

## Centrifugal Pumps with Shaft Seal

### Standardised Water Pumps

## Etanorm



### Main applications

Pump for handling clean or aggressive fluids which are neither chemically nor mechanically aggressive to the pump materials.

- Water supply systems
- Cooling circuits
- Swimming pools
- Fire-fighting systems
- General 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	
		50 Hz	60 Hz
Flow rate	Q [m <sup>3</sup> /h]	≤ 640	≤ 740
Head	H [m]	≤ 160	≤ 160
Fluid temperature	T [°C]	-30 to +140	
Operating pressure	p [bar]	≤ 16	

### Materials per country

- A = Europe, Middle East, North Africa
  - A1 = Default material variant
  - A2 = Optional material variant
- B = India
  - B1 = Default material variant
  - B2 = Optional material variant
- C = South Africa
  - C1 = Default material variant
  - C2 = Optional material variant
- D = China
  - D1 = Default material variant
  - D2 = Optional material variant

### Designation

Example: ETN 050-032-160 GBXAA10GD2 PD2E M

Designation key

Code	Description
ETN	Etanorm type series
050	Nominal suction nozzle diameter [mm]
032	Nominal discharge nozzle diameter [mm]
160	Nominal impeller diameter [mm]
G	Casing material
G	= cast iron
B	= bronze
S	= nodular cast iron
C	= stainless steel
B	Impeller material if different from casing material
G	= cast iron
C	= stainless steel
B, I	= bronze
X	Additional code
X	= special design
FX	= fire-fighting pump
A	Type of seal
A	= conical cover
C	= cylindrical cover
A	Operating mode
A	= conical cover without internal circulation
10	Shaft seal
10	= Q1 Q1 X4GG
G	Bearing bracket
G	= grease lubrication
D	Scope of supply

Code	Description
	D = pump, complete
2	Shaft unit
	2 = shaft unit 25, LS standard bearing bracket
PD2E <sup>1)</sup>	Drive type series
M <sup>1)</sup>	PumpMeter

Code	Description	Region
LR	Reinforced	A, B, C, D
PS	Bearing pedestal	C

### Further information on the designation

( > Page 38)

### Design details

#### Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Dimensions and ratings to EN 733
- Requirements to 2009/125/EC Directive

#### Pump casing

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

#### 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, D
Double mechanical seals to EN 12756	A, C
Shaft equipped with replaceable shaft protecting sleeve in the shaft seal area	A, B, C, D

#### Bearings

Bearings

Bearing design	Region
Standard bearings	A, B, C, D
– Floating bearings: deep groove ball bearings	
Reinforced bearings	A, B, C, D
– 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, D
25	Size code <sup>3)</sup>	A, B, C, D
LS	Standard	A, B, C, D

1) Valid only for Etanorm with automation system

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

3) Based on dimensions of seal chamber and shaft end

## Bearings used

### Standard bearings

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

- 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

### Automation

#### Automation options:

Automation systems	Region
PumpMeter	A, C <sup>4)</sup> , D <sup>4)</sup>
PumpDrive	A, C <sup>4)</sup> , D <sup>4)</sup>

### 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 the most efficient water pumps is MEI  $\geq 0.70$ .
- 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>

