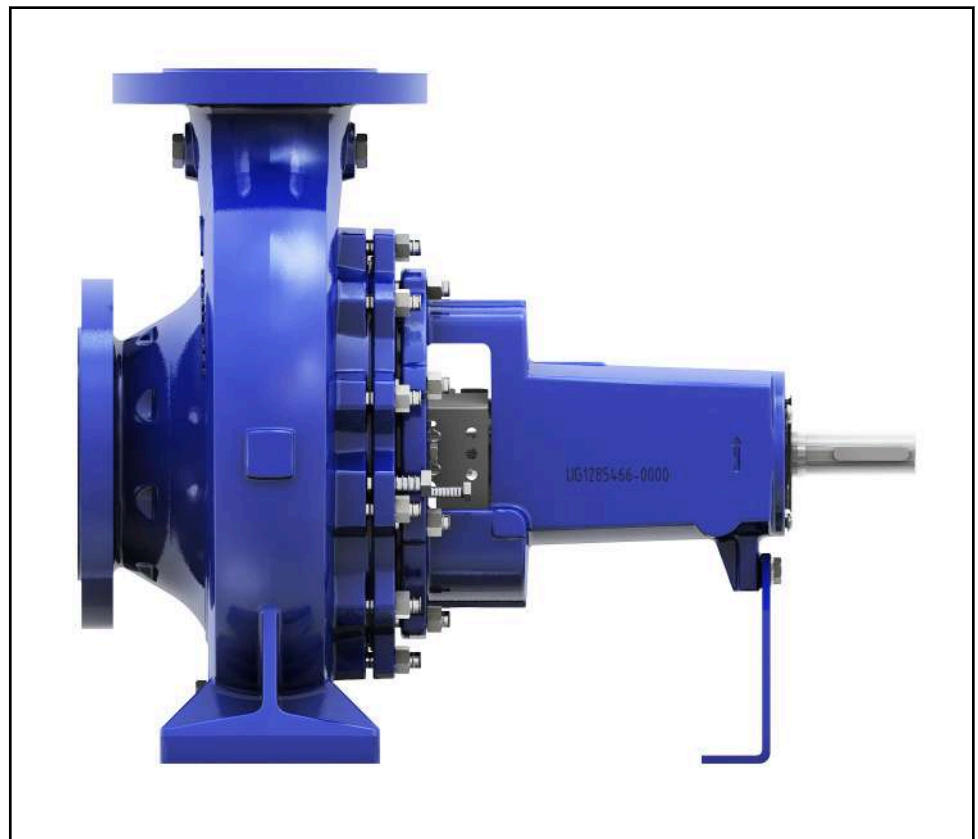


Standardised Water Pump

Etanorm

Type Series Booklet





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Type Series Booklet Etanorm

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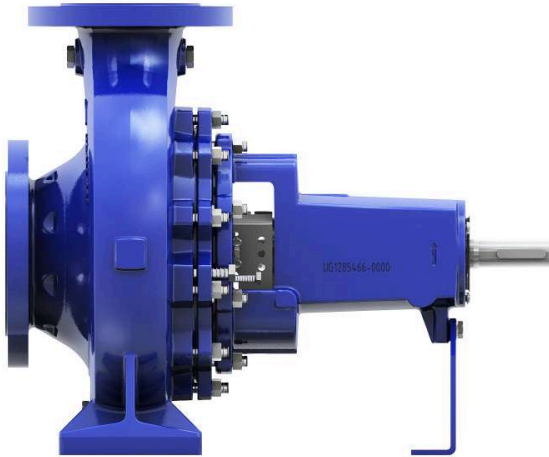
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## Centrifugal Pumps with Shaft Seal

### Standardised Water Pumps

### Etanorm



#### Main applications

Pump for handling clean or aggressive fluids not chemically and mechanically aggressive to the pump materials.

- Water supply systems
- Cooling circuits
- Swimming pools
- Fire-fighting systems
- Irrigation systems
- Drainage systems
- Heating systems
- Air-conditioning systems
- Spray irrigation systems

#### Fluids handled

- Seawater
- Brackish water
- Drinking water
- Hot water
- Service water
- Fire-fighting water
- Brine
- Cleaning agents
- Condensate
- Oils

#### Operating data

Operating properties

Characteristic		Value
Flow rate	Q	Up to 660 m <sup>3</sup> /h (50 Hz) Up to 740 m <sup>3</sup> /h (60 Hz)
Head	H	Up to 160 m (50 Hz) Up to 160 m (60 Hz)
Operating temperature	t	-30 °C to +140 °C
Operating pressure	p	Up to 16 bar

#### Materials per country

- A = Europe, Middle East, North Africa
  - A1 = Default material variant
  - A2 = Optional material variant
- B = Asia / India
  - B1 = Default material variant
  - B2 = Optional material variant
- C = South Africa
  - C1 = Default material variant
  - C2 = Optional material variant

#### Designation

Example: Etanorm 050-032-160 GB X 10

Key to the designation

Code	Description	Region
Etanorm	Type series	A, B, C
050	Nominal suction nozzle diameter [mm]	A, B, C
032	Nominal discharge nozzle diameter [mm]	A, B, C
160	Nominal impeller diameter [mm]	A, B, C
G	Casing material	
G	Cast iron	A, B, C
B	Bronze	A, C <sup>1)</sup>
S	Nodular cast iron	A, C <sup>1)</sup>
C	Stainless steel	A, C
B	Impeller material if different from casing material	
G	Cast iron	A, B, C
C	Stainless steel	A, B, C
B, I	Bronze	A, B, C
X	Additional code	
X	Special design	A
FX	Fire-fighting pump	A
10	Shaft seal, e.g. Q1 Q1 X4GG	A, C

#### Design details

##### Design

- Volute casing pump
- Horizontal installation
- Back pull-out design

1) On request

- Single-stage
- Dimensions and ratings to EN 733
- Complies with the 2009/125/EC Directive

### Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet<sup>2)</sup>
- Replaceable casing wear rings

### Impeller type

- Closed radial impeller with multiply curved vanes

### Shaft seal

Shaft seal

Shaft seal design	Region
Gland packing	A, B, C
Single mechanical seals to EN 12756	A, B, C
Double mechanical seals to EN 12756	A, C
Shaft equipped with replaceable shaft protecting sleeve in the shaft seal area	A, B, C

### Bearings

Bearings

Bearing design	Region
Standard bearings	A, B, C
– Floating bearings: deep groove ball bearings	
Reinforced bearings	A, B, C
– Floating bearings: deep groove ball bearings	
Bearings with bearing pedestal	C
– Floating bearings: deep groove ball bearings	

### Example: WS\_25\_LS

Bearing bracket designation

Code	Description	Region
WS	Bearing bracket, standardised water pump	A, B, C
25	Size code (based on dimensions of seal chamber and shaft end)	A, B, C
LS	Standard	A, B, C
LR	Reinforced	A, B, C
PS	Bearing pedestal	C

### Bearings used

Standard bearings

Design	Bearing bracket	Rolling element bearings		
		Pump end	Drive end	Region
Standard bearings (grease-lubricated)	WS_25_LS	6305 2Z C3	6305 2Z C3	A, B, C
	WS_35_LS	6307 2Z C3	6307 2Z C3	A, B, C
	WS_55_LS	6311 2Z C3	6311 2Z C3	A, B, C
Standard bearings (oil-lubricated)	WS_25_LS	6305 C3	6305 C3	A, B, C
	WS_35_LS	6307 C3	6307 C3	A, B, C
	WS_55_LS	6311 C3	6311 C3	A, B, C
Reinforced bearings (grease-lubricated)	WS_50_LR	6310 2Z C3	6310 2Z C3	A, B, C
	WS_60_LR	6312 2Z C3	6312 2Z C3	A, B, C
Reinforced bearings (oil-lubricated)	WS_50_LR	6310 C3	6310 C3	A, B, C

<sup>2)</sup> Depending on the size, pumps with bearing pedestal have integrally cast pump feet.

Design	Bearing bracket	Rolling element bearings		
		Pump end	Drive end	Region
	WS_60_LR	6312 C3	6312 C3	A, B, C
Standard bearing pedestal (grease lubrication)	WS_25_PS	6305 2Z C3	6305 2Z C3	C
	WS_35_PS	6307 2Z C3	6307 2Z C3	C
	WS_55_PS	6311 2Z C3	6311 2Z C3	C
Standard bearing pedestal (oil lubrication)	WS_25_PS	6305 C3	6305 C3	C
	WS_35_PS	6307 C3	6307 C3	C
	WS_55_PS	6311 C3	6311 C3	C

Lubrication

Type of lubrication	Region
Grease lubrication	A, B, C
Oil lubrication	A, B, C

Automation

Automation options:

Automation systems	Region
PumpMeter	A, C <sup>3)</sup>
PumpDrive	A, C <sup>3)</sup>

Coating and preservation

Coating and preservation

Design	Region
Coating and preservation to KSB standard	A, B, C

Product benefits

- Improved efficiency and  $NPSH_{req}$  by experimentally verified hydraulic design of impellers (vanes)
- Low energy costs through compliance with future requirements of Commission Regulation 547/2012 (minimum efficiency index  $MEI \geq 0.4$ )
- Operating costs reduced by trimming the impeller diameter to match the specified duty point
- Little wear, low vibration levels and excellent smooth running characteristics thanks to good suction performance and virtually cavitation-free operation across a wide operating range
- Casing sealed reliably – even in varying operating conditions – by confined casing gasket
- Large variety of materials for perfectly matching the pump to the fluid handled. Large range of materials for many applications available as a standard
- Extended selection chart with additional pump sizes for small flow rates
- Easy to dismantle with forcing screws provided at the interface of casing cover and bearing bracket lantern
- Year of construction: see data sheet
- Manufacturer's name or trade mark, commercial registration number and place of manufacture: see data sheet or order documentation
- Product's type and size identifier: see data sheet
- Hydraulic pump efficiency (%) with trimmed impeller: see data sheet
- Pump performance curves, including efficiency characteristics: see documented characteristic curve
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with full impeller diameter. Trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- Operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.
- Information relevant for disassembly, recycling or disposal at end of life: see installation/operating manual
- Information on benchmark efficiency or benchmark efficiency graph for  $MEI = 0.7$  (0.4) for the pump based on the model shown in the Figure are available at: <http://www.europump.org/efficiencycharts>

Product Information as per Regulation No. 547/2012 (for Water Pumps with a Maximum Shaft Power of 150 kW) Implementing "Ecodesign" Directive 2009/125/EC

- Minimum efficiency index: see data sheet
- The benchmark for most efficient water pumps is  $MEI \geq 0.70$ .

3) On request

## Acceptance tests/warranty

Overview of acceptance tests/warranty

Acceptance tests/warranty	Region
Materials testing	
▪ Test report 2.2 on request	A, B, C
Final inspection	
▪ Inspection certificate 3.1 to EN 10204 on request	A, B, C
Hydraulic test against surcharge	
▪ The operating point of each pump with a delivery address or final destination in Europe is warranted in accordance with ISO 9906/2B.	A
▪ The operating point of each pump with a delivery address or final destination outside of Europe is warranted in accordance with ISO 9906/2B and ISO 9906/3B.	B, C
▪ NPSH test	A, B, C
Other inspections/tests possible on request	A, B, C
Warranty	
▪ Warranties are given within the scope of the valid delivery conditions.	A, B, C

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Overview of all fluids handled

Table of fluids handled and associated material combinations

X = standard

Fluid handled	Temperature [°C]	Materials Casing/impeller					Shaft seal Mechanical seal							Variant code		Comments		
		Grey cast iron/ grey cast iron	Grey cast iron/ tin bronze	Nodular cast iron/ grey cast iron	Tin bronze/ tin bronze	CrNiMo cast steel/ CrNiMo cast steel	RT-P	Pure graphite	U3BEGG	Q1Q1EGG	U3U3VGG	Q1Q1X4GG	BQ1EGG	Q12Q1M1GG	Gland packing <sup>4)</sup>		Mechanical seal	
																		G
<b>Water</b>																		
Brackish water <sup>5)</sup>	≤ 25				X	X							X			1	10	CrNiMo cast steel can be used
Fire-fighting water <sup>6)</sup>	≤ 60		X			X							X			1	10	Contact KSB for supply to VdS guideline.
Heating water <sup>7)</sup>	≤ 120	X				X							X			1	11	If used as a circulator pump to DIN 4752; p max. ≤ 10 bar. If ductile material has been specified: "5"
Heating water	≤ 140	X					X	X								3	6	
Heating water	≥ 110	X				X						X				1	10	
Condensate	≤ 120	X				X							X			1	11	
Condensate, not conditioned	≤ 120					X	X						X			1	11	
Cooling water (without antifreeze)	≤ 60	X				X							X			1	10	Open loop: use GB 1 / GB 10
Cooling water pH ≥ 7.5 (with antifreeze) <sup>8)</sup>	≥ 30	X				X							X			1	11	Open loop: use GB
Cooling water pH ≥ 7.5 (with antifreeze) <sup>8)</sup>	≥ 60	X				X			X							1	7	Open loop: use GB
Cooling water pH ≥ 7.5 (with antifreeze) <sup>8)</sup>	≤ 110																	
Slightly contaminated water	≤ 60	X				X							X			1	10	
Seawater	≤ 25				X	X							X			1	10	CrNiMo cast steel can be used
Pure water <sup>9)</sup>	≤ 60	X				X							X			1	11	
Raw water	≤ 60	X				X							X			1	10	
Swimming pool water (fresh water)	≤ 60	X				X							X			1	10	Also applies to requirements as per DIN 19643
Swimming pool water <sup>10)</sup> : filtration	≤ 40		X										X			1	10	Variant GB Shaft C45+N, shaft sleeve CrNiMo steel, nut A4/AISI 316, key A2, casing wear ring (suction and discharge side) grey cast iron JL 1040/ CI
Swimming pool water <sup>10)</sup> : water features; without turbulences and/or air content	≤ 40		X										X			1	10	Variant GB Shaft C45+N, shaft sleeve CrNiMo steel, nut A4/ AISI 316, key A2, casing wear ring (suction and discharge side) CC495K-GS
Swimming pool water <sup>10)</sup> : water features; with turbulences and/or air content	≤ 40				X								X			1	10	Variant B Shaft 1.4571, shaft sleeve CrNiMo steel, nut A4/ AISI 316, key A2, casing wear ring (suction and discharge side) CC495K-GS
Swimming pool water (seawater)	≤ 40				X	X							X			1	10	CrNiMo cast steel for t ≤ 25 °C
Dam water	≤ 60		X			X							X			1	10	If solids are contained, contact KSB.
Drinking water <sup>11)</sup>	≤ 60		X			X							X			1	11	
Partly desalinated water	≤ 120	X				X							X			1	11	
Fully desalinated water	≤ 120					X	X						X			1	11	Purity requirements cannot be met
Fully desalinated water as boiler feed water	≤ 120	X				X							X			1	11	
<b>Refrigerants, cooling brines</b>																		
Cooling brine; inorganic, pH value > 7.5, inhibited	≥ 30 ≤ 25	X				X							X			1	11	

4) Na: p1 ≤ 0.5 bar; Nb: p1 > 0.5 bar

5) For components made of bronze: ammonia (NH3) ≤ 5 mg/kg, free from hydrogen sulphide (H2S); no limitation of Cl content required in this case. Please contact KSB if limits are exceeded.

