

Standardised Water Pump

Etanorm

Fixed Speed / Variable Speed

50 Hz / 60 Hz

Europe (EU)

Middle East (ME)

North Africa (NA)

Type Series Booklet



KSb. IRAN

www.ksbiran.com

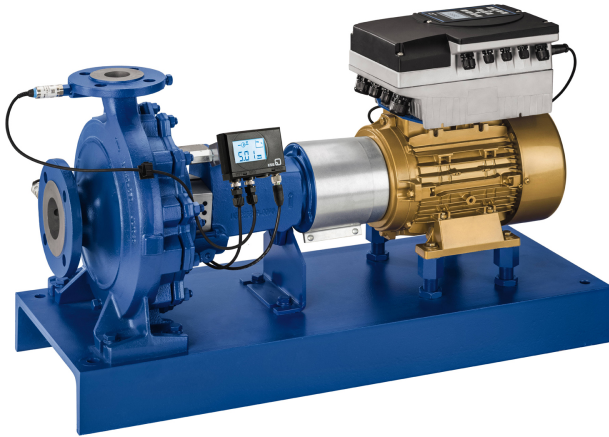
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Centrifugal Pumps with Shaft Seal

Standardised Water Pumps

Etanorm (EU / ME / NA)



i The product illustrated as an example may include options incurring a surcharge.

Main applications

- Handling clean or aggressive fluids not chemically and 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
- High-temperature hot water
- Service water
- Fire-fighting water
- Brine
- Cleaning agents
- Condensate
- Oils

Further information on fluids handled

Overview of fluids handled (⇒ Page 13)

Related documents

Information/documents

Document	Reference number
General arrangement drawings booklet	1311.391
Characteristic curves booklet (50 Hz) Fixed speed version	1311.45
Characteristic curves booklet (60 Hz) Fixed speed version	1311.46
Characteristic curves booklet Variable speed version	1311.452
Type series booklet KSB SuPremE	4075.53
Type series booklet PumpDrive 2 / PumpDrive 2 Eco	4074.5
Type series booklet PumpMeter	4072.5

Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q m ³ /h	≤ 640	≤ 740
Head	H [m]	≤ 160	≤ 160
Fluid temperature	T [°C]	≥ -30	≥ -30
		≤ +140	≤ +140
Operating pressure	p [bar]	≤ 16	≤ 16

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
- Fixed speed version (without PumpDrive) / variable speed version (with PumpDrive)

Pump casing

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

Drive (fixed speed version)

Standard design:

- KSB/Siemens surface-cooled IEC frame three-phase squirrel-cage motor
- Efficiency class IE1 (size 71/80) / IE3 (from size 90) to IEC 60034-30
- Rated voltage (50 Hz) 230 V / 400 V \leq 2.20 kW
- Rated voltage (50 Hz) 400 V / 690 V \geq 3.00 kW
- Rated voltage (60 Hz) - / 460 V \leq 2.20 kW
- Rated voltage (60 Hz) 460 V / - \geq 3.00 kW
- Type of construction IM B3
- Enclosure IP55
- Duty cycle: continuous duty S1
- Thermal class F with temperature sensor, 1 PTC thermistor (size 80/90) / 3 PTC thermistors (from size 100)

Explosion-proof design:

- KSB surface-cooled IEC three-phase current squirrel-cage motor
- Efficiency class IE2 / IE3 to IEC 60034-30
- Rated voltage (50 Hz) 230 V / 400 V \leq 2.50 kW
- Rated voltage (50 Hz) 400 V / 690 V \geq 3.30 kW
- Rated voltage (60 Hz) - / 460 V \leq 2.50 kW
- Rated voltage (60 Hz) 460 V / - \geq 3.30 kW
- Type of construction IM B3
- Enclosure IP55
- Duty cycle: continuous duty S1
- Type of protection EEx eb II
- Temperature class T3

Drive (variable speed version)

KSB SuPremE motor:

- Surface-cooled KSB SuPremE motor, IEC-compatible, magnetless synchronous reluctance motor (PumpDrive required)
- Efficiency class IE4/IE5 to IEC TS 60034-30-2:2016
- Mounting points to EN 50347:2001

- Envelope dimensions to DIN VDE 42673-4:2011-07
- Type of construction IM B3
- Enclosure IP55
- Duty cycle: continuous duty S1
- Thermal class F with temperature sensor, 3 PTC thermistors
- Shaft centreline height 71 to 225 mm
- Rated power 0.55 kW to 45 kW
- Rated speed 1500 rpm or 3000 rpm
- Frequency 50 Hz / 60 Hz (PumpDrive input)
- Voltage 380 V to 480 V (PumpDrive input)

KSB SuPremE X1:

- With terminal box for connecting to PumpDrive 2 or PumpDrive R for mounting on walls and in control cabinets

KSB SuPremE X2:

- Equipped for being fitted with a motor-mounted PumpDrive 2

PumpDrive 2:

- Self-cooling frequency inverter of modular design for the continuously variable speed control of asynchronous reluctance motors and synchronous reluctance motors by means of analog standard signals, a field bus or the control panel
- Identical design of frequency inverter for motor mounting, wall mounting and cabinet mounting
- Mains voltage 3~ 380 V AC -10 % to 480 V AC +10 %
- Mains frequency 50 Hz to 60 Hz \pm 2 %

PumpMeter:

- Intelligent pressure transmitter for pumps, with on-site display of measured values and operating data
- For recording the load profile of the pump
- Supplied completely assembled and parameterised for the individual pump

Shaft seal

- Gland packing
- Single mechanical seals and double mechanical seals to EN 12756
- Shaft equipped with replaceable shaft sleeve in the shaft seal area

Impeller type

- Closed radial impeller with multiply curved vanes

Bearings

Standard:

- Deep groove ball bearing (floating bearing assembly)

Reinforced

- Deep groove ball bearing (floating bearing assembly)

Further information on bearings

(⇒ Page 17)

Designation

Designation example

Position																																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
E	T	N		0	5	0	-	0	3	2	-	1	2	5	1	G	G	S	A	S	1	1	G	B	2	1	3	2	0	2	B	P	D	2	E	M
See name plate and data sheet																									See data sheet											

Designation key

Position	Code	Description
1-4	Pump type	
	ETN	Etanorm
	ETNF	Etanorm fire-fighting pump
5-16	Size [mm], z. B.	
	050	Nominal suction nozzle diameter
	032	Nominal discharge nozzle diameter
	1251	Nominal impeller diameter
17	Pump casing material	
	B	Bronze CC480K-GS / B30 C90700
	C	Stainless steel 1.4408 / A743CF8M
	G	Cast iron EN-GJL-250 / A48CL35
	S	Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18
18	Impeller material	
	B	Bronze CC480K-GS / B30 C90700
	C	Stainless steel 1.4408 / A743CF8M
	G	Cast iron EN-GJL-250 / A48CL35
	O	Cast steel 1.4008 / A743CF8M
	S	Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18
19	Design	
	A	Fire-fighting variant to APSAD
	H	Approved for drinking water to ACS
	K	Approved for drinking water to KSB standard
	M	Fire-fighting variant to FM or UL
	N	Fire-fighting variant, non-listed
	S	Standard
	U	Approved for drinking water to UBA
	V	Fire-fighting variant to VDS
	W	Approved for drinking water to WRAS
	X	Non-standard (BT3D, BT3)
20	Casing cover	
	A	Conical casing cover for version with single mechanical seal
	C	Cylindrical casing cover for version with gland packing or double mechanical seal
21	Shaft seal type	
	A	Single mechanical seal, conical casing cover without internal circulation
	D	Double mechanical seal in back-to-back arrangement
	E	Single mechanical seal, external circulation
	F	Single mechanical seal, external flushing
	I	Single mechanical seal, internal circulation (only for version with conical casing cover)
	P	Gland packing
	S	Single mechanical seal, internal circulation with anti-swirl baffles (only for version with conical casing cover)
T	Double mechanical seal in tandem arrangement with internal circulation	
22-23	Seal code of gland packing	
	1A	P1, with internal barrier fluid (Na), material RT/P (for hot water of up to 120 °C)
	1B	P2, without barrier fluid (Nb), material RT/P (for hot water of up to 120 °C)
	1C	P3, with external barrier fluid (Nc), material RT/P (for hot water of up to 110 °C)
	1D	P4, with external flushing liquid (VSH), material RT/P (for hot water of up to 110 °C)

Position	Code	Description	
22-23	3B	P2, without barrier fluid (Nb), material BUP901/B5 (for hot water of up to 140 °C)	
	4A	P1, with internal barrier fluid (Na), material BU5426 (for drinking water to ACS, for example)	
	4B	P2, without barrier fluid (Nb), material BU5426 (for drinking water to ACS, for example)	
	5A	P1, with internal barrier fluid (Na), material HE1727 (surface treatment technology)	
	5B	P2, without barrier fluid (Nb), material HE1727 (surface treatment technology)	
	Seal code, single mechanical seal		
	01	Q1Q1VGG	1 (ZN1181) ≥ -20 - ≤ +110 [°C]
	06	U3BEGG	RMG13G606 ≥ -30 - ≤ +140 [°C]
	07	Q1Q1EGG	1A (ZN1181) ≥ -30 - ≤ +110 [°C]
	08	AQ1VGG	M32N69 ≥ -30 - ≤ +110 [°C]
	09	U3U3VGG	MG13G60 ≥ -20 - ≤ +110 [°C]
	10	Q1Q1X4GG	1 (ZN1181) ≥ -20 - ≤ +110 [°C]
	11	BQ1EGG-WA	1 (ZN1181) ≥ -30 - ≤ +110 [°C]
	12	Q12Q1M1GG1	M37GN83 ≥ -20 - ≤ +100 [°C]
	13	BQ1VGG	1 (ZN1181) ≥ -20 - ≤ +110 [°C]
	14	Q1Q1KY7G	KMB13S2G9 ≥ -20 - ≤ +120 [°C]
	15	Q1Q1KGG	M7G49 ≥ -20 - ≤ +110 [°C]
	16	BVPGG	MG1S20 ≥ -20 - ≤ +110 [°C]
	17	Q1BVGG	M7N / 5A ≥ -20 - ≤ +110 [°C]
	22	AQ1EGG	M32N69 ≥ -30 - ≤ +140 [°C]
	66	Q7Q7EGG	MG13G6 ≥ -30 - ≤ +120 [°C]
	67	Q6Q6X4GG	MG13G60 / MG1G61S6 ≥ -20 - ≤ +110 [°C]
	Seal code, double mechanical seal in tandem arrangement		
	18	Q1Q1EGG/G	MG12G6-E1 ≥ -30 - ≤ +110 [°C]
		Q1Q1EGG-G	MG12G6-E1 ≥ -30 - ≤ +110 [°C]
	19	Q1Q1M1GG	HN400N ≥ -30 - ≤ +110 [°C]
		Q1Q1EGG-G	MG12G6-E1 ≥ -30 - ≤ +110 [°C]
	20	Q12Q1M1GG1	M37GN85 ≥ -20 - ≤ +110 [°C]
		Q1Q1EGG-G	MG12G6-E1 ≥ -20 - ≤ +110 [°C]
	23	Q12Q1M1GG1	M37GN92 ≥ -20 - ≤ +110 [°C]
		Q1Q1EGG-G	MG12G6-E1 ≥ -20 - ≤ +110 [°C]
	Seal code, double mechanical seal in back-to-back arrangement		
	21	Q1Q1KGG	M7G49 ≥ -20 - ≤ +110 [°C]
Q1Q1KGG		M7G49 ≥ -20 - ≤ +110 [°C]	
24	Q1Q1KGG	M7G49 ≥ -20 - ≤ +110 [°C]	
	Q1BVGG	M7N ≥ -20 - ≤ +110 [°C]	
24	Bearing bracket		
	G	Grease lubrication	
	O	Oil lubrication	
25	Scope of supply		
	A	Pump only (Fig. 0)	
	B	Pump, baseplate	
	C	Pump, baseplate, coupling, coupling guard	
	D	Pump, baseplate, coupling, coupling guard, motor	
	E	Back pull-out unit	
26	Shaft unit		
	2	Shaft unit 25, bearing bracket LS (standard)	
	3	Shaft unit 35, bearing bracket LS (standard)	
	4	Shaft unit 50, bearing bracket LR (reinforced)	
	5	Shaft unit 55, bearing bracket LS (standard)	
	6	Shaft unit 60, bearing bracket LR (reinforced)	
	7	Shaft unit 60.1, bearing bracket LR (reinforced)	
27-30	Motor rating P _N [kW]		
	0007	0,75	
	

Position	Code	Description
	1320	132,00
31	Number of motor poles	
32	Product generation	
	B	Etanorm 2013
33-36	Version	
	-	Fixed speed version
	PD2	Variable speed version, with PumpDrive 2
	PD2E	Variable speed version, with PumpDrive 2 Eco
	IFS	MyFlow Drive
37	PumpMeter	
	M	PumpMeter

Materials

Symbols key

Symbol	Description
x	Standard
o	Optional
-	Version not available / not feasible

Overview of available materials

Part No. (⇒ Page 33)	Description	Material	Material variant							
			GG	GB	GC	BB	SG	SB	SC	CC
102	Volute casing	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	x	x	x	-	-	-	-	-
		Bronze CC480K-GS / B30 C90700	-	-	-	x	-	-	-	-
		Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18	-	-	-	-	x	x	x	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	-	-	-	-	-	-	x
161	Conical casing cover	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	x	x	x	-	-	-	-	-
		Bronze CC480K-GS / B30 C90700	-	-	-	x	-	-	-	-
		Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18	-	-	-	-	x	x	x	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	-	-	-	-	-	-	x
161	Cylindrical casing cover	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	o	o	o	-	-	-	-	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	-	-	-	-	-	-	o
		Bronze CC480K-GS / B30 C90700	-	-	-	o	-	-	-	-
210	Shaft	Tempered steel C45+N	x	x	x	-	x	x	x	-
		Chrome steel 1.4057+QT800	o	o	o	-	o	o	o	-
		Duplex stainless steel 1.4462 / UNS S31803	o	o	o	x	o	o	o	x
230	Impeller	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	x	-	-	-	x	-	-	-
		Bronze CC480K DW	-	x	-	x	-	x	-	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	-	x	-	-	-	x	x
330	Bearing bracket	Grey cast iron EN-GJL-250 / A 48 Cl. 35B ¹⁾	x	x	x	x	x	x	x	x
		Nodular cast iron EN-GJS-400-18-LT ²⁾	x	x	x	x	x	x	x	x
400	Gaskets	DPAF, asbestos-free	x	x	x	x	x	x	x	x
502.01	Casing wear ring, suction side	JL / lamellar graphite cast iron	x	x	x	-	x	x	x	-
		Stainless steel (CrNiMoST) ³⁾	o	-	o	-	-	-	-	o
		Bronze CC495K-GS	-	o	-	x	-	o	-	-
502.02	Casing wear ring, discharge side	JL / lamellar graphite cast iron	x	x	x	-	x	x	x	-
		Stainless steel (CrNiMoST) ³⁾	o	-	o	-	-	-	-	o
		Bronze CC495K-GS	-	o	-	x	-	o	-	-
523	Shaft sleeve ⁴⁾	Stainless steel (CrNiMoST) ³⁾	x	x	x	x	x	x	x	
524	Shaft protecting sleeve ⁵⁾	Stainless steel (CrNiMoST) ³⁾	-	-	-	x	-	-	-	x
		Chrome steel 1.4122+QT750	x	x	x	-	-	-	-	-
902	Studs	Steel 8.8	x	x	x	-	x	x	x	-
		A4-70/ A193 Gr. B8M Cl. 2	o	o	o	x	o	o	o	x
903	Screw plugs	Steel	x	x	x	-	x	x	x	-
		A4/ AISI 316	o	o	o	x	o	o	o	x
920	Nut	8+A2A/ 8+B633 SC1 TP3	x	x	x	-	x	x	x	-
		A4/ AISI 316	o	o	o	x	o	o	o	x
920.95	Impeller nut	A4/ AISI 316	o	x	x	x	o	x	x	x
		Steel 8	x	-	-	-	x	-	-	-

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- 1) Valid for shaft units WS25, WS35, WS55 - bearing bracket LS (standard)
- 2) Valid for shaft units WS50, WS60 - bearing bracket LR (reinforced)
- 3) Possible materials for material group CrNiMo steel INT (material identification code 7605): 1.4401, 1.4404, 1.4408, 1.4571, AISI 316, AISI 316TI, A743 Gr. CF8M, A479 TYPE 316L.
- 4) For versions with mechanical seal
- 5) For versions with gland packing

Coating and preservation

- Coating and preservation to KSB standard

Product benefits

- Improved efficiency and NPSHreq by experimentally verified hydraulic design of impellers (vanes)
- Operating costs reduced by trimming the nominal 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
- Optimum match of pump to fluid handled by a large choice of materials for many applications as standard
- PumpDrive perfectly matched to pump and motor by default factory parameter settings
- Motor-mounted variable speed system up to 45 kW saves space
- Pump operation made fully transparent with PumpMeter
- The efficiency of the motor also exceeds 95 % of the nominal efficiency when the motor runs at 25 % of its nominal power on a quadratic torque-speed curve.
- Sustainable and environmentally friendly because no magnets based on "rare earth elements" such as NdFeB are used

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <http://www.ksb.com/reach>.