### Coating and preservation

#### Coating and preservation

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

### 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 standard.

<sup>4)</sup> On request

### Acceptance tests/warranty

Overview of acceptance tests / warranty

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

Overview of fluids handled

Table of fluids handled and associated material combinations

X = standard

Fluid handled	Temperature [°C]	Casing/impeller materials						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>5)</sup>	Mechanical seal		
		G	GB	SG	BB	C	1	3	6	7	9	10	11	12				
<b>Water</b>																		
Brackish water <sup>6)</sup>	≤ 25	-	-	-	X	-	X	-	-	-	-	X	-	-	1	10	CrNiMo cast steel can be used.	
Fire-fighting water <sup>7)</sup>	≤ 60	-	X	-	-	-	X	-	-	-	-	X	-	-	1	10	Contact KSB for supply to VdS guideline.	
Heating water <sup>8)</sup>	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11	If used as a circulating pump to DIN 4752; p max. ≤ 10 bar. If ductile material has been specified: "S"	
Heating water	≤ 140	X	-	-	-	-	-	X	X	-	-	-	-	-	3	6		
Heating water	≥ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	10		
Condensate	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Condensate, not conditioned	≤ 110	-	-	-	-	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>9)</sup> )	≥ 30	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11	Open loop: use GB	
Cooling water pH ≥ 7.5 (with antifreeze <sup>9)</sup> )	≤ 60	X	-	-	-	-	X	-	-	X	-	-	-	-	1	7	Open loop: use GB	
Cooling water pH ≥ 7.5 (with antifreeze <sup>9)</sup> )	≥ 60	X	-	-	-	-	X	-	-	X	-	-	-	-	1	7	Open loop: use GB	
Cooling water pH ≥ 7.5 (with antifreeze <sup>9)</sup> )	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	10		
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>10)</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>11)</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>11)</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>11)</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>12)</sup>	≤ 60	-	X	-	-	-	X	-	-	-	-	X	-	-	1	11		
Partly desalinated water	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Fully desalinated water	≤ 110	-	-	-	-	X	X	-	-	-	-	X	-	-	1	11	Purity requirements cannot be met.	
Fully desalinated water as boiler feed water	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
<b>Refrigerants, cooling brines</b>																		
Cooling brine; inorganic, pH value > 7.5, inhibited	≥ 30	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Cooling brine; inorganic, pH value > 7.5, inhibited	≤ 25	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Water with antifreeze, pH value ≥ 7.5	≥ 30	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Water with antifreeze, pH value ≥ 7.5	≤ 60	X	-	-	-	-	X	-	-	-	-	X	-	-	1	11		
Water with antifreeze, pH value ≥ 7.5	≥ 60	X	-	-	-	-	X	-	-	X	-	-	-	-	1	7		
Water with antifreeze, pH value ≥ 7.5	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	1	7		
<b>Oils/emulsions</b>																		
Diesel oil, extra light fuel oil	≤ 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)	≤ 80	-	-	X	-	-	-	-	-	-	-	X	-	-	-	10	If specified "without internal primer" contact KSB. GG possible, unless specific standards have to be observed	
Drilling/grinding emulsion	≤ 60	X	-	-	-	-	-	-	-	-	X	-	-	-	1	9		
Oil-water emulsion	≤ 60	X	-	-	-	-	-	-	-	-	X	-	-	-	1	9		
<b>Brewery applications</b>																		

5) Na: p1 ≤ 0,5 bar; Nb: p1 > 0,5 bar

6) 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.

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

8) Treatment to VdTUV 1466; additional requirement: O2 < 0.02 mg/l

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

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

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

12) For France, ACS approval is required.

Fluid handled	Temperature [°C]	Casing/impeller materials							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>5)</sup>			Mechanical seal
		G	GB	SG	BB	C	1	3	6	7	9	10	11	12				
Beer mash	≤ 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	≤ 100	X	-	-	-	-	-	-	-	-	-	-	X	-	12			