6) General evaluation criteria for results of water analysis: pH value ≥ 7; chlorides content (Cl) ≤ 250 mg/kg. Chlorine (Cl2) ≤ 0.6 mg/kg.

7) Treatment to VdT V 1466; additional requirement: O2 < 0.02 mg/l

8) Antifreeze on ethylene glycol basis with inhibitors. Content: >20 % to 50 % (e.g. ogen N)

9) No ultra-pure water! Conductivity at 25 °C: ≤ 800 µS/cm, neutral with regard to chemical corrosion

10) For France, observe the applicable rules as per ministerial order dated 18 January 2002.

11) For France, ACS approval is required.



Fluid handled	Temperature [°C]	Materials Casing/impeller						Shaft seal Mechanical seal							Variant code		Comments	
		Grey cast iron/ grey cast iron	Grey cast iron/ tin bronze	Modular cast iron/ grey cast iron	Tin bronze/ tin bronze	CrNiMo cast steel/ CrNiMo cast steel	RT-P	Pure graphite	U3BEGG	Q1Q1EGG	U3U3VGG	Q1Q1X4GG	BQ1EGG	Q12Q1M1GG	Gland packing <sup>4)</sup>	Mechanical seal		
		G	GB	SG	BB	C	1	3	6	7	9	10	11	12				
Water with antifreeze, pH value $\geq 7.5$	$\geq 30$ $\leq 60$	X					X					X			1	11		
Water with antifreeze, pH value $\geq 7.5$	$\geq 60$ $\leq 110$	X					X		X						1	7		
<b>Oils/emulsions</b>																		
Diesel oil, extra light fuel oil	$\leq 60$			X							X						10	GG possible, unless specific standards have to be observed
Lubricating oil, turbine oil, does not apply to SF-D oils (hardly flammable)	$\leq 80$			X							X						10	If specified "without internal primer" contact KSB. GG possible, unless specific standards have to be observed
Drilling/grinding emulsion	$\leq 60$	X								X					1	9		
Oil and water emulsion	$\leq 60$	X								X					1	9		
<b>Brewery applications</b>																		
Beer mash	$\leq 100$	X											X				12	If there is a risk of the pump running dry due to excessive emptying of the tank, an Etanorm with double seal in tandem arrangement must be used.
Beer wort	$\leq 100$	X										X					12	

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4) Na: p1  $\leq$  0.5 bar; Nb: p1  $>$  0.5 bar

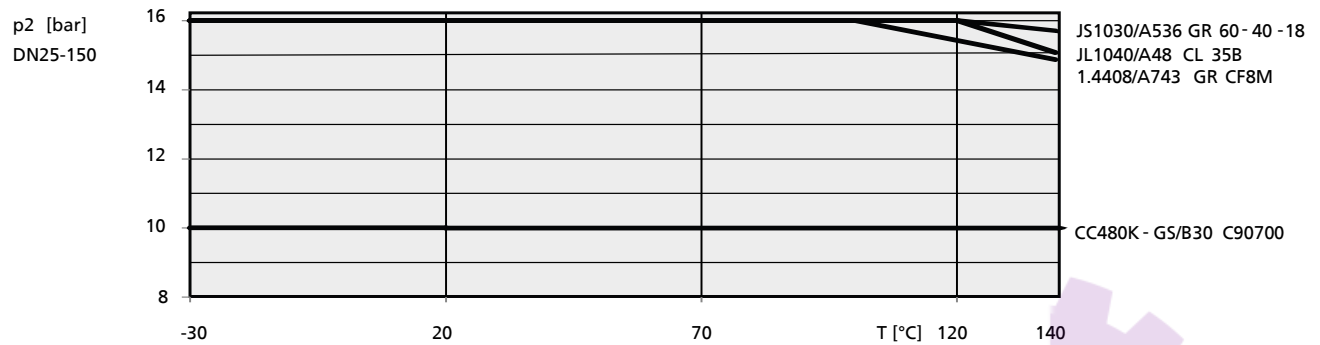
Pressure and temperature limits

Pressure and temperature limits of pump

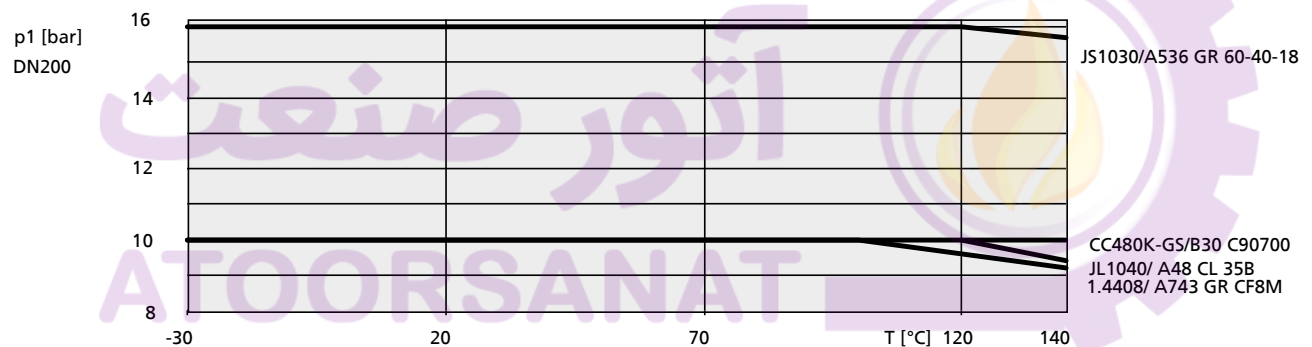
Pressure and temperature limits of pump

Material variant	Fluid temperature <sup>12)13)</sup>	Test pressure <sup>14)</sup>	Region
G	-30 °C to +140 °C	Up to 21 bar	A, B, C
GB, GC	-30 °C to +140 °C	Up to 21 bar	A, B, C
GI	-30 °C to +140 °C	Up to 21 bar	B
S, SB, SC	-30 °C to +140 °C	Up to 25 bar	A, C <sup>15)</sup>
B	-30 °C to +140 °C	Up to 13 bar	A, C <sup>15)</sup>
C	-30 °C to +140 °C	Up to 21 bar	A, C

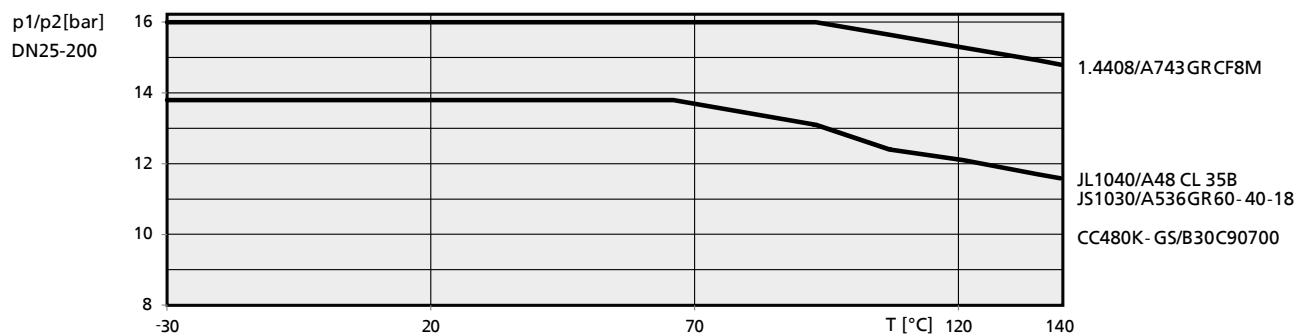
Pressure and temperature limits of pump with flanges to EN 1092-1, 1092-2 and 1092-3



Pressure and temperature limits DN 25 - DN150



Pressure and temperature limits DN 200



Pressure and temperature limits of pump with flanges drilled to ASME

<sup>12)</sup> For hot water heating systems to DIN 4752, Section 4.5, application limits must be observed.

<sup>13)</sup> For fluid temperatures >140 °C use Etanorm SYT.

<sup>14)</sup> The casing components are checked for leakage by means of internal pressure tests to AN 1897/75-03D00 with water.

<sup>15)</sup> On request

**Materials**

Overview of materials available for Europe

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
102	Volute casing	Grey cast iron JL1040/ A 48 CL 35B	A1	A1	A1	-	-	-	-	-	-
		Bronze CC480K-GS/B30 C90700	-	-	-	-	A1	-	-	-	-
		Nodular cast iron JS1030/ A536 GR 60-40-18	-	-	-	-	-	A1	A1	A1	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	A1
161	Casing cover, conical	Grey cast iron JL1040 / A 48 CL 35B	A1	A1	A1	-	-	-	-	-	-
		Bronze CC480K-GS / B30 C90700	-	-	-	-	A1	-	-	-	-
		Nodular cast iron JS1030/ A536 GR 60-40-18	-	-	-	-	-	A1	A1	A1	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	A1
161	Casing cover, cylindrical	Grey cast iron JL1040/ A 48 CL 35B	A2	A2	A2	-	-	-	-	-	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	A2
		Bronze CC480K-GS / B30 C90700	-	-	-	-	A2	-	-	-	-
210	Shaft	Tempered steel C45+N	A1	A1	A1	-	-	A1	A1	A1	-
		Chrome steel 1.4057+QT800	A2	A2	A2	-	-	A2	A2	A2	-
		Duplex stainless steel 1.4462/ UNS S31803	A2	A2	A2	-	A1	A2	A2	A2	A1
230	Impeller	Grey cast iron JL1040/ A 48 CL 35B	A1	-	-	-	-	A1	-	-	-
		Bronze CC480K-GS / B30 C90700	-	A1	-	-	A1	-	A1	-	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	A1	-	-	-	-	A1	A1
330	Bearing bracket	Grey cast iron JL1040/ A 48 CL 35B	A1	A1	A1	-	A1	A1	A1	A1	
400	Sealing elements	DPAF, asbestos-free	A1	A1	A1	-	A1	A1	A1	A1	
502.01	Casing wear ring, suction side	Grey cast iron JL1040 / CI	A1	A1	A1	-	-	A1	A1	A1	-
		Stainless steel (CrNiMoST) <sup>16)</sup>	A2	-	A2	-	-	-	-	-	A2
		Bronze CC480K-GS	-	A2	-	-	A1	-	A2	-	-
502.02	Casing wear ring, discharge side	Grey cast iron JL1040 / CI <sup>16)</sup>	A1	A1	A1	-	-	A1	A1	A1	-
		Stainless steel (CrNiMoST)	A2	-	A2	-	-	-	-	-	A2
		Bronze CC480K-GS <sup>16)</sup>	-	A2	-	-	A1	-	A2	-	-
523	Shaft sleeve <sup>17)</sup>	Stainless steel (CrNiMoST)	A1	A1	A1	-	A1	A1	A1	A1	
524	Shaft protecting sleeve <sup>18)</sup>	Stainless steel (CrNiMoST) <sup>16)</sup>	-	-	-	-	A1	-	-	-	A1
		Chrome steel 1.4122HV500+80	A1	A1	A1	-	-	-	-	-	-
902	Studs	Steel 8.8	A1	A1	A1	-	-	A1	A1	A1	-
		A4-70/ A193 Gr B8M CL2	A2	A2	A2	-	A1	A2	A2	A2	A1
903	Screw plug	Steel	A1	A1	A1	-	-	A1	A1	A1	-
		CC 493K-GS	-	-	-	-	A1	-	-	-	-
		A4/ AISI 316	A2	A2	A2	-	-	A2	A2	A2	A1
920	Nut	8+A2A/ 8+B633 SC1 TP3	A1	A1	A1	-	-	A1	A1	A1	-
		A4/ AISI 316	A2	A2	A2	-	A1	A2	A2	A2	A1
920.95	Impeller nut	A4/ AISI 316	A2	A1	A1	-	A1	A2	A1	A1	A1
		Steel 8	A1	-	-	-	-	A1	-	-	-

Overview of materials available for India

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
102	Volute casing	Grey cast iron JL1040 / A 48 CL 35B	B1	B1	B1	B	-	-	-	-	-
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	B1	-	-	B1	-	-	-	-	-
		Bronze CC480K-GS / B30 C90700	-	B1	-	-	-	-	-	-	-
		Bronze IS318 LTB2	-	-	-	B1	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr CF8 M	-	-	B1	-	-	-	-	-	-
161	Casing cover, conical	Grey cast iron JL 1040 / A 48 CL 35B	B2	B2	B2	B2	-	-	-	-	
161	Casing cover, cylindrical	Grey cast iron JL 1040 / A 48 CL 35B	B1	B1	B1	B1	-	-	-	-	

<sup>16)</sup> Material group CRNIMO ST (WSZ 7605). Possible materials: 1.4401, 1.4404; 1.4408; 1.4571; AISI 316; AISI 316Ti; A743 GR CF8M; A479 TYPE 316L

<sup>17)</sup> Variants with mechanical seal

<sup>18)</sup> Variants with gland packing

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
210	Shaft	IS 5517 45C8	B1	B1	B1	B1	-	-	-	-	-
		A276 TP 410 COND H	B2	B2	B2	B2	-	-	-	-	-
502.01	Casing wear ring, suction side	Grey cast iron JL 1040 / A 48 CL 35B	B1	-	-	-	-	-	-	-	-
		Bronze IS318 LTB4 <sup>19)</sup>	-	B1	-	B1	-	-	-	-	-
		Stainless steel (CrNiMoST)	-	-	B1	-	-	-	-	-	-
502.02	Casing wear ring, discharge side	Grey cast iron JL 1040 / A 48 CL 35B	B1	-	-	-	-	-	-	-	-
		Bronze IS318 LTB4 <sup>19)</sup>	-	B1	-	B1	-	-	-	-	-
		Stainless steel (CrNiMoST) <sup>19)</sup>	-	-	B1	-	-	-	-	-	-
523	Shaft sleeve <sup>17)</sup>	Stainless steel (CrNiMoST)	B1	B1	B1	B1	-	-	-	-	-
524	Shaft protecting sleeve <sup>18)</sup>	A276 TP 410 COND H	B1	B1	B1	B1	-	-	-	-	-
920.95	Impeller nut	A4/ AISI 316	B1	B1	B1	B1	-	-	-	-	-
330	Bearing bracket	Grey cast iron JL1040 / A 48 CL 35B	B1	B1	B1	B1	-	-	-	-	-
400	Sealing elements	DPAF, asbestos-free	B1	B1	B1	B1	-	-	-	-	-
		CrNi steel / carbon CrNi graphite 1F	B2	B2	B2	B2	-	-	-	-	-
902	Studs	Steel 8.8	B1	B1	B1	B1	-	-	-	-	-
920	Nut	8+A2A/ 8+B633 SC1 TP3	B1	B1	B1	B1	-	-	-	-	-
903	Screw plug	Steel	B1	B1	B1	B1	-	-	-	-	-

