



The First Manufacturer of  
Hydraulic Gear Pumps in IRAN

Gear Pump and Accessories



- پمپ هیدرولیک دنده ای
- شیر هیدرولیک برقی و دستی
- پمپ پره ای و پیستونی
- هیدروموتور
- شیر اوریترول



## **Arafan Naein Co.**

### **Precision, Speed and Quality**

**ArafanNaein Company was first established in 1998, aiming at producing various kinds of Hydraulic Gear Pumps and other hydraulic accessories.**

**In 2000 the productions was started, and the production of various kinds of hydraulic gear pumps, with the range of displacement from 0.33cc/rev to 150cc/rev and in three main series:**

**PM Type ( 0.33cc/rev to 1.33cc/rev )**

**PLO Type ( 1cc/rev to 6.5cc/rev )**

**PL Type ( 4cc/rev to 35cc/rev )**

**PLA Type ( 24cc/rev to 56cc/rev )**

**PNA Type ( 24cc/rev to 73.3cc/rev )**

**PNC Type ( 53.3cc/rev to 150cc/rev )**

**Having gained 2 years of experience in producing gear pumps for industrial applications (Static Hydraulic), the company entered the new stage of production of dynamic hydraulic gear pumps, which are used for the applications below, mainly as the steering pumps:**

**Agricultural Machines - Mineral Machines**

**Road Construction Machines - industrial machines**

**Transportation Machines - Road & Building Machine**

**Now, with over 17 years of experience in production, Arafan Naein Company as the first and the only manufacturer of Hydraulic Gear Pumps in Iran, is able to produce any sample of Hydraulic Gear Pump, and is now expanding its products to various kinds of Hydraulic Gear Pumps, a great deal of Arafan Naein Company's products is exported to at least 8 Asian countries, especially the ) OEM, and also some European and South American countries, with %10 annual increase of exportation.**

**ArafanNaein Company tries its best to be at the service of the**

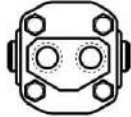
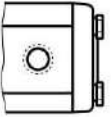


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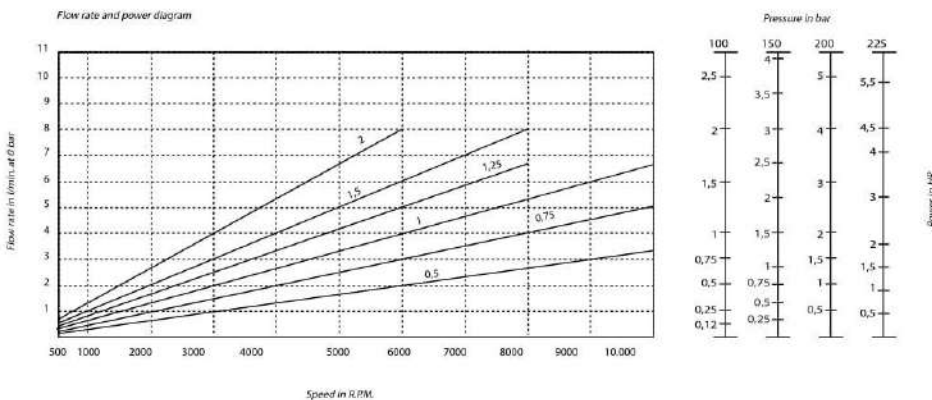




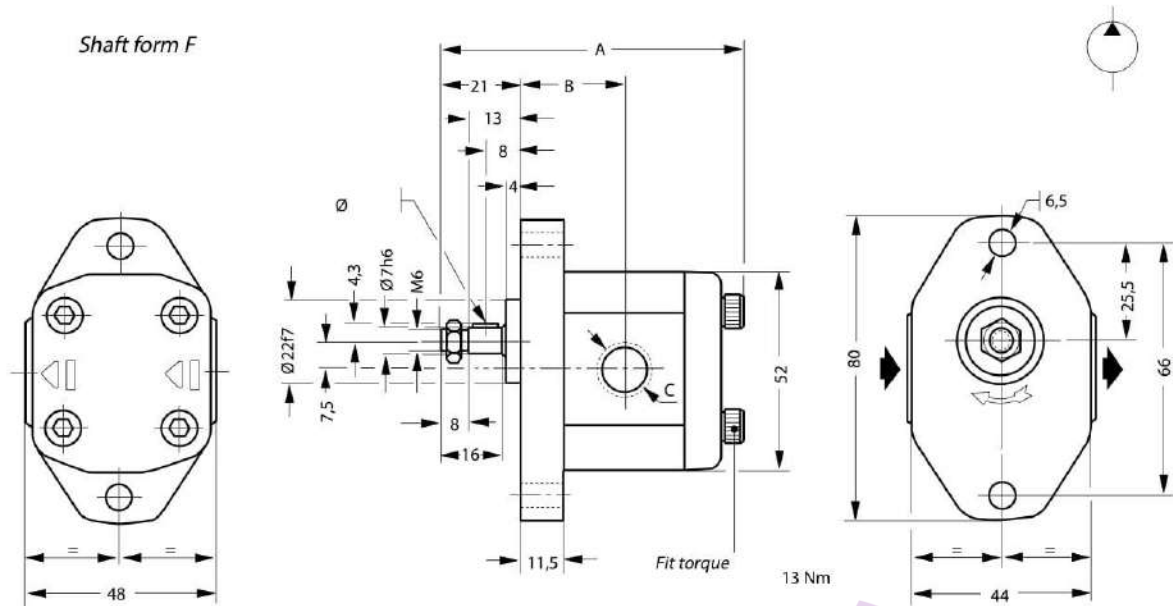
**CODING SYSTEM** 1 M 1,5 C F 09 R - \* **CODING SYSTEM**

|   |                  |   |  |
|---|------------------|---|--|
| <b>Type</b>                               |                  | <b>Additional data</b>  |  |
| 1   | Without pulley   |   |  |
| <b>Model</b>                              |                  | <b>Port connection form</b>   |  |
| M   | Single           |   |  |
| <b>Pump flow rate at 1500 RPM a 0 bar</b> |                  | <b>Fixing flange</b>  |  |
| See technical data                        |                  | 22 - 09   |  |
| <b>Rotation sense</b>                     |                  | <b>Driving shaft form</b>   |  |
| C   | Clockwise        | B - F   |  |
| CC  | Counterclockwise |   |  |
| R   | Reversible       |   |  |

| Hydraulic technical data       |                            | 0,5    | 0,75  | 1     | 1,25 | 1,5   | 2    |
|--------------------------------|----------------------------|--------|-------|-------|------|-------|------|
| Pump Flow rate                 | (L/min) 1500 R.P.M.        | 0,5    | 0,75  | 1     | 1,25 | 1,5   | 2    |
| Displacement                   | cm <sup>3</sup> /v<br>cc/r | 0,33   | 0,5   | 0,66  | 0,83 | 1     | 1,33 |
| Cont. max. pressure            | bar                        | 225    |       |       | 175  |       |      |
| Intermitent max. pressure      | bar                        | 250    |       |       | 200  |       |      |
| R.P.M. at cont. pressure       |                            | 5.000  |       | 4.000 |      | 3.000 |      |
| Max. R.P.M.                    |                            | 10.000 |       | 8.000 |      | 6.000 |      |
| Min. R.P.M. at given pressures | 100 bar                    | 1.000  |       |       |      |       |      |
|                                | 175                        | 1.500  |       |       |      |       |      |
|                                | 250                        | 3.000  | 2.500 |       | —    |       |      |



## HYDRAULIC GEAR PUMPS TYPE PM | FLANGE 09



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ATOORSANAT

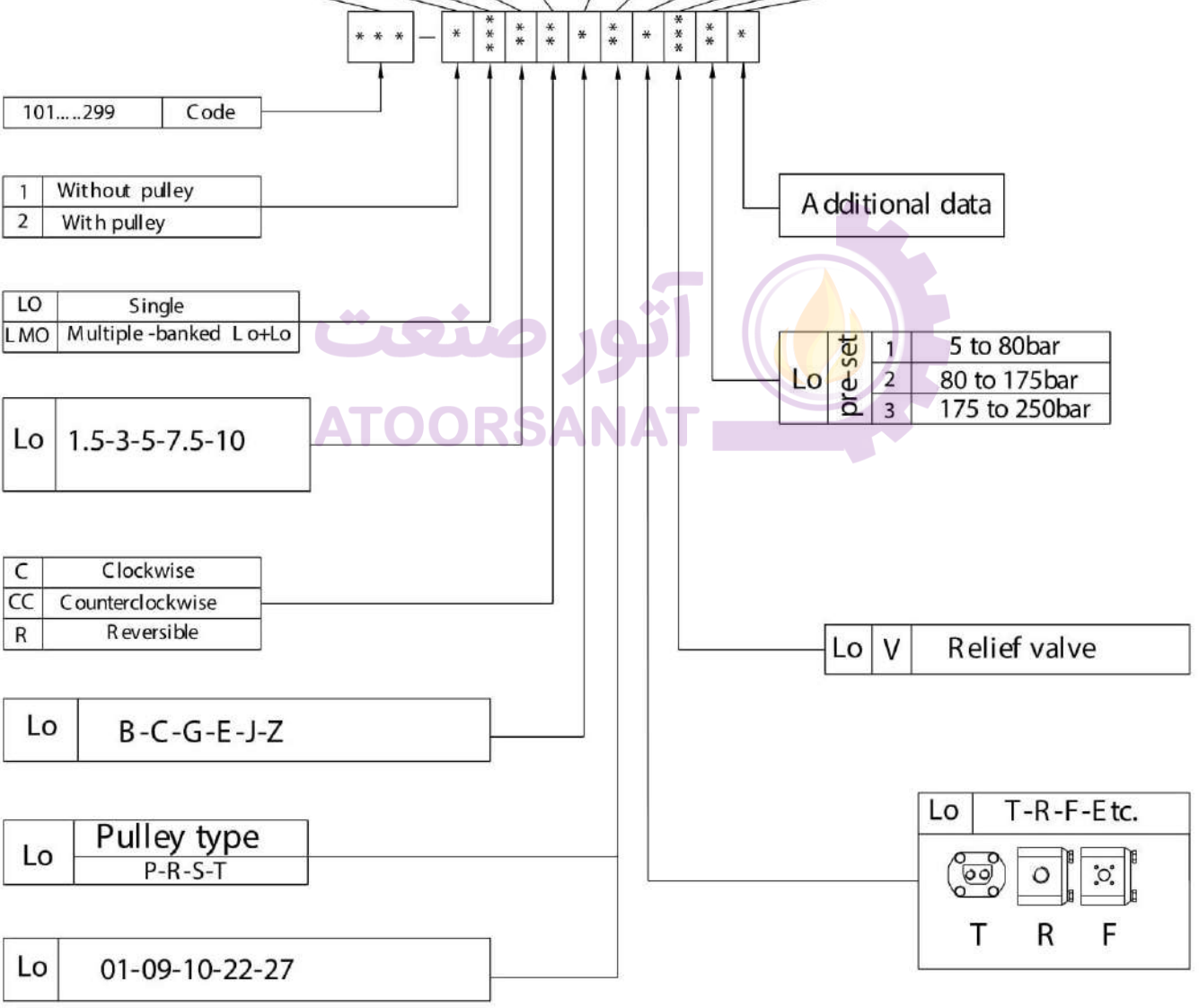
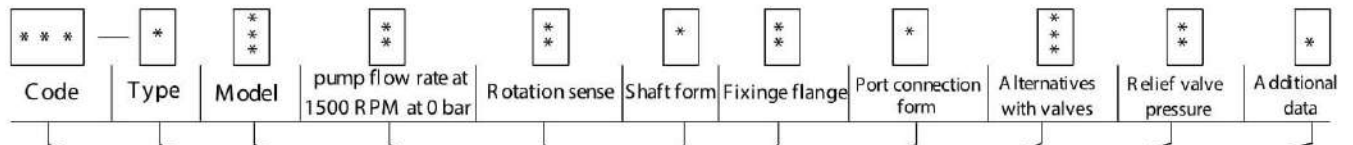


| Model       | Displacement cc/r | A  | B    | Pressure | Suction  | Weight kg |
|-------------|-------------------|----|------|----------|----------|-----------|
|             |                   |    |      | C        | C        |           |
| 1M0,5CF09R  | 0,33              | 75 | 26,5 | 4/1" BSP | 4/1" BSP | 0,558     |
| 1M0,75CF09R | 0,5               | 77 | 27,5 |          |          | 0,606     |
| 1M1CF09R    | 0,66              | 79 | 28   |          |          | 0,624     |
| 1M1,25CF09R | 0,83              | 81 |      |          |          | 0,645     |
| 1M1,5CF09R  | 1                 | 83 | 30,5 |          |          | 0,666     |
| 1M2CF09R    | 1,33              | 87 |      |          |          | 0,688     |



### Coding system model LO

|           |   |   |    |    |   |   |    |   |    |    |   |
|-----------|---|---|----|----|---|---|----|---|----|----|---|
| 101...299 | - | 1 | Lo | 5  | C | E | 10 | F | V  | 2  | B |
| ***       |   | * | ** | ** | * | * | ** | * | ** | ** | * |

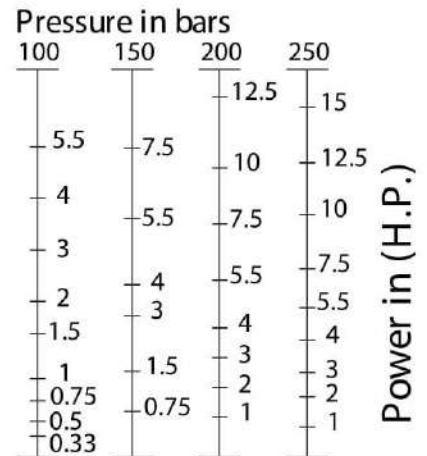
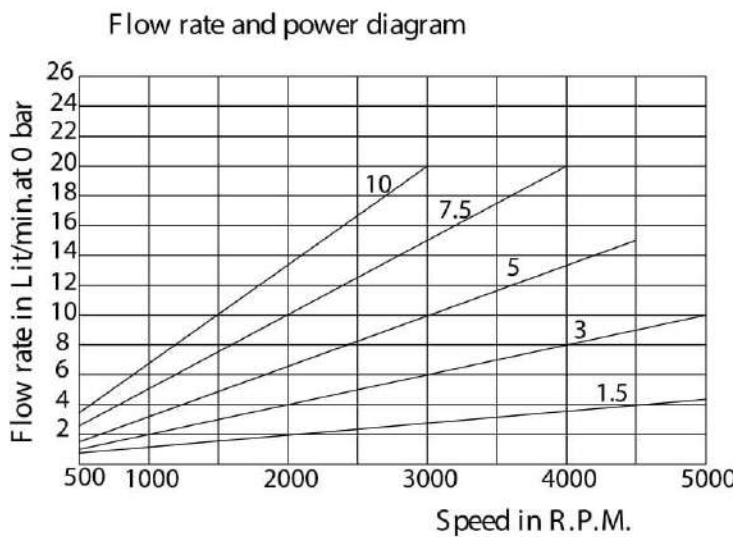
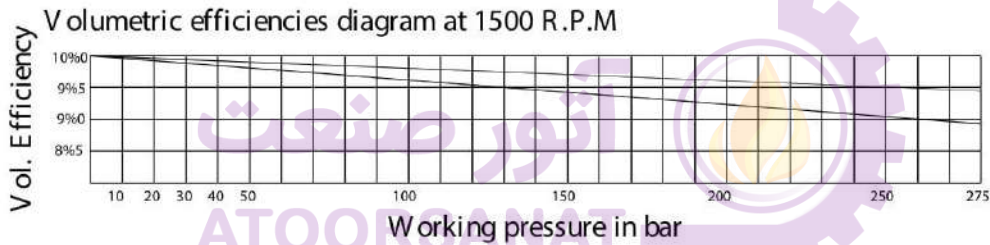


General specification model LO

Hydraulic technical data

Gear Pump Model- LO

|   |        |      |      |      |      |   |
|---|--------|------|------|------|------|---|
| Pump Flow RATE<br>(Lit/Min) at 1500 R.P.M | 1.5    | 3    | 5    | 7.5  | 10   |   |
| DISPLACEMENT<br>(CC /rev)                 | 1      | 2    | 3.3  | 5    | 6.6  |   |
| Cont. MAX. PRESSURE<br>(bar)              | 275    |      | 250  | 185  | 135  |   |
| INTERMITTENT MAX.<br>PRESSURE (bar)       | 300    |      | 275  | 200  | 150  |   |
| R.P.M AT CONT.PRESSURE                    | 5000   |      | 4000 | 3000 |      |   |
| MAX. R.P.M                                | 6000   |      | 5000 | 4000 | 3000 |   |
| MIN. R.P.M<br>AT GIVEN<br>PRESSURES       | 100bar | 1000 |      | 750  | 500  |   |
|   | 175bar | 1500 | 1250 |      | 1000 | + |
|   | 250bar | 2000 | 1750 | 1500 | +    | + |
|   | 300bar | 3000 | 2000 | +    | +    | + |



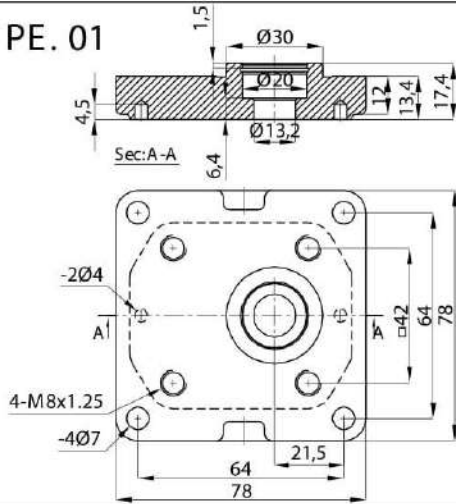
NOTE : The results have been obtained with 5 E (37cSt) viscosity oil and at 50 °C