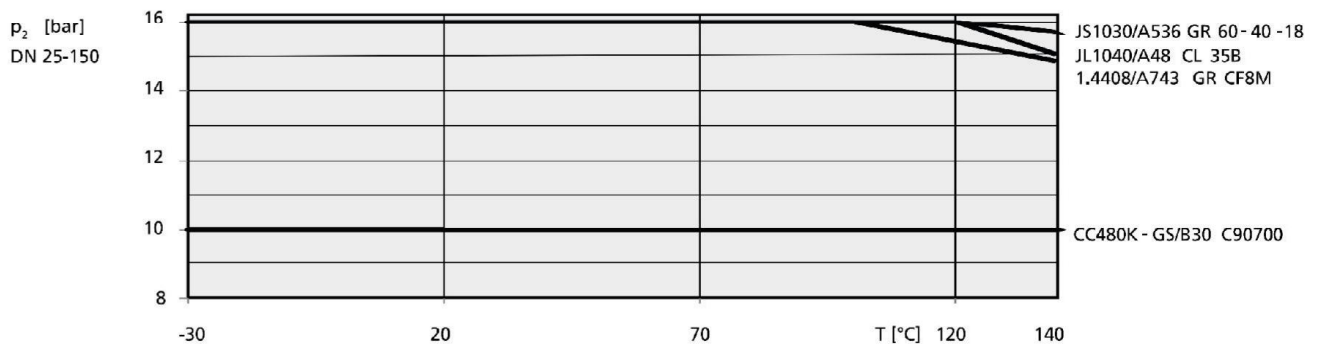
### Pressure and temperature limits

#### Pressure and temperature limits of the pump

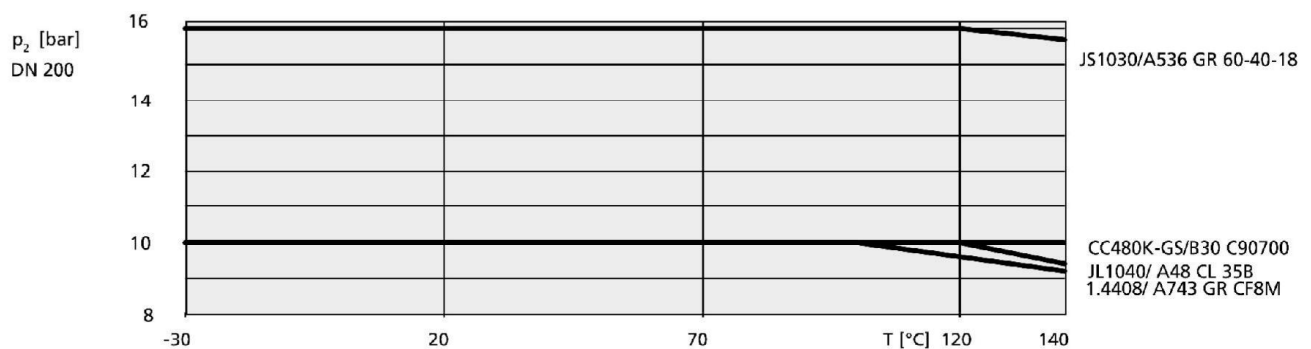
Pressure and temperature limits of the pump

Material variant	Fluid temperature <sup>13)14)</sup>	Discharge pressure p <sub>2</sub>	Test pressure <sup>15)</sup>	Region
G	-30 °C to +140 °C	16 bar	Up to 21 bar	A, B, C, D
GB, GC	-30 °C to +140 °C	16 bar	Up to 21 bar	A, B, C, D
GI	-30 °C to +140 °C	16 bar	Up to 21 bar	B
S, SB, SC	-30 °C to +140 °C	16 bar	Up to 25 bar	A
B	-30 °C to +140 °C	10 bar	Up to 13 bar	A
C	-30 °C to +140 °C	16 bar	Up to 21 bar	A, B, C, D

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



Pump pressure and temperature limits DN 25 - DN 150



Pump pressure and temperature limits DN 200

5) Na: p<sub>1</sub> ≤ 0,5 bar; Nb: p<sub>1</sub> > 0,5 bar

13) For hot water heating systems to DIN 4752, Section 4.5, application limits must be observed.

14) For fluid temperatures > 140 °C use Etanorm SYT.

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

**Materials**

Overview of available materials for Europe

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
102	Volute casing	Grey cast iron EN-GJL-250/ A 48 CL 35B	A1	A1	A1	-	-	-	-	-	-
		Bronze CC480K-GS/ B30 C90700	-	-	-	-	A1	-	-	-	-
		Nodular cast iron EN-GJS-400-15/ A536 GR 60-40-18	-	-	-	-	-	A1	A1	A1	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	A1
161	Casing cover, conical	Grey cast iron EN-GJL-250/ A 48 CL 35B	A1	A1	A1	-	-	-	-	-	-
		Bronze CC480K-GS/ B30 C90700	-	-	-	-	A1	-	-	-	-
		Nodular cast iron EN-GJS-400-15/ A536 GR 60-40-18	-	-	-	-	-	A1	A1	A1	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	A1
161	Casing cover, cylindrical	Grey cast iron EN-GJL-250/ 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 EN-GJL-250/ 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 EN-GJL-250/ 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 EN-GJL-250/ CI	A1	A1	A1	-	-	A1	A1	A1	-
		Stainless steel (CrNiMoST) <sup>16)</sup>	A2	-	A2	-	-	-	-	-	A2
		Bronze CC495K-G5	-	A2	-	-	A1	-	A2	-	-
502.02	Casing wear ring, discharge side	Grey cast iron EN-GJL-250/ CI <sup>16)</sup>	A1	A1	A1	-	-	A1	A1	A1	-
		Stainless steel (CrNiMoST)	A2	-	A2	-	-	-	-	-	A2
		Bronze CC495K-G5 <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	
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	Plug	Steel	A1	A1	A1	-	-	A1	A1	A1	-
		CC 493K-G5	-	-	-	-	A1	-	-	-	-
		A4/ AISI 316	A2	A2	A2	-	-	A2	A2	A2	A1
920	Nut	8+A2A/ 8+B633 5C1 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	B1	-	-	-	-	-
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	B1	-	-	-	-	-	-	-	-
		Bronze CC480K-GS/ B30 C90700	-	B1	-	-	-	-	-	-	-
		Bronze IS318 LTB2	-	-	-	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> For pump sets with mechanical seal

