Water Pump

Etanorm-R

Fixed Speed / Variable Speed
50 Hz / 60 Hz

Type Series Booklet

KSB

Legal information/Copyright

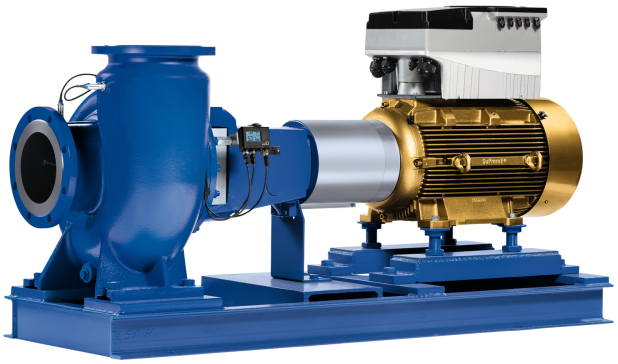
Type Series Booklet Etanorm-R

Contents

Centrifugal Pumps with Shaft Seal

Water Pump

Etanorm-R



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

Main applications

- Water supply systems
- Spray irrigation systems
- Drainage systems
- Air-conditioning systems
- Fire-fighting systems
- General irrigation systems
- Heating 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 10)

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
Type series booklet KSB SuPremE	4075.53
Type series booklet PumpDrive 2 / PumpDrive 2 Eco	4074.5
Type series booklet PumpDrive R	4073.5
Type series booklet PumpMeter	4072.5

Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q m³/h]	≤ 1900	≤ 2285
Head	H [m]	≤ 101	≤ 88
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
- Two-stage (size 125-500/2)
- Axial thrust balanced by discharge-side casing wear ring and balancing holes
- Replaceable casing wear rings
- Fixed speed version (without PumpDrive 2 / PumpDrive 2 Eco / PumpDrive R) / variable speed version (with PumpDrive 2 / PumpDrive 2 Eco / PumpDrive R)

Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet
- Baseframe made of welded channel sections
- Replaceable casing wear rings

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) 400 V / 690 V ≥ 3.00 kW
- Rated voltage (60 Hz) 460 V / - ≥ 3.00 kW
- Type of construction IM B3

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- 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) 400 V / 690 V ≥ 3.30 kW
- Rated voltage (60 Hz) 460 V / - ≥ 3.30 kW
- Type of construction IM B3
- Enclosure IP55
- Duty cycle: continuous duty S1
- II 3G Ex ec IIC T3 Gc
- II 2G Ex eb IIC T3 Gb
- II 2G Ex db (eb) IIB T4 Gb
- II 2G Ex db (eb) IIC T4 Gb

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 4 kW to 45 kW
- Rated speed 1500 min^{-1}
- 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 / PumpDrive 2 Eco:

- Self-cooling frequency inverter of modular design for the continuously variable speed control of asynchronous 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 ± 2 %

PumpDrive R:

- Self-cooling frequency inverter of modular design for the continuously variable speed control of asynchronous motors and synchronous reluctance motors, such as KSB SupremE motors or permanent magnet synchronous motors, by means of analog standard signals, a field bus or the control panel
- Identical design of frequency inverter for the mounting types wall mounting and cabinet mounting
- Mains voltage 3~ 380 V AC -10 % to 480 V AC +10 %
- Extended mains voltage range (on request)
- Mains frequency 50 Hz to 60 Hz ± 2 %
- Extended power range with a nominal power of 110 kW (standard) or 1400 kW (on request)

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

KSB Guard

- System for monitoring the pump's condition by means of temperature and vibration sensors
- Measured values and operating data may be retrieved via the KSB Guard app and the web portal at any time.

Shaft seal

- Cartridge seal
- Standardised mechanical seal to EN 12756
- Gland packing

Impeller type

- Closed radial impeller with multiply curved vanes

Sizes 200-250, 250-300, 300-340:

- Mixed flow impeller

Bearings

- Grease-packed deep groove ball bearing
- Oil-lubricated deep groove ball bearing

Direction of rotation

- Clockwise, viewed from the drive end.

Further information on the drive

(⇨ Page 11)

Further information on the shaft seal

(⇨ Page 12)

Further information on bearings

(⇨ Page 13)

Further information on the coupling

(⇨ Page 13)

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Designation

Example: Etanorm-R X G C1 300-400

Designation key

Code	Description	
Etanorm-R X	Type series (fire-fighting pump)	
G	Casing material	
	G	Cast iron
	S	Nodular cast iron
C1	Impeller material	
	C1	Stainless steel
	G	Cast iron
	M	Bronze
300	Nominal discharge nozzle diameter [mm]	
400	Nominal impeller diameter [mm]	
-	Additional code	
	-[1)]	Single-stage
	.1	Single-stage, modified version
	/2	Two-stage

