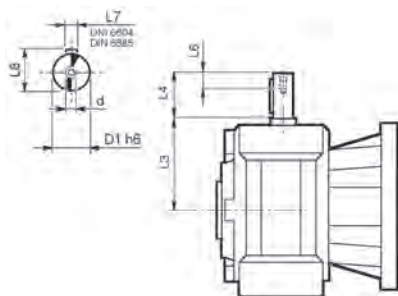
321 L

321 R



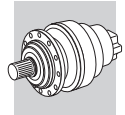
|  |      | C   | D1             | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1    | Input |
|--|------|-----|----------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-------|-------|
| 321 L1                                       |      |     |                |     |        |     |          |    |    |    |     |    |    |    |     |       |       |
| Please consult Bonfiglioli Technical Service |      |     |                |     |        |     |          |    |    |    |     |    |    |    |     |       |       |
| 321 L2                                       | V9AF | 181 | 120x3 DIN 5480 | 365 | 390 f7 | 415 | M16 n°18 | —  | 4  | 30 | 3   | 65 | —  | —  | 20° | 20°   | F     |
| 321 L3                                       | V9AD | 75  | 80x74 DIN 5482 | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 9.5 | 40 | —  | —  | 60° | 30°   | D     |
| 321 L4                                       | V9AB | 51  | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |
| 321 R4 (B) (C)                               | V9AB | 45  | 58x53 DIN 5482 | 195 | 236 H7 | 222 | M10 n°12 | —  | 4  | 18 | 11  | 22 | —  | —  | 45° | 22.5° | B     |

3/V 21 L4



|              | D1 h6 | L3  | L4  | L6 | L7 | L8 | d   |
|--------------|-------|-----|-----|----|----|----|-----|
| 3/V 21 L4_HS | 55    | 276 | 110 | 40 | 16 | 59 | M16 |



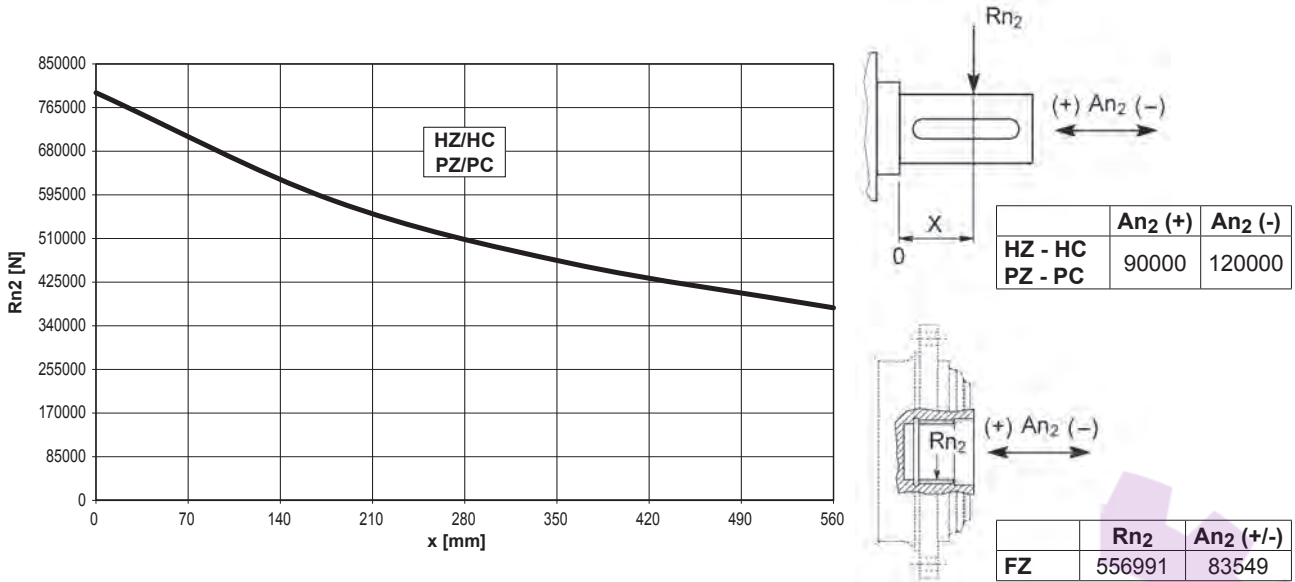


321 L

321 R

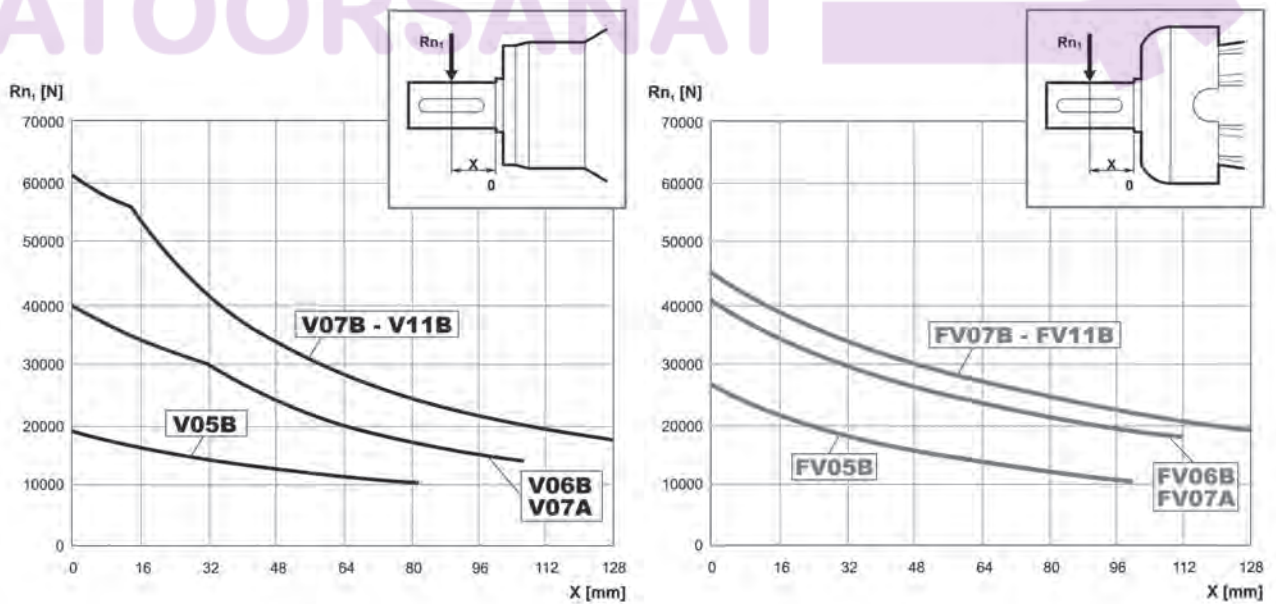
3/V 21 L4

Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



| Load corrective factor $fh_2$ on shafts | $Fh_2 = n_2 \cdot h$ |    | 10000             | 25000 | 50000 | 100000 | 500000 | 1000000 |
|---|----------------------|----|-------------------|-------|-------|--------|--------|---------|
|   | $fh_2$               | FZ | HZ - HC - PZ - PC | 2.15  | 1.59  | 1.26   | 1.00   | 0.58    |
|   |                      |    | 1.54              | 1.35  | 1.23  | 1.00   | 0.62   | 0.50    |

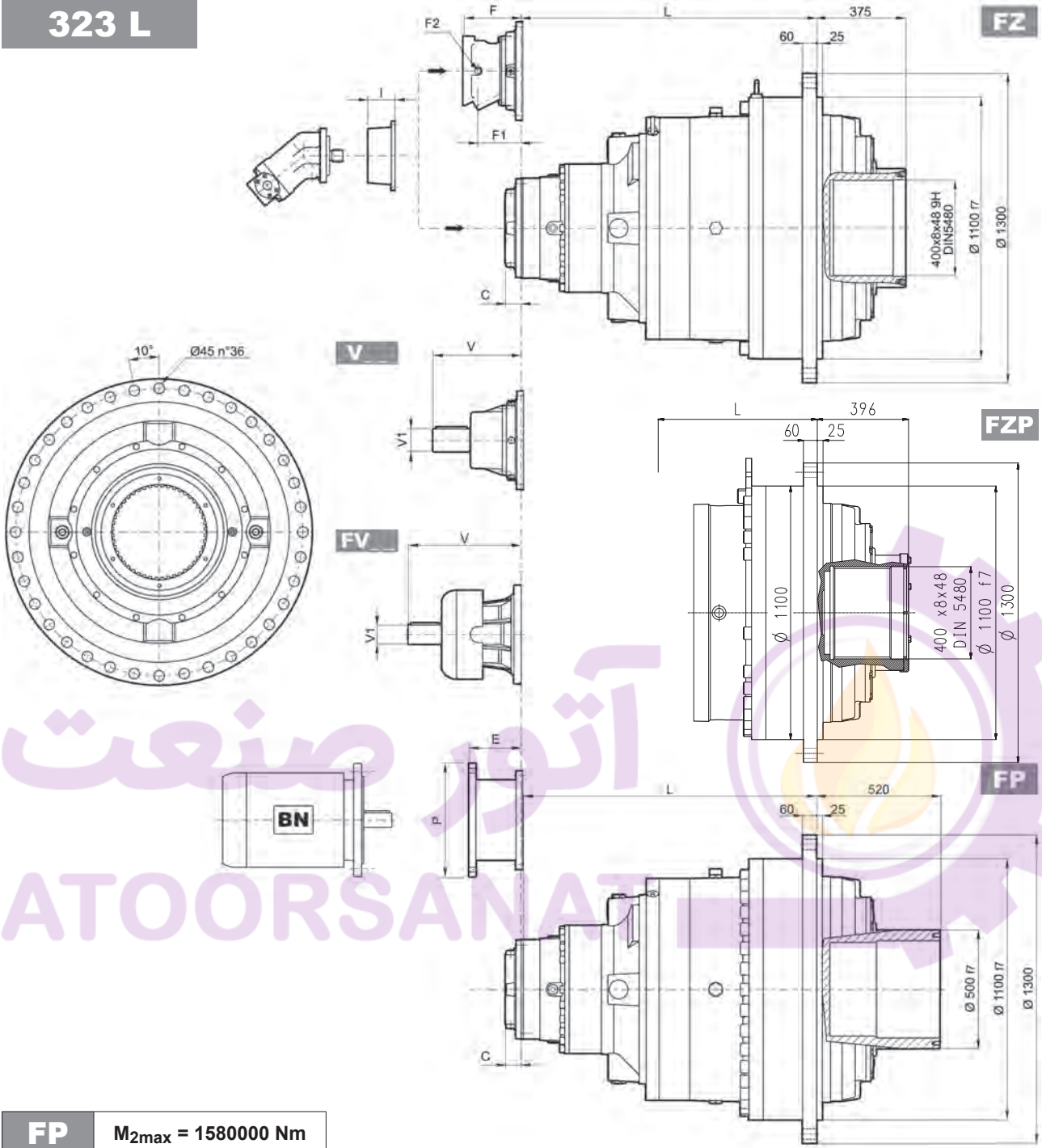
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$ on shafts | $Fh_1 = n_1 \cdot h$ |  | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|---|----------------------|--|--------|--------|---------|---------|---------|----------|
|   | $fh_1$               |  |        | 1      | 0.79    | 0.63    | 0.50    | 0.37     |



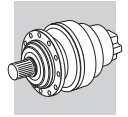
**323 L**



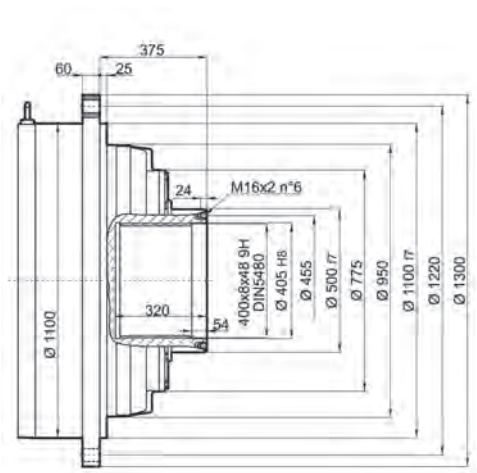
**FP**  $M_{2max} = 1580000 \text{ Nm}$

|               | L  |      | Kg   | Kg   | V   | V1  | Kg  | V   | V1 | Kg |
|---------------|--|------|------|------|-----|-----|-----|-----|----|----|
|               | FZ - FZP                                     | FP   |      |      |     |     |     |     |    |    |
| <b>323 L1</b> | Please consult Bonfiglioli Technical Service |      |      |      |     |     |     |     |    |    |
| <b>323 L2</b> | 666  | 666  | 4450 | 4550 | —   | —   | —   | —   | —  | —  |
| <b>323 L3</b> | 1049   | 1049 | 4750 | 4850 | 556 | 120 | 125 | —   | —  | —  |
| <b>323 L4</b> | 1261   | 1261 | 4900 | 5000 | 315 | 80  | 35  | 456 | 80 | 85 |

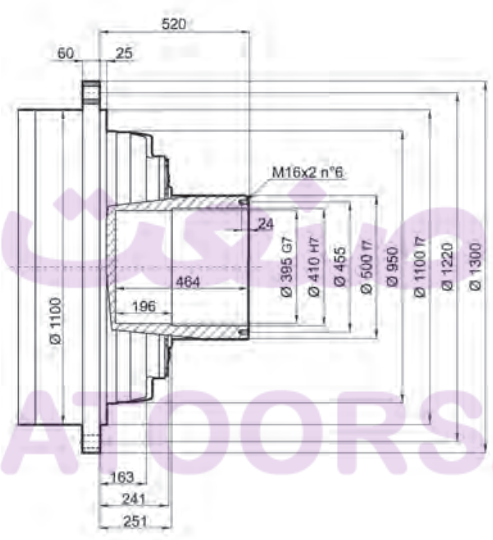
|               | C     |   | I   | F   |    |       | Type | Input | Kg | P200 |     | P225 |     | P250 |     |
|---------------|-------|---|-----|-----|----|-------|------|-------|----|------|-----|------|-----|------|-----|
|               | Input |   |     | F   | F1 | F2    |      |       |    | E    | P   | E    | P   | E    | P   |
| <b>323 L1</b> | —     | — | 457 | —   | —  | —     | —    | —     | —  | —    | —   | —    | —   | —    | —   |
| <b>323 L2</b> | 245   | G |     | —   | —  | —     | —    | —     | —  | —    | —   | —    | —   | —    | —   |
| <b>323 L3</b> | 116   | E |     | —   | —  | —     | —    | —     | —  | —    | —   | —    | —   | —    | —   |
| <b>323 L4</b> | 81    | D |     | 201 | 48 | 1/4 G | 6    | B     | 22 | 267  | 400 | 297  | 450 | 297  | 550 |



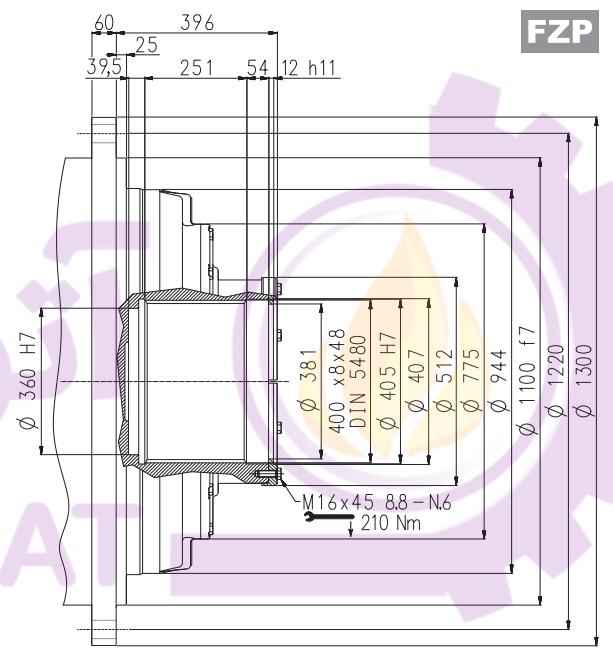
323 L



FZ

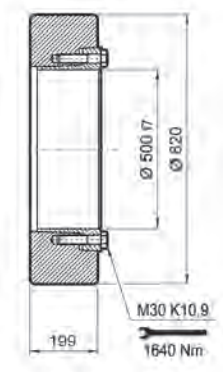
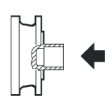


FP



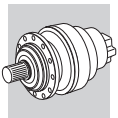
FZP

Shrink disc

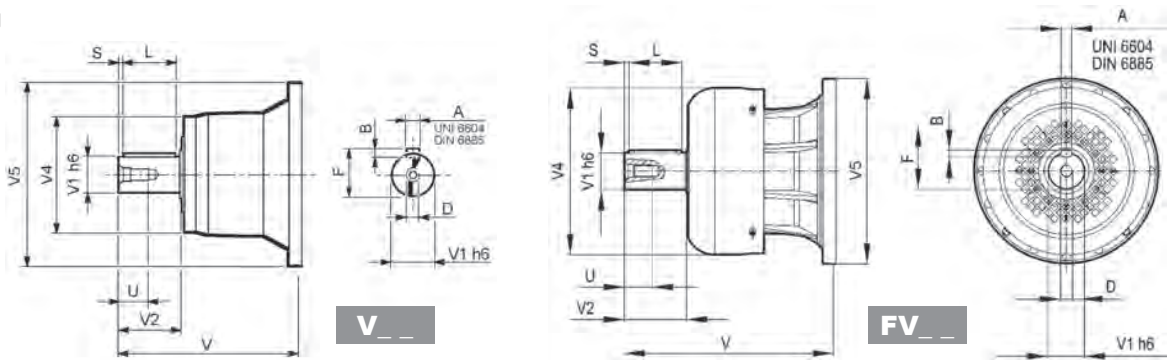


GOA

FP M<sub>2max</sub> = 1580000 Nm

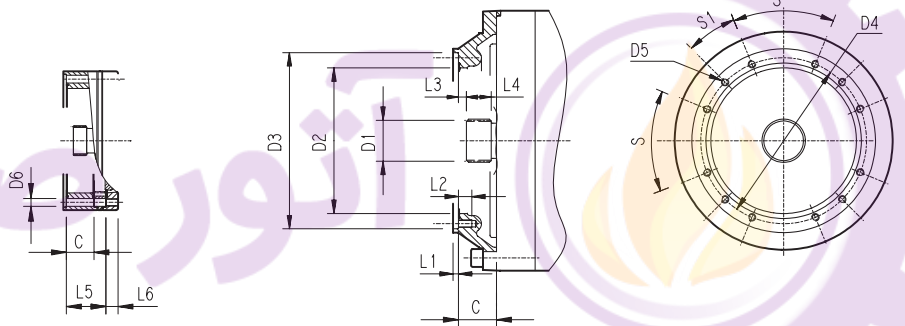


### 323 L



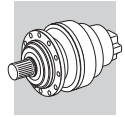
|        |       | V   | V1  | V2  | V4    | V5  | A  | B  | F   | L   | S  | D   | U  |
|--------|-------|-----|-----|-----|-------|-----|----|----|-----|-----|----|-----|----|
| 323 L3 | V15B  | 556 | 120 | 210 | 230   | 542 | 32 | 18 | 127 | 180 | 15 | M24 | 50 |
| 323 L4 | V11B  | 348 | 80  | 130 | 200   | 428 | 22 | 14 | 85  | 110 | 10 | M16 | 36 |
|        | FV11B | 456 | 80  | 130 | 347.5 | 428 | 22 | 14 | 85  | 110 | 10 | M16 | 36 |

### 323 L



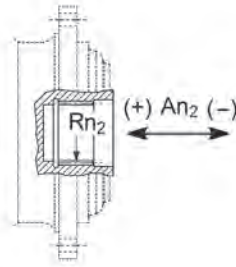
|  |      | C   | D1                | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1  | Input |
|--|------|-----|-------------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-----|-------|
| 323 L1                                       |      |     |                   |     |        |     |          |    |    |    |     |    |    |    |     |     |       |
| Please consult Bonfiglioli Technical Service |      |     |                   |     |        |     |          |    |    |    |     |    |    |    |     |     |       |
| 323 L2                                       | V9AG | 245 | 150x5x28 DIN 5480 | 444 | 474 g7 | 503 | M20 n°20 | 20 | 5  | 40 | 20  | 82 | —  | —  | 30° | 15° | G     |
| 323 L3                                       | V9AE | 116 | 100x94 DIN 5482   | 340 | 412 H7 | 390 | M16 n°18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20° | E     |
| 323 L4                                       | V9AD | 81  | 80x74 DIN 5482    | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30° | D     |





**323 L**

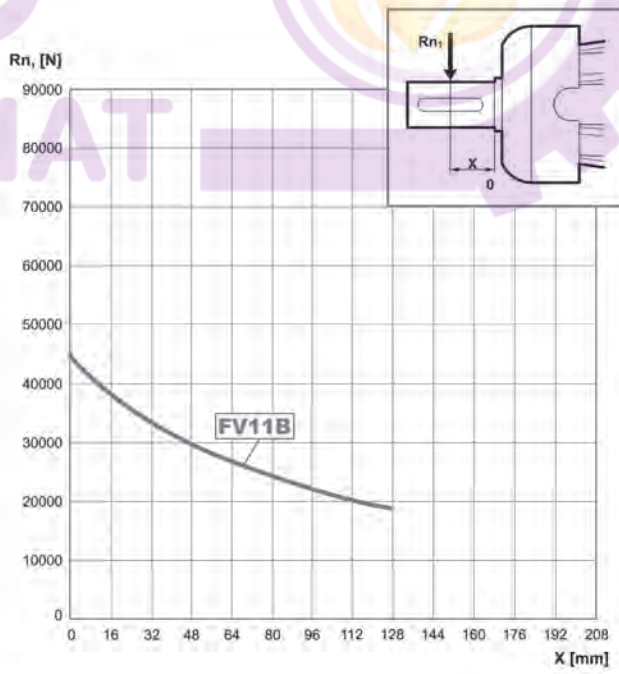
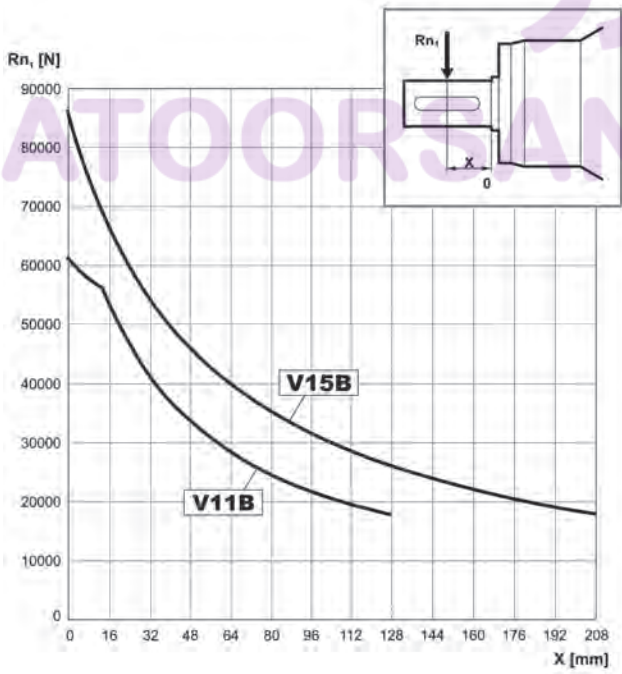
Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



|           | $Rn_2$ | $An_2 (+)$ | $An_2 (-)$ |
|-----------|--------|------------|------------|
| <b>FZ</b> | 510575 | 174060     | 69624      |

| Load corrective factor $fh_2$<br>on shafts | $Fh_2 = n_2 \cdot h$ |    |       |       |       |        |        |         |
|--|----------------------|----|-------|-------|-------|--------|--------|---------|
|  | $fh_2$               | FZ | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|  |                      | FZ | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |

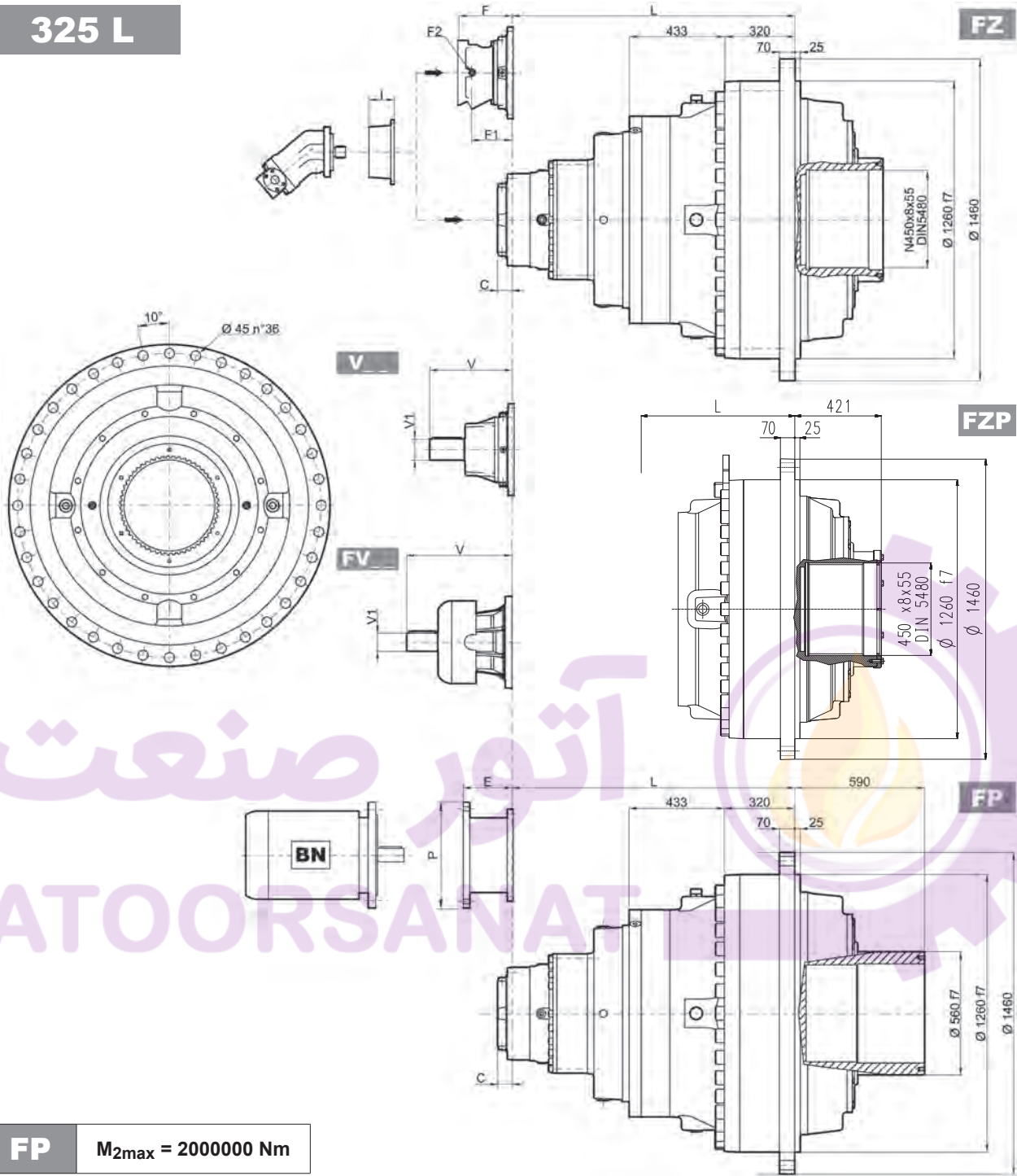
Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$



| Load corrective factor $fh_1$<br>on shafts | $Fh_1 = n_1 \cdot h$ |        |        |         |         |         |          |
|--|----------------------|--------|--------|---------|---------|---------|----------|
|  | $fh_1$               | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  |                      | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |



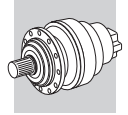
**325 L**



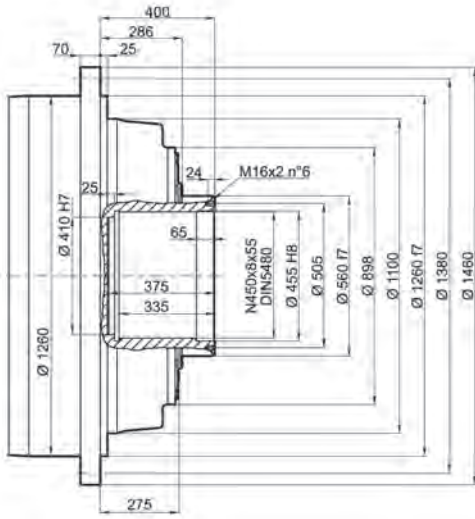
**FP**  $M_{2max} = 200000 \text{ Nm}$

|        | L  |      | Kg       |      | V   |     | Kg  |     | V  |    | Kg |
|--------|--|------|----------|------|-----|-----|-----|-----|----|----|----|
|        | FZ - FZP                                     | FP   | FZ - FZP | FP   | V   | V1  | Kg  | V   | V1 | Kg |    |
| 325 L1 | Please consult Bonfiglioli Technical Service |      |          |      |     |     |     |     |    |    |    |
| 325 L2 | 698  | 698  | 5700     | 5900 | —   | —   | —   | —   | —  | —  | —  |
| 325 L3 | 1081   | 1081 | 6000     | 6200 | 556 | 120 | 125 | —   | —  | —  | —  |
| 325 L4 | 1293   | 1293 | 6150     | 6350 | 315 | 80  | 35  | 456 | 80 | 85 |    |

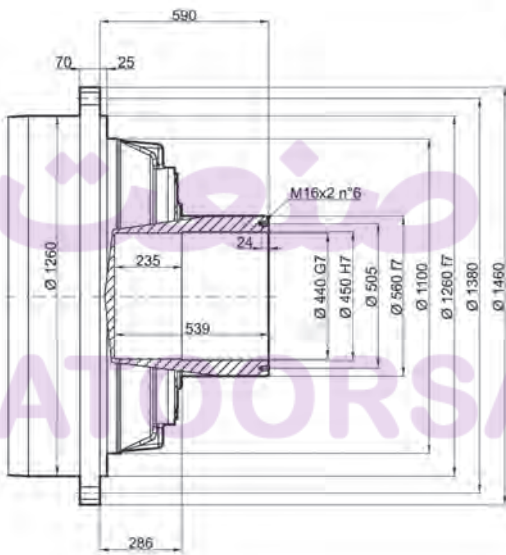
|        | C     |   | I   | Type |    |       |       | Kg | P200 |     | P225 |     | P250 |     |
|--------|-------|---|-----|------|----|-------|-------|----|------|-----|------|-----|------|-----|
|        | Input |   |     | F    | F1 | F2    | Input |    | E    | P   | E    | P   | E    | P   |
| 325 L1 | —     | — | 457 | —    | —  | —     | —     | —  | —    | —   | —    | —   | —    | —   |
| 325 L2 | 245   | G |     | —    | —  | —     | —     | —  | —    | —   | —    | —   | —    | —   |
| 325 L3 | 116   | E |     | —    | —  | —     | —     | —  | —    | —   | —    | —   | —    | —   |
| 325 L4 | 81    | D |     | 201  | 48 | 1/4 G | 6     | B  | 22   | 267 | 400  | 297 | 450  | 297 |



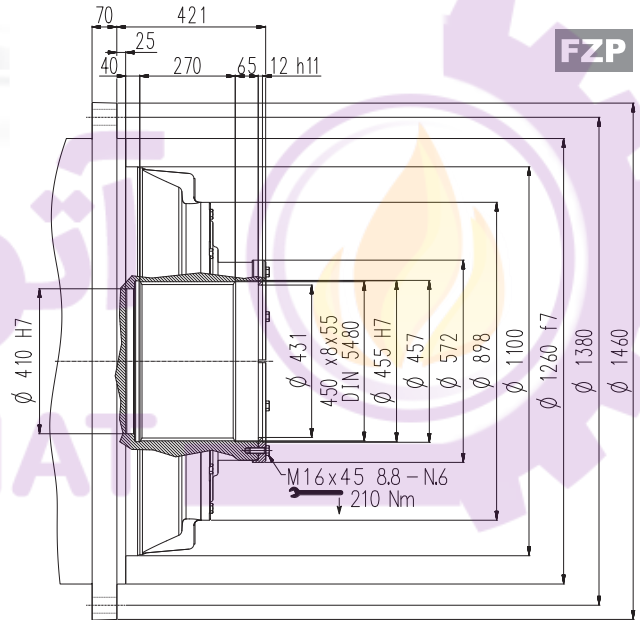
325 L



FZ



FP

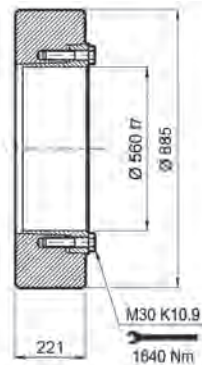


FZP

Shrink disc

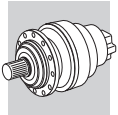


G0A

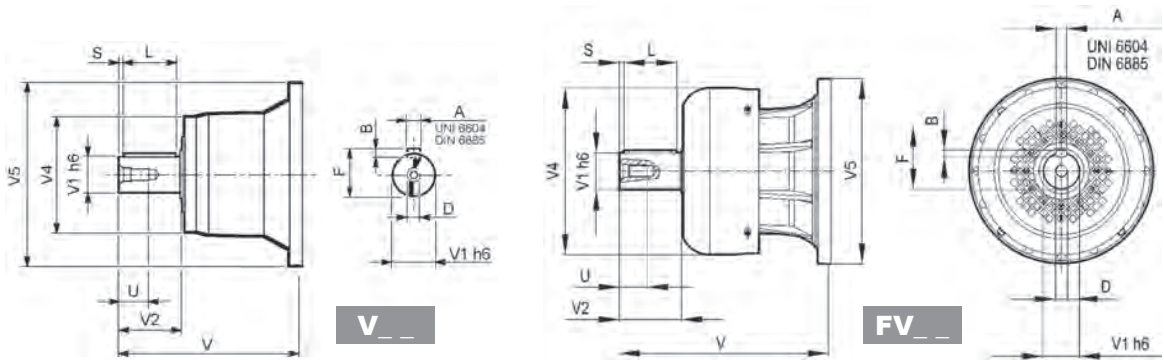


FP

M<sub>2max</sub> = 2000000 Nm

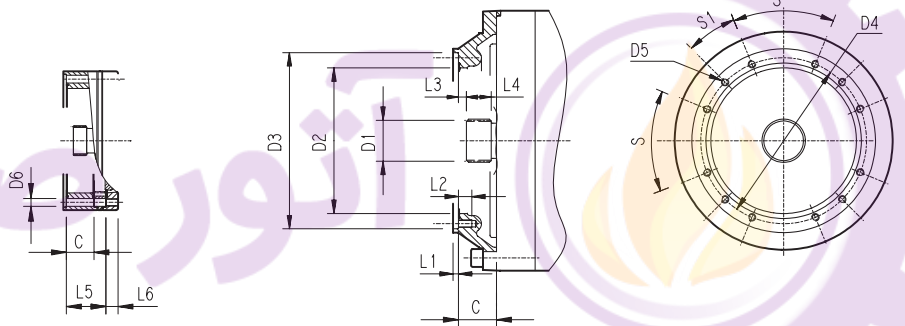


### 325 L



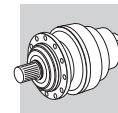
|        |       | V   | V1  | V2  | V4    | V5  | A  | B  | F   | L   | S  | D   | U  |
|--------|-------|-----|-----|-----|-------|-----|----|----|-----|-----|----|-----|----|
| 325 L3 | V15B  | 556 | 120 | 210 | 230   | 542 | 32 | 18 | 127 | 180 | 15 | M24 | 50 |
| 325 L4 | V11B  | 348 | 80  | 130 | 200   | 428 | 22 | 14 | 85  | 110 | 10 | M16 | 36 |
|        | FV11B | 456 | 80  | 130 | 347.5 | 428 | 22 | 14 | 85  | 110 | 10 | M16 | 36 |

### 325 L



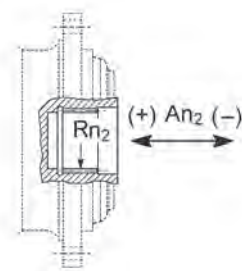
|        |      | C   | D1                | D2  | D3     | D4  | D5       | D6 | L1 | L2 | L3  | L4 | L5 | L6 | S   | S1  | Input  |
|--------|------|-----|-------------------|-----|--------|-----|----------|----|----|----|-----|----|----|----|-----|-----|--|
| 325 L1 |      |     |                   |     |        |     |          |    |    |    |     |    |    |    |     |     | Please consult Bonfiglioli Technical Service |
| 325 L2 | V9AG | 245 | 150x5x28 DIN 5480 | 444 | 474 g7 | 503 | M20 n°20 | 20 | 5  | 40 | 20  | 82 | —  | —  | 30° | 15° | G  |
| 325 L3 | V9AE | 116 | 100x94 DIN 5482   | 340 | 412 H7 | 390 | M16 n°18 | —  | 7  | 30 | 8   | 55 | —  | —  | 20° | 20° | E  |
| 325 L4 | V9AD | 81  | 80x74 DIN 5482    | 270 | 335 H7 | 314 | M16 n°8  | —  | 5  | 30 | 8.5 | 40 | —  | —  | 60° | 30° | D  |





### 325 L

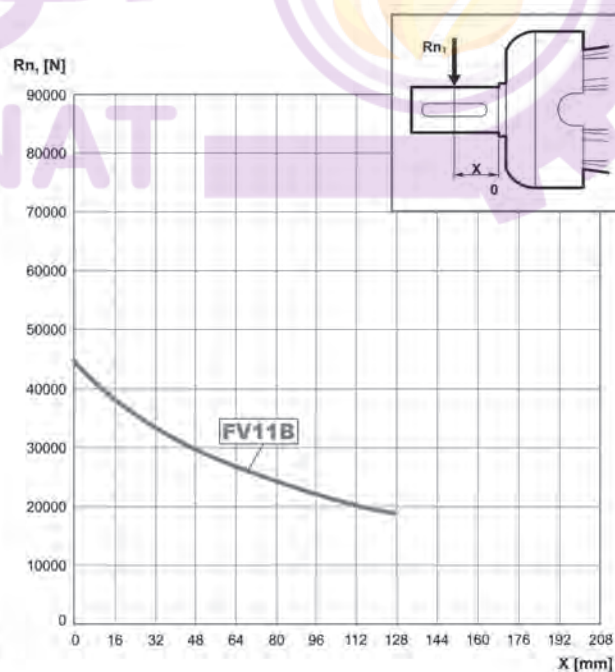
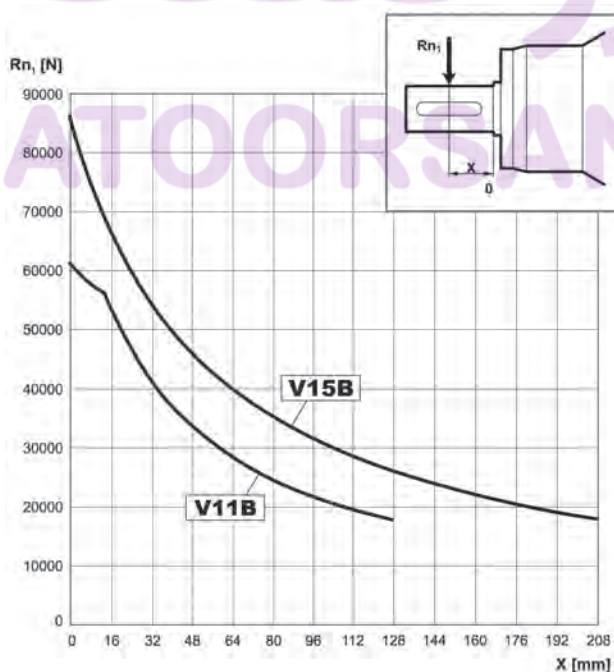
Permissible radial and axial loads on output shaft with  $Fh_2 : n_2 \cdot h = 100000$



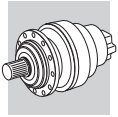
|           | $Rn_2$ | $An_2 (+)$ | $An_2 (-)$ |
|-----------|--------|------------|------------|
| <b>FZ</b> | 510575 | 174060     | 69624      |

| Load corrective factor $fh_2$<br>on shafts | $Fh_2 = n_2 \cdot h$ |    |       |       |       |        |        |         |
|--|----------------------|----|-------|-------|-------|--------|--------|---------|
|  | $fh_2$               | FZ | 10000 | 25000 | 50000 | 100000 | 500000 | 1000000 |
|  |                      | FZ | 2.15  | 1.59  | 1.26  | 1.00   | 0.58   | 0.46    |

Permissible radial loads on input shaft with  $Fh_1 : n_1 \cdot h = 250000$

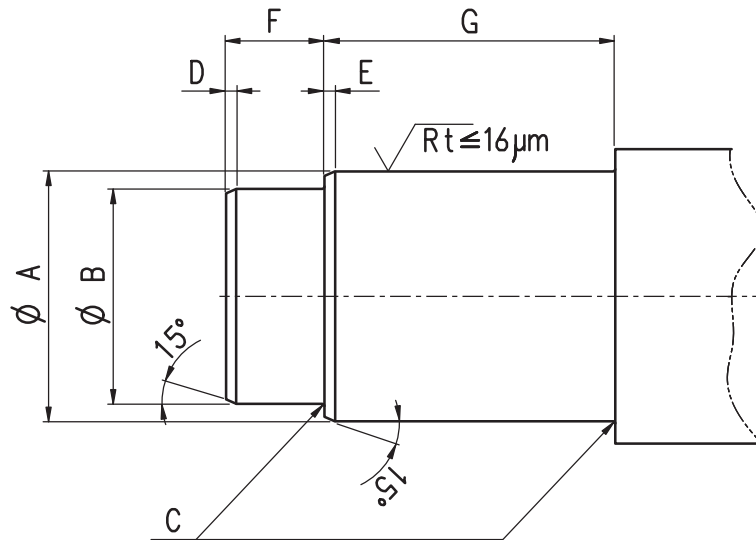


| Load corrective factor $fh_1$<br>on shafts | $Fh_1 = n_1 \cdot h$ |        |        |         |         |         |          |
|--|----------------------|--------|--------|---------|---------|---------|----------|
|  | $fh_1$               | 250000 | 500000 | 1000000 | 2000000 | 5000000 | 10000000 |
|  |                      | 1      | 0.79   | 0.63    | 0.50    | 0.37    | 0.29     |

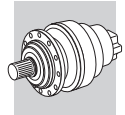


CUSTOMER'S SHAFT

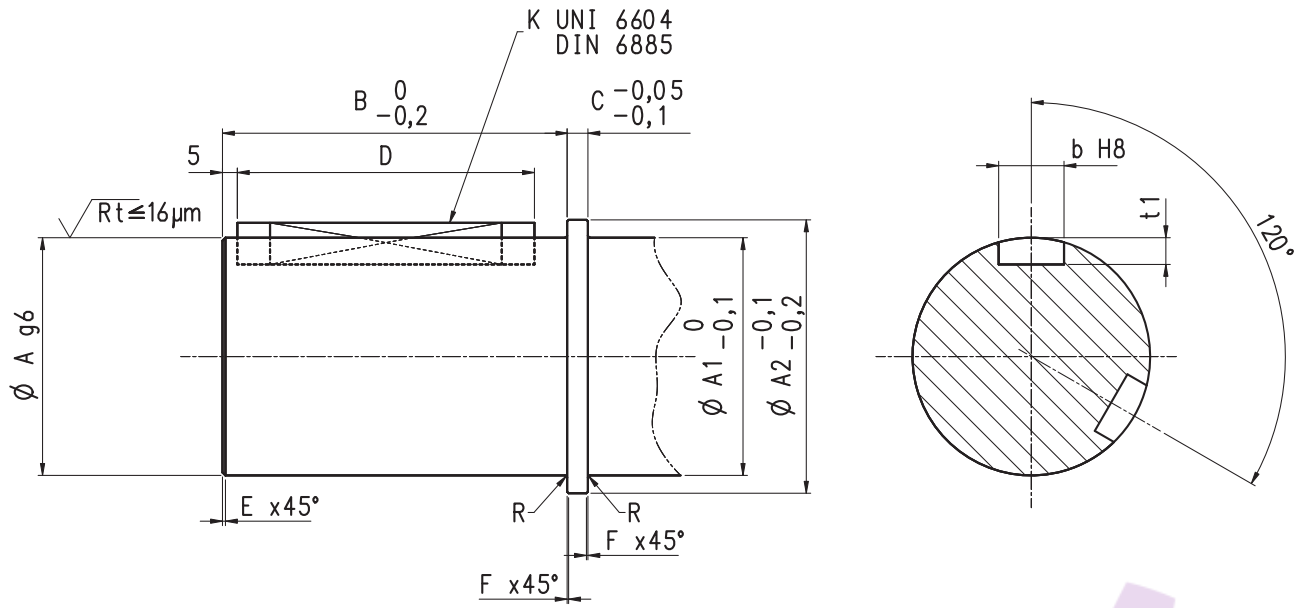
FP



|                 | A<br>$\varnothing$<br>H7 - g6<br>[mm] | B<br>$\varnothing$<br>H7 - g6<br>[mm] | C<br>[mm] | D<br>[mm] | E<br>[mm] | F<br>[mm] | G<br>[mm] | Shaft<br>material   |
|-----------------|---------------------------------------|---------------------------------------|-----------|-----------|-----------|-----------|-----------|---|
| 300             | 42                                    | 35                                    | 1.6       | 2         | 2         | 18        | 38        | Suggested material:<br>Steel with tensile strength $\sigma_R \geq 700MPa$ |
| 301             | 52                                    | 35                                    | 1.6       | 2         | 2         | 18        | 38        |   |
| 303 - 304 - 305 | 75                                    | 65                                    | 1.6       | 2         | 2         | 30        | 65        |   |
| 306             | 90                                    | 75                                    | 1.6       | 3         | 3         | 55        | 85        |   |
| 307             | 100                                   | 85                                    | 1.6       | 3         | 3         | 40        | 95        |   |
| 309             | 120                                   | —                                     | 1.6       | —         | 3         | —         | 140       |   |
| 310             | 130                                   | —                                     | 1.6       | —         | 3         | —         | 155       |   |
| 311             | 135                                   | —                                     | 1.6       | —         | 3         | —         | 150       |   |
| 313             | 140                                   | 130                                   | 2         | 3         | 3         | 45        | 150       |   |
| 314             | 180                                   | 160                                   | 1.6       | 3         | 3         | 50        | 200       |   |
| 315             | 180                                   | 160                                   | 1.6       | 3         | 3         | 50        | 200       |   |
| 316             | 180                                   | 165                                   | 1.6       | 3         | 3         | 90        | 180       |   |
| 317             | 200                                   | —                                     | 1.6       | —         | 3         | —         | 250       |   |
| 318             | 220                                   | 200                                   | 2         | 3         | 3         | 130       | 180       |   |
| 319             | 280                                   | —                                     | 2         | —         | 3         | —         | 300       |   |
| 321             | 320                                   | —                                     | 2         | —         | 3         | —         | 300       |   |
| 323             | 410                                   | —                                     | 2         | —         | 3         | —         | 250       |   |
| 325             | 450                                   | —                                     | 2         | —         | 3         | —         | 300       |   |

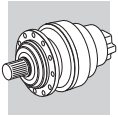


**FDK**

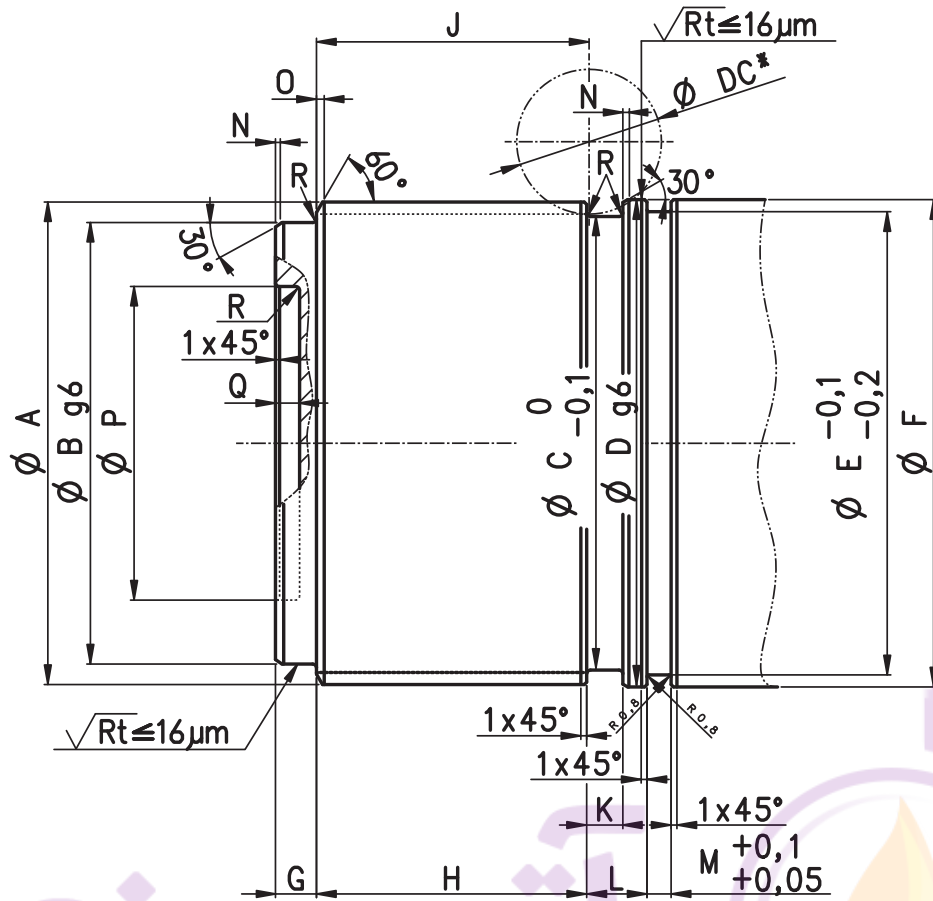


|                 | A       | B      | A1   | A2   | C    | Shaft material<br>Suggested material: Steel with tensile strength<br>σR ≥ 900MPa | Keyways dimensions             |           | b     | t <sub>1</sub>   | E                  | F         | R      |
|-----------------|---------|--------|------|------|------|--|--------------------------------|-----------|-------|--|--------------------|-----------|--------|
|                 | ∅ shaft | Length |      |      |      |  | Keyways<br>UNI 6604 / DIN 6885 |           |       |  | Chamfer dimensions |           | Fillet |
|                 | [mm]    | [mm]   | [mm] | [mm] | [mm] |  | —                              | [mm]      | [mm]  | [mm]   | [mm]               | [mm]      | [mm]   |
| 300             | 35 g6   | 64     | 35   | 39   | 4    | Suggested material: Steel with tensile strength<br>σR ≥ 900MPa                   | N°2 x 120°                     | 10x8x50   | 10 H8 | Dimension according to<br>UNI6604 / DIN 6885 standard. | 1 x 45°            | 0.5 x 45° | (*)    |
| 301             | 35 g6   | 64     | 35   | 43   | 5    |  | N°2 x 120°                     | 10x8x50   | 10 H8 |  | 1 x 45°            | 0.5 x 45° | 0.5    |
| 303 - 304 - 305 | 65 g6   | 95     | 65   | 75   | 6    |  | N°2 x 120°                     | 18x11x80  | 18 H8 |  | 1 x 45°            | 0.5 x 45° | 0.8    |
| 306             | 80 g6   | 116    | 80   | 92   | 7    |  | N°2 x 120°                     | 22x14x100 | 22 H8 |  | 1 x 45°            | 0.5 x 45° | 0.8    |
| 307             | 90 g6   | 141    | 90   | 102  | 8    |  | N°2 x 120°                     | 25x14x125 | 25 H8 |  | 2 x 45°            | 1 x 45°   | 0.8    |
| 309             | 120 g6  | 128    | 120  | 136  | 10   |  | N°2 x 120°                     | 32x18x110 | 32 H8 |  | 2 x 45°            | 1 x 45°   | 1.6    |
| 310             | 130 g6  | 138    | 130  | 146  | 10   |  | N°2 x 120°                     | 32x18x120 | 32 H8 |  | 2 x 45°            | 1 x 45°   | 1.6    |

(\*) Relief groove (UNI 4386 - 75 E0.6x0.3)



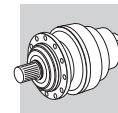
**FZP**



|     | A                                 | B                 | C                              | Shaft material   | D    | E    | F    | G    | H    | K    | J    | L    | M    | N    | O    | P    | Q    | R    | DC*  |
|-----|-----------------------------------|-------------------|--------------------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|     | Splined shaft<br>DIN 5480<br>[mm] | Ø H7 - g6<br>[mm] | Relief groove diameter<br>[mm] |  | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 311 | 120x3x38                          | 108               | 112                            | Suggested material: Steel with tensile strength<br>$\sigma_R \geq 900\text{MPa}$ | 124  | 112  | 124  | 19   | 69   | 9    | 70   | 18,5 | 6    | 1    | 1.6  | —    | —    | 1.6  | 60   |
| 313 | 140x5x26                          | 110               | 132                            |  | 142  | 132  | 142  | 26   | 83   | 18   | 84   | 30   | 6    | 1    | 2    | —    | —    | 3    | 60   |
| 314 | 150x5x28                          | 136               | 136                            |  | 152  | 136  | 152  | 16   | 103  | 8    | 104  | 20   | 8    | 1    | 2    | —    | —    | 1.6  | 60   |
| 315 | 150x5x28                          | 136               | 136                            |  | 152  | 136  | 152  | 16   | 103  | 8    | 104  | 20   | 8    | 1    | 2    | —    | —    | 1.6  | 60   |
| 316 | 170x5x32                          | 150               | 154                            |  | 172  | 154  | 172  | 30   | 113  | 20   | 114  | 45   | 9    | 1    | 3    | —    | —    | 3    | 60   |
| 317 | 200x5x38                          | 187               | 192                            |  | 202  | 192  | 202  | 16   | 112  | 7    | 113  | 21   | 9    | 1    | 3.5  | 130  | 10   | 1.6  | 60   |
| 318 | 210x5x40                          | 190               | 194                            |  | 212  | 194  | 212  | 27   | 133  | 20   | 134  | 45   | 9    | 2    | 3    | —    | —    | 3    | 60   |
| 319 | 260x5x50                          | 248               | 243                            |  | 265  | 243  | 265  | 29   | 144  | 20   | 145  | 40   | 11   | 2    | 3    | —    | —    | 3    | 60   |
| 321 | 300x8x36                          | 282               | 281                            |  | 305  | 281  | 305  | 25   | 158  | 25   | 159  | 50   | 12   | 2    | 3    | —    | —    | 3    | 70   |
| 323 | 400x8x48                          | 360               | 381                            |  | 405  | 381  | 405  | 35   | 254  | 26   | 256  | 53,5 | 12   | 2    | 4    | —    | —    | 5    | 70   |
| 325 | 450x8x55                          | 410               | 431                            |  | 455  | 431  | 455  | 34   | 272  | 24   | 274  | 66   | 12   | 2    | 4    | —    | —    | 5    | 70   |

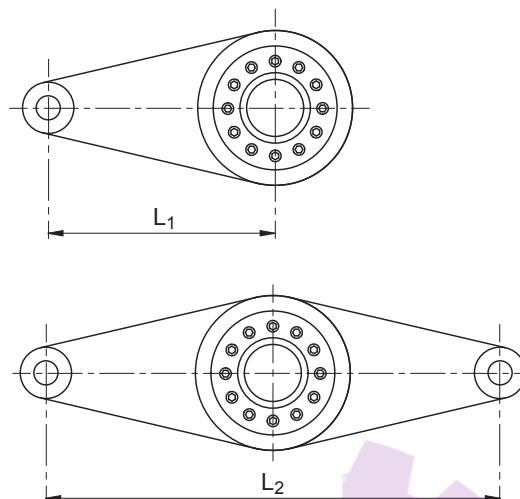
\* Max cutter diameter





## TORQUE ARM

|     | L1<br>[mm] | L2<br>[mm] |
|-----|------------|------------|
| 300 | 300        | 450        |
| 301 | 580        |            |
| 303 | 350        | 500        |
| 304 |            |            |
| 305 |            |            |
| 306 | 410        | 600        |
| 307 | 490        | 700        |
| 309 | 600        | 900        |
| 310 | 1030       | 1000       |
| 311 | 800        | 1100       |
| 313 | 900        | 1200       |
| 314 | 1100       | 1400       |
| 315 |            |            |
| 316 | 1280       | 1500       |
| 317 | 1300       | 1600       |
| 318 | 1900       | 1800       |
| 319 | 1500       | 2000       |
| 321 | 1500       |            |
| 323 | 1750       | 3000       |
| 325 | 2050       | 3200       |



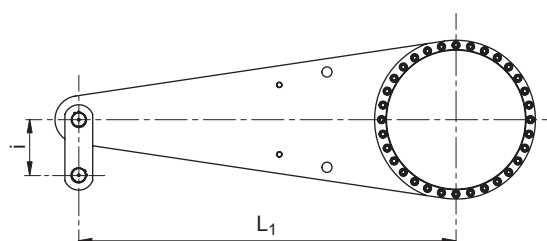
NOTE: Drawings for illustration purpose only

Suggested material: S275JR - UNI EN 10025 or S355JR - UNI EN 10025.