**Overview of materials available for South Africa**

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
102	Volute casing	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr CF8 M	-	-	-	-	-	-	-	-	C1
161	Casing cover, conical	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	C1
161	Casing cover, cylindrical	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	C1
210	Shaft	Tempered steel C45+N	C1	C1	C1	-	-	-	-	-	-
		A276 Type 316	C2	C2	C2	-	-	-	-	-	C1
		Chrome steel 1.4057+QT800	C2	C2	C2	-	-	-	-	-	-
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	C1	-	-	-	-	-	-	-	-
		Bronze CC480K-GS / B30 C90700	-	C1	-	-	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr CF8 M	-	-	C1	-	-	-	-	-	C1
330	Bearing bracket	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	C1
331	Bearing pedestal	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
400	Sealing elements	KLINGERSIL C4243	C1	C1	C1	-	-	-	-	-	C1
502.01	Casing wear ring, suction side	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
		Stainless steel (CrNiMoST)	-	-	C2	-	-	-	-	-	C2
		Bronze CC480K-GS	-	C2	-	-	-	-	-	-	-
502.02	Casing wear ring, discharge side	Grey cast iron JL1040 / A 48 CL 35B	C1	C1	C1	-	-	-	-	-	-
		Stainless steel (CrNiMoST)	-	-	C2	-	-	-	-	-	C2
		Bronze CC480K-GS	-	C2	-	-	-	-	-	-	-
523	Shaft sleeve <sup>17)</sup>	Stainless steel (CrNiMoST)	C1	C1	C1	-	-	-	-	-	C1
524	Shaft protecting sleeve <sup>18)</sup>	Stainless steel (CrNiMoST)	-	-	-	-	-	-	-	-	C1
		Chrome steel 1.4122HV500+80	C1	C1	C1	-	-	-	-	-	-
902	Studs	Steel 8.8	C1	C1	C1	-	-	-	-	-	-
		A4-70/A193 GR B8M CL2	C2	C2	C2	-	-	-	-	-	C1
903	Screw plug	Steel	C1	C1	C1	-	-	-	-	-	-
		A4/AISI 316	C2	C2	C2	-	-	-	-	-	C1
920	Nut	8+A2A/ 8+B633 SC1 TP3	C1	C1	C1	-	-	-	-	-	-
		A4/AISI 316	C2	C2	C2	-	-	-	-	-	C1
920.95	Impeller nut	A4/ AISI 316	C2	C1	C1	-	-	-	-	-	C1
		Steel 8	C1	-	-	-	-	-	-	-	-

<sup>19)</sup> Material group CRNIMO ST (WSZ 7605). Possible materials: 1.4401, 1.4404; 1.4408; 1.4571; AISI 316; AISI 316Ti; A743 GR CF8M; A479 TYPE 316L

Availability of pump sizes per material variant

Available material variants

Size	G	GB	GC	GI	B	S	SB	SC	C
040-025-160	X	X	X	X	-	X	X	X	X
040-025-200	X	X	X	X	-	X	X	X	X
050-032-125.1	X	X	X	X	X	X	X	X	X
050-032-160.1	X	X	X	X	X	X	X	X	X
050-032-200.1	X	X	X	X	X	X	X	X	X
050-032-250.1	X	X	X	X	-	-	-	-	X
050-032-125	X	X	X	X	-	-	-	-	X
050-032-160	X	X	X	X	X	X	X	X	X
050-032-200	X	X	X	X	X	X	X	X	X
050-032-250	X	X	X	X	-	X	X	X	X
065-040-125	X	X	X	X	-	-	-	-	X
065-040-160	X	X	X	X	X	X	X	X	X
065-040-200	X	X	X	X	X	X	X	X	X
065-040-250	X	X	X	X	X	X	X	X	X
065-040-315	X	X	X	X	-	X	X	X	X
065-050-125	X	X	X	X	-	-	-	-	X
065-050-160	X	X	X	X	X	X	X	X	X
065-050-200	X	X	X	X	X	X	X	X	X
065-050-250	X	X	X	X	X	X	X	X	X
065-050-315	X	X	X	X	-	X	X	X	X
080-065-125	X	X	X	X	-	-	-	-	X
080-065-160	X	X	X	X	X	X	X	X	X
080-065-200	X	X	X	X	X	X	X	X	X
080-065-250	X	X	X	X	X	X	X	X	X
080-065-315	X	X	X	X	-	X	X	X	X
100-080-160	X	X	X	X	X	X	X	X	X
100-080-200	X	X	X	X	X	X	X	X	X
100-080-250	X	X	X	X	X	X	X	X	X
100-080-315	X	X	X	X	-	X	X	X	X
100-080-400	X	X	X	X	-	-	-	-	X
125-100-160	X	X	X	X	X	X	X	X	X
125-100-200	X	X	X	X	X	X	X	X	X
125-100-250	X	X	X	X	X	X	X	X	X
125-100-315	X	X	X	X	X	X	X	X	X
125-100-400	X	X	X	X	-	-	-	-	X
150-125-200	X	X	X	X	X	X	X	X	X
150-125-250	X	X	X	X	X	X	X	X	X
150-125-315	X	X	X	X	X	X	X	X	X
150-125-400	X	X	X	X	-	X	X	X	X
200-150-200	X	X	X	X	-	-	-	-	X
200-150-250	X	X	X	X	X	-	-	-	X
200-150-315	X	X	X	X	X	X	X	X	X
200-150-400	X	X	X	X	X	X	X	X	X

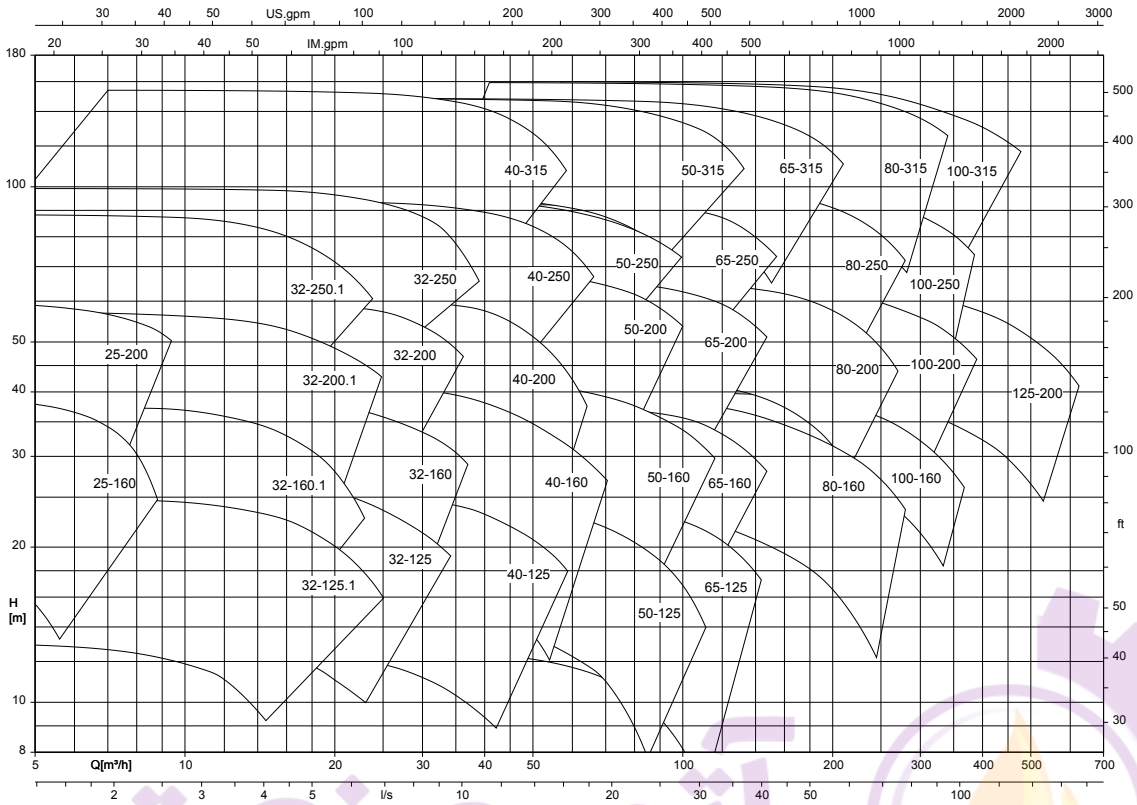
Technical data

Technical data

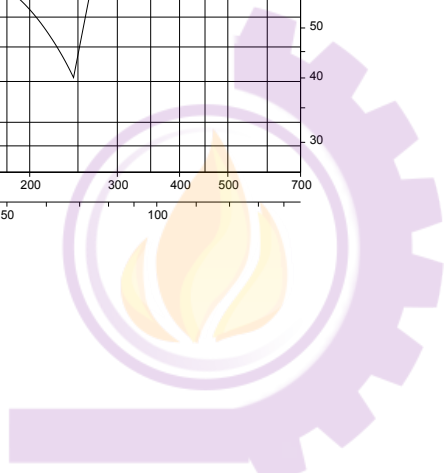
Sizes	Bearing bracket			Impeller				Speed limit	
	LS	LR	PS	Impeller outlet width	Impeller inlet diameter	Impeller diameter		max	min
				[mm]	[mm]	max	min		
040-025-160	WS_25_LS	-	WS_25_PS	6,0	45,2	169	130	3500	500
040-025-200	WS_25_LS	-	WS_25_PS	6,0	45,2	209	160	3500	500
050-032-125.1	WS_25_LS	-	WS_25_PS	6,6	52,4	139	104	4300	500
050-032-160.1	WS_25_LS	-	WS_25_PS	5,7	52,7	170	136	4400	500
050-032-200.1	WS_25_LS	-	WS_25_PS	5,6	54,0	204	170	3800	500
050-032-250.1	WS_25_LS	-	WS_25_PS	5,5	58,3	254	200	3000	500
050-032-125	WS_25_LS	-	WS_25_PS	9,8	63,4	139	104	4200	500
050-032-160	WS_25_LS	-	WS_25_PS	8,5	60,6	174	136	3500	500
050-032-200	WS_25_LS	-	WS_25_PS	7,0	62,9	209	170	3700	500
050-032-250	WS_25_LS	-	WS_25_PS	7,5	62,6	261	209	3000	500
065-040-125	WS_25_LS	-	WS_25_PS	14,0	73,9	139	104	4000	500
065-040-160	WS_25_LS	-	WS_25_PS	13,0	70,0	174	128	4400	500
065-040-200	WS_25_LS	-	WS_25_PS	9,4	69,4	209	165	3700	500
065-040-250	WS_25_LS	-	WS_25_PS	8,4	74,1	260	200	3000	500
065-040-315	WS_35_LS	-	WS_35_PS	7,5	75,3	326	260	2300	500
065-040-315	-	WS_50_LR	-	7,5	75,3	326	260	3000	500
065-050-125	WS_25_LS	-	WS_25_PS	19,9	87,9	142	112	4500	500
065-050-160	WS_25_LS	-	WS_25_PS	16,9	86,9	174	128	4400	500
065-050-200	WS_25_LS	-	WS_35_PS	13,8	83,1	219	170	3400	500
065-050-250	WS_25_LS	-	WS_25_PS	10,5	84,0	260	215	3000	500
065-050-315	WS_35_LS	-	WS_35_PS	10,0	87,0	323	265	2400	500
065-050-315	-	WS_50_LR	-	10,0	87,0	323	265	3000	500
080-065-125	WS_25_LS	-	WS_25_PS	25,8	99,0	141	109	4000	500
080-065-160	WS_25_LS	-	WS_25_PS	21,0	92,0	174	132	3900	500
080-065-200	WS_25_LS	-	WS_25_PS	17,0	99,7	219	175	3000	500
080-065-250	WS_35_LS	-	WS_35_PS	15,1	101,0	260	215	3000	500
080-065-315	WS_35_LS	-	WS_35_PS	13,7	108,2	320	260	2400	500
080-065-315	-	WS_60_LR	-	13,7	108,2	320	260	3000	500
100-080-160	WS_25_LS	-	WS_25_PS	31,6	124,0	174	138	3500	500
100-080-200	WS_35_LS	-	WS_35_PS	24,5	115,0	219	180	3500	500
100-080-250	WS_35_LS	-	WS_35_PS	19,0	115,0	269	215	2900	500
100-080-315	WS_35_LS	-	WS_35_PS	18,7	115,6	334	269	1900	500
100-080-315	-	WS_60_LR	-	18,7	115,6	334	269	3000	500
100-080-400	WS_55_LS	-	WS_55_PS	15,0	130,0	398	330	1900	500
125-100-160	WS_35_LS	-	WS_35_PS	37,6	135,0	185	162	3600	500
125-100-200	WS_35_LS	-	WS_35_PS	32,5	142,0	219	179	3300	500
125-100-250	WS_35_LS	-	WS_35_PS	27,0	145,0	269	210	2500	500
125-100-315	WS_35_LS	-	WS_35_PS	23,0	142,0	334	270	1800	500
125-100-315	-	WS_60_LR	-	23,0	142,0	334	270	3000	500
125-100-400	WS_55_LS	-	WS_55_PS	18,0	142,8	401	329	1900	500
150-125-200	WS_35_LS	-	WS_35_PS	40,7	159,0	224	182	2600	500
150-125-250	WS_35_LS	-	WS_35_PS	37,0	162,4	269	218	2000	500
150-125-315	WS_55_LS	-	WS_55_PS	30,9	162,0	334	270	2300	500
150-125-400	WS_55_LS	-	WS_55_PS	25,9	162,4	419	330	1800	500
200-150-200	WS_35_LS	-	WS_35_PS	59,5	180,0	224	188	2300	500
200-150-250	WS_35_LS	-	WS_35_PS	48,8	191,0	269	220	1800	500
200-150-315	WS_55_LS	-	WS_55_PS	39,7	191,5	334	264	2100	500
200-150-400	WS_55_LS	-	WS_55_PS	33,0	191,4	419	330	1800	500