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 ≥ 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 = 0.70 (0.40) for the pump based on the model shown in the Figure are available at: <http://www.europump.org/efficiencycharts>

Acceptance tests and warranty

Materials inspection and testing:

- Test report 2.2 on request

Final inspection:

- Inspection certificate 3.1 to EN 10204 on request

Hydraulic test against surcharge

- Duty point to ISO 9906/2B
- NPSH test

 Other inspections/tests on request

Warranty:

- Warranties are given within the scope of the valid terms and conditions of sale and delivery.

Overview of product features / selection tables
Overview of material variants

Other designs on request

Symbols key

Symbol	Description
X	Standard
-	Version not available / not feasible

Overview of Etanorm variants

Variant	102 / Volute casing	230 / Impeller	Gland packing / mechanical seal	T [°C]	Main applications										
					Handling clean or aggressive fluids not chemically and mechanically aggressive to the pump materials	Water supply systems	Cooling circuits	Swimming pools	Fire-fighting systems	General irrigations systems	Drainage systems	Heating systems	Air-conditioning systems	Spray irrigation systems	MPG
GG01	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Gland packing RT/P	≥ -20 - ≤ +110	-	-	X	-	-	-	-	X	X	-	V7
GG06	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	SU 25, 35: mech. seal U3BEGG SU 55: mech. seal AQ1EGG	≥ -30 - ≤ +140	-	-	-	-	-	-	-	X	-	-	V7
GG10	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Mech. seal Q1Q1X4GG	≥ -20 - ≤ +110	-	X	-	X ⁶⁾	X	X	X	-	-	X	V7
GG11	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Mech. seal BQ1EGG	≥ -30 - ≤ +110	X	X	X ⁷⁾	-	X	-	-	-	X ⁷⁾	-	V7
GB01	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Bronze CC480K-GS / B30 C90700	Gland packing RT/P	≥ -20 - ≤ +110	-	-	X	-	-	-	-	X	X	-	X2
GB06	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Bronze CC480K-GS / B30 C90700	SU 25, 35: mech. seal U3BEGG SU 55: mech. seal AQ1EGG	≥ -30 - ≤ +140	-	-	-	-	-	-	-	X	-	-	X2
GB10	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Bronze CC480K-GS / B30 C90700	Mech. seal Q1Q1X4GG	≥ -20 - ≤ +110	-	X	-	X ⁶⁾	X	X	X	-	-	X	X2
GB11	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Bronze CC480K-GS / B30 C90700	Mech. seal BQ1EGG	≥ -30 - ≤ +110	X	X	X ⁷⁾	-	X	-	-	-	X ⁷⁾	-	X2
SG10	Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Mech. seal Q1Q1X4GG	≥ -20 - ≤ +110	-	X	-	X ⁶⁾	X	X	X	-	-	X	V8
SG11	Nodular cast iron EN-GJS-400-15 / A536 Gr. 60-40-18	Grey cast iron EN-GJL-250 / A 48 Cl. 35 B	Mech. seal BQ1EGG	≥ -30 - ≤ +110	X	X	X ⁷⁾	-	X	-	-	-	X ⁷⁾	-	V8
BB01	Bronze CC480K-GS / B30 C90700	Bronze CC480K-GS / B30 C90700	Gland packing RT/P	≥ -20 - ≤ +110	-	-	X	-	-	-	-	X	X	-	X1
BB10	Bronze CC480K-GS / B30 C90700	Bronze CC480K-GS / B30 C90700	Mech. seal Q1Q1X4GG	≥ -20 - ≤ +110	-	X	-	X ⁶⁾	X	X	X	-	-	X	X1
BB11	Bronze CC480K-GS / B30 C90700	Bronze CC480K-GS / B30 C90700	Mech. seal BQ1EGG	≥ -30 - ≤ +110	X	X	X ⁷⁾	-	X	-	-	-	X ⁷⁾	-	X1

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6) Q1Q1VGG
 7) Q1Q1EGG / Q7Q7EGG, fluid handled: water, glycol with inhibitors

Variant	102 / Volute casing	230 / Impeller	Gland packing / mechanical seal	T [°C]	Main applications										
					Handling clean or aggressive fluids not chemically and mechanically aggressive to the pump materials	Water supply systems	Cooling circuits	Swimming pools	Fire-fighting systems	General irrigations systems	Drainage systems	Heating systems	Air-conditioning systems	Spray irrigation systems	MPG
CC01	Stainless steel 1.4408 / A743 Gr. CF8 M	Stainless steel 1.4408 / A743 Gr. CF8 M	Gland packing RT/P	≥ -20 - ≤ +110	-	-	✗	-	-	-	-	✗	✗	-	60
CC10	Stainless steel 1.4408 / A743 Gr. CF8 M	Stainless steel 1.4408 / A743 Gr. CF8 M	Mech. seal Q1Q1X4GG	≥ -20 - ≤ +110	-	✗	-	✗ ⁶⁾	✗	✗	✗	-	-	✗	60
CC11	Stainless steel 1.4408 / A743 Gr. CF8 M	Stainless steel 1.4408 / A743 Gr. CF8 M	Mech. seal BQ1EGG	≥ -30 - ≤ +110	✗	✗	✗ ⁷⁾	-	✗	-	-	-	✗ ⁷⁾	-	60

Overview of fluids handled
KSB EasySelect, selection software for all applications


KSB EasySelect is a comprehensive selection tool for all applications. It guides users to an optimal solution for their projects by offering a fast, easy and user-friendly way to select and configure pumps and valves. All that is required are some project-specific criteria and a few minutes' time. The tool systematically guides the user through KSB's wide range of products to the right product for the application at hand.

KSB EasySelect

Other fluids upon request.

Symbols key

Symbol	Description
X	Standard
-	Version not available / not feasible

Excerpt from the overview of fluids handled with associated material variants

Fluid handled	T ⁸⁾		Materials						Shaft seal						Comments	
			Casing/impeller						Mechanical seal							
	Minimum	Maximum	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	Gland packing RT/P	Gland packing, pure graphite	U3BEGG	Q1Q1EGG	U3U3VGG	Q1Q1X4GG	BQ1EGG		Q12Q1M1GG1
[°C]	[°C]	GG	GB	SG	BB	CC	1	3B	6	7	9	10	11	12		
Water																
Brackish water ⁹⁾	-	≤ 25	-	-	-	X	-	X	-	-	-	-	X	-	-	CrNiMo cast steel can be used.
Fire-fighting water ¹⁰⁾	-	≤ 60	-	X	-	-	-	X	-	-	-	-	X	-	-	Contact KSB for supply to VdS guideline.
Heating water ¹¹⁾	-	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	If used as circulating pump to DIN 4752: p ≤ 10 bar. If ductile material has been specified: "S"
Heating water	-	≤ 140	X	-	-	-	-	-	X	X	-	-	-	-	-	
Heating water	-	≥ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	
Condensate	-	≤ 110	X	-	-	-	-	X	-	-	-	-	-	X	-	-
Condensate, not conditioned	-	≤ 110	-	-	-	-	X	X	-	-	-	-	-	X	-	-
Cooling water without antifreeze	-	≤ 60	X	-	-	-	-	X	-	-	-	-	X	-	-	Open circuit: GB 1 / GB 10 required.
Cooling water with antifreeze ¹²⁾ , pH ≥ 7.5	≥ 30	≤ 60	X	-	-	-	-	X	-	-	-	-	-	X	-	Open circuit: use GB
Cooling water with antifreeze ¹²⁾ , pH ≥ 7.5	≥ 60	≤ 110	X	-	-	-	-	X	-	-	X	-	-	-	-	Open circuit: use GB
Slightly contaminated water	-	≤ 60	X	-	-	-	-	X	-	-	-	-	X	-	-	-
Seawater	-	≤ 25	-	-	-	X	-	X	-	-	-	-	X	-	-	CrNiMo cast steel can be used.
Pure water ¹³⁾	-	≤ 60	X	-	-	-	-	X	-	-	-	-	-	X	-	-
Raw water	-	≤ 60	X	-	-	-	-	X	-	-	-	-	X	-	-	-
Swimming pool water (fresh water)	-	≤ 60	X	-	-	-	-	X	-	-	-	-	X	-	-	Also applies to requirements as per DIN 19643

8) T = fluid temperature

 9) 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.

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

 11) Treatment to VdTUV 1466, additional requirement: O₂ t < 0.02 mg/l

12) Antifreeze on ethylene glycol basis with inhibitors, content > 20 % to 50 % (e.g. Antifrogen N)

13) No ultra-pure water, electrical conductivity at 25 °C: ≤ 800 µS/cm, neutral with regard to chemical corrosion

Fluid handled	T ⁸⁾		Materials					Shaft seal						Comments			
			Casing/impeller					Gland packing RT/P	Gland packing, pure graphite	Mechanical seal							
	Minimum	Maximum	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			U3BEGG	Q1Q1EGG	U3U3VGG	Q1Q1X4GG		BQ1EGG	Q12Q1M1GG1	
								[°C]	GG								GB
Swimming pool water ¹⁴⁾ : filtration	-	≤ 40	-	X	-	-	-	-	-	-	-	-	X	-	-	-	Variant GB; shaft C45+N, shaft sleeve CrNiMo steel, nut A4/ AISI 316, key A2, casing wear ring (suction side and discharge side) JL / lamellar graphite cast iron
Swimming pool water ¹⁴⁾ : water features; without turbulences and/or air content	-	≤ 40	-	X	-	-	-	-	-	-	-	-	X	-	-	-	Variant GB; shaft C45+N, shaft sleeve CrNiMo steel, nut A4/ AISI 316, key A2, casing wear ring (suction side and discharge side) CC495K-GS
Swimming pool water ¹⁴⁾ : water features; with turbulences and/or air content	-	≤ 40	-	-	-	X	-	-	-	-	-	-	X	-	-	-	Variant B; shaft 1.4571, shaft sleeve CrNiMo steel, nut A4/ AISI 316, key A2, casing wear ring (suction side and discharge side) CC495K-GS
Swimming pool water (seawater)	-	≤ 40	-	-	-	X	-	X	-	-	-	-	X	-	-	-	CrNiMo cast steel for t ≤ 25 °C
Dam water	-	≤ 60	-	X	-	-	-	X	-	-	-	-	X	-	-	-	If solids are contained, contact KSB.
Drinking water ¹⁵⁾	-	≤ 60	-	X	-	-	-	X	-	-	-	-	X	-	-	-	-
Partly desalinated water	-	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	-	-
Fully desalinated water	-	≤ 110	-	-	-	-	X	X	-	-	-	-	X	-	-	-	Purity requirements cannot be met.
Fully desalinated water as boiler feed water	-	≤ 110	X	-	-	-	-	X	-	-	-	-	X	-	-	-	-
Refrigerants, cooling brines																	
Cooling brine; inorganic, pH > 7.5, inhibited	≥ 30	≤ 25	X	-	-	-	-	X	-	-	-	-	-	X	-	-	-
Water with antifreeze, pH ≥ 7.5	≥ 30	≤ 60	X	-	-	-	-	X	-	-	-	-	-	X	-	-	-
Water with antifreeze, pH ≥ 7.5	≥ 60	≤ 110	X	-	-	-	-	X	-	-	X	-	-	-	-	-	-
Oils/emulsions																	
Diesel oil, extra light fuel oil	-	≤ 60	-	-	X	-	-	-	-	-	-	-	X	-	-	-	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	-	-	-	If specified without internal primer contact KSB. GG possible, unless specific standards have to be observed
Drilling emulsion, grinding emulsion	-	≤ 60	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Oil-water emulsion	-	≤ 60	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-

14) France: Observe the rules as per ministerial order dated 18 January 2002.
15) For France, ACS approval is required.

Fluid handled	T ⁸⁾		Materials						Shaft seal						Comments	
			Casing/impeller						Gland packing RT/P	Gland packing, pure graphite	Mechanical seal					
	Minimum	Maximum	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	U3BEGG			Q1Q1EGG	U3U3VGG	Q1Q1X4GG	BQ1EGG		Q12Q1M1GG1
Brewery applications																
Beer mash	-	≤ 100	X	-	-	-	-	-	-	-	-	-	-	-	X	If there is a risk of the pump running dry due to excessive emptying of the tank, use an Etanorm with double mechanical seal in tandem arrangement.
Beer wort	-	≤ 100	X	-	-	-	-	-	-	-	-	-	-	-	X	

Overview of material variants

Symbols key

Symbol	Description
X	Standard
-	Version not available / not feasible

Material variants available

Etanorm	Material variants							
	GG	GB	GC	BB	SG	SB	SC	CC
040-025-160	X	X	X	-	X	X	X	X
040-025-200	X	X	X	-	X	X	X	X
050-032-125.1	X	X	X	X	X	X	X	X
050-032-160.1	X	X	X	X	X	X	X	X
050-032-200.1	X	X	X	X	X	X	X	X
050-032-250.1	X	X	X	-	-	-	-	X
050-032-125	X	X	X	X	-	-	-	X
050-032-160	X	X	X	X	X	X	X	X
050-032-200	X	X	X	X	X	X	X	X
050-032-250	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
065-040-200	X	X	X	X	X	X	X	X
065-040-250	X	X	X	X	X	X	X	X
065-040-315	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
065-050-200	X	X	X	X	X	X	X	X
065-050-250	X	X	X	X	X	X	X	X
065-050-315	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
080-065-200	X	X	X	X	X	X	X	X
080-065-250	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
100-080-200	X	X	X	X	X	X	X	X
100-080-250	X	X	X	X	X	X	X	X
100-080-315	X	X	X	-	X	X	X	X
100-080-400	X	X	X	-	-	-	-	X
125-100-160	X	X	X	X	X	X	X	X
125-100-200	X	X	X	X	X	X	X	X
125-100-250	X	X	X	X	X	X	X	X
125-100-315	X	X	X	X	X	X	X	X
125-100-400	X	X	X	-	-	-	-	X
150-125-200	X	X	X	X	X	X	X	X
150-125-250	X	X	X	X	X	X	X	X
150-125-315	X	X	X	X	X	X	X	X
150-125-400	X	X	X	-	X	X	X	X
200-150-200	X	X	X	-	-	-	-	X
200-150-250	X	X	X	X	-	-	-	X
200-150-315	X	X	X	X	X	X	X	X
200-150-400	X	X	X	X	X	X	X	X