## TORQUE ARM KIT FOR FP VERSIONS

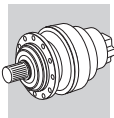
If requested, it's possible to install a specific "Torque arm" Kit on 300 series geraboxes. For detailed information please contact our Technical Service .

|     | L1<br>[mm] | i<br>[mm] |
|-----|------------|-----------|
| 300 | 300        | 55        |
| 301 | 580        |           |
| 303 | 350        | 80        |
| 304 |            |           |
| 305 |            |           |
| 306 | 410        | 115       |
| 307 | 490        |           |
| 309 | 600        |           |
| 310 | 1030       | 135       |
| 311 | 800        | 155       |
| 313 | 900        | 160       |
| 314 | 1100       | 200       |
| 315 |            |           |
| 316 | 1280       | 210       |
| 317 | 1300       | 240       |
| 318 | 1900       | 280       |
| 319 | 1500       | 320       |
| 321 | 1500       | 360       |
| 323 | 1750       | 400       |
| 325 | 2050       | 440       |



NOTE: Draw for illustration purpose only

Suggested material: S275JR - UNI EN 10025 or S355JR - UNI EN 10025.



## NEGATIVE MULTIDISC BRAKE AND HYDRAULIC MOTORS

### H1 SYMBOLS AND UNITS OF MEASURE

| Symbols     | Units of Measure   | Description                     | Symbols  | Units of Measure     | Description                        |
|-------------|--------------------|---------------------------------|----------|----------------------|------------------------------------|
| V           | [cm <sup>3</sup> ] | Rot. displacement               | $\eta_v$ |                      | Volumetric efficiency              |
| p           | [bar]              | Pressure                        | n        | [min <sup>-1</sup> ] | Angular speed                      |
| pA. pB      | [bar]              | Pressure in A and B connections | M        | [Nm]                 | Actual torque onto the motor shaft |
| Q           | [l/min]            | Flow rate                       | cont     |                      | General value, for continuous duty |
| $\eta_t$    |                    | Efficiency                      | int      |                      | General value, intermittent duty   |
| $\eta_{mh}$ |                    | Hydraulic-mechanical efficiency |          |                      |                                    |

### H2 NEGATIVE MULTIDISC BRAKE

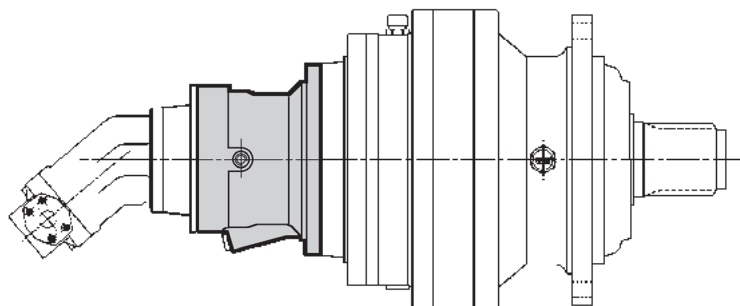
#### DESCRIPTION

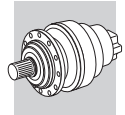
TRASMITAL's fail-safe parking brake is an oil immersed multidisc unit on the input side of the gearbox. The brake is operated when there is no hydraulic pressure and is released when the minimum release pressure is applied.

Use of parking brake is necessary whenever the driven system must be kept at standstill even under external forces and/or torques.

#### Applications:

- winches
- slewing drives
- parking brake on mobile equipment
- general industrial applications





## H2.1 Brake technical data

(A 22)

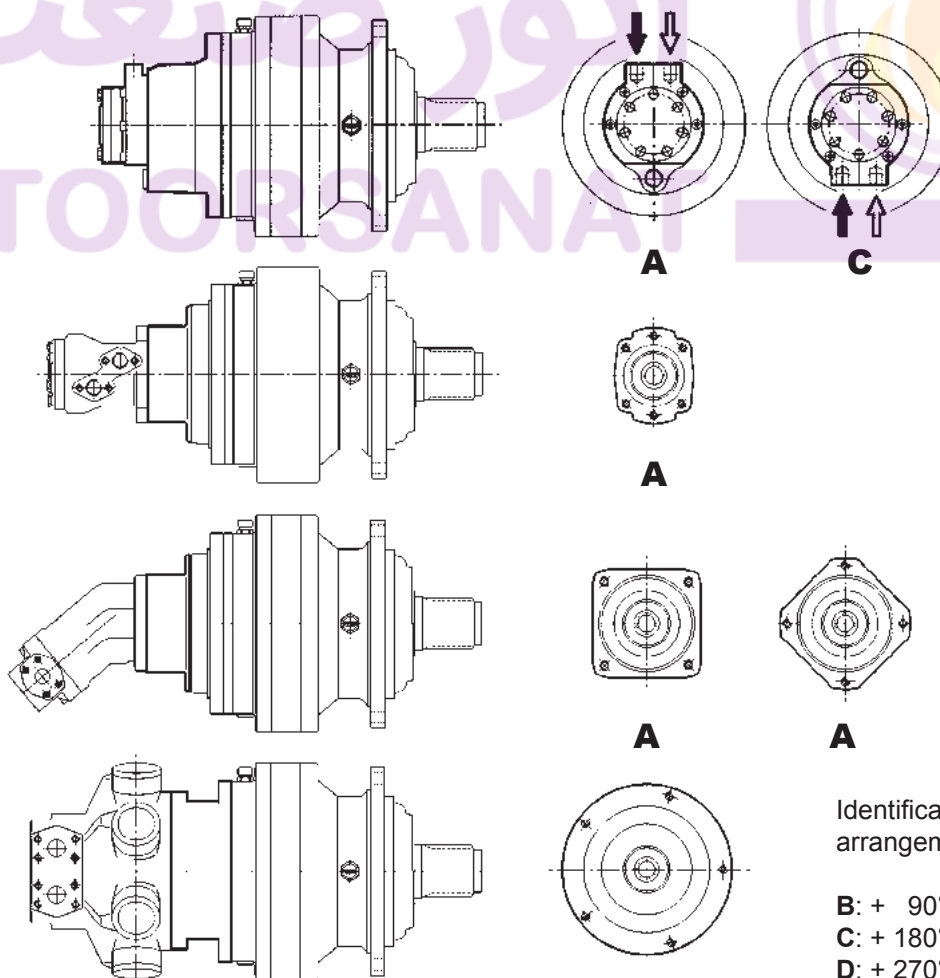
|                              |                 | Type |      |      |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |
|------------------------------|-----------------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
|                              |                 | 4.   |      |      |      |      |      |      | 5.    |       |       |       |       |      | 6.   |      |      |      |      |
|                              |                 | A    | B    | D    | F    | H    | K    | L    | B     | C     | E     | G     | K     | B    | C    | E    | G    | K    | L    |
| Static braking torque Mb     | Nm<br>±10%      | 50   | 100  | 160  | 260  | 330  | 400  | 440  | 400   | 500   | 630   | 800   | 1000  | 850  | 1100 | 1500 | 2100 | 2600 | 3200 |
| Min. opening pressure        | bar             | 10   | 20   | 30   | 20   | 25   | 30   | 34   | 20    | 27    | 20    | 26    | 32    | 14   | 19   | 25   | 19   | 24   | 29   |
| Max. operating pressure      | bar             | 320  |      |      |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |
| Oil volume for brake release | cm <sup>3</sup> | 6.65 | 6.65 | 6.65 | 6.65 | 6.65 | 6.65 | 6.65 | 13.96 | 13.96 | 13.96 | 13.96 | 13.96 | 37.2 | 37.2 | 37.2 | 37.2 | 37.2 | 37.2 |

## H3 INPUTS FOR HYDRAULIC MOTORS

All sizes can be supplied with hydraulic motor input flanges.

The available motor adaptors are shown in the following pages.

The standard orientations (A) of the motor flanges are shown in the following scheme, taking into consideration the input side of the gearbox.

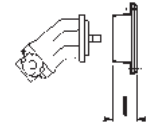
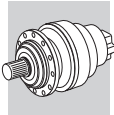


Identification codes of other arrangements:

B: + 90° (clockwise)

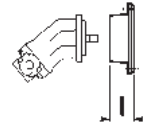
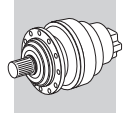
C: + 180° (clockwise)

D: + 270° (clockwise)

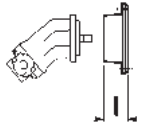


|      |             | SAE Standard J744c |                   |                    |                |                     |                 |                    |                |                     |                |                   |                   |
|------|-------------|--------------------|-------------------|--------------------|----------------|---------------------|-----------------|--------------------|----------------|---------------------|----------------|-------------------|-------------------|
|      |             | SAE A<br>16/32 z9  | SAE A<br>ø15,8/75 | SAE B<br>16/32 z13 | SAE B<br>ø22,2 | SAE BB<br>16/32 z15 | SAE BB<br>ø25,4 | SAE C<br>12/24 z14 | SAE C<br>ø31,7 | SAE CC<br>12/24 z17 | SAE C<br>ø38,1 | SAE D<br>8/16 z13 | SAE E<br>8/16 z13 |
|      |             | S5AM               | S5AN              | S5BA               | S5BB           | S5BM                | S5BN            | S5CA               | S5CB           | S5CP                | S5CQ           | S5DA              | S5EA              |
| CODE |             | I                  |                   |                    |                |                     |                 |                    |                |                     |                |                   |                   |
| 300  | L1-L2-L3-L4 | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 301  | L1-L2-L3-L4 | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 303  | L1          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L2-L3-L4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 304  | L1          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L2-L3-L4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 305  | L1          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L2-L3-L4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 306  | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L3-L4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2-R3-R4    | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 307  | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L3-L4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 309  | R3-R4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L3-L4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 310  | R2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R3-R4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 146               | 158               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                | 113               |
| 311  | L3          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R2(B)-R2(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | R3-R4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 313  | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L3          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 314  | R2(B)-R2(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | R3-R4       | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 146               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 315  | L3          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R3(B)-R3(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | R4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 316  | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L3          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 317  | R3(B)-R3(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | R4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
| 318  | L3          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | L4          | 42                 | 42                | 52                 | 52             | 52                  | 52              | 64                 | 64             | 80                  | 80             | 81                |                   |
|      | R4(B)-R4(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      |             |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
| 319  | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L3          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L4          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
| 321  | R4(B)-R4(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      |             |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L1          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L2          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
| 321  | L3          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | L4          |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      | R4(B)-R4(C) |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |
|      |             |                    |                   |                    |                |                     |                 |                    |                |                     |                | 101               | 113               |

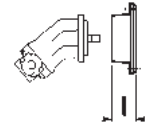
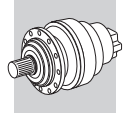




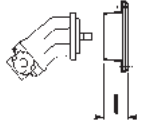
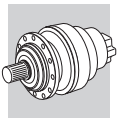
|      |  | CALZONI                  |                          |                           |                          |                          |                           |                            |                            | CHAR-LYNN (EATON)            |                              |                            |                                  |  |                               |                                  |                              |                                  |
|------|--|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|----------------------------|----------------------------|------------------------------|------------------------------|----------------------------|----------------------------------|--|-------------------------------|----------------------------------|------------------------------|----------------------------------|
|      |  | CALZONI<br>MR190 N<br>z8 | CALZONI<br>MR300 N<br>z8 | CALZONI<br>MRP300 N<br>z8 | CALZONI<br>MR460 N<br>z8 | CALZONI<br>MR700 N<br>z8 | CALZONI<br>MR1100 N<br>z8 | CALZONI<br>MR1800 N<br>z10 | CALZONI<br>MR2800 N<br>z10 | SERIE 2000<br>SAE A<br>1" 6B | SERIE 2000<br>SAE A<br>025,4 | SERIE 2000<br>SAE A<br>032 | SERIE 2000<br>SAE A<br>12/24 z14 | SERIE 2000<br>BEARINGLESS<br>12/24 z12 | SERIE 4000<br>SAE B<br>ø31,75 | SERIE 4000<br>SAE C<br>12/24 z17 | SERIE 6000<br>SAE C<br>ø38,1 | SERIE 6000<br>SAE C<br>12/24 z17 |
| CODE |  | C0AA                     | C0AD                     | C0BL                      | C0AG                     | C0AL                     | C0AP                      | C0AS                       | C0AV                       | S5AQ                         | S5AS                         | D0AG                       | D0AH                             | E2AA                                   | S5BP                          | S5CP                             | S5CQ                         | S5CP                             |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 64                       | 78                       | 78                        |                          |                          |                           |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 64                       | 78                       | 78                        |                          |                          |                           |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 64                       | 78                       | 78                        |                          |                          |                           |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 64                       | 78                       | 78                        |                          |                          |                           |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 64                       | 78                       | 78                        |                          |                          |                           |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 64                       | 78                       | 78                        | 143<br>98                | 147<br>102               | 178<br>133                |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       |                            |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 64                       | 78                       | 78                        | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            | 42                           | 42                           | 64                         | 64                               | 52                                     | 68                            | 80                               | 80                           | 80                               |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                          |                           | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            |                              |                              |                            |                                  |  |                               |                                  |                              |                                  |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                          |                           | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            |                              |                              |                            |                                  |  |                               |                                  |                              |                                  |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                          |                           | 98                       | 102                      | 133                       | 130<br>165<br>200          |                            |                              |                              |                            |                                  |  |                               |                                  |                              |                                  |



| CODE |  | SAUER DANFOSS (orbit)    |                                |                   |                            |                             |                    |                             |                              | DENISON Hydraulics           |                           |                         |                  |                       |                       |                          |                       |                   |
|------|--|--------------------------|--------------------------------|-------------------|----------------------------|-----------------------------|--------------------|-----------------------------|------------------------------|------------------------------|---------------------------|-------------------------|------------------|-----------------------|-----------------------|--------------------------|-----------------------|-------------------|
|      |  | OMP-OMR<br>50/315<br>ø25 | OMP-OMR<br>50/315<br>SAE 1" 6B | OVS<br>80/315 ø32 | OMS<br>80/315<br>12/24 z14 | OMSS<br>80/315<br>12/24 z12 | OMT<br>160/400 ø40 | OMT<br>160/400<br>12/24 z17 | OMTS<br>160/400<br>12/24 z16 | OMVS<br>315/800<br>10/20 z16 | M6-M7-M8 3**<br>12/24 z14 | M11-M14 3**<br>8/16 z13 | M3 B 16/32<br>z9 | M4C-M4SC<br>16/32 z13 | M4D-M4SD<br>12/24 z14 | M4DC-M4S<br>DC 12/24 z14 | M4E-M4SE<br>12/24 z14 | M6BS 16/32<br>z13 |
| S5AP | S5AQ   | D0AG                     | D0AH                           | D0AL              | D0AM                       | D0AN                        | D0AQ               | D0AU                        | S5CA                         | S5EA                         | S5AM                      | S5BA                    | S5CA             | S5CA                  | S5CA                  | S5CA                     | S5BA                  |                   |
| I    |  |                          |                                |                   |                            |                             |                    |                             |                              |                              |                           |                         |                  |                       |                       |                          |                       |                   |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 64                           |                           | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 64                           |                           | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 64                           |                           | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 64                           |                           | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 64                           |                           | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 115<br>70                    | 158<br>113                | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                       | 42                             | 64                | 64                         | 37                          | 112                | 112                         | 57                           | 70                           | 113                       | 42                      | 52               | 64                    | 64                    | 64                       | 64                    | 52                |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                                |                   |                            |                             |                    |                             |                              | 70                           | 113                       |                         |                  |                       |                       |                          |                       |                   |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                                |                   |                            |                             |                    |                             |                              | 70                           | 113                       |                         |                  |                       |                       |                          |                       |                   |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                          |                                |                   |                            |                             |                    |                             |                              | 70                           | 113                       |                         |                  |                       |                       |                          |                       |                   |



| CODE |  | LINDE                |                      |                              |                           |                               |                                |                                     | I5AF              |
|------|--|----------------------|----------------------|------------------------------|---------------------------|-------------------------------|--------------------------------|-------------------------------------|-------------------|
|      |  | MMF 43<br>16/32 z15  | MMF 63<br>12/24 z14  | HMF<br>28-35-02<br>16/32 z15 | HMF<br>50-02<br>16/32 z21 | HMF-HMV<br>75-02 16/32<br>z21 | HMF-HMV<br>105-02<br>16/32 z23 | HMF-HMV<br>135-02<br>16/32 z27      |                   |
|      |  | S5BM                 | S5CA                 | S5BM                         | S5CE                      | S5CE                          | S5CD                           | S5DC                                |                   |
|      |  | I                    |                      |                              |                           |                               |                                |                                     |                   |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 81<br>81                            |                   |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 81<br>81                            |                   |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52<br>52<br>52       | 64<br>64<br>64       | 52<br>52<br>52               | 64<br>64<br>64            | 64<br>64<br>64                | 64<br>64<br>64                 | 81<br>81<br>81                      |                   |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52<br>52<br>52       | 64<br>64<br>64       | 52<br>52<br>52               | 64<br>64<br>64            | 64<br>64<br>64                | 64<br>64<br>64                 | 81<br>81<br>81                      |                   |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52<br>52<br>52       | 64<br>64<br>64       | 52<br>52<br>52               | 64<br>64<br>64            | 64<br>64<br>64                | 64<br>64<br>64                 | 81<br>81<br>81                      |                   |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 52<br>52<br>52       | 64<br>64<br>64       | 52<br>52<br>52               | 64<br>64<br>64            | 64<br>64<br>64                | 64<br>64<br>64                 | 101<br>81<br>81<br>81               | 121               |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 52<br>52<br>52<br>52 | 64<br>64<br>64<br>64 | 52<br>52<br>52<br>52         | 64<br>64<br>64<br>64      | 64<br>64<br>64<br>64          | 64<br>64<br>64<br>64           | 101<br>81<br>81<br>81<br>81         | 121               |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 52<br>52<br>52<br>52 | 64<br>64<br>64<br>64 | 52<br>52<br>52<br>52         | 64<br>64<br>64<br>64      | 64<br>64<br>64<br>64          | 64<br>64<br>64<br>64           | 101<br>81<br>81<br>81<br>81         | 121               |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 146<br>101<br>81<br>81<br>101<br>81 | 166<br>121<br>121 |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 101<br>81<br>81<br>101<br>81        | 121<br>121        |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 101<br>81<br>81<br>101<br>81        | 121<br>121        |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52<br>52             | 64<br>64             | 52<br>52                     | 64<br>64                  | 64<br>64                      | 64<br>64                       | 101<br>81<br>81<br>101<br>81        | 121<br>121        |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52                   | 64                   | 52                           | 64                        | 64                            | 64                             | 101<br>81<br>101<br>81              | 121<br>121        |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52                   | 64                   | 52                           | 64                        | 64                            | 64                             | 101<br>81<br>101<br>81              | 121<br>121        |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52                   | 64                   | 52                           | 64                        | 64                            | 64                             | 101<br>81<br>101<br>81              | 121<br>121        |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      |                      |                              |                           |                               |                                | 101<br>101                          | 121<br>121        |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      |                      |                              |                           |                               |                                | 101<br>101                          | 121<br>121        |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      |                      |                              |                           |                               |                                | 101<br>101                          | 121<br>121        |

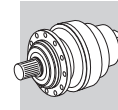


**BRUENINGHAUS HYDROMATIK (BOSCH REXROTH)**

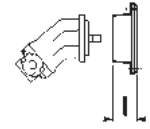
| HOAA | HOAE | HOAH | HOAI | HOBA | HOBC | HOBG | HOBI | HOCA | HOCC | HOCE | HOCCG | HOCl | HO DA | HO DE | S5BM |
|------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|-------|------|
|------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|-------|------|

| CODE |                      | I  |    |    |    |    |    |    |    |     |     |     |     |     |     |     |    |
|------|----------------------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|
| 300  | L1-L2-L3-L4          | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
| 301  | L1-L2-L3-L4          | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
| 303  | L1                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | L2-L3-L4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
| 304  | L1                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | L2-L3-L4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
| 305  | L1                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | L2-L3-L4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     | 52  |     |    |
| 306  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3-L4                | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2-R3-R4             | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 307  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3-L4                | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R3-R4                | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 309  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3-L4                | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R3-R4                | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 310  | L1                   |    |    |    |    |    |    |    |    |     |     | 146 | 146 | 146 | 158 | 158 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L4                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2(B)-R2(C)<br>R3-R4 | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
| 311  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L4                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2(B)-R2(C)<br>R3-R4 | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
| 313  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L4                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | R2(B)-R2(C)<br>R3-R4 | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
| 314  | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L4                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 315  | R3(B)-R3(C)<br>R4    | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 316  | R3(B)-R3(C)<br>R4    | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 317  | R3(B)-R3(C)<br>R4    | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
|      | L3                   | 42 | 52 | 52 | 64 | 64 | 64 | 75 | 75 | 101 | 101 |     |     |     |     |     | 52 |
| 318  | R4(B)-R4(C)          |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L3                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
| 319  | R4(B)-R4(C)          |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L3                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
| 321  | R4(B)-R4(C)          |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L1                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L2                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |
|      | L3                   |    |    |    |    |    |    |    |    |     |     | 101 | 101 | 101 | 113 | 113 | 52 |

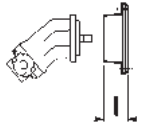
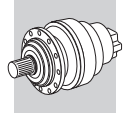




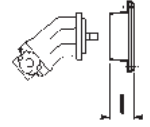
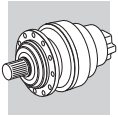
| CODE |  | SAI                  |                                   |                       |                 |                 |                     | KAWASAKI STAFFA         |            |            |  |
|------|--|----------------------|-----------------------------------|-----------------------|-----------------|-----------------|---------------------|-------------------------|------------|------------|--|
|      |  | GM05<br>UNI 8953     | GM1<br>UNI 8953                   | GM1/P1/S1<br>35x2 z16 | GM2<br>UNI 8953 | GM3<br>UNI 8953 | GM4/GM5<br>UNI 8953 | SAI L7 (9)<br>N80x3 z25 | B030 z17   | B045 z17   | HM (HD)B150<br>HM (HD)B200<br>5/10 z16 |
|      |  | S2BA                 | S2AB                              | S2CE                  | S2AF            | S2DN            | S2BF                | S2BH                    | S1AB       | S1AC       | S1AL                                   |
|      |  | I                    |                                   |                       |                 |                 |                     |                         |            |            |  |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 73<br>73             | 37<br>37                          | 57<br>57              |                 |                 |                     |                         |            |            |  |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 73<br>73             | 37<br>37                          | 57<br>57              |                 |                 |                     |                         |            |            |  |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 73<br>73<br>73       | 37<br>37<br>37                    | 57<br>57<br>57        |                 |                 |                     |                         |            |            |  |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 73<br>73<br>73       | 37<br>37<br>37                    | 57<br>57<br>57        |                 |                 |                     |                         |            |            |  |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 73<br>73<br>73       | 37<br>37<br>37                    | 57<br>57<br>57        |                 |                 |                     |                         |            |            |  |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 73<br>73<br>73       | 74<br>37<br>37                    | 57<br>57<br>57        | 98              | 98              | 105                 | 135                     | 140        |            |  |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 73<br>73<br>73<br>73 | 74<br>37<br>37<br>37              | 57<br>57<br>57<br>57  | 98              | 98              | 105                 | 135                     | 140        |            |  |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 73<br>73<br>73<br>73 | 74<br>37<br>37<br>37              | 57<br>57<br>57<br>57  | 98              | 98              | 105                 | 135                     | 140        |            |  |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 73<br>73<br>73<br>73 | 119<br>74<br>37<br>37<br>74<br>37 | 57<br>57<br>57<br>57  | 143<br>98       | 143<br>98       | 150<br>105          | 180<br>135              | 185<br>140 |            |  |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 73<br>73<br>73<br>73 | 74<br>37<br>37<br>74<br>37        | 57<br>57<br>57        | 135<br>98       | 150<br>98       | 150<br>105          | 90                      |            | 187        |  |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 73<br>73<br>73       | 74<br>37<br>37<br>74<br>37        | 57<br>57              | 135<br>98       | 150<br>98       | 150<br>105          | 90                      |            | 187        |  |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 73<br>73<br>73       | 74<br>37<br>37<br>74<br>37        | 57<br>57              | 98              | 98              | 105                 |                         | 135        | 140        |  |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 73                   | 74<br>37<br>74<br>37              | 57                    | 135<br>98       | 150<br>98       | 150<br>105          | 90                      |            | 187        |  |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 73                   | 74<br>37<br>74<br>37              | 57                    | 135<br>98       | 150<br>98       | 150<br>105          | 90                      |            | 187        |  |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 73                   | 74<br>37<br>74<br>37              | 57                    | 135<br>98       | 150<br>98       | 150<br>105          | 90                      |            | 187        |  |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      | 74<br>74                          |                       | 135<br>98<br>98 | 150<br>98<br>98 | 150<br>105<br>105   | 90                      | 135<br>135 | 140<br>140 | 187                                    |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      | 74<br>74                          |                       | 135<br>98<br>98 | 150<br>98<br>98 | 150<br>105<br>105   | 90                      | 135<br>135 | 140<br>140 | 187                                    |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                      | 74<br>74                          |                       | 135<br>98<br>98 | 150<br>98<br>98 | 150<br>105<br>105   | 90                      | 135<br>135 | 140<br>140 | 187                                    |



|      |  | SAUER DANFOSS (piston)                    |                                 |                        |                        |                               |                                  |                                  |                      |                           |                      |                       |                       |                      |                      |                      |
|------|--|---|---------------------------------|------------------------|------------------------|-------------------------------|----------------------------------|----------------------------------|----------------------|---------------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|
|      |  | OMF-SMF-<br>OMV-SMV<br>1-038 16/32<br>z13 | SMF<br>2033-02-070<br>16/32 z21 | SMF 2/089<br>16/32 z23 | SMF 2/119<br>16/32 z27 | SMF<br>2/166-227<br>16/32 z27 | SMF<br>4/023 90M042<br>16/32 z13 | SMF<br>4/046 90M042<br>16/32 z15 | 90 M055 16/32<br>z21 | 90 M075-M100<br>16/32 z23 | 90 M130<br>16/32 z27 | 51 V 060<br>12/24 z14 | 51 V 080<br>12/24 z14 | 51 V 110<br>8/16 z13 | 51 V 160<br>8/16 z13 | 51 V 250<br>8/16 z15 |
| CODE |  | S5BA                                      | S5CE                            | S5CD                   | S5DC                   | S5EC                          | S5BA                             | S5BM                             | S5CE                 | S5CD                      | S5DC                 | S5CA                  | S5CA                  | S5DA                 | S5DA                 | S5ED                 |
|      |  | I   |                                 |                        |                        |                               |                                  |                                  |                      |                           |                      |                       |                       |                      |                      |                      |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 52  | 64                              | 64                     | 81                     |                               | 52                               | 52                               | 64                   | 64                        | 81                   | 64                    | 64                    | 81                   | 81                   |                      |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 52  | 64                              | 64                     | 81                     |                               | 52                               | 52                               | 64                   | 64                        | 81                   | 64                    | 64                    | 81                   | 81                   |                      |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52  | 64                              | 64                     | 81                     |                               | 52                               | 52                               | 64                   | 64                        | 81                   | 64                    | 64                    | 81                   | 81                   |                      |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52  | 64                              | 64                     | 81                     |                               | 52                               | 52                               | 64                   | 64                        | 81                   | 64                    | 64                    | 81                   | 81                   |                      |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 52  | 64                              | 64                     | 81                     |                               | 52                               | 52                               | 64                   | 64                        | 81                   | 64                    | 64                    | 81                   | 81                   |                      |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52  | 64                              | 64                     | 81                     | 146                           | 52                               | 52                               | 64                   | 64                        | 146                  | 64                    | 64                    | 146                  | 146                  | 158                  |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 52  | 64                              | 64                     | 81                     | 101                           | 52                               | 52                               | 64                   | 64                        | 101                  | 64                    | 64                    | 101                  | 101                  | 113                  |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |   |                                 |                        | 101                    | 113                           |                                  |                                  |                      |                           | 101                  |                       |                       | 101                  | 101                  | 113                  |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |   |                                 |                        | 101                    | 113                           |                                  |                                  |                      |                           | 101                  |                       |                       | 101                  | 101                  | 113                  |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |   |                                 |                        | 101                    | 113                           |                                  |                                  |                      |                           | 101                  |                       |                       | 101                  | 101                  | 113                  |



| CODE |  | TRW-TORQMOTOR (PARKER) |                        |                        |                        |                        | VICKERS (EATON)     |                                   |  |                                   | WHITE                    |                            |                          |                            |                             |
|------|--|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------|-----------------------------------|--|-----------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|-----------------------------|
|      |  | MAG 04-32<br>SAE 1" 6B | MAF 06-40<br>SAE 1" 6B | MAB 06-32<br>SAE 1" 6B | MAB 06-32<br>SAE A ø25 | MAE 10-68<br>SAE 1" 6B | MFE 19<br>16/32 z15 | 25M <sup>+</sup> A11<br>16/32 z13 | 35-45<br>M <sup>+</sup> A11<br>12/24 z14 | 50 M <sup>+</sup> A11<br>8/16 z13 | HS 02-15<br>SAE<br>A ø25 | HS 02-15<br>SAE A<br>1" 6B | RS 08-24<br>SAE<br>A ø25 | RS 08-24<br>SAE<br>A 1" 6B | REO 06-45<br>SAE<br>A 1" 6B |
| CODE |  | S5AQ                   | S5AQ                   | S5AQ                   | S5AP                   | S5AQ                   | S5BM                | S5BA                              | S5CA                                     | S5DA                              | S5AP                     | S5AQ                       | S5AP                     | S5AQ                       | S5AP                        |
| 300  | L1-L2-L3-L4<br>R2-R3-R4                      | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 42                       | 42                         | 42                       | 42                         | 42                          |
| 301  | L1-L2-L3-L4<br>R2-R3-R4                      | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 42                       | 42                         | 42                       | 42                         | 42                          |
| 303  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 42                       | 42                         | 42                       | 42                         | 42                          |
| 304  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 42                       | 42                         | 42                       | 42                         | 42                          |
| 305  | L1<br>L2-L3-L4<br>R2-R3-R4                   | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 42                       | 42                         | 42                       | 42                         | 42                          |
| 306  | L1<br>L2<br>L3-L4<br>R2-R3-R4                | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 307  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 309  | L1<br>L2<br>L3-L4<br>R2<br>R3-R4             | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 310  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 146                      | 42                         | 42                       | 42                         | 42                          |
| 311  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 313  | L1<br>L2<br>L3<br>L4<br>R2(B)-R2(C)<br>R3-R4 | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 314  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 315  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 316  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 317  | L1<br>L2<br>L3<br>L4<br>R3(B)-R3(C)<br>R4    | 42                     | 42                     | 42                     | 42                     | 42                     | 52                  | 52                                | 64                                       | 81                                | 101                      | 42                         | 42                       | 42                         | 42                          |
| 318  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                        |                        |                        |                        |                        |                     |                                   |  |                                   | 101                      |                            |                          |                            |                             |
| 319  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                        |                        |                        |                        |                        |                     |                                   |  |                                   | 101                      |                            |                          |                            |                             |
| 321  | L1<br>L2<br>L3<br>L4<br>R4(B)-R4(C)          |                        |                        |                        |                        |                        |                     |                                   |  |                                   | 101                      |                            |                          |                            |                             |



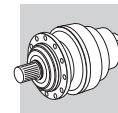
**VOAC (PARKER)**

|                 |                  |                  |                             |                 |                   |                 |                   |                 |                   |                 |                   |                  |                   |                    |                 |                |                            |                             |                |                            |                             |                            |                            |                |                            |          |
|-----------------|------------------|------------------|-----------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|------------------|-------------------|--------------------|-----------------|----------------|----------------------------|-----------------------------|----------------|----------------------------|-----------------------------|----------------------------|----------------------------|----------------|----------------------------|----------|
| F11-5<br>CK ø18 | F11-10<br>CK ø20 | F11-19<br>CK ø25 | F11-19<br>CD 25x1,25<br>z18 | F12-30<br>MF1'D | 30x2 z14<br>MF1'D | F12-40<br>MF1'D | 32x2 z14<br>MF1'D | F12-60<br>MF1'D | 35x2 z16<br>MF1'D | F12-80<br>MF1'D | 40x2 z18<br>MF1'D | F12-110<br>MF1'D | 45x2 z21<br>MF1'D | F11-150/250<br>S-S | 8/16 z13<br>I'D | V12 060<br>I'D | 35x2 z16<br>V12 060<br>S-S | 12/24 z14<br>V12 080<br>S-S | V12 080<br>I'D | 40x2 z18<br>V12 080<br>S-S | 12/24 z14<br>V12 110<br>I'D | 45x2 z21<br>V12 110<br>S-S | 8/16 z13<br>V12 160<br>S-S | V12 160<br>S-S | 8/16 z13<br>V12 160<br>N'C | 45x2 z21 |
|-----------------|------------------|------------------|-----------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|------------------|-------------------|--------------------|-----------------|----------------|----------------------------|-----------------------------|----------------|----------------------------|-----------------------------|----------------------------|----------------------------|----------------|----------------------------|----------|

**VOAA VOAC VOAE VOAG HOAE HOAI H0BC H0BG HOCA S5DA H0BC S5CA H0BG S5CA HOCA S5DA S5DA H0CG**

| CODE | I           | VOAA | VOAC | VOAE | VOAG | HOAE | HOAI | H0BC | H0BG | HOCA | S5DA | H0BC | S5CA | H0BG | S5CA | HOCA | S5DA | S5DA | H0CG |
|------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 300  | L1-L2-L3-L4 | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 301  | L1-L2-L3-L4 | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 303  | L1          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L2-L3-L4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 304  | L1          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L2-L3-L4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 305  | L1          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L2-L3-L4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 306  | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L3-L4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2-R3-R4    | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 307  | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L3-L4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 309  | R3-R4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L3-L4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 310  | R2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R3-R4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L1          |      |      |      |      |      |      |      |      |      | 146  |      |      |      |      |      | 146  | 146  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 311  | L3          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R2(B)-R2(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R3-R4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 313  | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L3          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 314  | R2(B)-R2(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R3-R4       | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 315  | L3          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R3(B)-R3(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 316  | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L3          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 317  | R3(B)-R3(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 318  | L3          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | L4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
|      | R4(B)-R4(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R4          | 64   | 52   | 53   | 53   | 52   | 64   | 64   | 75   | 101  | 81   | 64   | 64   | 75   | 64   | 101  | 81   | 81   | 101  |
| 319  | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L3          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L4          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
| 321  | R4(B)-R4(C) |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | R4          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L1          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |
|      | L2          |      |      |      |      |      |      |      |      |      | 101  |      |      |      |      |      | 101  | 101  |      |



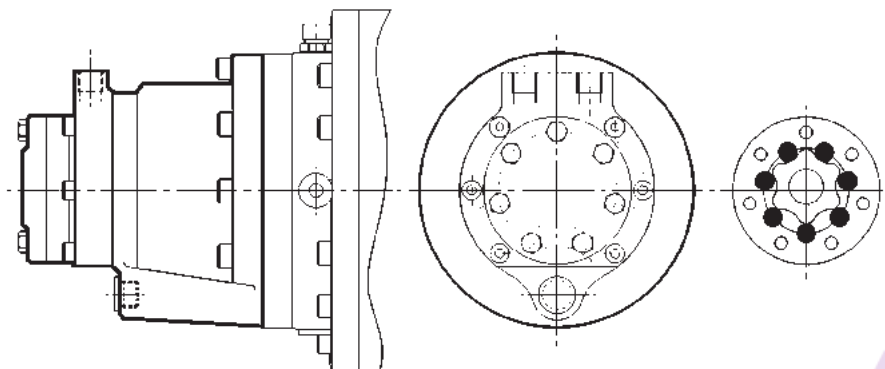


## H4 HYDRAULIC MOTORS

### GENERAL FEATURES

Gearboxes belonging to the series 300 can be supplied complete with MG hydraulic motors manufactured by BONFIGLIOLI TRASMITAL. These motors were designed to provide compact and energy efficient gearmotors.

Before ordering, you should consult with the Technical Service Bonfiglioli.



### H4.1 MG hydraulic motors

Design characteristics:

- Orbit system with GEROLER® rollers between rotor and stator
- Distributor on output shaft
- Displacements from 50 to 250 cm<sup>3</sup>
- Max. pressure 175 bar
- Max. flow rate 48 lt/min
- High efficiency
- Hydraulic brake can be included in the motor overall dimensions
- Inner brake directly controlled by the motor with no valves or outer circuits required.

## H5 TECHNICAL FEATURES

### H5.1 Displacement V [cm<sup>3</sup>]

Geometrical volume produced as a result of each motor rotation corresponding to the theoretical volume of hydraulic oil necessary for a rotation of the driving shaft

### H5.2 Pressure p [bar]

Hydraulic pressure applied to the motor when running.

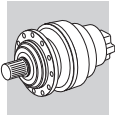
### H5.3 Flow rate Q [l / min]

Hydraulic oil flow through the motor when running.

### H5.4 Efficiency $\eta_t$

Total efficiency of the hydraulic motor given by:

$$\eta_t = \eta_{mh} \times \eta_v \quad (38)$$



### H5.5 Mechanical-hydraulic efficiency $\eta_{mh}$

This is the ratio of actual torque to theoretical torque at the driving shaft. Value depending on inner losses due to mechanical friction as well as hydraulic fluid pressure losses, calculated as follows:

$$\eta_{mh} = \frac{2 \pi \times 10 \times M}{(p_A - p_B) \times V} \quad (39)$$

### H5.6 Hydraulic efficiency $\eta_v$

This is the ratio of motor actual speed to motor theoretical speed. Value depending on the motor inner blow-by between high and low pressure volumes. This value is given by the following formula:

$$\eta_v = \frac{n \times V}{Q \times 1000} \quad (40)$$

### H5.7 Angular speed n [min<sup>-1</sup>]

Hydraulic motor rotation speed. Value resulting from the following formula:

$$n = \frac{Q \times 1000}{V} \times \eta_v \quad (41)$$

### H5.8 Torque M [Nm]

Actual torque transmitted by the hydraulic motor. Value given by the following formula:

$$M = \frac{(p_A - p_B) \times V}{2 \pi \times 10} \times \eta_{mh} \quad (42)$$

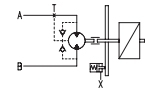
## H6 DESIGNATION

**MG 050 SD\_R P010**

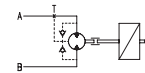
PORTS

**P010** = oil ports on motor housing direct

with brake

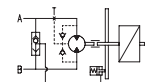


without brake



**B02P** = oil ports with valve brake pilot

with brake

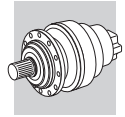


CONSTRUCTIVE SERIES

DISPLACEMENT

|            |        |                 |            |        |                 |
|------------|--------|-----------------|------------|--------|-----------------|
| <b>050</b> | 51.60  | cm <sup>3</sup> | <b>160</b> | 159.60 | cm <sup>3</sup> |
| <b>080</b> | 80.30  | cm <sup>3</sup> | <b>200</b> | 199.80 | cm <sup>3</sup> |
| <b>100</b> | 99.80  | cm <sup>3</sup> | <b>250</b> | 249.30 | cm <sup>3</sup> |
| <b>125</b> | 125.70 | cm <sup>3</sup> |            |        |                 |

ORBIT MOTOR TYPE MG



## H7 DISPLACEMENT SELECTION

Displacement  $V$  of the hydraulic motor should be selected together with the gearbox.

Once the output torque and speed  $n_2$  for the gearbox  $M_{r2}$  is known, proceed as follows:

Define the control pressure value  $p_A - p_B \leq 175$  bar for the motor.

Calculate the gearbox displacement value called  $V_{eq}$  with the following formula:

$$V_{eq} = \frac{2\pi \times 10 \times M_{r2}}{(p_A - p_B) \times \eta_{mh} \times \eta_d} \text{ [cm}^3\text{]} \quad (43)$$

where  $\eta_{mh}$ , for example, is equal to 0.85;

$\eta_d$ : gearbox dynamic efficiency, consider 0.94.

Calculate the value for flow rate  $Q$ , necessary for feeding the hydraulic motor, with the following formula:

$$Q = \frac{n_2 \times V_{eq}}{1000 \times \eta_v} \text{ [l/min]} \quad (44)$$

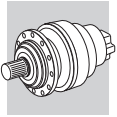
where  $\eta_v$ , for example, is equal to 0.90.

- Select the gearbox size with  $M_{r2}$  and  $n_2$ .
- Look up the diagram (A23) for the gearmotor with equivalent displacement value  $V_{eq}$  and select:
  - a motor that fulfils the  $p$  int. and  $Q$  requirements and at the same time.
  - the indicative value of reduction ratio  $i$ . Please consider that ratio should be obtained with as few reduction stages as possible, to save on gearmotor costs and contain dimensions.

Once you have determined the value of  $M_2$  and the indicative value of  $i$ , select the gearbox and check your selection as indicated in chapt. 14.5.

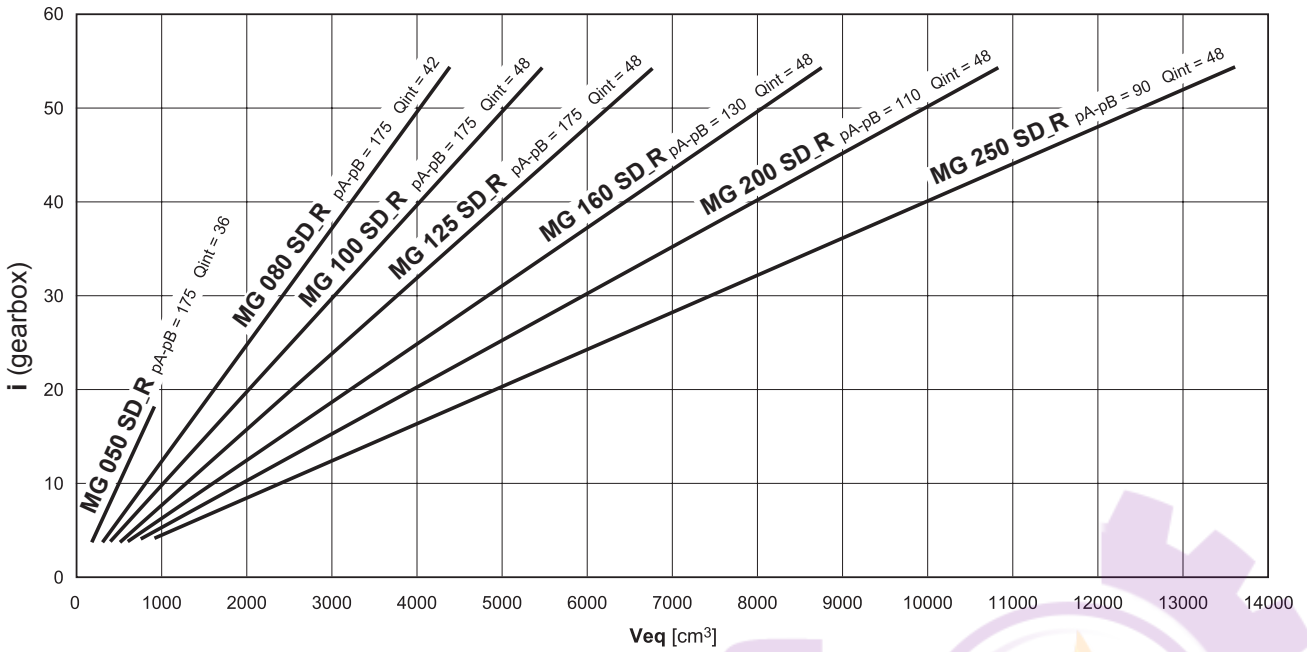
## H8 CHECKING

Check that pressure, efficiency and flow rate values correspond with values indicated in Table (A24 and A25) on motor technical features.