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Materials

Symbols key

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

Overview of available materials

Part No. (⇨ Page 28)	Description	Material	Material variant					
			GG	GM	GC1	SG	SM	SC1
102	Volute casing	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	✗	✗	-	-	-
		Nodular cast iron EN-GJS-400 / A536 Gr. 60-40-18	-	-	-	✗	✗	✗
230	Impeller	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	-	-	✗	-	-
		Bronze CC480K-GS / B30 C90700	-	✗	-	-	✗	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	-	✗	-	-	✗
161	Casing cover	Grey cast iron JL1040 / grey cast iron A 48 Cl. 35B	✗	✗	✗	-	-	-
		Nodular cast iron JS1030 / A536 Gr. 60-40-18	-	-	-	✗	✗	✗
171	Diffuser[2)]	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	-	-	-	-	-
		Grey cast iron JL1040 / grey cast iron A 48 Cl. 35B	-	-	-	✗	-	-
		Bronze CC480K-GS / B30 C90700	-	✗	-	-	✗	-
		Grey cast iron EN-GJL-250 / A 48 Cl. 35B	-	-	✗	-	-	✗
183	Support foot	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	✗	✗	✗	✗	✗
210	Shaft	Tempered steel C45+N	✗	✗	✗	✗	✗	✗
		Chrome steel 1.4057+QT800	o	o	o	o	o	o
502.01	Casing wear ring, suction side	Grey cast iron EN-GJL-250 / CI	✗	✗	✗	✗	✗	✗
		Bronze CC495K-GS	o	o	o	o	o	o
502.02	Casing wear ring, discharge side	Grey cast iron EN-GJL-250 / CI	✗	✗	✗	✗	✗	✗
		Bronze CC495K-GS	o	o	o	o	o	o
523	Shaft sleeve	Chrome nickel molybdenum steel 1.4571	✗	-	-	-	-	-
524	Shaft protecting sleeve	Chrome molybdenum steel 1.4122	-	✗	✗	✗	✗	✗
330	Bearing bracket	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	✗	✗	✗	✗	✗
360.1/.2	Bearing cover	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	✗	✗	✗	✗	✗	✗
400.1/.9	Gasket	DPAF	✗	✗	✗	✗	✗	✗
412	O-ring	EPDM80	✗	✗	✗	✗	✗	✗

2 For size 125-500/2 only

Coating and preservation

- Coating and preservation to KSB standard
- Special coatings on request

Product benefits

- 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
- Pioneering energy efficiency by variable speed operation in combination with PumpDrive. When used in combination with the KSB SuPremE motor, the pump achieves efficiency level IE4/IE5 to IEC TS 60034-30-2:2016 already today.
- Easy to dismantle due to back pull-out design; no need to remove the pump casing from the piping

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 identificator: 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

Certifications

Overview

Label	Effective in:	Comment
	All countries	Certified quality management to ISO 9001

Standards

Applicable standards

Standard	Description
DIN EN 809	Pumps and pump sets for liquids – Common safety requirements
DIN EN 12756	Mechanical seals – Main dimensions, designation and material codes
DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction

Acceptance tests and warranty

Hydraulic test:

- To ISO 9906 Cl. 2A
- Non-witnessed
- Scope of testing: Q, H, P, η, H_0

Hydraulic test:

- To ISO 9906 Cl. 2A
- Non-witnessed
- Scope of testing: Q, H, P, η, H_0, NPSH at duty point

Hydraulic test:

- To ISO 9906 Cl. 2A
- Witnessed
- Scope of testing: Q, H, P, η, H_0

Hydraulic test:

- To ISO 9906 Cl. 2A
- Witnessed
- Scope of testing: Q, H, P, η, H_0, NPSH at duty point

Final inspection:

- Inspection certificate 3.1. B to EN 10204 for hydrostatic test of complete pump

Materials inspection and testing:

- Test report 2.1 to EN 10204

Materials inspection and testing:

- Test report 2.2 to EN 10204

Warranty:

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

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Overview of product features / selection tables

Overview of variants

Other designs on request

Symbols key

Symbol	Description
✗	Standard
-	Version not available / not feasible

Overview of Etanorm-R variants

Design	102 / Volute casing	230 / Impeller	T	Main applications						
			[°C]	Water supply systems	Fire-fighting systems	General irrigation systems	Drainage systems	Heating systems	Air-conditioning systems	Spray irrigation systems
GG	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	≥ -30 - ≤ +140	✗	✗	✗	✗	✗	✗	✗
GM	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	Bronze CC480K-GS / B30 C90700	≥ -30 - ≤ +140	✗	✗	✗	✗	✗	✗	✗
GC1	Grey cast iron EN-GJL-250 / A 48 Cl. 35B	Stainless steel 1.4408 / A743 Gr. CF8 M	≥ -30 - ≤ +140	✗	✗	✗	✗	✗	✗	✗

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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.

https://www.ksb.com/ksb-en/Select_your_pumps_and_valves/ksb-easyselect/

Other fluids upon request.