Selection charts

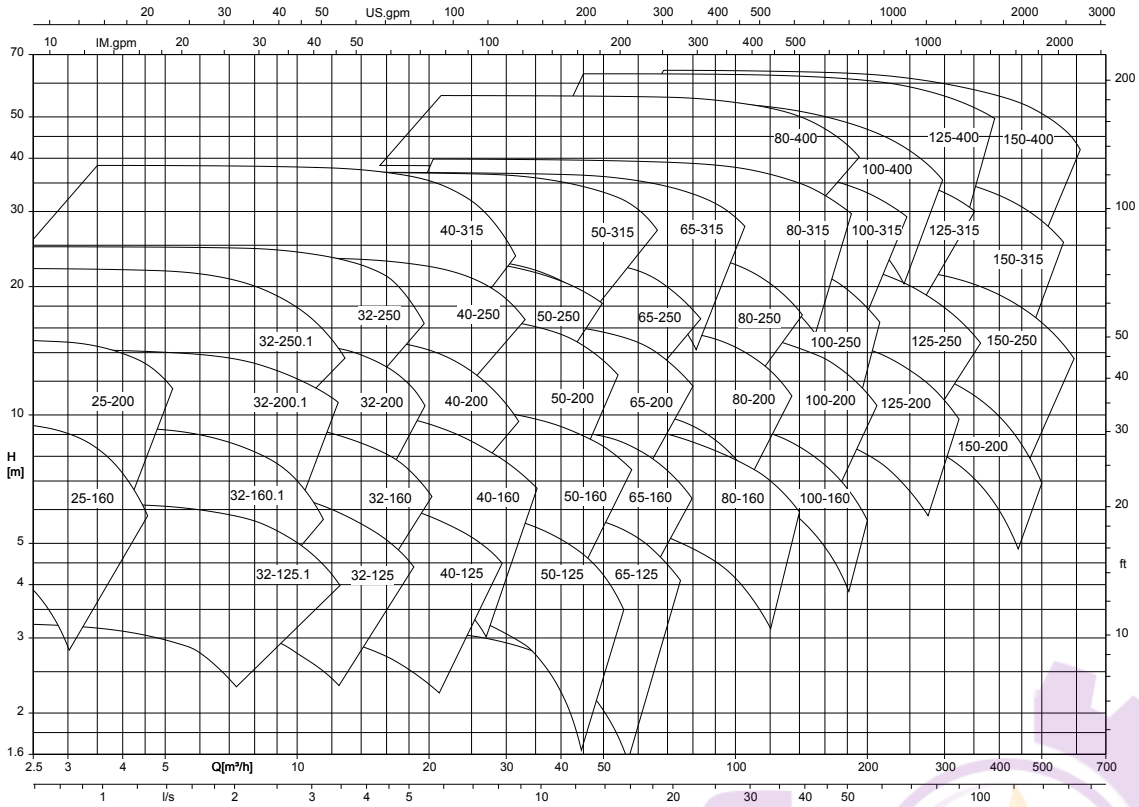
Etanorm, n = 2900 rpm



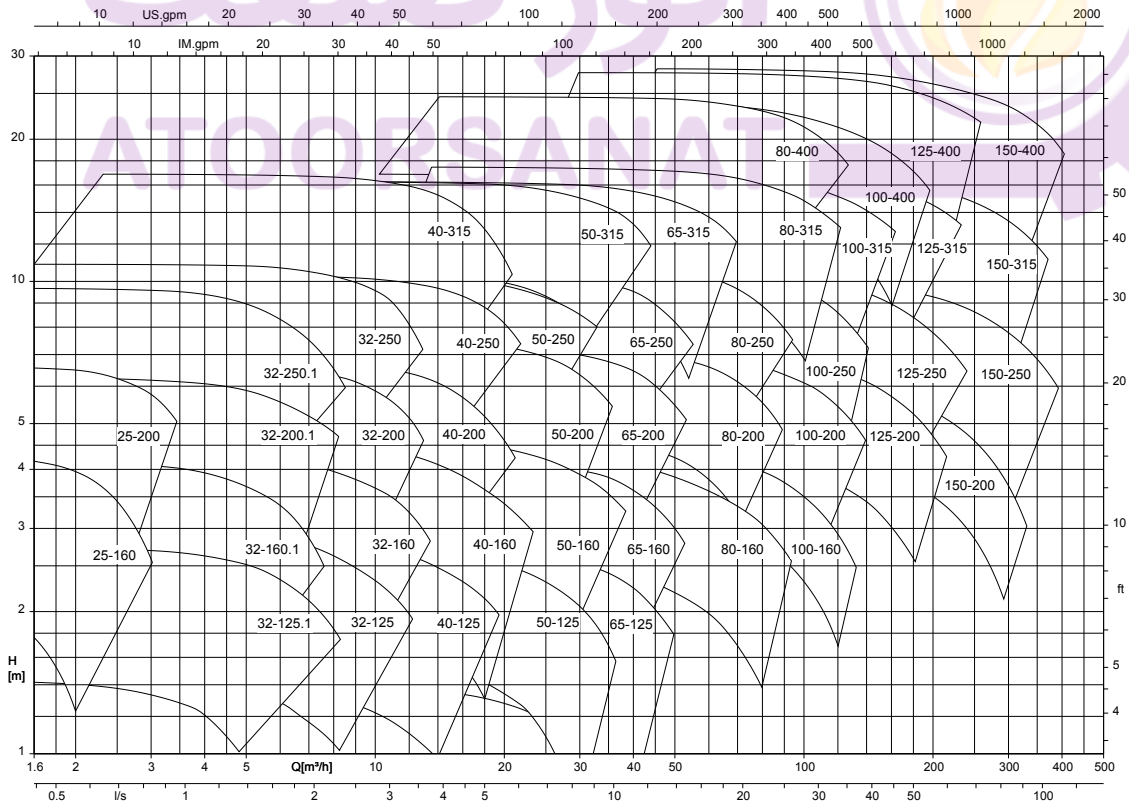
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Etanorm, n = 1450 rpm