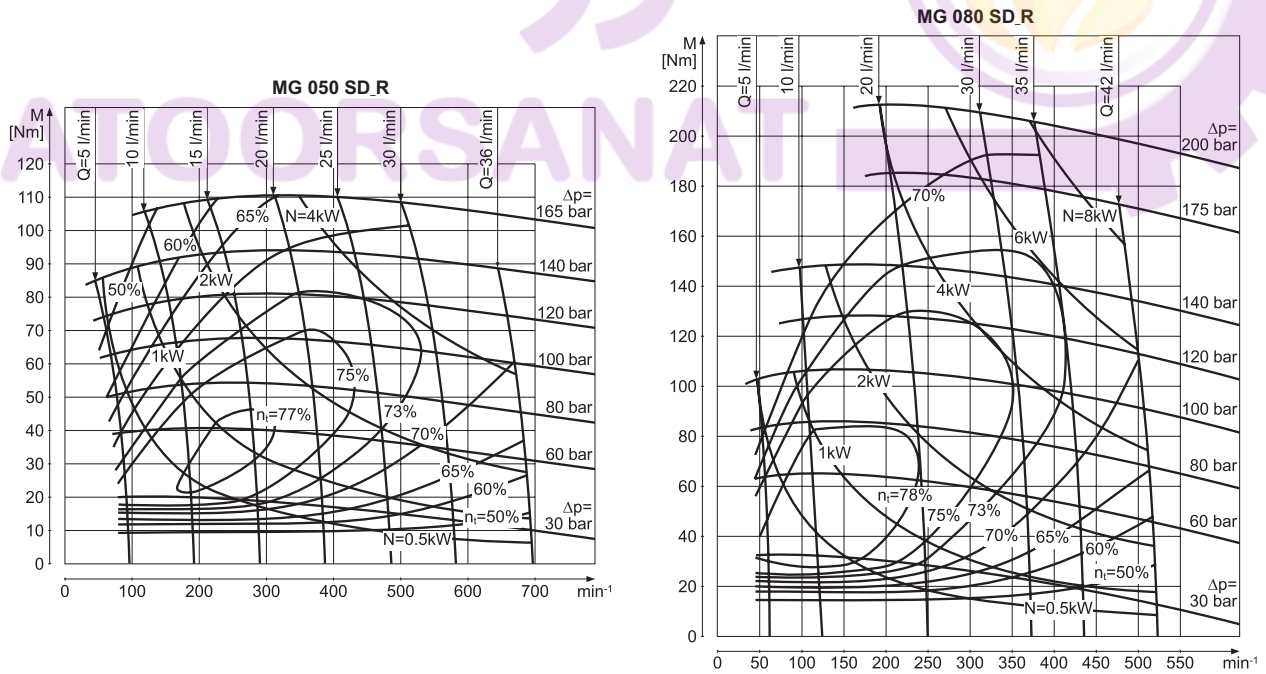


H9 TECHNICAL DATA MG MOTORS

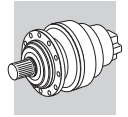
(A 23)



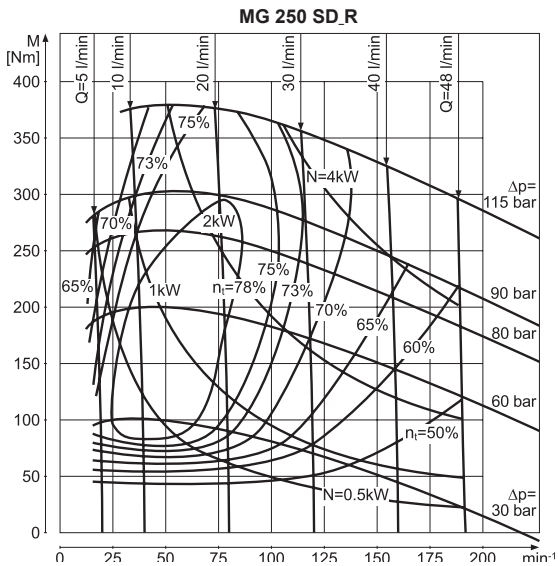
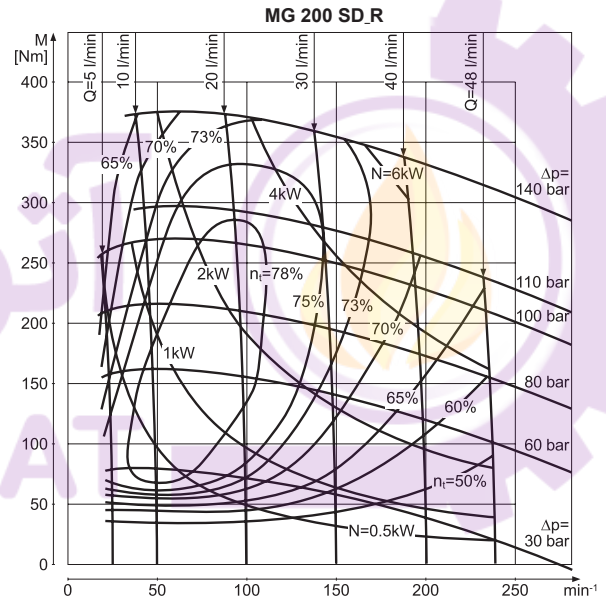
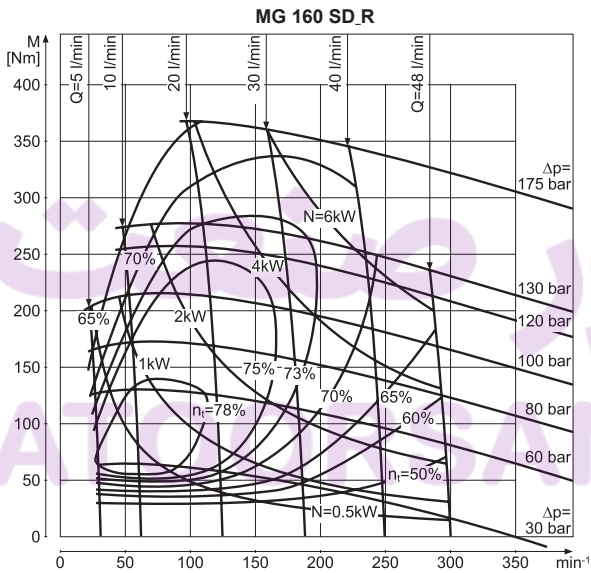
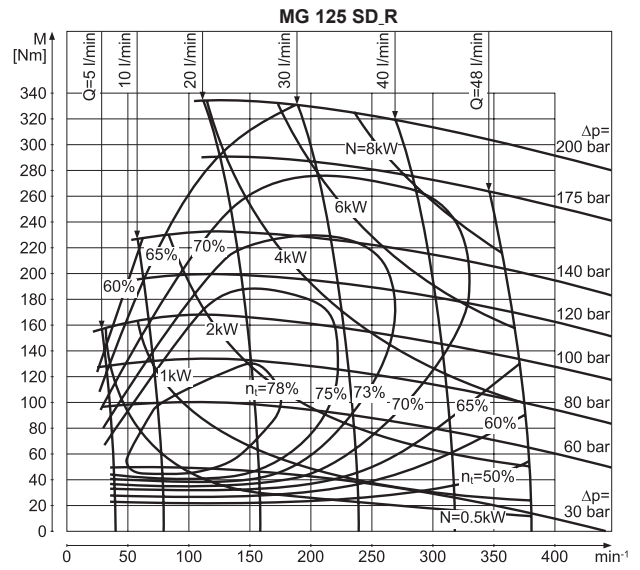
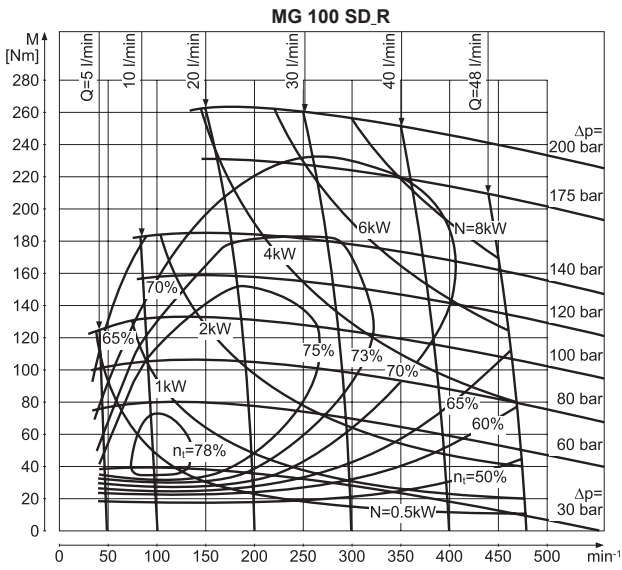
(A 24)







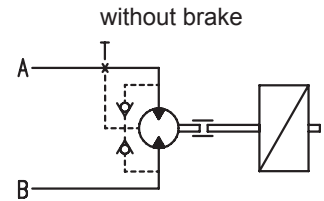
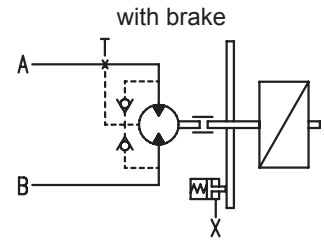
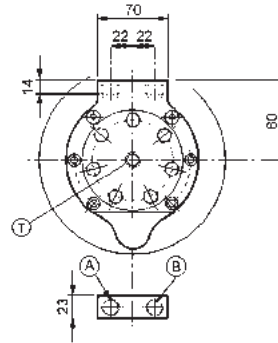
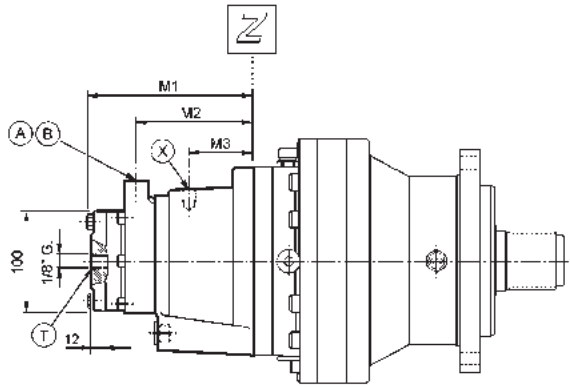
(A 25)





H10 DIMENSIONS MG MOTORS

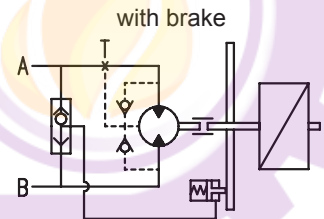
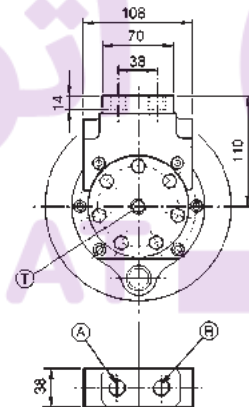
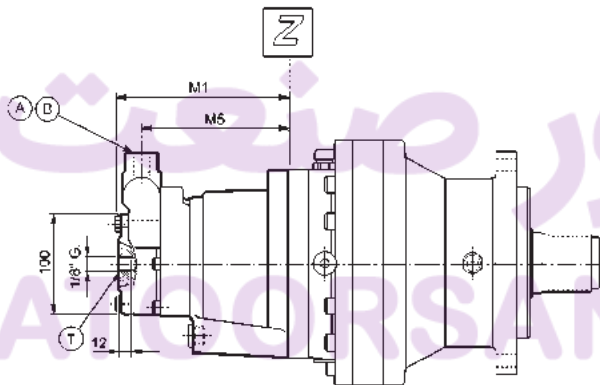
MG-\*\*P010



PORTS

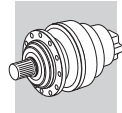
A - B = 3/8" G 19TPI  
T = 1/8" G 28TPI  
X = 1/4 G 19TPI

MG-\*\*B02P



(A 26)

| Suitable gearbox | Motor  |        |        |        |        |        |        | Execution |      |     |
|------------------|--------|--------|--------|--------|--------|--------|--------|-----------|------|-----|
|                  | MG 050 | MG 080 | MG 100 | MG 125 | MG 160 | MG 200 | MG 250 | P010      | B02P |     |
|                  | M1     |        |        |        |        |        |        | M2        | M3   | M5  |
| 300 L1 - L2 - R2 | 162    | 167    | 171    | 175    | 181    |        |        | 113       | 60   | 143 |
| 301 L1 - L2 - R2 | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |
| 303 L1           |        |        |        |        | 203    | 210    | 219    | 135       | 77   | 165 |
| 303 L2 - R2      | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |
| 304 L1           |        |        |        | 197    | 203    | 210    | 219    | 135       | 77   | 165 |
| 304 L2 - R2      | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |
| 305 L1           |        |        |        |        | 203    | 210    | 219    | 135       | 77   | 165 |
| 305 L2 - R2      | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |
| 306 L2           |        |        |        |        | 203    | 210    | 219    | 135       | 77   | 165 |
| 306 R2 - R3      | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |
| 307 L2           |        |        |        |        | 203    | 210    | 219    | 135       | 77   | 165 |
| 307 R2 - R3      | 162    | 167    | 171    | 175    | 181    | 188    | 197    | 113       | 60   | 143 |



## H11 TECHNICAL DATA BRAKES FOR MG MOTORS

| (A 27) |                                   | Brake<br>TYPE 3 |      |      |      | Brake<br>TYPE 4 |      |      |      |
|--------|-----------------------------------|-----------------|------|------|------|-----------------|------|------|------|
|        |                                   | 3E              | 3I   | 3L   | 3N   | 4K              | 4N   | 4R   | 4U   |
|        | Brake torque Mf [Nm]              | 120             | 200  | 280  | 350  | 260             | 320  | 430  | 620  |
|        | Min. opening pressure [bar]       | 16              | 28   | 28   | 35   | 25              | 30   | 24   | 34   |
|        | Max. operating pressure [bar]     | 200             |      |      |      |                 |      |      |      |
|        | Oil volume for brake release [cc] | 6.43            | 6.43 | 6.43 | 6.43 | 6.65            | 6.65 | 6.65 | 6.65 |

| (A 28) | Suitable gearbox | Motor   |    |         |    |         |    |         |    |         |    |         |    |         |    |
|--------|------------------|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|
|        |                  | MG 050  |    | MG 080  |    | MG 100  |    | MG 125  |    | MG 160  |    | MG 200  |    | MG 250  |    |
|        |                  | Mf [Nm] |    | Mf [Nm] |    | Mf [Nm] |    | Mf [Nm] |    | Mf [Nm] |    | Mf [Nm] |    | Mf [Nm] |    |
|        | 300 L1 - L2      | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N |         |    |         |    |
|        | 300 R2           | 120     | 3E | 200     | 3I | 280     | 3L |         |    |         |    |         |    |         |    |
|        | 301 L1 - L2      |         |    | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N | 350     | 3N |
|        | 301 R2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N |         |    |         |    |
|        | 303 L1           |         |    |         |    |         |    |         |    | 430     | 4R | 430     | 4R | 430     | 4R |
|        | 303 L2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 303 R2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 304 L1           |         |    |         |    |         |    | 350     | 3N | 430     | 4R | 430     | 4R | 430     | 4R |
|        | 304 L2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 304 R2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 305 L1           |         |    |         |    |         |    |         |    | 430     | 4R | 430     | 4R | 430     | 4R |
|        | 305 L2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 305 R2           | 120     | 3E | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 306 L2           |         |    | 260     | 4K | 260     | 4K | 430     | 4R | 430     | 4R | 430     | 4R | 430     | 4R |
|        | 306 R2 - R3      |         |    | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N |         |    |
|        | 307 L2           |         |    |         |    | 260     | 4K | 430     | 4R | 430     | 4R | 430     | 4R | 430     | 4R |
|        | 307 R2 - R3      |         |    | 200     | 3I | 280     | 3L | 350     | 3N | 350     | 3N | 350     | 3N | 350     | 3N |

## H12 INSTALLATION

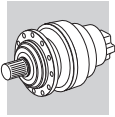
Further to standards on gearbox installation, refer to chapter 15, comply with the following hydraulic motor installation instructions.

### a) Connection to the hydraulic circuit

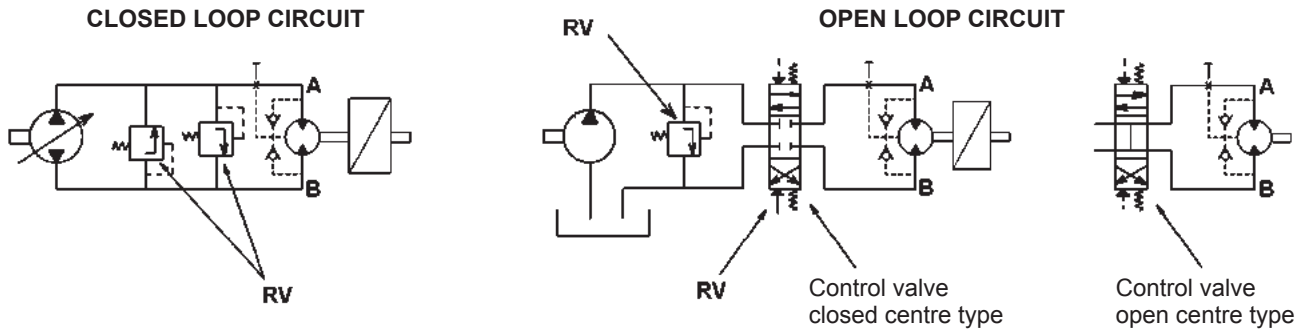
Motors can be connected either to closed or open circuits.

In case of an open circuit, solenoid valve or control distributor can be of the closed or open center type.

The hydraulic motor delivery side should always have a max. pressure valve set to a value not exceeding the  $p_{int}$  value allowed for the hydraulic motor. See hydraulic diagrams (A29).



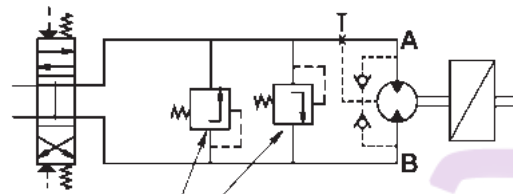
(A 29)



RV = Max pressure valve set to a  $p_{RV} < p_{max}$

If not possible, because the circuits control other devices needing a higher pressure and/or a closed center control valve is fitted and the motor controls parts with a high moment of inertia, max. pressure secondary valves should be as close as possible to the motor. See diagram (A30).

(A 30)



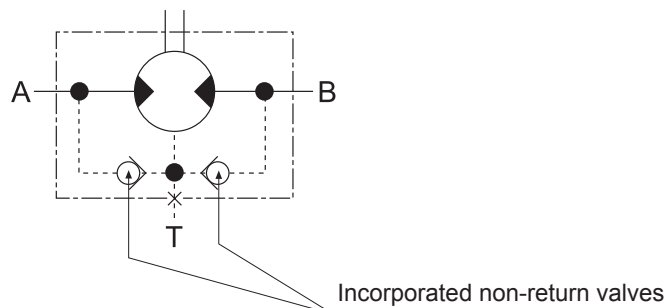
RV = Max pressure secondary valve set to a  $p_{RV} < p_{max}$

### b) Connecting drain port T

These motors have a 1/8" G drain hole in the centre of the cover. The motor is supplied with the port closed by a metal plug (see figure below).

Two non-return valves are incorporated in the motor casing to maintain internal pressure at the same level as the low pressure line A or B if the drain port is not connected to the tank.

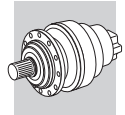
(A 31)



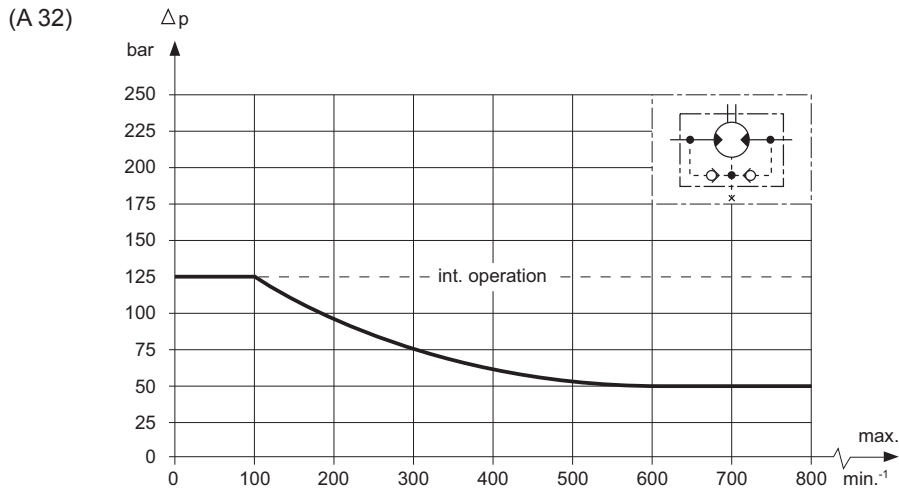
1) If the drain port is connected up, pressure at the shaft seal is always equal to the pressure in the drain line.

2) If the drain port is closed off, pressure at the shaft seal never exceeds pressure in the return line.





The maximum values for pressure in the drain line (case 1) or return line (case 2) are given in the following figure (for continuous and intermittent operating conditions).



The drain port must always be connected up when more motors are operated in series.

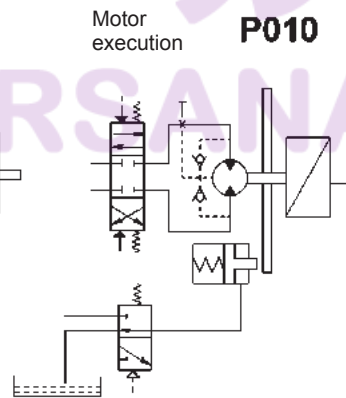
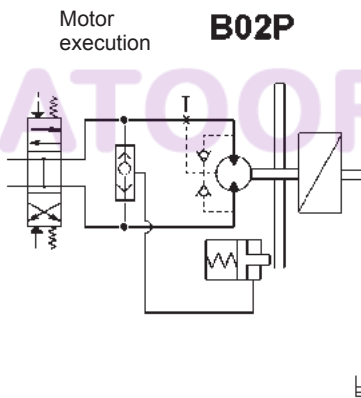
### c) Brake control

For gearmotors equipped with brakes, there are two motor versions available, i.e. the B02P or P010 executions.

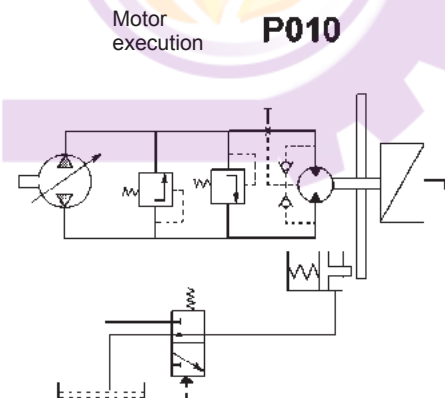
In the B02P version, the motor has an in-built, direct brake control system. In the P010 version, an auxiliary branching is required to control the brake. See the following diagram.

#### (A 33) OPEN LOOP CIRCUIT

Control valve open centre type    Control valve closed centre type



#### CLOSED LOOP CIRCUIT



### d) Hydraulic oil

Use hydraulic mineral oil with viscosity ISO VG 46 (46 Cst at  $t = 40^{\circ}\text{C}$ ).

It is recommended the oil temperature should be between  $+30^{\circ}\text{C}$  and  $+70^{\circ}\text{C}$ .

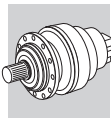
### e) Oil filtering

For reliable motor operation and long life, it is important that the hydraulic circuit has a filter for a proper oil filtering according to the following degree:

degree 9 NAS 1638

degree 6 SAE

degree 18/15 SO DIS 4406



## PLANETARY GEARBOX SERIES 300 ATEX CONFIGURATION

### A1 SCOPE OF DOCUMENT

This Technical Bulletin serves as an aid for the selection of 300 series planetary gear units intended for installation in explosion risk areas, classified according to Directive 1999/92/EC.

This Technical Bulletin is an integral part of the 300 series, and subsequent revisions, and has the following scope:

- describes the **constructional characteristics** of the reducers comply with the directive 2014/34/EU, where these differ from those of standard construction gear units - See section A4.2.
- specifies the **selection criteria** approved by the manufacturer that said gear units operate keeping the minimum security requirements required by the Directive 2014/34/EU - See section A4.4.

### A2 INTRODUCTION TO THE ATEX DIRECTIVES

Under the provisions of Directive 2014/34/EU, an explosive atmosphere is defined as a mixture:

- of **flammable substances**, whether gas, vapour, mist or dust;
- with **air**;
- in certain **atmospheric conditions**;
- in which, following ignition, combustion spreads to the entire unburned mixture (note that in the case of dust, the entire quantity of dust is not always completely burnt after combustion).

An atmosphere which may potentially be transformed into an explosive atmosphere due to operating and/or ambient conditions is defined as a **potentially explosive atmosphere**. The products governed by Directive 2014/34/EU are intended for use only in a potentially explosive atmosphere defined in this way.

#### European harmonised ATEX standards

The European Union has issued two harmonisation guidelines in the area of health and safety. Directive 2014/34/EU stipulates the minimum safety requirements for products intended for use in explosion risk areas within the member countries of the European Union. The directive also assigns such equipment to **categories**, which are defined by the directive itself.

Directive 1999/92/EC defines the minimum health and safety requirements for the workplace, for working conditions and for the handling of products and materials in explosion risk areas. The directive also divides the workplace into zones and defines the criteria for the application of product **categories** in said **zones**.

The following table describes the **zones** into which the user of a plant, in which an explosive atmosphere may occur, is required to divide the equipment application areas.

| Zones              |                  | Formation frequency of a potentially explosive atmosphere                                       | Type of danger |
|--------------------|------------------|---|----------------|
| Gaseous atmosphere | Dusty atmosphere |   |                |
| G                  | D                |   |                |
| 0                  | 20               | Present continuously or for long periods  | Permanent      |
| 1                  | 21               | Likely to occur in normal operation occasionally  | Potential      |
| 2                  | 22               | Not likely to occur in normal operation but if it does occur will persist for short period only | Minimal        |

**BONFIGLIOLI RIDOTTORI gear units selected in this catalogue are suitable for installation in zones 1, 21, as highlighted in light gray in the above table, 2 and 22 only on request by contacting our Technical Department, highlighted in dark gray in the diagram above.**

Starting from July 1, 2003, the Atex Directives apply throughout the European Union, and replace the divergent laws currently in force at national and European level in the field of explosive atmospheres.

The directives apply to mechanical, hydraulic and pneumatic equipment.

#### Levels of protection for the various categories of equipment

The various categories of equipment must be able to operate in conformity with the Manufacturers operational specifications, at certain defined levels of protection.

| Protection level | Category |          | Type of protection  | Operating conditions   |
|------------------|----------|----------|---|--|
|                  | Group I  | Group II |   |  |
| Very high        | M1       |          | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational even in the presence of an explosive atmosphere  |
| Very high        |          | 1        | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational in zones 0, 1, 2 (G) and/or zones 20, 21, 22 (D) |
| High             | M2       |          | Protection suitable for normal operation and heavy duty conditions  | Power to the equipment is shut off in the presence of a potentially explosive atmosphere       |
| High             |          | 2        | Protection suitable for normal operation and frequent faults or equipment in which malfunction is normal. | The equipment remains powered and operational in zones 1, 2 (G) and/or zones 21, 22 (D)        |
| Normal           |          | 3        | Protection suitable for normal operation  | The equipment remains powered and operational in zones 2 (G) and/or 22 (D)                     |

 BONFIGLIOLI TECHNICAL SERVICE

#### Definition of groups (EN 1127-1)

**Group I** Applies to equipment intended for use underground in parts of mines and those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust.

**Group II** Applies to equipment intended for use in other places liable to be endangered by explosive atmospheres.

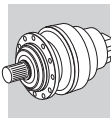
The areas highlighted in grey indicate the only categories in which BONFIGLIOLI RIDOTTORI products may be used. BONFIGLIOLI RIDOTTORI products may not therefore be installed in mines, classified in **Group I**. To summarise, the classification of equipment into groups, categories and zones is illustrated in the table below, where the availability of BONFIGLIOLI RIDOTTORI products is highlighted in grey.

| Group                                       | I               |    | II  |    |      |      |      |      |
|---|-----------------|----|---|----|------|------|------|------|
|   | mines, firedamp |    | other potentially explosive areas (gas, dust) |    |      |      |      |      |
| Category                                    | M1              | M2 | 1   |    | 2    |      | 3    |      |
| Atmosphere <sup>(1)</sup>                   |                 |    | G   | D  | G    | D    | G    | D    |
| Zone  |                 |    | 0   | 20 | 1    | 21   | 2    | 22   |
| Type of protection gear unit <sup>(2)</sup> |                 |    |   |    | c, k | c, k | c, k | c, k |

 BONFIGLIOLI TECHNICAL SERVICE

(1) G = gas D = DUST

(2) as per EN13463



### A3 USE, INSTALLATION AND MAINTENANCE



The instructions for safe storage, handling and use of the product are given in the unit's User, Installation and Service Manual.

This document must be kept in a suitable place, in the vicinity of the installed gear unit, as a reference for all persons authorised to work with or on the product throughout its service life.

The Manufacturer reserves the right to modify, supplement or improve the Manual, in the interests of the User.

### A4 PECULIARITIES OF 300 SERIES GEAR UNITS COMPLIANT WITH DIRECTIVE ATEX

#### A4.1 PRODUCT AVAILABILITY



Frame sizes : 300 to 321.

|                | 3...L     |     | 3...R     |     | 3/V           |
|----------------|-----------|-----|-----------|-----|---------------|
| Configurations | 300...321 | L 1 | -         | -   | -             |
|                | 300...321 | L 2 | 300...306 | R 2 | -             |
|                | 300...321 | L 3 | 300...317 | R 3 | 300...307 L 3 |
|                | 300...321 | L 4 | 300...321 | R 4 | -             |

| Versions | Foot mount |    | Flange mount |       |    | Shaft mount | Agitator (vertical) |
|----------|------------|----|--------------|-------|----|-------------|---------------------|
|          |            |    |              |       |    |             |                     |
|          | PC         | PZ | MC/HC        | MZ/HZ | FZ | FP          | VK                  |

|  |  |  |  |   |
|--|--|--|--|---|
|  |  |  |  | Hydraulic motor connecting  |
|  |  |  |  | Standard negative multidisco brake<br>6 = Type: 4, 5, 6<br>A = Braking torque: A, B, C, ... |

**NOTE:**

- With the negative multi disc brake, you must always ensure a minimum pressure for opening the discs. This must be 20% higher than that of the table of the brakes.

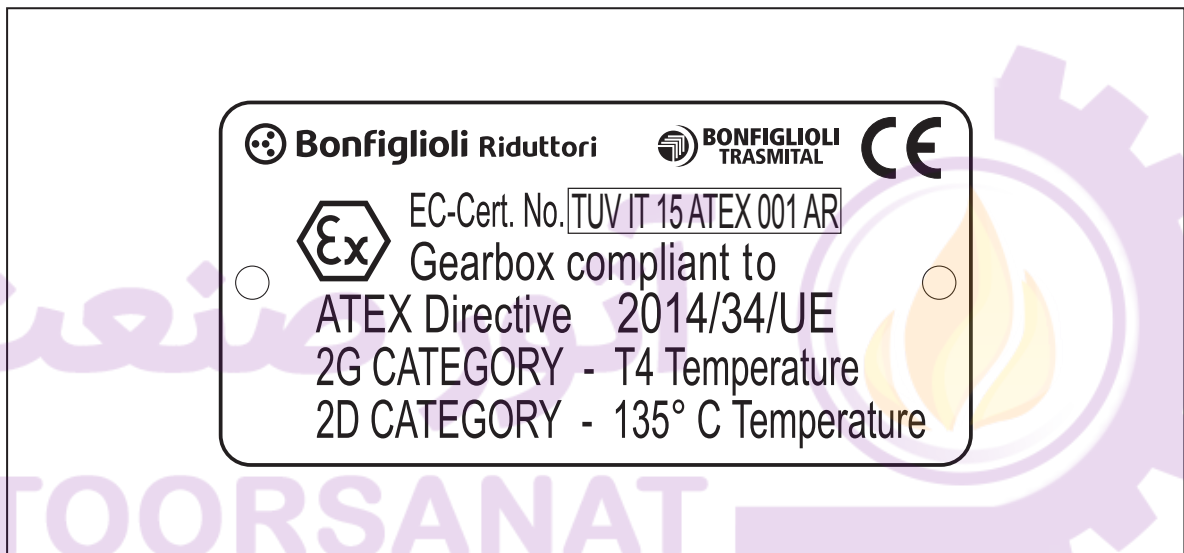
- The pressure max. of brake control must not exceed 50 bar.

| Accessories |       |     |     |     |     |
|-------------|-------|-----|-----|-----|-----|
|             | P ... | B0A | M0A | G0A | W0A |



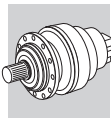
#### A4.2 CONSTRUCTIONAL CHARACTERISTICS

- Only synthetic lubricants are used.
- Only VITON® gaskets are used.
- Oil seals are equipped with dust lips.
- Vent plugs are equipped with valves with anti-intrusion springs, to prevent contamination of the lubricant by solid particles.
- Oil filler, drain and level plugs are made from steel and equipped with aluminium lock washers.
- No external metal moving parts in contact with other parts.
- No plastic parts prone to accumulating static charges; if present, such parts are shielded.
- Each gear unit is supplied with an installation drawing indicating the following information:
  - main technical characteristics
  - installation specifications
  - location of oil plugs for the specified mounting position
  - lubrication instructions
- The units are fitted with an additional nameplate specifying the product category. For example:



#### A4.3 OPERATIONAL CHARACTERISTICS

For installation in zones 21 and 22, the Customer must set out and implement a specific cleaning schedule for the unit's surfaces and recesses to prevent build ups of dust exceeding 5 mm in depth.



#### A4.4 SELECTING THE PRODUCT

The gear unit and gearmotor selection procedure is identical to that given in the 300 Series, and any future revisions thereof.

The following chapters contain variations to the procedure given in the catalogue, and subsequent revisions thereof as regards the selection of products compliant with 2014/34/EU, which supersede the procedure specified in the catalogue for units intended for installation in areas without risk of explosion.

These variations primarily affect the following:

- Application of an adjusting factor to the thermal capacity.
- Application of a service factor «  $f_s$  » with a greater safety margin.

#### - Thermal capacity « $P_t$ » [kW]

This parameter is linked to the gearbox thermal limit. Values for the thermal capacity are listed within the rating charts of gearboxes and gearmotors and represent the mechanical power that can be transmitted continuously at an input speed  $n_1$  and at an ambient temperature of 20°C, without the temperatures  $t_o$  and  $t_s$  exceeding the values indicated in the chapter "Allowed temperature limits".

When the duty cycle is formed by short operating periods and rest time is long enough for the unit to cool down, the thermal capacity is hardly significant and it may be omitted from calculation.

For ambient temperatures other than 20°C, intermittent duty and drive speed  $n_1$  other than the reference speed listed in the rating charts,  $P_t$  is to be adjusted through thermal factor  $f_t$  and/or speed factor  $f_v$  as listed in the following tables. Finally, make sure that the following condition is always satisfied:

$$P_{r1} \leq P_t \times f_t \times f_v \times f_{Ex}$$

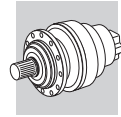
| $t_a$<br>(°C) | Continuous duty | $f_t$                        |     |     |     |
|---------------|-----------------|------------------------------|-----|-----|-----|
|               |                 | Intermittent duty            |     |     |     |
|               |                 | Intermittence ratio<br>« I » |     |     |     |
|               |                 | 80%                          | 60% | 40% | 20% |
| 10            | 1.2             | 1.3                          | 1.6 | 1.8 | 2.0 |
| 20            | 1.0             | 1.1                          | 1.3 | 1.5 | 1.7 |
| 30            | 0.9             | 1.0                          | 1.2 | 1.3 | 1.5 |
| 40            | 0.7             | 0.8                          | 0.9 | 1.0 | 1.2 |
| 50            | 0.5             | 0.6                          | 0.7 | 0.8 | 0.9 |

| $n_1$ (min <sup>-1</sup> ) | $f_v$ |
|----------------------------|-------|
| 500                        | 1.35  |
| 900                        | 1.2   |
| 1500                       | 1.0   |
| 1800                       | 0.85  |

$$I = \frac{t_f}{t_f + t_r} \times 100$$

$t_f$  = operating time under load;  
 $t_r$  = rest time.

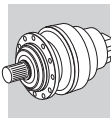
| Frame size | Configuration |             | reductions | $f_{Ex}$ |
|------------|---------------|-------------|------------|----------|
|            | in line       | right angle |            |          |
| 300...321  | L             | -           | 1          | 0.8      |
| 300...321  | L             | -           | 2          | 0.9      |
| 300...321  | L             | -           | 3 - 4      | 1.0      |
| 300...306  | -             | R           | 2          | 0.8      |
| 300...321  | -             | R           | 3 - 4      | 0.9      |



- Service factor in Atex gearboxes with Negative multidisc brake

|     |    | POS A, E, F, G Input speed [rpm] |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|-----|----|----------------------------------|-----|-----|-----|-----|----------------|-----|-----|-----|------|----------------|------|------|------|------|------|------|------|
|     |    | 100                              | 200 | 300 | 400 | 500 | 600            | 700 | 800 | 900 | 1000 | 1100           | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 |
| 300 | L1 | Unusable speed                   |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 301 | L1 | Unusable speed                   |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 303 | L1 | 85%                              |     |     |     |     | Unusable speed |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 305 | L1 | 85%                              |     |     |     |     | Unusable speed |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 306 | L1 | 85%                              |     |     |     |     | Unusable speed |     |     |     |      |                |      |      |      |      | 75%  |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 307 | L1 | 85%                              |     |     |     |     | Unusable speed |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 309 | L1 | 85%                              |     |     |     |     | Unusable speed |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 310 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 311 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 313 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
| 315 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | Unusable speed                   |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      | 80%            |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 75%            |      |      |      |      |      |      |      |
| 316 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      | 80%            |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 75%            |      |      |      |      |      |      |      |
| 317 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 75%            |      |      |      |      |      |      |      |
| 318 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      | 80%            |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 75%            |      |      |      |      |      |      |      |
| 319 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | 85%                              |     |     |     |     |                |     |     |     |      | Unusable speed |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 80%            |      |      |      |      |      |      |      |
| 321 | L1 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L2 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L3 | no brake                         |     |     |     |     |                |     |     |     |      |                |      |      |      |      |      |      |      |
|     | L4 | 85%                              |     |     |     |     |                |     |     |     |      | 80%            |      |      |      |      |      |      |      |

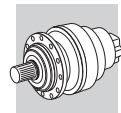
Unusable speed



|     |    | POS O, Q, T, V Input speed [rpm] |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|-----|----|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|--|--|--|--|--|
|     |    | 100                              | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 |     |  |  |  |  |  |
| 300 | L1 | 85%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 301 | L1 | 85%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 303 | L1 | 60%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 305 | L1 | 60%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 306 | L1 | 50%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     | 60% |     |     |      |      |      | 40%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 307 | L1 | 50%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     | 60% |     |     |      |      |      | 40%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 309 | L1 | 50%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     | 60% |     |     |      |      |      | 40%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      | 70%  |      |      |      |      |      |     |  |  |  |  |  |
| 310 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L3 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      | 70% |  |  |  |  |  |
| 311 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L3 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      | 70% |  |  |  |  |  |
| 313 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L3 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
|     | L4 | 85%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      | 70% |  |  |  |  |  |
| 315 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L4 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
| 316 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L4 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
| 317 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L4 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
| 318 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 |                                  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
|     | L4 |                                  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      | 40% |  |  |  |  |  |
| 319 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | 50%                              |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |
| 321 | L1 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L2 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L3 | no brake                         |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |
|     | L4 | 50%                              |     |     |     |     |     |     |     |     |      |      |      | 15%  |      |      |      |      |      | 10% |  |  |  |  |  |

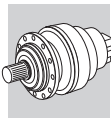
Unusable speed





|     |        | POS B0, B2, I0, I2, J0, J2, M1, M3, P, R, U, W Input speed [rpm] |     |     |     |     |     |     |     |     |      |      |      |                |      |      |      |      |      |
|-----|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|----------------|------|------|------|------|------|
|     |        | 100  | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300           | 1400 | 1500 | 1600 | 1700 | 1800 |
| 300 | R2     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 301 | R2     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 303 | R2     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 305 | R2     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 306 | R2     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 307 | R2     | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 309 | R2     | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 310 | R2 (A) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R2 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
|     | R4     | 85%  |     |     |     |     |     |     |     |     | 70%  |      |      |                |      |      |      |      |      |
| 311 | R2 (A) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R2 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R2 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 313 | R2 (A) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R2 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R2 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 315 | R3 (A) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R3 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 316 | R3 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 317 | R3 (A) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R3 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R3 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 318 | R4 (B) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4     | 60%  |     |     |     |     |     |     |     |     | 40%  |      |      |                |      |      |      |      |      |
| 319 | R4 (B) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R4 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
| 321 | R4 (B) | 60%  |     |     |     |     |     |     |     |     |      |      |      | 40%            |      |      |      |      |      |
|     | R4 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |
|     | R4 (C) | 50%  |     |     |     |     |     | 15% |     |     | 10%  |      |      | Unusable speed |      |      |      |      |      |

Unusable speed



|        |        | POS B1, B3, I1, I3, J1, J3, M0, M2 Input speed [rpm] |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|--------|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
|        |        | 100  | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 |
| 300    | R2     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 301    | R2     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 303    | R2     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 305    | R2     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 306    | R2     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 307    | R2     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      | 75%  |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 309    | R2     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 310    | R2 (A) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | R2 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 311    | R2 (A) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | R2 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R2 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | R4     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
| 313    | R2 (A) |  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      |
|        | R2 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R2 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | R4     |  |     |     |     |     |     |     |     | 85% |      |      |      |      |      |      |      |      |      |
| 315    | R3 (A) |  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
| 316    | R3 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R3 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4     |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
|        | 317    | R3 (A)   |     |     |     |     |     |     | 85% |     |      |      |      |      |      |      |      |      |      |
| R3 (B) |        |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
| R3 (C) |        |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
| R4     |        |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      | 75%  |
| 318    | R4 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 60% |     |     |      |      |      |      |      |      |      |      |      |
| 319    | R4 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
| 321    | R4 (B) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |
|        | R4 (C) |  |     |     |     |     |     | 85% |     |     |      |      |      |      |      |      |      |      |      |

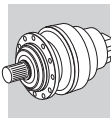
Unusable speed

- Service factor «  $f_s$  »

| Service factor « $f_s$ » |               |                                 |            |             |             |       |
|--------------------------|---------------|---------------------------------|------------|-------------|-------------|-------|
| Duty                     | Starts / hour | Accumulated operating hours (h) |            |             |             |       |
|                          |               | ≤ 5000                          | 10000      | 15000       | 25000       | 50000 |
|                          | z             | Daily operating hours (h)       |            |             |             |       |
| h < 4                    |               | 4 < h < 8                       | 8 < h < 12 | 12 < h < 16 | 16 < h < 24 |       |
| Uniform load             | Z < 10        | 1.10                            | 1.10       | 1.15        | 1.30        | 1.60  |
|                          | 10 < Z < 30   | 1.10                            | 1.15       | 1.30        | 1.50        | 1.80  |
|                          | 30 < Z < 100  | 1.10                            | 1.25       | 1.45        | 1.60        | 2.00  |
| Moderate shock load      | Z < 10        | 1.10                            | 1.25       | 1.45        | 1.60        | 2.00  |
|                          | 10 < Z < 30   | 1.10                            | 1.40       | 1.60        | 1.80        | 2.20  |
|                          | 30 < Z < 100  | 1.20                            | 1.50       | 1.70        | 2.00        | 2.40  |
| Heavy shock load         | Z < 10        | 1.20                            | 1.50       | 1.70        | 2.00        | 2.40  |
|                          | 10 < Z < 30   | 1.30                            | 1.60       | 1.80        | 2.10        | 2.60  |
|                          | 30 < Z < 100  | 1.40                            | 1.75       | 2.00        | 2.30        | 2.80  |

- Limitation of input speed for single-stage (L1) gearboxes

| Frame size | reductions | $n_1$ (min <sup>-1</sup> ) MAX |
|------------|------------|--------------------------------|
| 300 - 301  | L1         | 1000                           |
| 303 - 305  | L1         | 700                            |
| 306 - 309  | L1         | 500                            |
| 310 - 313  | L1         | 400                            |
| 315 - 316  | L1         | 300                            |
| 317 - 321  | L1         | 200                            |

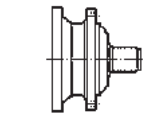


## A5 ORDERING NUMBERS

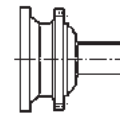
### A5.1 DESIGNATION OF IN-LINE (300 L) AND RIGHT ANGLE (300 R) GEAR UNITS

**3 11 L 2 16.7 HZ**

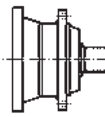
#### OUTPUT VERSION



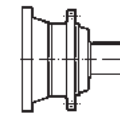
**MZ:** Splined male shaft



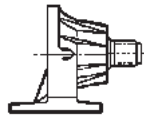
**MC:** Solid keyed shaft



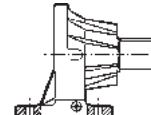
**HZ:** Heavy duty splined male shaft



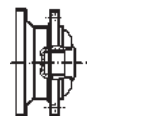
**HC:** Heavy duty solid keyed shaft



**PZ:** Foot mounted with splined shaft



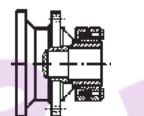
**PC:** Foot mounted with solid keyed shaft



**FZ:** A Hollow splined shaft



**VK:** Reinforced output with large solid keyed shaft for stirrers and mixer



**FP:** Hollow shaft for shrink disc

#### GEAR RATIO

Fill in the value of the gear ratio (including point and decimals) as listed in the selection charts

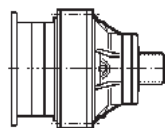
Ex.:  $1/44.6 = 44.6$   $1/131 = 131$

#### REDUCTIONS

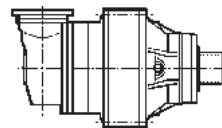
1 - 2 - 3 - 4

#### DESIGN

L = In line



R = Right angle

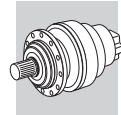


#### GEARBOX FRAME SIZE

|                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|
| <b>00</b> = 300 | <b>06</b> = 306 | <b>11</b> = 311 | <b>17</b> = 317 |
| <b>01</b> = 301 | <b>07</b> = 307 | <b>13</b> = 313 | <b>18</b> = 318 |
| <b>03</b> = 303 | <b>09</b> = 309 | <b>15</b> = 315 | <b>19</b> = 319 |
| <b>05</b> = 305 | <b>10</b> = 310 | <b>16</b> = 316 | <b>21</b> = 321 |

SERIES





- V11B A A W0A EX ...

OPTIONS

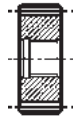
INPUT SHAFT PREFERENTIAL DIRECTION OF ROTATION  
(applicable to angle gear units only)

RA = counterclockwise  
RO = clockwise



CONFIGURATION COMPLIANT WITH THE OLD DIRECTIVE 94/9/EC AND AT THE NEW DIRECTIVE 2014/34/EU.

OUTPUT FITTINGS



P... = Pinions



B0A = Splined bar



M0A = Sleeve coupling



G0A = Shrink disc



W0A = Flange

MOTOR FLANGE ORIENTATION

MOUNTING POSITION



In mounting positions featuring a vertical output shaft, the gearbox will be equipped with an expansion tank. Please request the installation drawing to Bonfiglioli's Technical Service.



INPUT



Input keyed shaft

|       | V01A | V01B | V05B | V06B | V07A | V07B | V10B | V11B | V15B |
|-------|------|------|------|------|------|------|------|------|------|
| diam. | Ø24  | Ø38  | Ø48  | Ø60  | Ø60  | Ø80  | Ø80  | Ø80  | Ø120 |



Electric motor connection **P** + motor size (80,90,100,132,160, ...)



Hydraulic Motor connection

BONFIGLIOLI  
TECHNICAL SERVICE

ONLY WITH HYDRAULIC MOTOR ADAPTOR



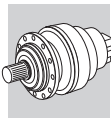
Standard negative multidisc brake

6 = Type: 4, 5, 6

A = Braking torque: A, B, C, ...