Symbols key

Symbol	Description
✗	Standard
-	Version not available / not feasible

Excerpt from the overview of fluids handled with associated material variants

Fluid handled	T[3]		Materials						Shaft seal						
	Minimum	Maximum	GG	GM	GC1	SG	SM	SC1	Q1BVGG	Q1Q1VGG	Q1Q1EGG	Q1AEGG	Q1BEGG	RT/P NA	RT/P NB
	[°C]														
Fire-fighting water	0	60	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗	-	-
Heating water ≤ 100 °C, to VDI 2035	0	100	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗	-	-
High-temperature hot water, to VdTüV 1466	0	140	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗[4]	-	-
Condensate, to VdTüV 1466	0	140	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗[4]	-	-
Condensate, AF composition	0	140	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗[4]	-	-
Vapour condensate	0	140	✗	✗	✗	✗	✗	✗	-	-	-	✗	✗[4]	-	-
Cooling water, closed cooling circuit	0	70	-	✗	✗	-	✗	✗	-	✗	-	-	-	-	-
Cooling water, open cooling circuit	0	70	-	✗	✗	-	✗	✗	-	✗	-	-	-	-	-
River water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Surface water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Lake water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Dam water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Raw water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Grey water	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	-	-	-
Swimming pool water	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-
Brewing water	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-
Ice water (brewery)	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-
Tap water	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-
Drinking water	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-
Hot water (brewery)	0	60	✗	✗	✗	✗	✗	✗	✗	✗	-	-	-	-	-
Clean water (brewery)	0	60	✗	✗	✗	✗	✗	✗	-	✗	-	-	✗	✗	✗
Ethylene glycol base anti-freeze (concentration: 50 %)	0	110	✗	✗	✗	✗	✗	✗	-	-	✗	-	-	✗	✗
Propylene glycol base anti-freeze (concentration: 50 %)	0	110	✗	✗	✗	✗	✗	✗	-	-	✗	-	-	✗	✗
Calcium chloride base cooling brine (concentration: ≤ 25.7 %)	0	25	✗	✗	-	✗	✗	-	-	-	✗	-	-	✗	✗
Ethylene glycol	0	80	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	✗	✗
Condenser water (sugar production)	0	60	✗	-	✗	✗	-	✗	-	-	-	-	✗	✗	✗
Olive oil	10	90	✗	-	✗	✗	-	✗	✗	-	-	-	-	✗	✗
Petrol	0	30	✗	✗	✗	✗	✗	✗	✗	-	-	-	-	-	-
Fuel oil	0	60	✗	✗	✗	✗	✗	✗	✗	-	-	-	-	-	-
Methanol	0	60	✗	✗	✗	✗	✗	✗	-	-	-	-	✗	-	-

3 T = fluid temperature
4 Fluid temperature ≤ 110 °C

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Overview of materials

Symbols key

Symbol	Description
✘	Standard
-	Version not available / not feasible

Material variants available

Etanorm-R	Material variant					
	GG	GM	GC1	SG	SM	SC1
125-500/2	✘	✘	✘	✘	✘	✘
150-500.1	✘	✘	✘	✘	✘	✘
200-250	✘	✘	✘	✘	✘	✘
200-260	✘	✘	✘	✘	✘	✘
200-330	✘	✘	✘	✘	✘	✘
200-400	✘	✘	✘	✘	✘	✘
200-500	✘	✘	✘	✘	✘	✘
250-300	✘	✘	✘	✘	✘	✘
250-330	✘	✘	✘	✘	✘	✘
250-400	✘	✘	✘	✘	✘	✘
250-500	✘	✘	✘	✘	✘	✘
300-340	✘	✘	✘	✘	✘	✘
300-360	✘	✘	✘	✘	✘	✘
300-400	✘	✘	✘	✘	✘	✘
300-500	✘	✘	✘	✘	✘	✘

Drive

Selection table: drive[5)]

Feature	KSB	SIEMENS
Motor enclosure	IP55	IP55
Thermal class	F to IEC 34-1	F to IEC 34-1
Rated voltage	400 V / 690 V	400 V / 690 V
Motor material	Grey cast iron	Grey cast iron
Efficiency class	IE3 to IEC 60034-30	IE3 to IEC 60034-30
Terminal box position	360°	360° / 45°
Frequency of starts ≤ 12 kW	15 starts/h	15 starts/h
Frequency of starts ≤ 100 kW	12 starts/h	12 starts/h
Frequency of starts > 100 kW	5 starts/h	5 starts/h

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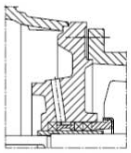
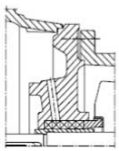
5 The cooling air of the electric motor used to drive the pump must flow in axial direction towards the pump end. Air velocity ≥ 3 m/s, measured in the area of the drive-side bearing end plate.

Shaft seal

Overview of gland packings

Feature	Gland packing design	
	Na	Nb
Illustration	 1211:57/2	 1211:4/3
Application	Pure fluids handled in suction lift operation, or with an inlet pressure ≤ 0.5 bar in suction head operation	Fluids handled with an inlet pressure > 0.5 bar in suction head operation, also malodorous fluids (e.g. ammonium hydroxide, petrol, benzene and lubricating oils, if the pump is installed outdoors).
Fluid temperature	-30 °C to +140 °C	-30 °C to +140 °C
Barrier fluid	Internal barrier fluid	No barrier fluid

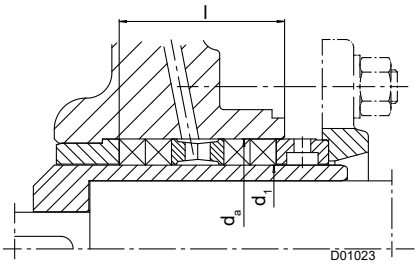
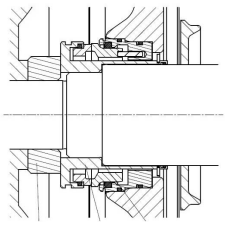
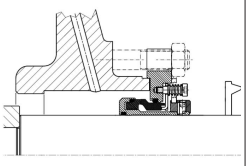
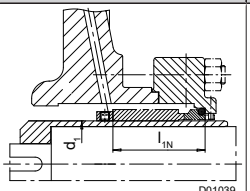
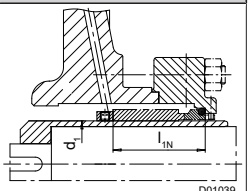