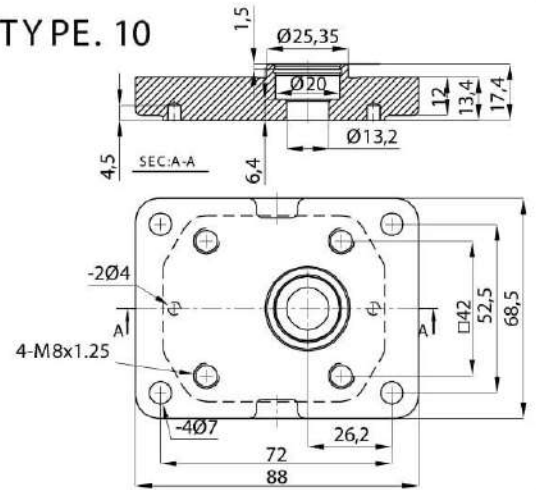


## Flange type model LO

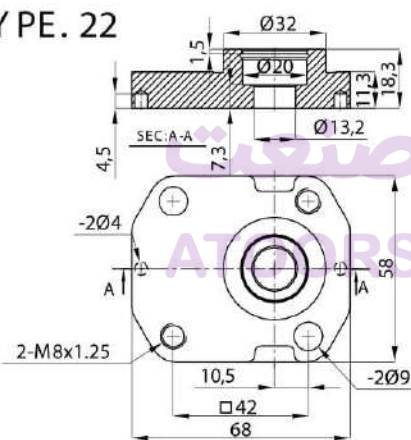
FLANGE TYPE. 01



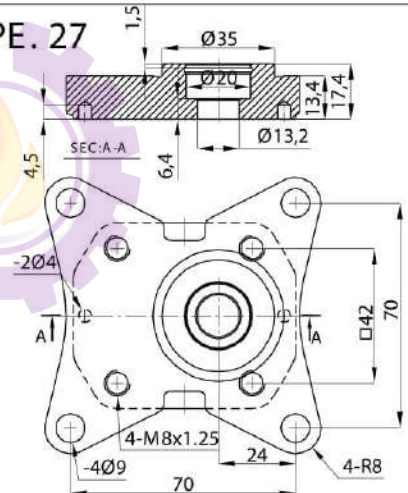
FLANGE TYPE. 10



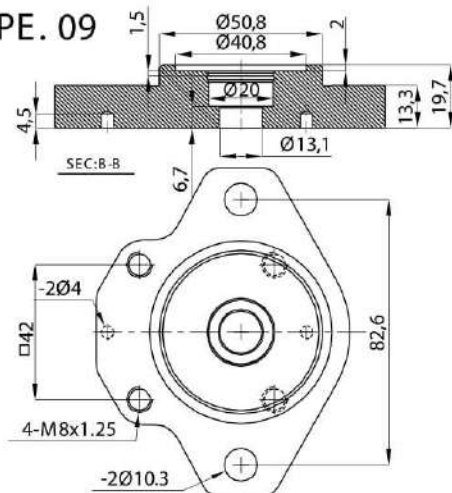
FLANGE TYPE. 22



FLANGE TYPE. 27



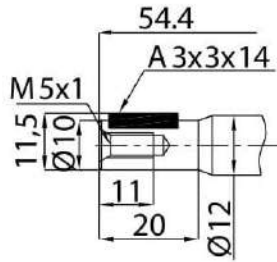
FLANGE TYPE. 09



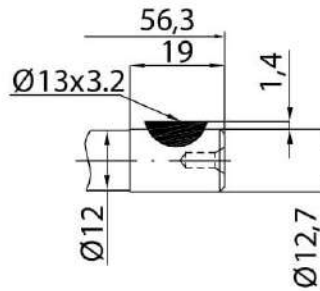


Shaft type model LO

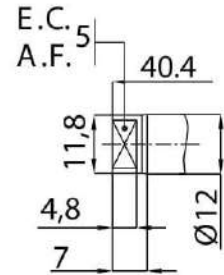
SHAFT C01



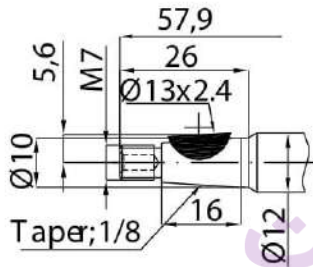
SHAFT C02



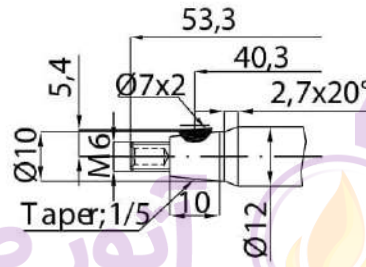
SHAFT B01



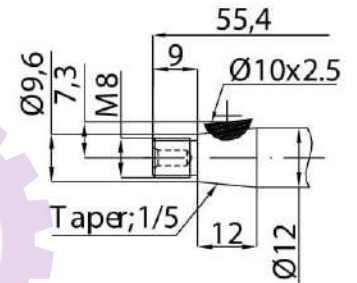
SHAFT E01



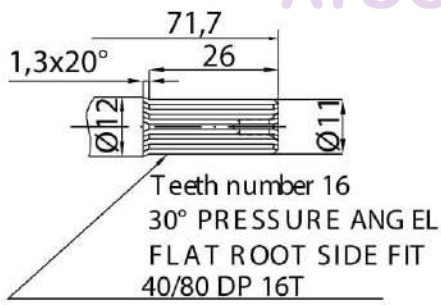
SHAFT J01



SHAFT Z01

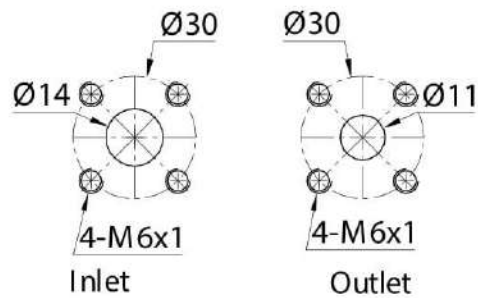


SHAFT G01

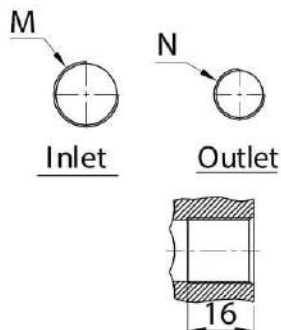


Outlet & inlet type model LO

Model:F 101

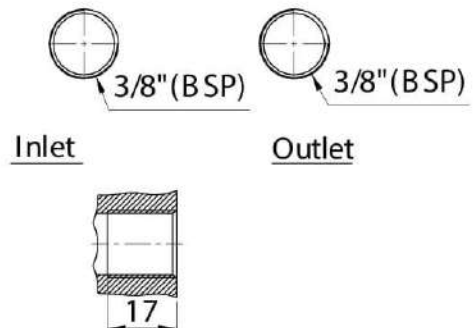


Model:R 101



| L (tr) | M (BSP) | N (BSP) |
|--------|---------|---------|
| 1.5    | 3/8 *   | 1/4 *   |
| 3      | 3/8 *   | 1/4 *   |
| 5      | 3/8 *   | 1/4 *   |
| 7.5    | 1/2 *   | 3/8 *   |
| 10     | 1/2 *   | 3/8 *   |

Model:R 102

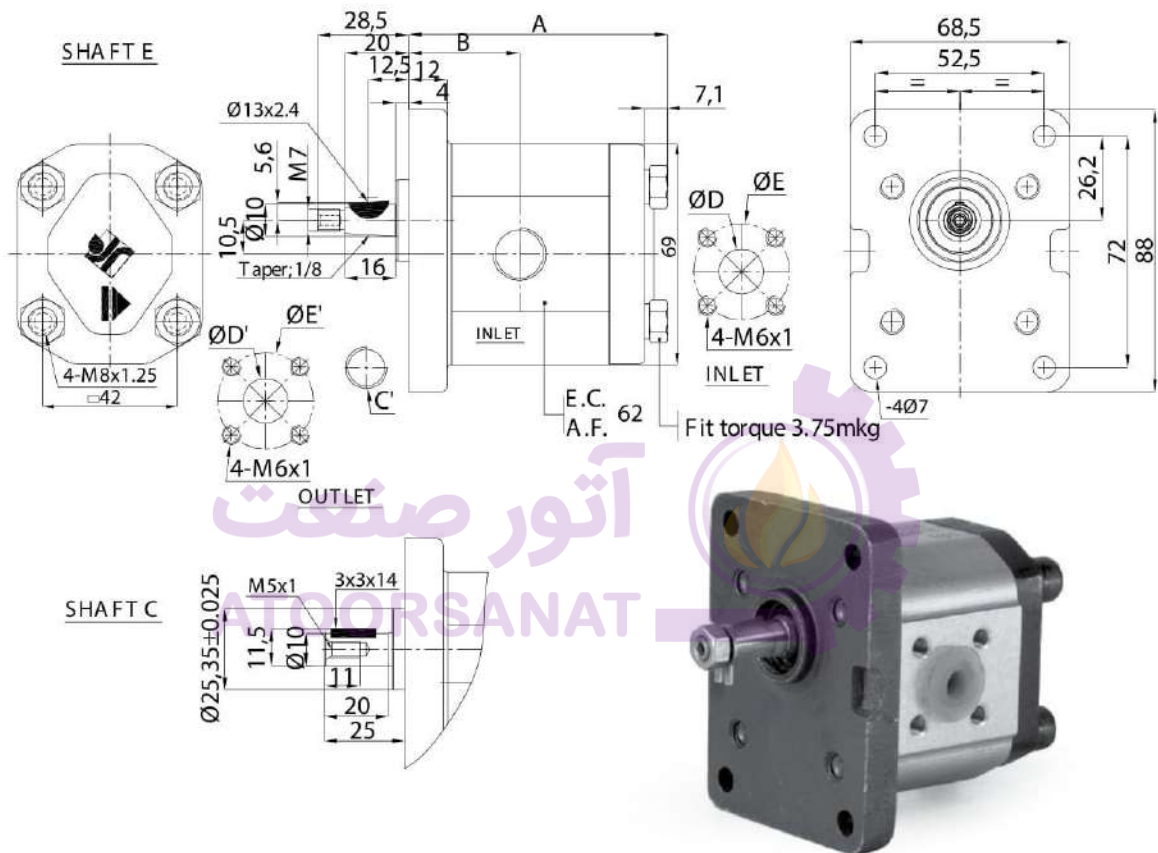




Pump with flange type 10  
Model LO

101-1LO...(C/CC)E 10R

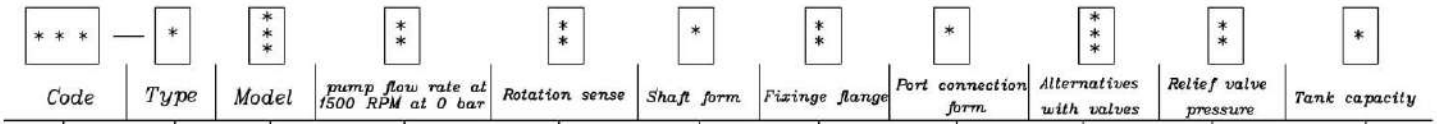
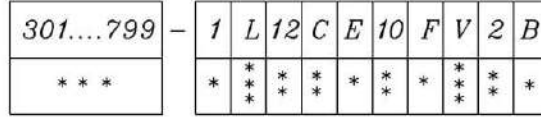
SHAFT C&E(01)  
OUTLET & INLET R&F(01)  
FLANGE 10



| Model           | A    | B    | Outlet |    |    | Inlet |    |    | Weight |
|-----------------|------|------|--------|----|----|-------|----|----|--------|
|                 |      |      | C'     | D' | E' | C     | D  | E  |        |
| 101-1LO1.5C▲10R | 68.7 | 31   | 1/4"   | 11 | 30 | 3/8"  | 14 | 30 |        |
| 101-1LO3C▲10R   | 73.8 | 31   |        |    |    |       |    |    |        |
| 101-1LO5C▲10R   | 80.5 | 34.5 | 3/8"   | 11 | 30 | 1/2"  | 14 | 30 |        |
| 101-1LO7.5▲10R  | 89.3 | 37.5 |        |    |    |       |    |    |        |
| 101-1LO10C▲10R  | 97.5 | 42.8 |        |    |    |       |    |    |        |

In the reversible pumps, threaded ports available R only, both ports same dimension on that corresponds to the suction dimension  
The drawing above shows a pump turning clockwise. For anti-clockwise rotation sense; replace C by CC in which case suction and pressure ports shall be inverted

### Coding system model L



|            |      |
|------------|------|
| 301....799 | Code |
|------------|------|

|   |  |
|---|--|
| 1 | Without pulley                               |
| 2 | With pulley                                  |
| 5 | Pump with back-up bearing and floating shaft |

|    |                  |      |
|----|------------------|------|
| L  | Single           |      |
| LM | Multiple -banked | L+L  |
| LS | Multiple -banked | L+L0 |

|   |  |
|---|--|
| L | 6-7.5-9-10-12-14-16-18-22-25-27-32-35-40-46-52 |
|---|--|

|    |                  |
|----|------------------|
| C  | Clockwise        |
| CC | Counterclockwise |
| R  | Reversible       |

|   |  |
|---|--|
| L | A-B-C-D-E-F-G-H-I-J-K-N-R-S-T<br>V-W-Y-Z |
|---|--|

|             |         |
|-------------|---------|
| Pulley type |         |
| L           | P-R-S-T |

|   |   |
|---|---|
| L | 01-02-03-04-05-07-08-09-10-11-12<br>13-14-15-16-17-18-19-21-22-23-24-25<br>27-28-30-32-33-36-37-38-39-40-41<br>42-45-46-47-50-51-52-53-55-85-86 |
|---|---|

|   |   |             |
|---|---|-------------|
| L | A | Sin . . . . |
|   | B | 1.5         |
|   | C | 2.5         |
|   | D | 3.8         |

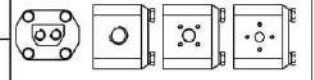
  

|   |                    |    |               |
|---|--------------------|----|---------------|
| L | Adjustable pre-set | 1  | 5 to 80bar    |
|   |                    | 2  | 80 to 175bar  |
|   |                    | 3  | 175 to 250bar |
|   | Adjustable pre-set | 11 | 5 to 80bar    |
|   |                    | 12 | 80 to 175bar  |
|   |                    | 13 | 175 to 250bar |

|   |     |   |
|---|-----|---|
| L | V   | Relief valve                                |
|   | VD  | R.valve and tank                            |
|   | VC  | Flow control valve with rel. valve          |
|   | VCD | Flow control valve with rel. valve and tank |
|   | Rc  | Priority flow valve                         |

|   |   |
|---|---|
| L | T-R-F-B-Etc.  |
|   |  |
|   | T R F B   |



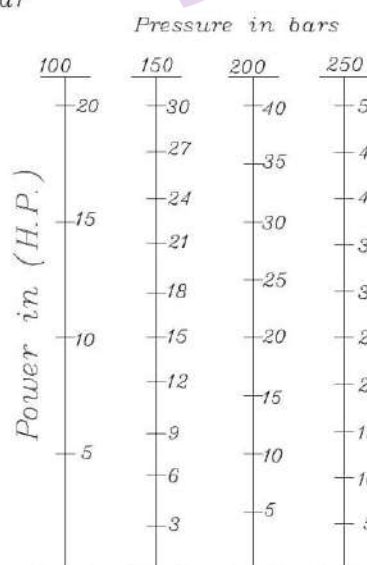
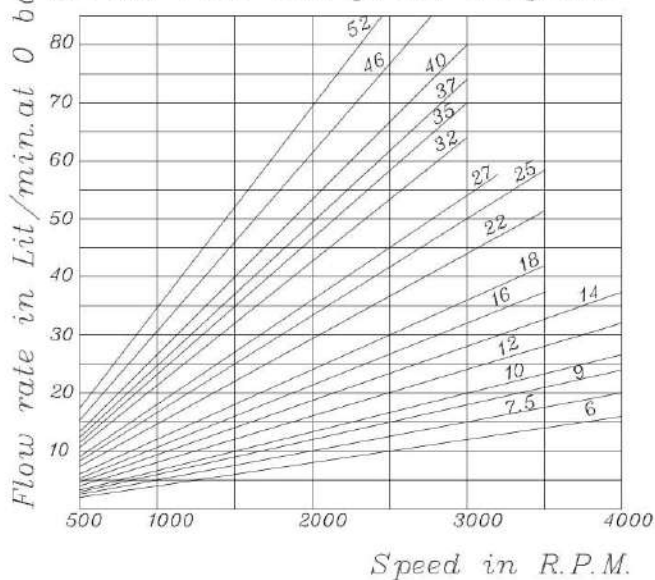
General specification model L  
Hydraulic technical data Gear Pump Type-L

|   |        |      |   |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |   |
|---|--------|------|---|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|---|
| Pump Flow RATE<br>(L/Min) at 1500 R.P.M | 6      | 7.5  | 9 | 10  | 12   | 14  | 16   | 18   | 22   | 25   | 27   | 32   | 35   | 37   | 40   | 46   | 52   |      |   |
| DISPLACEMENT<br>(CC/rev)                | 4      | 5    | 6 | 6.6 | 8    | 9.3 | 10.6 | 12   | 14.6 | 16.6 | 18   | 21.3 | 23.3 | 24.6 | 26.6 | 30.6 | 34.6 |      |   |
| Cont. MAX.PRESSURE<br>(bar)             | 275    |      |   |     |      |     | 250  |      |      | 225  |      | 175  |      |      | 145  | 135  | 120  |      |   |
| INTERMITENT MAX.<br>PRESSURE (bar)      | 300    |      |   |     |      |     | 275  |      |      | 250  |      | 190  |      |      | 160  | 150  | 140  |      |   |
| R.P.M AT CONT.PRESSURE                  | 3500   |      |   |     |      |     | 3000 |      |      | 2500 |      | 2300 |      | 2000 |      |      | 2000 |      |   |
| MAX. R.P.M                              | 4000   |      |   |     |      |     | 3500 |      |      | 3200 |      | 3000 |      |      | 3000 |      |      |      |   |
| MIN. R.P.M<br>AT GIVEN<br>PRESSURES     | 100bar | 500  |   |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |   |
|   | 175bar | 1200 |   |     | 1100 |     |      | 1100 |      |      | 850  |      | 850  |      | 750  |      |      | 750  |   |
|   | 250bar | 1400 |   |     |      |     |      | 1300 |      |      | 1200 |      | 1100 |      | 1100 |      |      | 1000 |   |
|   | 300bar | 1750 |   |     |      |     |      | 1500 |      |      | +    | +    | +    | +    | +    | +    | +    | +    | + |