Negative multidisc brake for MG hydraulic motor

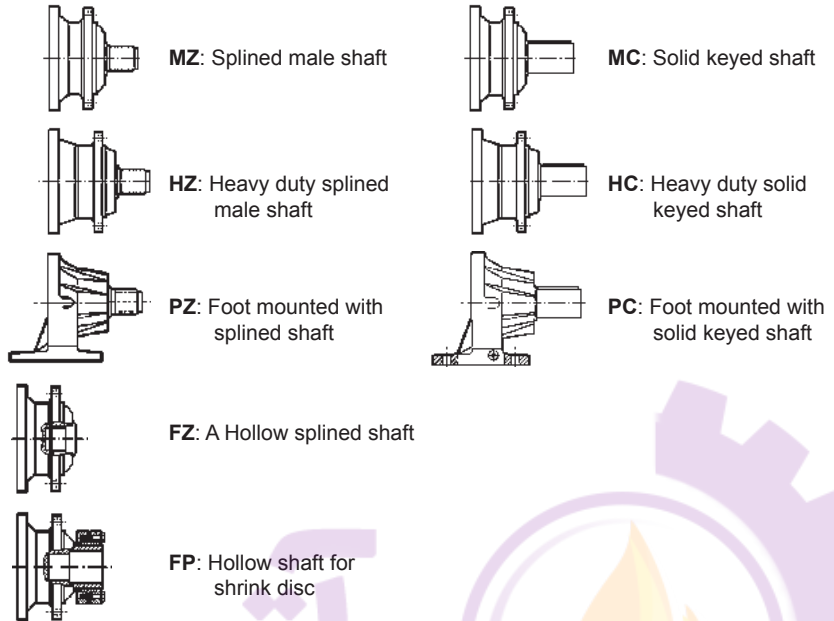
SF = Without brake



A5.2 DESIGNATION OF COMBINED WORM+PLANETARY (3/V) GEAR UNITS

**3/V 05 L 3 623 PC**

OUTPUT VERSION



GEAR RATIO

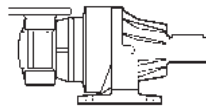
Fill in the value of the gear ratio (including point and decimals) as listed in the selection charts  
Ex.: 1/773 = 773

REDUCTIONS

3

DESIGN

L = Combined 300 unit, 2 planetary stages + worm gear units

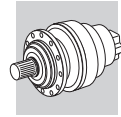


GEARBOX FRAME SIZE

**00** = 3/V 00    **06** = 3/V 06  
**01** = 3/V 01    **07** = 3/V 07  
**03** = 3/V 03  
**05** = 3/V 05

SERIES

Combined 300 gearboxes / Worm gear units



**P80** **B5** **AF** **W0A** **EX**

CONFIGURATION COMPLIANT WITH THE DIRECTIVE 2014/34/EU.

OUTPUT FITTINGS



P... = Pinions



B0A = Splined bar



M0A = Sleeve coupling



G0A = Shrink disc



W0A = Flange

MOUNTING POSITION

MOTOR EXECUTION  
B5, B14

INPUT

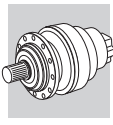


Electric motor connection  
P + motor size (80,90,100,132,160, ...)



Input keyed shaft  
HS





## A6 DECLARATION OF CONFORMITY

The Declaration of Conformity, is the document which attests to the conformity of the product to Directive 2014/34/EU.

The validity of the Declaration is bound to observance of the instructions given in the User, Installation and Service Manual for safe use of the product throughout its service life.

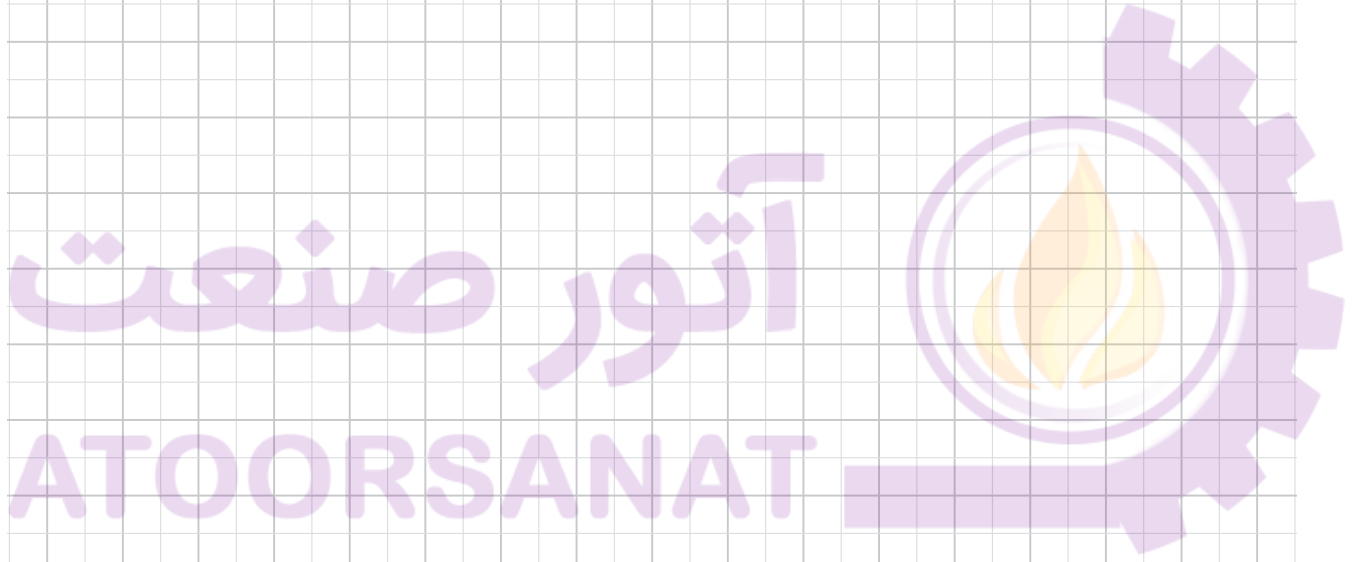
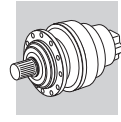
This can be downloaded from [www.bonfiglioli.com](http://www.bonfiglioli.com) where the manual is available in PDF format in a number of languages.

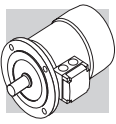
The instructions regarding ambient conditions are of particular importance inasmuch as failure to observe them during operation of the product renders the certificate null and void. In case of doubt regarding the validity of the certificate of conformity, contact the BONFIGLIOLI RIDUTTORI technical department.

آتور صنعت  
ATOORSANAT





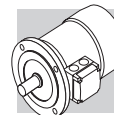




## ELECTRIC MOTORS

### M1 SYMBOLS AND UNITS OF MEASUREMENT

| Symbols    | Units of Measure    | Description                        | Symbols   | Units of Measure     | Description  |
|------------|---------------------|------------------------------------|-----------|----------------------|--|
| $\cos\phi$ | –                   | Power factor                       | $n$       | [min <sup>-1</sup> ] | Rated speed  |
| $\eta$     | –                   | Efficiency                         | $P_B$     | [W]                  | Power drawn by the brake at 20°C                         |
| $f_m$      | –                   | Power adjusting factor             | $P_n$     | [kW]                 | Motor rated power  |
| $I$        | –                   | Cyclic duration factor             | $P_r$     | [kW]                 | Required power   |
| $I_N$      | [A]                 | Rated current                      | $t_1$     | [ms]                 | Brake response time with one-way rectifier               |
| $I_s$      | [A]                 | Locked rotor current               | $t_{1s}$  | [ms]                 | Brake response time with electronic-controlled rectifier |
| $J_c$      | [Kgm <sup>2</sup> ] | Load moment of inertia             | $t_2$     | [ms]                 | Brake reaction time with a.c. disconnect                 |
| $J_M$      | [Kgm <sup>2</sup> ] | Moment of inertia                  | $t_{2c}$  | [ms]                 | Brake reaction time with a.c. and d.c. disconnect        |
| $K_c$      | –                   | Torque factor                      | $t_a$     | [°C]                 | Ambient temperature                                      |
| $K_d$      | –                   | Load factor                        | $t_f$     | [min]                | Work time at constant load                               |
| $K_J$      | –                   | Inertia factor                     | $t_r$     | [min]                | Rest time  |
| $M_A$      | [Nm]                | Mean breakaway torque              | $W$       | [J]                  | Braking work between service interval                    |
| $M_B$      | [Nm]                | Brake torque                       | $W_{max}$ | [J]                  | Maximum brake work for each braking                      |
| $M_N$      | [Nm]                | Rated torque                       | $Z$       | [1/h]                | Permissible starting frequency, loaded                   |
| $M_L$      | [Nm]                | Counter-torque during acceleration | $Z_0$     | [1/h]                | Max. permissible unloaded starting frequency (I = 50%)   |
| $M_s$      | [Nm]                | Starting torque                    |           |                      |  |



## M2 GENERAL CHARACTERISTICS

### M2.1 Production range

The asynchronous three-phase electric motors of BONFIGLIOLI RIDUTTORI's production, are available in basic designs IMB5 and derived versions, with the following polarities: 2, 4, 6, 2/4, 2/6, 2/8, 2/12.

The technical characteristics of compact motors, M type, are also supplied in this manual.

### M2.2 Standards

The motors described in this catalogue are manufactured to the applicable standards shown in the following table.

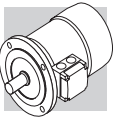
(F 1)

| Title   | CEI             | IEC          |
|---|-----------------|--------------|
| General requirements for rotating electrical machines                               | CEI EN 60034-1  | IEC 60034-1  |
| Terminal markings and direction of rotation of rotating machines                    | CEI 2-8         | IEC 60034-8  |
| Methods of cooling for electrical machines  | CEI EN 60034-6  | IEC 60034-6  |
| Dimensions and output ratings for rotating electrical machines                      | EN 50347        | IEC 60072    |
| Classification of degree of protection provided by enclosures for rotating machines | CEI EN 60034-5  | IEC 60034-5  |
| Noise limits  | CEI EN 60034-9  | IEC 60034-9  |
| Classification of type of construction and mounting arrangements                    | CEI EN 60034-7  | IEC 60034-7  |
| Rated voltage for low voltage mains power   | CEI 8-6         | IEC 60038    |
| Vibration level of electric machines  | CEI EN 60034-14 | IEC 60034-14 |

The motors also comply with foreign standards adapted to IEC 60034-1 as shown here below.

(F 2)

|                 |               |
|-----------------|---------------|
| DIN VDE 0530    | Germany       |
| BS5000 / BS4999 | Great Britain |
| AS 1359         | Australia     |
| NBNC 51 - 101   | Belgium       |
| NEK - IEC 34    | Norway        |
| NF C 51         | France        |
| OEVE M 10       | Austria       |
| SEV 3009        | Switzerland   |
| NEN 3173        | Netherlands   |
| SS 426 01 01    | Sweden        |



### M2.3 Motors for USA and Canada

## CUS

BN motors are available in NEMA Design C configuration (concerning electrical characteristics), in compliance with CSA (Canadian standard) C22.2 No. 100 and UL (Underwriters Laboratory) UL 1004-1. By specifying the option CUS the name plate is marked with both symbols shown here below.



The CUS option does not apply to servo-ventilated motors. US power mains voltages and the corresponding rated voltages to be specified for the motor are indicated in the following table:

(F 3)

| Frequency | Mains voltage | V <sub>mot</sub> |
|-----------|---------------|------------------|
| 60 Hz     | 208 V         | <b>200 V</b>     |
|           | 240 V         | <b>230 V</b>     |
|           | 480 V         | <b>460 V</b>     |
|           | 600 V         | <b>575 V</b>     |

CUS option is applicable onto 50 Hz operating motors as well.

Motors with voltage in ratio 2 (e.g. 230/460-60; 220/440-60) feature, as standard, a 9-stud terminal board. For some executions, as well as for 575V-60H tions, as well as for 575V-60Hz supply, the nominal rating is coincident with the correspondent 50Hz rating.

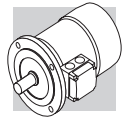
For DC brake motors type BN/M\_FD, the rectifier is connected to a single-phase 230 VAC supply voltage in the motor terminal box.

**Brake power supply** for brake motors is as follows:

(F 4)

| BN_FD<br>M_FD                     | BN_FA<br>M_FA                | Specify |
|-----------------------------------|------------------------------|---------|
| Wired to terminal box 1~230V a.c. | Separate power supply 230V Δ | 230SA   |
|                                   | Separate power supply 460V Y | 460SA   |





## M2.4 China Compulsory Certification

### CCC

Electric motors destined for sale in the People's Republic of China have to be certified under the CCC (China Compulsory Certification) system. BN motors of up to 7 Nm in rated torque are available with CCC certification and a special nameplate bearing the mark shown below:



CCC option is not currently available for servo - ventilated motors.

## M2.5 Directives 2006/95/EC (LVD) and 2004/108/EC (EMC)

BN and M motors meet the requirements of Directives 2006/95/EC (Low Voltage Directive) and 2004/108/EC (Electromagnetic Compatibility Directive) and their name plates bear the CE mark. As for the EMC Directive, construction is in accordance with standards CEI EN 60034-1, EN 61000-6-2, EN 61000-6-4.

Motors with FD brakes, when fitted with the suitable capacitive filter at rectifier input (option **CF**), meet the emission limits required by Standard EN 61000-6-3:2007 "Electromagnetic compatibility - Generic Emission Standard - Part 6-3 Residential, commercial and light industrial environment". Motors also meet the requirements of standard CEI EN 60204-1 "Electrical equipment of machines". The responsibility for final product safety and compliance with applicable directives rests with the manufacturer or the assembler who incorporate the motors as component parts.

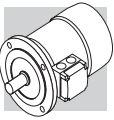
## M2.6 Tolerances

As per the Norms applicable the tolerances here below apply to the following quantities.

(F 5)

|  |                      |
|--|----------------------|
| -0.15 (1 - $\eta$ ) $P \leq 50\text{kW}$ | Efficiency           |
| $-(1 - \cos\phi)/6$ min 0.02 max 0.07    | Power factor         |
| $\pm 20\%$ *                             | Slip                 |
| +20%                                     | Locked rotor current |
| -15% +25%                                | Locked rotor torque  |
| -10%                                     | Max. torque          |

\*  $\pm 30\%$  for motors with  $P_n < 1 \text{ kW}$



### M3 MECHANICAL FEATURES

#### M3.1 Versions

EC-normalised BN motors are available in the design versions indicated in table (F6) as per Standards CEI EN 60034-14.

Mounting versions are:

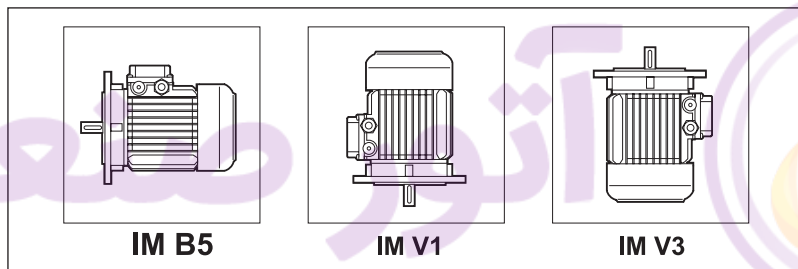
**IM B5** (basic)

IM V1, IM V3 (derived)

IM B5 design motors can be installed in positions IM V1 and IM V3; in such cases, the basic design IM B5 is indicated on the motor name plate.

In design versions with a vertically located motor and shaft downwards, it is recommended to request the drip cover (always necessary for brake motors). This facility, included in the option list should be specified when ordering as it does not come as a standard device

(F 6)

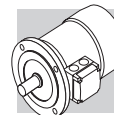


Flange output motors are also available with reduced coupling dimensions, as indicated in the table below - executions **B5R**. Their use in combination with gearboxes must be however coherent with the maximum installable power on gearboxes themselves (see chapters "Motors availability"). In case this condition is not met need to contact the Technical Service for the checking of the combination.

(F 7)

|                           | BN 71       | BN 80       | BN 90       | BN 100      | BN 112      | BN 132      |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                           | DxE - Ø     |             |             |             |             |             |
| <b>B5R</b> <sup>(1)</sup> | 11x23 - 140 | 14x30 - 160 | 19x40 - 200 | 24x50 - 200 | 24x50 - 200 | 28x60 - 250 |

(1) flange with through holes









### M3.2 Degree of protection

#### IP..

The following chart provides an overview of the degrees of protection available.

In addition to the degree of protection specified when ordering, motors to be installed outdoors require protection against direct sunlight and also – when they are to be installed vertically down – a drip cover to prevent the ingress of water and solid particles (option **RC**).

(F 8)

|  |  | IP 54   | IP 55   | IP 56   |
|---|---|---|---|---|
| <b>BN</b>   | <b>M</b>  |  | standard  |  |
| <b>BN_FD</b><br><b>BN_FA</b>  | <b>M_FD</b><br><b>M_FA</b>  | standard  |  |  |

### M3.3 Cooling

The motors are externally ventilated (IC 411 to CEI EN 60034-6) and are equipped with a plastic fan working in both directions. The motors must be installed allowing sufficient space between fan cowl and the nearest wall to ensure free air intake and allow access for maintenance purposes on motor and brake, if supplied.

Independent, forced air ventilation (IC 416) can be supplied on request (option U1).

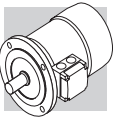
This solution enables to increase the motor duty factor when driven by an inverter and operating at reduced speed.

### M3.4 Direction of rotation

Rotation is possible in both directions. If terminals U1, V1, and W1 are connected to line phases L1, L2 and L3, clockwise rotation (looking from drive end) is obtained. For counterclockwise rotation, switch two phases.

### M3.5 Noise

Noise levels, measured using the method prescribed by ISO 1680 Standards, are within the maximum levels specified by Standards CEI EN 60034-9.



### M3.6 Vibrations and balancing

Rotor shafts are balanced with half key fitted and fall within the vibration class N, as per Standard CEI EN 60034-14.

If a further reduced noise level is required improved balancing care required improved balancing can be optionally requested (class B).

Table below shows the value for the vibration velocity for standard (A) and improved (B) balancing.

(F 9)

| Vibration class | Angular velocity       | Limits of the vibration velocity                           |
|-----------------|------------------------|--|
|                 | n [min <sup>-1</sup> ] | [mm/s]<br><b>BN 56 ≤ H ≤ BN 200</b><br><b>M05 ≤ H ≤ M5</b> |
| <b>A</b>        | 600 < n < 3600         | 1.6  |
| <b>B</b>        | 600 < n < 3600         | 0.70   |

Values refer to measures with freely suspended motor in unloaded conditions.

### M3.7 Terminal box

Terminal board features 6 studs for eyelet terminal connection (9 studs execution for US voltage "Dual Voltage").

A ground terminal is also supplied for earthing of the equipment.



Terminals number and type are shown in the following table.

For brake power supply, please read par. M6 (brake FD), M7 (brake FA).

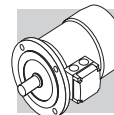
Brakemotors house the a.c./d.c. rectifier (factory pre-wired) inside the terminal box.

Wiring instructions are provided either in the box or in the user manual.

(F 10)

|  |  | No. of terminals | Terminal threads | Wire max cross section area<br>mm <sup>2</sup> |
|---|---|------------------|------------------|--|
| <b>BN 56 ... BN 71</b>  | <b>M05, M1</b>  | 6                | M4               | 2.5  |
| <b>BN 80, BN 90</b>   | <b>M2</b>   | 6                | M4               | 2.5  |
| <b>BN 100 ... BN 112</b>  | <b>M3</b>   | 6                | M5               | 6  |
| <b>BN 132 ... BN 160MR</b>  | <b>M4</b>   | 6                | M5               | 6  |
| <b>BN 160M ... BN 180M</b>  | <b>M5</b>   | 6                | M6               | 16   |
| <b>BN 180L ... BN 200L</b>  | –   | 6                | M8               | 25   |
| <b>BN 63 ... BN 160MR</b>   | <b>M05 ... M4</b>   | 9                | M4               | 6  |
| <b>BN 160M ... BN 200L</b>  | <b>M5</b>   | 9                | M6               | 16   |







### M3.8 Cable entry

The holes used to bring cables to terminal boxes use metric threads in accordance with standard EN 50262 as indicated in the table here after.

(F 11)


|  |  | Cable entry   | Max. cable diameter allowed [mm] |
|---|---|---------------|----------------------------------|
| <b>BN 63</b>  | <b>M05</b>  | 2 x M20 x 1.5 | 13                               |
| <b>BN 71</b>  | <b>M1</b>   | 2 x M25 x 1.5 | 17                               |
| <b>BN 80 - BN 90</b>  | <b>M2</b>   | 2 x M25 x 1.5 | 17                               |
| <b>BN 100</b>   | <b>M3</b>   | 2 x M32 x 1.5 | 21                               |
|   |   | 2 x M25 x 1.5 | 17                               |
| <b>BN 112</b>   | —   | 2 x M32 x 1.5 | 21                               |
|   |   | 2 x M25 x 1.5 | 17                               |
| <b>BN 132...BN 160MR</b>  | <b>M4</b>   | 4 x M32 x 1.5 | 21                               |
| <b>BN 160M...BN 200L</b>  | <b>M5</b>   | 2 x M40 x 1.5 | 28                               |

### M3.9 Bearings


Life lubricated preloaded radial ball bearings are used, types are shown in the chart here under. Calculated endurance lifetime  $L_{10h}$ , as per ISO 281, in unloaded condition, exceeds 40000 hrs.

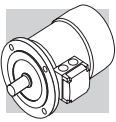
**DE** = drive end **NDE** = non drive end

(F 12)

|  | <b>DE</b>            |  | <b>NDE</b> |                   |
|---|----------------------|--|------------|-------------------|
|   | <b>M, M_FD, M_FA</b> |  | <b>M</b>   | <b>M_FD, M_FA</b> |
| <b>M05</b>  | 6004 2Z C3           |  | 6201 2Z C3 | 6201 2RS C3       |
| <b>M1</b>   | 6004 2Z C3           |  | 6202 2Z C3 | 6202 2RS C3       |
| <b>M2</b>   | 6007 2Z C3           |  | 6204 2Z C3 | 6204 2RS C3       |
| <b>M3</b>   | 6207 2Z C3           |  | 6206 2Z C3 | 6206 2RS C3       |
| <b>M4</b>   | 6309 2Z C3           |  | 6308 2Z C3 | 6308 2RS C3       |
| <b>M5</b>   | 6309 2Z C3           |  | 6309 2Z C3 | 6309 2RS C3       |

(F 13)

|  | <b>DE</b>               |  | <b>NDE</b> |                     |
|---|-------------------------|--|------------|---------------------|
|   | <b>BN, BN_FD, BN_FA</b> |  | <b>BN</b>  | <b>BN_FD, BN_FA</b> |
| <b>BN 56</b>  | 6201 2Z C3              |  | 6201 2Z C3 | —                   |
| <b>BN 63</b>  | 6201 2Z C3              |  | 6201 2Z C3 | 6201 2RS C3         |
| <b>BN 71</b>  | 6202 2Z C3              |  | 6202 2Z C3 | 6202 2RS C3         |
| <b>BN 80</b>  | 6204 2Z C3              |  | 6204 2Z C3 | 6204 2RS C3         |
| <b>BN 90</b>  | 6205 2Z C3              |  | 6205 2Z C3 | 6305 2RS C3         |
| <b>BN 100</b>   | 6206 2Z C3              |  | 6206 2Z C3 | 6206 2RS C3         |
| <b>BN 112</b>   | 6306 2Z C3              |  | 6306 2Z C3 | 6306 2RS C3         |
| <b>BN 132</b>   | 6308 2Z C3              |  | 6308 2Z C3 | 6308 2RS C3         |
| <b>BN 160MR</b>   | 6309 2Z C3              |  | 6308 2Z C3 | 6308 2RS C3         |
| <b>BN 160M/L</b>  | 6309 2Z C3              |  | 6309 2Z C3 | 6309 2RS C3         |
| <b>BN 180M</b>  | 6310 2Z C3              |  | 6309 2Z C3 | 6309 2RS C3         |
| <b>BN 180L</b>  | 6310 2Z C3              |  | 6310 2Z C3 | 6310 2RS C3         |
| <b>BN 200L</b>  | 6312 2Z C3              |  | 6310 2Z C3 | 6310 2RS C3         |



## M4 ELECTRICAL CHARACTERISTICS

### M4.1 Voltage



Single speed motors are provided in standard execution either for nominal voltage 230 / 400 V  $\Delta/Y$ , 50 Hz, or 400 / 690 V  $\Delta/Y$ , 50 Hz, with a voltage tolerance of  $\pm 10\%$ , according to what is specified on the below table.

On all the motors BN and M, for which the voltage / frequency configuration is not included on the below table, the voltage tolerance is reduced down to  $\pm 5\%$ .

For the operation out of the tolerance boundaries, the temperature may exceed by 10 K the limit provided by the adopted insulation class.

The motors are suitable for operation on distribution European grid with voltage complying with the publication IEC 60038.

(F 14)

|     |  |  | $V_{mot}$<br>$\pm 10\%$<br>3 ~   | Configuration                 |
|-----|---|---|----------------------------------|-------------------------------|
| IE1 | BN 56 ... BN 132  | M0 ... M4   | 230 / 400 V - $\Delta/Y$ - 50 Hz | Standard                      |
|     |   |   | 400 / 690 V - $\Delta/Y$ - 50 Hz | On request at no extra charge |
|     |   |   | 460 V Y - 60 Hz                  | Standard                      |
|     | BN 160 ... 200  | M5  | 400 / 690 V - $\Delta/Y$ - 50 Hz | Standard                      |
|     |   |   | 460 V $\Delta$ - 60 Hz           | Standard                      |


1 4 pole motor only

The only rated voltage for motors type 50Hz and all double speed motors is 400V.

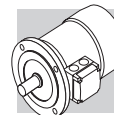
Applicable tolerances as per CEI EN 60034-1.

The table below shows the wiring options available.

(F 15)

| Pole |  | Wiring options            |
|------|---|---------------------------|
| 2    | BN 63 ... BN 200  | $\Delta / Y^{(2)}$        |
| 4    | BN 56 ... BN 200  |                           |
| 6    | BN 63 ... BN 200  |                           |
| 8    | BN 71 ... BN 132  | $\Delta / YY$ (Dahlander) |
| 2/4  | BN 63 ... BN 132  |                           |
| 2/6  | BN 71 ... BN 132  | Y / Y (Two windings)      |
| 2/8  | BN 71 ... BN 132  |                           |
| 2/12 | BN 80 ... BN 132  |                           |
| 4/6  | BN 71 ... BN 132  |                           |
| 4/8  | BN 80 ... BN 132  | $\Delta / YY$ (Dahlander) |

<sup>(2)</sup> Motors with voltage in ratio 2 (ex. 230/460 - 60) will be equipped with a 9 pin terminal box with winding connection either  $\Delta\Delta/\Delta$  or  $YY/Y$  (except 6 pole BN 63  $\Delta/Y$ )



## M4.2 Frequency

Rated output power BN / M for 60 Hz operation is shown in the following diagram.

(F 16)

|         |       | P <sub>n</sub> [kW] |      |      |         |          |      | P <sub>n</sub> [kW] |      |      |        |
|---------|-------|---------------------|------|------|---------|----------|------|---------------------|------|------|--------|
|         |       | 2P                  | 4P   | 6P   | 8P (*)  |          |      | 2P                  | 4P   | 6P   | 8P (*) |
| BN 56A  | -     | -                   | 0.07 | -    | -       | BN 100L  | M3LA | 3.5                 | -    | -    | -      |
| BN 56B  | M0B   | -                   | 0.10 | -    | -       | BN 100LA | M3LA | -                   | 2.5  | 1.8  | 0.85   |
| BN 63A  | M05A  | 0.21                | 0.14 | 0.10 | -       | BN 100LB |      | M3LB                | 4.7  | 3.5  | 2.2    |
| BN 63B  | M05B  | 0.30                | 0.21 | 0.14 | -       | BN 112M  | M3LB | 4.7                 | 4.7  | 2.5  | 1.8    |
| BN 63C  | M05C  | 0.45                | 0.30 | -    | -       | -        |      | M3LC                | -    | 4.7  | 2.5    |
| BN 71A  | M05C  | 0.45                | 0.30 | 0.21 | 0.10    | BN 132S  | M4SA | -                   | 6.5  | 3.5  | 2.5    |
| BN 71B  | M05SD | 0.65                | 0.45 | 0.30 | 0.14    | BN 132SA |      | M4SB                | 6.5  | -    | -      |
| BN 71C  | M1LA  | 0.90                | 0.65 | 0.45 | -       | BN 132SB | M4LA | 8.7                 | -    | -    | -      |
| BN 80A  |       | M2SA                | 0.90 | 0.65 | 0.45    | 0.21     |      | BN 132M             | 11   | -    | -      |
| BN 80B  | M2SA  | 1.30                | 0.90 | 0.65 | 0.30    | BN 132MA | M4LB | -                   | 8.7  | 4.6  | -      |
| BN 80C  |       | 1.80                | 1.3  | 0.90 | -       | BN 132MB |      | M4LC                | -    | 11   | 6.5    |
| BN 90S  | M2SB  | -                   | 1.3  | 0.90 | 0.45    | BN 160MR | M5SB | 12.5                | 12.5 | -    | -      |
| BN 90SA | -     | 1.8                 | -    | -    | -       | BN 160MB | M5SA | 17.5                | -    | -    | -      |
| BN 90SB |       | 2.2                 | -    | -    | -       | BN 160M  | M5S  | -                   | -    | 8.6  | -      |
| BN 90L  | M3SA  | 2.5                 | -    | 1.3  | 0.65    | BN 160L  | M5LA | 21.5                | 17.5 | 12.6 | -      |
| BN 90LA |       | -                   | -    | 1.8  | -       | BN 180M  | -    | 24.5                | 21.5 | -    | -      |
| BN 90LB | -     | -                   | 2.2  | -    | BN 180L | -        | -    | 25.3                | 17.5 | -    |        |
|         |       |                     |      |      |         | BN 200L  | -    | -                   | 34   | -    | -      |
|         |       |                     |      |      |         | BN 200LA | -    | 34                  | -    | 22   | -      |

(\*) Excluded M<sub>u</sub> motors

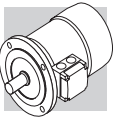
Double speed BN / M motors supplied at 60 Hz will have an increase of nominal power, referred to 50 Hz, equal to 15%.

If a nominal power rating, equal to the normalised nominal power rating at 50 Hz, was requested to be on a nameplate of a motor meant to be voltage supplied at 60 Hz, the PN option shall be specified on the motor designation. Motors normally designed for a 50 Hz frequency may be used on a 60 Hz operating grid, but the related data shall be updated according to the following table.

Motors designated for 50 Hz operation show on the nameplate also the values for 60 Hz operation (excluding motors in CUS execution and brake motors). See the following table.

(F 17)

| 50 Hz<br>V - 50 Hz | 60 Hz       |                        |   |                                |
|--------------------|-------------|------------------------|---|--------------------------------|
|                    | V - 60 Hz   | P <sub>n</sub> - 60 Hz | M <sub>n</sub> , M <sub>a</sub> /M <sub>n</sub> - 60 Hz | n [min <sup>-1</sup> ] - 60 Hz |
| 230/400 Δ/Y        | 220 - 240 Δ | 1                      | 0.83  | 1.2                            |
|                    | 380 - 415 Y |                        |   |                                |
| 400/690 Δ/Y        | 380 - 415 Δ | 1.15                   | 1   | 1.2                            |
| 230/400 Δ/Y        | 265 - 280 Δ |                        |   |                                |
|                    | 440 - 480 Y |                        |   |                                |
| 400/690 Δ/Y        | 440 - 480 Δ |                        |   |                                |



### M4.3 Ambient temperature

Catalogue rating values are calculated for 50 Hz operation and for standard ambient conditions (temperature 40 °C; elevation <1000 m a.s.l.) as per the CEI EN 60034-1 Standards.

The motors can be used within the 40 - 60 °C temperature range with rated power output adjusted by factors given in the following charts.

(F 18)

| Ambient temperature (°C)              | 40°  | 45° | 50° | 55° | 60° |
|---------------------------------------|------|-----|-----|-----|-----|
| Permitted power as a % of rated power | 100% | 95% | 90% | 85% | 80% |

Should a derating factor higher than 15% apply please consult factory.

### M4.4 Insulation class

#### CL F

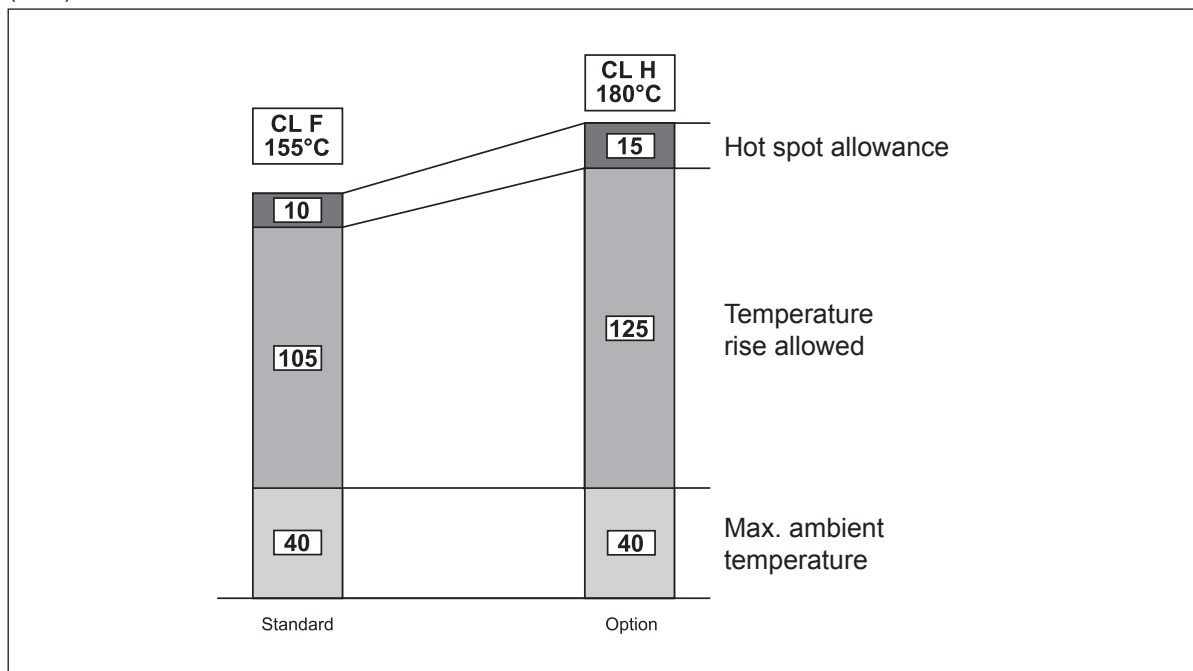
Bonfiglioli motors use class **F** insulating materials (enamelled wire, insulators, impregnation resins) as compare to the standard motor.

#### CL H

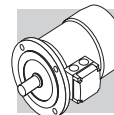
Motors manufactured in insulation class **H** are available at request.

In standard motors, stator windings over temperature normally stays below the 80 K limit corresponding to class B over temperature. A careful selection of insulating components makes the motors compatible with tropical climates and normal vibration. For applications involving the presence of aggressive chemicals or high humidity, contact Bonfiglioli Engineering for assistance with product selection. Not available for motors in compliance with CSA e UL standards (CUS option).

(F 19)







#### M4.5 Type of duty

Unless otherwise specified, catalogue motor power refers to continuous duty S1.

Any operating conditions other than S1 duty must be identified in accordance with duty cycle definitions laid down in standards CEI EN 60034-1. For duty cycles S2 and S3, the power increase coefficient reported in the following table may be used. Please note that the table provided below applies to single-speed motors. As an alternative to S1 continuous duty, one of the following values can be specified at the product configuration stage: S2, S3 or S9. The motor nameplate will be marked with an increased power rating to suit the type of duty, and with specific electrical data and a duty type of S2-30 min, S3-70% or S9 respectively.

For further details, contact Bonfiglioli's Technical Service.

Please contact Bonfiglioli Engineering for the power increase coefficients applicable to switch-pole motors.

(F 20)

|       | Duty                 |        |      |                              |      |         | Consult factory |
|-------|----------------------|--------|------|------------------------------|------|---------|-----------------|
|       | S2                   |        |      | S3 *                         |      |         |                 |
|       | Cycle duration (min) |        |      | Cyclic duration factor ( I ) |      |         |                 |
|       | 10                   | 30 (*) | 60   | 25%                          | 40%  | 70% (*) |                 |
| $f_m$ | 1.35                 | 1.15   | 1.05 | 1.25                         | 1.15 | 1.1     |                 |

\* Cycle duration must, in any event, be equal to or less than 10 minutes; if this time is exceeded, please contact our Technical Service.

(\*) Default values from options.

##### M4.5.1 Cyclic duration factor:

$$I = \frac{t_f}{t_f + t_r} \cdot 100 \quad (23)$$

$t_f$  = work time under constant load

$t_r$  = rest time

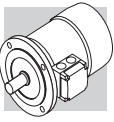
##### M4.5.2 Limited duration duty S2

This type of duty is characterized by operation at constant load for a limited time, which is shorter than the time required to reach thermal equilibrium, followed by a rest period of sufficient duration to restore ambient temperature in the motor.

##### M4.5.3 Periodical intermittent duty S3:

This type of duty is characterized by a sequence of identical operation cycles, each including a constant load operation period and a rest period.

For this type of duty, the starting current does not significantly influence overtemperature.



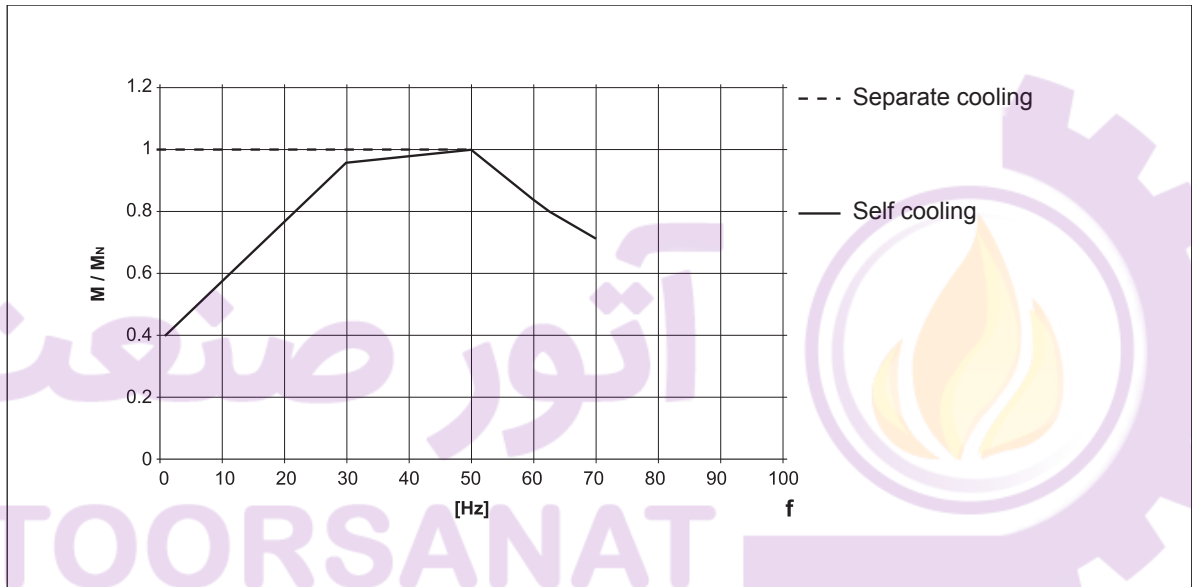
#### M4.6 Inverter-controlled motors

The electric motors of series BN and M may be used in combination with PWM inverters with rated voltage at transformer input up to 500 V. Standard motors use a phase insulating system with separators, class 2 enamelled wire and class H impregnation resins (1600V peak-to-peak voltage pulse capacity and rise edge  $t_s > 0.1 \mu s$  at motor terminals). The following table shows the typical torque/speed curves referred to S1 duty for motors with base frequency  $f_b = 50$  Hz.

Because ventilation is somewhat impaired in operation at lower frequencies (about 30 Hz), standard motors with incorporated fan (IC411) require adequate torque derating or - alternately - the addition of a separate supply fan cooling.

Above base frequency, upon reaching the maximum output voltage of the inverter, the motor enters a steady-power field of operation, and shaft torque drops with ratio  $(f/f_b)$ . As motor maximum torque decreases with  $(f/f_b)^2$ , the allowed overloading must be reduced progressively.

(F 21)



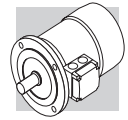
The following table reports the mechanical limit speed for motor operation above rated frequency:

(F 22)

| Motor Series | Motor Model | n [min <sup>-1</sup> ] |      |      |
|--------------|-------------|------------------------|------|------|
|              |             | 2p                     | 4p   | 6p   |
| ≤ BN 112     | M05...M3    | 5200                   | 4000 | 3000 |
| ≥ BN 132     | M4, M5      | 4500                   | 4000 | 3000 |

Above rated speed, motors generate increased mechanical vibration and fan noise. Class B rotor balancing is highly recommended in these applications. Installing a separate supply fan cooling may also be advisable.

Remote-controlled fan and brake (if fitted) must always be connected direct to mains power supply.



#### M4.7 Permissible starts per hour, Z

The rating charts of brakemotors lend the permitted number of starts  $Z_0$ , based on 50% intermittence and for unloaded operation.

The catalogue value represents the maximum number of starts per hour for the motor without exceeding the rated temperature for the insulation class F.

To give a practical example for an application characterized by inertia  $J_c$ , drawing power  $P_r$  and requiring mean torque at start-up  $M_L$  the actual number of starts per hour for the motor can be calculated approximately through the following equation:

$$Z = \frac{Z_0 \cdot K_c \cdot K_d}{K_J} \quad (24)$$

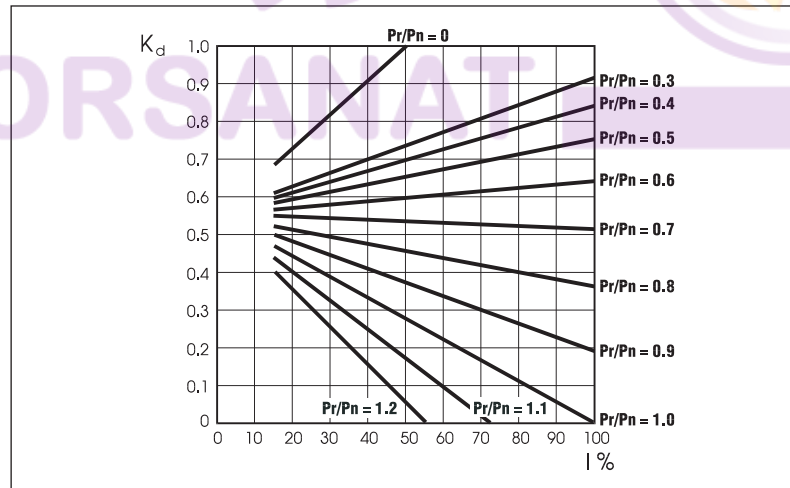
where:

$$K_J = \frac{J_m + J_c}{J_m} \quad \text{inertia factor}$$

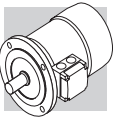
$$K_c = \frac{M_a - M_L}{M_a} \quad \text{torque factor}$$

$$K_d = \quad \text{load factor see table (F23)}$$

(F 23)



If actual starts per hour is within permitted value ( $Z$ ) it may be worth checking that braking work is compatible with brake (thermal) capacity  $W_{max}$  also given in tables (F30), (F38) and dependent on the number of switches (c/h).

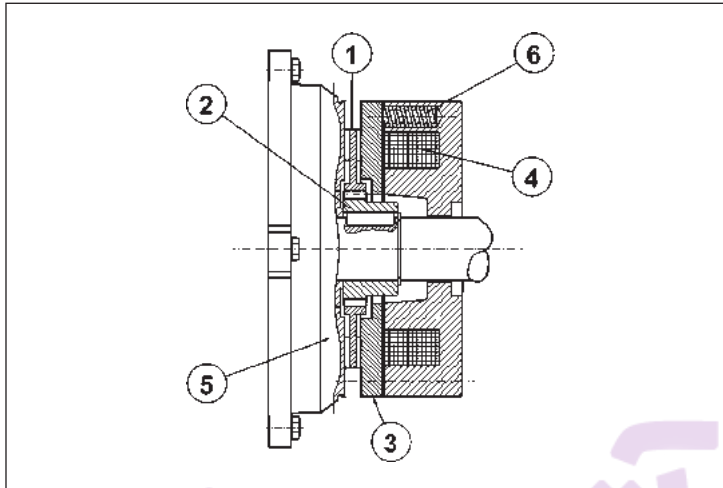


## M5 ASYNCHRONOUS BRAKE MOTORS

### M5.1 Operation

Versions with incorporated brake use spring-applied DC (FD option) or AC (FA options) brakes. All brakes are designed to provide fail-safe operation, meaning that they are applied by spring-action in the event of power failure.

(F 24)



Key:

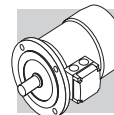
- ① brake disc
- ② disc carrier
- ③ pressure plate
- ④ brake coil
- ⑤ motor rear shield
- ⑥ brake springs

When voltage is interrupted, pressure springs push the armature plate against the brake disc. The disc becomes trapped between the armature plate and motor shield and stops the shaft from rotation. When the coil is energized, a magnetic field strong enough to overcome spring action attracts the armature plate, so that the brake disc – which is integral with the motor shaft – is released.

### M5.2 Most significant features

- High braking torques (normally  $M_b \approx 2 M_n$ ), braking torque adjustment.
- Steel brake disc with double friction lining (low-wear, asbestos-free lining).
- Hexagonal seat on motor shaft fan end (N.D.E.) for manual rotation (not compatible with options PS, RC, TC, U1, U2, EN1, EN2, EN3, EN4, EN5, EN6).
- Manual release lever (options **R** and **RM** for BN/M\_FD; option **R** for BN/M\_FA).
- Corrosion-proof treatment on all brake surfaces.
- Insulation class F.

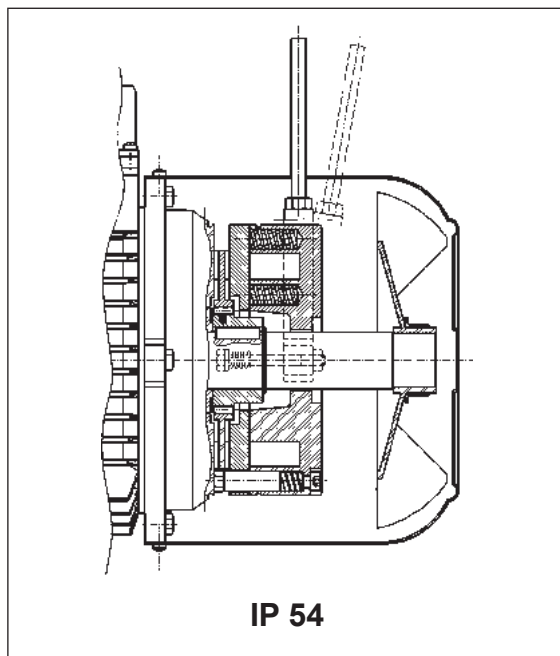




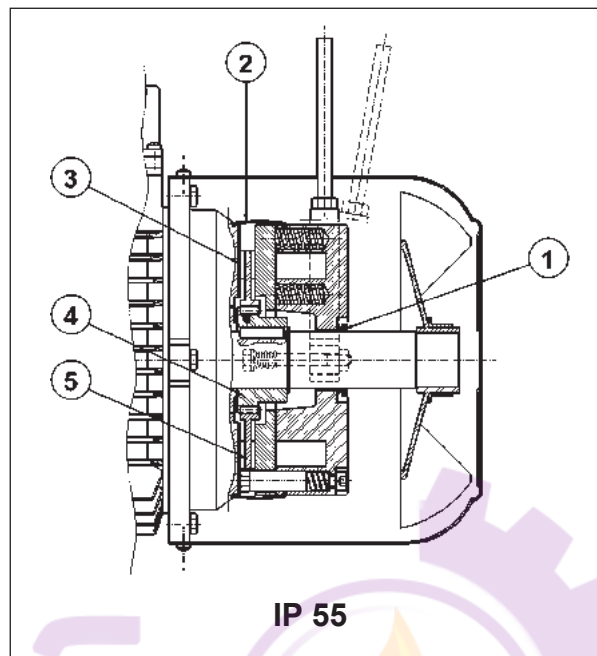
M6 DC BRAKE MOTORS TYPE BN\_FD and M\_FD

Frame sizes: BN 63 ... BN 200L / M05 ... M5

(F 25)



(F 26)



**Direct current** toroidal-coil electromagnetic brake bolted onto motor shield. Preloading springs provide axial positioning of magnet body.

Brake disc slides axially on steel hub shrunk onto motor shaft with anti-vibration device.

Brake torque factory setting is indicated in the corresponding motor rating charts. Braking torque may be modified by changing the type and/or number of springs.

At request, motors may be equipped with manual release lever with automatic return (**R**) or system for holding brake in the released position (**RM**).

See variant at paragraph "BRAKE RELEASE SYSTEMS" for available release lever locations.

FD brakes ensure excellent dynamic performance with low noise. DC brake operating characteristics may be optimized to meet application requirements by choosing from the various rectifier/power supply and wiring connection options available.

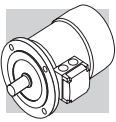
**For applications involving lifting and/or high hourly energy dissipation, contact Bonfiglioli's Technical Service.**

**M6.1 Degree of protection**

Standard protection class is IP54.

Brake motor FD is also available in protection class **IP55**, which mandates the following variants:

- ① V-ring at N.D.E. of motor shaft
- ② dust and water-proof rubber boot
- ③ stainless steel ring placed between motor shield and brake disc
- ④ stainless steel hub
- ⑤ stainless steel brake disc



### M6.2 FD brake power supply

A rectifier accommodated inside the terminal box feeds the DC brake coil. Wiring connection across rectifier and brake coil is performed at the factory.

On all single-pole motors, rectifier is connected to the motor terminal board.