Fig. 1: Dimensions of the gland packing chamber

Dimensions of the gland packing chamber

Shaft unit	Gland packing chamber			Packing rings / lantern ring
	d_1	d_a	l	
	[mm]	[mm]	[mm]	Quantity
65	80	105	80	4 / 1

Overview of mechanical seals

Feature	KSB 4EB	KSB 4ES	Burgmann M32 N-75 R	Crane 59U
Illustration				
Application	Cartridge seal, without shaft protecting sleeve, without seal cover		-	
Fluid temperature	-30 °C to +140 °C		-20 °C to +110 °C	
Operating pressure	Dynamic: 16 bar		16 bar	
Approval	WRAS, ACS			
Code	Q1BVGG: -20 °C to +110 °C		BSVGG: -20 °C to +110 °C	Q1Q1TGG/BP: -20 °C to +110 °C
	Q1BEGG: -20 °C to +110 °C			BQ1TGG/BP: -20 °C to +110 °C
	Q1Q1VGG: -20 °C to +110 °C			
	Q1Q1EGG: -20 °C to +110 °C			
	Q1AEGG: -30 °C to +140 °C			
Operating mode	Without circulation	Internal circulation		
Direction of rotation	Independent		Clockwise	
Mechanical seal	Balanced		Unbalanced	

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Bearings

Selection table: bearings

Feature	Standard		Optional	
	Pump end	Drive end	Pump end	Drive end
Design	Deep groove ball bearing		Deep groove ball bearing	
Material	6413 C3 with Nilos ring JV[6)]		6413 C3	
Lubrication type	Grease-lubricated		Oil-lubricated	
Lubricant	High-quality lithium-soap grease		Mineral oil	
Lubricant change intervals	Every 15,000 operating hours; at least once within two years[7)]		Every 3000 operating hours; at least once a year[8)]	
Bearing temperature (measured on the outside of the bearing bracket)	≤ 90 °C[9)]		≤ 90 °C[9)]	
Bearing bracket	WE 65		WE 65	

Key to designation of bearing bracket

Code	Description
WE	Bearing bracket: version for heat transfer fluids
65	Size code (based on dimensions of seal chamber and shaft end)

Coupling / coupling guard

Selection table: coupling

Feature	N coupling	NH coupling	Rotex ZS-DKM-H
Design	Flexible coupling		
Spacer sleeve	-	✗	✗

Selection table: coupling guard

Feature	Standard	Optional
Design	Coupling guard	Coupling guard
Description	Lightweight	
	Not designed to support a person's weight	
	Without support piece	
	Guard/ring made of galvanised solid unperforated sheet metal	Non-sparking, made of brass
	-	Not designed to support a person's weight
	-	Mounted on bearing bracket

6 To DIN 625

7 Under unfavourable operating conditions (e.g. high room temperature, high atmospheric humidity, dust-laden air, aggressive industrial atmosphere etc.) check the bearings earlier and clean and re-lubricate them if required.

8 The first oil change should be carried out after 300 operating hours.

9 Bearing temperature may exceed room temperature by up to 50 °C but must never rise above 90 °C.

Overview of functions

Overview of functions

Functions / firmware	PumpDrive 2	PumpDrive 2 Eco
Protective functions		
Thermal motor protection	✗	✗
Mains voltage monitoring	✗	✗
Phase failure, motor side	✗	✗
Short-circuit monitoring, motor side (phase to phase and phase to earth)	✗	✗
Dynamic overload protection by speed limitation (i^2t control)	✗	✗
Resonant frequency suppression	✗	✗
Broken wire detection (live zero)	✗	✗
Protection against dry running and hydraulic blockage (sensorless due to learning function)	✗	✗
Dry running protection (external control signal)	✗	✗
Operating point estimation and characteristic curve control	✗	✗
Open-loop control		
Open-loop control mode	✗	✗
Closed-loop control		
Closed-loop control mode via integrated PID controller	✗	✗
Pressure control / differential pressure control (Δp const)	✗	✗
Pressure control / differential pressure control with dynamic pressure compensation (Δp var)	✗	✗
Flow rate control	✗	✗
Sensorless differential pressure control (Δp const) in a single-pump configuration	✗	✗
Sensorless differential pressure control with dynamic pressure compensation (Δp var) in a single-pump configuration	✗	✗
Sensorless flow rate control	✗	✗
Level control	✗	✗
Temperature control	✗	✗
Alternative setpoint	✗	-
Operation and monitoring (display)		
Measured value display (pressure, head, speed, electric power, motor voltage, motor current, torque)	✗	✗
Fault history	✗	✗
Operating hours counter	✗	✗
Fault reporting via relay	✗	✗
Frequency inverter functions		
Programmable start ramps and stop ramps	✗	✗
Field-oriented control (vector control), V/f control	✗	✗
Configurable motor control method (asynchronous motor, KSB SuPremE)	✗	✗
Automatic motor adaptation (AMA)	✗	✗
Motor standstill heater	✗	✗
Manual-0-automatic mode	✗	✗
External OFF	✗	✗
External minimum speed	✗	✗
Sleep mode (stand-by mode)	✗	✗
Energy savings meter	✗	-
Pump functions		
Flow rate estimation	✗	✗
M12 module with PumpMeter bus connection	✗	✗
M12 module for dual-pump configuration	✗	✗
M12 module for multiple pump configuration with up to 6 pumps	✗	✗
Functional check run	✗	✗
Deragging	✗	✗
Integrated dual-pump configuration (1×100 % with redundant pump or 2×50 % without redundant pump)	✗	✗
Multiple pump configuration with up to 6 pumps	✗	✗
Waste water function: start-up at maximum speed	✗	-
Waste water function: rinsing function	✗	-
Operation		