Bearings

Standard:

- Deep groove ball bearing (floating bearing assembly)

Reinforced

- Deep groove ball bearing (floating bearing assembly)

Example: WS_25_LS

Bearing bracket designation

Code	Description
WS	Bearing bracket, standardised water pump
25	Size code ¹⁶⁾
LS	Standard
LR	Reinforced

Bearings used

Standard bearings: grease-lubricated deep groove ball bearings

Bearing bracket	Pump end	Drive end
WS_25_LS	6305 2Z C3	6305 2Z C3
WS_35_LS	6307 2Z C3	6307 2Z C3
WS_55_LS	6311 2Z C3	6311 2Z C3

Standard bearings: oil-lubricated deep groove ball bearings

Bearing bracket	Pump end	Drive end
WS_25_LS	6305 C3	6305 C3
WS_35_LS	6307 C3	6307 C3
WS_55_LS	6311 C3	6311 C3

Reinforced bearings: grease-lubricated deep groove ball bearings

Bearing bracket	Pump end	Drive end
WS_50_LR	6310 2Z C3	6310 2Z C3
WS_60_LR	6312 2Z C3	6312 2Z C3

Reinforced bearings: oil-lubricated deep groove ball bearings

Bearing bracket	Pump end	Drive end
WS_50_LR	6310 C3	6310 C3
WS_60_LR	6312 C3	6312 C3

16) Referring to the dimensions of seal chamber and shaft end

Overview of functions

Overview of functions

Functions / firmware	PumpDrive 2 Eco	PumpDrive 2
Protective functions		
Thermal motor protection	X	X
Mains voltage monitoring	X	X
Phase failure, motor side	X	X
Short-circuit monitoring, motor side (phase to phase and phase to earth)	X	X
Dynamic overload protection by speed limitation (I ² t control)	X	X
Resonant frequency suppression	X	X
Broken wire detection (live zero)	X	X
Protection against dry running and hydraulic blockage (sensorless due to learning function)	-	X
Dry running protection (external control signal)	X	X
Operating point estimation and characteristic curve control	X	X
Open-loop control		
Open-loop control mode	X	X
Closed-loop control		
Closed-loop control mode via integrated PID controller	X	X
Pressure control / differential pressure control (Δp const)	X	X
Pressure control / differential pressure control with dynamic pressure compensation (Δp var)	X	X
Flow rate control	X	X
Sensorless differential pressure control (Δp const) in a single-pump configuration	X	X
Sensorless differential pressure control with dynamic pressure compensation (Δp var) in a single-pump configuration	X	X
Sensorless flow rate control	X	X
Level control	X	X
Temperature control	X	X
Alternative setpoint	-	X
Operation and monitoring (display)		
Measured value display (pressure, head, speed, electric power, motor voltage, motor current, torque)	X	X
Fault history	X	X
Operating hours counter	X	X
Fault reporting via relay	X	X
Frequency inverter functions		
Programmable start ramps and stop ramps	X	X
Field-oriented control (vector control), V/f control	X	X
Configurable motor control method (asynchronous motor, KSB SuPremE)	X	X
Automatic motor adaptation (AMA)	X	X
Motor standstill heater	X	X
Manual-0-automatic mode	X	X
External OFF	X	X
External minimum speed	X	X
Sleep mode (stand-by mode)	X	X
Energy savings meter	-	X
Pump functions		
Flow rate estimation	X	X
M12 module with PumpMeter bus connection	X	X
M12 module for dual-pump configuration	X	X
M12 module for multiple pump configuration with up to 6 pumps	-	X
Functional check run	X	X
Integrated dual pump configuration (1x100 % with redundant pump or 2x50 % without redundant pump)	X	X
Multiple pump configuration with up to 6 pumps	-	X
Waste water function: start-up at maximum speed	-	X
Waste water function: rinsing function	-	X
Operation		

Functions / firmware	PumpDrive 2 Eco	PumpDrive 2
Control panel	✗ ¹⁷⁾	✗
Commissioning wizard	✗ ¹⁸⁾	✗
Favourites list	-	✗
Service interface	✗	✗

Pressure limits and temperature limits

Test pressure limits and temperature limits

Pressure limits and temperature limits as a function of material variant

Material variant	Fluid temperature ¹⁹⁾²⁰⁾	Discharge pressure p_2	Test pressure ²¹⁾
	[°C]	[bar]	[bar]
GG, GB, GC	-30 to +140	16	21
SG, SB, SC	-30 to +140	16	25
BB	-30 to +140	10	15
CC	-30 to +140	16	21

In-service pressure limits and temperature limits

With flange to EN 1092-1, 1092-2 and 1092-3

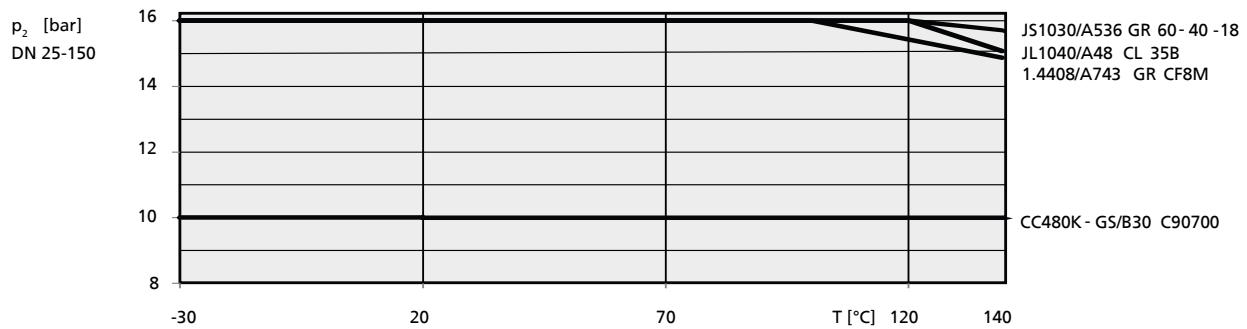


Fig. 1: Pump pressure limits and temperature limits DN 25 - DN 150

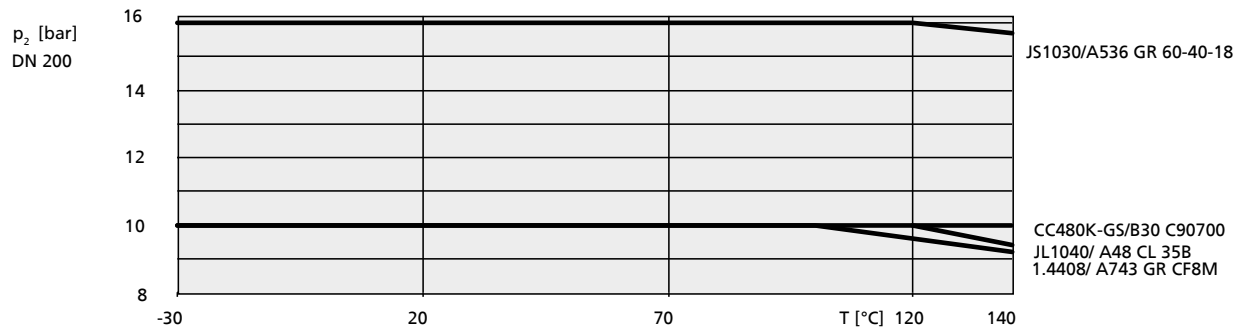


Fig. 2: Pump pressure limits and temperature limits DN 200

17) Some functions can only be parameterised and/or displayed using the KSB ServiceTool (see operating manual).
 18) Only available via KSB ServiceTool and app
 19) For hot water heating systems to DIN 4752, Section 4.5, application limits must be observed.
 20) For fluid temperatures >140 °C use Etanorm SYT.
 21) The casing components have been checked for leakage by means of internal pressure tests to ZN 1650 with water.

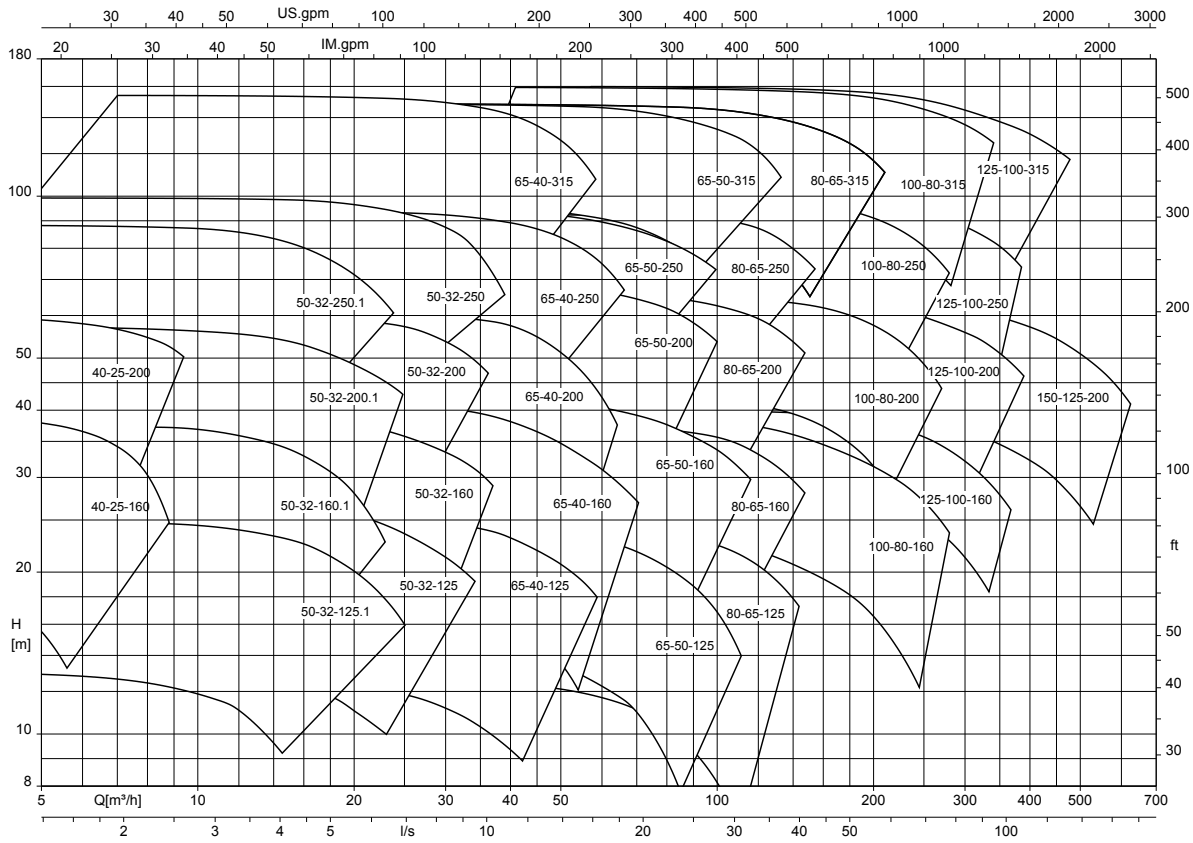
Technical data
Etanorm

Technical data

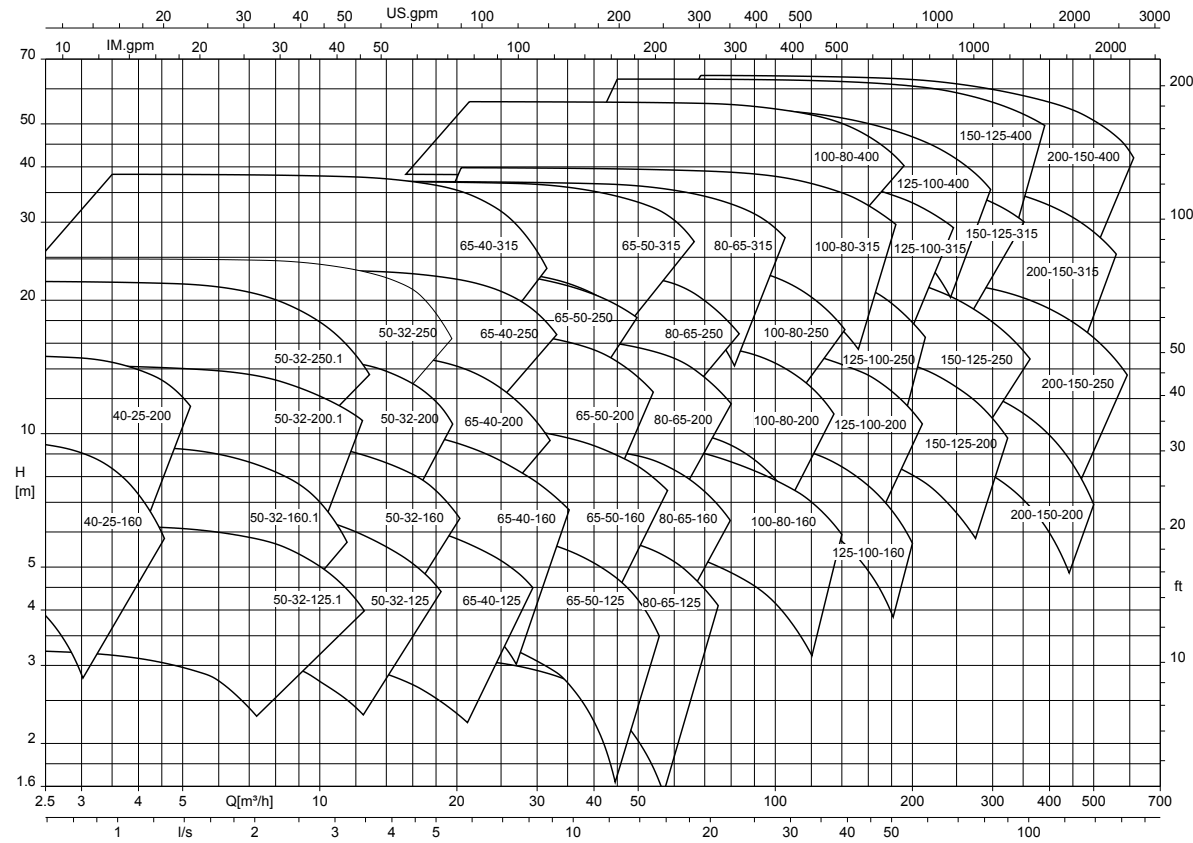
Etanorm	Shaft unit		Impeller					Speed limit	
	Bearing bracket LS (standard)	Bearing bracket LR (reinforced)	Impeller outlet width	Free passage diameter	Impeller inlet diameter	Nominal impeller diameter		Maximum	Minimum
						Maximum	Minimum		
						[mm]			
040-025-160	WS_25_LS	-	6,0	57	45,2	169	135	3600	500
040-025-200	WS_25_LS	-	6,0	57	45,2	209	165	3600	500
050-032-125.1	WS_25_LS	-	6,8	60	52,4	139	104	3600	500
050-032-160.1	WS_25_LS	-	5,7	54	52,7	170	135	4400	500
050-032-200.1	WS_25_LS	-	5,6	53	54,0	204	168	3800	500
050-032-250.1	WS_25_LS	-	5,5	52	58,3	254	200	3600	500
050-032-125	WS_25_LS	-	9,8	57	63,4	139	104	3600	500
050-032-160	WS_25_LS	-	8,5	58	60,6	174	132	3600	500
050-032-200	WS_25_LS	-	7,0	67	62,9	209	170	3700	500
050-032-250	WS_25_LS	-	7,5	71	62,6	261	205	3600	500
065-040-125	WS_25_LS	-	14,0	96	73,9	139	104	3600	500
065-040-160	WS_25_LS	-	13,0	115	70,0	174	128	4400	500
065-040-200	WS_25_LS	-	9,4	89	69,4	209	160	3700	500
065-040-250	WS_25_LS	-	8,4	80	74,1	260	195	3600	500
065-040-315	WS_35_LS	-	7,5	71	75,3	326	260	2300	500
065-040-315	-	WS_50_LR	7,5	71	75,3	326	260	3000	500
065-050-125	WS_25_LS	-	19,9	116	87,9	142	112	4500	500
065-050-160	WS_25_LS	-	16,9	116	86,9	174	128	4400	500
065-050-200	WS_25_LS	-	13,8	119	83,6	219	170	3600	500
065-050-250	WS_25_LS	-	10,5	100	84,0	260	215	3600	500
065-050-315	WS_35_LS	-	10,0	95	87,0	323	265	2400	500
065-050-315	-	WS_50_LR	10,0	95	87,0	323	265	3000	500
080-065-125	WS_25_LS	-	25,8	129	99,0	141	109	3900	500
080-065-160	WS_25_LS	-	21,0	122	91,9	174	132	3900	500
080-065-200	WS_25_LS	-	17,0	133	99,7	219	165	3600	500
080-065-250	WS_35_LS	-	15,1	143	101,0	260	215	3600	500
080-065-315	WS_35_LS	-	13,7	140	108,2	320	245	1900	500
080-065-315	-	WS_60_LR	13,7	140	108,2	320	245	3000	500
100-080-160	WS_25_LS	-	31,6	151	124,0	174	138	3600	500
100-080-200	WS_35_LS	-	24,5	152	115,3	219	165	3600	500
100-080-250	WS_35_LS	-	19,0	158	115,1	269	215	3600	500
100-080-315	WS_35_LS	-	18,7	178	115,6	334	265	1900	500
100-080-315	-	WS_60_LR	18,7	178	115,6	334	265	3000	500
100-080-400	WS_55_LS	-	15,0	143	129,9	398	315	1900	500
125-100-160	WS_35_LS	-	37,6	164	124,0	185	162	3600	500
125-100-200	WS_35_LS	-	32,5	179	115,3	219	170	3600	500
125-100-250	WS_35_LS	-	27,0	188	115,1	269	210	3600	500
125-100-315	WS_35_LS	-	23,0	199	115,6	334	250	1900	500
125-100-315	-	WS_60_LR	23,0	199	115,6	334	250	3000	500
125-100-400	WS_55_LS	-	18,0	171	129,9	401	317	1900	500
150-125-200	WS_35_LS	-	40,7	211	159,2	224	182	3600	500
150-125-250	WS_35_LS	-	37,0	224	162,4	269	218	2000	500
150-125-315	WS_55_LS	-	30,9	226	162,3	334	270	1900	500
150-125-400	WS_55_LS	-	25,9	209	162,4	419	330	1800	500
200-150-200	WS_35_LS	-	59,5	252	179,4	224	188	2100	500
200-150-250	WS_35_LS	-	48,8	230	191,0	269	220	1800	500
200-150-315	WS_55_LS	-	39,7	269	191,5	334	264	1800	500
200-150-400	WS_55_LS	-	33,0	238	191,4	419	330	1800	500