Rectifier standard power supply voltage  $V_B$  is as indicated in the following table, regardless of mains frequency:

(F 27)

| 2, 4, 6 P              |                   |  |                       | 1 speed  |                             |
|------------------------|-------------------|--|-----------------------|--|-----------------------------|
|                        |                   | <b>BN_FD / M_FD</b><br>$V_{mot} \pm 10\%$<br>3 ~ | $V_B \pm 10\%$<br>1 ~ | brake connected to terminal board power supply | separate power supply       |
| <b>BN 63...BN 132</b>  | <b>M05...M4LB</b> | 230/400 V – 50 Hz                                | 230 V                 | standard                                       | specify $V_B$ SA o $V_B$ SD |
| <b>BN 160...BN 200</b> | <b>M4LC...M5</b>  | 400/690 V – 50 Hz                                | 400 V                 | standard                                       | specify $V_B$ SA o $V_B$ SD |

Switch-pole motors feature a separate power supply line for the brake with rectifier input voltage  $V_B$  as indicated in the table below:

(F 28)

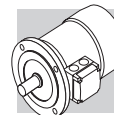
| 2/4, 2/6, 2/8, 2/12, 4/6, 4/8 P |                   |  |                       | 2 speed  |                             |
|---------------------------------|-------------------|--|-----------------------|--|-----------------------------|
|                                 |                   | <b>BN_FD / M_FD</b><br>$V_{mot} \pm 10\%$<br>3 ~ | $V_B \pm 10\%$<br>1 ~ | brake connected to terminal board power supply | separate power supply       |
| <b>BN 63...BN 132</b>           | <b>M05...M4LB</b> | 400 V – 50 Hz                                    | 230 V                 |  | specify $V_B$ SA o $V_B$ SD |

The diode half-wave rectifier ( $V_{DC} \approx 0,45 \times V_{AC}$ ) is available in versions **NB**, **SB**, **NBR** e **SBR**, as detailed in the table below:

(F 29)

|                          |            | brake  |                  |  |
|--------------------------|------------|--|------------------|--|
|                          |            |  | standard         | at request   |
| <b>BN 63</b>             | <b>M05</b> | <b>FD 02</b>                                 | <p><b>NB</b></p> | <p><b>SB</b></p> <p><b>SBR</b></p> <p><b>NBR</b></p> |
| <b>BN 71</b>             | <b>M1</b>  | <b>FD 03</b><br><b>FD 53</b>                 |                  |  |
| <b>BN 80</b>             | <b>M2</b>  | <b>FD 04</b>                                 |                  |  |
| <b>BN 90S</b>            | —          | <b>FD 14</b>                                 |                  |  |
| <b>BN 90L</b>            | —          | <b>FD 05</b>                                 |                  |  |
| <b>BN 100</b>            | <b>M3</b>  | <b>FD 15</b>                                 | <p><b>SB</b></p> | <p><b>SBR</b></p>                                    |
| —                        |            | <b>FD 55</b>                                 |                  |  |
| <b>BN 112</b>            | —          | <b>FD 06S</b>                                |                  |  |
| <b>BN 132 - BN 160MR</b> | <b>M4</b>  | <b>FD 56</b><br><b>FD 06</b><br><b>FD 07</b> |                  |  |
| <b>BN 160L - BN 180M</b> | <b>M5</b>  | <b>FD 08</b>                                 |                  |  |
| <b>BN 180L - BN 200M</b> | —          | <b>FD 09</b>                                 |                  |  |

(\*)  $t_{2c} < t_{2r} < t_2$



Rectifier **SB** with electronic energizing control over-energizes the electromagnet upon power-up to cut brake release response time and then switches to normal half-wave operation once the brake has been released.

Use of the **SB** rectifier is mandatory in the event of:

- high number of operations per hour
- reduced brake release response time
- brake is exposed to extreme thermal stress

Rectifiers **NBR** or **SBR** are available for applications requiring quick brake intervention (braking condition reinstatement) response.

These rectifiers complement the **NB** and **SB** types as their electronic circuit incorporates a static switch that de-energizes the brake quickly in the event voltage is missing.

This arrangement ensures short brake release response time with no need for additional external wiring and contacts.

Optimum performance of rectifiers **NBR** and **SBR** is achieved with separate brake power supply.

**Versions available: 230Vac ±10%, 400Vac ± 10%, 50/60 Hz (with power supply); 100Vdc ±10%, 180Vdc ± 10% (with SD option).**

### M6.3 FD brake technical specifications

The table below reports the technical specifications of DC brakes FD.

(F 30)

| Brake  | Brake torque $M_b$ [Nm] |     |      | Release |          | Braking |          | $W_{max}$ per brake operation |         |          | W   | P   |
|--------|-------------------------|-----|------|---------|----------|---------|----------|-------------------------------|---------|----------|-----|-----|
|        | springs                 |     |      | $t_1$   | $t_{1s}$ | $t_2$   | $t_{2c}$ | [ J ]                         |         |          |     |     |
|        | 6                       | 4   | 2    | [ms]    | [ms]     | [ms]    | [ms]     | 10 s/h                        | 100 s/h | 1000 s/h |     |     |
| FD02   | –                       | 3.5 | 1.75 | 30      | 15       | 80      | 9        | 4500                          | 1400    | 180      | 15  | 17  |
| FD03   | 5                       | 3.5 | 1.75 | 50      | 20       | 100     | 12       | 7000                          | 1900    | 230      | 25  | 24  |
| FD53   | 7.5                     | 5   | 2.5  | 60      | 30       | 100     | 12       |                               |         |          |     |     |
| FD04   | 15                      | 10  | 5    | 80      | 35       | 140     | 15       | 10000                         | 3100    | 350      | 30  | 33  |
| FD14   |                         |     |      |         |          |         |          |                               |         |          |     |     |
| FD05   | 40                      | 26  | 13   | 130     | 65       | 170     | 20       | 18000                         | 4500    | 500      | 50  | 45  |
| FD15   | 40                      | 26  | 13   | 130     | 65       | 170     | 20       |                               |         |          |     |     |
| FD55   | 55                      | 37  | 18   | –       | 65       | 170     | 20       |                               |         |          |     |     |
| FD06S  | 60                      | 40  | 20   | –       | 80       | 220     | 25       | 20000                         | 4800    | 550      | 70  | 55  |
| FD56   | –                       | 75  | 37   | –       | 90       | 250     | 20       | 29000                         | 7400    | 800      | 80  | 65  |
| FD06   |                         | 100 | 50   |         | 100      | 250     | 20       |                               |         |          |     |     |
| FD07   | 150                     | 100 | 50   | –       | 120      | 200     | 25       | 40000                         | 9300    | 1000     | 130 | 65  |
| FD08*  | 250                     | 200 | 170  | –       | 140      | 350     | 30       | 60000                         | 14000   | 1500     | 230 | 100 |
| FD09** | 400                     | 300 | 200  | –       | 200      | 450     | 40       | 70000                         | 15000   | 1700     | 230 | 120 |

\* brake torque values obtained with 9, 7 and 6 springs, respectively

\*\* brake torque values obtained with 12, 9 and 6 springs, respectively

$t_1$  = brake release time with half-wave rectifier  
 $t_{1s}$  = brake release time with over-energizing rectifier  
 $t_2$  = brake engagement time with AC line interruption and separate power supply

$t_{2c}$  = brake engagement time with AC and DC line interruption – Values for  $t_1$ ,  $t_{1s}$ ,  $t_2$ ,  $t_{2c}$  indicated in the tab. (F30) are referred to brake set at maximum torque, medium air gap and rated voltage

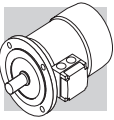
$W_{max}$  = max energy per brake operation

W = braking energy between two successive air gap adjustments

$P_b$  = brake power absorption at 20 °C

$M_b$  = static braking torque (±15%)

s/h = starts per hour



The brake pad wear depends on the operating/ambient conditions (temperature, humidity, angular speed, specific pressure); Therefore the declared wear rate must be considered as indicative.

#### M6.4 FD brake connections

On standard single-pole motors, the rectifier is connected to the motor terminal board at the factory. For switch-pole motors and where a separate brake power supply is required, connection to rectifier must comply with brake voltage  $V_B$  stated in motor name plate.

**Because the load is of the inductive type, brake control and DC line interruption must use contacts from the usage class AC-3 to IEC 60947-4-1.**

Table (F31) – Brake power supply from motor terminals and AC line interruption  
Delayed stop time  $t_2$  and function of motor time constants.

Mandatory when soft-start/stops are required.

Table (F32) – Brake coil with separate power supply and AC line interruption

Normal stop time independent of motor.

Achieved stop times  $t_2$  are indicated in the table (F30).

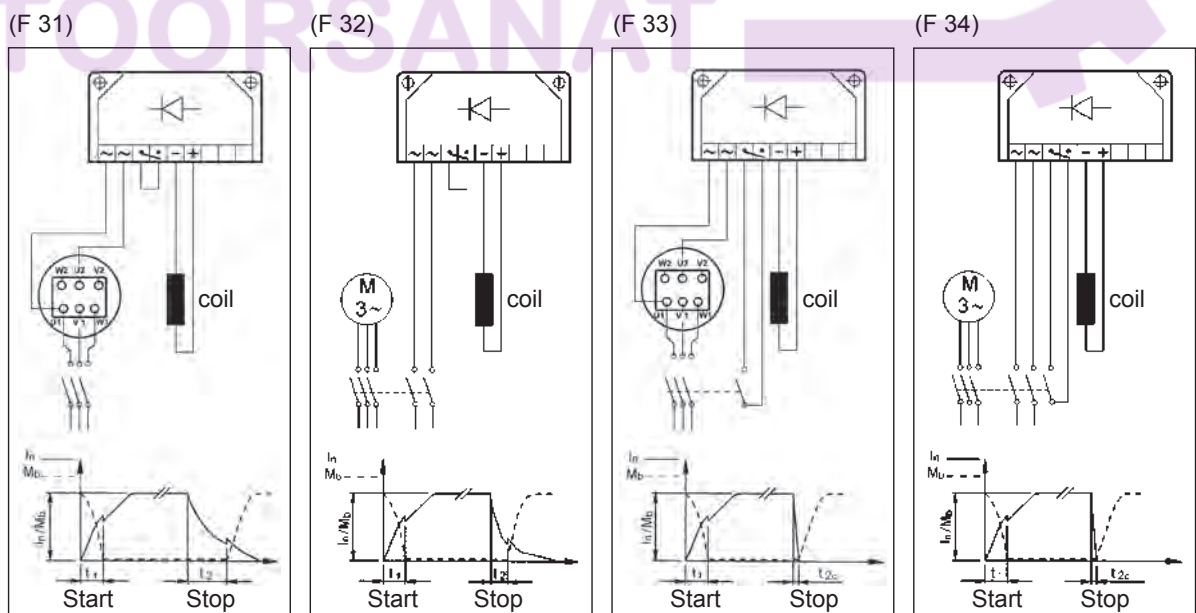
Table (F33) – Brake coil power supply from motor terminals and AC/DC line interruption.

Quick stop with operation times  $t_{2c}$  as per table (F30).

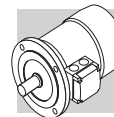
Table (F34) – Brake coil with separate power supply and AC/DC line interruption.

Stop time decreases by values  $t_{2c}$  indicated in the table (F30).

The brake may be voltage supplied directly from the motor terminal box (from tab. F31 to tab. F34) only if the nominal voltage of the brake is the same as the smaller voltage of the motor.



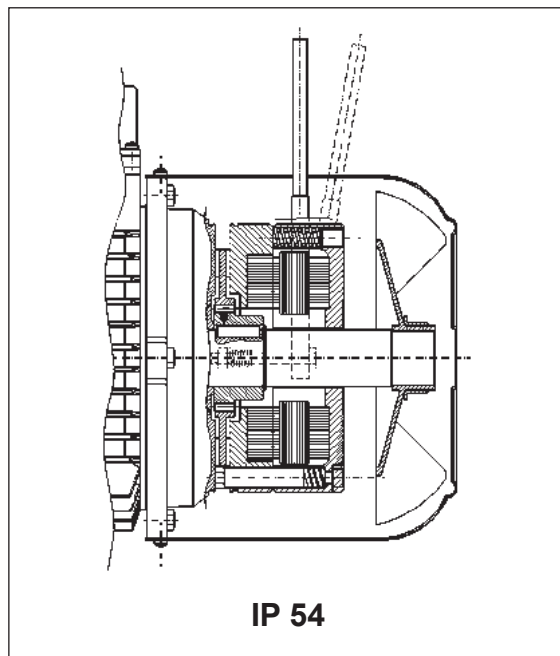




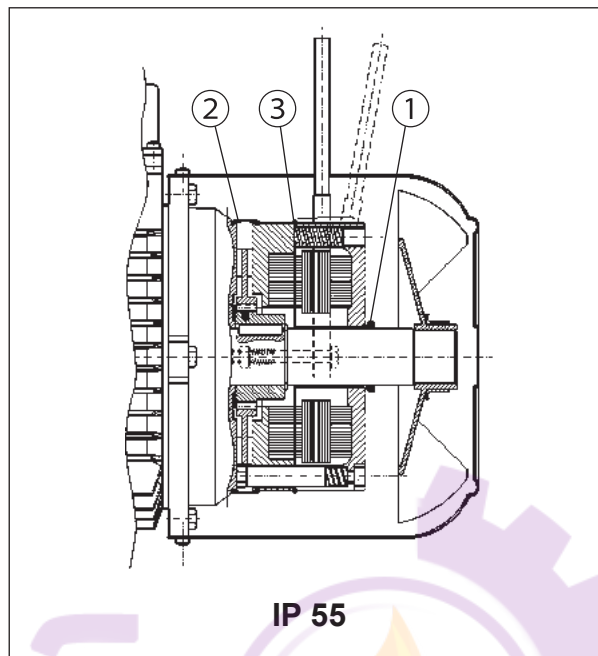
## M7 AC BRAKE MOTORS TYPE BN\_FA and M\_FA

Frame sizes: BN 63 ... BN 180M / M05 ... M5

(F 35)



(F 36)



Electromagnetic brake operates from three-phase **alternated current** power supply and is bolted onto conveyor shield. Preloading springs provide axial positioning of magnet body.

Steel brake disc slides axially on steel hub shrunk onto motor shaft with anti-vibration device.

Brake torque factory setting is indicated in the corresponding motor rating charts.

Spring preloading screws provide stepless braking torque adjustment.

Torque adjustment range is  $30\% M_{bMAX} < M_b < M_{bMAX}$  (where  $M_{bMAX}$  is maximum braking torque as shown in tab. (F38).

Thanks to their high dynamic characteristics, FA brakes are ideal for heavy-duty applications as well as applications requiring frequent stop/starts and very fast response time.

Motors may be equipped with manual release lever with automatic return (**R**) at request. See variant at paragraph "BRAKE RELEASE SYSTEMS" for available release lever locations.

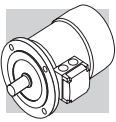
**For applications involving lifting and/or high hourly energy dissipation, contact Bonfiglioli's Technical Service.**

### M7.1 Degree of protection

Standard protection class is IP54.

Brake motor FA is also available in protection class **IP55**, which mandates the following variants:

- ① V-ring at N.D.E. of motor shaft
- ② dust and water-proof rubber boot
- ③ O-ring



## M7.2 FA brake power supply

In single speed motors, power supply is brought to the brake coil direct from the motor terminal box. As a result, brake voltage and motor voltage are the same. In this case, brake voltage indication may be omitted in the designation.

Switch-pole motors and motors with separate brake power supply feature an auxiliary terminal board with 6 terminals for connection to brake line. In both cases, brake voltage indication in the designation is mandatory. The following table reports standard AC brake power supply ratings for single- and switch-pole motors:

(F 37)

| single-pole motor | BN 63...BN 132             | BN 160...BN 180           |
|-------------------|----------------------------|---------------------------|
|                   | M05...M4LB                 | M4LC...M5                 |
|                   | 230Δ / 400Y V ±10% – 50 Hz | 400Δ/ 690Y V ±10% – 50 Hz |
|                   | 265Δ / 460Y ±10% - 60 Hz   | 460Y – 60 Hz              |

| switch-pole motors<br>(separate power supply line) | BN 63...BN 132             |
|--|----------------------------|
|  | M05...M4                   |
|  | 230Δ / 400Y V ±10% – 50 Hz |
|  | 460Y - 60 Hz               |

Unless otherwise specified, standard brake power supply is 230Δ /400Y V - 50 Hz.

Special voltages in the 24...690 V, 50-60 Hz range are available at request.

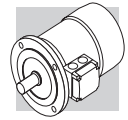
## M7.3 Technical specifications of FA brakes

(F 38)

| Brake  | Brake torque<br>$M_b$<br>[Nm] | Release<br>$t_1$<br>[ms] | Braking<br>$t_2$<br>[ms] | $W_{max}$<br>[ J ] |         |          | W<br>[MJ] | P<br>[VA] |
|--------|-------------------------------|--------------------------|--------------------------|--------------------|---------|----------|-----------|-----------|
|        |                               |                          |                          | 10 s/h             | 100 s/h | 1000 s/h |           |           |
| FA 02  | 3.5                           | 4                        | 20                       | 4500               | 1400    | 180      | 15        | 60        |
| FA 03  | 7.5                           | 4                        | 40                       | 7000               | 1900    | 230      | 25        | 80        |
| FA 04  | 15                            | 6                        | 60                       | 10000              | 3100    | 350      | 30        | 110       |
| FA 14  |                               |                          |                          |                    |         |          |           |           |
| FA 05  | 40                            | 8                        | 90                       | 18000              | 4500    | 500      | 50        | 250       |
| FA 15  |                               |                          |                          |                    |         |          |           |           |
| FA 06S | 60                            | 16                       | 120                      | 20000              | 4800    | 550      | 70        | 470       |
| FA 06  | 75                            | 16                       | 140                      | 29000              | 7400    | 800      | 80        | 550       |
| FA 07  | 150                           | 16                       | 180                      | 40000              | 9300    | 1000     | 130       | 600       |
| FA 08  | 250                           | 20                       | 200                      | 60000              | 14000   | 1500     | 230       | 1200      |

$M_b$  = max static braking torque ( $\pm 15\%$ )  
 $t_1$  = brake release time  
 $t_2$  = brake engagement time  
 $W_{max}$  = max energy per brake operation (brake thermal capacity)  
W = braking energy between two successive air gap adjustments  
 $P_b$  = power drawn by brake at 20° (50 Hz)  
s/h = starts per hour

NOTE  
Values  $t_1$  and  $t_2$  in the table refer to a brake set at rated torque, medium air gap and rated voltage.

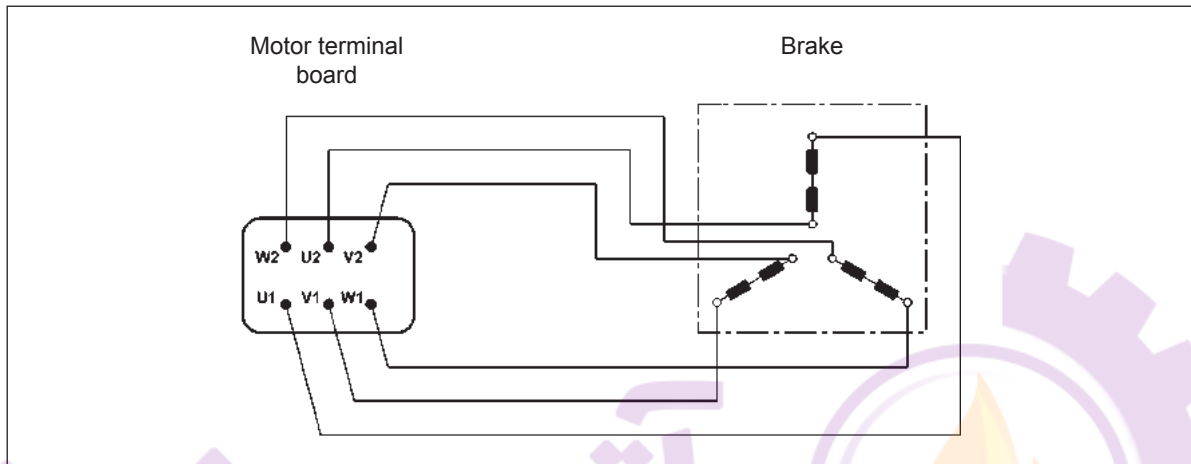


The brake pad wear depends on the operating/ambient conditions (temperature, humidity, angular speed, specific pressure); Therefore the declared wear rate must be considered as indicative.

#### M7.4 FA brake connections

The diagram below shows the wiring when brake is connected directly to same power supply of the motor:

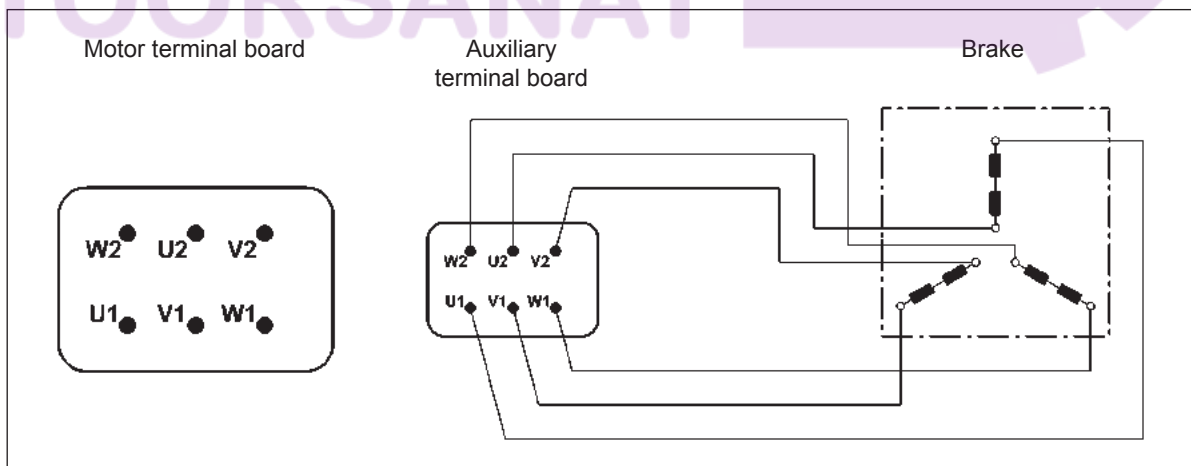
(F 39)

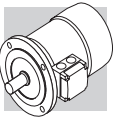


Switch-pole motors and, at request, single-pole motors with separate power supply are equipped with an auxiliary terminal board with 6 terminals for brake connection.

In this version, motors feature a larger terminal box. See diagram below:

(F 40)



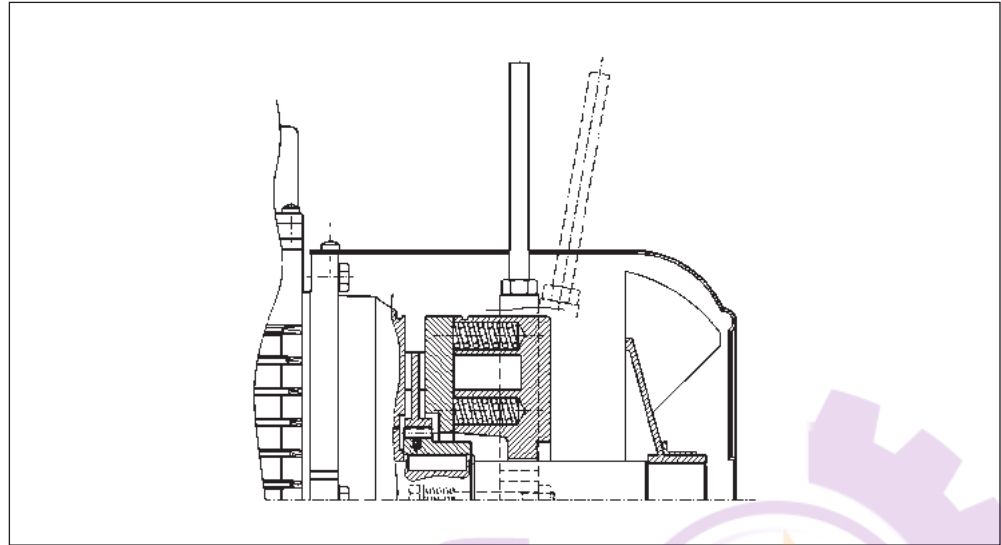


## M8 BRAKE RELEASE SYSTEMS

Spring-applied brakes type FD and FA may be equipped with optional manual release devices. These are typically used for manually releasing the brake before servicing any machine or plant parts operated by the motor.

R

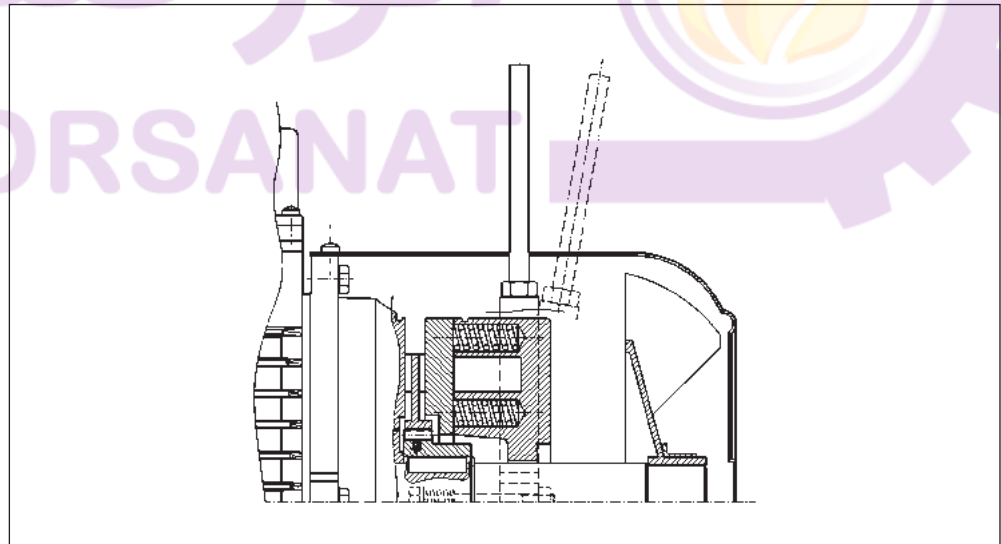
(F 41)



A return spring brings the release lever back in the original position.

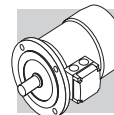
RM

(F 42)



On motors type BN\_FD, if the option RM is specified, the release device may be locked in the "release" position by tightening the lever until its end becomes engaged with a brake housing projection. The availability for the various disengagement devices is charted here below:





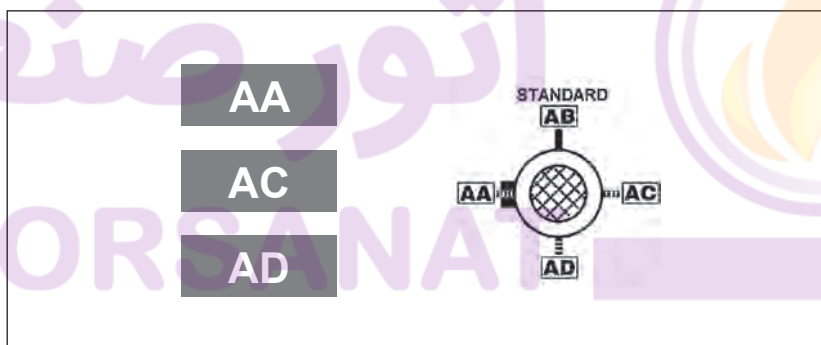
(F 43)

|       | R               | RM  |
|-------|-----------------|---|
| BN_FD | BN 63...BN 200  | 2p 63A2 ≤ H ≤ 132M2<br>4p 63A4 ≤ H ≤ 132MA4<br>6p 63A6 ≤ H ≤ 132MA6 |
| M_FD  | M 05...M 5      | M 05...M 4LA  |
| BN_FA | BN 63...BN 180M | ●   |
| M_FA  | M 05...M 5      |   |

### M8.1 Release lever orientation

Unless otherwise specified, the release lever is located 90° away from the terminal box – identified by letters [AB] in the diagram below – in a clockwise direction on both options R and RM. Alternative lever positions [AA], [AC] and [AD] are also possible when the corresponding option is specified:



(F 44)

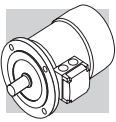


### M8.2 Fly-wheel data (F1)

The table below shows values of weight and inertia of flywheel (option F1). Overall dimensions of motors remain unchanged.

(F 45)

| Main data for flywheel of motore type: BN_FD, M_FD                                  |   |                       |                                       |
|---|---|-----------------------|---------------------------------------|
|  |  | Fly-wheel weight [Kg] | Fly-wheel inertia [Kgm <sup>2</sup> ] |
| BN 63   | M05   | 0.69                  | 0.00063                               |
| BN 71   | M1  | 1.13                  | 0.00135                               |
| BN 80   | M2  | 1.67                  | 0.00270                               |
| BN 90 S - BN 90 L   | –   | 2.51                  | 0.00530                               |
| BN 100  | M3  | 3.48                  | 0.00840                               |
| BN 112  | –   | 4.82                  | 0.01483                               |
| BN 132 S - BN 132 M   | M4  | 6.19                  | 0.02580                               |



## M9 OPTIONS

### M9.1 Thermal protective devices

In addition to the standard protection provided by the magneto-thermal device, motors can be supplied with built-in thermal probes to protect the winding against overheating caused, by insufficient ventilation or by an intermittent duty.

This additional protection should always be specified for servoventilated motors (IC416).

### M9.2 Capacitive filter

CF

An optional capacitive filter is available for DC brake motors type BN\_FD only. When the suitable capacitive filter is installed upstream of the rectifier (option CF), motors comply with the emission limits required by standard EN61000-6-3:2007“ Electromagnetic Compatibility – Generic Emission Standard – Part 6-3: Residential, commercial and light industrial environment”.

### M9.3 Thermistors

E3

These are semi-conductors having rapid resistance variation when they are close to the rated switch off temperature (150 °C).

Variations of the  $R = f(T)$  characteristic are specified under DIN 44081, IEC 34-11 Standards.

Positive temperature coefficient thermistors are normally used (also known as PTC “cold conductor resistors”).

Thermistors cannot control relays directly and must be connected to a suitable disconnect device.

Thus protected, three PTCs connected in series are installed in the winding, the terminals of which are located on the auxiliary terminal-board.

K1

The design characteristics of this sub-group of PTC thermistors allow them to be used as positive temperature coefficient sensors with variable resistance.

Functioning temperature range: 0°C ... +260°C.

Thermistors cannot control relays directly and must be connected to a suitable disconnect device.

Terminals (polarised) for 1 x KTY 84-130 are provided on an auxiliary terminal strip.

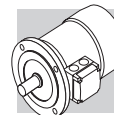
### M9.4 Bimetallic thermostates

D3

These types of protective devices house a bimetal disk. When the rated switch off temperature (150 °C) is reached, the disk switches the contacts from their initial rest position.

As temperature falls, the disk and the contacts automatically return to rest position.

Three bimetallic thermostates connected in series are usually employed, with normally closed contacts. The terminals are located on an auxiliary terminal-board.



## M9.5 Plug connector

### CON

Three types of connectors (CON 1, CON 2, CON 3) are provided; they can be mounted in two different positions: right side of terminal box cover (C1D, C2D, C3D); left side of terminal box cover (C1S, C2S, C3S).

The option CON is applicable to single speed BN and M motors (2, 4, 6, 8 poles), and it is not applicable to switch-pole motors. More details about the motor sizes are available in the next table.

The connectors CON 1 / CON 2 are available for BN and M motors without brake and for BN and M brakemotors equipped with DC brake type FD, for the motor sizes listed below.

**The male connector (with pins) is mounted on the motor, the female connector is not provided. With CON option, the winding connection is always Y.**

With option U1 "forced ventilation", the fan unit supply is available inside the separate terminal box fixed to fan cover.

With options EN1...EN6, the encoder connection is made by a cable not connected to the motor plug connector.

The CON option is not applicable to brakemotors equipped with AC brake type FA. The CON option is not available when at least one of the next options are selected: the U2, CUS, IC.

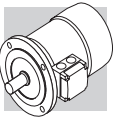
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ATOORSANAT



### Specifications

(F 46)

| Option                            | CON 1                     |
|-----------------------------------|---------------------------|
| Motor size                        | BN63...BN112 / M05...M3   |
| Connector view                    |                           |
| Type of connector                 | Harting Han 10ES          |
| Housing                           | Han EMC 10B with 2 levers |
| Numbers of pins - nominal current | 10 x 16A                  |
| Voltage                           | 500 Vac                   |
| Contact connection                | Screw terminals           |



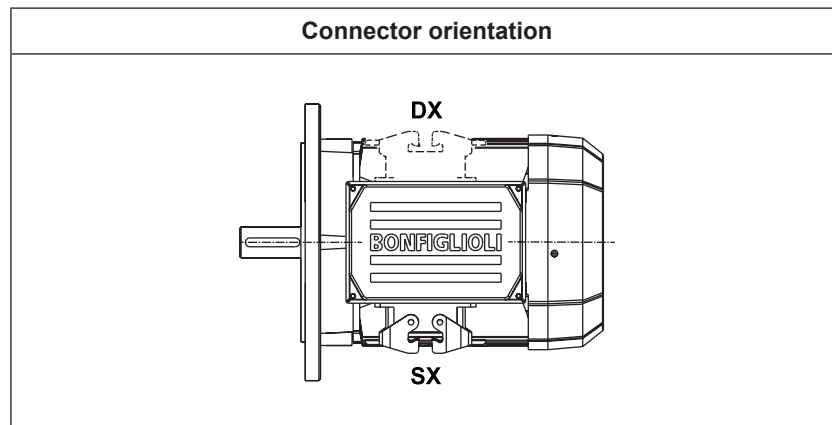
(F 47)

| Option                            | CON 2                              |
|-----------------------------------|------------------------------------|
| Motor size                        | BN63...BN132M / M05...M4L          |
| Connector view                    |                                    |
| Type of connector                 | Harting Han Modular                |
| Housing                           | Han EMC 10B with 2 levers          |
| Module type                       | Module C + Empty module + Module E |
| Numbers of pins - nominal current | 3 x 36A / 6 x 16A                  |
| Voltage                           | 500 Vac                            |
| Contact connection                | Crimping contacts                  |

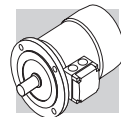
(F 48)

| Option                            | CON 3                          |
|-----------------------------------|--------------------------------|
| Motor size                        | BN63...BN132M / M05...M4L      |
| Connector view                    |                                |
| Type of connector                 | Harting Han Modular            |
| Housing                           | Han EMC 10B with 2 levers      |
| Module type                       | Module C + Module E + Module E |
| Numbers of pins - nominal current | 3 x 36A / 6 + 6 x 16A          |
| Voltage                           | 500 Vac                        |
| Contact connection                | Crimping contacts              |

(F 49)







(F 50)

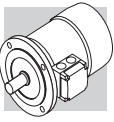
| Motors without brake dimensions |            |         |         |         |         |                       |
|---------------------------------|------------|---------|---------|---------|---------|-----------------------|
|                                 |            |         |         |         |         |                       |
|                                 |            | AD (mm) | AF (mm) | AH (mm) | LL (mm) | V <sup>(*)</sup> (mm) |
|                                 |            |         |         |         |         |                       |
| <b>BN63</b>                     | <b>M05</b> | 136     | 110     | 45      | 165     | 4.5                   |
| <b>BN71</b>                     | <b>M1</b>  | 149     | 110     | 45      | 165     | 15.5                  |
| <b>BN80</b>                     | <b>M2</b>  | 160     | 110     | 45      | 165     | 16.5                  |
| <b>BN90</b>                     | —          | 162     | 110     | 45      | 165     | 31.5                  |
| <b>BN100</b>                    | <b>M3</b>  | 171     | 110     | 45      | 165     | 37.5                  |
| <b>BN112</b>                    | —          | 186     | 110     | 45      | 165     | 39                    |
| <b>BN132</b>                    | <b>M4</b>  | 210     | 140     | 45      | 188     | 45.5                  |
| <b>BN160MR</b>                  | —          | 210     | 140     | 45      | 188     | 161                   |

(\*) Dimension valid only for motors BN.

(F 51)

| Motors with FD brake dimensions |            |         |         |         |         |                       |
|---------------------------------|------------|---------|---------|---------|---------|-----------------------|
|                                 |            |         |         |         |         |                       |
|                                 |            | AD (mm) | AF (mm) | AH (mm) | LL (mm) | V <sup>(*)</sup> (mm) |
|                                 |            |         |         |         |         |                       |
| <b>BN63</b>                     | <b>M05</b> | 136     | 110     | 45      | 165     | 4.5                   |
| <b>BN71</b>                     | <b>M1</b>  | 149     | 110     | 45      | 165     | 1.5                   |
| <b>BN80</b>                     | <b>M2</b>  | 160     | 110     | 45      | 165     | 18.5                  |
| <b>BN90</b>                     | —          | 162     | 110     | 45      | 165     | 39.5                  |
| <b>BN100</b>                    | <b>M3</b>  | 171     | 110     | 45      | 165     | 63.5                  |
| <b>BN112</b>                    | —          | 186     | 110     | 45      | 165     | 75                    |
| <b>BN132</b>                    | <b>M4</b>  | 210     | 140     | 45      | 188     | 122                   |
| <b>BN160MR</b>                  | —          | 210     | 140     | 45      | 188     | 161                   |

(\*) Dimension valid only for motors BN.



## M9.6 Control of brake operation

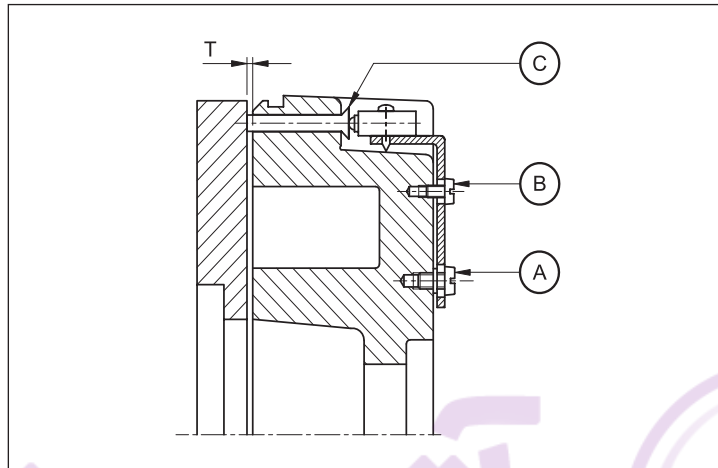
### MSW

The microswitch can be set in order to obtain from it a signal related to the attraction/release of an anchor plate, or it can be set in order to give feedback when the air gap reaches the maximum value.

**MSW option is available for brakes FD03...FD09.**

The microswitch is provided with three lead wires (NC, NO, COM). The next figure shown the main components of the brake equipped with microswitch.

(F 52)



- A: Plate fixing screws
- B: Setting screws
- C: Actuator control pin

## M9.7 Additional cable entry for brakemotors

### IC

The terminal box cover of brakemotors BN63...BN160MR / M05...M4 is provided with two additional cable entry M16 x 1.5 (one cable entry per side).

The terminal box cover of brakemotors BN160...BN200 / M5 is provided with an additional cable entry M16 x 1.5 next to the cable entry used for the brake.

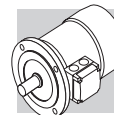
## M9.8 Anti-condensation heaters

### H1

### NH1

Where an application involves high humidity or extreme temperature fluctuation, motors may be equipped with an anti-condensate heater.

A single-phase power supply is available in the auxiliary terminal board inside the main terminal box. Values for the absorbed power are listed here below:



(F 53)

|                   |         | H1                     | NH1                    |
|-------------------|---------|------------------------|------------------------|
|                   |         | 1~ 230V ± 10%<br>P [W] | 1~ 115V ± 10%<br>P [W] |
| BN 56...BN 80     | M0...M2 | 10                     | 10                     |
| BN 90...BN 160MR  | M3 - M4 | 25                     | 25                     |
| BN 160M...BN 180M | M5      | 50                     | 50                     |
| BN 180L...BN 200L | —       |                        |                        |

### Warning!

Always remove power supply to the anti-condensante heater before operating the motor.

## M9.9 Tropicalization

**TP**

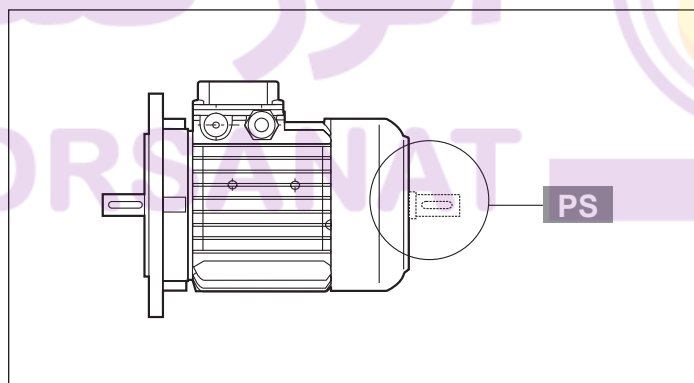
When option **TP** is specified, motor windings receive additional protection for operation in high humidity and temperature conditions.

## M9.10 Second shaft extension

**PS**

This option is not compatible with variants RC, TC, U1, U2, EN1, EN2, EN3, EN4, EN5, EN6. For shaft dimensions please see motor dimensions tables.

(F 54)



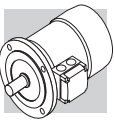
## M9.11 Backstop device

**AL**


**AR**

For applications where backdriving must be avoided, motors equipped with an anti run-back device can be used (available for the M series only). While allowing rotation in the direction required, this device operates instantaneously in case of a power failure, preventing the shaft from running back. The anti run-back device is life lubricated with special grease for this specific application. When ordering, customers should indicate the required rotation direction, AL or AR.

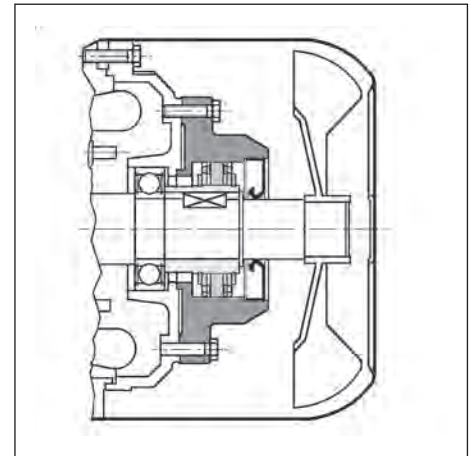
Never use the anti run-back device to prevent reverse rotation caused by faulty electrical connection. Table (F55) shows rated and maximum locking torques for the anti run-back devices. A diagram of the device can be seen in Table (F56). Overall dimensions are same as the corresponding brake motor. The direction of free rotation is described in the "MOTOR OPTIONS" section of specifically dedicated sections to gear units.



(F 55)

|  | Rated locking torque | Max. locking torque | Release speed        |
|---|----------------------|---------------------|----------------------|
|   | [Nm]                 | [Nm]                | [min <sup>-1</sup> ] |
| <b>M1</b>   | 6                    | 10                  | 750                  |
| <b>M2</b>   | 16                   | 27                  | 650                  |
| <b>M3</b>   | 54                   | 92                  | 520                  |
| <b>M4</b>   | 110                  | 205                 | 430                  |

(F 56)



### M9.12 Ventilation

Motors are cooled through outer air blow (IC 411 according to CEI EN 60034-6) and are equipped with a plastic radial fan, which operates in both directions.

Ensure that fan cover is installed at a suitable distance from the closest wall so to allow air circulation and servicing of motor and brake, if fitted.



On request, motors can be supplied with independently power-supplied forced ventilation system starting from BN 71 or M1 size.

Motor is cooled by an axial fan with independent power supply and fitted on the fan cover (IC 416 cooling system).

This version is used in case of motor driven by inverter so that steady torque operation is possible even at low speed or when high starting frequencies are needed.

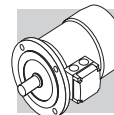
Brake all motors with rear shaft projection (PS option) are excluded.

(F 57)



| Power supply  |   |                 |         |       |             |
|---|---|-----------------|---------|-------|-------------|
|  |  | V a.c. ± 10%    | Hz      | P [W] | I [A]       |
| <b>BN 71</b>  | <b>M1</b>   | 1~ 230          | 50 / 60 | 22    | 0.12        |
| <b>BN 80</b>  | <b>M2</b>   |                 |         | 22    | 0.12        |
| <b>BN 90</b>  | —   |                 |         | 40    | 0.30        |
| <b>BN 100 (*)</b>   | <b>M3</b>   |                 |         | 50    | 0.25        |
| <b>BN 112</b>   | —   |                 |         | 50    | 0.26 / 0.15 |
| <b>BN 132S</b>  | <b>M4S</b>  | 3~ 230 Δ / 400Y | 50      | 110   | 0.38 / 0.22 |
| <b>BN 132M...BN 160MR</b>   | <b>M4L</b>  |                 |         |       |             |
| <b>BN 160...BN 180M</b>   | <b>M5</b>   |                 |         |       |             |
|   |   |                 | 50      | 180   | 1.25 / 0.72 |

This variant has two different models, called **U1** and **U2**, having the same longitudinal size. Longer side of fan cover (**DL**) is specified for both models in the table below. Overall dimension can be reckoned from motor size table.





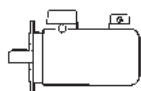
(F 58)

| Extra length for servoventilated motors   |   |              |              |
|---|---|--------------|--------------|
|  |  | $\Delta L_1$ | $\Delta L_2$ |
| <b>BN 71</b>  | <b>M1</b>   | 93           | 32           |
| <b>BN 80</b>  | <b>M2</b>   | 127          | 55           |
| <b>BN 90</b>  | —   | 131          | 48           |
| <b>BN 100</b>   | <b>M3</b>   | 119          | 28           |
| <b>BN 112</b>   | —   | 130          | 31           |
| <b>BN 132S</b>  | <b>M4S</b>  | 161          | 51           |
| <b>BN 132M</b>  | <b>M4L</b>  | 161          | 51           |

$\Delta L_1$  = extra length to LB value of corresponding standard motor

$\Delta L_2$  = extra length to LB value of corresponding brake motor

**U1**



Fan wiring terminals are housed in a separate terminal box.

In brake motors of size BN 71...BN 160MR, M1...M4L, with **U1** model, the release lever cannot be positioned to AA.



The option is not applicable to motors compliant with the CSA and UL norms (option CUS).

**U2**



Fan terminals are wired in the motor terminal box. The **U2** option does not apply to motors BN 160 through BN 200L, M5, with the only exception of motor BN 160MR for which the option is available instead and to motors with option CUS (ompliant to norms CSA and UL).

(F 59)

|  |  | V a.c.<br>$\pm 10\%$    | Hz      | P<br>[W] | I<br>[A]    |
|---|---|-------------------------|---------|----------|-------------|
| <b>BN 71</b>  | <b>M1</b>   | 1 ~ 230                 | 50 / 60 | 22       | 0.12        |
| <b>BN 80</b>  | <b>M2</b>   |                         |         | 22       | 0.12        |
| <b>BN 90</b>  | —   |                         |         | 40       | 0.30        |
| <b>BN 100</b>   | <b>M3</b>   | 3 ~ 230 $\Delta$ / 400Y |         | 40       | 0.26 / 0.09 |
| <b>BN 112</b>   | —   |                         |         | 50       | 0.26 / 0.15 |
| <b>BN 132 ... BN 160MR</b>  | <b>M4L</b>  |                         |         | 110      | 0.38 / 0.22 |

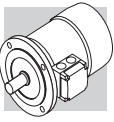
### M9.13 Rain canopy

**RC**



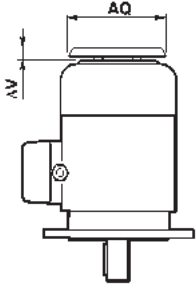
The rain canopy protects the motor from dripping and avoids the ingress of solid bodies. It is recommended when motor is installed in a vertical position with the shaft downwards.

Relevant dimensions are indicated in the table below.

The drip cover is not compatible with variants PS, EN1, EN2, EN3, EN4, EN5, EN6.



(F 60)

|  |  | AQ  | $\Delta V$ |  |
|---|---|-----|------------|---|
| BN 63   | M05   | 118 | 24         |   |
| BN 71   | M1  | 134 | 27         |   |
| BN 80   | M2  | 152 | 25         |   |
| BN 90   | —   | 168 | 30         |   |
| BN 100  | M3  | 190 | 28         |   |
| BN 112  | —   | 211 | 32         |   |
| BN 132...BN 160MR   | M4  | 254 | 32         |   |
| BN 160M...BN 180M   | M5  | 302 | 36         |   |
| BN 180L...BN 200L   | —   | 340 | 36         |   |

#### M9.14 Textile canopy

##### TC

Option TC is a cover variant for textile industry environments, where lint may obstruct the fan grid and prevent a regular flow of cooling air.

This option is not compatible with variants EN1, EN2, EN3, EN4, EN5, EN6.

Overall dimensions are the same as drip cover type RC.

#### M9.15 Feedback units

Motors may be combined with six different types of encoders to achieve feedback circuits.

Configurations with double-extended shaft (PS) and rain canopy (RC, TC) are not compatible with encoder installation.

##### EN1

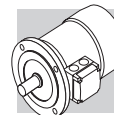
Incremental encoder,  $V_{IN} = 5\text{ V}$ , line-driver output RS 422.

##### EN2

Incremental encoder,  $V_{IN} = 10\text{-}30\text{ V}$ , line-driver output RS 422.

##### EN3

Incremental encoder,  $V_{IN} = 12\text{-}30\text{ V}$ , push-pull output 12-30 V



## EN4

Encoder sin/cos,  $V_{IN} = 4.5-5.5$  V, output Sinus  $0.5V_{PP}$ .

## EN5

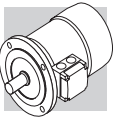
Absolute encoder singleturn, HIPERFACE® interface,  $V_{IN} = 7-12$  V.

## EN6

Absolute encoder multiturn, HIPERFACE® interface,  $V_{IN} = 7-12$  V.