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Functions / firmware	PumpDrive 2	PumpDrive 2 Eco
Control panel	✗	✗[10)]
Commissioning wizard	✗	✗[11)]
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	Test pressure[12)]
	[°C]	[bar]
GG, GM, GC1	-30 to +140	≤ 15
SG, SM, SC1	≤ 140	≤ 24

In-service pressure limits and temperature limits

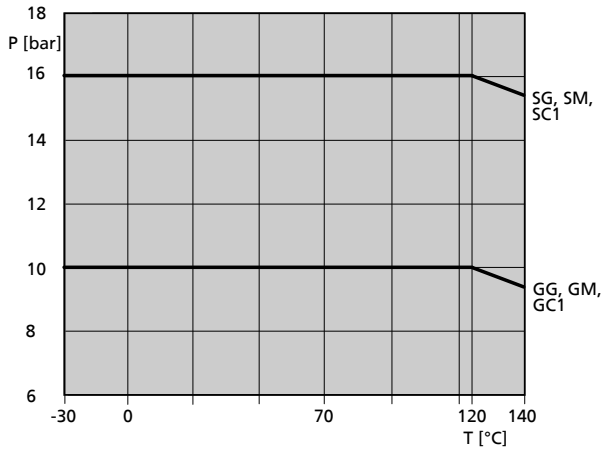

Fig. 2: In-service pressure limits and temperature limits as a function of material variant[13)]

Inlet pressure

The maximum inlet pressure is limited by the permissible pump discharge pressure p2.

Test pressure

1.5 x nominal pressure

10 Some functions can only be parameterised and/or displayed using the KSB ServiceTool (see operating manual).
11 Only available via KSB ServiceTool or app
12 The casing components are checked for leakage by means of internal pressure tests to AN 1897/75-03D00 with water.
13 The sum of inlet pressure and shut-off head must not exceed the values indicated in the diagram.

Technical data

Pump

Technical data

Etanorm-R	Number of blades	Impeller				n		J	Volumetric pump content (approx.)	Material variant	
		Outlet width	Free passage diameter	Nominal diameter						GG, SG	GM, SM, GC1, SC1
				Minimum	Maximum	Minimum	Maximum				
		[mm]				[rpm]		[kg m²]	[l]	[kg]	[kg]
125-500/2	7	16	14	260	405	500	1500	0,68	41,8	300	303
150-500.1	7	21	19	410	500	500	1500	0,85	62,7	370	375
200-250	4	57	48	200	240	500	1800	0,15	81,8	350	352
200-260	6	62	33	240	2600	500	1800	0,17	46,4	355	358
200-330	5	54	48	270	330	500	1800	0,25	47,7	390	393
200-400	7	38	32	340	405	500	1800	0,52	49,5	385	389
200-500	7	36	33	420	510	500	1500	1,10	52,6	560	566
250-300	4	66,5	60	245	285	500	1800	0,35	122,8	405	408
250-330	6	72	37	290	330	500	1800	0,42	70,3	458	463
250-400	6	58	36	340	405	500	1800	0,75	78,8	460	464
250-500	7	44	40	440	520	500	1500	1,35	84,3	635	642
300-340	4	74,5	68	270	320	500	1800	0,47	175,6	547	551
300-360	6	78	44	320	360	500	1800	0,55	125,1	590	595
300-400	8	65	33	360	430	500	1800	0,94	120,7	705	711
300-500	7	56	40	450	520	500	1500	1,67	120,1	720	728

P/n values as a function of material variant, temperature and shaft material

Etanorm-R	Material variant											
	GG, SG				GM, SM				GC1, SC1			
	20 °C		140 °C		20 °C		140 °C		20 °C		140 °C	
	Shaft											
	C45N	1.4057	C45N	1.4057	C45N	1.4057	C45N	1.4057	C45N	1.4057	C45N	1.4057
125-500/2	0,0696	0,088	0,0587	0,088	0,0677	0,0677	0,0479	0,0479	0,0696	0,0835	0,0587	0,0591
150-500.1	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
200-250	0,1203	0,2067	0,1015	0,1765	0,1203	0,159	0,1015	0,1124	0,1203	0,1961	0,1015	0,1389
200-260	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
200-330	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
200-400	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
200-500	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
250-300	0,1203	0,2067	0,1015	0,1765	0,1203	0,159	0,1015	0,1765	0,1203	0,1961	0,1015	0,1765
250-330	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
250-400	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
250-500	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
300-340	0,1203	0,2067	0,1015	0,1765	0,1203	0,159	0,1015	0,1765	0,1203	0,1961	0,1015	0,1765
300-360	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
300-400	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905
300-500	0,2385	0,2836	0,2013	0,2836	0,2182	0,2182	0,1542	0,1542	0,2385	0,2691	0,1905	0,1905