Volumetric efficiencies diagram at 1500 R.P.M



Flow rate and power diagram

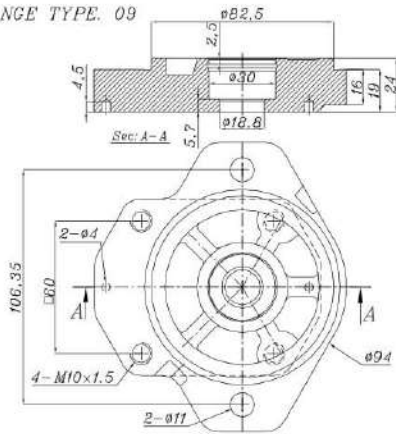


NOTE : The results have been obtained with 4.5 E viscosity oil and at 50 °C

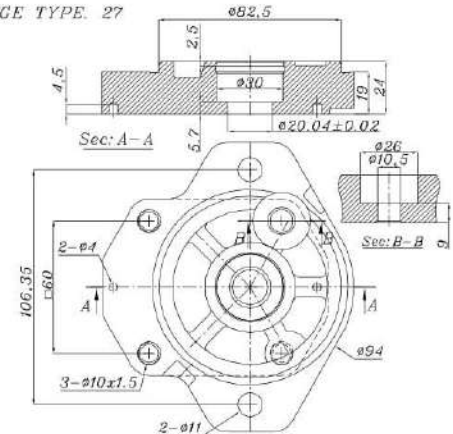


Flange type model L

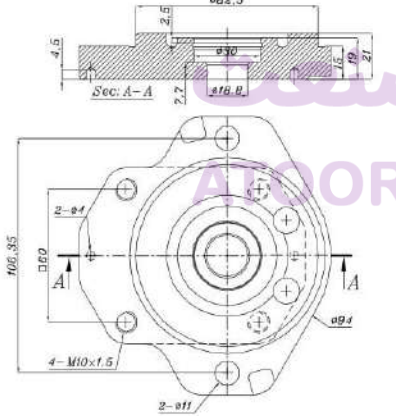
FLANGE TYPE. 09



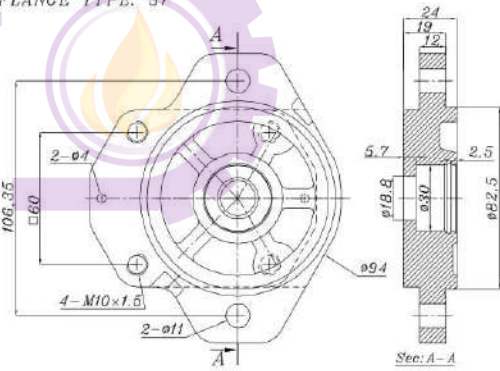
FLANGE TYPE. 27



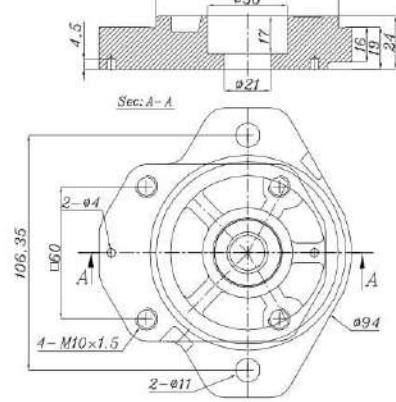
FLANGE TYPE. 36



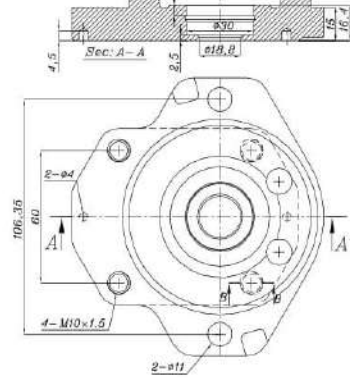
FLANGE TYPE. 37



FLANGE TYPE. 38



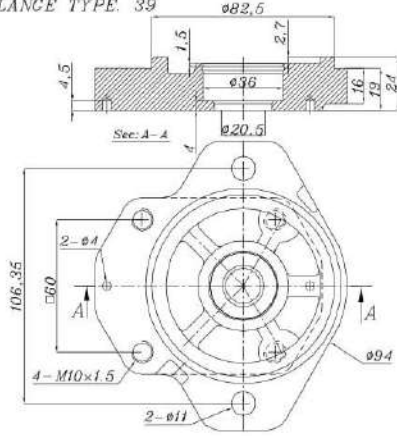
FLANGE TYPE. 18



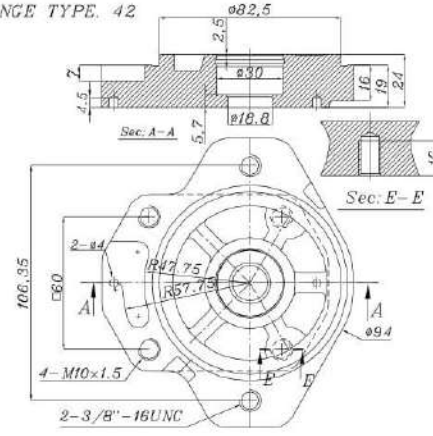


Flange type model L

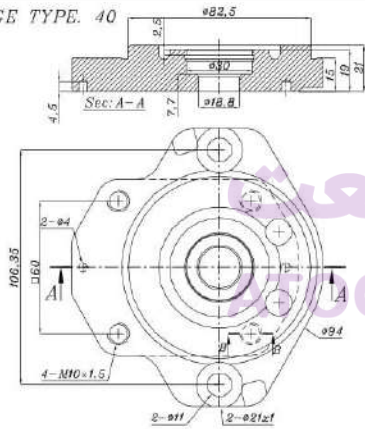
FLANGE TYPE. 39



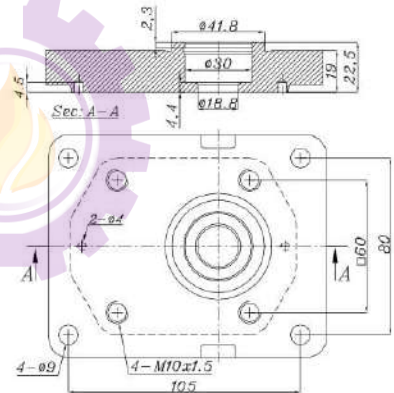
FLANGE TYPE. 42



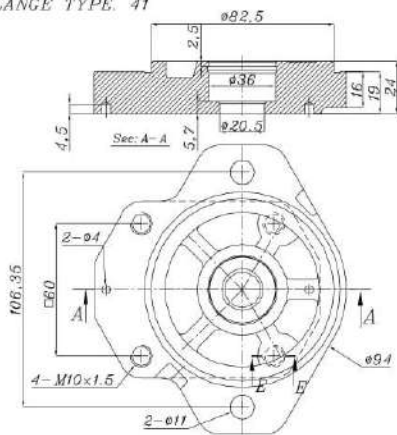
FLANGE TYPE. 40



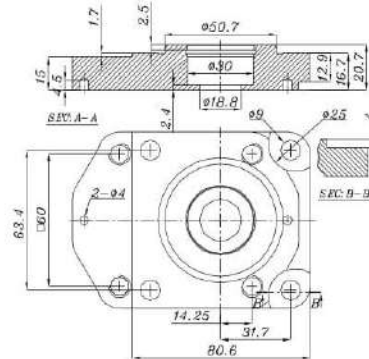
FLANGE TYPE. 24



FLANGE TYPE. 41

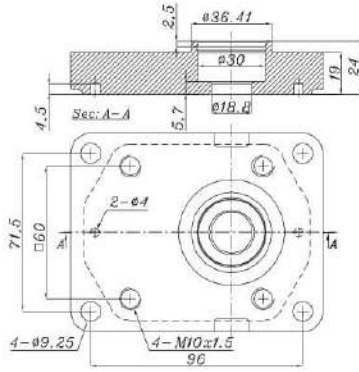


FLANGE TYPE. 02

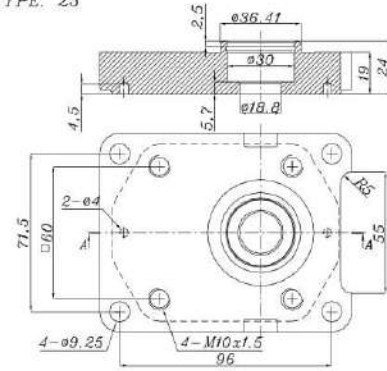


Flange type model L

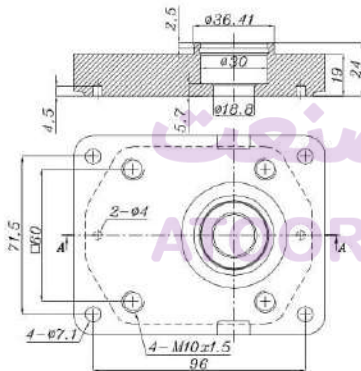
FLANGE TYPE. 10



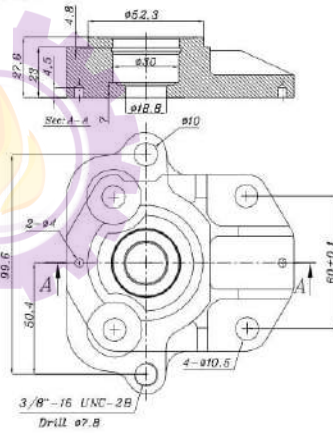
FLANGE TYPE. 25



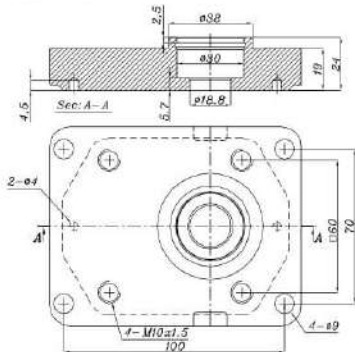
FLANGE TYPE. 01



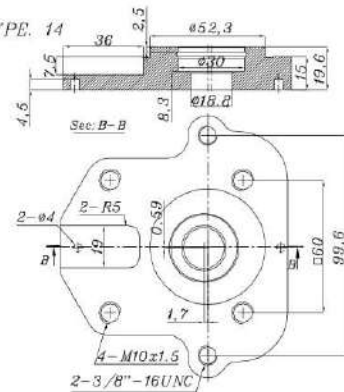
FLANGE TYPE. 07



FLANGE TYPE. 16



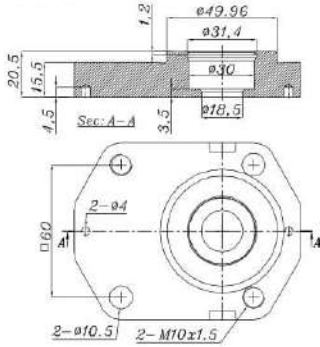
FLANGE TYPE. 14



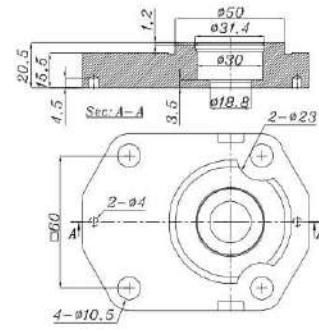


Flange type model L

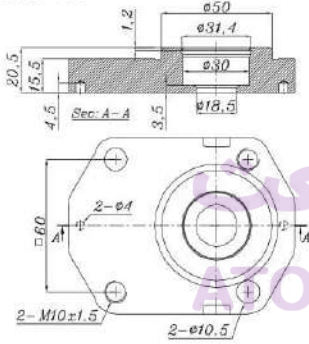
FLANGE TYPE. 22



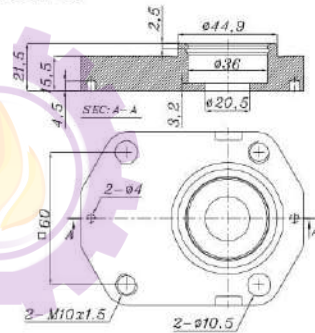
FLANGE TYPE. 51



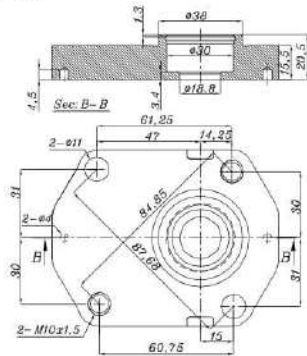
FLANGE TYPE. 55



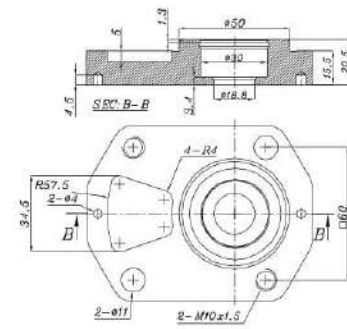
FLANGE TYPE. 53



FLANGE TYPE. 05



FLANGE TYPE. 50





### Shaft type model L

|                     |                    |                         |                    |                    |                    |
|---------------------|--------------------|-------------------------|--------------------|--------------------|--------------------|
| <p>shaft J/J01</p>  | <p>shaft C/C01</p> | <p>shaft E/E01 78.6</p> | <p>shaft Z/Z01</p> | <p>shaft N/N01</p> | <p>shaft S/S01</p> |
| <p>shaft J/J02</p>  | <p>shaft C/C03</p> | <p>shaft E/E02</p>      | <p>shaft Z/Z02</p> | <p>shaft N/N02</p> |                    |
| <p>shaft J/J05</p>  | <p>shaft C/C04</p> | <p>shaft E/E04</p>      | <p>shaft Z/Z03</p> | <p>shaft N/N03</p> |                    |
| <p>shaft J/J05</p>  | <p>shaft C/C05</p> | <p>shaft E/E05</p>      | <p>shaft F/F01</p> | <p>shaft N/N04</p> |                    |
| <p>shaft J/J06</p>  | <p>shaft C/C06</p> | <p>shaft E/E06</p>      | <p>shaft F/F02</p> | <p>shaft I/I01</p> |                    |
| <p>shaft J/J08</p>  | <p>shaft C/C08</p> | <p>shaft E/E07</p>      | <p>shaft B/B01</p> | <p>shaft I/I02</p> |                    |
| <p>shaft J/J09</p>  | <p>shaft C/C08</p> | <p>shaft V/V01</p>      | <p>shaft B/B02</p> | <p>shaft D/D01</p> |                    |
| <p>shaft J/J11</p>  | <p>shaft C/C15</p> | <p>shaft V/V02</p>      | <p>shaft B/B03</p> | <p>shaft A/A01</p> |                    |
| <p>shaft J/J13</p>  | <p>shaft G/G17</p> | <p>shaft V/V03</p>      | <p>shaft H/H01</p> | <p>shaft A/A02</p> |                    |
| <p>shaft Y/Y01a</p> | <p>shaft G/G22</p> | <p>shaft V/V04</p>      | <p>shaft H/H02</p> | <p>shaft C/C01</p> |                    |
| <p>shaft G/G25</p>  | <p>shaft G/G23</p> | <p>shaft V/V05</p>      | <p>shaft W/W01</p> | <p>shaft C/C02</p> |                    |



Outlet & inlet type model L

**Model: B**

**BT315-317**  
Inlet: 4-M6x1.25

**BT318**  
Inlet: 4-M6x1.25

**B331**  
Outlet: 3-M6x1  
Inlet: 2-M6x1.25

**B331**  
Outlet: 2-M6x1  
Inlet: 2-M6x1

| 52 | 46 | 40 | 35 | 32 | 27 | 25 | 22 | 18 | 16 | 14 | 12 | 9    | 7.5  | 6    | L/min | parameter |
|----|----|----|----|----|----|----|----|----|----|----|----|------|------|------|-------|-----------|
| 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 13.5 | 13.5 | 13.5 | d     |           |
| 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30   | 30   | 30   | d     |           |
| 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13.5 | 13.5 | 13.5 | d'    |           |
| 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30   | 30   | 30   | d'    |           |
| 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 13 | 13 | 13   | 13   | 13   | e     |           |

**B316**  
Outlet: 4-M6x1.25  
Inlet: 4-M6x1.25

**BF343**  
Inlet: 3-M6x1.25  
Outlet: 4-M6x1

**Model: F**

**FR338**  
Inlet: M6x1.25

**FT364**  
Inlet: 4-M6x1

**F365**  
Inlet: 4-M6x1.25  
Outlet: 4-M6x1.25

| 52 | 46 | 40 | 35 | 32 | 27 | 25 | 22 | 18 | 16 | 14 | 12 | 9  | 7.5 | 6  | L/min | parameter |
|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-------|-----------|
| 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 15 | 15  | 15 | d     |           |
| 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40  | 40 | d     |           |
| 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15  | 15 | d'    |           |
| 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35  | 35 | d'    |           |

**Model: R**

**RT362**  
Inlet: M27x1.5

**R339**  
Outlet: 7/8" UNF-2B  
Inlet: 1-1/16" UN-2B

**R313**  
Inlet: M27x1.5  
Outlet: M18x1.5

**R325**  
Outlet: M18x1.5  
Inlet: M18x1.5

**R355**  
Outlet: 3/4"-16UNF  
Inlet: 1"-12UNF

**R350**  
Outlet: M16x1.5  
Inlet: M20x1.5

**R350**  
Outlet: M20x1.5  
Inlet: M20x1.5

**RT344**  
Inlet: 1 5/16" UN  
Drill #31

**BR311**  
Outlet: M14x1.5  
Inlet: 2-M6x1

**BR311**  
Inlet: M6x1  
Outlet: M18x1.5

**R302**  
Outlet: 3/16"-18-UNF 2B  
Drill#12.75

**Model: A**

**Model: C**

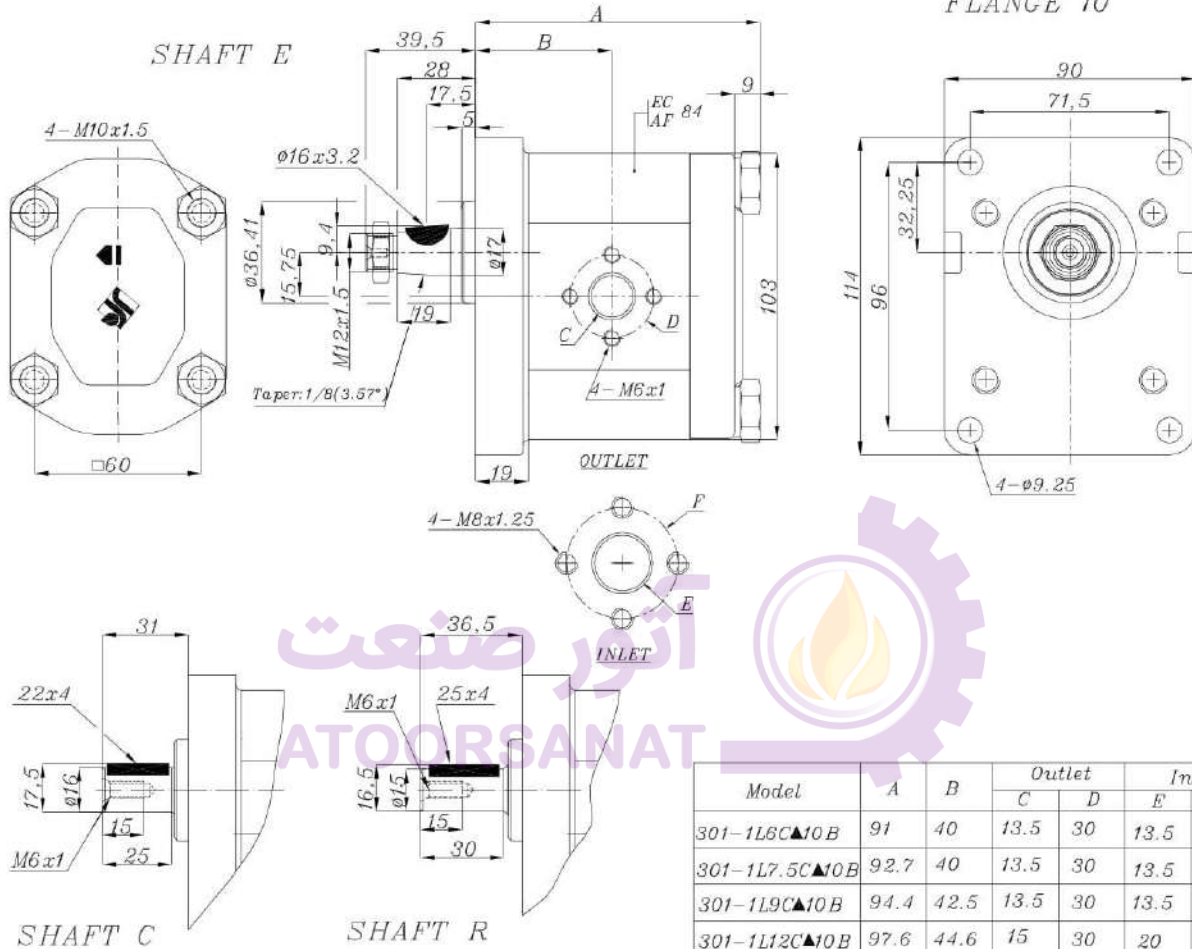
**C337**  
Inlet: 3-M6x1  
Outlet: 3-M6x1

| 52 | 46 | 40 | 35 | 32 | 27 | 25 | 22 | 18 | 16 | 14 | 12 | 9  | 7.5 | 6  | L/min | parameter |
|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-------|-----------|
| 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 13 | 13 | 13  | 13 | e     |           |

Pump with flange type 10  
Model L

301-1L...(C/CC)E10B

SHAFT E&C&R(01)  
OUTLET & INLET B  
FLANGE 10



| Model          | A     | B    | Outlet |    | Inlet |    | Weight |
|----------------|-------|------|--------|----|-------|----|--------|
|                |       |      | C      | D  | E     | F  |        |
| 301-1L6C▲10B   | 91    | 40   | 13.5   | 30 | 13.5  | 30 |        |
| 301-1L7.5C▲10B | 92.7  | 40   | 13.5   | 30 | 13.5  | 30 |        |
| 301-1L9C▲10B   | 94.4  | 42.5 | 13.5   | 30 | 13.5  | 30 |        |
| 301-1L12C▲10B  | 97.6  | 44.6 | 15     | 30 | 20    | 40 |        |
| 301-1L14C▲10B  | 99.8  | 44.6 | 15     | 30 | 20    | 40 |        |
| 301-1L16C▲10B  | 102.1 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1L18C▲10B  | 104.3 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1L22C▲10B  | 108.9 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1L25C▲10B  | 112.3 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1L27C▲10B  | 114.6 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1L32C▲10B  | 120.7 | 54.7 | 15     | 30 | 20    | 40 |        |
| 301-1L35C▲10B  | 123.6 | 56.5 | 15     | 30 | 20    | 40 |        |
| 301-1L40C▲10B  | 129.8 | 59.3 | 15     | 30 | 20    | 40 |        |
| 301-1L46C▲10B  | 136.1 | 62   | 15     | 30 | 20    | 40 |        |
| 301-1L52C▲10B  | 143   | 66.2 | 15     | 30 | 20    | 40 |        |

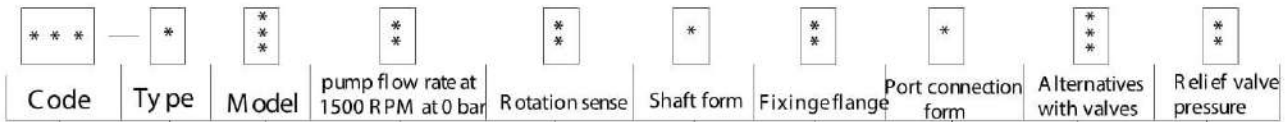
In the reversible pumps, threaded ports available R only, both ports same dimension that corresponds to the suction dimension. The drawing above shows a pump turning clockwise. For anti-clockwise rotation sense; replace C by CC in which case suction and pressure ports shall be inverted.





### Coding system model LA

|            |   |   |    |    |   |   |    |    |    |   |   |
|------------|---|---|----|----|---|---|----|----|----|---|---|
| 801....999 | - | 1 | LA | 36 | C | E | 10 | F  | V  | 2 | B |
| ***        |   | * | ** | ** | * | * | *  | ** | ** | * | * |



|            |      |
|------------|------|
| 801....999 | Code |
|------------|------|

|   |                                    |
|---|------------------------------------|
| 1 | Without pulley                     |
| 2 | With pulley                        |
| 6 | Shaft section for mounting onto ZF |

|    |                 |       |
|----|-----------------|-------|
| LA | Single          |       |
| LL | Multiple-banked | LA+LA |
| LD | Multiple-banked | LA+L  |
| LN | Multiple-banked | LA+LO |

|    |                |
|----|----------------|
| LA | 36-45-54-66-84 |
|----|----------------|





|    |                  |
|----|------------------|
| C  | Clockwise        |
| CC | Counterclockwise |
| R  | Reversible       |

|    |                     |
|----|---------------------|
| LA | A-B-C-D-E-G-I-J-K-W |
|----|---------------------|

|    |             |
|----|-------------|
|    | Pulley type |
| LA | P-S-T       |

|    |         |   |               |
|----|---------|---|---------------|
| LA | pre-set | 1 | 5 to 80bar    |
|    |         | 2 | 80 to 175bar  |
|    |         | 3 | 175 to 250bar |

|    |    |                     |
|----|----|---------------------|
| LA | V  | Relief valve        |
|    | Rc | Priority flow valve |

|    |  |
|----|--|
| LA | T-R-F-B-Etc.   |
|    |     |
|    | T R F B  |

|    |  |
|----|--|
| LA | 01-05-06-09-10-11-12<br>18-19-23-27-36 |
|----|--|





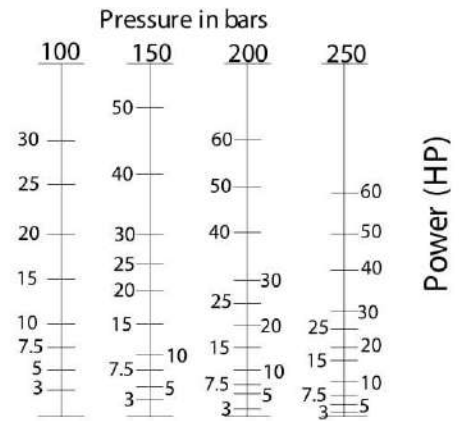
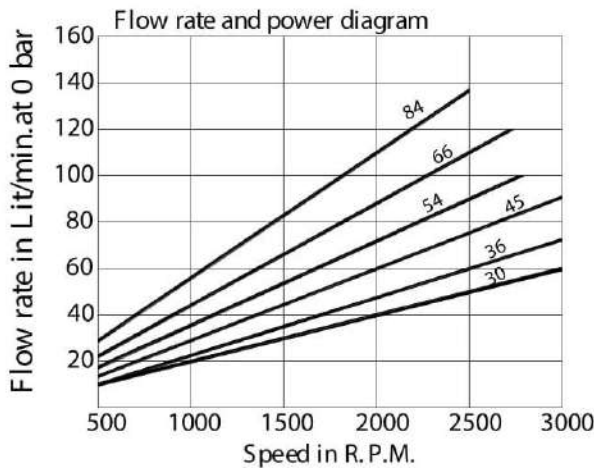
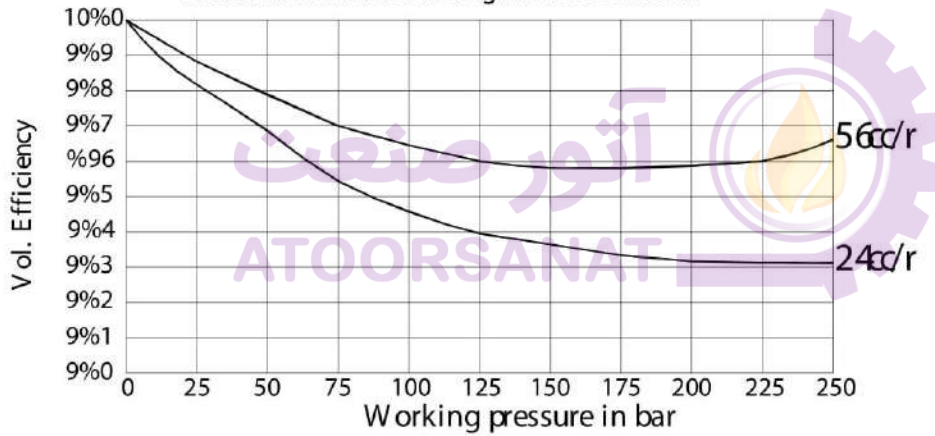
## General specification model LA