(F 61)

|                                 | EN1                                    | EN2        | EN3           | EN4                                       | EN5        | EN6        |
|---------------------------------|--|------------|---------------|---|------------|------------|
| Interface                       | TTL/RS 422                             | TTL/RS 422 | HTL/push-pull | Sinus 0.5 VPP                             | HIPERFACE® | HIPERFACE® |
| Power supply voltage [V]        | 4...6                                  | 10...30    | 12...30       | 4.4...5.5                                 | 7...12     | 7...12     |
| Output voltage [V]              | 5                                      | 5          | 12...30       | —   | —          | —          |
| No-load operating current [mA]  | 120                                    | 100        | 100           | 40  | 80         | 80         |
| No. of pulses per revolution    | 1024                                   |            |               |   |            |            |
| Steps per revolution            | —                                      | —          | —             | —   | 15 bit     | 15 bit     |
| Revolutions                     | —                                      | —          | —             | —   | —          | 12 bit     |
| No. of signals                  | 6 (A, B, Z + inverted signals)         |            |               | 6 (cos-, cos+, sin-, sin+, Z, $\bar{Z}$ ) | —          | —          |
| Max. output frequency [kHz]     | 600                                    |            |               | 200                                       |            |            |
| Max. speed [min <sup>-1</sup> ] | 6000 (9000 min <sup>-1</sup> for 10 s) |            |               |   |            |            |
| Working temperature range [°C]  | -30 ... +100                           |            |               |   |            |            |
| Protection class                | IP 65                                  |            |               |   |            |            |



(F 63)

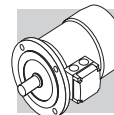
| EN1, EN2, EN3, EN4, EN5, EN6 |                |
|------------------------------|----------------|
|                              |                |
| BN 63...BN 200L              | M05...M5       |
| BN 63_FD...BN 200L_FD        | M05_FD...M5_FD |
| BN 63_FA...BN 200L_FA        | M05_FA...M5_FA |

(F 62)

| EN_ + U1                |       |           |
|-------------------------|-------|-----------|
|                         |       | <b>L3</b> |
| BN 160M...BN 180M       | M5    | 72        |
| BN 180L...BN 200L       | -     | 82        |
| BN 160M_FD...BN 180M_FD | M5_FD | 35        |
| BN 180L_FD...BN 200L_FD | -     | 41        |

If the encoder device (option EN\_) is specified on motors BN71...BN160MR / M1...M4, along with the independent fan cooling (options U1, U2), the extra length of motor is coincident with that of the correspondent U1 and U2 execution.





## M9.16 Surface protection

C\_

When no specific protection class is requested, the painted (ferrous) surfaces of motors are protected to at least corrosivity class C2 (UNI EN ISO 12944-2). For improved resistance to atmospheric corrosion, motors can be delivered with C3 and C4 surface protection.

| SURFACE PROTECTION | Typical environments  | Maximum surface temperature | Corrosivity class according to UNI EN ISO 12944-2 |
|--------------------|---|-----------------------------|---|
| C3                 | Urban and industrial environments with up to 100% relative humidity (medium air pollution)              | 120°C                       | C3  |
| C4                 | Industrial areas, coastal areas, chemical plant, with up to 100% relative humidity (high air pollution) | 120°C                       | C4  |

Motors with optional protection to class C3 or C4 are available in a choice of colours. If no specific colour is requested (see the "PAINTING" option) motors are finished in RAL 7042.

Motors can also be supplied with surface protection for corrosivity class C5 according to UNI EN ISO 12944-2. Contact our Technical Service for further details.

## M9.17 Painting

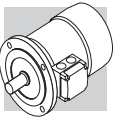
RAL\_

Gearboxes with optional protection to class C3 or C4 are available in the colours listed in the following table.

| PAINTING | Colour          | RAL number |
|----------|-----------------|------------|
| RAL7042* | Traffic Grey A  | 7042       |
| RAL5010  | Gentian Blue    | 5010       |
| RAL9005  | Jet Black       | 9005       |
| RAL9006  | White Aluminium | 9006       |
| RAL9010  | Pure White      | 9010       |

\* Gearboxes are supplied in this standard colour if no other colour is specified.

NOTE – "PAINTING" options can only be specified in conjunction with "SURFACE PROTECTION" options.



## M9.18 Certificates

### ACM

#### Certificate of compliance of motors

The document certifies the compliance of the product with the purchase order and the construction in conformity with the applicable procedures of the Bonfiglioli Quality System.

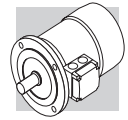
### CC

#### Inspection certificate

The document entails checking on order compliance, the visual inspection of external conditions and instrumental testing of the electrical characteristics in unloaded conditions. Units inspected are sampled within the shipping batch and marked individually.

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ATOORSANAT

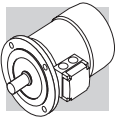




**M10 MOTOR RATING CHARTS**

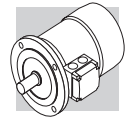
| 2P             |          | 3000 min <sup>-1</sup> - S1 |                |      |   |          |         |         |       |      |     |     |     |     |                | 50 Hz      |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
|----------------|----------|-----------------------------|----------------|------|---|----------|---------|---------|-------|------|-----|-----|-----|-----|----------------|------------|--------|------|-------|----------------|------|------|----------------|-------|--------|-------|----------------|------|----------------|-------|
|                |          | d.c. brake                  |                |      |   |          |         |         |       |      |     |     |     |     |                | a.c. brake |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
|                |          | FD                          |                |      |   |          |         |         | IM B5 |      |     |     |     |     |                | FA         |        |      | IM B5 |                |      |      |                |       |        |       |                |      |                |       |
| P <sub>n</sub> | kW       | IE1                         | M <sub>n</sub> | n    | n | η (100%) | η (75%) | η (50%) | cosφ  | In   | Is  | Ms  | Ma  | Mn  | J <sub>m</sub> | IM B5      | Mod    | Mb   | NB    | Z <sub>0</sub> | 1/h  | SB   | J <sub>m</sub> | IM B5 | Mod    | Mb    | Z <sub>0</sub> | 1/h  | J <sub>m</sub> | IM B5 |
| 0.18           | BN 63A   | 2                           | 2730           | 0.63 | ○ | 59.9     | 56.9    | 51.9    | 0.77  | 0.56 | 3.0 | 2.1 | 2.0 | 2.0 | 2.0            | 3.5        | FD 02  | 1.75 | 3900  | 4800           | 4800 | 4800 | 4800           | 2.6   | 5.2    | FA 02 | 1.75           | 4800 | 2.6            | 5.0   |
| 0.25           | BN 63B   | 2                           | 2740           | 0.87 | ○ | 66.0     | 64.8    | 64.8    | 0.76  | 0.72 | 3.3 | 2.3 | 2.3 | 2.3 | 3.9            | 3.9        | FD 02  | 1.75 | 3900  | 4800           | 4800 | 4800 | 3.0            | 5.6   | FA 02  | 1.75  | 4800           | 3.0  | 5.4            |       |
| 0.37           | BN 63C   | 2                           | 2800           | 1.26 | ○ | 69.1     | 66.8    | 66.8    | 0.78  | 0.99 | 3.9 | 2.6 | 2.6 | 2.6 | 5.1            | 5.1        | FD 02  | 3.5  | 3600  | 4500           | 4500 | 4500 | 3.9            | 6.8   | FA 02  | 3.5   | 4500           | 3.9  | 6.6            |       |
| 0.37           | BN 71A   | 2                           | 2820           | 1.25 | ○ | 73.8     | 73.0    | 70.6    | 0.76  | 0.95 | 4.8 | 2.8 | 2.6 | 2.6 | 5.4            | 5.4        | FD 03  | 3.5  | 3000  | 4100           | 4100 | 4100 | 4.6            | 8.1   | FA 03  | 3.5   | 4200           | 4.6  | 7.8            |       |
| 0.55           | BN 71B   | 2                           | 2820           | 1.86 | ○ | 76.0     | 75.8    | 74.8    | 0.76  | 1.37 | 5.0 | 2.9 | 2.8 | 2.8 | 6.2            | 6.2        | FD 03  | 5    | 2900  | 4200           | 4200 | 4200 | 5.3            | 8.9   | FA 03  | 5     | 4200           | 5.3  | 8.6            |       |
| 0.75           | BN 71C   | 2                           | 2810           | 2.6  | ○ | 76.6     | 76.2    | 76.2    | 0.76  | 1.86 | 5.1 | 3.1 | 2.8 | 2.8 | 7.3            | 7.3        | FD 03  | 5    | 1900  | 3300           | 3300 | 3300 | 6.1            | 10.0  | FA 03  | 5     | 3600           | 6.1  | 9.7            |       |
| 0.75           | BN 80A   | 2                           | 2810           | 2.6  | ● | 76.2     | 75.5    | 66.3    | 0.81  | 1.75 | 4.8 | 2.6 | 2.2 | 2.2 | 7.8            | 8.6        | FD 04  | 5    | 1700  | 3200           | 3200 | 3200 | 9.4            | 12.5  | FA 04  | 5     | 3200           | 9.4  | 12.4           |       |
| 1.1            | BN 80B   | 2                           | 2800           | 3.8  | ● | 76.4     | 76.2    | 75.0    | 0.81  | 2.57 | 4.8 | 2.8 | 2.4 | 2.4 | 9.0            | 9.5        | FD 04  | 10   | 1500  | 3000           | 3000 | 3000 | 10.6           | 13.4  | FA 04  | 10    | 3000           | 10.6 | 13.3           |       |
| 1.5            | BN 80C   | 2                           | 2800           | 5.1  | ● | 79.1     | 79.5    | 77.2    | 0.81  | 3.4  | 4.9 | 2.7 | 2.4 | 2.4 | 11.3           | 11.3       | FD 04  | 15   | 1300  | 2600           | 2600 | 2600 | 13.0           | 15.2  | FA 04  | 15    | 2600           | 13.0 | 15.1           |       |
| 1.5            | BN 90SA  | 2                           | 2870           | 5.0  | ● | 82.0     | 81.5    | 78.1    | 0.80  | 3.4  | 5.9 | 2.7 | 2.6 | 2.6 | 12.5           | 12.3       | FD 14  | 15   | 900   | 2200           | 2200 | 2200 | 14.1           | 16.5  | FA 14  | 15    | 2200           | 14.1 | 16.4           |       |
| 1.85           | BN 90SB  | 2                           | 2880           | 6.1  | ● | 82.5     | 82.0    | 75.4    | 0.80  | 4.0  | 6.2 | 2.9 | 2.6 | 2.6 | 16.7           | 14         | FD 14  | 15   | 900   | 2200           | 2200 | 2200 | 18.3           | 18.2  | FA 14  | 15    | 2200           | 18.3 | 18.1           |       |
| 2.2            | BN 90L   | 2                           | 2880           | 7.3  | ● | 82.7     | 82.1    | 80.8    | 0.80  | 4.8  | 6.3 | 2.9 | 2.7 | 2.7 | 16.7           | 14         | FD 05  | 26   | 900   | 2200           | 2200 | 2200 | 21             | 20    | FA 05  | 26    | 2200           | 21   | 20.7           |       |
| 3              | BN 100L  | 2                           | 2860           | 10.0 | ● | 81.5     | 81.3    | 77.4    | 0.79  | 6.7  | 5.6 | 2.6 | 2.2 | 2.2 | 31             | 20         | FD 15  | 26   | 700   | 1600           | 1600 | 1600 | 35             | 26    | FA 15  | 26    | 1600           | 35   | 27             |       |
| 4              | BN 100LB | 2                           | 2870           | 13.3 | ● | 83.1     | 83.0    | 77.8    | 0.80  | 8.7  | 5.8 | 2.7 | 2.5 | 2.5 | 39             | 23         | FD 15  | 40   | 450   | 900            | 900  | 900  | 43             | 29    | FA 15  | 40    | 1000           | 43   | 30             |       |
| 4              | BN 112M  | 2                           | 2900           | 13.2 | ● | 85.5     | 84.5    | 83.0    | 0.82  | 8.2  | 6.9 | 3.0 | 2.9 | 2.9 | 57             | 28         | FD 06S | 40   | —     | 950            | —    | —    | 66             | 39    | FA 06S | 40    | 950            | 66   | 40             |       |
| 5.5            | BN 132SA | 2                           | 2890           | 18.2 | ● | 84.7     | 84.5    | 81.2    | 0.84  | 11.2 | 5.9 | 2.6 | 2.2 | 2.2 | 101            | 35         | FD 06  | 50   | —     | 600            | —    | —    | 112            | 48    | FA 06  | 50    | 600            | 112  | 49             |       |
| 7.5            | BN 132SB | 2                           | 2900           | 25   | ● | 86.5     | 86.3    | 84.4    | 0.85  | 14.7 | 6.4 | 2.6 | 2.2 | 2.2 | 145            | 42         | FD 06  | 50   | —     | 550            | —    | —    | 154            | 55    | FA 06  | 50    | 550            | 154  | 56             |       |
| 9.2            | BN 132M  | 2                           | 2930           | 30   | ● | 87.0     | 86.5    | 83.6    | 0.86  | 17.7 | 6.7 | 2.8 | 2.3 | 2.3 | 178            | 53         | FD 66  | 75   | —     | 430            | —    | —    | 189            | 66    | FA 06  | 75    | 430            | 189  | 67             |       |
| 11             | BN 160MR | 2                           | 2920           | 36   | ● | 87.6     | 87.0    | 86.0    | 0.88  | 20.6 | 6.9 | 2.9 | 2.5 | 2.5 | 210            | 65         |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
| 15             | BN 160MB | 2                           | 2930           | 49   | ● | 89.6     | 89.4    | 88.0    | 0.86  | 28.1 | 7.1 | 2.6 | 2.3 | 2.3 | 340            | 84         |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
| 18.5           | BN 160L  | 2                           | 2930           | 60   | ● | 90.4     | 90.1    | 89.0    | 0.86  | 34   | 7.6 | 2.7 | 2.3 | 2.3 | 420            | 97         |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
| 22             | BN 180M  | 2                           | 2930           | 72   | ● | 89.9     | 89.7    | 89.5    | 0.88  | 40   | 7.8 | 2.6 | 2.4 | 2.4 | 490            | 109        |        |      |       |                |      |      |                |       |        |       |                |      |                |       |
| 30             | BN 200LA | 2                           | 2930           | 98   | ● | 90.7     | 90.1    | 87.6    | 0.89  | 54   | 7.8 | 2.7 | 2.9 | 2.9 | 770            | 140        |        |      |       |                |      |      |                |       |        |       |                |      |                |       |

○ = n.a. ● = IE1



| 4P   |          | 1500 min <sup>-1</sup> - S1 |           |  |          |          |          |                 |      |                 |                 |                  |     |                      |                        |      |          |                       | 50 Hz  |           |     |          |                       |  |           |    |
|------|----------|-----------------------------|-----------|--|----------|----------|----------|-----------------|------|-----------------|-----------------|------------------|-----|----------------------|------------------------|------|----------|-----------------------|--|-----------|-----|----------|-----------------------|--|-----------|----|
|      |          | d.c. brake                  |           |  |          |          |          |                 |      |                 |                 |                  |     |                      |                        |      |          |                       | a.c. brake   |           |     |          |                       |  |           |    |
|      |          | P <sub>n</sub><br>kW        | IM B5<br> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | Ma<br>Mn | Ms<br>Mn | Is<br>In | In<br>400V<br>A | cosφ | η<br>(50%)<br>% | η<br>(75%)<br>% | η<br>(100%)<br>% | IE1 | M <sub>n</sub><br>Nm | n<br>min <sup>-1</sup> | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | Mod | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> |    |
| NB   | SB       |                             |           |  |          |          |          |                 |      |                 |                 |                  |     |                      |                        |      |          |                       |  |           |     |          |                       |  |           | FA |
| 0.06 | BN 56A   | 4                           | 1340      | 0.43   | ○        | 46.8     | 81.4     | 83.8            | 84.4 | 81.6            | 0.81            | 8.4              | 5.6 | 2.7                  | 2.5                    | 98   | FD 06S   | 60                    | 1400   | 107       | 40  | FA 06S   | 60                    | 2100   | 107       | 42 |
| 0.09 | BN 56B   | 4                           | 1350      | 0.64   | ○        | 51.7     | 84.8     | 88.5            | 88.7 | 88.4            | 0.81            | 30               | 6.0 | 2.3                  | 2.1                    | 650  | FD 07    | 150                   | 1400   | 107       | 40  | FA 07    | 150                   | 2100   | 107       | 42 |
| 0.12 | BN 63A   | 4                           | 1350      | 0.85   | ○        | 59.8     | 84.8     | 88.5            | 88.7 | 88.4            | 0.81            | 30               | 6.0 | 2.3                  | 2.1                    | 650  | FD 07    | 150                   | 1400   | 107       | 40  | FA 07    | 150                   | 2100   | 107       | 42 |
| 0.18 | BN 63B   | 4                           | 1320      | 1.30   | ○        | 54.8     | 86.3     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 0.25 | BN 63C   | 4                           | 1340      | 1.78   | ○        | 65.3     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 0.25 | BN 71A   | 4                           | 1380      | 1.73   | ○        | 63.7     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 0.37 | BN 71B   | 4                           | 1370      | 2.6  | ○        | 66.8     | 88.7     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 0.55 | BN 71C   | 4                           | 1380      | 3.8  | ○        | 69.0     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 0.55 | BN 80A   | 4                           | 1390      | 3.8  | ○        | 72.0     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 0.75 | BN 80B   | 4                           | 1400      | 5.1  | ●        | 75.0     | 88.7     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 1.1  | BN 80C   | 4                           | 1400      | 7.5  | ●        | 75.5     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 1.1  | BN 90S   | 4                           | 1390      | 7.6  | ●        | 76.5     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 1.5  | BN 90LA  | 4                           | 1410      | 10.2   | ●        | 78.7     | 88.7     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 1.85 | BN 90LB  | 4                           | 1390      | 12.7   | ●        | 78.6     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 2.2  | BN 100LA | 4                           | 1410      | 14.9   | ●        | 81.1     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 3    | BN 100LB | 4                           | 1410      | 20   | ●        | 82.6     | 88.7     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 4    | BN 112M  | 4                           | 1430      | 27   | ●        | 84.4     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 5.5  | BN 132S  | 4                           | 1440      | 36   | ●        | 84.7     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 7.5  | BN 132MA | 4                           | 1440      | 50   | ●        | 86.0     | 88.7     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 9.2  | BN 132MB | 4                           | 1440      | 61   | ●        | 88.4     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 11   | BN 160MR | 4                           | 1440      | 73   | ●        | 87.6     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 15   | BN 160L  | 4                           | 1460      | 98   | ●        | 88.7     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 18.5 | BN 180M  | 4                           | 1460      | 121  | ●        | 89.3     | 88.6     | 90.0            | 91.4 | 91.0            | 0.80            | 44               | 6.4 | 2.5                  | 2.5                    | 1250 | FD 09    | 300                   | 1400   | 107       | 40  | FA 09    | 300                   | 2100   | 107       | 42 |
| 22   | BN 180L  | 4                           | 1460      | 144  | ●        | 89.9     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |
| 30   | BN 200L  | 4                           | 1460      | 196  | ●        | 91.4     | 87.6     | 89.3            | 89.3 | 89.2            | 0.81            | 37               | 6.2 | 2.6                  | 2.5                    | 790  | FD 08    | 200                   | 1400   | 107       | 40  | FA 08    | 200                   | 2100   | 107       | 42 |

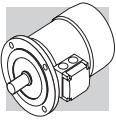
○ = n.a. ● = IE1



| 6P                   |          | 1000 min <sup>-1</sup> - S1 |                      |     |                  |                 |                 |      |                 |          |          |          |  |           | 50 Hz      |      |       |       |     |            |        |      |      |       |     |       |        |      |      |
|----------------------|----------|-----------------------------|----------------------|-----|------------------|-----------------|-----------------|------|-----------------|----------|----------|----------|--|-----------|------------|------|-------|-------|-----|------------|--------|------|------|-------|-----|-------|--------|------|------|
| P <sub>n</sub><br>kW |          | n<br>min <sup>-1</sup>      | M <sub>n</sub><br>Nm | IE1 | η<br>(100%)<br>% | η<br>(75%)<br>% | η<br>(50%)<br>% | cosφ | In<br>400V<br>A | Is<br>In | Ms<br>Mn | Ma<br>Mn | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | d.c. brake |      |       |       |     | a.c. brake |        |      |      |       |     |       |        |      |      |
|                      |          |                             |                      |     |                  |                 |                 |      |                 |          |          |          |  |           | FD         |      | FA    |       |     | FD         |        | FA   |      |       |     |       |        |      |      |
|                      |          |                             |                      |     |                  |                 |                 |      |                 |          |          |          |  |           |            |      |       |       |     |            |        |      |      |       |     |       |        |      |      |
|                      |          |                             |                      |     |                  |                 |                 |      |                 |          |          |          |  |           |            |      |       |       |     |            |        |      |      |       |     |       |        |      |      |
| 0.09                 | BN 63A   | 6                           | 0.98                 | ○   | 41.0             | 41.0            | 32.9            | 0.53 | 0.60            | 2.1      | 2.1      | 1.8      | 3.4  | 4.6       | FD 02      | 9000 | 14000 | 14000 | 3.5 | 14000      | FA 02  | 6.3  | 4.0  | 14000 | 3.5 | 14000 | FA 02  | 6.1  | 4.0  |
| 0.12                 | BN 63B   | 6                           | 1.32                 | ○   | 45.0             | 44.0            | 41.8            | 0.60 | 0.64            | 2.1      | 1.9      | 1.7      | 3.7  | 4.9       | FD 02      | 9000 | 14000 | 14000 | 3.5 | 14000      | FA 02  | 6.6  | 4.3  | 14000 | 3.5 | 14000 | FA 02  | 6.4  | 4.3  |
| 0.18                 | BN 71A   | 6                           | 1.91                 | ○   | 55.0             | 55.5            | 51.0            | 0.69 | 0.68            | 2.6      | 1.9      | 1.7      | 8.4  | 5.5       | FD 03      | 8100 | 13500 | 13500 | 5   | 13500      | FA 03  | 8.2  | 9.5  | 13500 | 5   | 13500 | FA 03  | 7.9  | 9.5  |
| 0.25                 | BN 71B   | 6                           | 2.70                 | ○   | 62.0             | 58.5            | 51.4            | 0.71 | 0.82            | 2.6      | 1.9      | 1.7      | 10.9   | 6.7       | FD 03      | 7800 | 13000 | 13000 | 5   | 13000      | FA 03  | 9.4  | 12   | 13000 | 5   | 13000 | FA 03  | 9.1  | 12   |
| 0.37                 | BN 71C   | 6                           | 3.9                  | ○   | 66.0             | 60.0            | 53.3            | 0.69 | 1.17            | 3.0      | 2.4      | 2.0      | 12.9   | 7.7       | FD 53      | 5100 | 9500  | 9500  | 7.5 | 9500       | FA 03  | 10.4 | 14   | 9500  | 7.5 | 9500  | FA 03  | 10.1 | 14   |
| 0.37                 | BN 80A   | 6                           | 3.9                  | ○   | 68.0             | 67.4            | 63.3            | 0.68 | 1.15            | 3.2      | 2.2      | 2.0      | 21   | 9.9       | FD 04      | 5200 | 8500  | 8500  | 10  | 8500       | FA 04  | 13.8 | 23   | 8500  | 10  | 8500  | FA 04  | 13.7 | 23   |
| 0.55                 | BN 80B   | 6                           | 5.7                  | ○   | 70.0             | 69.8            | 64.3            | 0.68 | 1.67            | 3.9      | 2.6      | 2.2      | 25   | 11.3      | FD 04      | 4800 | 7200  | 7200  | 15  | 7200       | FA 04  | 15.2 | 27   | 7200  | 15  | 7200  | FA 04  | 15.1 | 27   |
| 0.75                 | BN 80C   | 6                           | 7.8                  | ●   | 70.0             | 70.0            | 64.4            | 0.65 | 2.38            | 3.8      | 2.5      | 2.2      | 28   | 12.2      | FD 04      | 3400 | 6400  | 6400  | 15  | 6400       | FA 04  | 16.1 | 30   | 6400  | 15  | 6400  | FA 04  | 16.0 | 30   |
| 0.75                 | BN 90S   | 6                           | 7.8                  | ●   | 70.0             | 69.0            | 64.2            | 0.68 | 2.27            | 3.8      | 2.4      | 2.2      | 26   | 12.6      | FD 14      | 3400 | 6500  | 6500  | 15  | 6500       | FA 14  | 16.8 | 28   | 6500  | 15  | 6500  | FA 14  | 16.7 | 28   |
| 1.1                  | BN 90L   | 6                           | 11.4                 | ●   | 72.9             | 72.6            | 69.1            | 0.69 | 3.2             | 3.9      | 2.3      | 2.0      | 33   | 15        | FD 05      | 2700 | 5000  | 5000  | 26  | 5000       | FA 05  | 21   | 37   | 5000  | 26  | 5000  | FA 05  | 22   | 37   |
| 1.5                  | BN 100LA | 6                           | 15.2                 | ●   | 75.2             | 74.2            | 70.3            | 0.72 | 4.0             | 4.1      | 2.1      | 2.0      | 82   | 22        | FD 15      | 1900 | 4100  | 4100  | 40  | 4100       | FA 15  | 28   | 86   | 4100  | 40  | 4100  | FA 15  | 29   | 86   |
| 1.85                 | BN 100LB | 6                           | 19.0                 | ●   | 76.6             | 72.8            | 62.6            | 0.73 | 4.8             | 4.6      | 2.1      | 2.0      | 95   | 24        | FD 15      | 1700 | 3600  | 3600  | 40  | 3600       | FA 15  | 30   | 99   | 3600  | 40  | 3600  | FA 15  | 31   | 99   |
| 2.2                  | BN 112M  | 6                           | 22                   | ●   | 78.5             | 79.0            | 76.5            | 0.73 | 5.5             | 4.8      | 2.2      | 2.0      | 168  | 32        | FD 06S     | —    | 2100  | 2100  | 60  | 2100       | FA 06S | 42   | 177  | 2100  | 60  | 2100  | FA 06S | 44   | 177  |
| 3                    | BN 132S  | 6                           | 30                   | ●   | 79.7             | 77.0            | 75.1            | 0.76 | 7.1             | 5.1      | 1.9      | 1.8      | 216  | 36        | FD 56      | —    | 1400  | 1400  | 75  | 1400       | FA 06  | 49   | 226  | 1400  | 75  | 1400  | FA 06  | 50   | 226  |
| 4                    | BN 132MA | 6                           | 40                   | ●   | 81.4             | 81.5            | 79.5            | 0.77 | 9.2             | 5.5      | 2.0      | 1.8      | 295  | 45        | FD 06      | —    | 1200  | 1200  | 100 | 1200       | FA 07  | 58   | 305  | 1200  | 100 | 1200  | FA 07  | 63   | 318  |
| 5.5                  | BN 132MB | 6                           | 56                   | ●   | 83.1             | 80.9            | 79.1            | 0.78 | 12.2            | 6.1      | 2.1      | 1.9      | 383  | 56        | FD 07      | —    | 1050  | 1050  | 150 | 1050       | FA 07  | 72   | 406  | 1050  | 150 | 1050  | FA 07  | 74   | 406  |
| 7.5                  | BN 160M  | 6                           | 75                   | ●   | 85.0             | 85.0            | 84.8            | 0.81 | 15.7            | 5.9      | 2.2      | 2.0      | 740  | 83        | FD 08      | —    | 900   | 900   | 170 | 900        | FA 08  | 112  | 815  | 900   | 170 | 900   | FA 08  | 113  | 815  |
| 11                   | BN 160L  | 6                           | 109                  | ●   | 86.4             | 86.5            | 85.9            | 0.81 | 22.7            | 6.6      | 2.5      | 2.3      | 970  | 103       | FD 08      | —    | 800   | 800   | 200 | 800        | FA 08  | 133  | 1045 | 800   | 200 | 800   | FA 08  | 133  | 1045 |
| 15                   | BN 180L  | 6                           | 148                  | ●   | 87.7             | 88.0            | 87.3            | 0.82 | 30              | 6.2      | 2.0      | 2.4      | 1550   | 130       | FD 09      | —    | 600   | 600   | 300 | 600        | FA 09  | 170  | 1750 | 600   | 300 | 600   | FA 09  | 170  | 1750 |
| 18.5                 | BN 200LA | 6                           | 184                  | ●   | 88.6             | 88.0            | 87.3            | 0.81 | 37              | 5.9      | 2.0      | 2.3      | 1700   | 145       | FD 09      | —    | 450   | 450   | 400 | 450        | FA 09  | 185  | 1900 | 450   | 400 | 450   | FA 09  | 185  | 1900 |

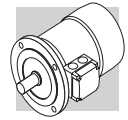
○ = n.a.    ● = IE1



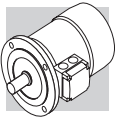





| 8P                   |          | 750 min <sup>-1</sup> - S1 |                      |        |      |                             |                   |                   |                   |  |           |            |          |      | 50 Hz                 |  |           |            |          |                       |  |           |
|----------------------|----------|----------------------------|----------------------|--------|------|-----------------------------|-------------------|-------------------|-------------------|--|-----------|------------|----------|------|-----------------------|--|-----------|------------|----------|-----------------------|--|-----------|
| P <sub>n</sub><br>kW |          | n<br>min <sup>-1</sup>     | M <sub>n</sub><br>Nm | η<br>% | cosφ | I <sub>n</sub><br>400V<br>A | $\frac{I_s}{I_n}$ | $\frac{M_s}{M_n}$ | $\frac{M_a}{M_n}$ | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | d.c. brake |          |      |                       |  |           | a.c. brake |          |                       |  |           |
|                      |          |                            |                      |        |      |                             |                   |                   |                   |  |           | FD         |          |      | FA                    |  |           | FD         |          |                       | FA   |           |
|                      |          |                            |                      |        |      |                             |                   |                   |                   |  |           | Mod        | Mb<br>Nm | NB   | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | Mod        | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> |
| 0.09                 | BN 71A   | 8                          | 1.26                 | 47     | 0.59 | 0.47                        | 2.3               | 2.4               | 2.3               | 10.9   | 6.7       | FD 03      | 3.5      | 9000 | 16000                 | 12.0   | 9.4       | FA 03      | 3.5      | 16000                 | 12.0   | 9.1       |
| 0.12                 | BN 71B   | 8                          | 1.69                 | 51     | 0.59 | 0.58                        | 2.1               | 2.3               | 2.2               | 12.9   | 7.7       | FD 03      | 5.0      | 9000 | 16000                 | 14.0   | 10.4      | FA 03      | 5.0      | 16000                 | 14.0   | 10.1      |
| 0.18                 | BN 80A   | 8                          | 2.49                 | 51     | 0.60 | 0.85                        | 2.4               | 2.2               | 2.2               | 15   | 8.2       | FD 04      | 5.0      | 6500 | 11000                 | 16.6   | 12.1      | FA 04      | 5.0      | 11000                 | 16.6   | 12.0      |
| 0.25                 | BN 80B   | 8                          | 3.51                 | 54     | 0.63 | 1.06                        | 2.4               | 2.0               | 1.9               | 20   | 9.9       | FD 04      | 10.0     | 6000 | 10000                 | 22   | 13.8      | FA 04      | 10.0     | 10000                 | 23   | 13.7      |
| 0.37                 | BN 90S   | 8                          | 5.2                  | 58     | 0.60 | 1.53                        | 2.6               | 2.3               | 2.1               | 26   | 12.6      | FD 14      | 15.0     | 4800 | 7500                  | 28   | 16.8      | FA 14      | 15.0     | 7500                  | 28   | 16.7      |
| 0.55                 | BN 90L   | 8                          | 7.8                  | 62     | 0.60 | 2.13                        | 2.6               | 2.2               | 2.0               | 33   | 15        | FD 05      | 26       | 4000 | 6400                  | 37   | 21        | FA 05      | 26       | 6400                  | 37   | 22        |
| 0.75                 | BN 100LA | 8                          | 10.2                 | 68     | 0.63 | 2.53                        | 3.4               | 1.9               | 1.7               | 82   | 22        | FD 15      | 26       | 2800 | 4800                  | 86   | 28        | FA 15      | 26       | 4800                  | 86   | 29        |
| 1.1                  | BN 100LB | 8                          | 15.0                 | 68     | 0.64 | 3.65                        | 3.2               | 1.7               | 1.7               | 95   | 24        | FD 15      | 40       | 2500 | 4000                  | 99   | 30        | FA 15      | 40       | 4000                  | 99   | 31        |
| 1.5                  | BN 112M  | 8                          | 20.2                 | 71     | 0.66 | 4.6                         | 3.7               | 1.8               | 1.9               | 168  | 32        | FD 06S     | 60       | —    | 3000                  | 177  | 42        | FA 06S     | 60       | 3000                  | 177  | 44        |
| 2.2                  | BN 132S  | 8                          | 29.6                 | 75     | 0.66 | 6.4                         | 3.8               | 1.8               | 2.0               | 295  | 45        | FD 56      | 75       | —    | 2300                  | 305  | 58        | FA 06      | 75       | 2300                  | 305  | 56        |
| 3                    | BN 132MA | 8                          | 40.4                 | 76     | 0.69 | 8.3                         | 3.9               | 1.6               | 1.8               | 370  | 53        | FD 06      | 100      | —    | 1900                  | 394  | 69        | FA 07      | 100      | 1900                  | 406  | 74        |

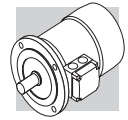




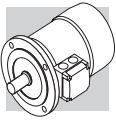
| 2/4P           |      | 3000/1500 min <sup>-1</sup> - S1 |                |    |       |                |                |                |                |                |                |                |       |        |     | 50 Hz          |      |      |      |                |                    |                  |       |        |     |                |      |                |                    |                  |       |   |   |
|----------------|------|----------------------------------|----------------|----|-------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------|--------|-----|----------------|------|------|------|----------------|--------------------|------------------|-------|--------|-----|----------------|------|----------------|--------------------|------------------|-------|---|---|
|                |      | d.c. brake                       |                |    |       |                |                |                |                |                |                |                |       |        |     | a.c. brake     |      |      |      |                |                    |                  |       |        |     |                |      |                |                    |                  |       |   |   |
|                |      | FD                               |                |    |       |                |                |                | IM B5          |                |                |                |       |        |     | FA             |      |      |      |                |                    |                  | IM B5 |        |     |                |      |                |                    |                  |       |   |   |
| P <sub>n</sub> | kW   | n                                | M <sub>n</sub> | η  | cos φ | I <sub>n</sub> | I <sub>s</sub> | I <sub>n</sub> | I <sub>s</sub> | M <sub>s</sub> | M <sub>n</sub> | J <sub>m</sub> | IM B5 | Mod    | Mb  | Z <sub>o</sub> | 1/h  | SB   | NB   | J <sub>m</sub> | x 10 <sup>-4</sup> | kgm <sup>2</sup> | IM B5 | Mod    | Mb  | Z <sub>o</sub> | 1/h  | J <sub>m</sub> | x 10 <sup>-4</sup> | kgm <sup>2</sup> | IM B5 |   |   |
| 2              |      |                                  |                |    |       |                |                |                |                |                |                |                |       |        |     |                |      |      |      |                |                    |                  |       |        |     |                |      |                |                    |                  |       | 4 | 2 |
| 0.20           | 0.15 | 2700                             | 0.71           | 55 | 0.82  | 0.64           | 3.5            | 0.88           | 2.9            | 2.1            | 1.9            | 2.9            | 4.4   | FD 02  | 3.5 | 2200           | 2600 | 4000 | 5100 | 2200           | 2600               | 3.5              | 6.1   | FA 02  | 3.5 | 2600           | 5100 | 3.5            | 5.9                | IM B5            |       |   |   |
| 0.28           | 0.20 | 2700                             | 0.99           | 56 | 0.82  | 0.88           | 2.9            | 0.88           | 2.9            | 1.9            | 1.7            | 4.7            | 4.4   | FD 03  | 3.5 | 2100           | 2400 | 3800 | 4800 | 2100           | 2400               | 3.5              | 7.1   | FA 03  | 3.5 | 2400           | 4800 | 5.8            | 6.8                | IM B5            |       |   |   |
| 0.37           | 0.25 | 2740                             | 1.29           | 56 | 0.82  | 1.16           | 3.5            | 0.82           | 3.3            | 1.8            | 1.8            | 5.8            | 5.1   | FD 03  | 5.0 | 1400           | 2100 | 2900 | 4200 | 1400           | 2100               | 5.0              | 7.8   | FA 03  | 5.0 | 2100           | 4200 | 6.9            | 7.5                | IM B5            |       |   |   |
| 0.45           | 0.30 | 2780                             | 1.55           | 63 | 0.85  | 1.21           | 3.8            | 0.85           | 3.6            | 2.0            | 1.9            | 6.9            | 5.9   | FD 03  | 5.0 | 1400           | 2100 | 2800 | 4200 | 1400           | 2100               | 5.0              | 8.6   | FA 03  | 5.0 | 2100           | 4200 | 8.0            | 8.3                | IM B5            |       |   |   |
| 0.55           | 0.37 | 2800                             | 1.9            | 63 | 0.85  | 1.48           | 3.9            | 0.85           | 3.9            | 1.7            | 1.7            | 15             | 8.2   | FD 04  | 5.0 | 1600           | 2300 | 3000 | 4000 | 1600           | 2300               | 5.0              | 12.1  | FA 04  | 5.0 | 2300           | 4000 | 17             | 12.0               | IM B5            |       |   |   |
| 0.75           | 0.55 | 2780                             | 2.6            | 65 | 0.85  | 1.96           | 3.8            | 0.85           | 3.9            | 1.9            | 1.8            | 20             | 9.9   | FD 04  | 10  | 1400           | 1600 | 2700 | 3600 | 1400           | 1600               | 10               | 13.8  | FA 04  | 10  | 1600           | 3600 | 22             | 13.7               | IM B5            |       |   |   |
| 1.1            | 0.75 | 2790                             | 3.8            | 71 | 0.82  | 2.73           | 4.7            | 0.82           | 4.7            | 2.3            | 2.0            | 21             | 12.2  | FD 14  | 10  | 1500           | 1600 | 2300 | 2800 | 1500           | 1600               | 10               | 16.4  | FA 14  | 10  | 1600           | 2800 | 23             | 16.3               | IM B5            |       |   |   |
| 1.5            | 1.1  | 2780                             | 5.2            | 70 | 0.85  | 3.64           | 4.5            | 0.85           | 4.7            | 2.4            | 2.1            | 28             | 14.0  | FD 05  | 26  | 1050           | 1200 | 1600 | 2000 | 1050           | 1200               | 26               | 20    | FA 05  | 26  | 1200           | 2000 | 32             | 21                 | IM B5            |       |   |   |
| 2.2            | 1.5  | 2800                             | 7.5            | 72 | 0.85  | 5.2            | 4.5            | 0.85           | 5.2            | 2.0            | 1.9            | 40             | 18.3  | FD 15  | 26  | 600            | 900  | 1300 | 2300 | 600            | 900                | 26               | 25    | FA 15  | 26  | 900            | 2300 | 44             | 25                 | IM B5            |       |   |   |
| 3.5            | 2.5  | 2850                             | 11.7           | 80 | 0.84  | 7.5            | 5.4            | 0.84           | 5.5            | 2.2            | 2.2            | 61             | 25    | FD 15  | 40  | 500            | 900  | 1000 | 2100 | 500            | 900                | 40               | 31    | FA 15  | 40  | 900            | 2100 | 65             | 32                 | IM B5            |       |   |   |
| 4              | 3.3  | 2880                             | 13.3           | 79 | 0.83  | 8.8            | 6.1            | 0.83           | 6.1            | 2.4            | 2.0            | 98             | 30    | FD 06S | 60  | —              | —    | —    | —    | —              | —                  | 60               | 40    | FA 06S | 60  | 700            | 107  | 107            | 42                 | IM B5            |       |   |   |
| 5.5            | 4.4  | 2890                             | 18.2           | 80 | 0.87  | 11.4           | 5.9            | 0.87           | 5.3            | 2.4            | 2.0            | 213            | 44    | FD 56  | 75  | —              | —    | —    | —    | —              | —                  | 75               | 57    | FA 06  | 75  | 350            | 223  | 223            | 58                 | IM B5            |       |   |   |
| 7.5            | 6    | 2900                             | 25             | 82 | 0.87  | 15.2           | 6.5            | 0.87           | 5.8            | 2.4            | 2.1            | 270            | 53    | FD 06  | 100 | —              | —    | —    | —    | —              | —                  | 100              | 66    | FA 07  | 100 | 350            | 293  | 293            | 71                 | IM B5            |       |   |   |
| 9.2            | 7.3  | 2920                             | 30             | 83 | 0.86  | 18.6           | 6.0            | 0.86           | 5.5            | 2.6            | 2.2            | 319            | 59    | FD 07  | 150 | —              | —    | —    | —    | —              | —                  | 150              | 75    | FA 07  | 150 | 300            | 342  | 342            | 77                 | IM B5            |       |   |   |




| 2/6P           |   | 3000/1000 min-1 - S3 60/40% |                |    |      |                |                |                   |                   |                   |                  |   |                 |                |                  | 50 Hz   |                 |                |                  |   |      |
|----------------|---|-----------------------------|----------------|----|------|----------------|----------------|-------------------|-------------------|-------------------|------------------|---|-----------------|----------------|------------------|---|-----------------|----------------|------------------|---|------|
|                |   | d.c. brake                  |                |    |      |                |                |                   |                   |                   |                  |   |                 |                |                  | a.c. brake  |                 |                |                  |   |      |
|                |   | FD                          |                |    |      |                |                |                   | FA                |                   |                  |   |                 |                |                  | IM B5   |                 | IM B5          |                  |   |      |
| P <sub>n</sub> |  | n                           | M <sub>n</sub> | η  | cosφ | I <sub>n</sub> | I <sub>s</sub> | $\frac{I_s}{I_n}$ | $\frac{M_s}{M_n}$ | $\frac{M_a}{M_n}$ | J <sub>m</sub>   | IM B5   | M <sub>ob</sub> | Z <sub>o</sub> | J <sub>m</sub>   | IM B5   | M <sub>ob</sub> | Z <sub>o</sub> | J <sub>m</sub>   | IM B5   |      |
| kW             |   | min <sup>-1</sup>           | Nm             | %  |      | A              |                |                   |                   |                   | kgm <sup>2</sup> |  | Nm              | 1/h            | kgm <sup>2</sup> |  | Nm              | 1/h            | kgm <sup>2</sup> |  |      |
| 0.25           | BN 71A  | 2                           | 0.84           | 60 | 0.82 | 0.73           | 4.3            | 1.9               | 1.8               | 1.8               | 6.9              | 5.9   | 1.75            | 1700           | 8.0              | 8.6   | 2.5             | 1700           | 8.0              | 8.3   | 8.3  |
| 0.08           |   | 6                           | 0.84           | 43 | 0.70 | 0.38           | 2.1            | 1.4               | 1.5               |                   |                  |   | 10000           | 13000          |                  |   |                 | 13000          |                  |   |      |
| 0.37           | BN 71B  | 2                           | 1.23           | 62 | 0.80 | 1.08           | 4.4            | 1.9               | 1.8               | 1.8               | 9.1              | 7.3   | 3.5             | 1300           | 10.2             | 10.0  | 3.5             | 1300           | 10.2             | 10.2  | 9.7  |
| 0.12           |   | 6                           | 1.27           | 44 | 0.73 | 0.54           | 2.4            | 1.4               | 1.5               |                   |                  |   | 9000            | 11000          |                  |   |                 | 11000          |                  |   |      |
| 0.55           | BN 80A  | 2                           | 1.88           | 63 | 0.86 | 1.47           | 4.5            | 1.9               | 1.7               | 1.7               | 20               | 9.9   | 5.0             | 1800           | 22               | 13.8  | 5.0             | 1800           | 22               | 22  | 13.7 |
| 0.18           |   | 6                           | 1.85           | 52 | 0.65 | 0.77           | 3.3            | 2.0               | 1.9               |                   |                  |   | 4100            | 6300           |                  |   |                 | 6300           |                  |   |      |
| 0.75           | BN 80B  | 2                           | 2.6            | 66 | 0.87 | 1.89           | 4.3            | 1.8               | 1.6               | 1.6               | 25               | 11.3  | 5.0             | 1700           | 27               | 15.2  | 5.0             | 1900           | 27               | 27  | 15.1 |
| 0.25           |   | 6                           | 2.6            | 54 | 0.67 | 1.00           | 3.2            | 1.7               | 1.8               |                   |                  |   | 3800            | 6000           |                  |   |                 | 6000           |                  |   |      |
| 1.10           | BN 90L  | 2                           | 3.7            | 67 | 0.84 | 2.82           | 4.7            | 2.1               | 1.9               | 1.9               | 28               | 14.0  | 13              | 1400           | 32               | 20  | 13              | 1600           | 32               | 32  | 21   |
| 0.37           |   | 6                           | 3.8            | 59 | 0.71 | 1.27           | 3.3            | 1.6               | 1.6               |                   |                  |   | 3400            | 5200           |                  |   |                 | 5200           |                  |   |      |
| 1.5            | BN 100LA  | 2                           | 5              | 73 | 0.84 | 3.53           | 5.1            | 1.9               | 2.0               | 2.0               | 40               | 18.3  | 13              | 1000           | 44               | 24  | 13              | 1200           | 44               | 44  | 25   |
| 0.55           |   | 6                           | 5.6            | 64 | 0.67 | 1.85           | 3.5            | 1.7               | 1.8               |                   |                  |   | 2900            | 4000           |                  |   |                 | 4000           |                  |   |      |
| 2.2            | BN 100LB  | 2                           | 7.2            | 77 | 0.85 | 4.9            | 5.9            | 2.0               | 2.0               | 2.0               | 61               | 25  | 26              | 700            | 65               | 31  | 26              | 900            | 65               | 65  | 32   |
| 0.75           |   | 6                           | 7.5            | 67 | 0.64 | 2.5            | 3.3            | 1.9               | 1.8               |                   |                  |   | 2100            | 3000           |                  |   |                 | 3000           |                  |   |      |
| 3              | BN 112M   | 2                           | 9.9            | 78 | 0.87 | 6.4            | 6.3            | 2.0               | 2.1               | 2.1               | 98               | 30  | 40              | —              | 107              | 40  | 40              | 1000           | 107              | 107   | 32   |
| 1.1            |   | 6                           | 11.1           | 72 | 0.64 | 3.4            | 3.9            | 1.8               | 1.8               |                   |                  |   | —               | 2600           |                  |   |                 | 2600           |                  |   |      |
| 4.5            | BN 132S   | 2                           | 14.8           | 78 | 0.84 | 9.9            | 5.8            | 1.9               | 1.8               | 1.8               | 213              | 44  | 37              | —              | 223              | 57  | 37              | 500            | 223              | 223   | 58   |
| 1.5            |   | 6                           | 14.9           | 74 | 0.67 | 4.4            | 4.2            | 1.9               | 2.0               |                   |                  |   | —               | 2100           |                  |   |                 | 2100           |                  |   |      |
| 5.5            | BN 132M   | 2                           | 18.0           | 78 | 0.87 | 11.7           | 6.2            | 2.1               | 1.9               | 2.0               | 270              | 53  | 50              | —              | 280              | 66  | 50              | 400            | 280              | 280   | 67   |
| 2.2            |   | 6                           | 22             | 77 | 0.71 | 5.8            | 4.3            | 2.1               | 2.0               |                   |                  |   | —               | 1900           |                  |   |                 | 1900           |                  |   |      |



| 2/8P           |    | 3000/750 min <sup>-1</sup> - S3 60/40% |   |                |      |       |                        |                                  |                                  |                                  |  |       |        |      |                       | 50 Hz      |       |  |       |      |        |                       |  |       |      |
|----------------|----|--|---|----------------|------|-------|------------------------|----------------------------------|----------------------------------|----------------------------------|--|-------|--------|------|-----------------------|------------|-------|--|-------|------|--------|-----------------------|--|-------|------|
|                |    | d.c. brake                             |   |                |      |       |                        |                                  |                                  |                                  |  |       |        |      |                       | a.c. brake |       |  |       |      |        |                       |  |       |      |
|                |    | FD                                     |   |                |      |       |                        |                                  | FA                               |                                  |  |       |        |      |                       | IM B5      |       | IM B5  |       |      |        |                       |  |       |      |
| P <sub>n</sub> | kW | P <sub>n</sub>                         | n | M <sub>n</sub> | η    | cos φ | I <sub>n</sub><br>400V | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod    | Mb   | Z <sub>0</sub><br>1/h | NB         | SB    | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod  | Mb     | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 |      |
| 2              |    |  |   |                |      |       |                        |                                  |                                  |                                  |  |       |        |      |                       |            |       |  |       |      |        |                       |  |       | 8    |
| 0.25           |    | BN 71A                                 | 2 | 2790           | 0.86 | 61    | 0.87                   | 3.9                              | 1.8                              | 1.9                              | 10.9   | 6.7   | FD 03  | 1.75 | 1300                  | 1400       | 1400  | 1400   | 12    | 9.4  | FA 03  | 2.5                   | 1400   | 12    | 9.1  |
| 0.06           |    |  | 8 | 680            | 0.84 | 31    | 0.61                   | 2.0                              | 1.8                              | 1.9                              |  |       |        |      | 10000                 | 13000      | 13000 | 13000  |       |      |        |                       |  |       |      |
| 0.37           |    | BN 71B                                 | 2 | 2800           | 1.26 | 63    | 0.86                   | 3.9                              | 1.8                              | 1.9                              | 12.9   | 7.7   | FD 03  | 3.5  | 1200                  | 1300       | 1300  | 1300   | 14    | 10.4 | FA 03  | 3.5                   | 1300   | 14    | 10.1 |
| 0.09           |    |  | 8 | 670            | 1.28 | 34    | 0.75                   | 1.8                              | 1.4                              | 1.5                              |  |       |        |      | 9500                  | 13000      | 13000 | 13000  |       |      |        |                       |  |       |      |
| 0.55           |    | BN 80A                                 | 2 | 2830           | 1.86 | 66    | 0.86                   | 4.4                              | 2.1                              | 2.0                              | 20   | 9.9   | FD 04  | 5.0  | 1500                  | 1800       | 1800  | 1800   | 22    | 13.8 | FA 04  | 5.0                   | 1800   | 22    | 13.7 |
| 0.13           |    |  | 8 | 690            | 1.80 | 41    | 0.64                   | 2.3                              | 1.6                              | 1.7                              |  |       |        |      | 5600                  | 8000       | 8000  | 8000   |       |      |        |                       |  |       |      |
| 0.75           |    | BN 80B                                 | 2 | 2800           | 2.6  | 68    | 0.88                   | 4.6                              | 2.1                              | 2.0                              | 25   | 11.3  | FD 04  | 10   | 1700                  | 1900       | 1900  | 1900   | 27    | 15.2 | FA 04  | 10                    | 1900   | 27    | 15.1 |
| 0.18           |    |  | 8 | 690            | 2.5  | 43    | 0.66                   | 2.3                              | 1.6                              | 1.7                              |  |       |        |      | 4800                  | 7300       | 7300  | 7300   |       |      |        |                       |  |       |      |
| 1.10           |    | BN 90L                                 | 2 | 2830           | 3.7  | 63    | 0.84                   | 4.5                              | 2.1                              | 1.9                              | 28   | 14.0  | FD 05  | 13   | 1400                  | 1600       | 1600  | 1600   | 32    | 20   | FA 05  | 13                    | 1600   | 32    | 21   |
| 0.28           |    |  | 8 | 690            | 3.9  | 48    | 0.63                   | 2.4                              | 1.8                              | 1.9                              |  |       |        |      | 3400                  | 5100       | 5100  | 5100   |       |      |        |                       |  |       |      |
| 1.5            |    | BN 100LA                               | 2 | 2880           | 5.0  | 69    | 0.85                   | 4.7                              | 1.9                              | 1.8                              | 40   | 18.3  | FD 15  | 13   | 1000                  | 1200       | 1200  | 1200   | 44    | 25   | FA 15  | 13                    | 1200   | 44    | 25   |
| 0.37           |    |  | 8 | 690            | 5.1  | 46    | 0.63                   | 2.1                              | 1.6                              | 1.6                              |  |       |        |      | 3300                  | 5000       | 5000  | 5000   |       |      |        |                       |  |       |      |
| 2.4            |    | BN 100LB                               | 2 | 2900           | 7.9  | 75    | 0.82                   | 5.4                              | 2.1                              | 2.0                              | 61   | 25    | FD 15  | 26   | 550                   | 700        | 700   | 700  | 65    | 31   | FA 15  | 26                    | 700  | 65    | 32   |
| 0.55           |    |  | 8 | 700            | 7.5  | 54    | 0.58                   | 2.6                              | 1.8                              | 1.8                              |  |       |        |      | 2000                  | 3500       | 3500  | 3500   |       |      |        |                       |  |       |      |
| 3              |    | BN 112M                                | 2 | 2900           | 9.9  | 76    | 0.87                   | 6.3                              | 2.1                              | 1.9                              | 98   | 30    | FD 06S | 40   | —                     | 900        | —     | 900  | 107   | 40   | FA 06S | 40                    | 900  | 107   | 42   |
| 0.75           |    |  | 8 | 690            | 10.4 | 60    | 0.65                   | 2.5                              | 1.6                              | 1.6                              |  |       |        |      | —                     | 2900       | 2900  | 2900   |       |      |        |                       |  |       |      |
| 4              |    | BN 132S                                | 2 | 2870           | 13.3 | 73    | 0.84                   | 5.6                              | 2.3                              | 2.4                              | 213  | 44    | FD 66  | 37   | —                     | 500        | —     | 500  | 223   | 57   | FA 06  | 37                    | 500  | 223   | 58   |
| 1              |    |  | 8 | 690            | 13.8 | 66    | 0.62                   | 3.5                              | 1.9                              | 1.8                              |  |       |        |      | —                     | 3500       | 3500  | 3500   |       |      |        |                       |  |       |      |
| 5.5            |    | BN 132M                                | 2 | 2870           | 18.3 | 75    | 0.84                   | 6.1                              | 2.4                              | 2.5                              | 270  | 53    | FD 06  | 50   | —                     | 400        | —     | 400  | 280   | 66   | FA 06  | 50                    | 400  | 280   | 67   |
| 1.5            |    |  | 8 | 690            | 21   | 68    | 0.63                   | 2.9                              | 1.9                              | 1.9                              |  |       |        |      | —                     | 2400       | 2400  | 2400   |       |      |        |                       |  |       |      |