Selection charts

Etanorm (fixed speed version), n = 2900 rpm

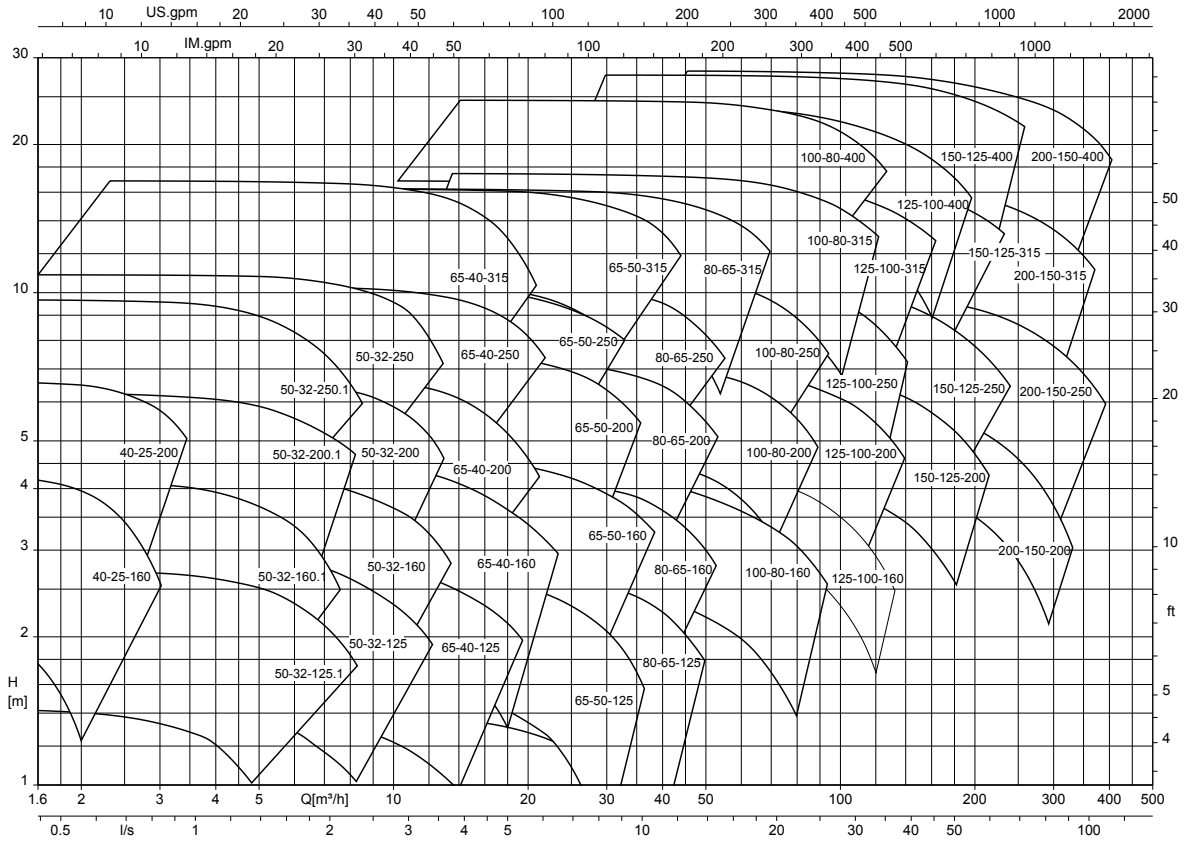


Etanorm (fixed speed version), n = 1450 rpm

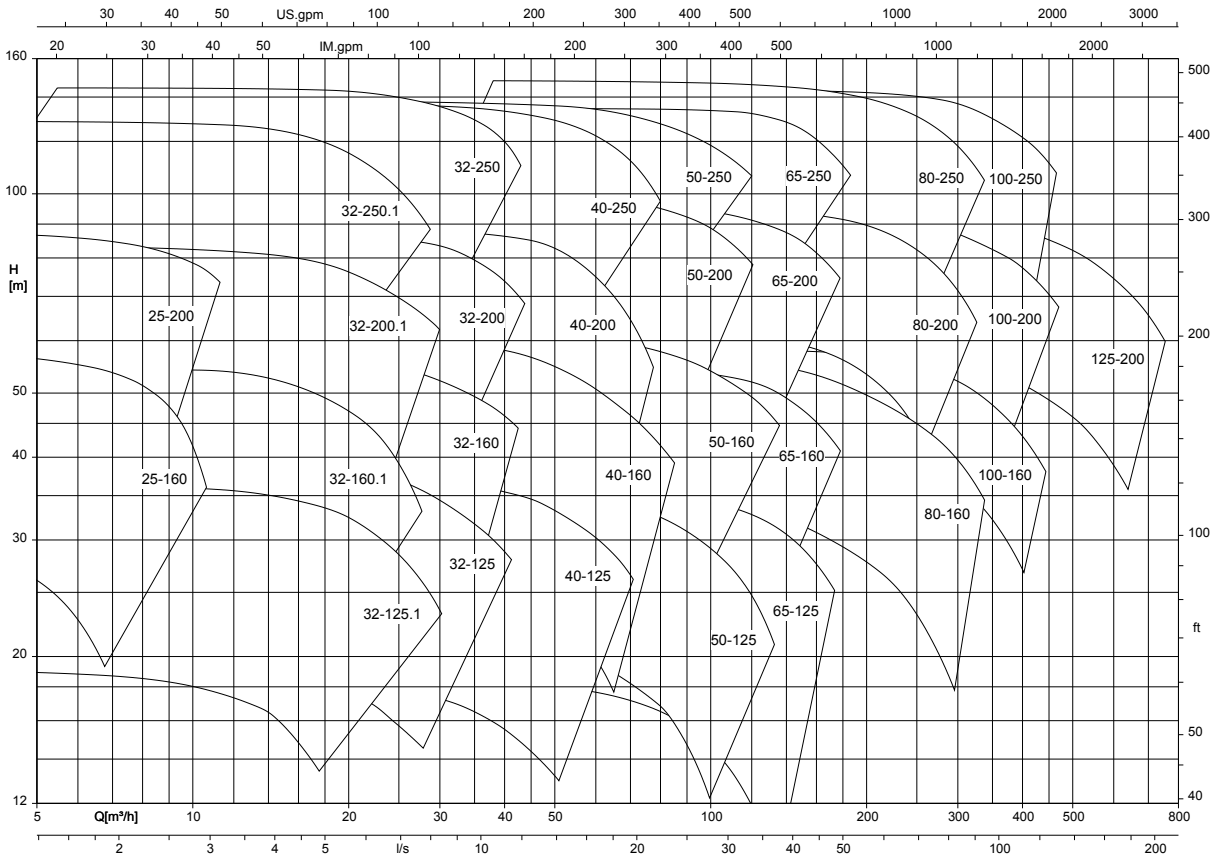


1311.5/07-EN

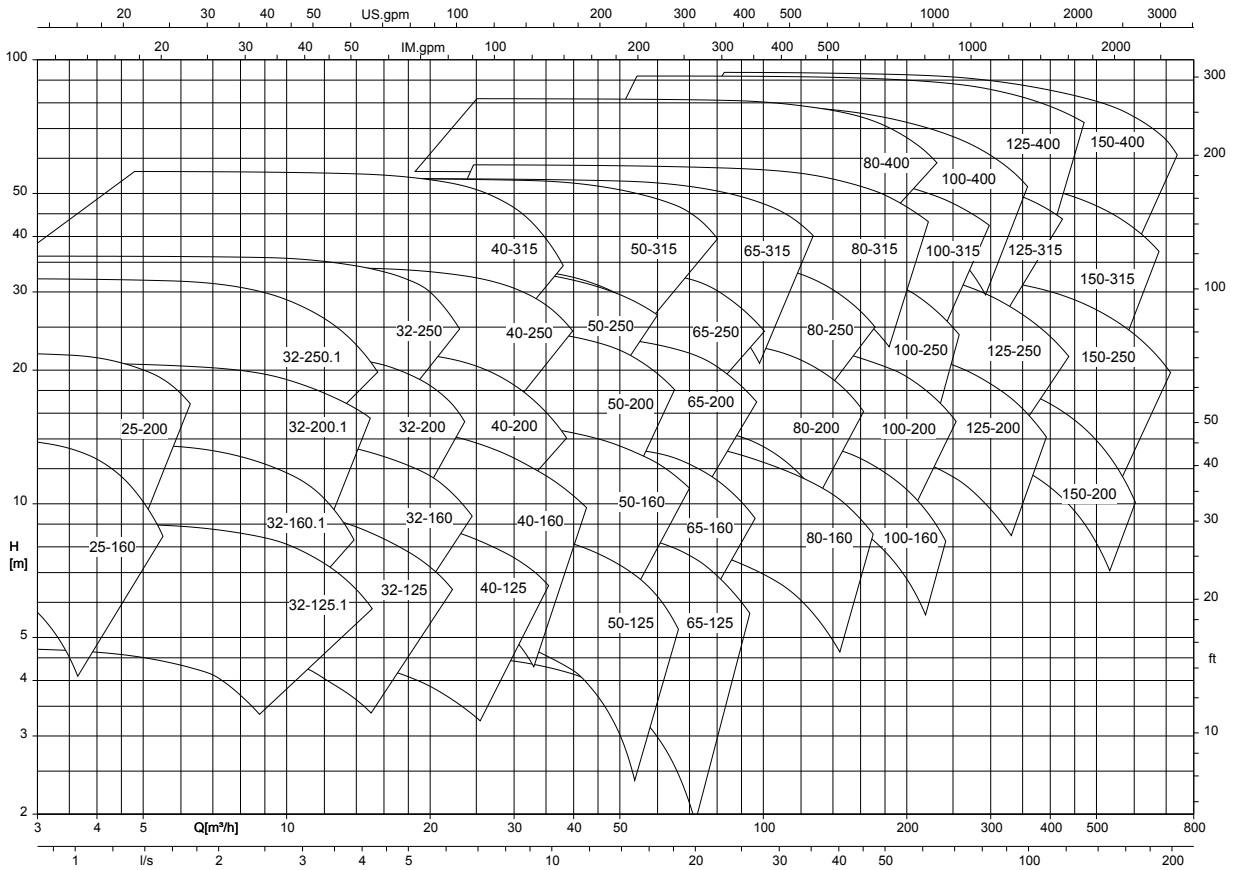
Etanorm (fixed speed version), n = 960 rpm



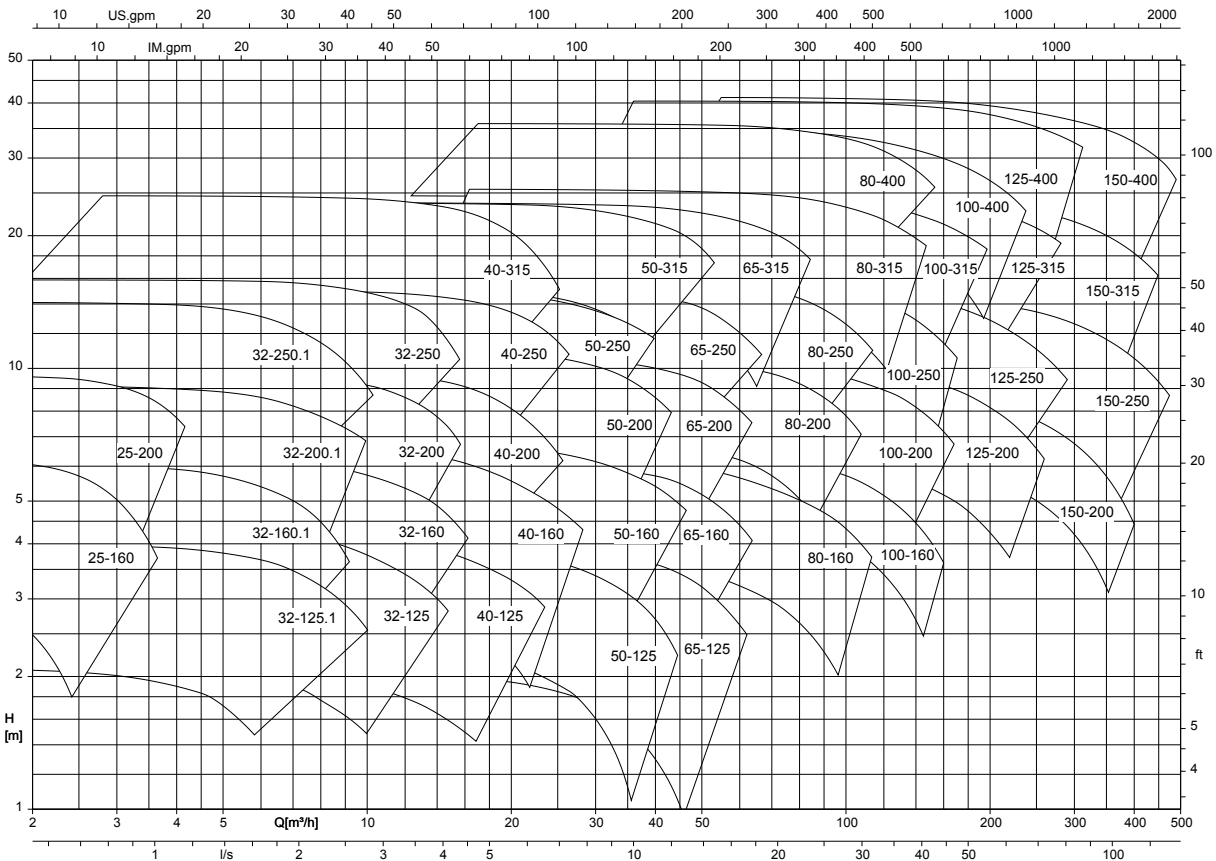
Etanorm (fixed speed version), n = 3500 rpm