### Hydraulic technical data

### Gear Pump Type-LA

|                                      |        |      |      |      |     |    |      |     |      |      |      |
|--------------------------------------|--------|------|------|------|-----|----|------|-----|------|------|------|
| Pump Flow RATE (L/Min) at 1500 R.P.M | 30     | 36   | 40   | 45   | 54  | 66 | 75   | 84  | 95   | 100  | 115  |
| DISPLACEMENT (CC/rev)                | 20     | 24   | 26.6 | 30   | 36  | 44 | 50   | 56  | 63.3 | 66.6 | 76.6 |
| Cont. MAX . PRESSURE (bar)           | 250    |      |      | 225  |     |    | 200  | 185 | 175  | 170  | 150  |
| INTERMITENT MAX. PRESSURE (bar)      | 275    |      |      | 250  |     |    | 225  | 220 | 200  | 180  | 170  |
| R.P.M AT CONT.PRESSURE               | 2500   |      |      | 2300 |     |    | 2200 |     |      | 2000 |      |
| MAX . R.P.M                          | 3000   |      |      | 2800 |     |    | 2600 |     |      | 2200 |      |
| MIN . R.P.M AT GIVEN PRESSURES       | 100bar | 500  |      |      |     |    |      |     |      |      |      |
|                                      | 175bar | 800  | 700  |      | 600 |    |      |     |      |      |      |
|                                      | 250bar | 1500 | 900  | ×    | ×   | ×  | ×    | ×   | ×    | ×    | ×    |

Volu metric efficiencies diagram at 1500 R.P.M

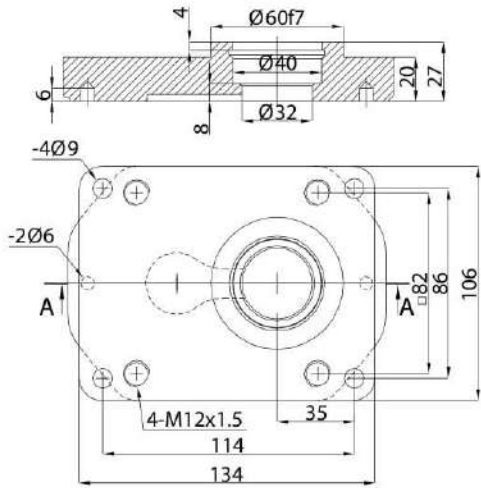


NOTE : The results have been obtained using ISO VG 46 oil at 50°

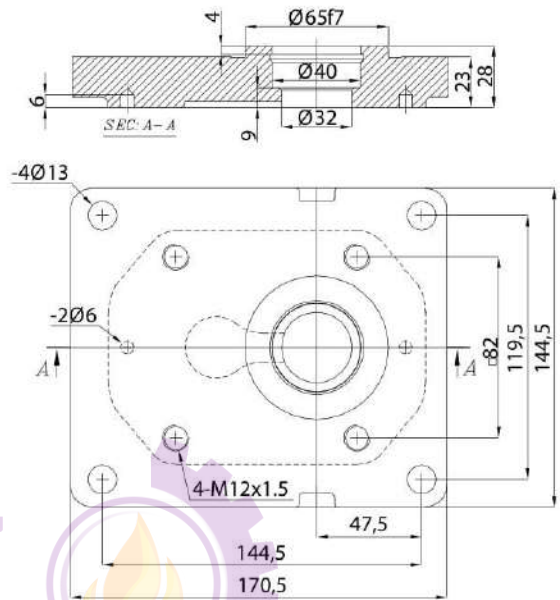


## Flange type model LA

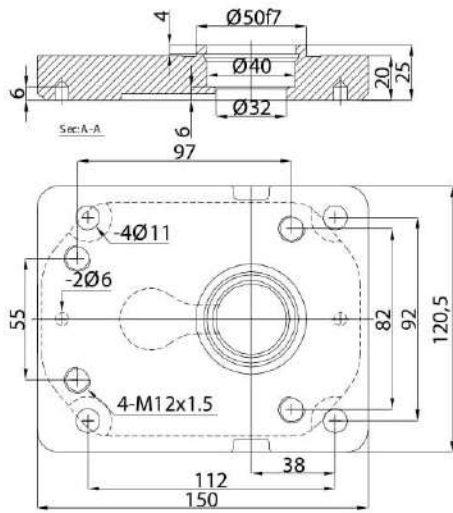
FLANGE TYPE. 01



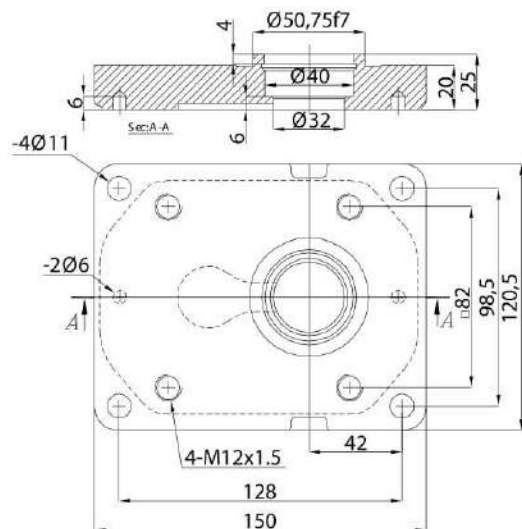
FLANGE TYPE. 06



FLANGE TYPE. 05



FLANGE TYPE. 10

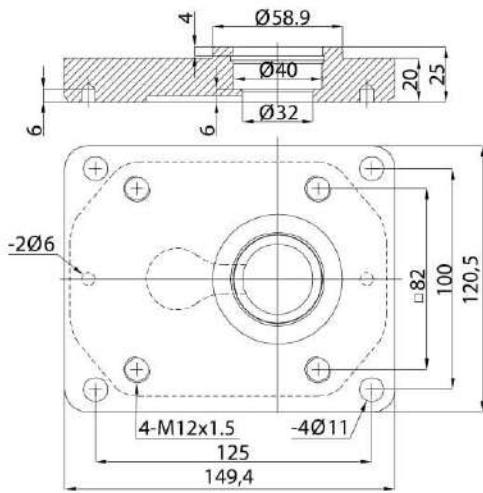


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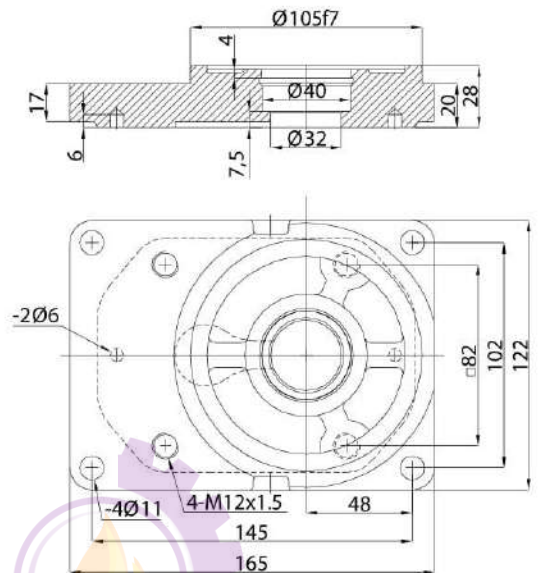
ATOORSANAT

Flange type model LA

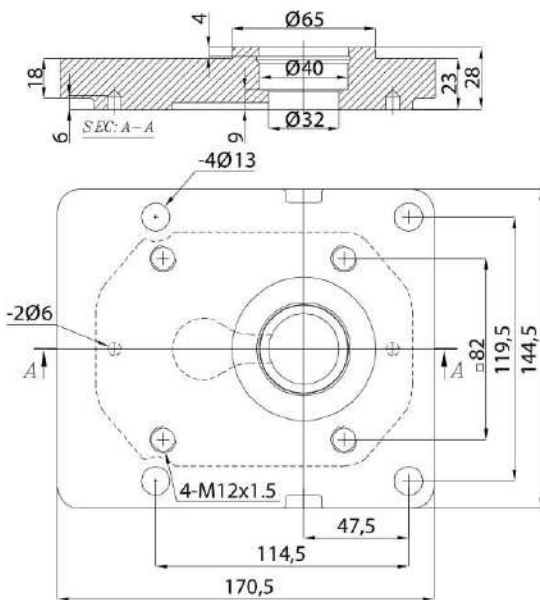
FLANGE TYPE. 11



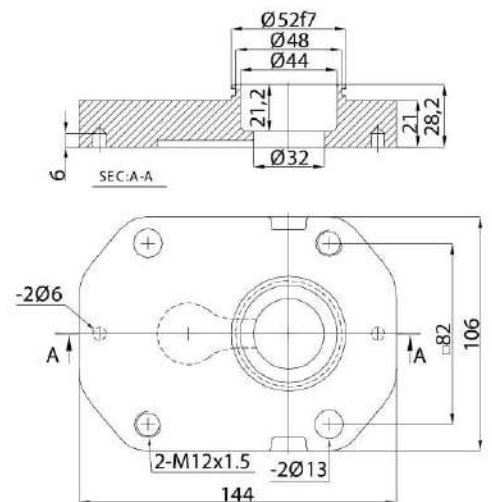
FLANGE TYPE. 23



FLANGE TYPE. 12



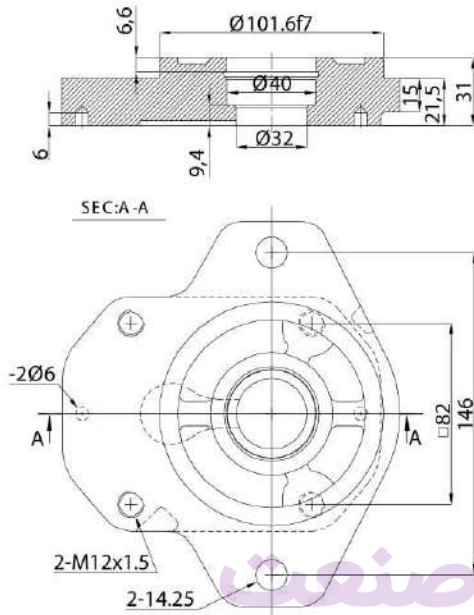
FLANGE TYPE. 19



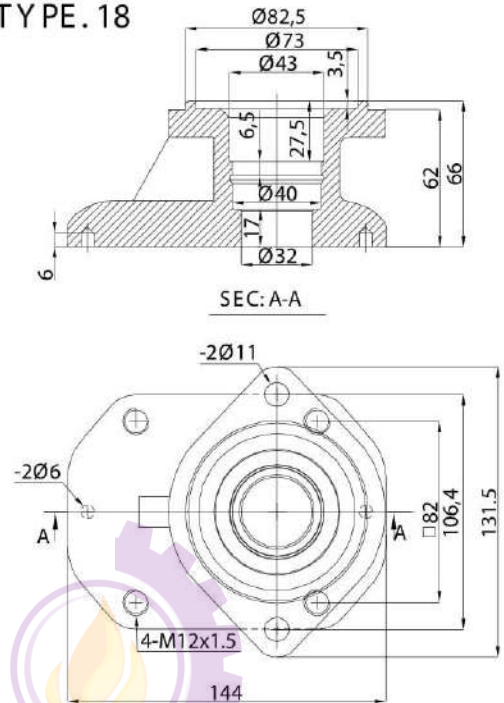


## Flange type model LA

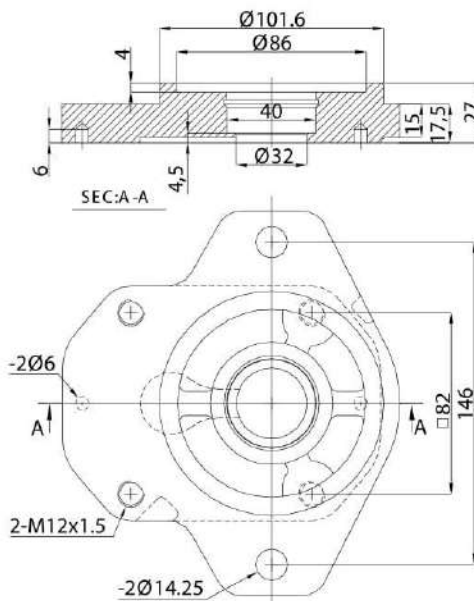
FLANGE TYPE. 09



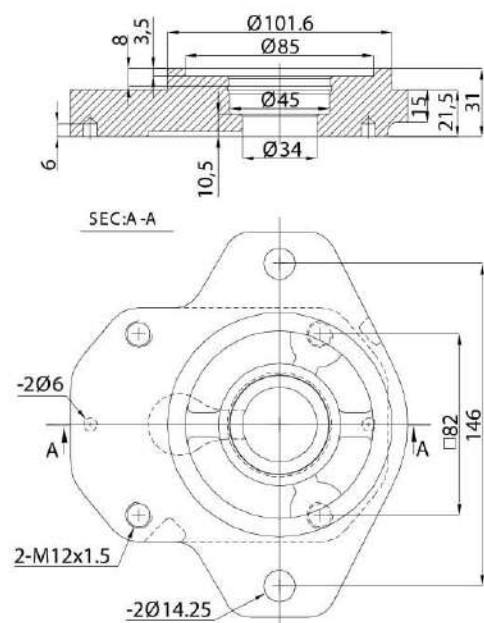
FLANGE TYPE. 18



FLANGE TYPE. 27



FLANGE TYPE. 36





Shaft type model LA

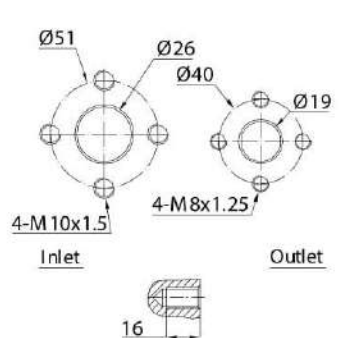
|   |                  |  |  |
|---|------------------|--|--|
| <p>SHAFT E01</p> <p>Taper: 1/8(3.56°)</p> | <p>SHAFT C01</p> | <p>SHAFT G01</p> <p>D.P:16/32<br/>Teeth number : 13<br/>Pressure angle : 30°</p>         | <p>SHAFT G04</p> <p>Diametral pitch 16/32<br/>Pressure angle 30°<br/>Teeth number 13</p> |
| <p>SHAFT E02</p>                          | <p>SHAFT C02</p> | <p>SHAFT G02</p> <p>Teeth number:6<br/>Base circle diameter (df)=19.5</p>                | <p>SHAFT G05</p> <p>Diametral pitch 12/24<br/>Pressure angle 30°<br/>Teeth number 14</p> |
| <p>SHAFT E03</p>                          | <p>SHAFT C03</p> | <p>SHAFT G03</p> <p>Diametral pitch 16/32<br/>Pressure angle 30°<br/>Teeth number 13</p> | <p>SHAFT G06</p> <p>Module:1.45<br/>Teeth number 13</p>                                  |

Shaft type model LA

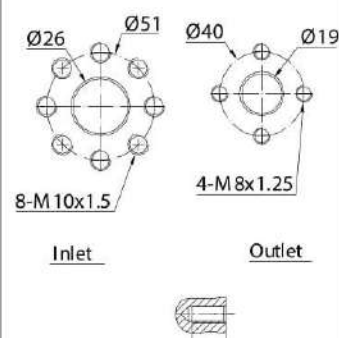
|   |   |   |   |
|---|---|---|---|
| <p><b>SHAFT J01</b></p> <p>Taper: 1/5(5.65°)</p>        | <p><b>SHAFT W01</b></p> <p>Max.driving torque 120Nm</p>                             | <p><b>SHAFT G07</b></p> <p>Diametral pitch 132/6<br/>Pressure angle 30°<br/>Teeth number 16</p> | <p><b>SHAFT G10</b></p> <p>Diametral pitch 132/6<br/>Pressure angle 30°<br/>Teeth number 13</p> |
| <p><b>SHAFT A01</b></p> <p>Taper 3°</p>                 | <p><b>SHAFT K01</b></p> <p>D.P:16/32<br/>Teeth number:13<br/>Pressure angel 30°</p> | <p><b>SHAFT G08</b></p> <p>Diametral pitch 16/32<br/>Pressure angle 30°<br/>Teeth number 13</p> | <p><b>SHAFT G11</b></p> <p>Diametral pitch 16/32<br/>Pressure angle 30°<br/>Teeth number 14</p> |
| <p><b>SHAFT B01</b></p> <p>Max.driving torque 120Nm</p> | <p><b>SHAFT D01</b></p> <p>Grove diameter Ø24</p>                                   | <p><b>SHAFT G09</b></p> <p>Diametral pitch 16/32<br/>Pressure angle 30°<br/>Teeth number 13</p> | <p><b>SHAFT I01</b></p> <p>Grove diameter Ø23.6<br/>Module:1.667<br/>Teeth number:13</p>        |

### Outlet & inlet type model LA

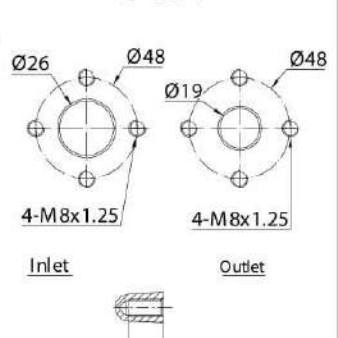
**Model: B 801**



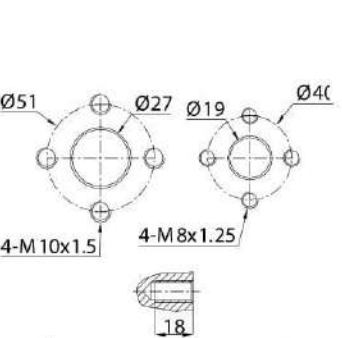
**B 809**



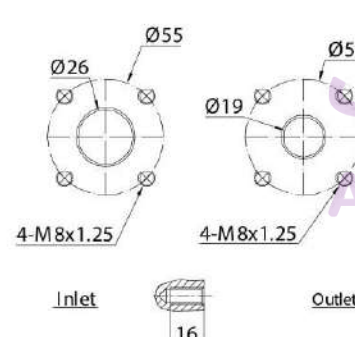
**B 804**



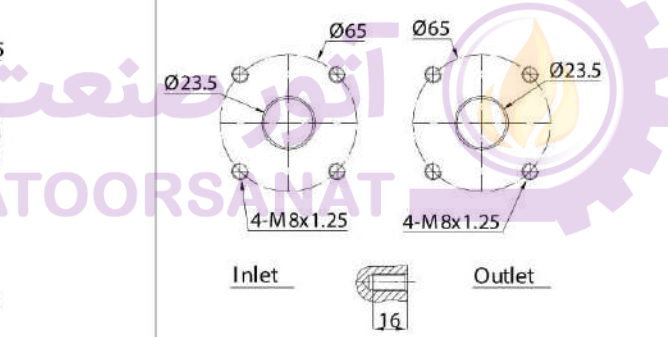
**B 805**



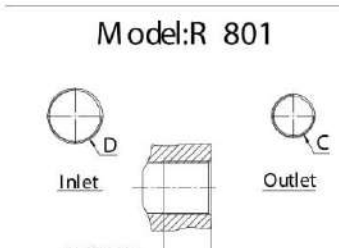
**Model: F 801**



**F 808**

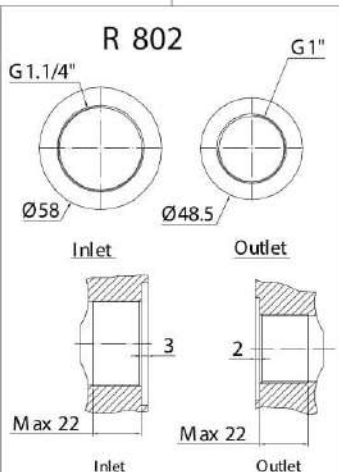


**Model: R 801**

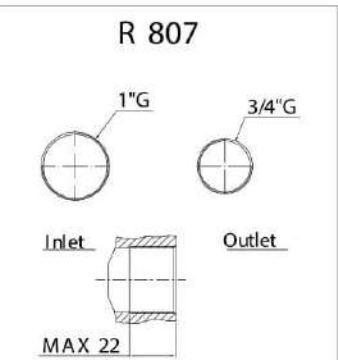


| Parameter | C (BSP) | D (BSP) |
|-----------|---------|---------|
| L/min     |         |         |
| 36        | 1/2"    | 3/4"    |
| 45        | 1/2"    | 3/4"    |
| 54        | 1/2"    | 3/4"    |
| 66        | 3/4"    | 1"      |
| 84        | 3/4"    | 1"      |