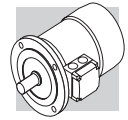



2/12P 3000/500 min-1 - S3 60/40% 50 Hz

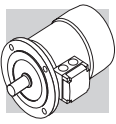
| P <sub>n</sub><br>kW |  | n<br>min <sup>-1</sup> | M <sub>n</sub><br>Nm | η<br>%   | cos φ        | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | d.c. brake    |          |                       |               |               |                       | a.c. brake    |              |                       |      |               |                       |               |              |                       |      |
|----------------------|---|------------------------|----------------------|----------|--------------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|---------------|----------|-----------------------|---------------|---------------|-----------------------|---------------|--------------|-----------------------|------|---------------|-----------------------|---------------|--------------|-----------------------|------|
|                      |   |                        |                      |          |              |                             |                                  |                                  |                                  |  | FD            |          |                       | FA            |               |                       | FD            |              |                       | FA   |               |                       |               |              |                       |      |
|                      |   |                        |                      |          |              |                             |                                  |                                  |                                  |  | Mod           | Mb<br>Nm | Z <sub>0</sub><br>1/h | Mod           | Mb<br>Nm      | Z <sub>0</sub><br>1/h | Mod           | Mb<br>Nm     | Z <sub>0</sub><br>1/h | Mod  | Mb<br>Nm      | Z <sub>0</sub><br>1/h | Mod           | Mb<br>Nm     | Z <sub>0</sub><br>1/h |      |
| 0.55<br>0.09         | <b>BN 80B</b>   | 2<br>12                | 1.86<br>2.0          | 64<br>30 | 0.89<br>0.63 | 1.39<br>0.69                | 4.2<br>1.8                       | 1.6<br>1.9                       | 1.7<br>1.8                       | 25<br>11.3   | <b>FD 04</b>  | 5.0      | 1000<br>8000          | 1300<br>12000 | <b>FA 04</b>  | 5.0                   | 1300<br>12000 | <b>IM B5</b> | 27                    | 15.2 | <b>FA 04</b>  | 5.0                   | 1300<br>12000 | <b>IM B5</b> | 27                    | 15.1 |
| 0.75<br>0.12         | <b>BN 90L</b>   | 2<br>12                | 2.6<br>2.7           | 56<br>26 | 0.89<br>0.63 | 2.17<br>1.06                | 4.2<br>1.7                       | 1.8<br>1.4                       | 1.7<br>1.6                       | 26<br>12.6   | <b>FD 05</b>  | 13       | 1000<br>4600          | 1150<br>6300  | <b>FA 05</b>  | 13                    | 1150<br>6300  | <b>IM B5</b> | 30                    | 18.6 | <b>FA 05</b>  | 13                    | 1150<br>6300  | <b>IM B5</b> | 30                    | 19.3 |
| 1.10<br>0.18         | <b>BN 100LA</b>   | 2<br>12                | 3.7<br>4.0           | 65<br>26 | 0.85<br>0.54 | 2.87<br>1.85                | 4.5<br>1.5                       | 1.6<br>1.3                       | 1.8<br>1.5                       | 40<br>18.3   | <b>FD 15</b>  | 13       | 700<br>4000           | 900<br>6000   | <b>FA 15</b>  | 13                    | 900<br>6000   | <b>IM B5</b> | 44                    | 25   | <b>FA 15</b>  | 13                    | 900<br>6000   | <b>IM B5</b> | 44                    | 25   |
| 1.5<br>0.25          | <b>BN 100LB</b>   | 2<br>12                | 4.9<br>5.4           | 67<br>36 | 0.86<br>0.46 | 3.76<br>2.18                | 5.6<br>1.8                       | 1.9<br>1.7                       | 1.9<br>1.8                       | 54<br>22   | <b>FD 15</b>  | 13       | 700<br>3800           | 900<br>5000   | <b>FA 15</b>  | 13                    | 900<br>5000   | <b>IM B5</b> | 58                    | 28   | <b>FA 15</b>  | 13                    | 900<br>5000   | <b>IM B5</b> | 58                    | 29   |
| 2<br>0.3             | <b>BN 112M</b>  | 2<br>12                | 6.6<br>6.2           | 74<br>46 | 0.88<br>0.43 | 4.43<br>2.19                | 6.5<br>2.0                       | 2.1<br>2.1                       | 2.0<br>2.0                       | 98<br>30   | <b>FD 06S</b> | 20       | —<br>—                | 800<br>3400   | <b>FA 06S</b> | 20                    | 800<br>3400   | <b>IM B5</b> | 107                   | 40   | <b>FA 06S</b> | 20                    | 800<br>3400   | <b>IM B5</b> | 107                   | 42   |
| 3<br>0.5             | <b>BN 132S</b>  | 2<br>12                | 9.8<br>10.2          | 74<br>51 | 0.87<br>0.43 | 6.7<br>3.3                  | 6.8<br>2.0                       | 2.3<br>1.7                       | 1.9<br>1.6                       | 213<br>44  | <b>FD 56</b>  | 37       | —<br>—                | 450<br>3000   | <b>FA 06</b>  | 37                    | 450<br>3000   | <b>IM B5</b> | 223                   | 57   | <b>FA 06</b>  | 37                    | 450<br>3000   | <b>IM B5</b> | 223                   | 58   |
| 4<br>0.7             | <b>BN 132M</b>  | 2<br>12                | 13.1<br>14.5         | 75<br>53 | 0.89<br>0.44 | 8.6<br>4.3                  | 5.9<br>1.9                       | 2.4<br>1.7                       | 2.3<br>1.6                       | 270<br>53  | <b>FD 56</b>  | 37       | —<br>—                | 400<br>2800   | <b>FA 06</b>  | 37                    | 400<br>2800   | <b>IM B5</b> | 280                   | 66   | <b>FA 06</b>  | 37                    | 400<br>2800   | <b>IM B5</b> | 280                   | 67   |



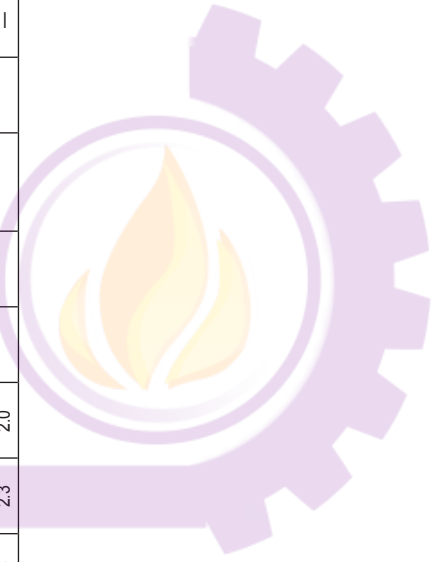


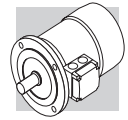


| 4/6P                 |   | 1500/1000 min <sup>-1</sup> - S1 |                      |        |      |                             |                   |                   |                   |  |       |        |          |                       |      | 50 Hz      |  |       |        |          |                       |  |       |      |
|----------------------|---|----------------------------------|----------------------|--------|------|-----------------------------|-------------------|-------------------|-------------------|--|-------|--------|----------|-----------------------|------|------------|--|-------|--------|----------|-----------------------|--|-------|------|
|                      |   | d.c. brake                       |                      |        |      |                             |                   |                   |                   |  |       |        |          |                       |      | a.c. brake |  |       |        |          |                       |  |       |      |
|                      |   | FD                               |                      |        |      |                             |                   |                   | FA                |  |       |        |          |                       |      | FA         |  | FA    |        |          |                       |  |       |      |
| P <sub>n</sub><br>kW |  | n<br>min <sup>-1</sup>           | M <sub>n</sub><br>Nm | η<br>% | cosφ | I <sub>n</sub><br>400V<br>A | $\frac{I_s}{I_n}$ | $\frac{M_s}{M_n}$ | $\frac{M_a}{M_n}$ | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod    | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB   | SB         | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod    | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 |      |
| 0.22                 | BN 71B  | 4                                | 1410                 | 1.5    | 64   | 0.74                        | 3.9               | 1.8               | 1.9               | 9.1  | 7.3   | FD 03  | 3.5      | 3500                  | 2500 | 3500       | 10.2   | 10.0  | FA 03  | 3.5      | 3500                  | 9000   | 10.2  | 9.7  |
| 0.13                 |   | 6                                | 920                  | 1.4    | 43   | 0.67                        | 2.3               | 1.6               | 1.7               |  |       |        |          | 5000                  | 5000 | 9000       |  |       |        |          |                       | 9000   |       |      |
| 0.30                 | BN 80A  | 4                                | 1410                 | 2.0    | 61   | 0.82                        | 3.5               | 1.3               | 1.5               | 15   | 8.2   | FD 04  | 5.0      | 3100                  | 2500 | 3100       | 16.6   | 12.1  | FA 04  | 5.0      | 3100                  | 6000   | 16.6  | 12.0 |
| 0.20                 |   | 6                                | 930                  | 2.1    | 54   | 0.66                        | 3.2               | 1.9               | 2.0               |  |       |        |          | 4000                  | 4000 | 6000       |  |       |        |          |                       | 6000   |       |      |
| 0.40                 | BN 80B  | 4                                | 1430                 | 2.7    | 63   | 0.75                        | 3.9               | 1.8               | 1.8               | 20   | 9.9   | FD 04  | 10       | 1800                  | 1800 | 2300       | 22   | 13.8  | FA 04  | 10       | 2300                  | 5500   | 22    | 13.7 |
| 0.26                 |   | 6                                | 930                  | 2.7    | 55   | 0.70                        | 2.7               | 1.5               | 1.6               |  |       |        |          | 3600                  | 3600 | 5500       |  |       |        |          |                       | 5500   |       |      |
| 0.55                 | BN 90S  | 4                                | 1420                 | 3.7    | 70   | 0.78                        | 4.5               | 2.0               | 1.9               | 21   | 12.2  | FD 14  | 10       | 1500                  | 1500 | 2100       | 23   | 16.1  | FA 14  | 10       | 2100                  | 4100   | 23    | 16.3 |
| 0.33                 |   | 6                                | 930                  | 3.4    | 62   | 0.70                        | 3.7               | 2.3               | 2.0               |  |       |        |          | 2500                  | 2500 | 4100       |  |       |        |          |                       | 4100   |       |      |
| 0.75                 | BN 90L  | 4                                | 1420                 | 5.0    | 74   | 0.78                        | 4.3               | 1.9               | 1.8               | 28   | 14    | FD 05  | 13       | 1400                  | 1400 | 2000       | 32   | 20    | FA 05  | 13       | 2000                  | 3600   | 32    | 21   |
| 0.45                 |   | 6                                | 920                  | 4.7    | 66   | 0.71                        | 3.3               | 2.0               | 1.9               |  |       |        |          | 2300                  | 2300 | 3600       |  |       |        |          |                       | 3600   |       |      |
| 1.1                  | BN 100LA  | 4                                | 1450                 | 7.2    | 74   | 0.79                        | 5.0               | 1.7               | 1.9               | 82   | 22    | FD 15  | 26       | 1400                  | 1400 | 2000       | 86   | 28    | FA 15  | 26       | 2000                  | 3300   | 86    | 29   |
| 0.8                  |   | 6                                | 950                  | 8.0    | 65   | 0.69                        | 4.1               | 1.9               | 2.1               |  |       |        |          | 2100                  | 2100 | 3300       |  |       |        |          |                       | 3300   |       |      |
| 1.5                  | BN 100LB  | 4                                | 1450                 | 9.9    | 75   | 0.79                        | 5.1               | 1.7               | 1.9               | 95   | 25    | FD 15  | 26       | 1300                  | 1300 | 1800       | 99   | 31    | FA 15  | 26       | 1800                  | 3000   | 99    | 32   |
| 1.1                  |   | 6                                | 950                  | 11.1   | 72   | 0.68                        | 4.3               | 2.0               | 2.1               |  |       |        |          | 2000                  | 2000 | 3000       |  |       |        |          |                       | 3000   |       |      |
| 2.3                  | BN 112M   | 4                                | 1450                 | 15.2   | 75   | 0.78                        | 5.2               | 1.8               | 1.9               | 168  | 32    | FD 06S | 40       | —                     | —    | —          | 177  | 42    | FA 06S | 40       | 1600                  | 2400   | 177   | 44   |
| 1.5                  |   | 6                                | 960                  | 14.9   | 73   | 0.72                        | 4.1               | 2.0               | 2.0               |  |       |        |          | —                     | —    | —          |  |       |        |          |                       | 2400   |       |      |
| 3.1                  | BN 132S   | 4                                | 1460                 | 20     | 83   | 0.83                        | 5.9               | 2.1               | 2.0               | 213  | 44    | FD 06  | 37       | —                     | —    | —          | 223  | 57    | FA 06  | 37       | 1200                  | 1900   | 223   | 58   |
| 2                    |   | 6                                | 960                  | 20     | 77   | 0.75                        | 4.9               | 2.1               | 2.1               |  |       |        |          | —                     | —    | —          |  |       |        |          |                       | 1900   |       |      |
| 4.2                  | BN 132MA  | 4                                | 1460                 | 27     | 84   | 0.82                        | 8.8               | 2.1               | 2.2               | 270  | 53    | FD 06  | 50       | —                     | —    | —          | 280  | 66    | FA 06  | 50       | 900                   | 1500   | 280   | 67   |
| 2.6                  |   | 6                                | 960                  | 26     | 79   | 0.72                        | 6.6               | 2.0               | 2.0               |  |       |        |          | —                     | —    | —          |  |       |        |          |                       | 1500   |       |      |



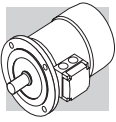
| 4/8P                  |    | 1500/750 min <sup>-1</sup> - S1 |                        |                      |        |       |                             |                                  |                                  |                                  |  |       |      |          |      | 50 HZ                 |        |     |          |                       |  |
|-----------------------|----|---------------------------------|------------------------|----------------------|--------|-------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|-------|------|----------|------|-----------------------|--------|-----|----------|-----------------------|--|
|                       |    | d.c. brake                      |                        |                      |        |       |                             |                                  |                                  |                                  |  |       |      |          |      | a.c. brake            |        |     |          |                       |  |
|                       |    | P <sub>n</sub><br>kW            | n<br>min <sup>-1</sup> | M <sub>n</sub><br>Nm | η<br>% | cos φ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod  | Mb<br>Nm | FD   |                       | FA     |     |          |                       |  |
| Z <sub>o</sub><br>1/h | NB |                                 |                        |                      |        |       |                             |                                  |                                  |                                  |  |       |      |          | SB   | Z <sub>o</sub><br>1/h | IM B5  | Mod | Mb<br>Nm | Z <sub>o</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> |
| 0.37                  | 4  | 2.5                             | 63                     | 0.82                 | 1.03   | 3.3   | 1.4                         | 1.4                              | 15                               | 8.2                              | FD 04  | 10    | 2300 | 3500     | 16.6 | 12.1                  | FA 04  | 10  | 3500     | 16.6                  | 12.0   |
| 0.18                  | 8  | 2.5                             | 44                     | 0.60                 | 0.98   | 2.2   | 1.5                         | 1.6                              | 20                               | 9.9                              | FD 04  | 10    | 4500 | 7000     | 22   | 13.8                  | FA 04  | 10  | 2900     | 22                    | 13.7   |
| 0.55                  | 4  | 3.8                             | 65                     | 0.86                 | 1.42   | 3.8   | 1.7                         | 1.6                              | 28                               | 13.6                             | FD 14  | 15    | 2300 | 2800     | 30   | 17.8                  | FA 14  | 15  | 2800     | 30                    | 17.7   |
| 0.30                  | 8  | 4.3                             | 49                     | 0.65                 | 1.36   | 2.3   | 1.7                         | 1.8                              | 30                               | 15.1                             | FD 05  | 26    | 3500 | 6000     | 34   | 21                    | FA 05  | 26  | 2100     | 34                    | 22   |
| 0.65                  | 4  | 4.5                             | 73                     | 0.85                 | 1.51   | 4.0   | 1.9                         | 1.9                              | 82                               | 22                               | FD 15  | 40    | 1300 | 1700     | 86   | 28                    | FA 15  | 40  | 1700     | 86                    | 29   |
| 0.70                  | 8  | 9.6                             | 58                     | 0.64                 | 2.72   | 2.8   | 1.8                         | 1.8                              | 95                               | 25                               | FD 15  | 40    | 2000 | 3400     | 99   | 31                    | FA 15  | 40  | 3400     | 99                    | 32   |
| 1.8                   | 4  | 12.1                            | 69                     | 0.87                 | 4.3    | 4.2   | 1.6                         | 1.7                              | 168                              | 32                               | FD 06S   | 60    | 1200 | 1200     | 177  | 42                    | FA 06S | 60  | 1200     | 177                   | 43   |
| 0.9                   | 8  | 12.3                            | 62                     | 0.63                 | 3.3    | 3.2   | 1.7                         | 1.8                              | 188                              | 32                               | FD 06S   | 60    | —    | —        | —    | —                     | —      | —   | —        | —                     | —  |
| 2.2                   | 4  | 14.6                            | 77                     | 0.85                 | 4.9    | 5.3   | 1.8                         | 1.8                              | 295                              | 45                               | FD 56  | 75    | —    | —        | —    | —                     | —      | —   | —        | —                     | —  |
| 1.2                   | 8  | 16.1                            | 70                     | 0.63                 | 3.9    | 3.3   | 1.9                         | 1.8                              | 383                              | 56                               | FD 06  | 100   | —    | —        | —    | —                     | —      | —   | —        | —                     | —  |
| 3.6                   | 4  | 24                              | 80                     | 0.82                 | 7.9    | 6.5   | 2.1                         | 1.9                              | 440                              | 56                               | FD 06  | 100   | 1000 | 1000     | 305  | 58                    | FA 06  | 75  | 1000     | 305                   | 59   |
| 1.8                   | 8  | 24                              | 72                     | 0.55                 | 6.6    | 4.6   | 1.9                         | 2.0                              | 440                              | 56                               | FD 06  | 100   | 1400 | 1400     | 393  | 69                    | FA 07  | 100 | 1400     | 393                   | 74   |
| 4.6                   | 4  | 30                              | 81                     | 0.83                 | 9.9    | 6.5   | 2.2                         | 1.9                              | 440                              | 56                               | FD 06  | 100   | 1000 | 1000     | 393  | 69                    | FA 07  | 100 | 1000     | 393                   | 74   |
| 2.3                   | 8  | 31                              | 73                     | 0.54                 | 8.4    | 4.4   | 2.3                         | 2.0                              | 440                              | 56                               | FD 06  | 100   | 1300 | 1300     | 393  | 69                    | FA 07  | 100 | 1300     | 393                   | 74   |





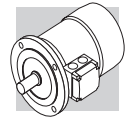
| 2P                   |                | 3000 min <sup>-1</sup> - S1 |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |                |            | 50 Hz    |                       |      |            |      |          |                       |                |  |          |                       |                |  |     |
|----------------------|----------------|-----------------------------|----------------------|------|------------------|-----------------|-----------------|------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|----------------|------------|----------|-----------------------|------|------------|------|----------|-----------------------|----------------|--|----------|-----------------------|----------------|--|-----|
| P <sub>n</sub><br>kW | Motor<br>Image | n<br>min <sup>-1</sup>      | M <sub>n</sub><br>Nm | IE1  | η<br>(100%)<br>% | η<br>(75%)<br>% | η<br>(50%)<br>% | cosφ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Image | d.c. brake |          |                       |      | a.c. brake |      |          |                       |                |  |          |                       |                |  |     |
|                      |                |                             |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |                | FD         |          | FA                    |      | FD         |      | FA       |                       |                |  |          |                       |                |  |     |
|                      |                |                             |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |                | Mod        | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB   | SB         | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | IM B5<br>Image | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | Mb<br>Nm | Z <sub>0</sub><br>1/h | IM B5<br>Image | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> |     |
| 0.18                 | M 05A          | 2                           | 2730                 | 0.63 | 59.9             | 56.9            | 51.9            | 0.77 | 0.56                        | 3.0                              | 2.1                              | 2.0                              | 2.0  | 3.2            | FD 02      | 1.75     | 3900                  | 4800 | 3900       | 4800 | 1.75     | 4800                  | 4.9            | 2.6  | 1.75     | 4800                  | 4.9            | 2.6  |     |
| 0.25                 | M 05B          | 2                           | 2740                 | 0.87 | 66.0             | 64.8            | 64.8            | 0.76 | 0.72                        | 3.3                              | 2.3                              | 2.3                              | 2.3  | 3.6            | FD 02      | 1.75     | 3900                  | 4800 | 3900       | 4800 | 1.75     | 4800                  | 5.3            | 3.0  | 1.75     | 4800                  | 5.3            | 3.0  |     |
| 0.37                 | M 05C          | 2                           | 2800                 | 1.26 | 69.1             | 66.8            | 66.8            | 0.78 | 0.99                        | 3.9                              | 2.6                              | 2.6                              | 3.3  | 4.8            | FD 02      | 3.5      | 3600                  | 4500 | 3600       | 4500 | 3.5      | 4500                  | 6.5            | 3.9  | 3.5      | 4500                  | 6.5            | 3.9  |     |
| 0.55                 | M 15D          | 2                           | 2820                 | 1.86 | 76.0             | 75.8            | 74.8            | 0.76 | 1.37                        | 5.0                              | 2.9                              | 2.8                              | 4.1  | 5.8            | FD 03      | 5        | 2900                  | 4200 | 2900       | 4200 | 5        | 4200                  | 8.5            | 5.3  | 5        | 4200                  | 8.5            | 5.3  |     |
| 0.75                 | M 15A          | 2                           | 2810                 | 2.6  | 76.6             | 76.2            | 76.2            | 0.76 | 1.86                        | 5.1                              | 3.1                              | 2.8                              | 5.0  | 6.9            | FD 03      | 5        | 1900                  | 3300 | 1900       | 3300 | 5        | 3300                  | 9.6            | 6.1  | 5        | 3300                  | 9.6            | 6.1  |     |
| 1.1                  | M 25A          | 2                           | 2800                 | 3.8  | 76.4             | 76.2            | 75.0            | 0.81 | 2.57                        | 4.8                              | 2.8                              | 2.4                              | 9.0  | 8.8            | FD 04      | 10       | 1500                  | 3000 | 1500       | 3000 | 10       | 3000                  | 11.9           | 10.6   | 10       | 3000                  | 11.9           | 10.6   |     |
| 1.5                  | M 25B          | 2                           | 2800                 | 5.1  | 79.1             | 79.5            | 77.2            | 0.81 | 3.4                         | 4.9                              | 2.7                              | 2.4                              | 11.4   | 10.6           | FD 04      | 15       | 1300                  | 2600 | 1300       | 2600 | 15       | 2600                  | 9.9            | 13.0   | 15       | 2600                  | 9.9            | 13.0   |     |
| 2.2                  | M 35A          | 2                           | 2880                 | 7.3  | 82.7             | 82.1            | 81.0            | 0.80 | 4.8                         | 6.3                              | 2.9                              | 2.7                              | 24   | 15.5           | FD 15      | 26       | 1100                  | 2400 | 1100       | 2400 | 26       | 2400                  | 22             | 28   | 26       | 2400                  | 22             | 28   |     |
| 3                    | M 35A          | 2                           | 2860                 | 10.0 | 81.5             | 81.3            | 77.4            | 0.79 | 6.7                         | 5.6                              | 2.6                              | 2.2                              | 31   | 18.7           | FD 15      | 26       | 700                   | 1600 | 700        | 1600 | 26       | 1600                  | 25             | 35   | 26       | 1600                  | 25             | 35   |     |
| 4                    | M 35B          | 2                           | 2870                 | 13.3 | 83.1             | 83.0            | 77.8            | 0.80 | 8.7                         | 5.8                              | 2.7                              | 2.5                              | 39   | 22             | FD 15      | 40       | 450                   | 900  | 450        | 900  | 40       | 900                   | 28             | 43   | 40       | 900                   | 28             | 43   |     |
| 5.5                  | M 45A          | 2                           | 2890                 | 18.2 | 84.7             | 84.5            | 81.2            | 0.84 | 11.2                        | 5.9                              | 2.6                              | 2.2                              | 101  | 33             | FD 06      | 50       | —                     | 600  | —          | 600  | 50       | 600                   | 46             | 112  | 50       | 600                   | 46             | 112  |     |
| 7.5                  | M 45B          | 2                           | 2900                 | 25   | 86.5             | 86.3            | 84.4            | 0.85 | 14.7                        | 6.4                              | 2.6                              | 2.2                              | 145  | 40             | FD 06      | 50       | —                     | 550  | —          | 550  | 50       | 550                   | 53             | 154  | 50       | 550                   | 53             | 154  |     |
| 9.2                  | M 45A          | 2                           | 2930                 | 30   | 87.0             | 86.5            | 83.6            | 0.86 | 17.7                        | 6.7                              | 2.8                              | 2.3                              | 178  | 51             | FD 06      | 75       | —                     | 430  | —          | 430  | 75       | 430                   | 64             | 189  | 75       | 430                   | 64             | 189  |     |
| 11                   | M 45C          | 2                           | 2920                 | 36   | 87.6             | 87.0            | 86.0            | 0.88 | 20.6                        | 6.9                              | 2.9                              | 2.5                              | 210  | 60             | FD 06      | 75       | —                     | —    | —          | —    | 75       | —                     | —              | 64   | 189      | 75                    | —              | —  |     |
| 15                   | M 55B          | 2                           | 2930                 | 49   | 89.6             | 89.4            | 88.0            | 0.86 | 28.1                        | 7.1                              | 2.6                              | 2.3                              | 340  | 70             | FD 06      | 50       | —                     | —    | —          | —    | 50       | —                     | —              | 53   | 154      | 50                    | 550            | 53   | 154 |
| 18.5                 | M 55C          | 2                           | 2930                 | 60   | 90.4             | 90.1            | 89.0            | 0.86 | 34                          | 7.6                              | 2.7                              | 2.3                              | 420  | 83             | FD 06      | 75       | —                     | —    | —          | —    | 75       | —                     | —              | 64   | 189      | 75                    | —              | —  |     |
| 22                   | M 55A          | 2                           | 2930                 | 72   | 89.9             | 89.7            | 89.5            | 0.88 | 40                          | 7.8                              | 2.6                              | 2.4                              | 490  | 95             | FD 06      | 75       | —                     | —    | —          | —    | 75       | —                     | —              | 64   | 189      | 75                    | —              | —  |     |

○ = n.a.      ● = IE1



| 4P                   |            | 1500 min <sup>-1</sup> - S1 |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            |            |          | 50 Hz                 |       |    |  |            |      |          |                       |  |            |      |   |
|----------------------|------------|-----------------------------|----------------------|------|------------------|-----------------|-----------------|------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|------------|------------|----------|-----------------------|-------|----|--|------------|------|----------|-----------------------|--|------------|------|---|
| P <sub>n</sub><br>kW | Motor icon | n<br>min <sup>-1</sup>      | M <sub>n</sub><br>Nm | IE1  | η<br>(100%)<br>% | η<br>(75%)<br>% | η<br>(50%)<br>% | cosφ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O | d.c. brake |          |                       |       |    | a.c. brake   |            |      |          |                       |  |            |      |   |
|                      |            |                             |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            | FD         |          |                       |       |    | FA   |            |      |          |                       |  |            |      |   |
|                      |            |                             |                      |      |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            | Mod        | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB    | SB | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O |      |   |
| 0.09                 | M 0B       | 4                           | 1350                 | 0.64 | ○                | 51.7            | 47.6            | 42.9 | 0.60                        | 0.42                             | 2.6                              | 2.4                              | 1.5  | 2.9        | FD 02      | 1.75     | 10000                 | 13000 | —  | —  | 2.6        | 4.9  | FA 02    | 1.75                  | 13000  | 2.6        | 4.7  |   |
| 0.12                 | M 05A      | 4                           | 1350                 | 0.85 | ○                | 59.8            | 56.2            | 47.0 | 0.62                        | 0.47                             | 2.6                              | 1.8                              | 2.0  | 3.2        | FD 02      | 3.5      | 10000                 | 13000 | —  | —  | 3.0        | 5.3  | FA 02    | 3.5                   | 13000  | 3.0        | 5.1  |   |
| 0.18                 | M 05B      | 4                           | 1320                 | 1.30 | ○                | 54.8            | 52.9            | 52.5 | 0.67                        | 0.71                             | 2.6                              | 2.2                              | 2.3  | 3.6        | FD 02      | 3.5      | 7800                  | 10000 | —  | —  | 3.9        | 6.5  | FA 02    | 3.5                   | 10000  | 3.9        | 6.3  |   |
| 0.25                 | M 05C      | 4                           | 1340                 | 1.78 | ○                | 65.3            | 65.0            | 57.9 | 0.69                        | 0.80                             | 2.7                              | 2.1                              | 3.3  | 4.8        | FD 03      | 5        | 6000                  | 9400  | —  | —  | 8.0        | 8.2  | FA 03    | 5                     | 9400   | 8.0        | 7.9  |   |
| 0.37                 | M 15D      | 4                           | 1370                 | 2.6  | ○                | 66.8            | 66.7            | 63.0 | 0.76                        | 1.05                             | 3.7                              | 2.0                              | 1.9  | 6.9        | FD 53      | 7.5      | 4300                  | 8700  | —  | —  | 10.2       | 9.6  | FA 03    | 7.5                   | 8700   | 10.2       | 9.3  |   |
| 0.55                 | M 1LA      | 4                           | 1380                 | 3.8  | ○                | 69.0            | 68.9            | 68.8 | 0.74                        | 1.55                             | 4.1                              | 2.3                              | 2.3  | 9.1        | FD 04      | 15       | 4100                  | 7800  | —  | —  | 22         | 13.1 | FA 04    | 15                    | 7800   | 22         | 13.0 |   |
| 0.75                 | M 25A      | 4                           | 1400                 | 5.1  | ●                | 75.0            | 74.5            | 69.3 | 0.78                        | 1.85                             | 4.9                              | 2.7                              | 2.5  | 20         | FD 04      | 15       | 2600                  | 5300  | —  | —  | 27         | 14.5 | FA 04    | 15                    | 5300   | 27         | 14.4 |   |
| 1.1                  | M 25B      | 4                           | 1400                 | 7.5  | ●                | 76.4            | 76.2            | 70.4 | 0.78                        | 2.66                             | 5.1                              | 2.8                              | 2.5  | 25         | FD 15      | 26       | 2800                  | 4900  | —  | —  | 38         | 22   | FA 15    | 26                    | 4900   | 38         | 23   |   |
| 1.5                  | M 35A      | 4                           | 1410                 | 10.2 | ●                | 79.6            | 80.5            | 79.3 | 0.77                        | 3.5                              | 4.6                              | 2.1                              | 2.1  | 34         | FD 15      | 40       | 2600                  | 4700  | —  | —  | 44         | 24   | FA 15    | 40                    | 4700   | 44         | 24   |   |
| 2.2                  | M 3LA      | 4                           | 1410                 | 14.9 | ●                | 81.1            | 81.4            | 79.9 | 0.75                        | 5.2                              | 4.5                              | 2.2                              | 2.0  | 40         | FD 15      | 40       | 2400                  | 4400  | —  | —  | 58         | 27   | FA 15    | 40                    | 4400   | 58         | 28   |   |
| 3                    | M 3LB      | 4                           | 1410                 | 20   | ●                | 82.6            | 83.8            | 83.7 | 0.77                        | 6.8                              | 5.0                              | 2.3                              | 2.2  | 54         | FD 55      | 55       | —                     | 1300  | —  | —  | 65         | 29   | FA 15    | 40                    | 1300   | 65         | 30   |   |
| 4                    | M 3LC      | 4                           | 1400                 | 27   | ○                | 82.7            | 83.1            | 80.5 | 0.78                        | 9.0                              | 4.7                              | 2.3                              | 2.2  | 61         | FD 56      | 75       | —                     | 1050  | —  | —  | 223        | 55   | FA 06    | 75                    | 1050   | 223        | 56   |   |
| 5.5                  | M 45A      | 4                           | 1440                 | 36   | ●                | 84.7            | 84.8            | 82.5 | 0.81                        | 11.6                             | 5.5                              | 2.3                              | 2.2  | 213        | FD 06      | 100      | —                     | 950   | —  | —  | 280        | 64   | FA 07    | 100                   | 950  | 280        | 65   |   |
| 7.5                  | M 4LA      | 4                           | 1440                 | 50   | ●                | 86.0            | 86.3            | 85.3 | 0.81                        | 15.5                             | 5.7                              | 2.5                              | 2.4  | 270        | FD 07      | 150      | —                     | 900   | —  | —  | 342        | 73   | FA 07    | 150                   | 900  | 342        | 75   |   |
| 9.2                  | M 4LB      | 4                           | 1440                 | 61   | ●                | 88.4            | 88.6            | 87.5 | 0.81                        | 18.8                             | 5.9                              | 2.7                              | 2.5  | 319        | FD 07      | 150      | —                     | 850   | —  | —  | 382        | 81   | FA 07    | 150                   | 850  | 382        | 83   |   |
| 11                   | M 4LC      | 4                           | 1440                 | 73   | ●                | 87.6            | 87.8            | 86.0 | 0.81                        | 22.4                             | 6.0                              | 2.7                              | 2.5  | 360        | FD 08      | 200      | —                     | 750   | —  | —  | 725        | 115  | FA 08    | 200                   | 750  | 725        | 114  |   |
| 15                   | M 55B      | 4                           | 1460                 | 98   | ●                | 88.7            | 88.5            | 88.4 | 0.81                        | 30.1                             | 6.0                              | 2.3                              | 2.1  | 650        | FD 08      | 250      | —                     | 700   | —  | —  | 865        | 131  | FA 08    | 250                   | 700  | 865        | 130  |   |
| 18.5                 | M 5LA      | 4                           | 1460                 | 121  | ●                | 89.3            | 89.5            | 89.2 | 0.81                        | 37                               | 6.2                              | 2.6                              | 2.5  | 790        | FD 08      | 250      | —                     | —     | —  | —  | —          | —    | —        | —                     | —  | —          | —    | — |

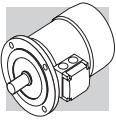
○ = n.a. ● = IE1



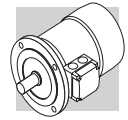
| 6P                   |                | 1000 min <sup>-1</sup> - S1 |                      |     |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            | 50 Hz      |          |                       |       |      |  |            |      |          |                       |  |            |      |
|----------------------|----------------|-----------------------------|----------------------|-----|------------------|-----------------|-----------------|------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|------------|------------|----------|-----------------------|-------|------|--|------------|------|----------|-----------------------|--|------------|------|
| P <sub>n</sub><br>kW | Motor<br>Image | n<br>min <sup>-1</sup>      | M <sub>n</sub><br>Nm | IE1 | η<br>(100%)<br>% | η<br>(75%)<br>% | η<br>(50%)<br>% | cosφ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O | d.c. brake |          |                       |       |      | a.c. brake   |            |      |          |                       |  |            |      |
|                      |                |                             |                      |     |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            | FD         |          |                       |       |      | FA   |            |      |          |                       |  |            |      |
|                      |                |                             |                      |     |                  |                 |                 |      |                             |                                  |                                  |                                  |  |            | Mod        | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB    | SB   | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>O |      |
| 0.09                 | M 05A          | 6                           | 0.98                 | ○   | 41.0             | 41.0            | 32.9            | 0.53 | 0.60                        | 2.1                              | 2.1                              | 1.8                              | 3.4  | 4.3        | FD 02      | 3.5      | 9000                  | 14000 | 9000 | 14000  | 4.0        | 6.0  | FA 02    | 3.5                   | 14000  | 4.0        | 5.8  |
| 0.12                 | M 05B          | 6                           | 1.32                 | ○   | 45.0             | 44.0            | 41.8            | 0.60 | 0.64                        | 2.1                              | 1.9                              | 1.7                              | 3.7  | 4.6        | FD 02      | 3.5      | 9000                  | 14000 | 9000 | 14000  | 4.3        | 6.3  | FA 02    | 3.5                   | 14000  | 4.3        | 6.1  |
| 0.18                 | M 15C          | 6                           | 1.91                 | ○   | 55.0             | 55.5            | 51.0            | 0.69 | 0.68                        | 2.6                              | 1.9                              | 1.7                              | 8.4  | 5.1        | FD 03      | 5        | 8100                  | 13500 | 8100 | 13500  | 9.5        | 7.8  | FA 03    | 5                     | 13500  | 9.5        | 7.5  |
| 0.25                 | M 15D          | 6                           | 2.7                  | ○   | 62.0             | 58.5            | 51.4            | 0.71 | 0.82                        | 2.6                              | 1.9                              | 1.7                              | 10.9   | 6.3        | FD 03      | 5        | 7800                  | 13000 | 7800 | 13000  | 12         | 9.0  | FA 03    | 5                     | 13000  | 12         | 8.7  |
| 0.37                 | M 15LA         | 6                           | 3.9                  | ○   | 66.0             | 60.0            | 53.3            | 0.69 | 1.17                        | 3.0                              | 2.4                              | 2.0                              | 12.9   | 7.3        | FD 53      | 7.5      | 5100                  | 9500  | 5100 | 9500   | 14         | 10.0 | FA 03    | 7.5                   | 9500   | 14         | 9.7  |
| 0.55                 | M 25A          | 6                           | 5.7                  | ○   | 70.0             | 69.8            | 64.3            | 0.68 | 1.67                        | 3.9                              | 2.6                              | 2.2                              | 25   | 10.6       | FD 04      | 15       | 4800                  | 7200  | 4800 | 7200   | 27         | 14.5 | FA 04    | 15                    | 7200   | 27         | 14.4 |
| 0.75                 | M 25B          | 6                           | 7.8                  | ●   | 70.0             | 70.0            | 64.4            | 0.65 | 2.38                        | 3.8                              | 2.5                              | 2.2                              | 28   | 11.5       | FD 04      | 15       | 3400                  | 6400  | 3400 | 6400   | 30         | 15.4 | FA 04    | 15                    | 6400   | 30         | 15.3 |
| 1.1                  | M 35A          | 6                           | 11.4                 | ●   | 75.0             | 74.0            | 72.0            | 0.72 | 2.9                         | 4.3                              | 2.0                              | 1.8                              | 33   | 17         | FD 15      | 26       | 2700                  | 5000  | 2700 | 5000   | 37         | 23   | FA 15    | 26                    | 5000   | 37         | 24   |
| 1.5                  | M 35LA         | 6                           | 15.2                 | ●   | 75.2             | 74.2            | 70.3            | 0.72 | 4.0                         | 4.1                              | 2.1                              | 2.0                              | 82   | 21         | FD 15      | 40       | 1900                  | 4100  | 1900 | 4100   | 86         | 27   | FA 15    | 40                    | 4100   | 86         | 28   |
| 1.85                 | M 35LB         | 6                           | 19.0                 | ●   | 76.6             | 72.8            | 62.6            | 0.73 | 4.8                         | 4.6                              | 2.1                              | 2.0                              | 95   | 23         | FD 15      | 40       | 1700                  | 3600  | 1700 | 3600   | 99         | 29   | FA 15    | 40                    | 3600   | 99         | 30   |
| 2.2                  | M 35LC         | 6                           | 23                   | ●   | 77.7             | 76.8            | 72.4            | 0.71 | 5.8                         | 4.7                              | 2.3                              | 2.1                              | 95   | 23         | FD 55      | 55       | —                     | 1900  | —    | 1900   | 99         | 29   | FA 15    | 55                    | 1900   | 99         | 30   |
| 3                    | M 45A          | 6                           | 30                   | ●   | 79.7             | 77.0            | 75.1            | 0.76 | 7.1                         | 5.1                              | 1.9                              | 1.8                              | 216  | 34         | FD 56      | 75       | —                     | 1400  | —    | 1400   | 226        | 47   | FA 06    | 75                    | 1400   | 226        | 48   |
| 4                    | M 45LA         | 6                           | 40                   | ●   | 81.4             | 81.5            | 79.5            | 0.77 | 9.2                         | 5.5                              | 2.0                              | 1.8                              | 295  | 43         | FD 06      | 100      | —                     | 1200  | —    | 1200   | 305        | 56   | FA 07    | 100                   | 1200   | 305        | 57   |
| 5.5                  | M 45LB         | 6                           | 56                   | ●   | 83.1             | 80.9            | 79.1            | 0.78 | 12.2                        | 6.1                              | 2.1                              | 1.9                              | 383  | 54         | FD 07      | 150      | —                     | 1050  | —    | 1050   | 406        | 70   | FA 07    | 150                   | 1050   | 406        | 72   |
| 7.5                  | M 55A          | 6                           | 75                   | ●   | 85.0             | 85.0            | 84.8            | 0.81 | 15.7                        | 5.9                              | 2.2                              | 2.0                              | 740  | 69         | FD 08      | 170      | —                     | 900   | —    | 900  | 815        | 98   | FA 08    | 170                   | 900  | 800        | 98   |
| 11                   | M 55B          | 6                           | 109                  | ●   | 86.4             | 86.5            | 85.9            | 0.81 | 22.7                        | 6.6                              | 2.5                              | 2.3                              | 970  | 89         | FD 08      | 200      | —                     | 800   | —    | 800  | 1045       | 119  | FA 08    | 200                   | 800  | 1030       | 118  |

○ = n.a.      ● = IE1

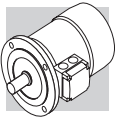








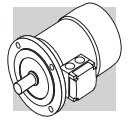
| 2/4P  |        | 3000/1500 min <sup>-1</sup> - S1 |       |                        |                      |        |       |                             |                                  |                                  |                                  |  |             |     |          | 50 Hz                 |      |      |  |             |     |          |                       |  |             |       |
|-------|--------|----------------------------------|-------|------------------------|----------------------|--------|-------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|-------------|-----|----------|-----------------------|------|------|--|-------------|-----|----------|-----------------------|--|-------------|-------|
|       |        | d.c. brake                       |       |                        |                      |        |       |                             |                                  |                                  |                                  |  |             |     |          | a.c. brake            |      |      |  |             |     |          |                       |  |             |       |
|       |        | P <sub>n</sub><br>kW             | IM B5 | n<br>min <sup>-1</sup> | M <sub>n</sub><br>Nm | η<br>% | cos φ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Kg | Mod | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB   | SB   | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Kg | Mod | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Kg |       |
| FD 02 | FD 03  |                                  |       |                        |                      |        |       |                             |                                  |                                  |                                  |  |             |     |          |                       |      |      |  |             |     |          |                       |  |             | FD 03 |
| 0.20  | M 05A  | 2                                | 2700  | 0.71                   | 55                   | 0.82   | 0.64  | 3.5                         | 2.1                              | 1.9                              | 2.9                              | 4.1  | FD 02       | 3.5 | 2200     | 2600                  | 2600 | 3.5  | 5.8  | FA 02       | 3.5 | 2600     | 3.5                   | 5.6  | 5.6         | 5100  |
| 0.15  |        | 4                                | 1350  | 1.06                   | 49                   | 0.67   | 0.66  | 2.6                         | 1.8                              | 1.7                              |                                  |  |             |     | 4000     | 5100                  |      |      |  |             |     |          |                       |  |             |       |
| 0.28  | M 1SB  | 2                                | 2700  | 0.99                   | 56                   | 0.82   | 0.88  | 2.9                         | 1.9                              | 1.7                              | 4.7                              | 4.0  | FD 03       | 3.5 | 2100     | 2400                  | 2400 | 5.8  | 6.7  | FA 03       | 3.5 | 2400     | 5.8                   | 6.4  | 4800        |       |
| 0.20  |        | 4                                | 1370  | 1.39                   | 59                   | 0.68   | 1.02  | 3.1                         | 1.8                              | 1.7                              |                                  |  |             |     | 3800     | 4800                  |      |      |  |             |     |          |                       |  |             |       |
| 0.37  | M 1SC  | 2                                | 2740  | 1.29                   | 56                   | 0.82   | 1.16  | 3.5                         | 1.8                              | 1.8                              | 5.8                              | 4.7  | FD 03       | 5   | 1400     | 2100                  | 2100 | 6.9  | 7.4  | FA 03       | 5   | 2100     | 6.9                   | 7.1  | 4200        |       |
| 0.25  |        | 4                                | 1390  | 1.72                   | 60                   | 0.73   | 0.82  | 3.3                         | 2.0                              | 1.9                              |                                  |  |             |     | 2900     | 4200                  |      |      |  |             |     |          |                       |  |             |       |
| 0.45  | M 1SD  | 2                                | 2780  | 1.55                   | 63                   | 0.85   | 1.21  | 3.8                         | 1.8                              | 1.8                              | 6.9                              | 5.5  | FD 03       | 5   | 1400     | 2100                  | 2100 | 8.0  | 8.2  | FA 03       | 5   | 2100     | 8.0                   | 7.9  | 4200        |       |
| 0.30  |        | 4                                | 1400  | 2.0                    | 63                   | 0.74   | 0.93  | 3.8                         | 2.1                              | 1.9                              |                                  |  |             |     | 2800     | 4200                  |      |      |  |             |     |          |                       |  |             |       |
| 0.55  | M 1LA  | 2                                | 2800  | 1.9                    | 73                   | 0.79   | 1.38  | 4.2                         | 2.0                              | 1.8                              | 9.1                              | 6.9  | FD 03       | 5   | 1600     | 2200                  | 2200 | 10.2 | 9.6  | FA 03       | 5   | 2200     | 10.2                  | 9.3  | 4600        |       |
| 0.37  |        | 4                                | 1400  | 2.5                    | 68                   | 0.72   | 1.09  | 3.9                         | 2.2                              | 2.0                              |                                  |  |             |     | 3300     | 4600                  |      |      |  |             |     |          |                       |  |             |       |
| 0.75  | M 2SA  | 2                                | 2780  | 2.6                    | 65                   | 0.85   | 1.96  | 3.8                         | 1.9                              | 1.8                              | 20                               | 9.2  | FD 04       | 10  | 1400     | 1600                  | 1600 | 22   | 13.1   | FA 04       | 10  | 1600     | 22                    | 13.0   | 3600        |       |
| 0.55  |        | 4                                | 1400  | 3.8                    | 68                   | 0.81   | 1.44  | 3.9                         | 1.7                              | 1.7                              |                                  |  |             |     | 2700     | 3600                  |      |      |  |             |     |          |                       |  |             |       |
| 1.1   | M 2SB  | 2                                | 2730  | 3.9                    | 65                   | 0.86   | 2.84  | 3.9                         | 2.0                              | 1.9                              | 25                               | 10.7   | FD 04       | 10  | 1200     | 1500                  | 1500 | 27   | 14.5   | FA 04       | 10  | 1500     | 27                    | 14.5   | 3100        |       |
| 0.75  |        | 4                                | 1410  | 5.1                    | 75                   | 0.81   | 1.78  | 4.5                         | 2.1                              | 2.0                              |                                  |  |             |     | 2300     | 3100                  |      |      |  |             |     |          |                       |  |             |       |
| 1.5   | M 3SA  | 2                                | 2830  | 5.1                    | 74                   | 0.83   | 3.5   | 4.7                         | 2.1                              | 2.0                              | 34                               | 15.5   | FD 15       | 26  | 700      | 1000                  | 1000 | 38   | 22   | FA 15       | 26  | 1000     | 38                    | 23   | 2600        |       |
| 1.1   |        | 4                                | 1420  | 7.4                    | 77                   | 0.78   | 2.6   | 4.3                         | 2.1                              | 2.0                              |                                  |  |             |     | 1600     | 2600                  |      |      |  |             |     |          |                       |  |             |       |
| 2.2   | M 3LA  | 2                                | 2800  | 7.5                    | 72                   | 0.85   | 5.2   | 4.5                         | 2.0                              | 1.9                              | 40                               | 17   | FD 15       | 26  | 600      | 900                   | 900  | 44   | 24   | FA 15       | 26  | 900      | 44                    | 24   | 2300        |       |
| 1.5   |        | 4                                | 1410  | 10.2                   | 73                   | 0.79   | 3.8   | 4.7                         | 2.0                              | 2.0                              |                                  |  |             |     | 1300     | 2300                  |      |      |  |             |     |          |                       |  |             |       |
| 3.5   | M 3LB  | 2                                | 2850  | 11.7                   | 80                   | 0.84   | 7.5   | 5.4                         | 2.2                              | 2.1                              | 61                               | 23   | FD 15       | 40  | 500      | 900                   | 900  | 65   | 29   | FA 15       | 40  | 900      | 65                    | 30   | 2100        |       |
| 2.5   |        | 4                                | 1420  | 16.8                   | 82                   | 0.80   | 5.5   | 5.2                         | 2.2                              | 2.2                              |                                  |  |             |     | 1000     | 2100                  |      |      |  |             |     |          |                       |  |             |       |
| 4.8   | M 4 SA | 2                                | 2900  | 15.8                   | 81                   | 0.88   | 9.7   | 6.0                         | 2.0                              | 1.9                              | 213                              | 42   | FD 06       | 50  | —        | 400                   | 400  | 233  | 55   | FA 06       | 50  | 400      | 233                   | 56   | 950         |       |
| 3.8   |        | 4                                | 1430  | 25.4                   | 81                   | 0.84   | 8.1   | 5.2                         | 2.1                              | 2.1                              |                                  |  |             |     | —        | 950                   |      |      |  |             |     |          |                       |  |             |       |
| 5.5   | M 4SB  | 2                                | 2890  | 18.2                   | 80                   | 0.87   | 11.4  | 5.9                         | 2.4                              | 2.0                              | 213                              | 42   | FD 06       | 75  | —        | 350                   | 350  | 223  | 55   | FA 06       | 75  | 350      | 223                   | 56   | 950         |       |
| 4.4   |        | 4                                | 1440  | 29                     | 82                   | 0.84   | 9.2   | 5.3                         | 2.2                              | 2.0                              |                                  |  |             |     | —        | 900                   |      |      |  |             |     |          |                       |  |             |       |
| 7.5   | M 4LA  | 2                                | 2900  | 25                     | 82                   | 0.87   | 15.2  | 6.5                         | 2.4                              | 2.0                              | 270                              | 51   | FD 06       | 100 | —        | 350                   | 350  | 280  | 64   | FA 07       | 100 | 350      | 280                   | 65   | 950         |       |
| 6     |        | 4                                | 1430  | 40                     | 84                   | 0.85   | 12.1  | 5.8                         | 2.3                              | 2.1                              |                                  |  |             |     | —        | 950                   |      |      |  |             |     |          |                       |  |             |       |
| 9.2   | M 4LB  | 2                                | 2920  | 30                     | 83                   | 0.86   | 18.6  | 6.0                         | 2.6                              | 2.2                              | 319                              | 57   | FD 07       | 150 | —        | 300                   | 300  | 342  | 73   | FA 07       | 150 | 300      | 342                   | 75   | 800         |       |
| 7.3   |        | 4                                | 1440  | 48                     | 85                   | 0.85   | 14.6  | 5.5                         | 2.3                              | 2.1                              |                                  |  |             |     | —        | 800                   |      |      |  |             |     |          |                       |  |             |       |