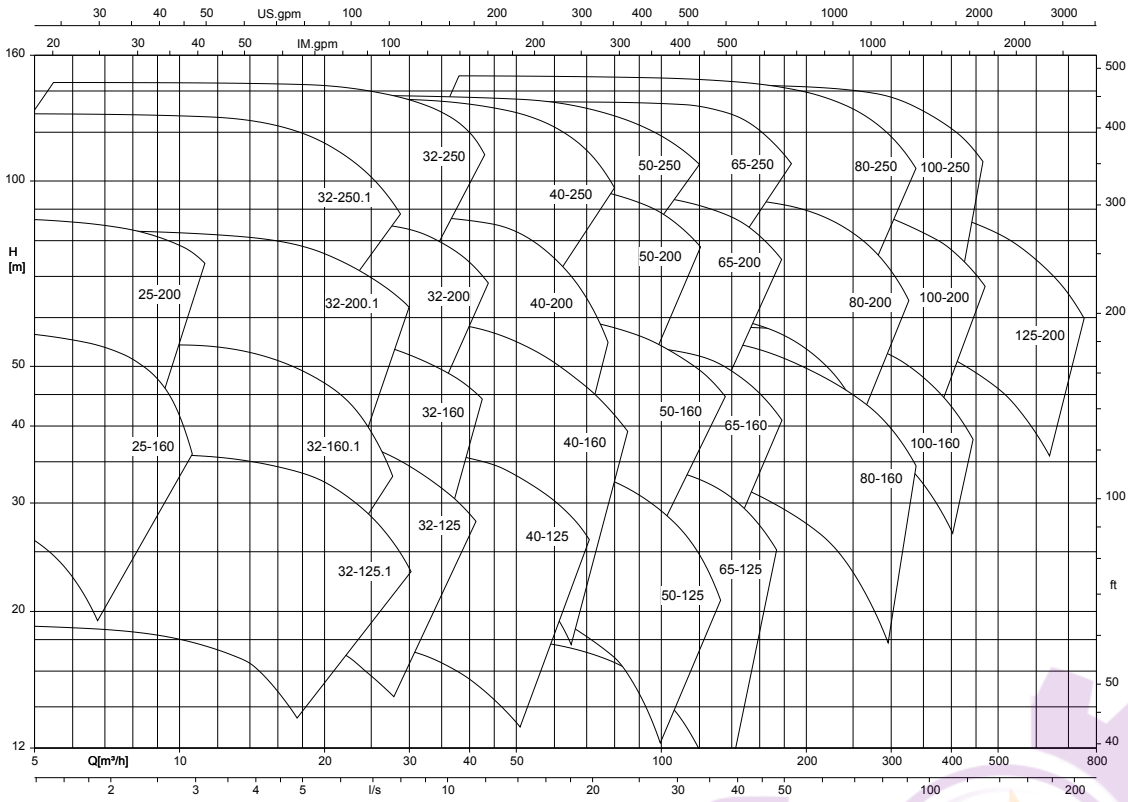


Etanorm, n = 960 rpm

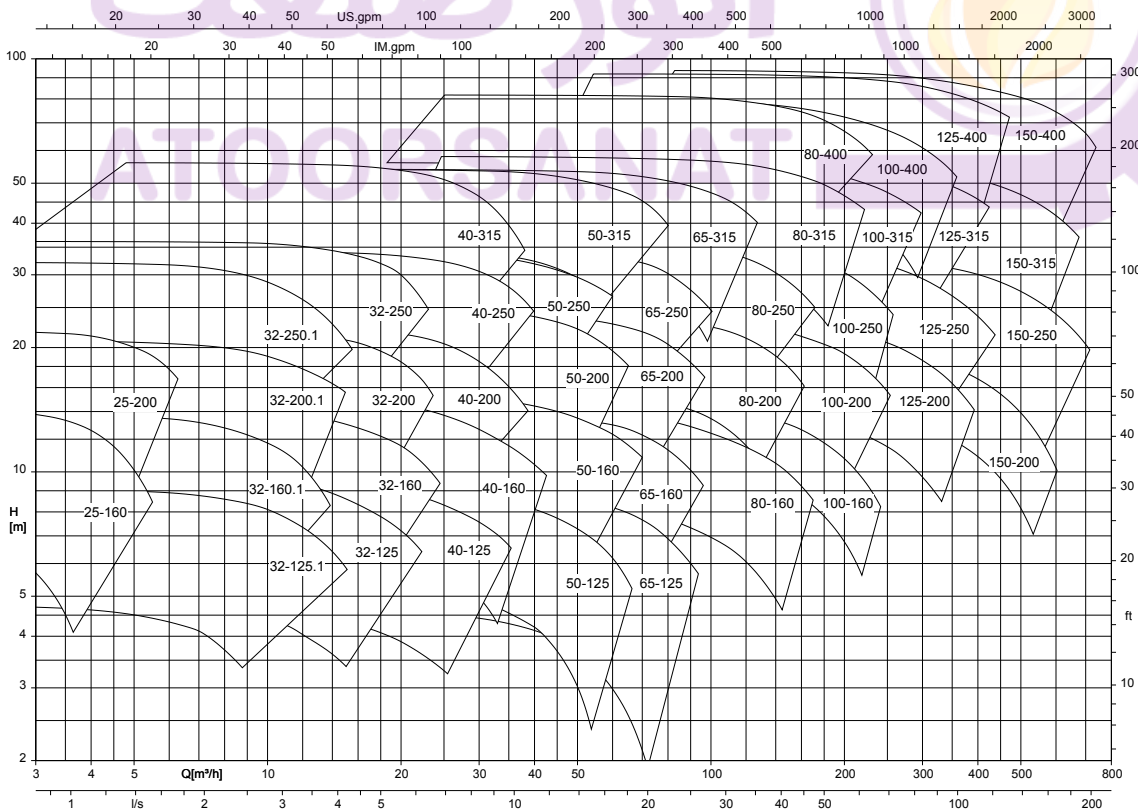




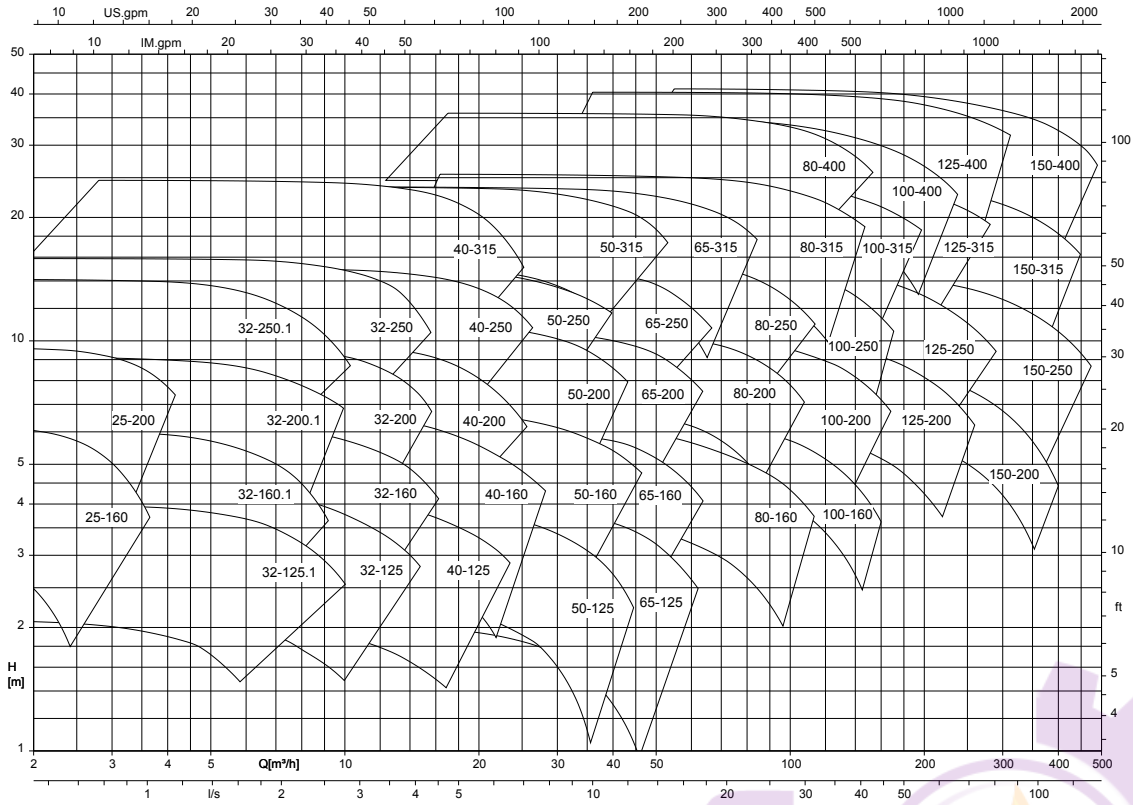
**Etanorm, n = 3500 rpm**



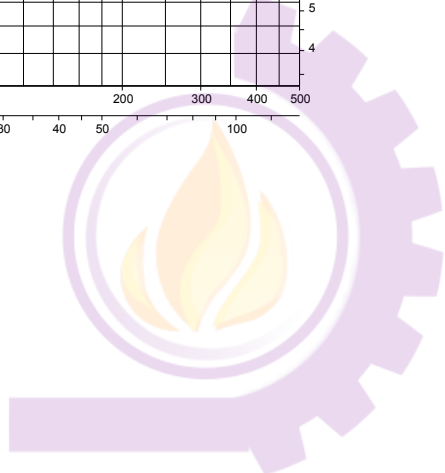
**Etanorm, n = 1750 rpm**



Etanorm, n = 1160 rpm

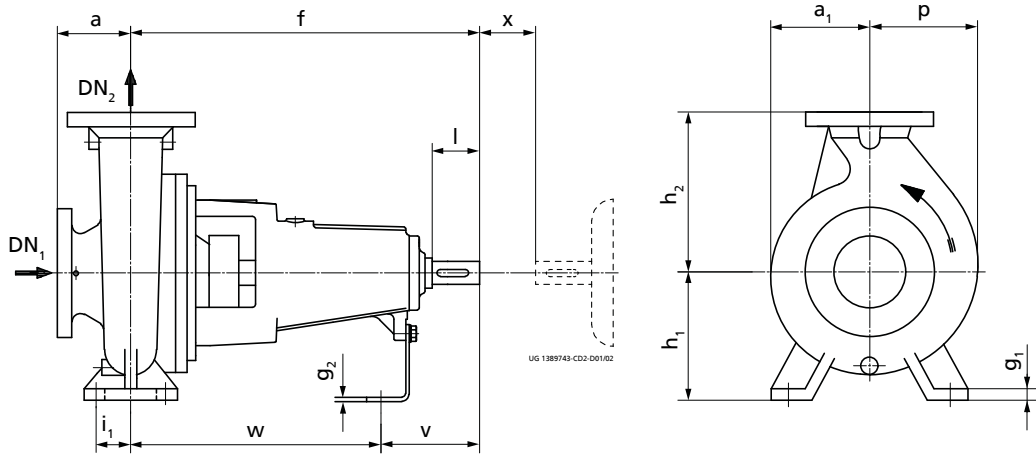


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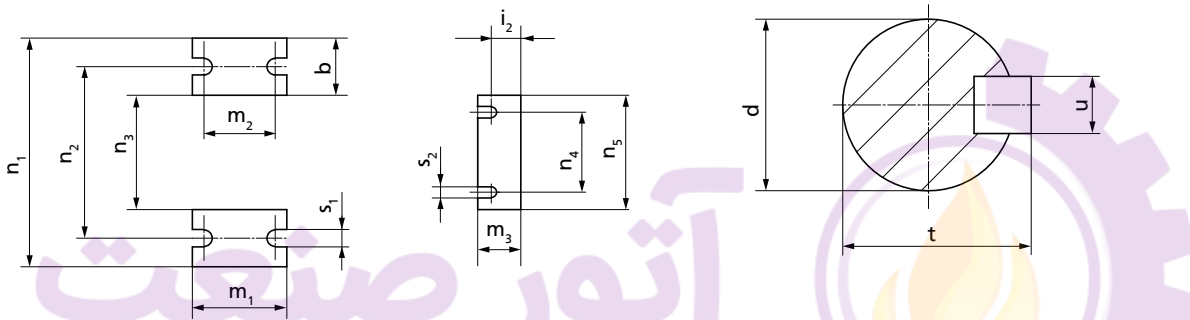


Dimensions

Pump with bearing bracket



Pump dimensions



Dimensions of shaft end and pump feet

Dimensions of pump with bearing bracket [mm]

Size	Bearing bracket	Bearing bracket	DN <sub>1</sub> <sup>20)</sup>	DN <sub>2</sub> <sup>20)</sup>	a <sup>20)</sup>	a <sub>1</sub>	b <sup>20)</sup>	d <sup>20)</sup>	f <sup>20)</sup>	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub> <sup>20)</sup>	h <sub>2</sub> <sup>20)</sup>	i <sub>1</sub>	i <sub>2</sub>	l <sup>20)</sup>	m <sub>1</sub> <sup>20)</sup>	m <sub>2</sub>
040-025-160	WS_25_LS	-	40	25	80	118	50	24	360	15	4	132	160	35	23	50	100	70
040-025-200	WS_25_LS	-	40	25	80	142	50	24	360	15	4	160	180	35	23	50	100	70
050-032-125.1	WS_25_LS	-	50	32	80	116	50	24	360	15	4	112	140	35	23	50	100	70
050-032-160.1	WS_25_LS	-	50	32	80	116	50	24	360	15	4	132	160	35	23	50	100	70
050-032-200.1	WS_25_LS	-	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70
050-032-250.1	WS_25_LS	-	50	32	100	168	65	24	360	18	6	180	225	47,5	25	50	125	95
050-032-125	WS_25_LS	-	50	32	80	115	50	24	360	15	4	112	140	35	23	50	100	70
050-032-160	WS_25_LS	-	50	32	80	118	50	24	360	15	4	132	160	35	23	50	100	70
050-032-200	WS_25_LS	-	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70
050-032-250	WS_25_LS	-	50	32	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95
065-040-125	WS_25_LS	-	65	40	80	117	50	24	360	15	4	112	140	35	23	50	100	70
065-040-160	WS_25_LS	-	65	40	80	119	50	24	360	15	4	132	160	35	23	50	100	70
065-040-200	WS_25_LS	-	65	40	100	142	50	24	360	18	4	160	180	35	23	50	100	70
065-040-250	WS_25_LS	-	65	40	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95
065-040-315	WS_35_LS	-	65	40	125	207	65	32	470	18	6	225	250	47,5	24	80	125	95
065-040-315	-	WS_50_LR	65	40	125	207	65	32	500 <sup>21)</sup>	18	6	225	250	47,5	26	80	125	95
065-050-125	WS_25_LS	-	65	50	100	117	50	24	360	18	4	132	160	35	23	50	100	70
065-050-160	WS_25_LS	-	65	50	100	128	50	24	360	18	4	160	180	35	23	50	100	70
065-050-200	WS_25_LS	-	65	50	100	144	50	24	360	18	4	160	200	35	23	50	100	70
065-050-250	WS_25_LS	-	65	50	100	170	65	24	360	18	6	180	225	47,5	25	50	125	95
065-050-315	WS_35_LS	-	65	50	125	207	65	32	470	18	6	225	280	47,5	24	80	125	95
065-050-315	-	WS_50_LR	65	50	125	207	65	32	500 <sup>21)</sup>	18	6	225	280	47,5	26	80	125	95
080-065-125	WS_25_LS	-	80	65	100	117	65	24	360	18	4	160	180	47,5	23	50	125	95
080-065-160	WS_25_LS	-	80	65	100	132	65	24	360	18	4	160	200	47,5	23	50	125	95

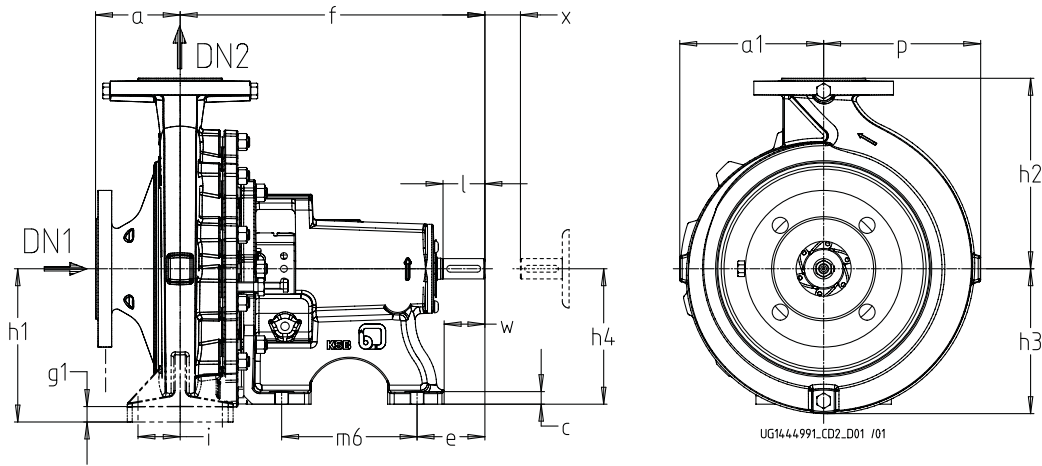
20) Dimensions to EN 733

21) Dimensions differ from those specified in EN 733

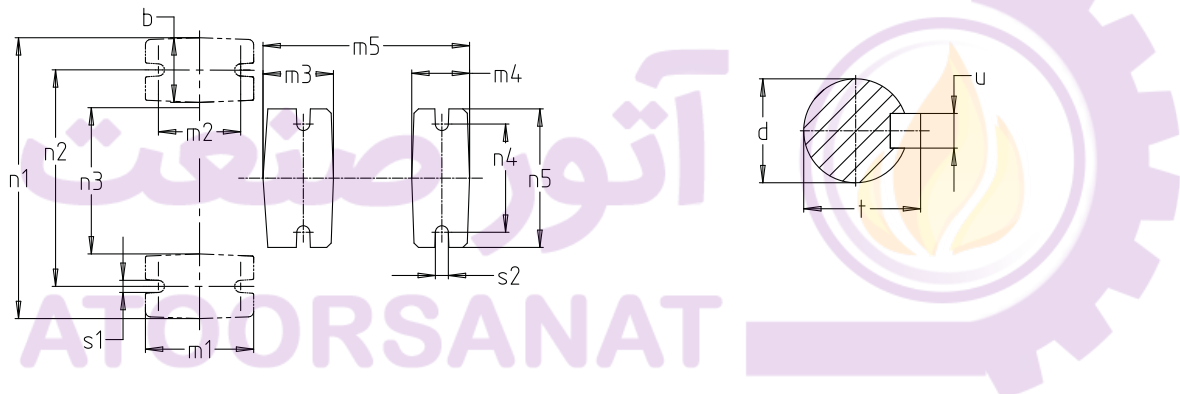


Size	Bearing bracket	Bearing bracket	DN <sub>1</sub> (20)	DN <sub>2</sub> (20)	m <sub>3</sub> (20)	n <sub>1</sub> (20)	n <sub>2</sub> (20)	n <sub>3</sub> (20)	n <sub>4</sub>	n <sub>5</sub>	p	s <sub>1</sub> (20)	s <sub>2</sub> (20)	t	u	v	w(20)	x(20)
200-150-315	WS_55_LS	-	200	150	48	550	450	350	110	160	304	24	14	45	12	160	370	140
200-150-400	WS_55_LS	-	200	150	48	550	450	350	110	160	331	24	14	45	12	160	370	140

**Pump with bearing pedestal**



**Dimensions of pump with bearing pedestal**



**Dimensions of bearing pedestal, shaft end and pump feet**

**Dimensions of pump with bearing pedestal [mm]**

Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	a <sub>1</sub>	b	c	d	e	f	g <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	i	l	m <sub>1</sub>	m <sub>2</sub>
040-025-160	WS_25_PS	40	25	80	118	-	14	24	80	360	-	-	160	106	160	-	50	-	-
040-025-200	WS_25_PS	40	25	80	142	-	14	24	80	360	-	-	180	137	160	-	50	-	-
050-032-125	WS_25_PS	50	32	80	115	-	14	24	80	360	-	-	140	104	160	-	50	-	-
050-032-125.1	WS_25_PS	50	32	80	116	-	14	24	80	360	-	-	140	104	160	-	50	-	-
050-032-160.1	WS_25_PS	50	32	80	116	-	14	24	80	360	-	-	160	110	160	-	50	-	-
050-032-200.1	WS_25_PS	50	32	80	142	-	14	24	80	360	-	-	180	137	160	-	50	-	-
050-032-250.1	WS_25_PS	50	32	100	168	-	14	24	80	360	-	-	225	166	160	-	50	-	-
050-032-160	WS_25_PS	50	32	80	118	-	14	24	80	360	-	-	160	115	160	-	50	-	-
050-032-200	WS_25_PS	50	32	80	142	-	14	24	80	360	-	-	180	137	160	-	50	-	-
050-032-250	WS_25_PS	50	32	100	169	-	14	24	80	360	-	-	225	166	160	-	50	-	-
065-040-125	WS_25_PS	65	40	80	117	-	14	24	80	360	-	-	140	106	160	-	50	-	-
065-040-160	WS_25_PS	65	40	80	119	-	14	24	80	360	-	-	160	119	160	-	50	-	-
065-040-200	WS_25_PS	65	40	100	142	-	14	24	80	360	-	-	180	141	160	-	50	-	-
065-040-250	WS_25_PS	65	40	100	169	-	14	24	80	360	-	-	225	166	160	-	50	-	-
065-040-315	WS_35_PS	65	40	125	207	-	20	32	110	470	-	-	250	203	200	-	80	-	-
065-050-125	WS_25_PS	65	50	100	117	-	14	24	80	360	-	-	160	112	160	-	50	-	-
065-050-160	WS_25_PS	65	50	100	128	-	14	24	80	360	-	-	180	133	160	-	50	-	-
065-050-200	WS_25_PS	65	50	100	144	-	14	24	80	360	-	-	200	150	160	-	50	-	-
065-050-250	WS_25_PS	65	50	100	170	-	14	24	80	360	-	-	225	171	160	-	50	-	-
065-050-315	WS_35_PS	65	50	125	207	-	20	32	110	470	-	-	280	203	200	-	80	-	-