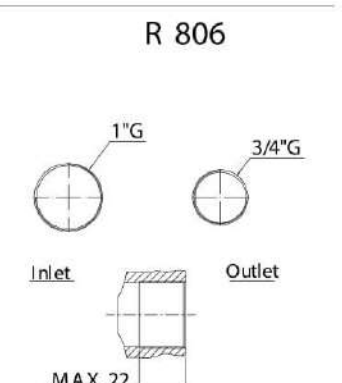
**R 802**



**R 807**



**R 806**

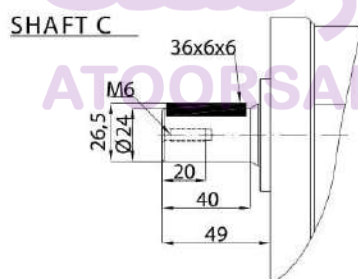
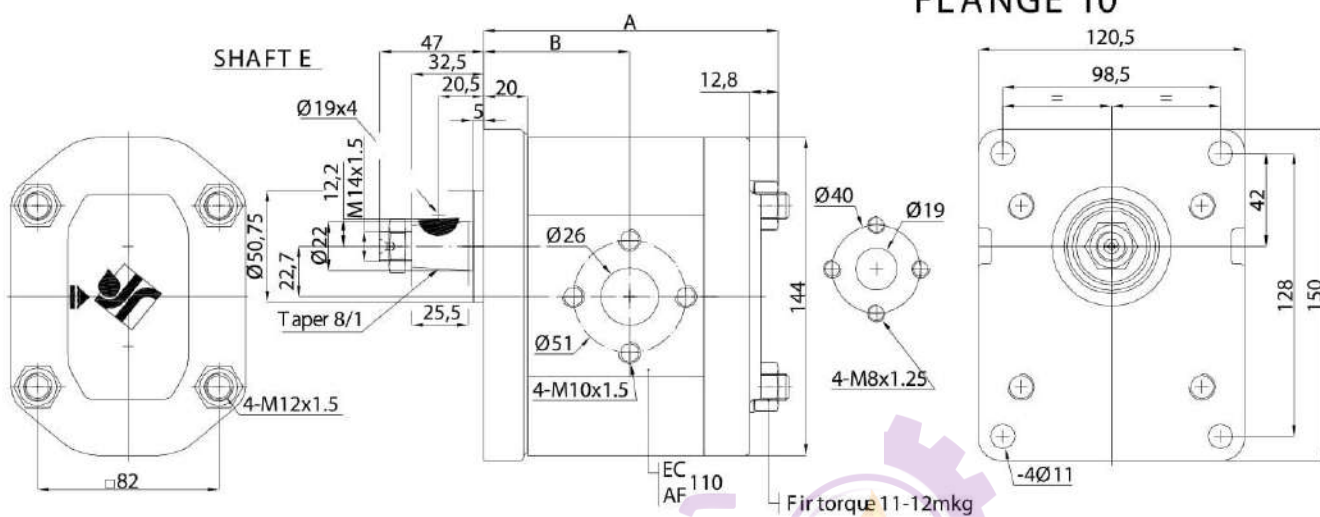




Pump with flange type 10  
Model LA

801-1LA....(C/CC)E 10B

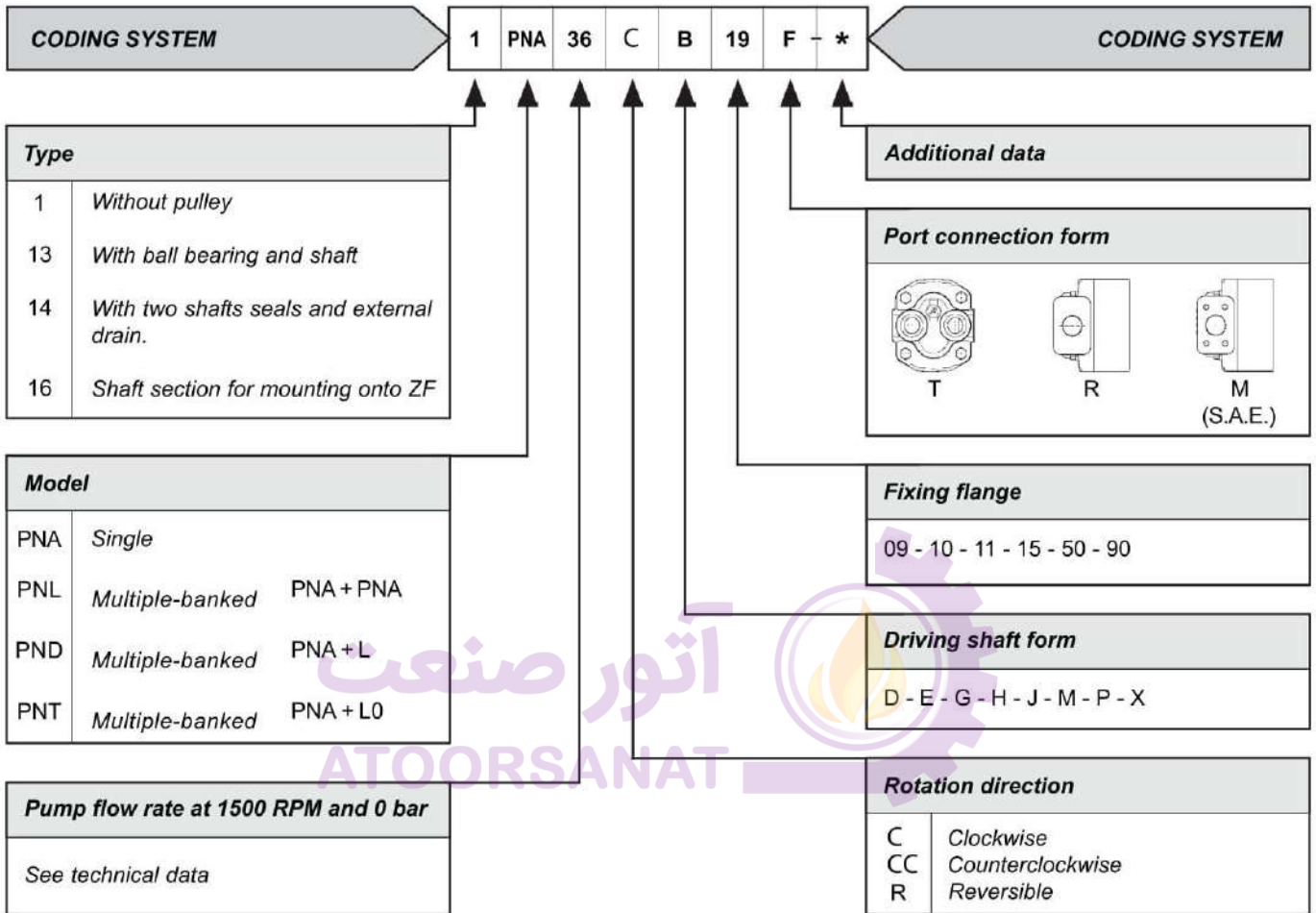
SHAFT C&E(01)  
OUTLET & INLET B 801  
FLANGE 10



| Model            | A     | B  | Outlet |    | Inlet |    | Weight |
|------------------|-------|----|--------|----|-------|----|--------|
|                  |       |    | C      | D  | E     | F  |        |
| 801-1LA 36C ▲10B | 133.3 | 66 |        |    |       |    |        |
| 801-1LA 45C ▲10B | 138.3 | 71 | 19     | 40 | 26    | 51 |        |
| 801-1LA 54C ▲10B | 143.3 |    |        |    |       |    |        |
| 801-1LA 66C ▲10B | 149.8 |    |        |    |       |    |        |
| 801-1LA 84C ▲10B | 159.3 |    |        |    |       |    |        |

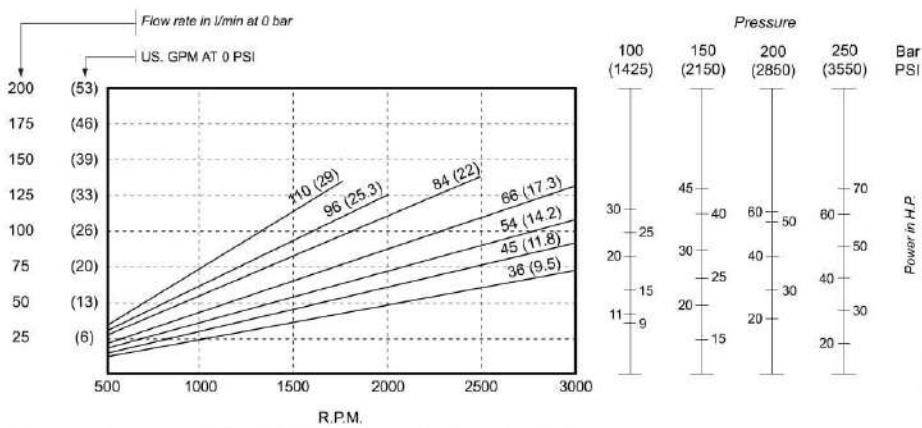
In the reversible pumps , threaded ports available R only .both ports same dimension that corresponds to the suction dimension  
The drawing above shows a pump turning clockwise .For anti -clockwise rotation sense ;replace C by CC in which case suction and pressure ports shall be inverted





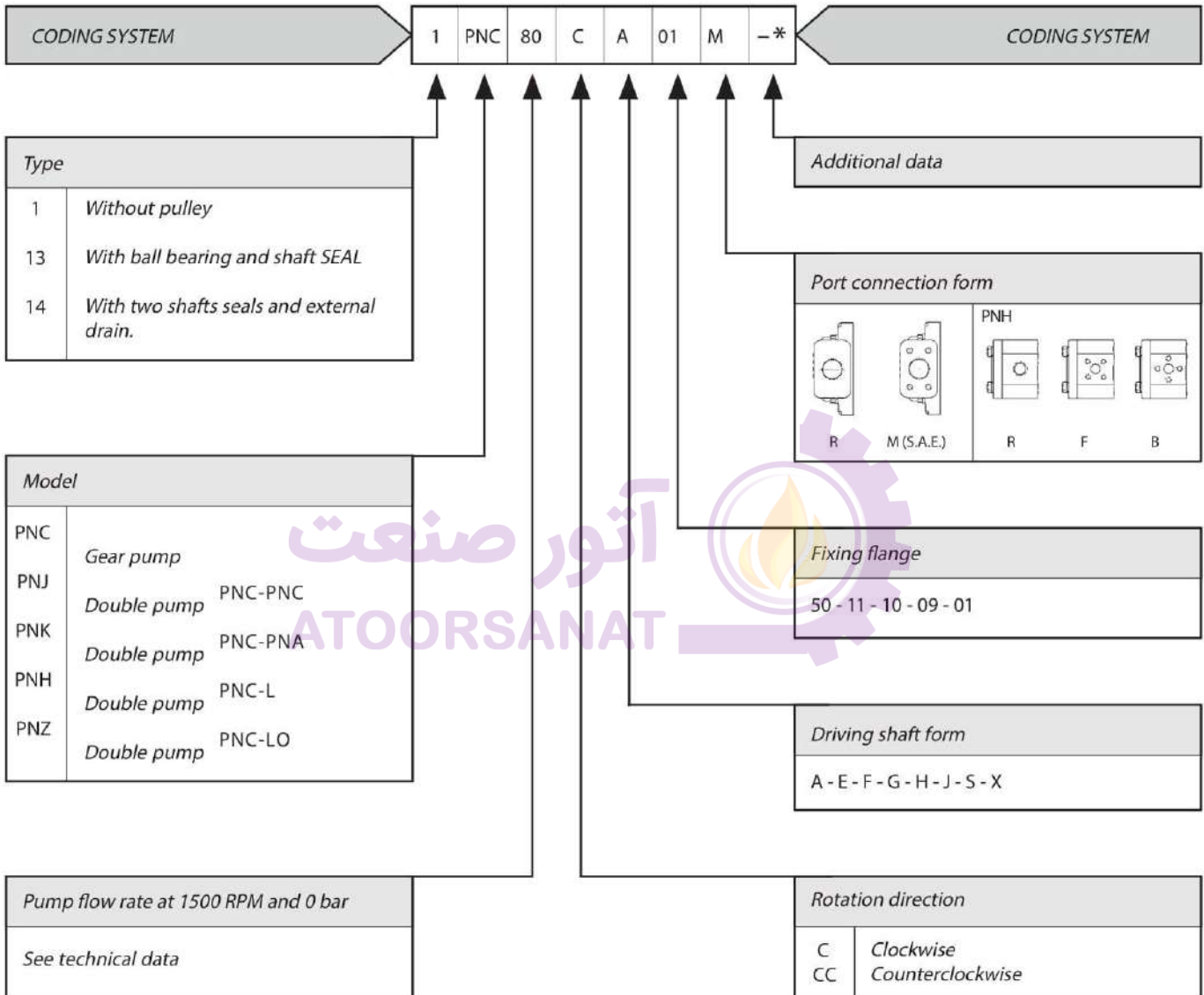


| Hydraulic technical data          |   |               |              |               |              |               |               |                |
|-----------------------------------|---|---------------|--------------|---------------|--------------|---------------|---------------|----------------|
| Pump flow rate                    | L/min. 1500 R.P.M<br>(US.GPM 1500 RPM)                | 36<br>(9.5)   | 45<br>(11.8) | 54<br>(14.2)  | 66<br>(17.3) | 84<br>(22)    | 96<br>(25.3)  | 110<br>(29)    |
| Displacement                      | cm <sup>3</sup> /v - cc/rev<br>(in <sup>3</sup> /rev) | 24<br>(1.46)  | 30<br>(1.82) | 36<br>(2.19)  | 44<br>(2.68) | 56<br>(3.41)  | 64<br>(3.90)  | 73.3<br>(4.46) |
| Cont. max. pressure               | bar<br>(PSI)  | 270<br>(3835) |              | 260<br>(3690) |              | 210<br>(2980) | 180<br>(2555) | 160<br>(2270)  |
| Intermittent max. pressure        | bar<br>(PSI)  | 300<br>(4260) |              | 285<br>(4050) |              | 250<br>(3550) | 225<br>(3200) | 200<br>(2850)  |
| Max. R.P.M.                       |   | 3000          |              |               | 2500         | 2000          | 1750          |                |
| Min. R.P.M. at<br>given pressures | 100 bar<br>(1425 PSI)                                 | 400           |              |               | 350          |               |               |                |
|                                   | 175 bar<br>(2500 PSI)                                 | 450           |              |               | 350          |               |               |                |
|                                   | 250 bar<br>(3550 PSI)                                 | 550           |              |               | -            | -             | -             |                |



NOTE: These results have been obtained with VG 46 viscosity oil and at 50 deg. C (122°F).







| Hydraulic technical data            |                    |             |             |             |            |              |              |            |
|-------------------------------------|--------------------|-------------|-------------|-------------|------------|--------------|--------------|------------|
| Pump flow rate (US. GPM 1500 RPM)   |                    | 80 (59)     | 100 (53)    | 125 (46)    | 150 (39)   | 175 (33)     | 200 (26)     | 225 (21)   |
| Displacement (in <sup>3</sup> /rev) |                    | 53,3 (9,15) | 66,6 (8,13) | 83,3 (7,11) | 100 (6,10) | 116,6 (5,08) | 133,3 (4,06) | 150 (3,27) |
| Cont. max. pressure (PSI)           |                    | 260 (2500)  |             | 250 (2850)  |            | 225 (3200)   | 200 (3550)   | 175 (3700) |
| Intermittent max. pressure (PSI)    |                    | 290 (4100)  |             | 275 (2850)  |            | 250 (3200)   | 225 (3550)   | 200 (3900) |
| Max. R.P.M.                         |                    | 3000        |             |             | 2500       | 2000         | 1750         |            |
| Min. R.P.M. at given pressures      | 100 bar (1425 PSI) | 400         |             |             | 350        |              |              |            |
|                                     | 175 bar (2500 PSI) | 450         |             |             | 400        |              |              |            |
|                                     | 250 bar (3550 PSI) | -           |             |             | -          | -            | -            | 550        |

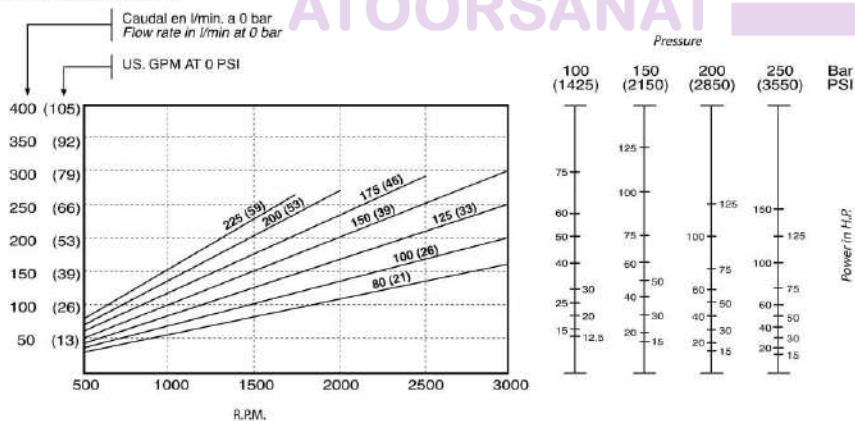


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Flow rate and power diagram



NOTE: These results have been obtained with VG-46 viscosity oil and at 50 deg. C (122F).







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## Gear Pumps For MF Tractors

| Pump name    | Pump code               | Application                                  |
|--------------|-------------------------|--|
| FERGUSON 285 | 302-1L9CCN07R /VD       | MF 265 and MF 285 trac tor ( farm trac tor ) |
| FERGUSON 240 | 319-5L7.5CD03R T/VD     | MF 240,250,255 trac tor ( farm trac tor )    |
| FERGUSON 399 | 303-1LM16-12CC E36BR /V | MF 399 trac tor ( farm trac tor )            |
| FERGUSON 440 | 312-1LM12-18CCJ14F      | MF 440 trac tor ( farm trac tor )            |
| FERGUSON 299 | 402-1L9CC E07R /D       | MF 299 trac tor ( farm trac tor )            |
| FERGUSON 800 | 428-1LM16-12CC E88BR /V | MF 800 trac tor ( farm trac tor )            |



| PHOTO   | APPLICATION   | TECHNICAL CODE |
|---|---|----------------|
|    | FIAT TRACTOR<br>480-450-540-54/C<br><br>UNIVERSAL<br>TRACTOR<br>445-530-550 | 1L16CE01B      |
|    | GARDEN TRACTOR  | 1L22CCI05BT    |
|   | CLAYSON<br>HARVESTING<br>COMBINE 366286                                     | 1L27CCJ23F     |
|  | JOHN DEER 955<br>HARVESTING<br>COMBINE                                      | 1L27CCJ27T/RC  |
|  | RENAULT BUS<br>HYDROFAN PUMP  | 5L22RV30F/VC   |
|  | RENAULT BUS<br>ENGINE PUMP  | 5L32CV21F      |