Etanorm (fixed speed version), n = 1750 rpm



Etanorm (fixed speed version), n = 1160 rpm



1311.5/07-EN

Characteristic curves

Related documents

Information/documents

Document	Reference number
Characteristic curves booklet (50 Hz) Fixed speed version	1311.45
Characteristic curves booklet (60 Hz) Fixed speed version	1311.46
Characteristic curves booklet Variable speed version	1311.452

Dimensions

Related documents

Information/documents

Document	Reference number
General arrangement drawings booklet	1311.391

Connections

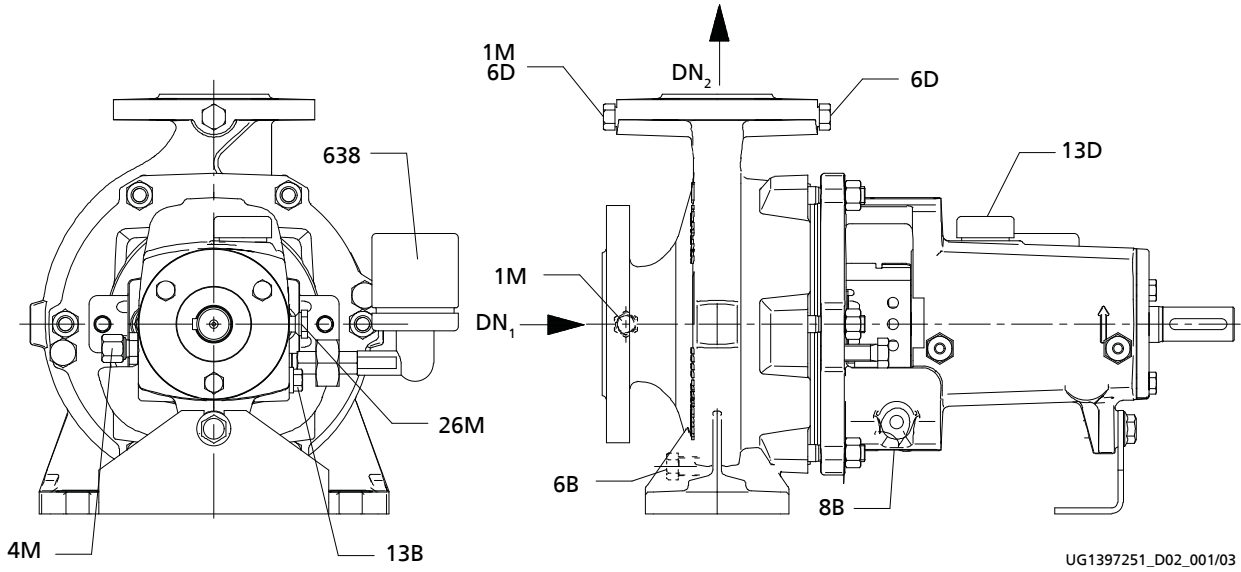


Fig. 3: Version with constant level oiler

P1	Na – Gland packing with internal barrier fluid
P2	Nb – Gland packing without barrier fluid
A	Single mechanical seal, A-type cover
IA	Single mechanical seal, A-type cover with internal circulation

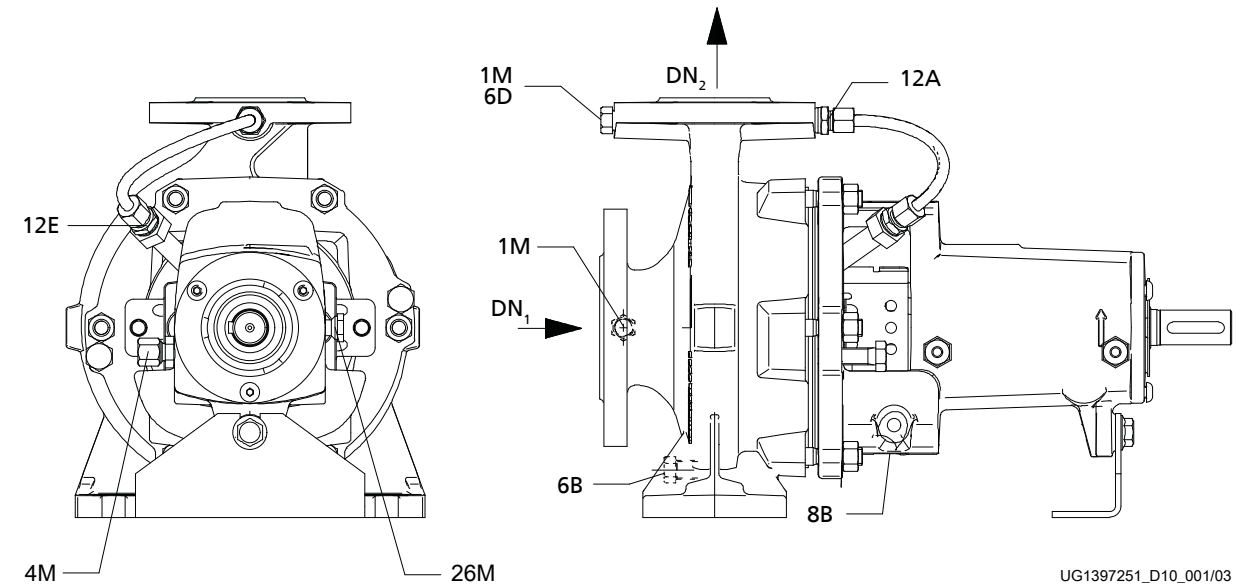


Fig. 4: Grease-lubricated version

EA	External circulation, A-type cover
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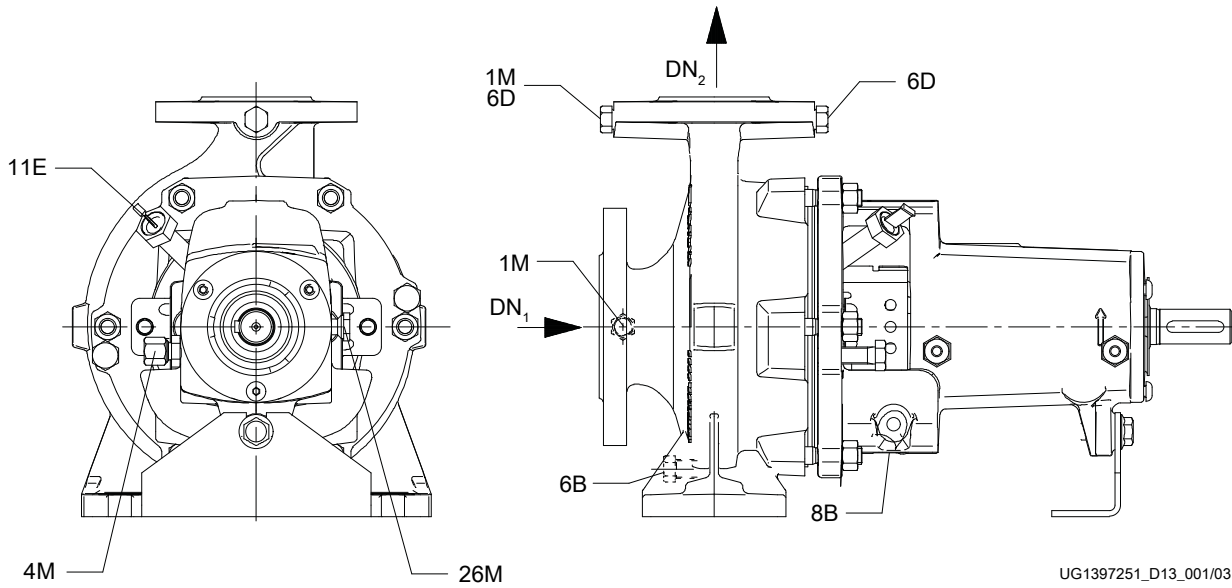


Fig. 5: Grease-lubricated version

FA	External flushing, A-type cover
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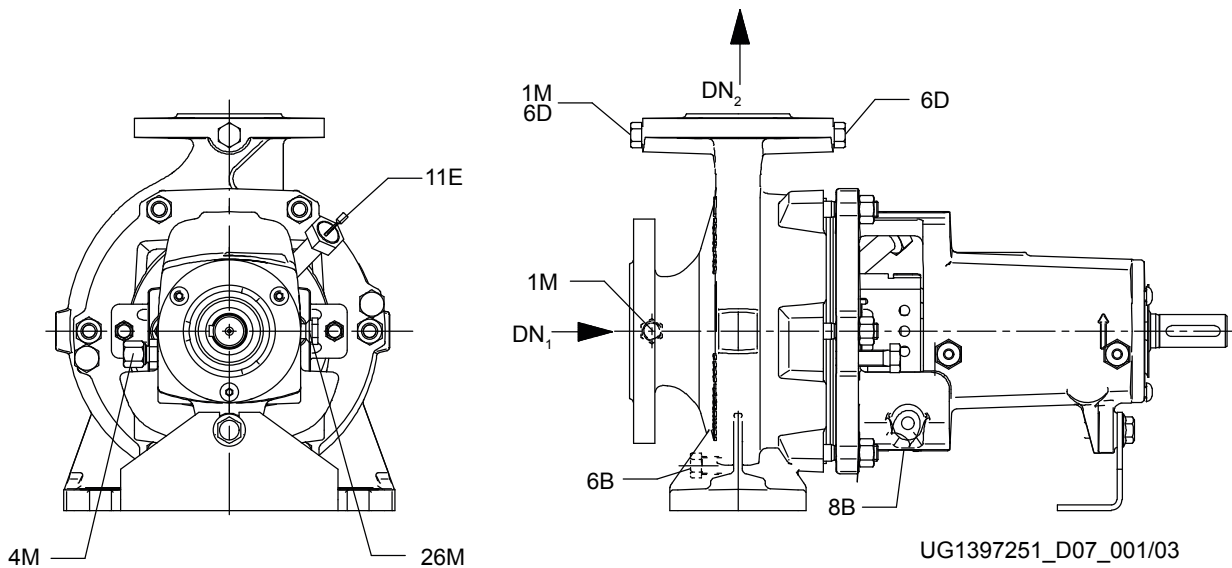


Fig. 6: Grease-lubricated version

P4	VSH – Gland packing, external flushing liquid
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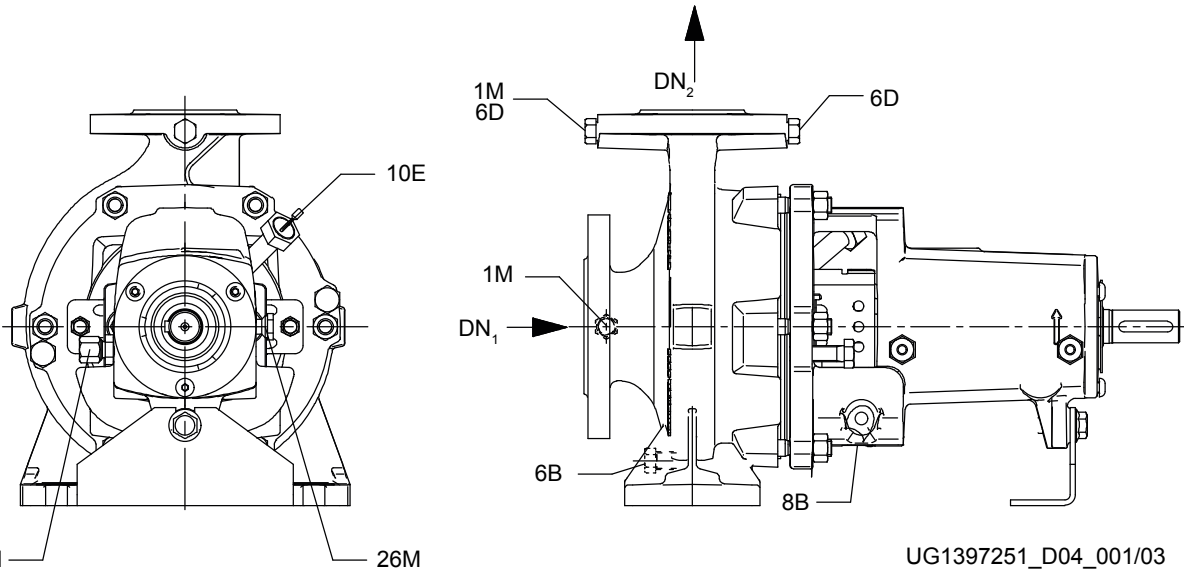


Fig. 7: Grease-lubricated version

P3	Nc – Gland packing, external barrier fluid
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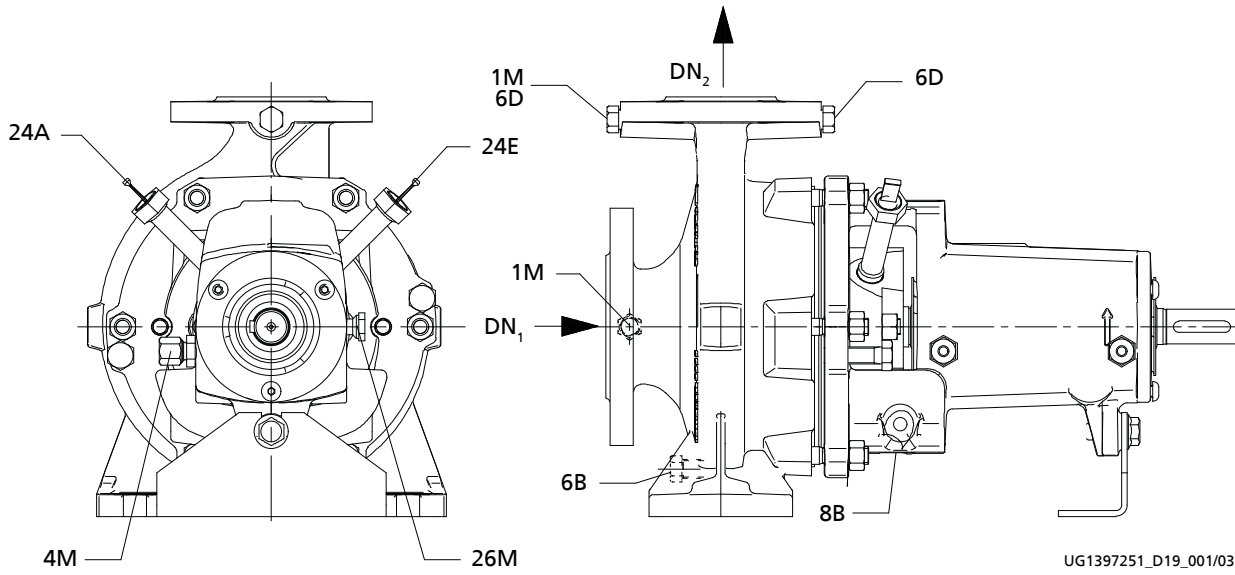
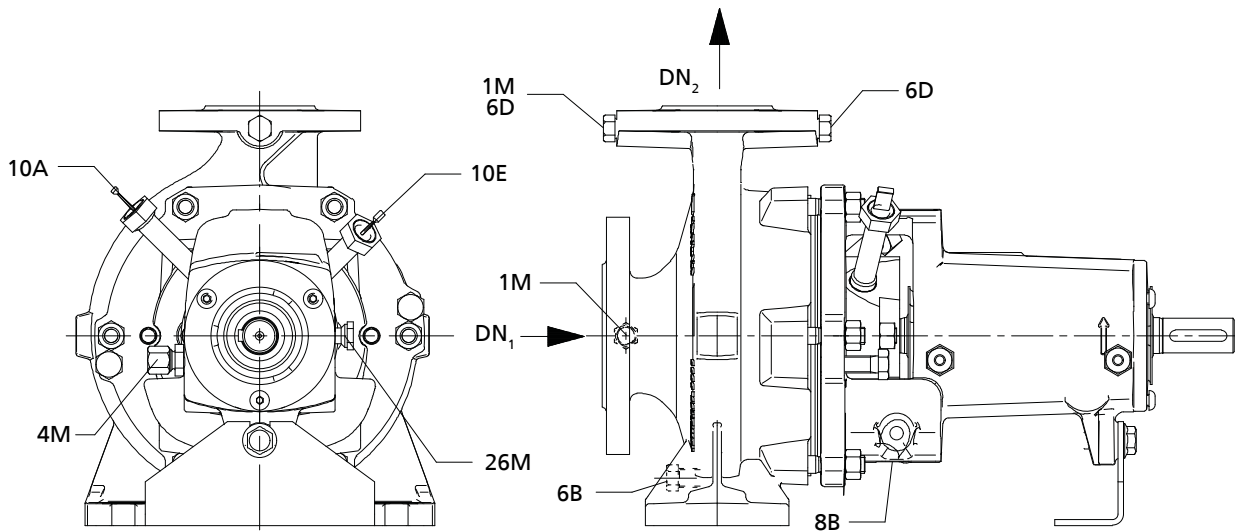