<sup>18)</sup> Pump sets with gland packing

Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
		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	-	-	-	-	-
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	-	B1	-	B1	-	-	-	-	-
		Stainless steel (CrNiMoST) <sup>19)</sup>	-	-	B1	-	-	-	-	-	-
502.02	Casing wear ring, discharge side	Grey cast iron JL 1040 / A 48 CL 35B	B1	-	-	-	-	-	-	-	-
		Bronze IS318 LTB4	-	B1	-	B1	-	-	-	-	-
		Stainless steel (CrNiMoST) <sup>19)</sup>	-	-	B1	-	-	-	-	-	-
523	Shaft sleeve <sup>17)</sup>	Stainless steel (CrNiMoST) <sup>19)</sup>	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	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 CC495K-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 CC495K-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	Plug	Steel	C1	C1	C1	-	-	-	-	-	-
		A4/AISI 316	C2	C2	C2	-	-	-	-	-	C1
920	Nut	8+A2A/ 8+B633 SC1 TP3	C1	C1	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



Part No.	Description		Material variant								
			G	GB	GC	GI	B	S	SB	SC	C
		A4/AISI 316	C2	C2	C2	-	-	-	-	-	C1
920.95	Impeller nut	A4/ AISI 316	C2	C1	C1	-	-	-	-	-	C1
		Steel 8	C1	-	-	-	-	-	-	-	-

Overview of available materials for China

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	D1	D1	D1	-	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr CF8 M	-	-	-	-	-	-	-	-	D1
161	Casing cover, conical	Grey cast iron JL1040 / A 48 CL 35B	D1	D1	D1	-	-	-	-	-	-
		Stainless steel 1.4408/ A743 Gr CF8 M	-	-	-	-	-	-	-	-	D1
210	Shaft	Tempered steel C45+N	D1	D1	D1	-	-	-	-	-	-
		Duplex stainless steel 1.4462/ UNS S31803	D2	D2	D2	-	-	-	-	-	D1
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	D1	-	-	-	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr CF8 M	-	-	D1	-	-	-	-	-	D1
330	Bearing bracket	Grey cast iron JL1040 / A 48 CL 35B	D1	D1	D1	-	-	-	-	-	D1
400	Sealing elements	DPAF, asbestos-free	D1	D1	D1	-	-	-	-	-	D1
502.01	Casing wear ring, suction side	Grey cast iron JL1040 / A 48 CL 35B	D1	D1	D1	-	-	-	-	-	-
		Stainless steel (CrNiMoST)	D2	D2	D2	-	-	-	-	-	D2
502.02	Casing wear ring, discharge side	Grey cast iron JL1040 / A 48 CL 35B	D1	D1	D1	-	-	-	-	-	-
		Stainless steel (CrNiMoST)	D2	D2	D2	-	-	-	-	-	D2
523	Shaft sleeve <sup>17)</sup>	Stainless steel (CrNiMoST)	D1	D1	D1	-	-	-	-	-	D1
902	Studs	Steel 8.8	D1	D1	D1	-	-	-	-	-	-
		A4-70/A193 GR B8M CL2	D2	D2	D2	-	-	-	-	-	D1
903	Plug	Steel	D1	D1	D1	-	-	-	-	-	-
		A4/ AISI 316	D2	D2	D2	-	-	-	-	-	D1
920	Nut	8+A2A/ 8+B633 SC1 TP3	D1	D1	D1	-	-	-	-	-	-
		A4/ AISI 316	D2	D2	D2	-	-	-	-	-	D1
920.95	Impeller nut	A4/ AISI 316	D2	D2	D1	-	-	-	-	-	D1
		Steel 8	D1	D1	-	-	-	-	-	-	-