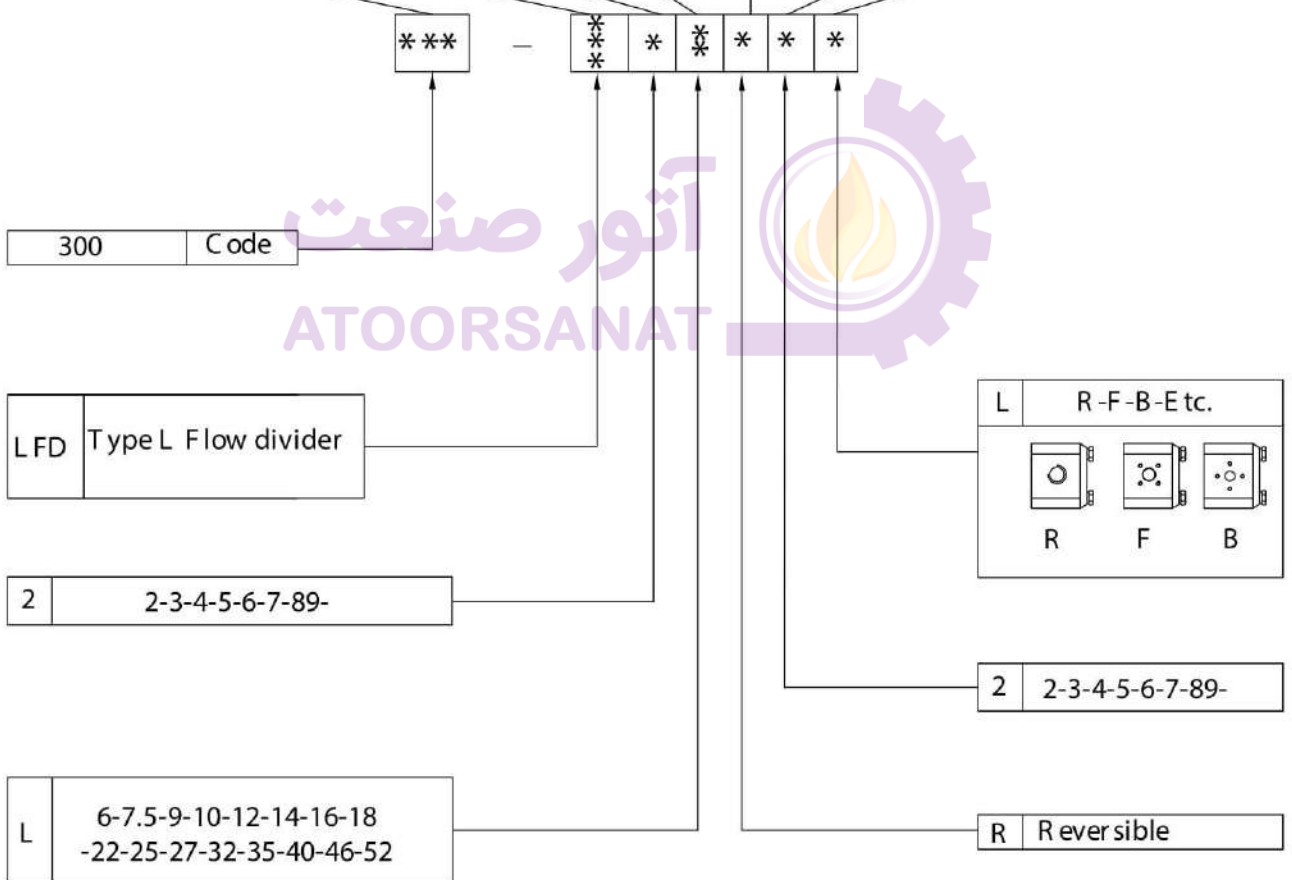
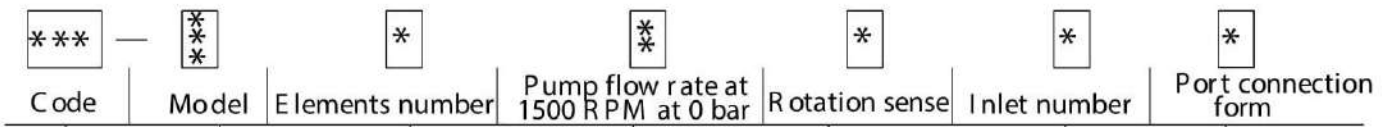
## HYDRAULIC GEAR PUMPS For Special Using

| PHOTO   | APPLICATION                          | TECHNICAL CODE   |
|---|--------------------------------------|------------------|
|    | LIEBHERR-912<br>EXCAVATOR (NEW)      | 1LM27-22-9CCJ22F |
|    | LIEBHERR-912<br>EXCAVATOR (OLD)      | 1LM27-16CCJ22F   |
|   | ROLLER CA 25                         | 1L16CCJ22F       |
|  | CLASS 145<br>HARVESTING<br>COMBINE   | 1LM9-22CCJ45R    |
|  | JAPANESE TADENO<br>CRANE (LIFT PUMP) | 1L46CCG09T       |
|  | LOADER BACKHOE                       | 1LA84CCG63FR     |



### Coding system Type L F low divider

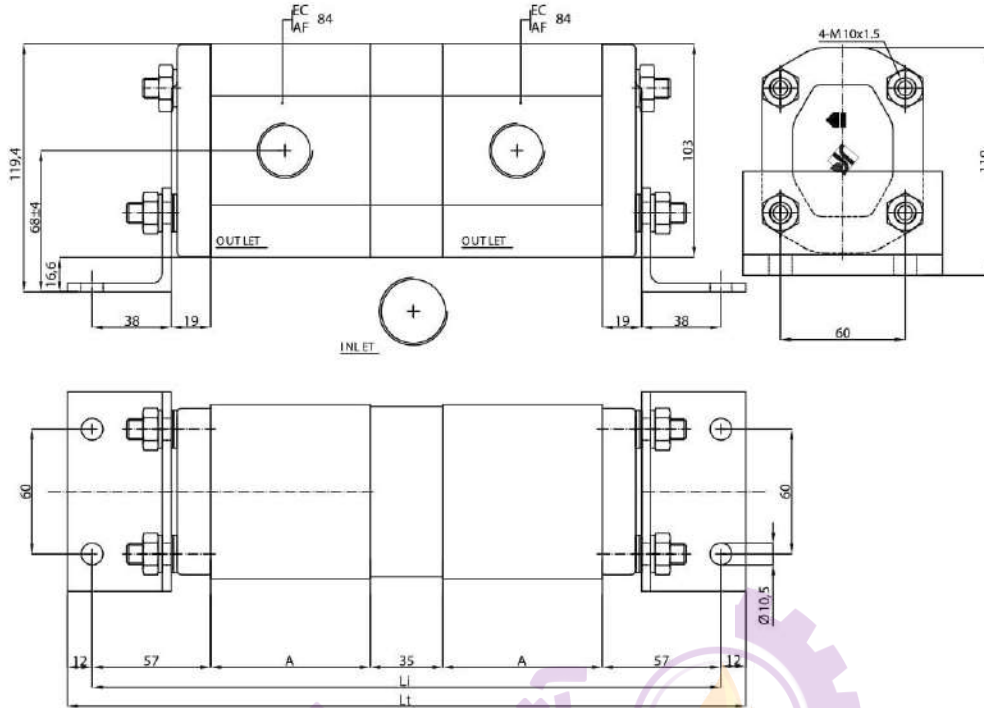
|     |   |     |   |    |   |   |   |
|-----|---|-----|---|----|---|---|---|
| 300 | - | LFD | 2 | 40 | R | 2 | R |
| *** |   | *   | * | *  | * | * | * |





# 300-LFD2-....R-1R

OUTLET & INLET R



Li=Distance between fixing hole centres

| INLET | OUTLET | Flow RATE (L/Min) | DISPLACEMENT (CC/rev) | A    | Number of elements |       |       |       |       |       |        |        |  |
|-------|--------|-------------------|-----------------------|------|--------------------|-------|-------|-------|-------|-------|--------|--------|--|
|       |        |                   |                       |      | 2                  | 3     | 4     | 5     | 6     | 7     | 8      | 9      |  |
| 3/8"  | 3/8"   | 6                 | 4                     | 47   | 243                | 325   | 407   | 489   | 571   | 653   | 735    | 817    |  |
| 1/2"  | 3/8"   | 9                 | 6                     | 50.4 | 249.8              | 335.2 | 420.6 | 506   | 591.4 | 676.8 | 762.2  | 847.6  |  |
| 1/2"  | 3/8"   | 12                | 8                     | 53.6 | 256.2              | 344.8 | 433.4 | 522   | 610.6 | 699.2 | 787.8  | 876.4  |  |
| 1/2"  | 3/8"   | 16                | 10.6                  | 58.1 | 265.2              | 358.3 | 451.4 | 544.5 | 637.6 | 730.7 | 823.8  | 916.9  |  |
| 1/2"  | 3/8"   | 22                | 14.6                  | 64.9 | 278.8              | 378.7 | 478.6 | 578.5 | 678.4 | 778.3 | 878.2  | 978.1  |  |
| 3/4"  | 1/2"   | 27                | 18                    | 70.6 | 290.2              | 395.8 | 501.4 | 607   | 712.6 | 818.2 | 923.8  | 1029.4 |  |
| 3/4"  | 1/2"   | 32                | 21.3                  | 76.7 | 302.4              | 414.1 | 525.8 | 637.5 | 749.2 | 860.9 | 972.6  | 1084.3 |  |
| 3/4"  | 1/2"   | 35                | 23.3                  | 79.6 | 308.2              | 422.8 | 537.4 | 652   | 766.6 | 881.2 | 995.8  | 1110.4 |  |
| 3/4"  | 1/2"   | 40                | 26.6                  | 85.8 | 320.6              | 441.4 | 562.2 | 683   | 803.8 | 924.6 | 1045.4 | 1166.2 |  |
| 3/4"  | 1/2"   | 46                | 30.6                  | 92.1 | 333.2              | 460.3 | 587.4 | 714.5 | 841.6 | 968.7 | 1095.8 | 1222.9 |  |
| 3/4"  | 1/2"   | 52                | 34.6                  | 99   | 347                | 481   | 615   | 749   | 883   | 1017  | 1151   | 1285   |  |

$$Li = [(n-1) \times 35] + 114 + [(n) \times A]$$

$$Lt = Li \times 24 +$$

$$114 = 57 + 57$$

n = Number of elements of flow divider

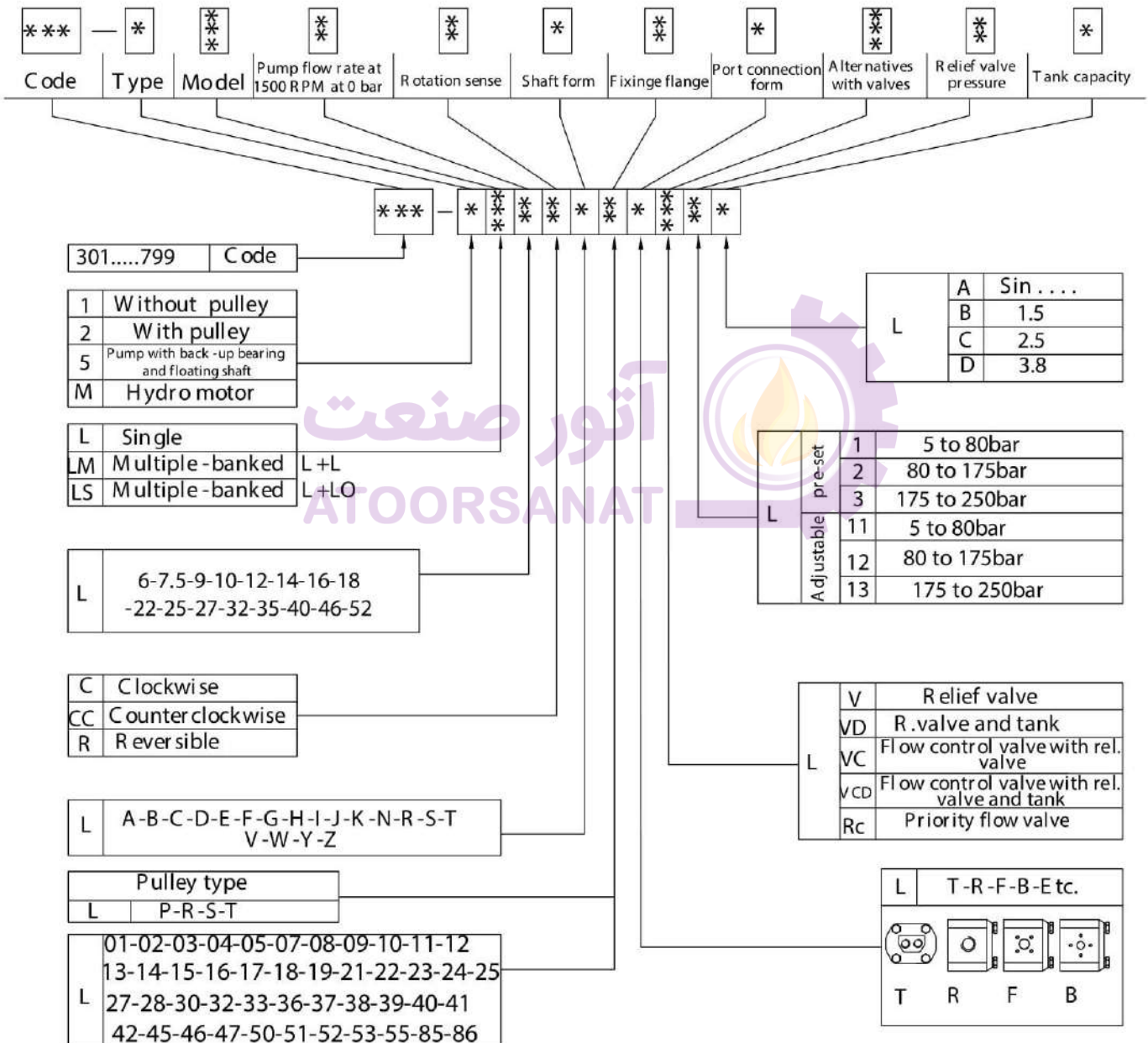
A = heights of elements of flow divider

$$24 = 12 + 12$$



## Coding system model L

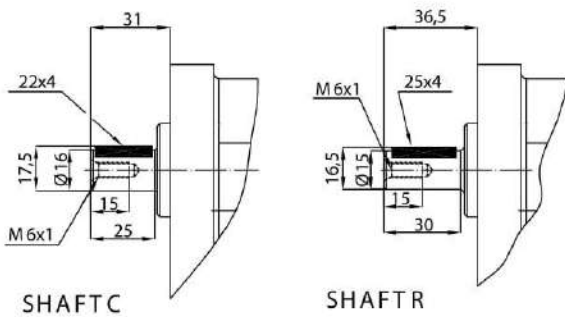
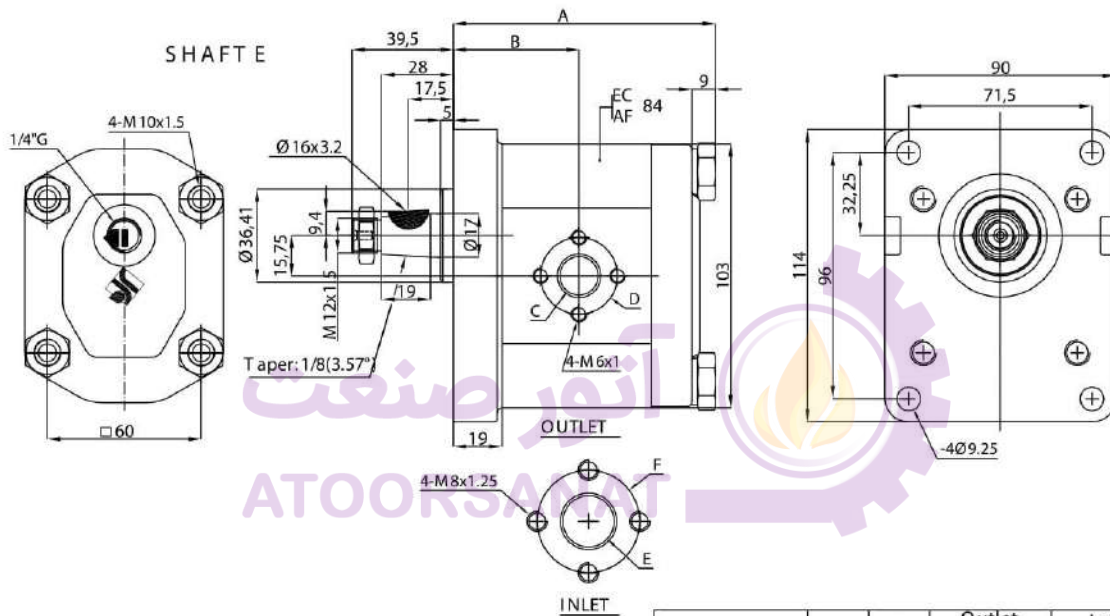
|            |   |   |         |         |         |   |         |         |         |   |   |
|------------|---|---|---------|---------|---------|---|---------|---------|---------|---|---|
| 301....799 | - | 1 | L       | 12      | C       | E | 10      | F       | V       | 2 | B |
| ***        |   | * | **<br>* | **<br>* | **<br>* | * | **<br>* | **<br>* | **<br>* | * | * |



### Hydro motor with flange type 10 Model L

301-1ML ... (R) E 10B

SHAFT E & C & R (01)  
OUTLET & INLET B  
FLANGE E 10



| Model            | A     | B    | Outlet |    | Inlet |    | Weight |
|------------------|-------|------|--------|----|-------|----|--------|
|                  |       |      | C      | D  | E     | F  |        |
| 301-1ML 6R▲10B   | 91    | 40   | 13.5   | 30 | 13.5  | 30 |        |
| 301-1ML 7.5R▲10B | 92.7  | 40   | 13.5   | 30 | 13.5  | 30 |        |
| 301-1ML 9R▲10B   | 94.4  | 42.5 | 13.5   | 30 | 13.5  | 30 |        |
| 301-1ML 12R▲10B  | 97.6  | 44.6 | 15     | 30 | 20    | 40 |        |
| 301-1ML 14R▲10B  | 99.8  | 44.6 | 15     | 30 | 20    | 40 |        |
| 301-1ML 16R▲10B  | 102.1 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1ML 18R▲10B  | 104.3 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1ML 22R▲10B  | 108.9 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1ML 25R▲10B  | 112.3 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1ML 27R▲10B  | 114.6 | 49   | 15     | 30 | 20    | 40 |        |
| 301-1ML 32R▲10B  | 120.7 | 54.7 | 15     | 30 | 20    | 40 |        |
| 301-1ML 35R▲10B  | 123.6 | 56.5 | 15     | 30 | 20    | 40 |        |
| 301-1ML 40R▲10B  | 129.8 | 59.3 | 15     | 30 | 20    | 40 |        |
| 301-1ML 46R▲10B  | 136.1 | 62   | 15     | 30 | 20    | 40 |        |
| 301-1ML 52R▲10B  | 143   | 66.2 | 15     | 30 | 20    | 40 |        |

Hydro motor with flange type 22  
Model L

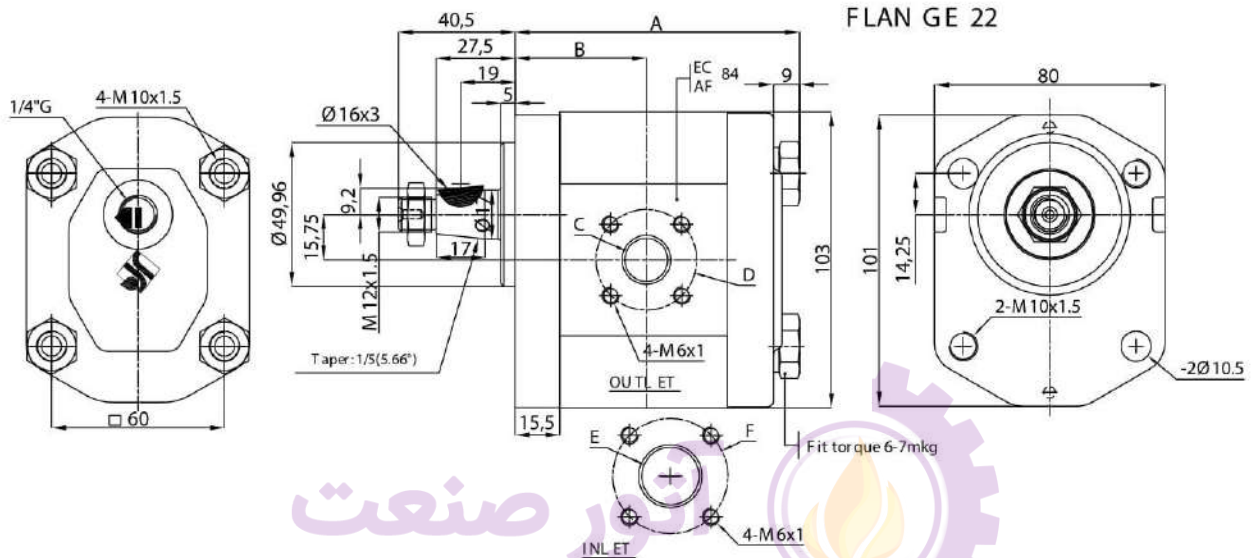
**301-1ML....(R)J22F**

SHAFT J

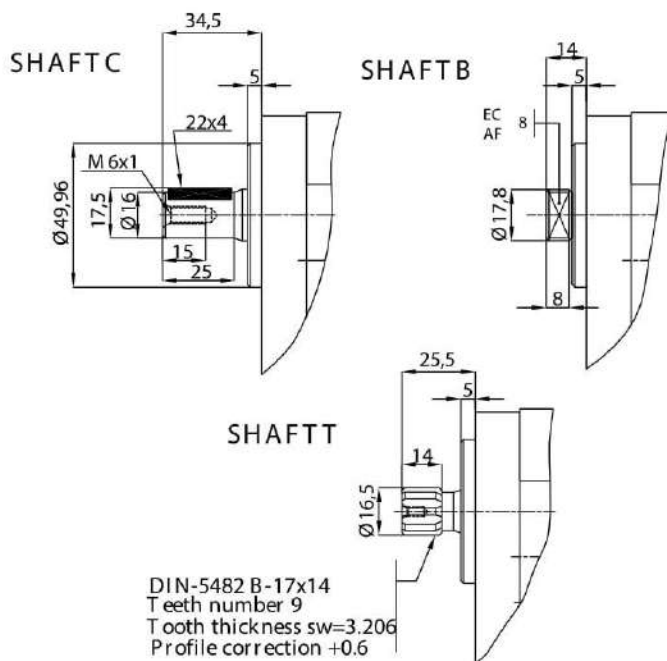
SHAFT J & C & B & T (01)