Fig. 8: Grease-lubricated version

TI	Double mechanical seal in tandem arrangement with internal circulation
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Fig. 9: Grease-lubricated version

DB	Double mechanical seal in back-to-back arrangement
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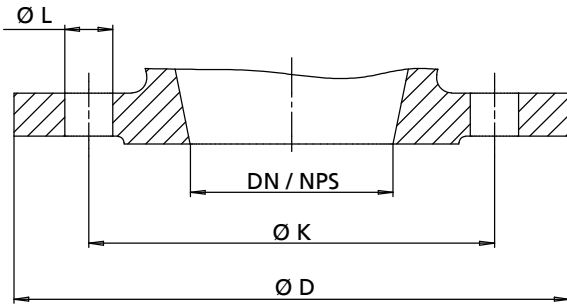
Connections

Connection	Variant	Configuration	Position
1M	Connection for pressure gauge	On pump set with pressure sensor	DN ₂
1M optional	Connection for pressure gauge	Drilled and closed or with pressure sensor	DN ₁
4M optional	Connection for temperature measuring instrument	Drilled and closed	-
6B	Fluid drain	Drilled and closed	-
6D	Fluid filling and venting	Drilled and closed	DN ₂ , suction side
6D optional	Fluid filling and venting	Drilled and closed	DN ₂ , drive end
8B	Leakage drain	Drilled and closed ²²⁾	-
10A optional	External barrier fluid outlet	Connection G 1/4 fitting, closed	-
10E optional	External barrier fluid inlet	Connection G 1/4 fitting, closed	-
11E optional	Flushing liquid inlet	Connection G 1/4 fitting, closed	-
12A optional	Circulation liquid outlet	Drilled and connected	-
12E optional	Circulation liquid inlet	Drilled and connected	-
13B optional	Oil drain	Drilled and closed	-
13D optional	Oil filling and venting	Drilled and closed	-
24A optional	Quench liquid outlet	Connection G 1/4 fitting, closed	-
24E optional	Quench liquid inlet	Connection G 1/4 fitting, closed	-
26M optional	Connection for vibration measurement	Drilled and closed	-

22) For bearing bracket LS only

Connections

Etanorm	Bearing bracket	Casing material								
		G, B, C, S								
		Connection								
		1M.1/6D/ 1M.2/6B/6D	8B	10A/ 10E	11E	12A	12E	13B	13D	24A/ 24E
040-025-160	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
040-025-200	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-125.1	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-160.1	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-200.1	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-250.1	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-125	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-160	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-200	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
050-032-250	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-125	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-160	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-200	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-250	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-315	35	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-040-315	50	G 1/4	-	G 1/4	G 1/4	G 1/4	G 1/4	G 3/8	DN 20	G 1/4
065-050-125	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-050-160	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-050-200	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-050-250	25	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-050-315	35	G 1/4	G 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	DN 20	G 1/4
065-050-315	50	G 1/4	-	G 1/4	G 1/4	G 1/4	G 1/4	G 3/8	DN 20	G 1/4
080-065-125	25	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
080-065-160	25	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
080-065-200	25	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
080-065-250	35	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
080-065-315	35	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
080-065-315	60	G 3/8	-	G 1/4	G 1/4	G 3/8	G 1/4	G 3/8	DN 20	G 1/4
100-080-160	25	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
100-080-200	35	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
100-080-250	35	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
100-080-315	35	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
100-080-315	60	G 3/8	-	G 1/4	G 1/4	G 3/8	G 1/4	G 3/8	DN 20	G 1/4
100-080-400	55	G 3/8	G 1/2	G 1/4	G 1/4	G 3/8	G 1/4	G 1/4	DN 20	G 1/4
125-100-160	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
125-100-200	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
125-100-250	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
125-100-315	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
125-100-315	60	G 1/2	-	G 1/4	G 1/4	G 1/2	G 1/4	G 3/8	DN 20	G 1/4
125-100-400	55	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
150-125-200	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
150-125-250	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
150-125-250	60	G 1/2	-	G 1/4	G 1/4	G 1/2	G 1/4	G 3/8	DN 20	G 1/4
150-125-315	55	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
150-125-400	55	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
200-150-200	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
200-150-250	35	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
200-150-250	60	G 1/2	-	G 1/4	G 1/4	G 1/2	G 1/4	G 3/8	DN 20	G 1/4
200-150-315	55	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4
200-150-400	55	G 1/2	G 1/2	G 1/4	G 1/4	G 1/2	G 1/4	G 1/4	DN 20	G 1/4

Flange design

Fig. 10: Flange dimensions
Flange dimensions to EN 1092-1, EN 1092-2, EN 1092-3

Flange dimensions [mm]

Nominal size	Standard																	
	EN 1092-3			EN 1092-1						EN 1092-2								
	Material variant volute casing																	
	B			C						G						S		
	PN 10			PN 10			PN 16			PN 10			PN 16			PN 16		
	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)
25	115	85	4 × Ø 14	-	-	-	115	85	4 × Ø 14	-	-	-	115	85	4 × Ø 14	115	85	4 × Ø 14
32	140	100	4 × Ø 18	-	-	-	140	100	4 × Ø 18	-	-	-	140	100	4 × Ø 19	140	100	4 × Ø 19
40	150	110	4 × Ø 18	-	-	-	150	110	4 × Ø 18	-	-	-	150	110	4 × Ø 19	150	110	4 × Ø 19
50	165	125	4 × Ø 18	-	-	-	165	125	4 × Ø 18	-	-	-	165	125	4 × Ø 19	165	125	4 × Ø 19
65	185	145	4 × Ø 18	-	-	-	185	145	4 × Ø 18	-	-	-	185	145	4 × Ø 19	185	145	4 × Ø 19
80 (DN ₁ ²³⁾	229	160	8 × Ø 18	-	-	-	230	160	8 × Ø 18	-	-	-	229	160	8 × Ø 19	229	160	8 × Ø 19
80 (DN ₂ ²⁴⁾	200	160	8 × Ø 18	-	-	-	200	160	8 × Ø 18	-	-	-	200	160	8 × Ø 19	229	160	8 × Ø 19
100	229	180	8 × Ø 18	-	-	-	230	180	8 × Ø 18	-	-	-	229	180	8 × Ø 19	229	180	8 × Ø 19
125	254	210	8 × Ø 18	-	-	-	255	210	8 × Ø 18	-	-	-	254	210	8 × Ø 19	254	210	8 × Ø 19
150	285	240	8 × Ø 22	-	-	-	285	240	8 × Ø 22	-	-	-	285	240	8 × Ø 23	285	240	8 × Ø 23
200	343	295	8 × Ø 22	345	295	8 × Ø 22	-	-	-	343	295	8 × Ø 23	-	-	-	343	295	12 × Ø 23

Flange drilled to: ASME B 16.1, Class 125 or ASME B 16.5, Class 150

Flange dimensions [mm]

Nominal size	Standard					
	ASME B 16.1, Class 125 or ASME B 16.5, Class 150					
	Material variant volute casing					
	B, G, S			C		
	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)
25/ NPS 1	115	79,2	4 × Ø 15.7	115	79,2	4 × Ø 15.9
32/ NPS 1 1/4	140	88,9	4 × Ø 15.7	140	88,9	4 × Ø 15.9
40/ NPS 1 1/2	150	98,6	4 × Ø 15.7	150	98,6	4 × Ø 15.9
50/ NPS 2	165	120,7	4 × Ø 19.1	165	120,7	4 × Ø 19.1
65/ NPS 2 1/2	185	139,7	4 × Ø 19.1	185	139,7	4 × Ø 19.1
80/ NPS 3 (DN ₁ ²³⁾	229	190,5	8 × Ø 19.1	230	190,5	8 × Ø 19.1
80/ NPS 3 (DN ₂ ²⁴⁾	200	152,4	4 × Ø 19.1	200	152,4	4 × Ø 19.1
100/ NPS 4	229	190,5	8 × Ø 19.1	230	190,5	8 × Ø 19.1

 23) Suction flange
 24) Discharge flange

Nominal size	Standard					
	ASME B 16.1, Class 125 or ASME B 16.5, Class 150					
	Material variant volute casing					
	B, G, S			C		
	Ø D	Ø K	Number × Ø of holes (Ø L)	Ø D	Ø K	Number × Ø of holes (Ø L)
125/ NPS 5	254	215,9	8 × Ø 22.4	255	215,9	8 × Ø 22.2
150/ NPS 6	285	241,3	8 × Ø 22.4	285	241,3	8 × Ø 22.2
200/ NPS 8	343	298,5	8 × Ø 22.4	345	298,5	8 × Ø 22.2

Flange design by materials

Material variant	Standard	Nominal size	Pressure class
GG, GB, GC	EN 1092-2	DN 25 - DN 150	PN 16
GG, GB, GC	EN 1092-2	DN 200	PN 10
GG, GB, GC	Drilled to ASME B16.1 ²⁵⁾	DN 25 - DN 200	Class 125 ²⁶⁾
SG, SB, SC	EN 1092-2	DN 25 - DN 200	PN 16
SG, SB, SC	Drilled to ASME B16.1 ²⁵⁾	DN 25 - DN 200	Class 125 ²⁶⁾
BB	EN 1092-3	DN 25 - DN 200	PN 10
BB	Drilled to ASME B16.1 ²⁵⁾	DN 25 - DN 200	Class 125 ²⁷⁾
CC	EN 1092-1	DN 25 - DN 150	PN 16
CC	EN 1092-1	DN 200	PN 10
CC	Drilled to ASME B16.5 ²⁵⁾	DN 25 - DN 200	Class 150

Scope of supply

Depending on the model, the following items are included in the scope of supply:

- Pump
- Baseplate
- Coupling
- Coupling guard
- Drive

Recommended spare parts stock

Quantity of spare parts for recommended spare parts stock for commissioning

Part No.	Description	Number of pumps									
		1	2	3	4	5	6	7	8	9	10 and more
433	Mechanical seal	1	1	1	2	2	2	2	3	3	25 %
433.01/02	Mechanical seal ²⁸⁾	1	1	1	2	2	2	2	3	3	25 %
400.10	Gasket	2	4	6	8	8	9	9	12	12	150 %
400.75	Gasket	2	4	6	8	8	9	9	12	12	150 %
400.15	Gasket ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %
411.15	Joint ring ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %
412.15	O-ring ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %

Quantity of spare parts for recommended spare parts stock for 2 years' operation to DIN 24296

Part No.	Description	Number of pumps									
		1	2	3	4	5	6	7	8	9	10 and more
210	Shaft	1	1	1	1	2	2	2	2	2	20 %
230	Impeller	1	1	1	1	2	2	2	2	2	20 %
321.01/02	Rolling element bearing (set)	1	1	1	2	2	2	2	3	3	25 %
433	Mechanical seal	1	1	1	2	2	2	2	3	3	25 %
433.01/02	Mechanical seal ²⁸⁾	1	1	1	2	2	2	2	3	3	25 %

25) Suction-side DN 80 machined like DN 100

26) Nozzle drilled to Class 125 with pressure class PN 16.

27) Nozzle drilled to Class 125 with pressure class PN 10.

28) For double mechanical seal

Part No.	Description	Number of pumps									
		1	2	3	4	5	6	7	8	9	10 and more
502.01/.02	Casing wear ring ²⁹⁾ (set)	1	2	2	2	3	3	3	4	4	50 %
523	Shaft sleeve	1	2	2	2	3	3	3	4	4	50 %
524	Shaft protecting sleeve	1	2	2	2	3	3	3	4	4	50 %
461	Gland packing (set)	2	4	4	6	6	6	6	8	8	100 %
458	Lantern ring ²⁹⁾	2	4	4	6	6	6	8	8	8	100 %
400.10	Gasket	2	4	6	8	8	9	9	12	12	150 %
400.75	Gasket	2	4	6	8	8	9	9	12	12	150 %
400.15	Gasket ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %
411.15	Joint ring ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %
412.15	O-ring ²⁸⁾	2	4	6	8	8	9	9	12	12	150 %

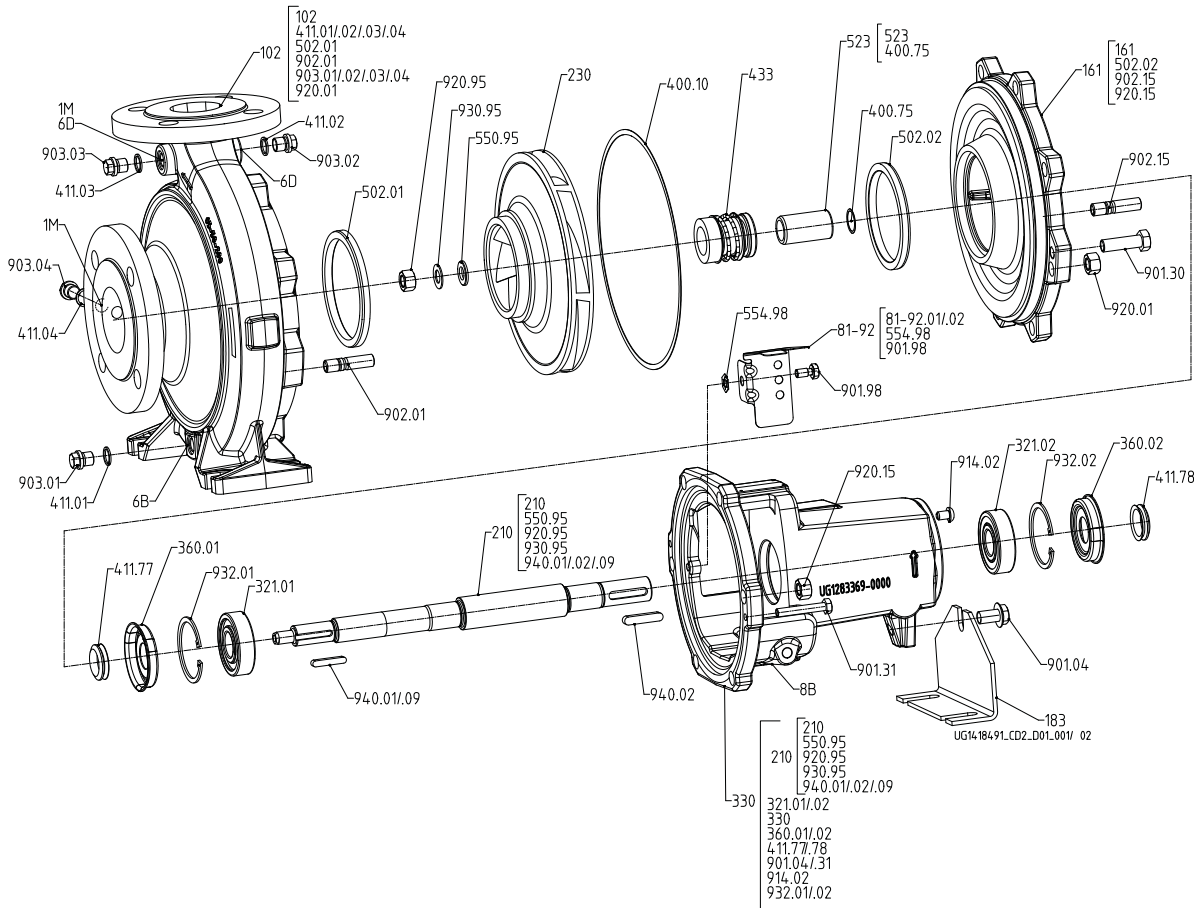
29) If any

General assembly drawings
Version with standardised mechanical seal and bolted casing cover