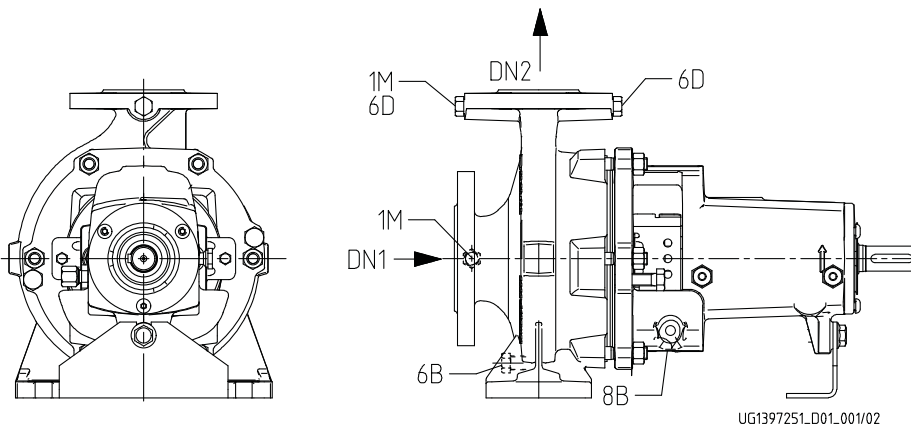
Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	a <sub>1</sub>	b	c	d	e	f	g <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	i	l	m <sub>1</sub>	m <sub>2</sub>
080-065-125	WS_25_PS	80	65	100	117	-	14	24	80	360	-	-	180	126	160	-	50	-	-
080-065-160	WS_25_PS	80	65	100	132	-	14	24	80	360	-	-	200	139	160	-	50	-	-
080-065-200	WS_25_PS	80	65	100	155	-	14	24	80	360	-	-	225	161	160	-	50	-	-
080-065-250	WS_35_PS	80	65	100	179	-	20	32	110	470	-	-	250	184	200	-	80	-	-
080-065-315	WS_35_PS	80	65	125	209	-	20	32	110	470	-	-	280	213	200	-	80	-	-
100-080-160	WS_25_PS	100	80	125	138	-	14	24	80	360	-	-	225	153	160	-	50	-	-
100-080-200	WS_35_PS	100	80	125	159	-	20	32	110	470	-	-	250	169	200	-	80	-	-
100-080-250	WS_35_PS	100	80	125	183	-	20	32	110	470	-	-	280	192	200	-	80	-	-
100-080-315	WS_35_PS	100	80	125	218	-	20	32	110	470	-	-	315	227	200	-	80	-	-
100-080-400	WS_55_PS	100	80	125	257	80	22	42	110	530	20	280	355	-	250	60	110	160	120
125-100-160	WS_35_PS	125	100	125	178	-	20	32	110	470	-	-	280	198	200	-	80	-	-
125-100-200	WS_35_PS	125	100	125	173	-	20	32	110	470	-	-	280	189	200	-	80	-	-
125-100-250	WS_35_PS	125	100	140	188	-	20	32	110	470	-	-	280	200	200	-	80	-	-
125-100-315	WS_35_PS	125	100	140	225	-	20	32	110	470	-	-	315	236	200	-	80	-	-
125-100-400	WS_55_PS	125	100	140	255	100	22	42	110	530	20	280	355	-	250	75	110	200	150
150-125-200	WS_35_PS	150	125	140	189	-	20	32	110	470	-	-	315	212	200	-	80	-	-
150-125-250	WS_35_PS	150	125	140	226	-	20	32	110	470	-	-	355	248	200	-	80	-	-
150-125-315	WS_55_PS	150	125	140	243	100	22	42	110	530	20	280	355	-	250	75	110	200	150
150-125-400	WS_55_PS	150	125	140	277	100	22	42	110	530	20	315	400	-	250	75	110	200	150
200-150-200	WS_35_PS	200	150	160	240	100	20	32	110	470	20	280	400	-	200	75	80	200	150
200-150-250	WS_35_PS	200	150	160	230	100	20	32	110	470	20	280	400	-	200	75	80	200	150
200-150-315	WS_55_PS	200	150	160	255	100	22	42	110	530	20	280	400	-	250	75	110	200	150
200-150-400	WS_55_PS	200	150	160	289	100	22	42	110	530	20	315	450	-	250	75	110	200	150

Dimensions of pump with bearing pedestal, continued [mm]

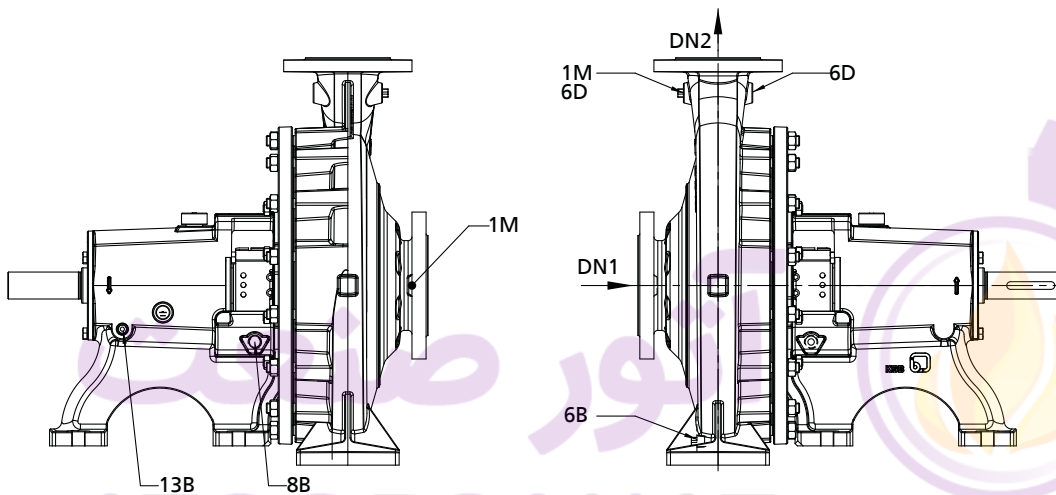
Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	m <sub>6</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	n <sub>5</sub>	p	s <sub>1</sub>	s <sub>2</sub>	t	u	w	x
040-025-160	WS_25_PS	40	25	56	64	216	160	-	-	-	125	160	118	-	15	27	8	48	100
040-025-200	WS_25_PS	40	25	56	64	216	160	-	-	-	125	160	142	-	15	27	8	48	100
050-032-125	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	115	-	15	27	8	48	100
050-032-125.1	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	116	-	15	27	8	48	100
050-032-160.1	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	121	-	15	27	8	48	100
050-032-200.1	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	142	-	15	27	8	48	100
050-032-250.1	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	168	-	15	27	8	48	100
050-032-160	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	128	-	15	27	8	48	100
050-032-200	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	143	-	15	27	8	48	100
050-032-250	WS_25_PS	50	32	56	64	216	160	-	-	-	125	160	178	-	15	27	8	48	100
065-040-125	WS_25_PS	65	40	56	64	216	160	-	-	-	125	160	117	-	15	27	8	48	100
065-040-160	WS_25_PS	65	40	56	64	216	160	-	-	-	125	160	134	-	15	27	8	48	100
065-040-200	WS_25_PS	65	40	56	64	216	160	-	-	-	125	160	155	-	15	27	8	48	100
065-040-250	WS_25_PS	65	40	56	64	216	160	-	-	-	125	160	179	-	15	27	8	48	100
065-040-315	WS_35_PS	65	40	58	80	271	210	-	-	-	160	200	207	-	19	35	10	70	100
065-050-125	WS_25_PS	65	50	56	64	216	160	-	-	-	125	160	130	-	15	27	8	48	100
065-050-160	WS_25_PS	65	50	56	64	216	160	-	-	-	125	160	149	-	15	27	8	48	100
065-050-200	WS_25_PS	65	50	56	64	216	160	-	-	-	125	160	163	-	15	27	8	48	100
065-050-250	WS_25_PS	65	50	56	64	216	160	-	-	-	125	160	186	-	15	27	8	48	100
065-050-315	WS_35_PS	65	50	58	80	271	210	-	-	-	160	200	215	-	19	35	10	70	100
080-065-125	WS_25_PS	80	65	56	64	216	160	-	-	-	125	160	150	-	15	27	8	48	100
080-065-160	WS_25_PS	80	65	56	64	216	160	-	-	-	125	160	160	-	15	27	8	48	100
080-065-200	WS_25_PS	80	65	56	64	216	160	-	-	-	125	160	178	-	15	27	8	48	140
080-065-250	WS_35_PS	80	65	58	80	271	210	-	-	-	160	200	199	-	19	35	10	70	140
080-065-315	WS_35_PS	80	65	58	80	271	210	-	-	-	160	200	229	-	19	35	10	70	140
100-080-160	WS_25_PS	100	80	56	64	216	160	-	-	-	125	160	174	-	15	27	8	48	140
100-080-200	WS_35_PS	100	80	58	80	271	210	-	-	-	160	200	188	-	19	35	10	70	140
100-080-250	WS_35_PS	100	80	58	80	271	210	-	-	-	160	200	209	-	19	35	10	70	140
100-080-315	WS_35_PS	100	80	58	80	271	210	-	-	-	160	200	242	-	19	35	10	70	140
100-080-400	WS_55_PS	100	80	68	90	323	250	435	355	275	200	250	280	19	19	45	12	65	140
125-100-160	WS_35_PS	125	100	58	80	271	210	-	-	-	160	200	225	-	19	35	10	70	140
125-100-200	WS_35_PS	125	100	58	80	271	210	-	-	-	160	200	212	-	19	35	10	70	140
125-100-250	WS_35_PS	125	100	58	80	271	210	-	-	-	160	200	219	-	19	35	10	70	140
125-100-315	WS_35_PS	125	100	58	80	271	210	-	-	-	160	200	255	-	19	35	10	70	140
125-100-400	WS_55_PS	125	100	68	90	323	250	500	400	300	200	250	283	24	19	45	12	65	140
150-125-200	WS_35_PS	150	125	58	80	271	210	-	-	-	160	200	242	-	19	35	10	70	140
150-125-250	WS_35_PS	150	125	58	80	271	210	-	-	-	160	200	275	-	19	35	10	70	140
150-125-315	WS_55_PS	150	125	68	90	323	250	500	400	300	200	250	280	24	19	45	12	65	140
150-125-400	WS_55_PS	150	125	68	90	323	250	500	400	300	200	250	309	24	19	45	12	65	140
200-150-200	WS_35_PS	200	150	58	80	271	210	550	450	350	160	200	316	24	19	35	10	70	140
200-150-250	WS_35_PS	200	150	58	80	271	210	500	400	300	160	200	300	24	19	35	10	70	140
200-150-315	WS_55_PS	200	150	68	90	323	250	550	450	350	200	250	304	24	19	45	12	65	140
200-150-400	WS_55_PS	200	150	68	90	323	250	550	450	350	200	250	331	24	19	45	12	65	140



Connections



Connections, pump with bearing bracket



Connections, pump with bearing pedestal

Connections

Connection	Description	Configuration	Position	Region
1M	Pressure gauge connection	On pump set with pressure sensor	DN2	A, B, C
6B	Fluid drain	Drilled and closed	-	A, B, C
6D	Fluid priming and venting	Drilled and closed	DN2, suction side	A, C
8B	Leakage drain	Drilled and closed	-	A, B, C
1M optional	Pressure gauge connection	Drilled and closed or with pressure sensor	DN1	A, B
6D optional	Fluid priming and venting	Drilled and closed	DN2, drive end	A, B
13B	Oil drain	Drilled and closed	-	B, C

Connections

Size	Bearing bracket	Europe			India		South Africa			
		Casing material								
		G, B	C, S	G, B, C, S	G		G	C	G, C	
		Connection								
		1M / 6D / 6B	8B	1M / 6D / 6B	8B	1M / 6D / 6B	8B	13B		
040-025-160	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
040-025-200	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4

Size	Bearing bracket	Europe			India		South Africa			
		Casing material								
		G, B	C, S	G, B, C, S	G		G	C	G, C	
		Connection								
		1M / 6D / 6B	8B	1M / 6D / 6B	8B	1M / 6D / 6B	8B	13B		
050-032-125.1	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-160.1	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-200.1	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-250.1	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-125	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-160	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-200	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
050-032-250	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-125	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-160	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-200	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-250	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-315	WS_35_LS	Rc 1/4	G 1/4	G 1/2	G 1/4	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-040-315	WS_50_LR	Rc 1/4	G 1/4	-	G 1/4	-	Rc 1/4	G 1/4	-	G 1/4
065-050-125	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 3/8	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-050-160	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 3/8	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-050-200	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 3/8	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-050-250	WS_25_LS	Rc 1/4	G 1/4	G 1/2	G 3/8	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-050-315	WS_35_LS	Rc 1/4	G 1/4	G 1/2	G 3/8	NPT 1/2-14	Rc 1/4	G 1/4	G 1/2	G 1/4
065-050-315	WS_50_LR	Rc 1/4	G 1/4	-	G 3/8	-	Rc 1/4	G 1/4	-	G 1/4
080-065-125	WS_25_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
080-065-160	WS_25_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
080-065-200	WS_25_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
080-065-250	WS_35_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
080-065-315	WS_35_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
080-065-315	WS_60_LR	Rc 3/8	G 3/8	-	G 3/8	-	Rc 3/8	G 3/8	-	G 1/4
100-080-160	WS_25_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
100-080-200	WS_35_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
100-080-250	WS_35_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
100-080-315	WS_35_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
100-080-315	WS_60_LR	Rc 3/8	G 3/8	-	G 3/8	-	Rc 3/8	G 3/8	-	G 1/4
100-080-400	WS_55_LS	Rc 3/8	G 3/8	G 1/2	G 3/8	NPT 1/2-14	Rc 3/8	G 3/8	G 1/2	G 1/4
125-100-160	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
125-100-200	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
125-100-250	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
125-100-315	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
125-100-315	WS_60_LR	R 1/2	G 1/2	-	G 1/2	-	R 1/2	G 1/2	-	G 1/4
125-100-400	WS_55_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
150-125-200	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
150-125-250	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
150-125-315	WS_55_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
150-125-400	WS_55_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
200-150-200	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
200-150-250	WS_35_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
200-150-315	WS_55_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4
200-150-400	WS_55_LS	R 1/2	G 1/2	G 1/2	G 1/2	NPT 1/2-14	R 1/2	G 1/2	G 1/2	G 1/4

### Flange design

Flange design by materials

Material variant	Standard	Nominal size	Pressure class	Region
G, GB, GC	EN 1092-2	DN 25 - DN 150	PN 16	A, C
		DN 200	PN 10	
	Drilled to ASME B16.1 <sup>22)</sup>	DN 25 - DN 200	Class 125	A, B

<sup>22)</sup> DN 80 machined like DN 100



Material variant	Standard	Nominal size	Pressure class	Region
S, SB, SC	EN 1092-2	DN 25 - DN 200	PN 16	A, C
	Drilled to ASME B16.1 <sup>22)</sup>	DN 25 - DN 200	Class 125	A
B	EN 1092-3	DN 25 - DN 200	PN 10	A, C
	Drilled to ASME B16.1 <sup>22)</sup>	DN 25 - DN 200	Class 125	A
C	EN 1092-1	DN 25 - DN 150	PN 16	A, C
		DN 200	PN 10	
	Drilled to ASME B16.1 <sup>22)</sup>	DN 25 - DN 200	Class 150	A