OUTLET & INLET F

FLANGE 22



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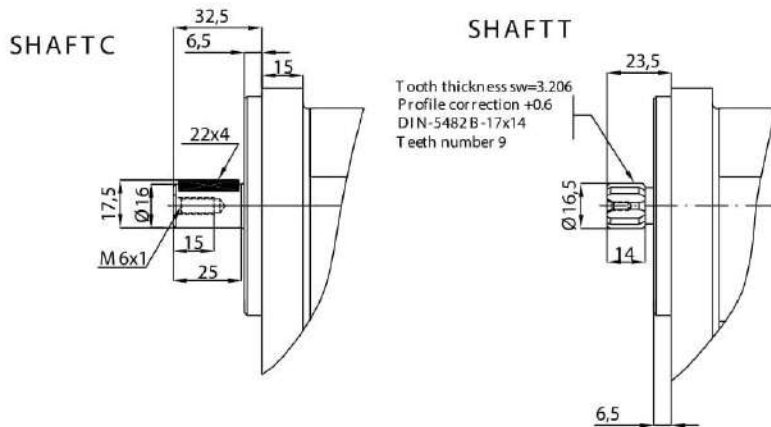
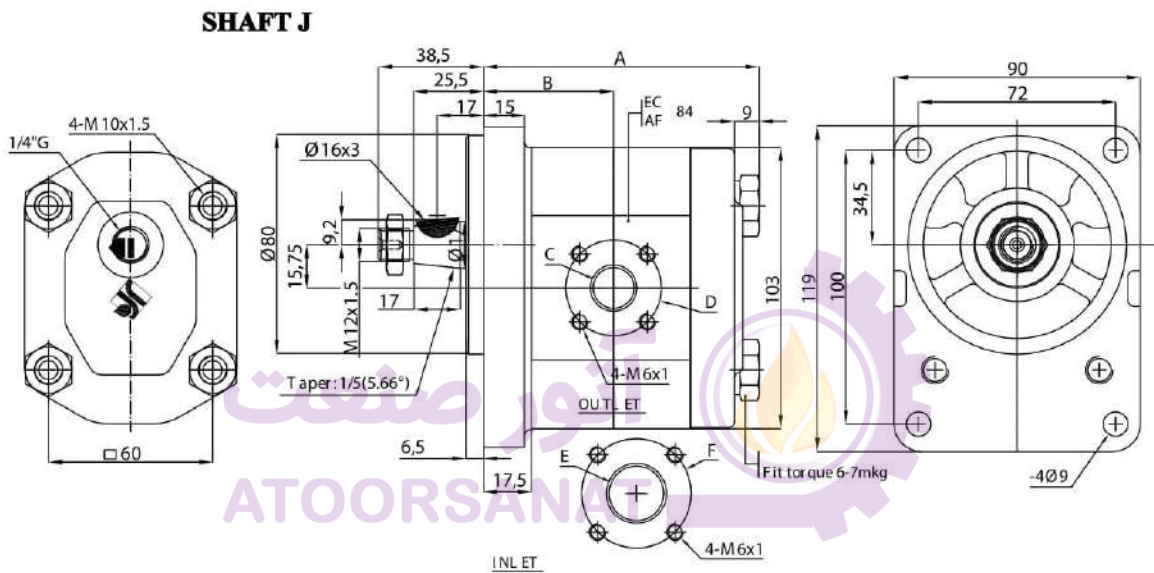
| Model            | A     | B    | OUTLET |    | INLET |    | Weight |
|------------------|-------|------|--------|----|-------|----|--------|
|                  |       |      | C      | D  | E     | F  |        |
| 301-1ML 6R▲22F   | 87.5  | 36.5 | 15     | 35 | 15    | 40 |        |
| 301-1ML 7.5R▲22F | 89.2  | 36.5 | 15     | 35 | 15    | 40 |        |
| 301-1ML 9R▲22F   | 90.9  | 39   | 15     | 35 | 15    | 40 |        |
| 301-1ML 12R▲22F  | 94.1  | 41.1 | 15     | 35 | 20    | 40 |        |
| 301-1ML 14R▲22F  | 96.3  | 41.1 | 15     | 35 | 20    | 40 |        |
| 301-1ML 16R▲22F  | 98.6  | 45.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 18R▲22F  | 100.8 | 45.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 22R▲22F  | 105.4 | 45.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 25R▲22F  | 108.8 | 45.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 27R▲22F  | 111.1 | 45.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 32R▲22F  | 117.2 | 51.2 | 15     | 35 | 20    | 40 |        |
| 301-1ML 35R▲22F  | 120.1 | 53   | 15     | 35 | 20    | 40 |        |
| 301-1ML 40R▲22F  | 126.3 | 55.8 | 15     | 35 | 20    | 40 |        |
| 301-1ML 46R▲22F  | 132.6 | 58.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 52R▲22F  | 139.5 | 62.7 | 15     | 35 | 20    | 40 |        |



### Hydro motor with flange type 23 Model L

301-1ML ....(R)J23F

SHAFT J & C & B & T (01)  
OUTLET & INLET F  
FLANGE 23



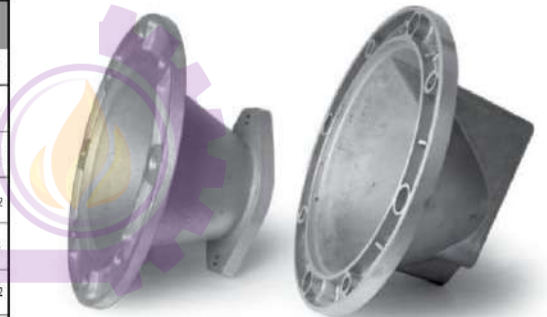
| Model             | A     | B    | OUTLET |    | INLET |    | Weight |
|-------------------|-------|------|--------|----|-------|----|--------|
|                   |       |      | C      | D  | E     | F  |        |
| 301-1ML 6R ▲23F   | 89.5  | 38.5 | 15     | 35 | 15    | 40 |        |
| 301-1ML 7.5R ▲23F | 91.2  | 38.5 | 15     | 35 | 15    | 40 |        |
| 301-1ML 9R ▲23F   | 92.9  | 41   | 15     | 35 | 15    | 40 |        |
| 301-1ML 12R ▲23F  | 96.1  | 43.1 | 15     | 35 | 20    | 40 |        |
| 301-1ML 14R ▲23F  | 98.3  | 43.1 | 15     | 35 | 20    | 40 |        |
| 301-1ML 16R ▲23F  | 100.6 | 47.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 18R ▲23F  | 102.8 | 47.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 22R ▲23F  | 107.4 | 47.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 25R ▲23F  | 110.8 | 47.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 27R ▲23F  | 113.1 | 47.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 32R ▲23F  | 119.2 | 53.2 | 15     | 35 | 20    | 40 |        |
| 301-1ML 35R ▲23F  | 122.1 | 55   | 15     | 35 | 20    | 40 |        |
| 301-1ML 40R ▲23F  | 128.3 | 57.8 | 15     | 35 | 20    | 40 |        |
| 301-1ML 46R ▲23F  | 134.6 | 60.5 | 15     | 35 | 20    | 40 |        |
| 301-1ML 52R ▲23F  | 141.5 | 64.7 | 15     | 35 | 20    | 40 |        |



| Hydraulic technical data |           |          |         |     |     |     |     |    |      |             |      |    |      |     |       |       |    |
|--------------------------|-----------|----------|---------|-----|-----|-----|-----|----|------|-------------|------|----|------|-----|-------|-------|----|
| Code                     | KW.       | HP       | E/Motor | H   | P   | N   | D1  | D2 | D    | Flange Type | B    | B1 | E    | E1  | L     | K     | M  |
| OK160                    | 0.25/0.37 | 0.33/0.5 | 71      | 80  | 160 | 110 | 130 | 10 | 25.5 | TYPE1       | 52.5 | 72 | 68.5 | 88  | 262   | 262.5 | M6 |
| 1K160                    | 0.25/0.37 | 0.33/0.5 | 71      | 80  | 160 | 110 | 130 | 10 | 36.5 | TYPE2       | 71.5 | 96 | 90   | 114 | 32.25 | 35.75 | M6 |
| OK200                    | 0.55/1.5  | 0.75/2   | 80/90   | 95  | 200 | 130 | 165 | 13 | 25.5 | TYPE1       | 52.5 | 72 | 68.5 | 88  | 262   | 262.5 | M6 |
| 1K200                    | 0.55/1.5  | 0.75/2   | 80/90   | 95  | 200 | 130 | 165 | 13 | 36.5 | TYPE2       | 71.5 | 96 | 90   | 114 | 32.25 | 35.75 | M6 |
| OK250                    | 2.2/4     | 3/5.5    | 110/112 | 115 | 250 | 180 | 215 | 13 | 25.5 | TYPE1       | 52.5 | 72 | 68.5 | 88  | 262   | 262.5 | M6 |
| 1K250                    | 2.2/4     | 3/5.5    | 110/112 | 115 | 250 | 180 | 215 | 13 | 36.5 | TYPE2       | 71.5 | 96 | 90   | 114 | 32.25 | 35.75 | M6 |



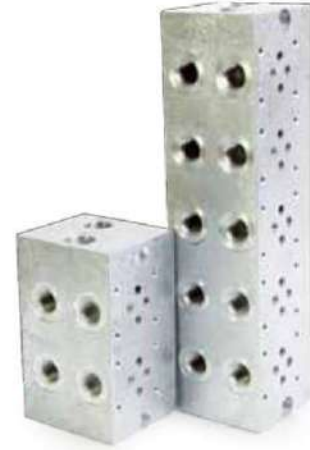
| Hydraulic technical data |        |        |         |     |     |     |     |    |       |             |      |     |       |       |       |       |     |
|--------------------------|--------|--------|---------|-----|-----|-----|-----|----|-------|-------------|------|-----|-------|-------|-------|-------|-----|
| Code                     | KW.    | HP     | E/Motor | H   | P   | N   | D1  | D2 | D     | Flange Type | B    | B1  | E     | E1    | L     | K     | M   |
| 1K300                    | 5.5/10 | 7.5/10 | 132     | 135 | 300 | 230 | 265 | 15 | 36.5  | TYPE2       | 71.5 | 96  | 90    | 114   | 32.25 | 35.75 | M6  |
| 2K300                    | 5.5/10 | 7.5/10 | 132     | 135 | 300 | 230 | 265 | 15 | 50.5  | TYPE3       | 98.5 | 128 | 120.5 | 149.4 | 42    | 49.25 | M8  |
| KV3003                   | 5.5/10 | 7.5/10 | 132     | 135 | 300 | 230 | 265 | 15 | 101.5 | TYPE5       | 146  | 0   | 116   | 174   | -     | -     | M12 |
| 2K350                    | 11/22  | 15/30  | 160/180 | 170 | 350 | 250 | 300 | 19 | 50.5  | TYPE3       | 98.5 | 128 | 120.5 | 149.4 | 42    | 49.25 | M8  |
| KV3504                   | 11/22  | 15/30  | 160/180 | 190 | 350 | 250 | 300 | 19 | 101.5 | TYPE5       | 146  | 0   | 116   | 174   | -     | -     | M12 |
| KV3505                   | 11/22  | 15/30  | 160/180 | 190 | 350 | 250 | 300 | 19 | 127   | TYPE5       | 181  | 0   | 147   | 210   | -     | -     | M16 |



| Hydraulic technical data |             |          |                     |    |    |    |    |    |    |   |                     |    |                  |    |    |    |    |        |     |
|--------------------------|-------------|----------|---------------------|----|----|----|----|----|----|---|---------------------|----|------------------|----|----|----|----|--------|-----|
| Code                     | Motor Power |          | Coupling Dimensions |    |    |    |    |    |    |   | Max. Operation Dia. |    | Treated Diameter |    |    |    |    |        |     |
|                          |             |          |                     |    |    |    |    |    |    |   |                     |    | Engine           |    |    | P  |    |        |     |
| Type                     | KW.         | HP       | L                   | A1 | B  | F  | E  | E1 | C  | G | D                   | H  | T                | D  |    | M  |    |        |     |
| DK 14                    | 0.25-0.38   | 0.35-0.5 | 50                  | 40 | 32 | 24 | 24 | 24 | 28 | 2 | 14                  | 5  | 16.5             | -  | -  | -  | 14 | PLD    | -   |
| DK 24                    | 1.1-1.5     | 1.5-2    | 58                  | 53 | 44 | 36 | 28 | 28 | 37 | 2 | 24                  | 6  | 27               | -  | 14 | 19 | 24 | PLD-PL | -   |
| DK 28                    | 2.2-4       | 3-5.5    | 82                  | 67 | 57 | 44 | 40 | 40 | 40 | 2 | 28                  | 8  | 32               | -  | 19 | 24 | 28 | PLD-PL | PLA |
| DK 42                    | 11-15       | 15-20    | 86                  | 88 | 72 | 60 | 42 | 42 | 47 | 2 | 42                  | 12 | 47               | 24 | 28 | 38 | 42 | PL     | PLA |



| Hydraulic technical data |                             |                               |
|--------------------------|-----------------------------|-------------------------------|
| Code                     | S1M-PS-1/4 - C              |                               |
| Max Flow (l/min / USgpm) | 40 (10)                     |                               |
| Max Pressure (bar / PSI) | 210 (3000)                  |                               |
| Approx. weight           | 0.8 (1.76)                  |                               |
| Fluid Viscosity          | 100- 500 mm <sup>2</sup> /s | 45 to 2000 ssu (5 to 420 cst) |
| Filtration               | ISO Code 16/13              | SAE Class 4 or better         |
| Fluid Temperature        | -20°C +80°C                 | - 4°C +176°C                  |
| Ambient Temperature      | -20°C +50°C                 | - 4°C +122°C                  |



| Hydraulic technical data |                             |                               |
|--------------------------|-----------------------------|-------------------------------|
| Code                     | S2M-PS-3/8 - C              |                               |
| Max Flow (l/min / USgpm) | 80 (20)                     |                               |
| Max Pressure (bar / PSI) | 210 (3000)                  |                               |
| Approx. weight           | 0.8 (1.76)                  |                               |
| Fluid Viscosity          | 100- 500 mm <sup>2</sup> /s | 45 to 2000 ssu (5 to 420 cst) |
| Filtration               | ISO Code 16/13              | SAE Class 4 or better         |
| Fluid Temperature        | -20°C +80°C                 | - 4°C +176°C                  |
| Ambient Temperature      | -20°C +50°C                 | - 4°C +122°C                  |



| Hydraulic technical data |                             |                               |
|--------------------------|-----------------------------|-------------------------------|
| Code                     | S1-M4-1/4 - B/V             | S2-M4-3/8 - B/V               |
| Max Flow (l/min / USgpm) | 40 (10)                     | 80 (20)                       |
| Max Pressure (bar / PSI) | 210 (3000)                  |                               |
| Approx. weight           | 0.8 (1.76)                  |                               |
| Fluid Viscosity          | 100- 500 mm <sup>2</sup> /s | 45 to 2000 ssu (5 to 420 cst) |
| Filtration               | ISO Code 16/13              | SAE Class 4 or better         |
| Fluid Temperature        | -20°C +80°C                 | - 4°C +176°C                  |
| Ambient Temperature      | -20°C +50°C                 | - 4°C +122°C                  |





| Specification                  |   | 02                           | 03              |
|--------------------------------|---|------------------------------|-----------------|
| Working pressure (MPa)         | Oil ports P,A,B   | 31.5                         | 31.5            |
|                                | Oil ports T   | 10                           | 10              |
| Max. Flow (L/min)              |   | 80                           | 120             |
| Working fluid                  |   | Mineral oil; phosphate-ester |                 |
| Fluid temp. (°C)               |   | -20~70                       |                 |
| Viscosity (mm <sup>2</sup> /s) |   | 2.8~100                      |                 |
| Working voltage (V)            | DC  | 12                           | 24              |
|                                | AC  | 110V/50Hz                    | 220V/50Hz       |
| Max. Switch frequency (T/h)    |   | 15000 (DC)                   | 7200 (AC)       |
| Insulation grade               |   | IP65                         |                 |
| Weight (kg)                    | Single solenoid   | 1.45(DC) 1.4(AC)             | 5.1(DC) 4.3(AC) |
|                                | Double solenoids  | 1.95(DC) 1.9(AC)             | 6.7(DC) 5.1(AC) |
| Cleanliness                    | The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be $\beta_{10} \geq 75$ . |                              |                 |



| Specification                  |   | 03  |         | 04  |         | 06  |         |
|--------------------------------|---|---|---------|---|---------|---|---------|
| Model                          |   | FWH-03  | HFWH-03 | FWH-04  | HFWH-04 | FWH-06  | HFWH-06 |
| Max. Working pressure (MPa)    | P, A, B Port  | 28  | 35      | 28  | 35      | 28  | 35      |
|                                | T port (internal leakage of control oil)  | 10  |         | 10  |         | 10  |         |
|                                | T port (external leakage of control oil)  | 10  |         | 10  |         | 10  |         |
| Minimum control pressure (MPa) |   | 1.0 Spring-Return three-way valve two-way valve |         | 1.2 Spring-Return three-way valve two-way valve |         | 1.3 Spring-Return three-way valve two-way valve |         |
| Maximum control pressure (MPa) |   | to 25   |         |   |         |   |         |
| Max. Flow (L/min)              |   | 160   |         | 300   |         | 650   |         |
| Working fluid                  |   | Mineral oil; phosphate-ester                    |         |   |         |   |         |
| Fluid temp. (°C)               |   | -20~70  |         |   |         |   |         |
| Viscosity (mm <sup>2</sup> /s) |   | 2.8~380   |         |   |         |   |         |
| Weight (kg)                    | Single-head solenoid  | 6.4   |         | 8.5   |         | 17.6  |         |
|                                | Double-head solenoids   | 6.8   |         | 8.9   |         | 18  |         |
|                                | FH Valve  | 4   |         | 7.3   |         | 16.5  |         |
|                                | Adjuster of reversing time  | 0.8   |         | 0.8   |         | 0.8   |         |
|                                | Pressure reducing valve   | 0.5   |         | 0.5   |         | 0.5   |         |
| Cleanliness                    | The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be $\beta_{10} \geq 75$ . |   |         |   |         |   |         |



| Specification                  |   | 02                           | 03        | 04      | 06       |
|--------------------------------|---|------------------------------|-----------|---------|----------|
| Working pressure (MPa)         | Port P, A, B  | 31.5                         |           |         |          |
|                                | Port T  | 10                           |           |         |          |
| Max. Flow (L/min)              |   | 60                           | 100       | 300     | 450      |
| Working fluid                  |   | Mineral oil; phosphate-ester |           |         |          |
| Fluid temp. (°C)               |   | -20~70                       |           |         |          |
| Viscosity (mm <sup>2</sup> /s) |   | 2.8~380                      |           |         |          |
| Weight (kg)                    |   | About 1.4                    | About 3.3 | About 8 | About 17 |
| Cleanliness                    | The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be $\beta_{10} \geq 75$ . |                              |           |         |          |





|                                |   |                             |
|--------------------------------|---|-----------------------------|
| Specification                  | 02  | 03                          |
| Max. working pressure (MPa)    | 31.5  |                             |
| Max. Flow (L/min)              | 35  | 70                          |
| Working fluid                  | Mineral oil; phosphate-ester  |                             |
| Fluid temp. (°C)               | -20~70  |                             |
| Viscosity (mm <sup>2</sup> /s) | 12~380  |                             |
| Working press (MPa)            | 7 14  | 21 31.5                     |
| Weight (kg)                    | 1.49 (Single) 2.19 (Double)   | 3.35 (Single) 4.66 (Double) |
| Cleanliness                    | The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be $\beta_{10} \geq 75$ . |                             |



| Model                  | BYLZ-02-**-*  | BYLZ-03-**-*           | BYLZ-06-250-*          |
|------------------------|---|------------------------|------------------------|
| Maximum pressure (MPa) | 31.5  |                        |                        |
| Maximum flow (l/min)   | 63  | 180                    | 250                    |
| Flow range (l/min)     | 1-63  | 1-180                  | 2.5-250                |
| Rated current (mA)     | 800   |                        |                        |
| Coil resistance (Ω)    | 19.5  | 43.5                   | 43.5                   |
| P Differential (MPa)   | 0.6   | 0.6                    | 0.7                    |
| Hysteresis (%)         | <5  | <7                     | <7                     |
| Repeatability (%)      | <1  |                        |                        |
| Pressure control       |   |                        |                        |
| Pressure Range (Mpa)   | 16:1.2-16<br>25:1.2-25<br>31.5:1.2-31.5   | 16:1.4-16<br>25:1.4-25 | 16:1.5-16<br>25:1.5-25 |
| Rated current (mA)     | 800   |                        |                        |
| Coil resistance (Ω)    | 10  | 10                     | 10                     |
| Hysteresis (%)         | <3  |                        |                        |
| Repeatability (%)      | <1  |                        |                        |
| Weight (Kg)            | 7   | 16                     | 30                     |
| Cleanliness            | Filter is recommended for the highest fluid pollution degree, the lowest specific filtration resistance according to ISO 4406 (C) 20/18/15. |                        |                        |

This proportional valve adopts two electrical loops to control pressure and flow of hydraulic system respectively. Using very small pressure drop to track load pressure and control the pump pressure, it is an energy-saving valve.