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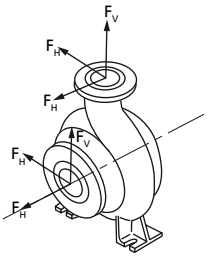
Permissible forces and moments at the pump nozzles



$$\left[\frac{\Sigma\,|F_V|}{|F_{Vmax}|}\right]^2 + \left[\frac{\Sigma\,|F_H|}{|F_{Hmax}|}\right]^2 + \left[\frac{\Sigma\,|M_t|}{|M_{tmax}|}\right]^2 \leq 1$$

Fig. 3: Forces and moments at the pump nozzles

The following condition must be met:

$\sum|F_V|$, $\sum|F_H|$, and $\sum|M_t|$ are the sums of the absolute values of the respective loads acting on the nozzles. Neither the load direction nor the load distribution among the nozzles are taken into account in these sums.

The values indicated also apply to pumps on non-grouted baseplates.

Forces and moments at the pump nozzles

DN	Material variant					
	GG, GM, GC1			SG, SM, SC1		
	F_{Vmax}	F_{Hmax}	M_{tmax}	F_{Vmax}	F_{Hmax}	M_{tmax}
	[kN]	[kN]	[kNm]	[kN]	[kN]	[kNm]
125	2,5	3,5	0,95	3,8	5,3	1,45
150	2,75	3,9	1,45	4,2	5,9	2,2
200	4,0	5,6	2,4	6,0	8,4	3,6
250	5,0	7,0	3,8	7,5	10,5	5,7
300	5,0	7,0	6,2	7,5	10,5	9,3
350	5,0	7,0	8,60	7,5	10,5	12,9

Noise characteristics

Surface sound pressure level L_{pA} [14)15)]

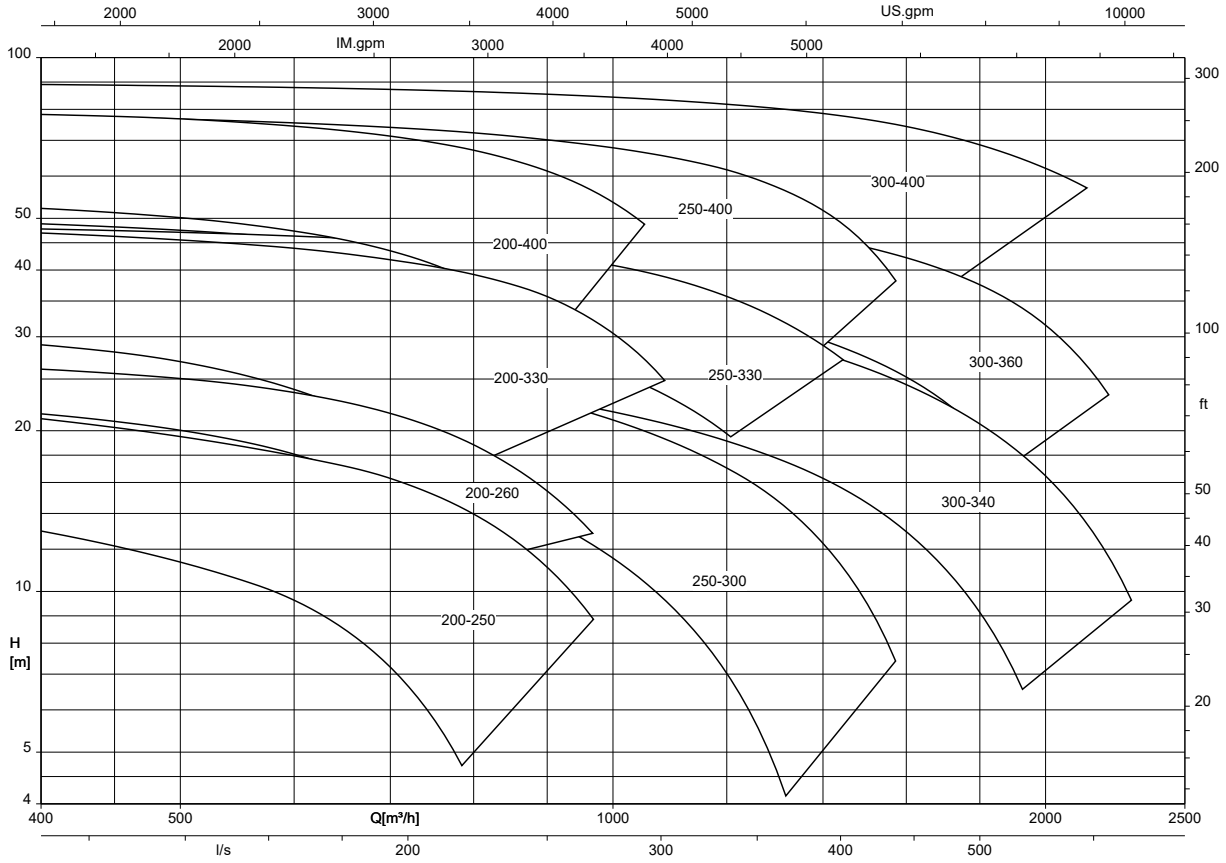
P_N	Pump	Pump set
	1450 rpm	1450 rpm
[kW]	[dB]	[dB]
15	64	69
19	65	69
22	66	70
30	67	71
37	69	72
45	70	73
55	71	74
75	72	75
90	73	76
110	74	76
132	76	79
160	76	79
200	77	80
250	78	81
315	79	82
400	79	82