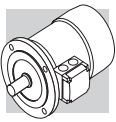
| 2/6P  |       | 3000/1000 min-1 - S3 60/40% |       |                        |                      |        |      |                             |                                  |                                  |                                  |  |       |      |          | 50 Hz                 |       |      |  |       |      |          |                       |  |       |
|-------|-------|-----------------------------|-------|------------------------|----------------------|--------|------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|--|-------|------|----------|-----------------------|-------|------|--|-------|------|----------|-----------------------|--|-------|
|       |       | d.c. brake                  |       |                        |                      |        |      |                             |                                  |                                  |                                  |  |       |      |          | a.c. brake            |       |      |  |       |      |          |                       |  |       |
|       |       | P <sub>n</sub><br>kW        | IM B5 | n<br>min <sup>-1</sup> | M <sub>n</sub><br>Nm | η<br>% | cosφ | I <sub>n</sub><br>400V<br>A | I <sub>s</sub><br>I <sub>n</sub> | M <sub>s</sub><br>M <sub>n</sub> | M <sub>a</sub><br>M <sub>n</sub> | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB    | SB   | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 | Mod  | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5 |
| FD 03 | FD 03 |                             |       |                        |                      |        |      |                             |                                  |                                  |                                  |  |       |      |          |                       |       |      |  |       |      |          |                       |  |       |
| 0.25  | M 1SA | 2                           | 2850  | 0.84                   | 60                   | 0.82   | 0.73 | 4.3                         | 1.9                              | 1.8                              | 6.9                              | 5.5  | FD 03 | 1.75 | 1500     | 1700                  | 1700  | 8.0  | 8.2  | FA 03 | 1.75 | 1700     | 1700                  | 8.0  | 7.9   |
| 0.08  |       | 6                           | 910   | 0.84                   | 43                   | 0.70   | 0.38 | 2.1                         | 1.4                              | 1.5                              |                                  |  |       |      | 10000    | 13000                 | 13000 |      |  |       |      |          | 13000                 |  |       |
| 0.37  | M 1LA | 2                           | 2880  | 1.23                   | 62                   | 0.80   | 1.08 | 4.4                         | 1.9                              | 1.8                              | 9.1                              | 6.9  | FD 03 | 3.5  | 1000     | 1300                  | 1300  | 10.2 | 9.6  | FA 03 | 3.5  | 1300     | 1300                  | 10.2   | 9.3   |
| 0.12  |       | 6                           | 900   | 1.27                   | 44                   | 0.73   | 0.54 | 2.4                         | 1.4                              | 1.5                              |                                  |  |       |      | 9000     | 11000                 | 11000 |      |  |       |      |          | 11000                 |  |       |
| 0.55  | M 2SA | 2                           | 2800  | 1.88                   | 63                   | 0.86   | 1.47 | 4.5                         | 1.9                              | 1.7                              | 20                               | 9.2  | FD 04 | 5    | 1500     | 1800                  | 1800  | 22   | 13.1   | FA 04 | 5    | 1800     | 1800                  | 22   | 13.0  |
| 0.18  |       | 6                           | 930   | 1.85                   | 52                   | 0.65   | 0.77 | 3.3                         | 2.0                              | 1.9                              |                                  |  |       |      | 4100     | 6300                  | 6300  |      |  |       |      |          | 6300                  |  |       |
| 0.75  | M 2SB | 2                           | 2800  | 2.6                    | 66                   | 0.87   | 1.89 | 4.3                         | 1.8                              | 1.6                              | 25                               | 10.6   | FD 04 | 5    | 1700     | 1900                  | 1900  | 27   | 14.5   | FA 04 | 5    | 1900     | 1900                  | 27   | 14.4  |
| 0.25  |       | 6                           | 930   | 2.6                    | 54                   | 0.67   | 1.00 | 3.2                         | 1.7                              | 1.8                              |                                  |  |       |      | 3800     | 6000                  | 6000  |      |  |       |      |          | 6000                  |  |       |
| 1.1   | M 3SA | 2                           | 2870  | 3.7                    | 71                   | 0.82   | 2.73 | 4.9                         | 1.8                              | 1.9                              | 34                               | 15.5   | FD 15 | 13   | 1000     | 1300                  | 1300  | 38   | 22   | FA 15 | 13   | 1300     | 1300                  | 38   | 23    |
| 0.37  |       | 6                           | 930   | 3.8                    | 63                   | 0.70   | 1.21 | 3.1                         | 1.5                              | 1.8                              |                                  |  |       |      | 3500     | 5000                  | 5000  |      |  |       |      |          | 5000                  |  |       |
| 1.5   | M 3LA | 2                           | 2880  | 5.0                    | 73                   | 0.84   | 3.53 | 5.1                         | 1.9                              | 2.0                              | 40                               | 17   | FD 15 | 13   | 1000     | 1200                  | 1200  | 44   | 24   | FA 15 | 13   | 1200     | 1200                  | 44   | 24    |
| 0.55  |       | 6                           | 940   | 5.6                    | 64                   | 0.67   | 1.85 | 3.5                         | 1.7                              | 1.8                              |                                  |  |       |      | 2900     | 4000                  | 4000  |      |  |       |      |          | 4000                  |  |       |
| 2.2   | M 3LB | 2                           | 2900  | 7.2                    | 77                   | 0.85   | 4.9  | 5.9                         | 2.0                              | 2.0                              | 61                               | 23   | FD 15 | 26   | 700      | 900                   | 900   | 65   | 29   | FA 15 | 26   | 900      | 900                   | 65   | 30    |
| 0.75  |       | 6                           | 950   | 7.5                    | 67                   | 0.64   | 2.5  | 3.3                         | 1.9                              | 1.8                              |                                  |  |       |      | 2100     | 3000                  | 3000  |      |  |       |      |          | 3000                  |  |       |
| 3     | M 4SA | 2                           | 2910  | 9.9                    | 74                   | 0.88   | 6.6  | 5.6                         | 2.0                              | 2.1                              | 170                              | 36   | FD 56 | 37   | —        | 600                   | 600   | 182  | 48   | FA 06 | 37   | 600      | 600                   | 182  | 50    |
| 1.1   |       | 6                           | 960   | 10.9                   | 73                   | 0.68   | 3.2  | 4.5                         | 2.2                              | 2.0                              |                                  |  |       |      | —        | 2200                  | 2200  |      |  |       |      |          | 2200                  |  |       |
| 4.5   | M 4SB | 2                           | 2910  | 14.8                   | 78                   | 0.84   | 9.9  | 5.8                         | 1.9                              | 1.8                              | 213                              | 42   | FD 56 | 37   | —        | 500                   | 500   | 223  | 55   | FA 06 | 37   | 500      | 500                   | 223  | 56    |
| 1.5   |       | 6                           | 960   | 14.9                   | 74                   | 0.67   | 4.4  | 4.2                         | 1.9                              | 2.0                              |                                  |  |       |      | —        | 2100                  | 2100  |      |  |       |      |          | 2100                  |  |       |
| 5.5   | M 4LA | 2                           | 2920  | 18.0                   | 78                   | 0.87   | 11.7 | 6.2                         | 2.1                              | 1.9                              | 270                              | 51   | FD 06 | 50   | —        | 400                   | 400   | 280  | 64   | FA 06 | 50   | 400      | 400                   | 280  | 65    |
| 2.2   |       | 6                           | 960   | 22                     | 77                   | 0.71   | 5.8  | 4.3                         | 2.1                              | 2.0                              |                                  |  |       |      | —        | 1900                  | 1900  |      |  |       |      |          | 1900                  |  |       |



| 2/8P                 |   | 3000/750 min <sup>-1</sup> - S3 60/40% |                      |        |       |                             |                   |                   |                   |  |  |       |          |                       |      | 50 Hz      |  |  |       |          |                       |  |  |                      |     |      |      |
|----------------------|---|--|----------------------|--------|-------|-----------------------------|-------------------|-------------------|-------------------|--|--|-------|----------|-----------------------|------|------------|--|--|-------|----------|-----------------------|--|--|----------------------|-----|------|------|
|                      |   | d.c. brake                             |                      |        |       |                             |                   |                   |                   |  |  |       |          |                       |      | a.c. brake |  |  |       |          |                       |  |  |                      |     |      |      |
|                      |   | FD                                     |                      |        |       |                             |                   |                   | FA                |  |  |       |          |                       |      | FA         |  | FA   |       |          |                       |  |  |                      |     |      |      |
| P <sub>n</sub><br>kW |  | n<br>min <sup>-1</sup>                 | M <sub>n</sub><br>Nm | η<br>% | cos φ | I <sub>n</sub><br>400V<br>A | $\frac{I_s}{I_n}$ | $\frac{M_s}{M_n}$ | $\frac{M_a}{M_n}$ | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | Mod   | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB   | SB         | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | Mod   | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br> | P <sub>n</sub><br>kW |     |      |      |
| 0.37                 | M 1LA   | 2                                      | 1.26                 | 63     | 0.86  | 0.99                        | 3.9               | 1.8               | 1.9               | 12.9   | 7.3  | FD 03 | 3.5      | 1300                  | 1200 | 1300       | 14   | 10.0   | FA 03 | 3.5      | 1300                  | 13000  | 14   | 1300                 | 14  | 9.7  | 0.09 |
| 0.55                 | M 2SA   | 2                                      | 1.86                 | 66     | 0.86  | 1.40                        | 4.4               | 2.1               | 2.0               | 20   | 9.2  | FD 04 | 5        | 1800                  | 1500 | 1800       | 22   | 13.1   | FA 04 | 5        | 1800                  | 8000   | 22   | 1800                 | 22  | 13.0 | 0.13 |
| 0.75                 | M 2SB   | 2                                      | 2.6                  | 68     | 0.88  | 0.72                        | 2.3               | 1.6               | 1.7               | 25   | 10.6   | FD 04 | 10       | 1900                  | 1700 | 1900       | 27   | 14.5   | FA 04 | 10       | 1900                  | 7300   | 27   | 1900                 | 27  | 14.4 | 0.18 |
| 1.1                  | M 3SA   | 2                                      | 3.7                  | 69     | 0.84  | 2.74                        | 4.6               | 1.8               | 1.7               | 34   | 15.5   | FD 15 | 13       | 3400                  | 1000 | 3400       | 38   | 22   | FA 15 | 13       | 3400                  | 5000   | 38   | 3400                 | 38  | 23   | 0.28 |
| 1.5                  | M 3LA   | 2                                      | 5.0                  | 69     | 0.85  | 3.69                        | 4.7               | 1.9               | 1.8               | 40   | 17   | FD 15 | 13       | 5000                  | 1000 | 5000       | 44   | 24   | FA 15 | 13       | 5000                  | 1200   | 44   | 5000                 | 44  | 24   | 0.37 |
| 2.4                  | M 3LB   | 2                                      | 7.9                  | 75     | 0.82  | 1.84                        | 2.1               | 1.6               | 1.6               | 61   | 23   | FD 15 | 26       | 700                   | 550  | 700        | 65   | 29   | FA 15 | 26       | 700                   | 3500   | 65   | 700                  | 65  | 30   | 0.55 |
| 3                    | M 4SA   | 2                                      | 9.8                  | 72     | 0.85  | 7.1                         | 5.6               | 2.0               | 1.8               | 162  | 36   | FD 56 | 37       | 600                   | —    | 600        | 182  | 48   | FA 06 | 37       | 600                   | 3400   | 182  | 600                  | 182 | 50   | 0.75 |
| 4                    | M 4SB   | 2                                      | 13.3                 | 73     | 0.84  | 2.8                         | 3.0               | 1.7               | 1.8               | 213  | 42   | FD 56 | 37       | 500                   | —    | 500        | 223  | 55   | FA 06 | 37       | 500                   | 3500   | 223  | 500                  | 223 | 56   | 1    |
| 5.5                  | M 4LA   | 2                                      | 18.3                 | 75     | 0.84  | 12.6                        | 6.1               | 2.4               | 2.5               | 270  | 51   | FD 06 | 50       | 400                   | —    | 400        | 280  | 64   | FA 06 | 50       | 400                   | 2400   | 280  | 400                  | 280 | 65   | 1.5  |

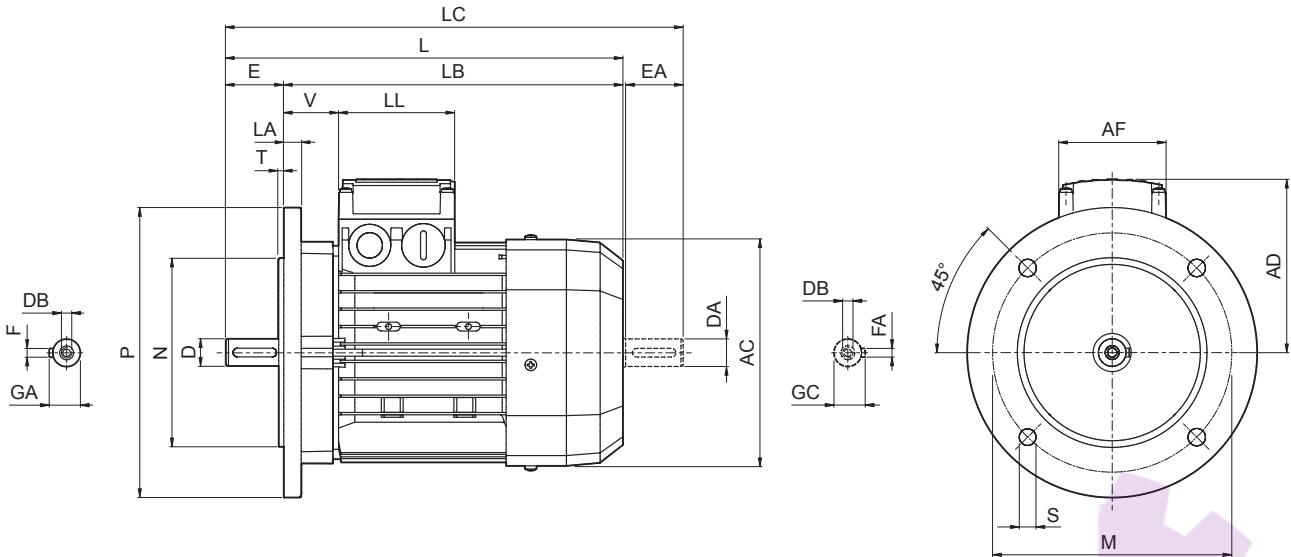


| 2/12P                |   | 3000/500 min <sup>-1</sup> - S3 60/40% |                      |        |       |                             |                   |                   |                   |                     |             |       |          |                       |       | 50 Hz      |  |             |       |          |                       |  |             |      |
|----------------------|---|--|----------------------|--------|-------|-----------------------------|-------------------|-------------------|-------------------|---------------------|-------------|-------|----------|-----------------------|-------|------------|--|-------------|-------|----------|-----------------------|--|-------------|------|
|                      |   | d.c. brake                             |                      |        |       |                             |                   |                   |                   |                     |             |       |          |                       |       | a.c. brake |  |             |       |          |                       |  |             |      |
|                      |   | FD                                     |                      |        |       |                             |                   |                   | FA                |                     |             |       |          |                       |       | FA         |  | FA          |       |          |                       |  |             |      |
| P <sub>n</sub><br>kW |  | n<br>min <sup>-1</sup>                 | M <sub>n</sub><br>Nm | η<br>% | cos φ | I <sub>n</sub><br>400V<br>A | $\frac{I_s}{I_n}$ | $\frac{M_s}{M_n}$ | $\frac{M_a}{M_n}$ | $\frac{J_m}{kgm^2}$ | IM B5<br>Kg | Mod   | Mb<br>Nm | Z <sub>0</sub><br>1/h | NB    | SB         | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Kg | Mod   | Mb<br>Nm | Z <sub>0</sub><br>1/h | J <sub>m</sub><br>x 10 <sup>-4</sup><br>kgm <sup>2</sup> | IM B5<br>Kg |      |
| 0.55                 | M 2SA   | 2                                      | 1.86                 | 64     | 0.89  | 1.39                        | 4.2               | 1.6               | 1.7               | 25                  | 10.6        | FD 04 | 5        | 1000                  | 1300  | 1300       | 27   | 14.5        | FA 04 | 5        | 1300                  | 12000  | 27          | 14.4 |
| 0.09                 |   | 12                                     | 2.0                  | 30     | 0.63  | 0.69                        | 1.8               | 1.9               | 1.8               |                     |             |       |          | 8000                  | 12000 | 12000      |  |             |       |          |                       |  |             |      |
| 0.75                 | M 3SA   | 2                                      | 2.5                  | 65     | 0.81  | 2.06                        | 5.2               | 1.9               | 2.1               | 34                  | 15.5        | FD 15 | 13       | 700                   | 900   | 900        | 38   | 22          | FA 15 | 13       | 900                   | 7000   | 38          | 23   |
| 0.12                 |   | 12                                     | 2.5                  | 33     | 0.43  | 1.22                        | 1.9               | 1.3               | 1.6               |                     |             |       |          | 5000                  | 7000  | 7000       |  |             |       |          |                       |  |             |      |
| 1.1                  | M 3LA   | 2                                      | 3.7                  | 65     | 0.85  | 2.87                        | 4.5               | 1.6               | 1.8               | 40                  | 17          | FD 15 | 13       | 700                   | 900   | 900        | 44   | 24          | FA 15 | 13       | 900                   | 6000   | 44          | 24   |
| 0.18                 |   | 12                                     | 4.0                  | 26     | 0.54  | 1.85                        | 1.5               | 1.3               | 1.5               |                     |             |       |          | 4000                  | 6000  | 6000       |  |             |       |          |                       |  |             |      |
| 1.5                  | M 3LB   | 2                                      | 4.9                  | 67     | 0.86  | 3.76                        | 5.6               | 1.9               | 1.9               | 54                  | 21          | FD 15 | 13       | 700                   | 900   | 900        | 58   | 27          | FA 15 | 13       | 900                   | 5000   | 58          | 28   |
| 0.25                 |   | 12                                     | 5.4                  | 36     | 0.46  | 2.18                        | 1.8               | 1.7               | 1.8               |                     |             |       |          | 3800                  | 5000  | 5000       |  |             |       |          |                       |  |             |      |
| 2                    | M 3LC   | 2                                      | 6.7                  | 70     | 0.84  | 4.9                         | 4.9               | 1.8               | 1.7               | 61                  | 23          | FD 55 | 18       | —                     | 700   | —          | 65   | 29          | FA 15 | 18       | 700                   | 3500   | 65          | 30   |
| 0.3                  |   | 12                                     | 6.4                  | 38     | 0.47  | 2.4                         | 1.7               | 1.6               | 1.7               |                     |             |       |          | —                     | 3500  | —          |  |             |       |          |                       |  |             |      |
| 3                    | M 4SA   | 2                                      | 9.8                  | 74     | 0.87  | 6.7                         | 6.8               | 2.3               | 1.9               | 213                 | 42          | FD 56 | 37       | —                     | 450   | —          | 223  | 55          | FA 06 | 37       | 450                   | 223  | 223         | 56   |
| 0.5                  |   | 12                                     | 10.2                 | 51     | 0.43  | 3.3                         | 2.0               | 1.7               | 1.6               |                     |             |       |          | —                     | 3000  | 3000       |  |             |       |          |                       |  |             |      |
| 4                    | M 4LA   | 2                                      | 13.1                 | 75     | 0.89  | 8.6                         | 5.9               | 2.4               | 2.3               | 270                 | 51          | FD 56 | 37       | —                     | 400   | —          | 280  | 64          | FA 06 | 37       | 400                   | 280  | 280         | 65   |
| 0.7                  |   | 12                                     | 14.5                 | 53     | 0.44  | 4.3                         | 1.9               | 1.7               | 1.6               |                     |             |       |          | —                     | 2800  | 2800       |  |             |       |          |                       |  |             |      |



M11 MOTORS DIMENSIONS

BN - IM B5

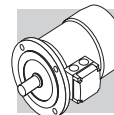


|           | Shaft        |                |                |                |              | Flange |     |     |      |     | Motor |     |     |     |     |     |     |     |     |     |    |
|-----------|--------------|----------------|----------------|----------------|--------------|--------|-----|-----|------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
|           | D<br>DA      | E<br>EA        | DB             | GA<br>GC       | F<br>FA      | M      | N   | P   | S    | T   | LA    | AC  | L   | LB  | LC  | AD  | AF  | LL  | V   |     |    |
| BN 56     | 9            | 20             | M3             | 10.2           | 3            | 100    | 80  | 120 | 7    | 3   | 8     | 110 | 185 | 165 | 207 | 91  | 74  | 80  | 34  |     |    |
| BN 63     | 11           | 23             | M4             | 12.5           | 4            | 115    | 95  | 140 | 9.5  |     |       |     | 10  | 121 | 207 | 184 |     |     | 232 | 95  | 26 |
| BN 71     | 14           | 30             | M5             | 16             | 5            | 130    | 110 | 160 |      |     |       |     |     | 138 | 249 | 219 |     |     | 281 | 108 | 37 |
| BN 80     | 19           | 40             | M6             | 21.5           | 6            | 165    | 130 | 200 | 11.5 | 3.5 | 11.5  | 156 | 274 | 234 | 315 | 119 | 193 | 118 | 38  |     |    |
| BN 90     | 24           | 50             | M8             | 27             | 8            |        |     |     |      |     |       | 176 | 326 | 276 | 378 | 133 |     |     | 44  |     |    |
| BN 100    | 28           | 60             | M10            | 31             | 8            | 215    | 180 | 250 | 14   | 4   | 14    | 195 | 367 | 307 | 429 | 142 | 98  | 98  | 50  |     |    |
| BN 112    |              |                |                |                |              |        |     |     |      |     | 15    | 219 | 385 | 325 | 448 | 157 |     |     | 52  |     |    |
| BN 132    |              |                |                |                |              |        |     |     |      |     | 20    | 493 | 413 | 576 | 193 | 118 |     |     | 118 | 58  |    |
| BN 160 MR | 42<br>38 (1) | 110<br>80 (1)  | M16<br>M12 (1) | 45<br>41 (1)   | 12<br>10 (1) | 300    | 250 | 350 | 18.5 | 5   | 15    | 258 | 562 | 452 | 645 | 245 | 187 | 187 | 218 |     |    |
| BN 160 M  |              |                |                |                |              |        |     |     |      |     |       | 310 | 596 | 486 | 680 |     |     |     | 51  |     |    |
| BN 160 L  |              |                |                |                |              |        |     |     |      |     |       | 310 | 640 | 530 | 724 |     |     |     | 51  |     |    |
| BN 180 M  | 48<br>38 (1) | 110<br>110 (1) | M16<br>M12 (1) | 51.5<br>41 (1) | 14<br>10 (1) | 350    | 300 | 400 | 18.5 | 5   | 18    | 348 | 708 | 598 | 823 | 261 | 187 | 187 | 52  |     |    |
| BN 180 L  | 48<br>42 (1) |                | M16<br>M16 (1) | 51.5<br>45 (1) | 14<br>12 (1) |        |     |     |      |     |       | 722 | 612 | 837 | 66  |     |     |     |     |     |    |
| BN 200 L  | 55<br>42 (1) |                | M20<br>M16 (1) | 59<br>45 (1)   | 16<br>12 (1) |        |     |     |      |     |       | 722 | 612 | 837 | 66  |     |     |     |     |     |    |

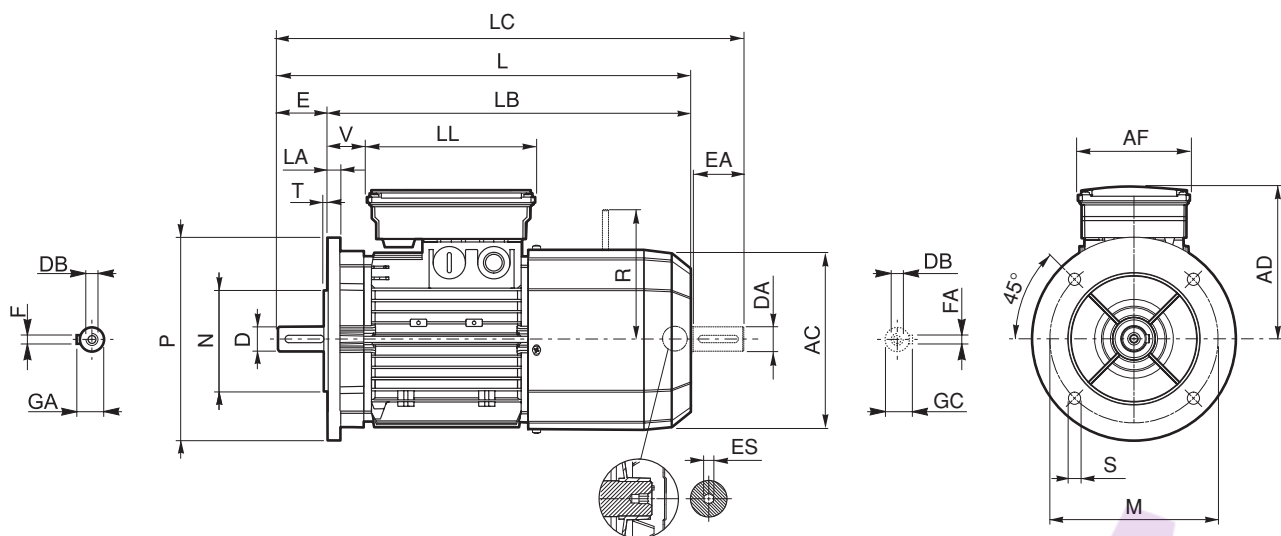
NOTE:

1) These values refer to the rear shaft end.





**BN\_FD ; IM B5**

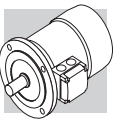


|                  | Shaft   |         |         |          |         | Flange |     |     |      |      | Motor |     |     |     |     |     |     |     |         |     |     |
|------------------|---------|---------|---------|----------|---------|--------|-----|-----|------|------|-------|-----|-----|-----|-----|-----|-----|-----|---------|-----|-----|
|                  | D<br>DA | E<br>EA | DB      | GA<br>GC | F<br>FA | M      | N   | P   | S    | T    | LA    | AC  | L   | LB  | LC  | AD  | AF  | LL  | V       | R   | ES  |
| <b>BN 63</b>     | 11      | 23      | M4      | 12.5     | 4       | 115    | 95  | 140 | 9.5  | 3    |       | 121 | 272 | 249 | 297 | 122 |     |     | 14      | 96  |     |
| <b>BN 71</b>     | 14      | 30      | M5      | 16       | 5       | 130    | 110 | 160 | 9.5  |      | 10    | 138 | 310 | 280 | 342 | 135 | 98  | 133 | 25      | 103 | 5   |
| <b>BN 80</b>     | 19      | 40      | M6      | 21.5     | 6       |        |     |     |      |      | 3.5   | 156 | 346 | 306 | 388 | 146 |     |     | 41      |     | 129 |
| <b>BN 90 S</b>   | 24      | 50      | M8      | 27       | 8       | 165    | 130 | 200 | 11.5 | 11.5 | 176   | 409 | 359 | 461 | 149 | 146 | 110 | 165 | 39      | 160 | 6   |
| <b>BN 90 L</b>   |         |         |         |          |         |        |     |     |      |      |       |     |     |     |     |     |     |     |         |     |     |
| <b>BN 100</b>    | 28      | 60      | M10     | 31       | 8       | 215    | 180 | 250 | 14   | 4    | 14    | 195 | 458 | 398 | 521 | 158 | 110 | 165 | 62      | 199 | 6   |
| <b>BN 112</b>    |         |         |         |          |         |        |     |     |      |      |       |     |     |     |     |     |     |     |         |     |     |
| <b>BN 132</b>    | 38      | 80      | M12     | 41       | 10      | 265    | 230 | 300 |      |      | 20    |     | 603 | 523 | 686 |     |     | 46  | 204 (2) |     |     |
| <b>BN 160 MR</b> | 42      | 110     | M16     | 45       | 12      |        |     |     |      |      |       | 258 |     | 672 | 562 | 755 | 210 | 140 | 188     | 161 | 226 |
| <b>BN 160 M</b>  | 38 (1)  | 80 (1)  | M12 (1) | 41 (1)   | 10 (1)  |        |     |     |      |      |       |     |     |     |     |     |     |     |         |     |     |
| <b>BN 160 L</b>  | 42      | 110     | M16     | 45       | 12      | 300    | 250 | 350 | 18.5 |      | 5     | 310 | 736 | 626 | 820 |     |     |     | 51      | 266 |     |
| <b>BN 180 M</b>  | 48      | 80 (1)  | M12 (1) | 51.5     | 14      |        |     |     |      |      |       |     | 780 | 670 | 864 |     | 187 | 187 |         |     |     |
| <b>BN 180 L</b>  | 48      | 110     | M16     | 51.5     | 14      |        |     |     |      |      |       |     | 866 | 756 | 981 |     |     |     | 52      |     |     |
| <b>BN 200 L</b>  | 55      | 110 (1) | M20     | 59       | 16      | 350    | 300 | 400 | 18.5 |      |       | 18  | 348 | 878 | 768 | 993 | 261 |     |         | 64  | 305 |
|                  | 42 (1)  |         | M16 (1) | 45 (1)   | 12 (1)  |        |     |     |      |      |       |     |     |     |     |     |     |     |         |     |     |

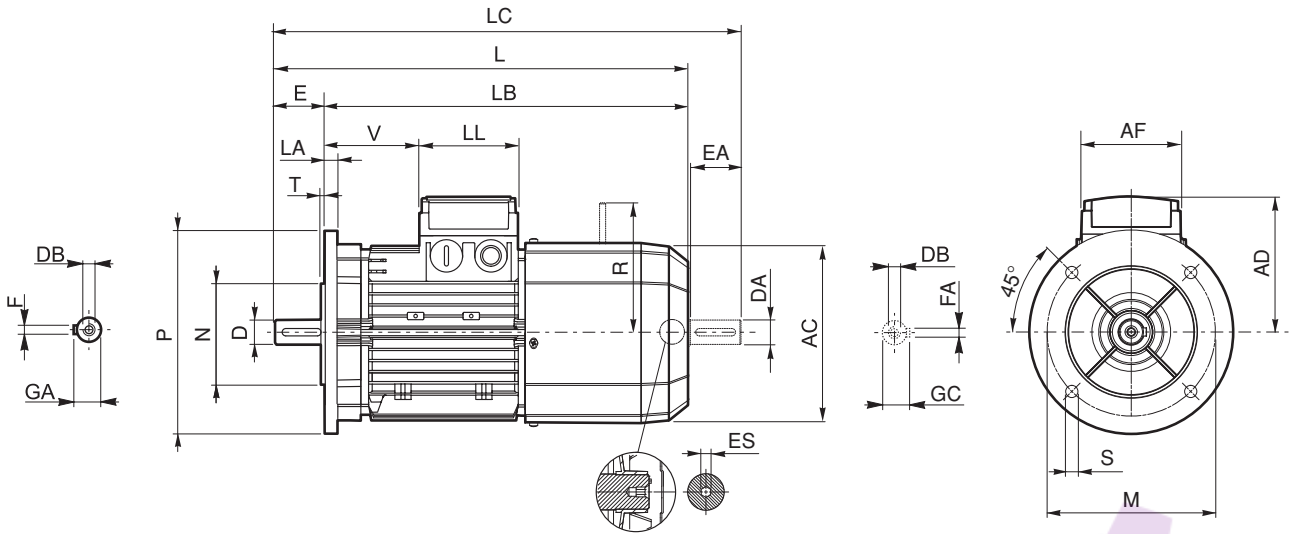
NOTE:

- 1) These values refer to the rear shaft end.
- 2) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



**BN\_FA - IM B5**



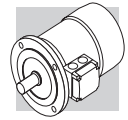
|                  | Shaft        |               |                |                |              | Flange |     |     |      |     | Motor |     |     |     |     |     |     |     |     |         |    |
|------------------|--------------|---------------|----------------|----------------|--------------|--------|-----|-----|------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|---------|----|
|                  | D<br>DA      | E<br>EA       | DB             | GA<br>GC       | F<br>FA      | M      | N   | P   | S    | T   | LA    | AC  | L   | LB  | LC  | AD  | AF  | LL  | V   | R       | ES |
| <b>BN 63</b>     | 11           | 23            | M4             | 12.5           | 4            | 115    | 95  | 140 | 9.5  | 3   | 10    | 121 | 272 | 249 | 297 | 95  |     |     | 26  | 116     | 5  |
| <b>BN 71</b>     | 14           | 30            | M5             | 16             | 5            | 130    | 110 | 160 |      |     |       | 138 | 310 | 280 | 342 | 108 | 74  | 80  | 68  | 124     |    |
| <b>BN 80</b>     | 19           | 40            | M6             | 21.5           | 6            | 165    | 130 | 200 | 11.5 | 3.5 | 11.5  | 156 | 346 | 306 | 388 | 119 |     |     | 83  | 134     | 6  |
| <b>BN 90</b>     | 24           | 50            | M8             | 27             | 8            |        |     |     |      |     |       | 176 | 409 | 359 | 461 | 133 |     |     |     |         |    |
| <b>BN 100</b>    | 28           | 60            | M10            | 31             | 8            | 215    | 180 | 250 | 14   | 4   | 14    | 195 | 458 | 398 | 521 | 142 | 98  | 98  | 119 |         | 6  |
| <b>BN 112</b>    |              |               |                |                |              |        |     |     |      |     |       | 15  | 219 | 484 | 424 | 547 | 157 |     |     | 128     |    |
| <b>BN 132</b>    | 38           | 80            | M12            | 41             | 10           | 265    | 230 | 300 |      |     | 20    |     | 603 | 523 | 686 | 210 | 140 | 188 | 46  | 200 (2) |    |
| <b>BN 160 MR</b> |              |               |                |                |              |        |     |     |      |     |       | 258 | 672 | 562 | 755 | 193 | 118 | 118 | 218 | 217     |    |
| <b>BN 160 M</b>  | 42<br>38 (1) | 110<br>80 (1) | M16<br>M12 (1) | 45<br>41 (1)   | 12<br>10 (1) | 300    | 250 | 350 | 18.5 | 5   | 15    | 310 | 736 | 626 | 820 | 245 | 187 | 187 | 51  | 247     | —  |
| <b>BN 160 L</b>  |              |               |                |                |              |        |     |     |      |     |       |     |     |     |     |     |     |     |     |         |    |
| <b>BN 180 M</b>  |              |               |                | 51.5<br>41 (1) | 14<br>10 (1) |        |     |     |      |     |       |     | 780 | 670 | 864 |     |     |     |     |         |    |

**NOTE:**

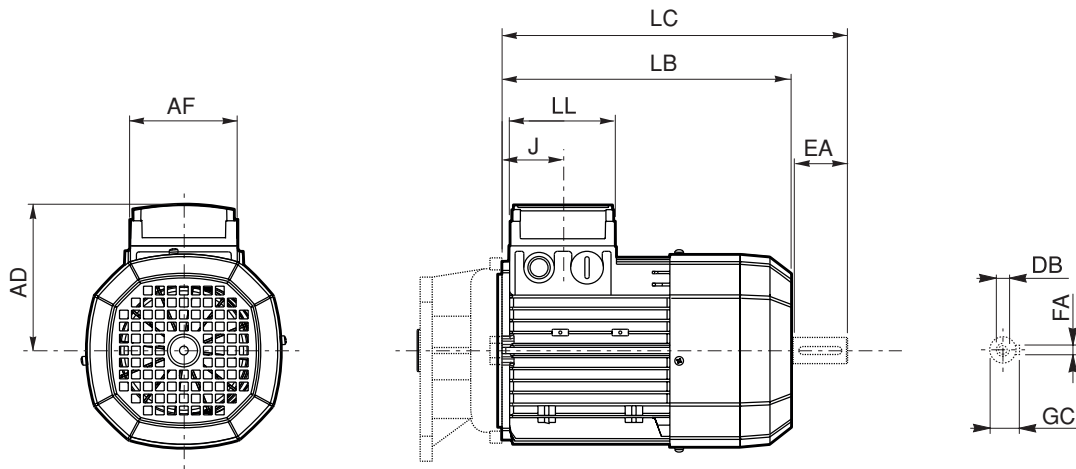
- 1) These values refer to the rear shaft end.
- 2) For FA07 brake value R=217.

Dimensions AD, AF, LL and V, relevant to terminal box of motors BN...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size BN...FD motors

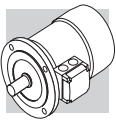
ES hexagon is not supplied with PS option.



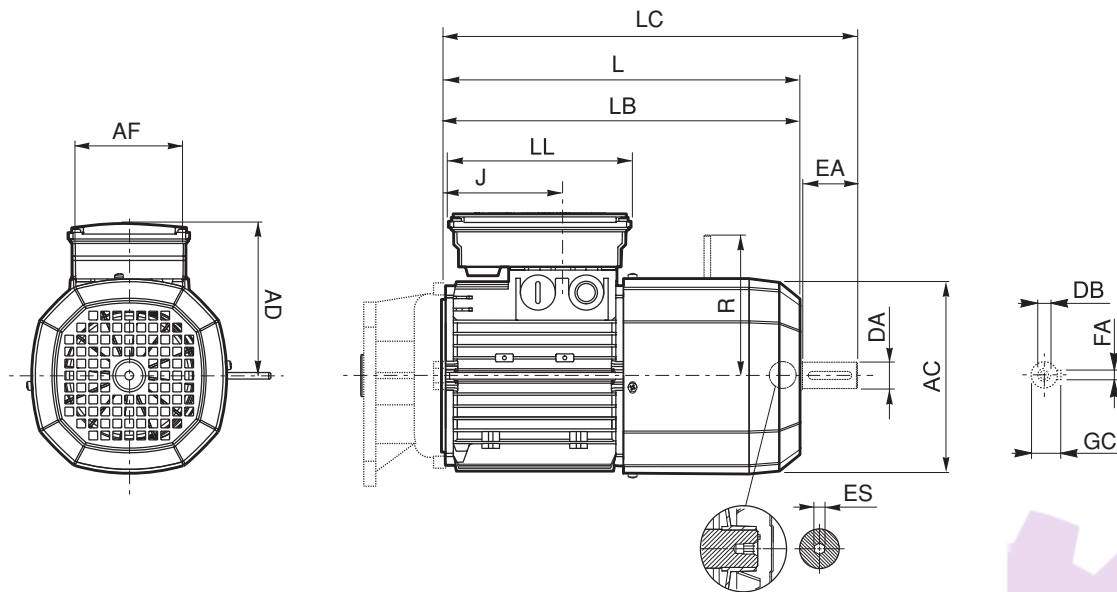
M



|        | Rear shaft end |    |     |    |      | Motor |     |     |     |     |      |     |
|--------|----------------|----|-----|----|------|-------|-----|-----|-----|-----|------|-----|
|        | DA             | EA | DB  | FA | GC   | AC    | LB  | LC  | AF  | LL  | J    | AD  |
| M 0    | 9              | 20 | M3  | 3  | 10.2 | 110   | 133 | 155 | 74  | 80  | 42   | 91  |
| M 05   | 11             | 23 | M4  | 4  | 12.5 | 121   | 165 | 191 |     |     | 48   | 95  |
| M 1    | 14             | 30 | M5  | 5  | 16   | 138   | 187 | 219 |     |     | 45   | 108 |
| M 2 S  | 19             | 40 | M6  | 6  | 21.5 | 156   | 202 | 245 |     |     | 44   | 119 |
| M 3 S  | 28             | 60 | M10 | 8  | 31   | 195   | 230 | 293 | 98  | 98  | 53.5 | 142 |
| M 3 L  |                |    |     |    |      |       | 262 | 325 |     |     |      |     |
| M 4    | 38             | 80 | M12 | 10 | 41   | 258   | 361 | 444 | 118 | 118 | 64.5 | 193 |
| M 4 LC |                |    |     |    |      |       | 396 | 479 |     |     |      |     |
| M 5 S  |                |    |     |    |      | 310   | 418 | 502 | 187 | 187 | 77   | 245 |
| M 5 L  |                |    |     |    |      |       | 462 | 546 |     |     |      |     |



M\_FD

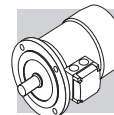


|        | Rear shaft end |    |     |    |      | Motor |     |     |     |     |       |     |         |    |
|--------|----------------|----|-----|----|------|-------|-----|-----|-----|-----|-------|-----|---------|----|
|        | DA             | EA | DB  | FA | GC   | AC    | LB  | LC  | AF  | LL  | J     | AD  | R       | ES |
| M 05   | 11             | 23 | M4  | 4  | 12.5 | 121   | 231 | 256 |     |     |       |     |         |    |
| M 1    | 14             | 30 | M5  | 5  | 16   | 138   | 248 | 280 | 98  | 133 | 73    | 135 | 103     | 5  |
| M 2 S  | 19             | 40 | M6  | 6  | 21.5 | 156   | 272 | 314 |     |     | 88    | 146 | 129     |    |
| M 3 S  |                |    |     |    |      |       | 326 | 389 |     |     |       |     |         |    |
| M 3 L  | 28             | 60 | M10 | 8  | 31   | 195   | 353 | 416 | 110 | 165 | 124.5 | 158 | 160     | 6  |
| M 4    |                |    |     |    |      |       | 470 | 553 |     |     | 185.5 |     | 204 (1) |    |
| M 4 LC |                |    |     |    |      | 258   | 495 | 578 | 140 | 188 | 64.5  | 210 | 226     |    |
| M 5 S  | 38             | 80 | M12 | 10 | 41   |       | 558 | 642 |     |     |       |     |         |    |
| M 5 L  |                |    |     |    |      | 310   | 602 | 686 | 187 | 187 | 77    | 245 | 266     | —  |

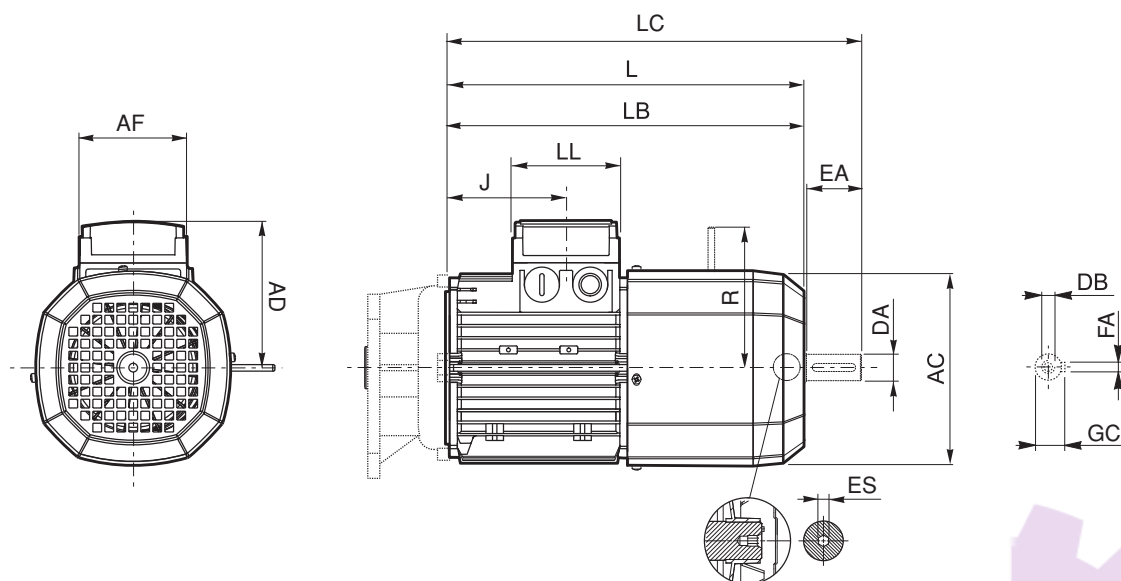
NOTE:

1) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



M\_FA



|        | Rear shaft end |     |     |    |      | Motor |     |     |     |     |       |     |         |    |
|--------|----------------|-----|-----|----|------|-------|-----|-----|-----|-----|-------|-----|---------|----|
|        | DA             | EA  | DB  | FA | GC   | AC    | LB  | LC  | AF  | LL  | J     | AD  | R       | ES |
| M 05   | 11             | 23  | M4  | 4  | 12.5 | 121   | 231 | 256 | 74  | 80  | 48    | 95  | 116     | 5  |
| M 1    | 14             | 30  | M5  | 5  | 16   | 138   | 248 | 280 |     |     | 73    | 108 | 124     |    |
| M 2 S  | 19             | 40  | M6  | 6  | 21.5 | 156   | 272 | 314 |     |     | 88    | 119 | 134     |    |
| M 3 S  | 28             | 60  | M10 | 8  | 31   | 195   | 326 | 389 | 98  | 98  | 124.5 | 142 | 160     | 6  |
| M 3 L  |                |     |     |    |      |       | 353 | 416 |     |     |       |     |         |    |
| M 4    | 38             | 80  | M14 | 10 | 41   | 258   | 470 | 553 | 140 | 188 | 185.5 | 210 | 200 (1) |    |
| M 4 LC |                |     |     |    |      |       | 495 | 578 |     |     | 64.5  |     | 217     |    |
| M 5 S  |                |     | 310 |    |      | M12   | 558 | 642 | 187 | 187 | 77    | 245 | 247     | —  |
| M 5 L  | 602            | 686 |     |    |      |       |     |     |     |     |       |     |         |    |

NOTE:

1) For FA07 brake value R=217.

Dimensions AD, AF, LL and V, relevant to terminal box of motors M...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size M...FD motors

ES hexagon is not supplied with PS option.

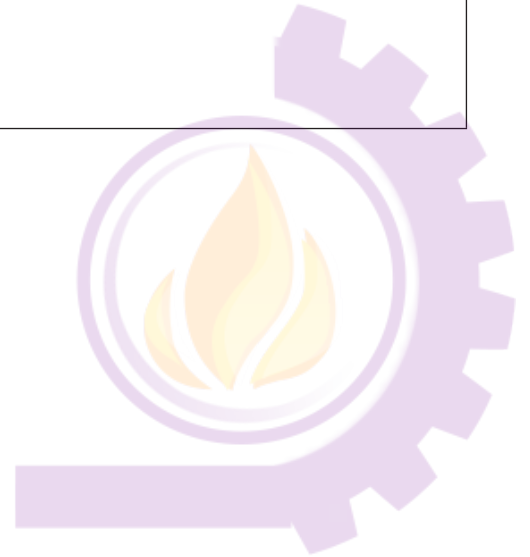




## INDEX OF REVISIONS

| BR_CAT_300IND_STD_ENG_R04_0 |  |
|-----------------------------|--|
|                             | Description  |
| 4, 26                       | Added "Allowed temperature limits" and "Lubrication" chapters. |

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2016 09 30

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