|                                |   |         |
|--------------------------------|---|---------|
| Specification                  | 03  | 06      |
| Max. working pressure (MPa)    | 31.5  |         |
| Max. Flow (L/min)              | 150   | 300     |
| Working fluid                  | Mineral oil; phosphate-ester  |         |
| Fluid temp. (°C)               | -20~70  |         |
| Viscosity (mm <sup>2</sup> /s) | 12~380  |         |
| Working press (MPa)            | 5 10  | 20 31.5 |
| Weight (Kg)                    | 3.4   | 5.3     |
| Cleanliness                    | The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be $\beta_{10} \geq 75$ . |         |





| Lift Valve Hydraulic technical data |    |                         |                      |                                  |                             |                         |
|-------------------------------------|----|-------------------------|----------------------|----------------------------------|-----------------------------|-------------------------|
| Normally closea-NC                  |    | Max. flow               | Rated flow           | Max. pressure kg/cm <sup>2</sup> | Operating temperature range | Weight (kg)             |
| NC                                  | NO | 20 L/min<br>(5.3 G.P.M) | 15L/min<br>(4 G.P.M) | 250                              | -20°C-120°C                 | 1.05 (2.3)<br>including |
| 20                                  |    |                         |                      |                                  |                             |                         |



| Hydraulic technical data |                                      |                                  |             |
|--------------------------|--------------------------------------|----------------------------------|-------------|
| Model                    | Operated pressure kg/cm <sup>2</sup> | Max. pressure kg/cm <sup>2</sup> | Weight (kg) |
| JCS - 02 - H             | 60 - 350                             | 400                              | 1.1         |
| JCS - 02 - N             | 30 - 210                             | 250                              | 1.0         |
| JCS - 02 - NL            | 15 - 60                              | 250                              | 1.0         |
| JCS - 02 - NLL           | 5 - 60                               | 70                               | 1.0         |



| Hydraulic technical data |                     |                      |                               |                        |                                      |                       |
|--------------------------|---------------------|----------------------|-------------------------------|------------------------|--------------------------------------|-----------------------|
| Nominal Pressure (MPA)   | Max. Pressure (MPA) | Nominal Flow (L/min) | Allowable Back Pressure (MPA) | Hydraulic Oil          |                                      |                       |
|                          |                     |                      |                               | Temperature range (°C) | Viscosity range (mm <sup>2</sup> /s) | Filter Precision (µm) |
| 20                       | 25                  | 80                   | ≤ 2.8                         | -20 - +80              | 10 - 400                             | ≤ 10                  |



ORBITROL STEERING UNIT AND HYDRO MOTOR | TECHNICAL INFORMATION

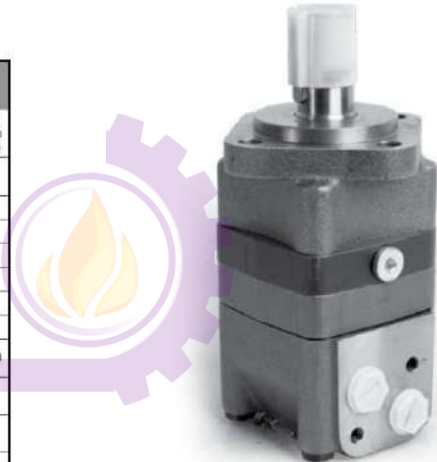
**Hydraulic technical data**

| TYPE              | Displacement ml/r | Rated Flow (l/min) | Max.input Pressure(Mpa) | Max.cont.Back Pressure(Mpa) | Normal Input Torque (N.m) | Length (mm) | Weight (kg) |
|-------------------|-------------------|--------------------|-------------------------|-----------------------------|---------------------------|-------------|-------------|
| BHR 1 / 2 / 3 50  | 50                | 5                  | 17.5                    | 2.5                         | <2.5                      | 140         | 4.7         |
| BHR 1 / 2 / 3 63  | 63                | 6                  | 17.5                    | 2.5                         | <2.5                      | 141         | 4.8         |
| BHR 1 / 2 / 3 80  | 80                | 8                  | 17.5                    | 2.5                         | <2.5                      | 142         | 5.0         |
| BHR 1 / 2 / 3 100 | 100               | 10                 | 17.5                    | 2.5                         | <2.5                      | 145         | 5.2         |
| BHR 1 / 2 / 3 125 | 125               | 13                 | 17.5                    | 2.5                         | <2.5                      | 148         | 5.4         |
| BHR 1 / 2 / 3 160 | 160               | 16                 | 17.5                    | 2.5                         | <2.5                      | 153         | 5.7         |
| BHR 1 / 2 / 3 200 | 200               | 20                 | 17.5                    | 2.5                         | <3                        | 158         | 6           |
| BHR 1 / 3 250     | 250               | 25                 | 17.5                    | 2.5                         | <3                        | 164         | 6.5         |
| BHR 1 / 3 280     | 280               | 28                 | 17.5                    | 2.5                         | <3                        | 169         | 6.8         |
| BHR 1 / 3 315     | 315               | 32                 | 17.5                    | 2.5                         | <3                        | 174         | 7.1         |
| BHR 1 / 3 400     | 400               | 40                 | 17.5                    | 2.5                         | <3                        | 184         | 7.8         |
| BHR 1 / 3 500     | 500               | 50                 | 17.5                    | 2.5                         | <5                        | 197         |             |



**Hydraulic technical data**

| TYPE                        | BRM - 50<br>BRW - 50<br>BR5 - 50 | BRM - 80<br>BRW - 80<br>BR5 - 80 | BRM - 100<br>BRW - 100<br>BR5 - 100 | BRM - 125<br>BRW - 125<br>BR5 - 125 | BRM - 160<br>BRW - 160<br>BR5 - 160 | BRM - 200<br>BRW - 200<br>BR5 - 200 | BRM - 250<br>BRW - 250<br>BR5 - 250 | BRM - 315<br>BRW - 315<br>BR5 - 315 | BRM - 400<br>BRW - 400<br>BR5 - 400 |
|-----------------------------|----------------------------------|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Displacement                | 51.7                             | 80.5                             | 100.5                               | 126.3                               | 160.8                               | 200.9                               | 252.6                               | 321.5                               | 401.9                               |
| Max.Pressure Drop(Mpa)      | cont.                            | 14                               | 14                                  | 14                                  | 14                                  | 14                                  | 11                                  | 9                                   | 7                                   |
|                             | int.                             | 17.5                             | 17.5                                | 17.5                                | 17.5                                | 17.5                                | 14                                  | 11                                  | 9                                   |
|                             | peak.                            | 20                               | 20                                  | 20                                  | 20                                  | 20                                  | 16                                  | 13                                  | 11                                  |
| Max.Torque (N.m)            | cont.                            | 93                               | 152                                 | 194                                 | 237                                 | 310                                 | 369                                 | 380                                 | 380                                 |
|                             | int.                             | 118                              | 189                                 | 236                                 | 296                                 | 378                                 | 450                                 | 470                                 | 470                                 |
|                             | peak.                            | 135                              | 216                                 | 270                                 | 338                                 | 433                                 | 509                                 | 540                                 | 540                                 |
| Speed.Range(cont.)(r/min)   | 10 - 775                         | 10 - 750                         | 10 - 600                            | 10 - 475                            | 10 - 375                            | 10 - 300                            | 10 - 240                            | 10 - 190                            | 10 - 160                            |
| Max.Flow(cont.)(L/min)      | 40                               | 60                               | 60                                  | 60                                  | 60                                  | 60                                  | 60                                  | 60                                  | 60                                  |
| Max.Output.Power(cont.)(Kw) | 7                                | 10                               | 10                                  | 10                                  | 10                                  | 8                                   | 6                                   | 5                                   | 4                                   |
| Weight(kg)                  | 6.5                              | 6.9                              | 7.0                                 | 7.3                                 | 7.5                                 | 8.0                                 | 8.5                                 | 9.0                                 | 11                                  |



**Hydraulic technical data**

| TYPE                        | BM3 - 80<br>BM3W - 80<br>BM35 - 80 | BM3 - 100<br>BM3W - 100<br>BM35 - 100 | BM3 - 125<br>BM3W - 125<br>BM35 - 125 | BM3 - 160<br>BM3W - 160<br>BM35 - 160 | BM3 - 200<br>BM3W - 200<br>BM35 - 200 | BM3 - 250<br>BM3W - 250<br>BM35 - 250 | BM3 - 315<br>BM3W - 315<br>BM35 - 315 | BM3 - 400<br>BM3W - 400<br>BM35 - 400 | BM3 - 500 |      |
|-----------------------------|------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------|------|
| Displacement                | 80.5                               | 100.5                                 | 126.3                                 | 160.8                                 | 200.9                                 | 252.6                                 | 321.5                                 | 401.9                                 | 471.1     |      |
| Max.Pressure Drop(Mpa)      | cont.                              | 17.5                                  | 17.5                                  | 17.5                                  | 16                                    | 16                                    | 12.5                                  | 12.5                                  | 10        | 10   |
|                             | int.                               | 20                                    | 20                                    | 20                                    | 20                                    | 20                                    | 16                                    | 16                                    | 14        | 14   |
|                             | peak.                              | 22.5                                  | 22.5                                  | 22.5                                  | 22.5                                  | 22.5                                  | 20                                    | 20                                    | 17.5      | 17.5 |
| Max.Torque (N.m)            | cont.                              | 194                                   | 242                                   | 303                                   | 358                                   | 438                                   | 440                                   | 551                                   | 560       | 636  |
|                             | int.                               | 218                                   | 283                                   | 345                                   | 429                                   | 540                                   | 580                                   | 625                                   | 687       | 890  |
|                             | peak.                              | 271                                   | 318                                   | 373                                   | 459                                   | 576                                   | 700                                   | 831                                   | 865       | 1113 |
| Speed.Range(cont.)(r/min)   | 10 - 810                           | 10 - 750                              | 9 - 600                               | 7 - 470                               | 6 - 375                               | 6 - 300                               | 5 - 240                               | 5 - 180                               | 155       |      |
| Max.Flow(cont.)(L/min)      | 65                                 | 75                                    | 75                                    | 75                                    | 75                                    | 75                                    | 75                                    | 75                                    | 75        |      |
| Max.Output.Power(cont.)(Kw) | 14                                 | 16                                    | 16                                    | 14                                    | 14                                    | 11                                    | 10                                    | 8                                     | 8         |      |
| Weight(kg)                  | 9.8                                | 10.0                                  | 10.3                                  | 10.7                                  | 11.1                                  | 11.6                                  | 12.3                                  | 13.1                                  | 14        |      |





| Hydraulic technical data |                     |                     |                  |                     |
|--------------------------|---------------------|---------------------|------------------|---------------------|
| Model                    | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
| 5                        | 18                  | 210                 | 2700             | 27                  |
| 8                        | 27                  |                     |                  | 40.5                |
| 11                       | 36                  |                     |                  | 54                  |
| 12                       | 40                  | 160                 | 2500             | 60                  |
| 14                       | 45                  | 140                 |                  | 67.5                |
| 17                       | 55                  | 210                 |                  | 82.5                |
| 21                       | 67                  |                     |                  | 100.5               |



| Hydraulic technical data |                     |                     |                  |                     |
|--------------------------|---------------------|---------------------|------------------|---------------------|
| Model                    | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
| 25                       | 81                  | 210                 | 2500             | 121.5               |
| 30                       | 97                  |                     |                  | 145.5               |
| 35                       | 112                 |                     |                  | 168                 |
| 38                       | 121                 |                     | 2400             | 181.5               |



| Hydraulic technical data |                     |                     |                  |                     |
|--------------------------|---------------------|---------------------|------------------|---------------------|
| Model                    | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
| 42                       | 138                 | 175                 | 2200             | 207                 |
| 50                       | 162                 |                     |                  | 243                 |
| 60                       | 193                 |                     |                  | 289.5               |





## HYDRAULIC VAN PUMPS | TECHNICAL INFORMATION

## Hydraulic technical data

| Model     | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
|-----------|---------------------|---------------------|------------------|---------------------|
| PV2R1-6   | 5.8                 | 210                 | 1800             | 8.5                 |
| PV2R1-8   | 8                   |                     |                  | 12                  |
| PV2R1-10  | 9.4                 |                     |                  | 14.1                |
| PV2R1-12  | 12.2                |                     |                  | 36.8                |
| PV2R 1-14 | 13.7                |                     |                  | 20.5                |
| PV2R1-17  | 16.6                |                     |                  | 25                  |
| PV2R1-19  | 18.6                |                     |                  | 28                  |
| PV2R1-23  | 22.7                |                     |                  | 34                  |
| PV2R1-25  | 25.3                |                     |                  | 38                  |
| PV2R1-28  | 28.1                |                     |                  | 42                  |
| PV2R1-31  | 32.0                |                     |                  | 160                 |



## Hydraulic technical data

| Model     | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
|-----------|---------------------|---------------------|------------------|---------------------|
| PV2R2-26  | 26.6                | 210                 | 1800             | 40                  |
| PV2R2-33  | 33.3                |                     |                  | 50                  |
| PV2R2-41  | 41.3                |                     |                  | 62                  |
| PV2R2-47  | 47.2                |                     |                  | 71                  |
| PV2R 2-53 | 52.5                |                     |                  | 78.5                |
| PV2R2-59  | 58.2                |                     |                  | 87                  |
| PV2R2-65  | 64.7                |                     |                  | 97                  |
| PV2R2-75  | 74.6                |                     |                  | 112                 |



## Hydraulic technical data

| Model     | Displacement (cc/r) | Max. pressure (bar) | Max. Speed (rpm) | Max. Flow (Lit/min) |
|-----------|---------------------|---------------------|------------------|---------------------|
| PV2R3-52  | 52.2                | 210                 | 1800             | 78.5                |
| PV2R3-60  | 59.6                |                     |                  | 89.5                |
| PV2R3-66  | 66.3                |                     |                  | 99.5                |
| PV2R3-76  | 76.4                |                     |                  | 114.5               |
| PV2R 3-85 | 85                  |                     |                  | 127.5               |
| PV2R3-94  | 93.6                |                     |                  | 140.5               |
| PV2R3-116 | 115.6               |                     |                  | 173.5               |
| PV2R3-125 | 122.2               |                     |                  | 183.3               |
| PV2R3-136 | 136                 | 160                 | 1800             | 204                 |
| PV2R3-153 | 153                 |                     |                  | 229.5               |
| PV2R4-136 | 136                 | 175                 | 1800             | 204                 |
| PV2R4-153 | 153                 |                     |                  | 229.5               |
| PV2R4-184 | 184                 |                     |                  | 276                 |
| PV2R4-200 | 201                 |                     |                  | 301.5               |
| PV2R4-237 | 237                 |                     |                  | 355                 |





| Hydraulic technical data |   |                     |                     |  |  |                   |
|--------------------------|---|---------------------|---------------------|--|--|-------------------|
| Size                     | Displacement<br>cm <sup>3</sup> /r (in <sup>3</sup> /r) | Max. Speed<br>(rpm) | Min. Speed<br>(rpm) | Max. Intermittent<br>Pressure<br>bar (psi) | Max. Continuous<br>Pressure<br>bar (psi) | Weight<br>kg (lb) |
| 003                      | 10.8 (0.66)   | 2800                | 600                 | 280 (4000)                                 | 240 (3500)                               | 15 (34)           |
| 005                      | 17.2 (1.05)   |                     |                     |  |  |                   |
| 006                      | 21.3 (1.30)   |                     |                     |  |  |                   |
| 008                      | 26.4 (1.61)   |                     |                     |  |  |                   |
| 010                      | 34.1 (2.08)   |                     |                     |  |  |                   |
| 012                      | 37.1 (2.26)   |                     |                     |  |  |                   |
| 014                      | 46.0 (2.81)   |                     |                     |  |  |                   |
| 017                      | 58.3 (3.56)   |                     |                     |  |  |                   |
| 020                      | 63.8 (3.89)   |                     |                     |  |  |                   |
| 022                      | 70.3 (4.29)   |                     |                     |  |  |                   |
| 025                      | 79.3 (4.84)   | 2500                | 600                 | 210 (3000)                                 | 160 (2300)                               |                   |
| 028                      | 88.8 (5.42)   |                     |                     |  |  |                   |
| 031                      | 100.0 (6.10)  |                     |                     |  |  |                   |



| Hydraulic technical data |   |                     |                     |  |  |                   |
|--------------------------|---|---------------------|---------------------|--|--|-------------------|
| Size                     | Displacement<br>cm <sup>3</sup> /r (in <sup>3</sup> /r) | Max. Speed<br>(rpm) | Min. Speed<br>(rpm) | Max. Intermittent<br>Pressure<br>bar (psi) | Max. Continuous<br>Pressure<br>bar (psi) | Weight<br>kg (lb) |
| 014                      | 47.6 (2.90)   | 2500                | 600                 | 240 (3500)                                 | 210 (3000)                               | 24 (53)           |
| 020                      | 66.0 (4.03)   |                     |                     |  |  |                   |
| 024                      | 79.5 (4.85)   |                     |                     |  |  |                   |
| 028                      | 89.7 (5.47)   |                     |                     |  |  |                   |
| 031                      | 98.3 (6.00)   |                     |                     |  |  |                   |
| 035                      | 111.0 (6.77)  |                     |                     |  |  |                   |
| 038                      | 120.3 (7.34)  |                     |                     |  |  |                   |
| 042                      | 136.0 (8.30)  |                     |                     |  |  |                   |
| 045                      | 145.7 (8.89)  |                     |                     |  |  |                   |
| 050                      | 158.0 (9.64)  |                     |                     |  |  |                   |
| 061                      | 190.5 (11.63)   | 1800                |                     | 120 (1700)                                 | 80 (1160)                                |                   |
|                          |   |                     |                     |  |  |                   |



| Hydraulic technical data |   |                     |                     |  |  |                   |
|--------------------------|---|---------------------|---------------------|--|--|-------------------|
| Size                     | Displacement<br>cm <sup>3</sup> /r (in <sup>3</sup> /r) | Max. Speed<br>(rpm) | Min. Speed<br>(rpm) | Max. Intermittent<br>Pressure<br>bar (psi) | Max. Continuous<br>Pressure<br>bar (psi) | Weight<br>kg (lb) |
| 042                      | 132.3 (8.06)  | 2200                | 600                 | 240  | 210                                      | 43.3 (95.26)      |
| 045                      | 142.4 (8.68)  |                     |                     |  |  |                   |
| 050                      | 158.5 (9.66)  |                     |                     |  |  |                   |
| 052                      | 164.8 (10.04)   |                     |                     |  |  |                   |
| 054                      | 171.0 (10.42)   |                     |                     |  |  |                   |
| 057                      | 183.3 (11.17)   |                     |                     |  |  |                   |
| 062                      | 196.7 (11.99)   |                     |                     |  |  |                   |
| 066                      | 213.3 (13.00)   |                     |                     |  |  |                   |
| 072                      | 227.1 (13.84)   |                     |                     |  |  |                   |
| 085                      | 268.8 (16.4)  |                     |                     |  |  |                   |



### ① General Description

Gear pumps are designed for transforming the mechanical energy to energy of the working liquid in the form of pressure and flow rate. They have simple structure and their costs are relatively low. They have a very wide application in the hydraulic systems due to their benefits in terms of cost, simplicity and availability.

### ② Pumps Drives:

The pump drive is either direct or indirect (by gear, chains, or toothed belt and V-belt transmissions). Both drives should not impose axial or radial forces on the pump shaft; or else the overload on the pump's parts will lead to primary failure of the pump. Direct drives are preferred if practicable, using a coupling set between the prime mover and the pump; this way there will be no undue side loads. Since indirect drives impose extra side loads on the pump bearing, they should be carefully calculated. Our technical staff is pleased to advise in this regard.

### ③ Pump Rotation

The rotation of the pump is shown on the back cover of the pump by an arrow from inlet to outlet. This arrow indicates the direction that the pump shaft must be turned so the pump operates. The rotation (clockwise (C), counterclockwise (CC) or reversible (R)) is always mentioned among the characters of the technical code. Please refer to the coding system guide of the catalog.

### ④ Mounting the Pump

The pumps are mounted on flange with spigot location, using 2 or 4 bolts for fixing. The flanges are various based on the location and application of the pump. The proper seating of the pump should be ensured.

### ⑤ Suction and Pressure lines

Suitable inlet piping and fittings should be chosen to avoid suction depression. The suction line should be as large as needed and without any sharp bends to minimize the depression at the inlet.

The outlet of pump should normally be protected by a relief valve to control the working pressure. The setting of this valve

should be as low as possible so that the pump is relieved once the excess pressure is produced. This minimizes the heating effect on the fluid and reduces the amount of work of pump, thereby saving energy. Outlet pipe size should be chosen to minimize flow velocity to avoid system noise, excess pressure and overheating.

### ⑥ Oil Reservoir

It is recommended that the reservoir capacity is at least twice as much as the pump output per minute at maximum pump speed. Too small a reservoir will fail to accommodate volume changes leading to the formation of vortex which will introduce air into the system. Oil suction ports also should be well immersed to eliminate vortex formation and as far as possible they should be located well away from the oil-return pipe to avoid recirculation of air bubbles.

### ⑦ Filtration

Contamination is the enemy of any hydraulic system. Adequate filtration must be provided to ensure that harmful dirt particles are trapped. At least the system should have a suction line strainer and a return line filter.

### ⑧ Oil

Only good quality, mineral based oil must be used with a viscosity characteristic that will conform to the requirements of the system. For normal temperature operation, SAE20W oils, and for cold climates SAE10W oils are recommended.

### ⑨ Operating temperature

The pumps are designed to operate between 0°C to 80°C for continuous work, and -20°C to 100°C for intermittent operation.

### ⑩ Working conditions summary:

- Working liquid: hydraulic oils with viscosity 16-200 mm<sup>2</sup>/s
- Degree of filtration: 15-25 μ in return line
- Fluid temperature range: -20 to 100°C
- Inlet pressure, absolute: 0.8 to 2.2 bar;
- Fluid velocity (suction line): 0.5 to 1 m/s
- Outlet pressure up to 250 BAR





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