14 The surface sound pressure level as spatial average as per ISO 3744 and EN 12639 is valid for pump operation in the Q/QBEP = 0.8 - 1.1 range and for non-cavitating operation.

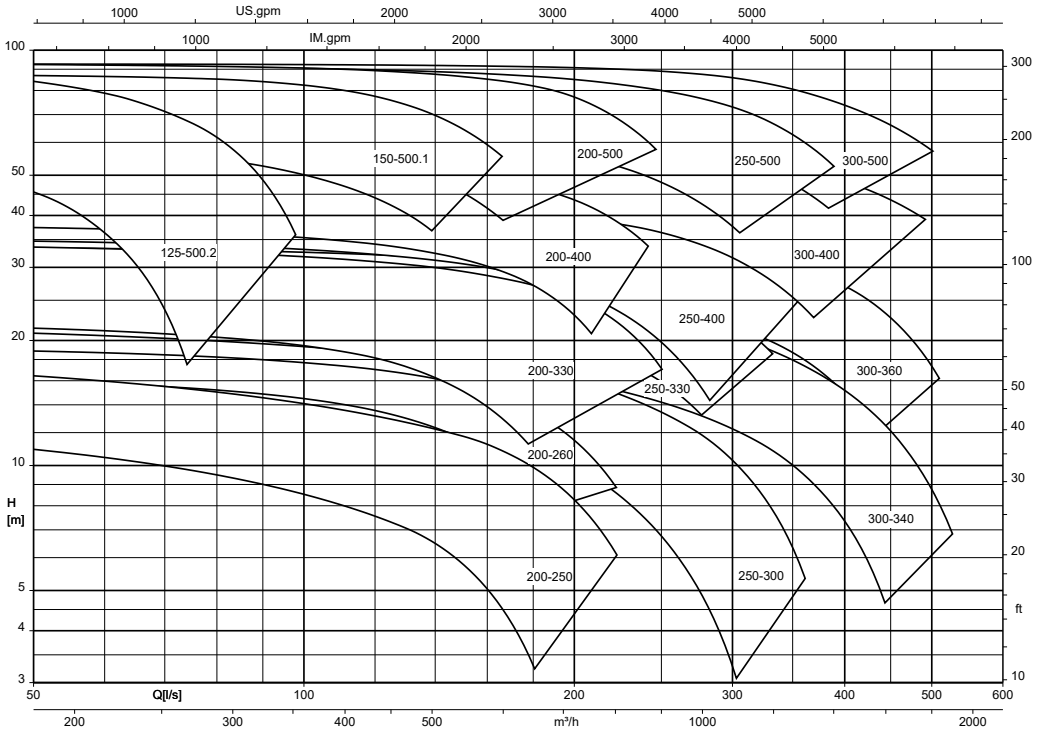
15 For measuring and constructional tolerance, add 1 dB for n ≤ 1750 rpm and 3 dB for n > 1750 rpm.