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	Free passage diameter	Impeller inlet diameter	Impeller diameter		Maximum [rpm]	Minimum [rpm]
							Maximum	Minimum		
040-025-160	WS_25_LS	-	WS_25_PS	6,0	5,7	44,0	169	130	3500	500
040-025-200	WS_25_LS	-	WS_25_PS	6,0	5,7	44,0	209	160	3500	500
050-032-125.1	WS_25_LS	-	WS_25_PS	6,0	6,0	52,0	139	104	4300	500
050-032-160.1	WS_25_LS	-	WS_25_PS	10,0	5,4	63,0	170	136	4400	500
050-032-200.1	WS_25_LS	-	WS_25_PS	7,0	5,3	62,0	204	170	3800	500
050-032-250.1	WS_25_LS	-	WS_25_PS	13,0	5,2	70,0	254	200	3000	500
050-032-125	WS_25_LS	-	WS_25_PS	7,0	5,7	52,0	139	104	4200	500
050-032-160	WS_25_LS	-	WS_25_PS	6,0	5,8	54,0	174	136	3500	500
050-032-200	WS_25_LS	-	WS_25_PS	9,0	6,7	63,0	209	170	3700	500
050-032-250	WS_25_LS	-	WS_25_PS	14,0	7,1	74,0	261	209	3000	500
065-040-125	WS_25_LS	-	WS_25_PS	9,0	9,6	69,0	139	104	4000	500
065-040-160	WS_25_LS	-	WS_25_PS	20,0	11,5	88,0	174	128	4400	500
065-040-200	WS_25_LS	-	WS_25_PS	17,0	8,9	87,0	209	165	3700	500
065-040-250	WS_25_LS	-	WS_25_PS	14,0	8,0	83,0	260	200	3000	500
065-040-315	WS_35_LS	-	WS_35_PS	26,0	7,1	99,0	326	260	2300	500
065-040-315	-	WS_50_LR	-	26,0	7,1	99,0	326	260	3000	500
065-050-125	WS_25_LS	-	WS_25_PS	6,0	11,6	58,0	142	112	4500	500
065-050-160	WS_25_LS	-	WS_25_PS	8,0	11,6	63,0	174	128	4400	500
065-050-200	WS_25_LS	-	WS_25_PS	8,0	11,9	73,0	219	170	3400	500
065-050-250	WS_25_LS	-	WS_25_PS	8,0	10,0	75,0	260	215	3000	500
065-050-315	WS_35_LS	-	WS_35_PS	11,0	9,5	84,0	323	265	2400	500
065-050-315	-	WS_50_LR	-	11,0	9,5	84,0	323	265	3000	500
080-065-125	WS_25_LS	-	WS_25_PS	10,0	12,9	86,0	141	130	4000	500
080-065-160	WS_25_LS	-	WS_25_PS	21,0	12,2	92,0	174	132	3900	500
080-065-200	WS_25_LS	-	WS_25_PS	17,0	13,3	100	219	175	3000	500
080-065-250	WS_35_LS	-	WS_35_PS	15,0	14,3	101	260	215	3000	500
080-065-315	WS_35_LS	-	WS_35_PS	32,0	14,0	124	320	260	2400	500
080-065-315	-	WS_60_LR	-	32,0	14,0	124	320	260	3000	500
100-080-160	WS_25_LS	-	WS_25_PS	25,0	15,1	115	174	154	3500	500
100-080-200	WS_35_LS	-	WS_35_PS	19,0	15,2	115	219	180	3500	500
100-080-250	WS_35_LS	-	WS_35_PS	38,0	15,8	135	269	215	2900	500
100-080-315	WS_35_LS	-	WS_35_PS	33,0	17,8	142	334	269	1900	500
100-080-315	-	WS_60_LR	-	33,0	17,8	142	334	269	3000	500
100-080-400	WS_55_LS	-	WS_55_PS	14,0	14,3	107	398	330	1900	500
125-100-160	WS_35_LS	-	WS_35_PS	19,0	16,4	115	185	177	3600	500
125-100-200	WS_35_LS	-	WS_35_PS	15,0	17,9	129	219	179	3300	500
125-100-250	WS_35_LS	-	WS_35_PS	27,0	18,8	145	269	210	2500	500
125-100-315	WS_35_LS	-	WS_35_PS	23,0	19,9	142	334	270	1800	500
125-100-315	-	WS_60_LR	-	23,0	19,9	142	334	270	3000	500
125-100-400	WS_55_LS	-	WS_55_PS	18,0	17,1	142	401	329	1900	500
150-125-200	WS_35_LS	-	WS_35_PS	41,0	21,1	160	224	205	2600	500
150-125-250	WS_35_LS	-	WS_35_PS	37,0	22,4	162	269	218	2000	500
150-125-315	WS_55_LS	-	WS_55_PS	31,0	22,6	162	334	270	2300	500
150-125-400	WS_55_LS	-	WS_55_PS	26,0	20,9	162	419	330	1800	500
200-150-200	WS_35_LS	-	WS_35_PS	60,0	25,2	179	224	215	2300	500
200-150-250	WS_35_LS	-	WS_35_PS	49,0	23,0	191	269	220	1800	500
200-150-315	WS_55_LS	-	WS_55_PS	40,0	26,9	192	334	264	2100	500
200-150-400	WS_55_LS	-	WS_55_PS	33,0	23,8	191	419	330	1800	500