This illustration applies to the following pump sizes:

040-025-200	050-032-200.1	050-032-200	065-040-200	065-050-200	080-065-200	100-80-250	125-100-250	150-125-250	200-150-250
	050-032-250.1	050-032-250	065-040-250	065-050-250	080-065-250	100-80-315	125-100-315	150-125-315	200-150-315
			065-040-315	065-050-315	080-065-315	100-80-400	125-100-400	150-125-400	200-150-400

[Supplied in packaging units only


Fig. 11: Version with standardised mechanical seal and bolted casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	523	Shaft sleeve
161	Casing cover	550.95 ³⁰⁾	Disc
183	Support foot	554.98	Lock washer
210	Shaft	81-92.01/02	Cover plate
230	Impeller	901.04/30/31/98	Hexagon head bolt
321.01/02	Deep groove ball bearing	902.01/15	Stud
330	Bearing bracket	903.01/02/03/04	Screw plug
360.01/02	Bearing cover	914.02	Round-head screw
400.10/75	Gasket	920.01/15/95	Hexagon nut
411.01/02/03/04	Joint ring	930.95	Spring washer

30) For shaft unit 25 only

Part No.	Description	Part No.	Description
411.77.78	Axial seal ring	932.01/02	Circlip
433	Mechanical seal	940.01/02/09 ³¹⁾	Key
502.01/02	Casing wear ring ³²⁾		

Connections

Part No.	Description	Part No.	Description
1M	Pressure gauge with connection	6D	Fluid priming and venting
6B	Fluid drain	8B	Leakage drain

31) For shaft units 55 and 60 only
32) Optional for casing material C

Version with standardised mechanical seal and clamped casing cover

This illustration applies to the following pump sizes:

040-025-160 050-032-125.1 050-032-125 065-040-125 065-050-125 080-065-125 100-80-160 125-100-160 150-125-200 200-150-200
050-032-160.1 050-032-160 065-040-160 065-050-160 080-065-160 100-80-200 125-100-200

[Supplied in packaging units only

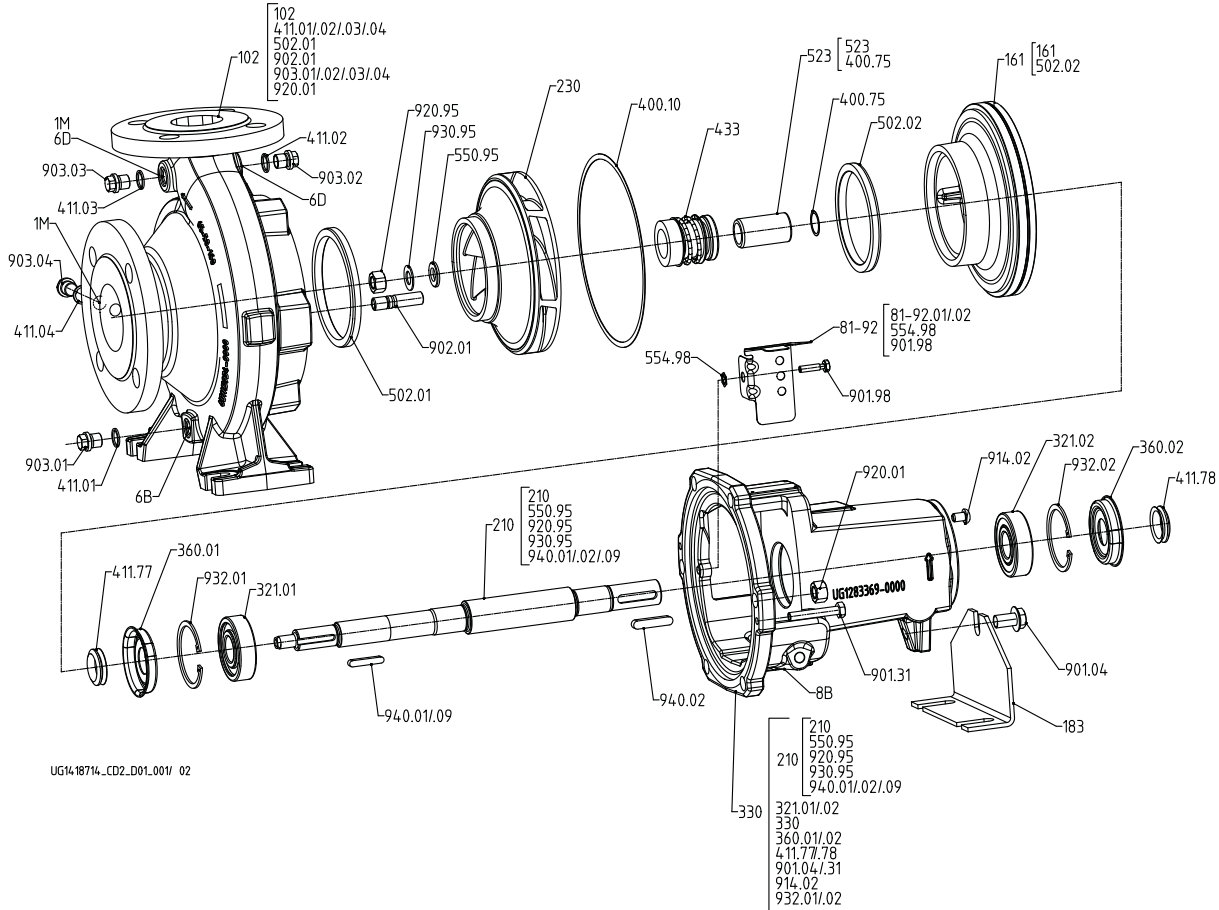


Fig. 12: Version with standardised mechanical seal and clamped casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	523	Shaft sleeve
161	Casing cover	550.95 ³³⁾	Disc
183	Support foot	554.98	Lock washer
210	Shaft	81-92.01/.02	Cover plate
230	Impeller	901.04/.31/.98	Hexagon head bolt
321.01/.02	Deep groove ball bearing	902.01	Stud
330	Bearing bracket	903.01/.02/.03/.04	Screw plug
360.01/.02	Bearing cover	914.02	Round-head screw
400.10/.75	Gasket	920.01/.95	Hexagon nut
411.01/.02/.03/.04	Joint ring	930.95	Spring washer
411.77/.78	Axial seal ring	932.01/.02	Circlip
433	Mechanical seal	940.01/.02/.09 ³⁴⁾	Key
502.01/.02 ³⁵⁾	Casing wear ring ³⁶⁾		

33) For shaft unit 25 only

34) For shaft units 55 and 60 only

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

36) Optional for casing material C

Connections

Part No.	Description	Part No.	Description
1M	Pressure gauge with connection	6D	Fluid priming and venting
6B	Fluid drain	8B	Leakage drain

Version with gland packing and bolted casing cover

This illustration applies to the following pump sizes:

040-025-200	050-032-200.1	050-032-200	065-040-200	065-050-200	080-065-200	100-80-250	125-100-250	150-125-250	200-150-250
	050-032-250.1	050-032-250	065-040-250	065-050-250	080-065-250	100-80-315	125-100-315	150-125-315	200-150-315
			065-040-315	065-050-315	080-065-315	100-80-400	125-100-400	150-125-400	200-150-400

[Supplied in packaging units only

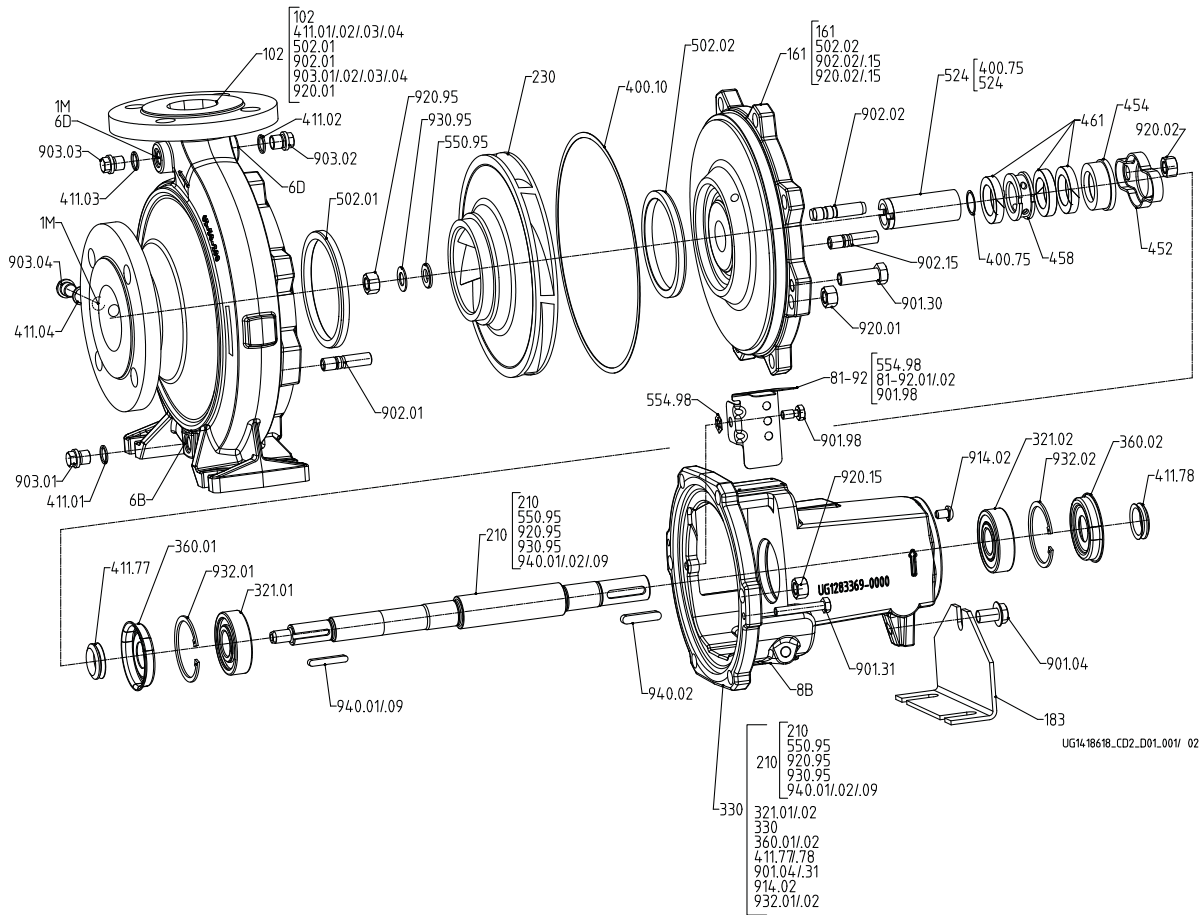


Fig. 13: Version with gland packing and bolted casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	461	Gland packing
161	Casing cover	502.01/.02	Casing wear ring ³⁷⁾
183	Support foot	524	Shaft protecting sleeve
210	Shaft	550.95 ³⁸⁾	Disc
230	Impeller	554.98	Lock washer
321.01/.02	Deep groove ball bearing	81-92.01/.02	Cover plate
330	Bearing bracket	901.04/.30/.31/.98	Hexagon head bolt
360.01/.02	Bearing cover	902.01/.02/.15	Stud
400.10/.75	Gasket	903.01/.02/.03/.04	Screw plug
411.01/.02/.03/.04	Joint ring	914.02	Round-head screw
411.77/.78	Axial seal ring	920.01/.02/.15/.95	Hexagon nut
452	Gland follower	930.95	Spring washer
454	Stuffing box ring	932.01/.02	Circlip
458	Lantern ring	940.01/.02/.09 ³⁹⁾	Key

37) Optional for casing material C

38) For shaft unit 25 only

39) For shaft units 55 and 60 only

Connections

Part No.	Description	Part No.	Description
1M	Pressure gauge with connection	6D	Fluid priming and venting
6B	Fluid drain	8B	Leakage drain

Version with gland packing and clamped casing cover

This illustration applies to the following pump sizes:

040-025-160 050-032-125.1 050-032-125 065-040-125 065-050-125 080-065-125 100-80-160 125-100-160 150-125-200 200-150-200
050-032-160.1 050-032-160 065-040-160 065-050-160 080-065-160 100-80-200 125-100-200

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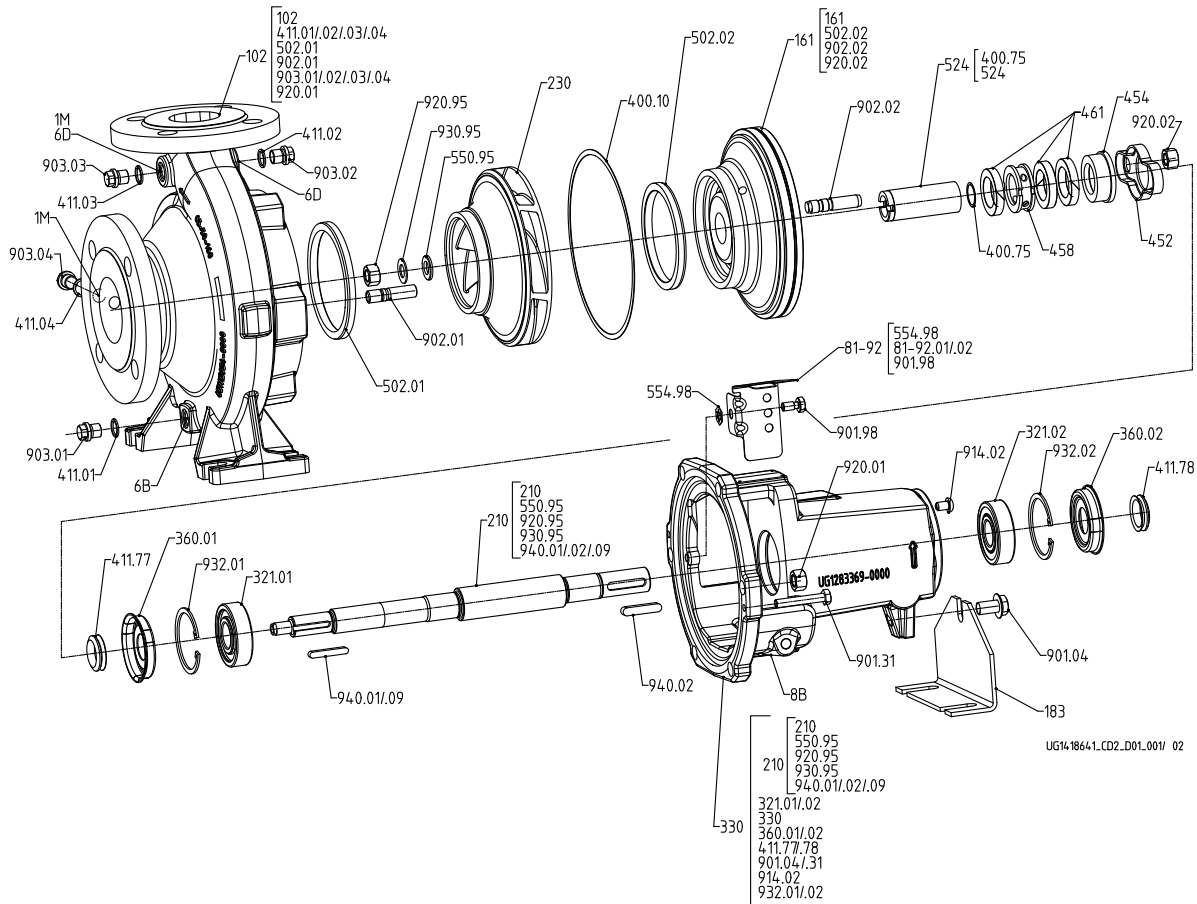