### Scope of supply

Depending on the design variant the following components are included in the scope of supply:

Scope of supply

Scope of supply	Region
Pump	A, B, C
Baseplate	A, B, C
Coupling	A, B, C
Coupling guard	A, B, C
Motor	A, C

**آتور صنعت**  
**ATOORSANAT**



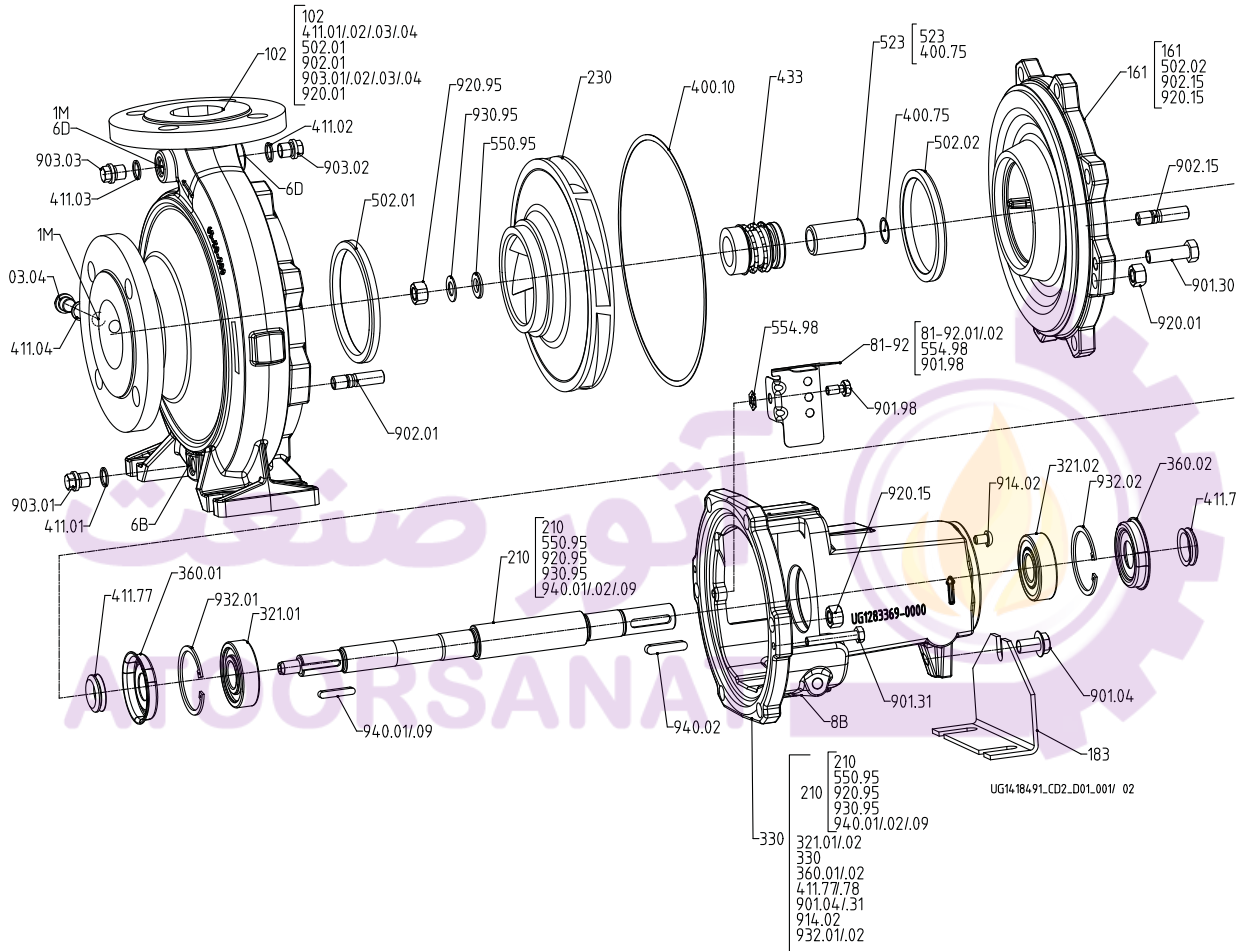
General assembly drawings

Standardised mechanical seal and bolted casing cover

This view applies to the following pump sizes:

040-025-200	050-32-200.1	065-040-200	065-050-200	080-065-200	100-080-250	125-100-250	150-125-250	200-150-250
	050-32-250.1	065-040-250	065-050-250	080-065-250	100-080-315	125-100-315	150-125-315	200-150-315
	050-32-200	065-040-315	065-050-315	080-065-315	100-080-400	125-100-400	150-125-400	200-150-400
	050-32-250							

[ Supplied in packaging units only



Pump set with standardised mechanical seal and bolted casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	554.98	Lock washer
161	Casing cover	81-92.01/02	Cover plate
183	Support foot	901.04/.30/.31/.98	Hexagon head bolt
210	Shaft	902.01/.15	Stud
230	Impeller	903.01/.02/.03/.04	Screw plug
321.01/02	Deep groove ball bearing	914.02	Round-head screw
330	Bearing bracket	920.01/.15/.95	Hexagon nut
360.01/02	Bearing cover	930.95	Spring washer
400.10/75	Gasket	932.01/02	Circlip
411.01/02/.03/.04	Joint ring <sup>23)</sup>	940.01/02/.09 <sup>24)</sup>	Key

Part No.	Description	Part No.	Description
411.77/78	Axial seal ring	Connections:	
433	Mechanical seal	1M	Connection for pressure gauge
502.01/02	Casing wear ring <sup>25)</sup>	6B	Fluid drain
523	Shaft sleeve	6D	Fluid priming and venting
550.95 <sup>26)</sup>	Disc	8B	Leakage drain

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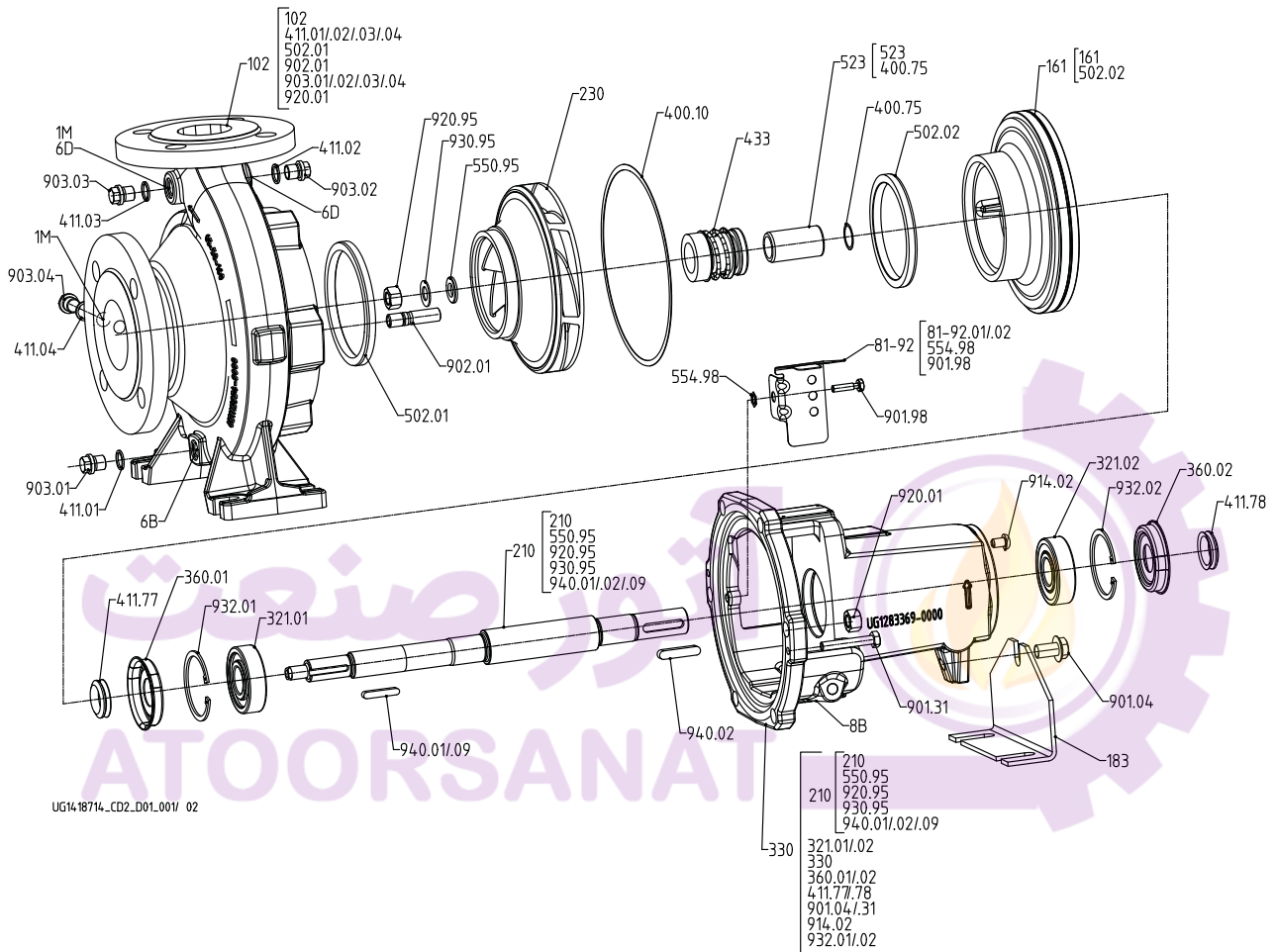
<sup>23)</sup> For casing materials S and C only  
<sup>24)</sup> For shaft units 55 and 60 only  
<sup>25)</sup> Optional for casing material C  
<sup>26)</sup> For shaft unit 25 only

**Standardised mechanical seal and clamped casing cover**

This view applies to the following pump sizes:

- |             |              |             |             |             |             |             |             |             |
|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 040-025-160 | 050-32-125.1 | 065-040-125 | 065-050-125 | 080-065-125 | 100-080-160 | 125-100-160 | 150-125-200 | 200-150-200 |
|             | 050-32-160.1 | 065-040-160 | 065-050-160 | 080-065-160 | 100-080-200 | 125-100-200 |             |             |
|             | 050-32-125   |             |             |             |             |             |             |             |
|             | 050-32-160   |             |             |             |             |             |             |             |

[ Supplied in packaging units only



**Pump set with standardised mechanical seal and clamped casing cover**

List of components

Part No.	Description	Part No.	Description
102	Volute casing	554.98	Lock washer
161	Casing cover	81-92.01/02	Cover plate
183	Support foot	901.04/.30/.31/.98	Hexagon head bolt
210	Shaft	902.01/.15	Stud
230	Impeller	903.01/.02/.03/.04	Screw plug
321.01/02	Deep groove ball bearing	914.02	Round-head screw
330	Bearing bracket	920.01/.95	Hexagon nut
360.01/02	Bearing cover	930.95	Spring washer
400.10/75	Gasket	932.01/02	Circlip
411.01/02/03/04	Joint ring <sup>27)</sup>	940.01/02/09 <sup>28)</sup>	Key

27) For casing materials S and C only

Part No.	Description	Part No.	Description
411.77/78	Axial sealing ring	Connections:	
433	Mechanical seal	1M	Connection for pressure gauge
502.01/02 <sup>29)</sup>	Casing wear ring <sup>30)</sup>	6B	Fluid drain
523	Shaft sleeve	6D	Fluid priming and venting
550.95 <sup>31)</sup>	Disc	8B	Leakage drain

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28) For shaft units 55 and 60 only

29) Not on sizes 040-025-160, 050-32-125.1, 050-32-160.1, 050-32-125, 050-32-160, 065-040-125

30) Optional for casing material C

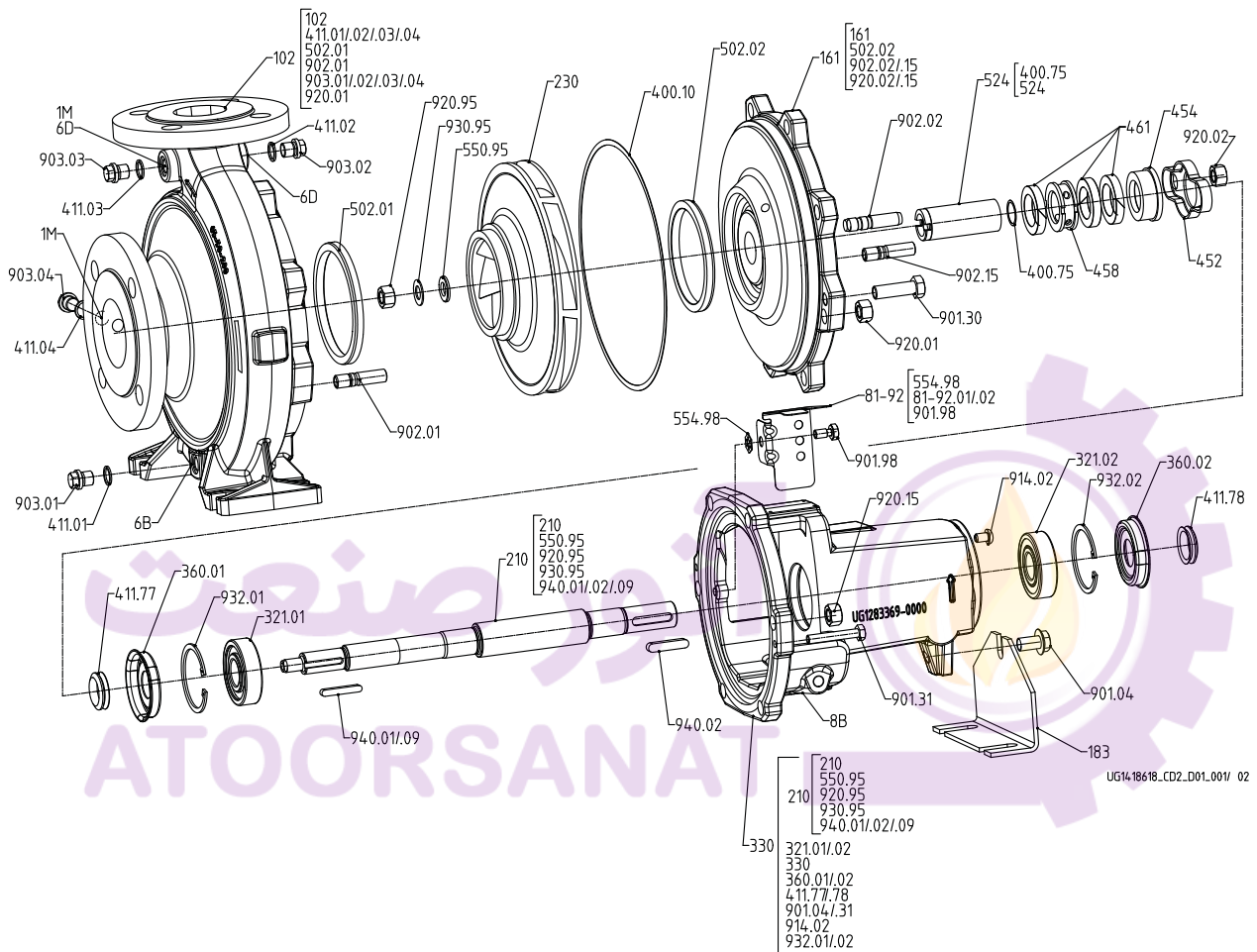
31) For shaft unit 25 only

### Gland packing and bolted casing cover

This view applies to the following pump sizes:

040-025-200	050-32-200.1	065-040-200	065-050-200	080-065-200	100-080-250	125-100-250	150-125-250	200-150-250
	050-32-250.1	065-040-250	065-050-250	080-065-250	100-080-315	125-100-315	150-125-315	200-150-315
	050-32-200	065-040-315	065-050-315	080-065-315	100-080-400	125-100-400	150-125-400	200-150-400
	050-32-250							

[ Supplied in packaging units only



### Pump set with gland packing and bolted casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	550.95 <sup>32)</sup>	Disc
161	Casing cover	554.98	Lock washer
183	Support foot	81-92.01/02	Cover plate
210	Shaft	901.04/30/98	Hexagon head bolt
230	Impeller	902.01/02/15	Stud
321.01/02	Deep groove ball bearing	903.01/02/03/04	Screw plug
330	Bearing bracket	914.02	Round-head screw
360.01/02	Bearing cover	920.01/02/15/95	Hexagon nut
400.10/75	Gasket	930.95	Spring washer

32) For shaft unit 25 only

Part No.	Description	Part No.	Description
411.01/02/03/04	Joint ring <sup>33)</sup>	932.01/02	Circlip
411.77/78	Axial seal ring	940.01/02/09 <sup>34)</sup>	Key
452	Gland follower		
454	Stuffing box ring	Connections:	
458	Lantern ring	1M	Connection for pressure gauge
461	Gland packing	6B	Fluid drain
502.01/02	Casing wear ring <sup>35)</sup>	6D	Fluid priming and venting
524	Shaft protecting sleeve	8B	Leakage drain

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<sup>33)</sup> For casing material C only

<sup>34)</sup> For shaft units 55 and 60 only

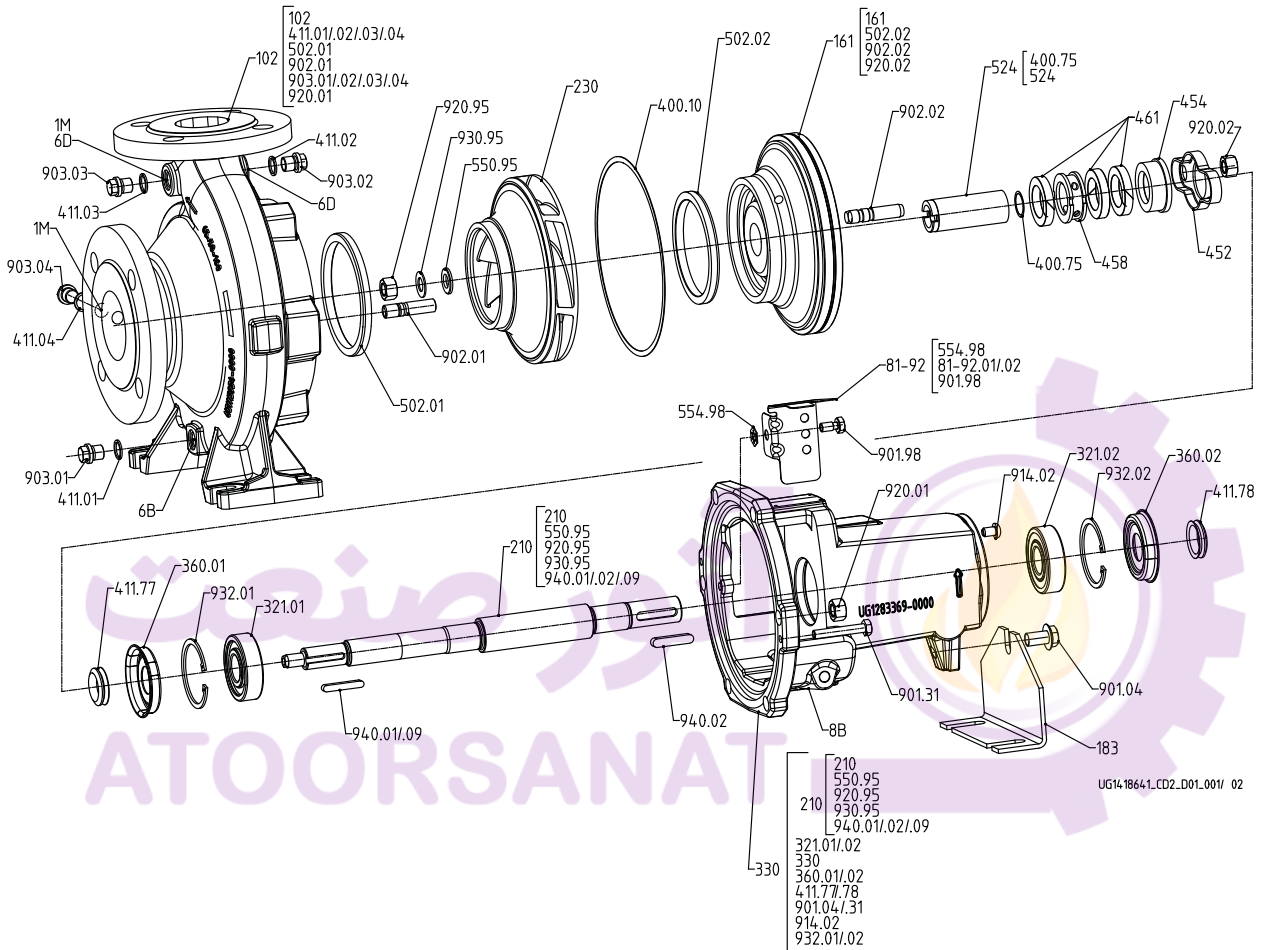
<sup>35)</sup> Optional for casing material C

### Gland packing and clamped casing cover

This view applies to the following pump sizes:

040-025-160	050-32-125.1 050-32-160.1	065-040-125 065-040-160	065-050-125 065-050-160	080-065-125 080-065-160	100-080-160 100-080-200	125-100-160 125-100-200	150-125-200	200-150-200
	050-32-125 050-32-160							

[ Supplied in packaging units only



### Pump set with gland packing and clamped casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	550.95 <sup>36)</sup>	Disc
161	Casing cover	554.98	Lock washer
183	Support foot	81-92.01/02	Cover plate
210	Shaft	901.04/30/98	Hexagon head bolt
230	Impeller	902.01/02	Stud
321.01/02	Deep groove ball bearing	903.01/02/03/04	Screw plug
330	Bearing bracket	914.02	Round-head screw
360.01/02	Bearing cover	920.01/02/15/95	Hexagon nut
400.10/75	Gasket	930.95	Spring washer
411.01/02/03/04	Joint ring <sup>37)</sup>	932.01/02	Circlip

36) For shaft unit 25 only



Part No.	Description	Part No.	Description
411.77/78	Axial seal ring	940.01/02/09 <sup>38)</sup>	Key
452	Gland follower		
454	Stuffing box ring	Connections:	
458	Lantern ring	1M	Connection for pressure gauge
461	Gland packing	6B	Fluid drain
502.01/02 <sup>39)</sup>	Casing wear ring <sup>40)</sup>	6D	Fluid priming and venting
524	Shaft protecting sleeve	8B	Leakage drain

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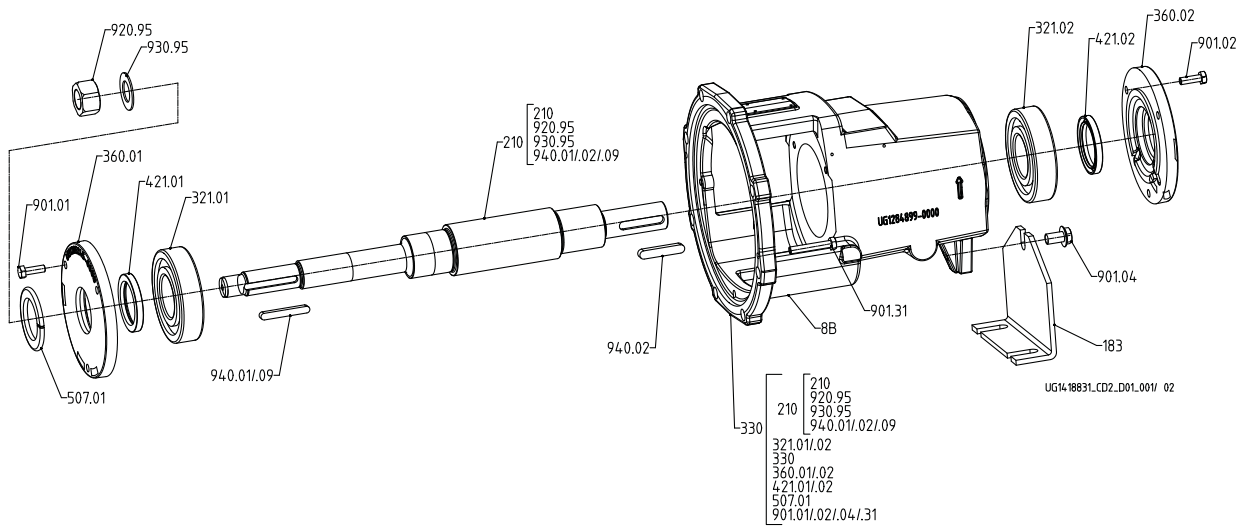
<sup>37)</sup> For casing material C only

<sup>38)</sup> For shaft units 55 and 60 only

<sup>39)</sup> Not on sizes 040-025-160, 050-32-125.1, 050-32-160.1, 050-32-125, 050-32-160, 065-040-125

<sup>40)</sup> Optional for casing material C

Reinforced bearings



Version with reinforced bearings (shaft units 50 and 60)

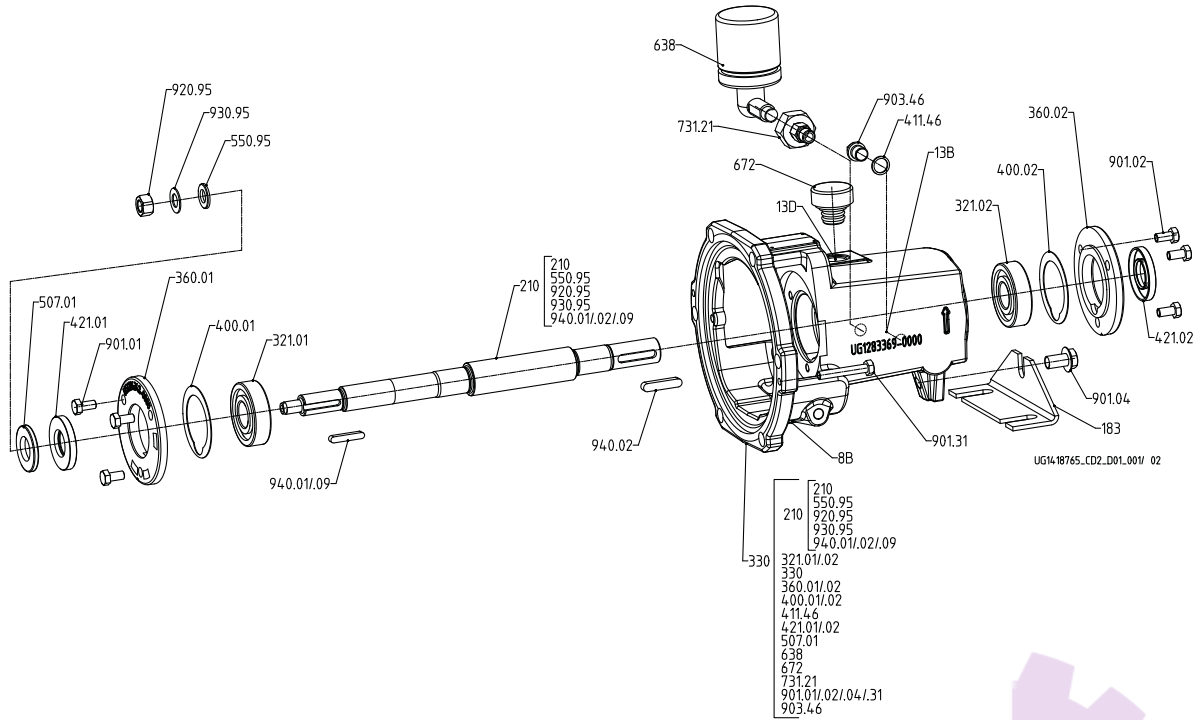
List of components<sup>41)</sup>

Part No.	Description	Part No.	Description
183	Support foot	901.01/.02/.04/.31	Hexagon head bolt
210	Shaft	920.95	Hexagon nut
330	Bearing bracket	930.95	Spring washer
321.01/.02	Deep groove ball bearing	940.01/.02/.09 <sup>42)</sup>	Key
360.01/.02	Bearing cover		
421.01/.02	Lip seal	Connections:	
507.01	Thrower	8B	Leakage drain

41) Some individual components might not be applicable, depending on the size and material.

42) For shaft unit 60 only

Oil lubrication with constant level oiler



Version with oil lubrication and constant level oiler

List of components<sup>43)</sup>

Part No.	Description	Part No.	Description
183	Support foot	672	Venting device
210	Shaft	731.21	Pipe union
330	Bearing bracket	901.01/.02/.04/.31	Hexagon head bolt
321.01/.02	Deep groove ball bearing	903.46	Screw plug
360.01/.02	Bearing cover	920.95	Hexagon nut
400.01/.02	Gasket	930.95	Spring washer
411.46	Joint ring	940.01/.02/.09 <sup>44)</sup>	Key
421.01/.02	Lip seal	Connections:	
507.01	Thrower	8B	Leakage drain
550.95 <sup>45)</sup>	Disc	13B	Oil drain
638	Constant level oiler	13D	Oil filling and venting

<sup>43)</sup> Some individual components might not be applicable, depending on the size and material.

<sup>44)</sup> For shaft units 55 and 60 only

<sup>45)</sup> For shaft unit 25 only

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