Fig. 14: Version with gland packing and clamped casing cover

List of components

Part No.	Description	Part No.	Description
102	Volute casing	461	Gland packing
161	Casing cover	502.01/.02 ⁴⁰⁾	Casing wear ring ⁴¹⁾
183	Support foot	524	Shaft protecting sleeve
210	Shaft	550.95 ⁴²⁾	Disc
230	Impeller	554.98	Lock washer
321.01/.02	Deep groove ball bearing	81-92.01/.02	Cover plate
330	Bearing bracket	901.04/.31/.98	Hexagon head bolt
360.01/.02	Bearing cover	902.01/.02	Stud
400.10/.75	Gasket	903.01/.02/.03/.04	Screw plug
411.01/.02/.03/.04	Joint ring	914.02	Round-head screw
411.77/.78	Axial seal ring	920.01/.02/.95	Hexagon nut
452	Gland follower	930.95	Spring washer
454	Stuffing box ring	932.01/.02	Circlip
458	Lantern ring	940.01/.02/.09 ⁴³⁾	Key

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

41) Optional for casing material C

42) For shaft unit 25 only

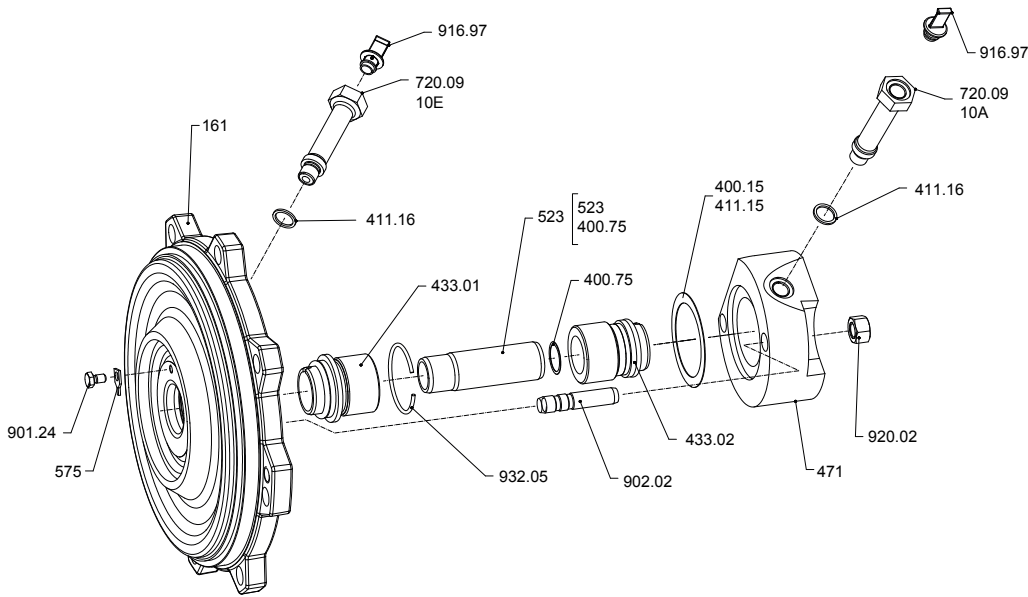
43) For shaft units 55 and 60 only

Connections

Part No.	Description	Part No.	Description
1M	Pressure gauge with connection	6D	Fluid priming and venting
6B	Fluid drain	8B	Leakage drain

Version with double mechanical seal in back-to-back arrangement

[Supplied in packaging units only



UG1790188_D02_101/01

Fig. 15: Version with double mechanical seal in back-to-back arrangement

List of components⁴⁴⁾

Part No.	Description	Part No.	Description
161	Casing cover	720.09	Fitting
400.15/.75	Gasket	901.24	Hexagon head bolt
411.15/.16	Joint ring	916.97	Plug
433.01/.02	Mechanical seal	902.02	Stud
471	Seal cover	920.02	Hexagon nut
523	Shaft sleeve	932.05	Circlip
575	Lug		

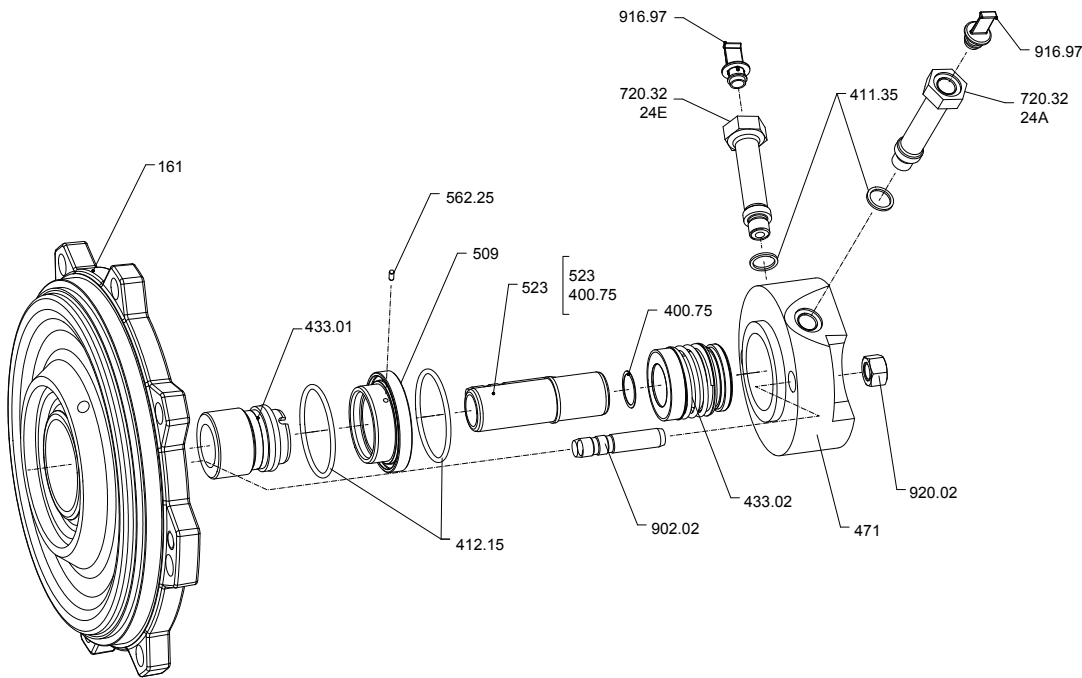
Auxiliary connections

Part No.	Description	Part No.	Description
10A	External barrier water outlet	10E	External barrier water inlet

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

Version with double mechanical seal in tandem arrangement

[Supplied in packaging units only



UG1790188_D01_101/01

Fig. 16: Version with double mechanical seal in tandem arrangement

List of components⁴⁵⁾

Part No.	Description	Part No.	Description
161	Casing cover	523	Shaft sleeve
400.75	Gasket	562.25	Parallel pin
411.35	Joint ring	720.32	Fitting
412.15	O-ring	902.02	Stud
433.01/02	Mechanical seal	916.97	Plug
471	Seal cover	920.02	Hexagon nut
509	Intermediate ring		

Auxiliary connections

Part No.	Description	Part No.	Description
24A	Quench liquid outlet	24E	Quench liquid inlet

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

Version with reinforced bearings

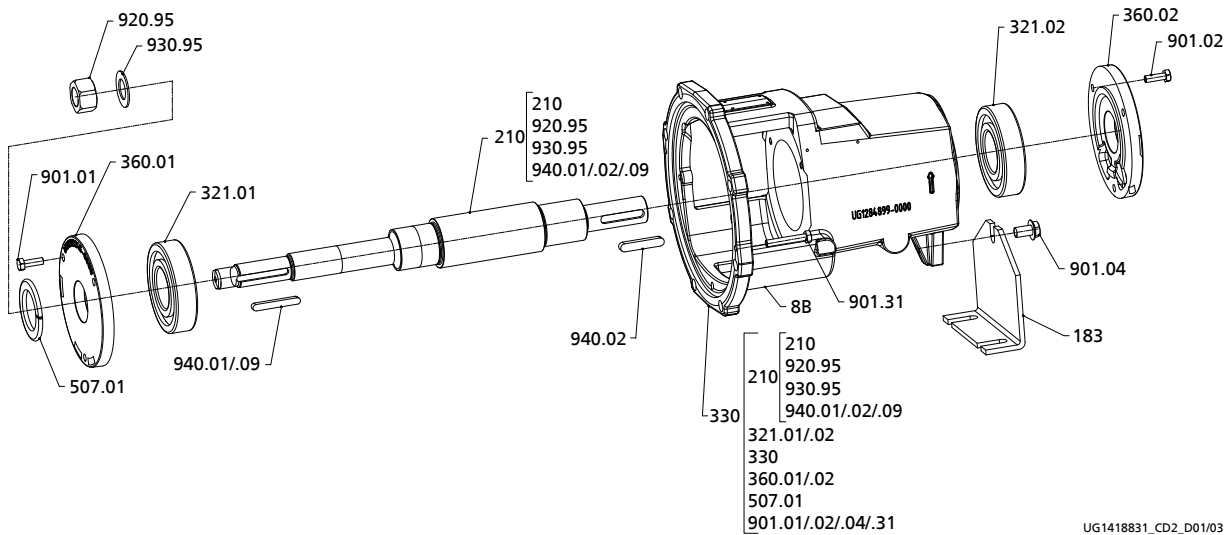


Fig. 17: Version with reinforced bearings (shaft units 50 and 60)

List of components⁴⁶⁾

Part No.	Description	Part No.	Description
183	Support foot	507.01	Thrower
210	Shaft	901.01/.02/.04/.31	Hexagon head bolt
330	Bearing bracket	920.95	Hexagon nut
321.01/.02	Deep groove ball bearing	930.95	Spring washer
360.01/.02	Bearing cover	940.01/.02/.09 ⁴⁷⁾	Key

Connections

Part No.	Description	Part No.	Description
8B	Leakage drain		

46) Some individual components might not be applicable, depending on the pump size and material.
47) For shaft unit 60 only

Version with oil lubrication and constant level oiler

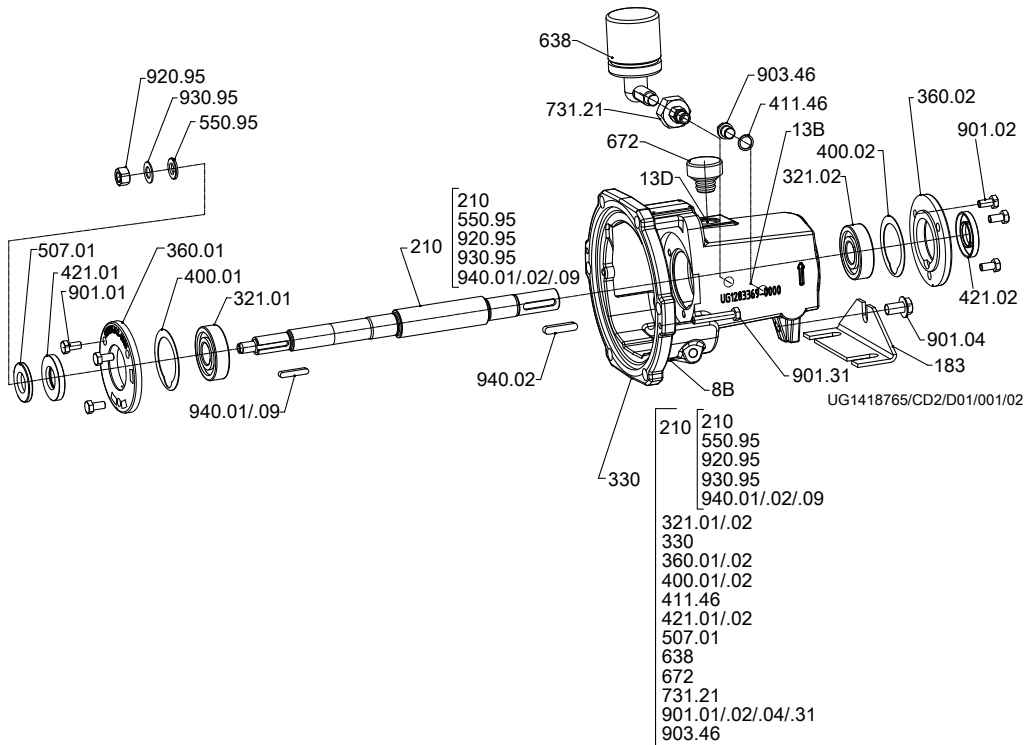


Fig. 18: Version with oil lubrication and constant level oiler

List of components⁴⁸⁾

Part No.	Description	Part No.	Description
183	Support foot	550.95 ⁴⁹⁾	Disc
210	Shaft	638	Constant level oiler
330	Bearing bracket	672	Vent
321.01/.02	Deep groove ball bearing	731.21	Pipe union
360.01/.02	Bearing cover	901.01/.02/.04/.31	Hexagon head bolt
400.01/.02	Gasket	903.46	Screw plug
411.46	Joint ring	920.95	Hexagon nut
421.01/.02	Lip seal	930.95	Spring washer
507.01	Thrower	940.01/.02/.09 ⁵⁰⁾	Key

Connections

Part No.	Description	Part No.	Description
8B	Leakage drain	13D	Oil filling and venting
13B	Oil drain		

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

49) For shaft unit 25 only

50) For shaft units 55 and 60 only

Glossary

ACS

French drinking water regulations (ACS = Attestation de Conformité Sanitaire)

Back pull-out design

The complete back pull-out unit can be pulled out without having to remove the pump casing from the piping.

FM

Certification by FM Global (FM = Factory Mutual) regarding property insurance in industry and risk management; FM-approved products

IE1

Efficiency class to IEC 60034-30: 1 = Standard Efficiency (IE = International Efficiency)

IE2

Efficiency class to IEC 60034-30: 2 = High Efficiency (IE = International Efficiency)

IE3

Efficiency class to IEC 60034-30: 3 = Premium Efficiency (IE = International Efficiency)

Mech. seal

Mechanical seal

MPG

The material price group is composed of a 2-digit numerical code / letter code and serves to automatically find the conditions/discounts for a product that has been entered in SAP.

SU

Shaft unit

UBA

German drinking water regulations to German Environment Agency

UL

Certification of materials, components and end products regarding product safety (UL = Underwriters Laboratories)

VdS

Certification for fire protection and safety by VdS

WRAS

Approved by all water suppliers in the UK (WRAS = Water Regulations Advisory Scheme)

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