Selection charts

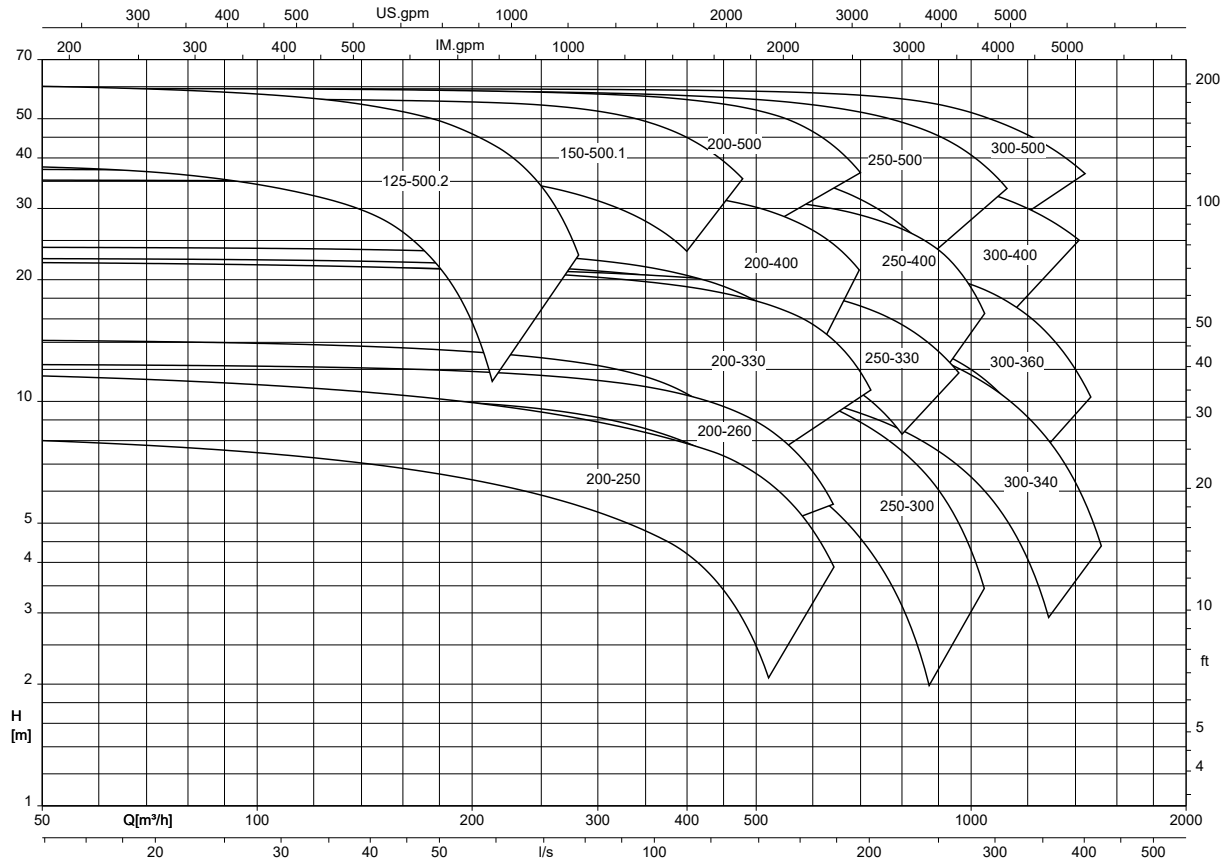
Etanorm-R (fixed speed version), n = 1750 rpm



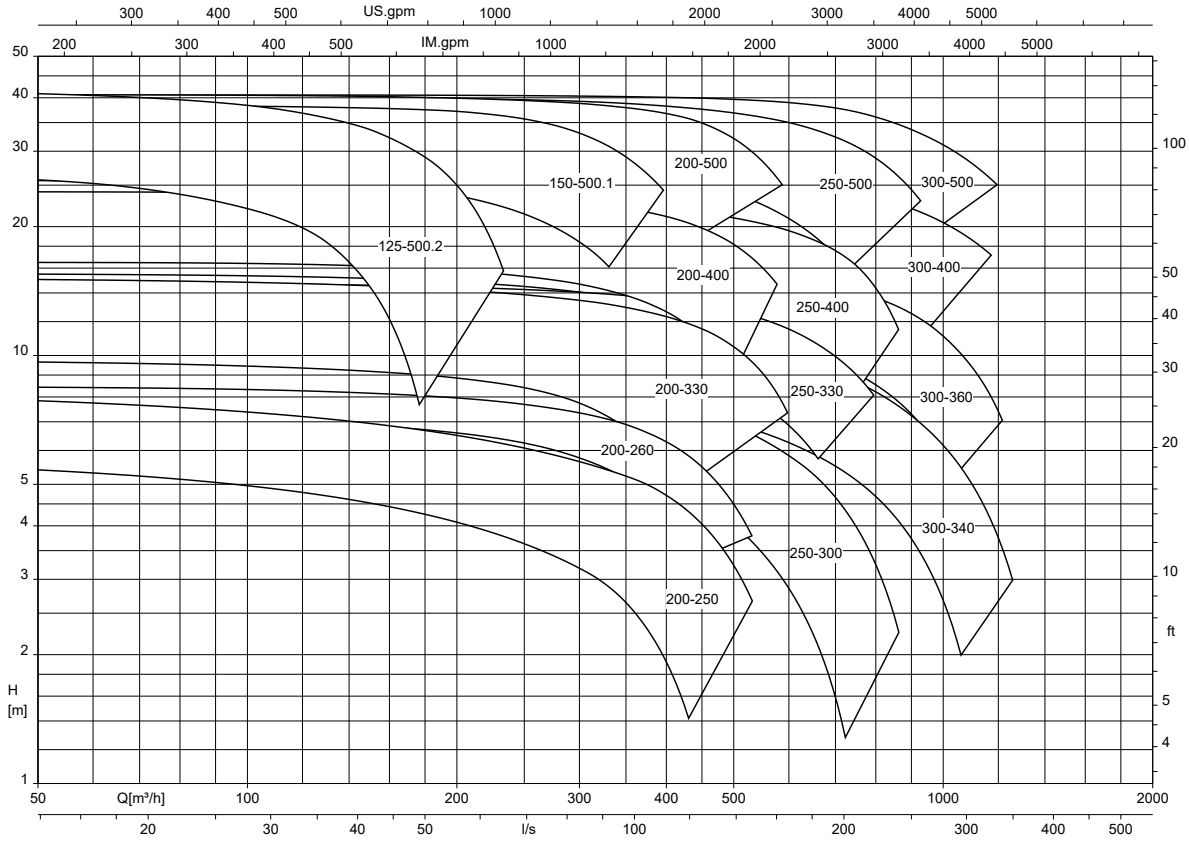
Etanorm-R (fixed speed version), n = 1450 rpm



Etanorm-R (fixed speed version), n = 1160 rpm



Etanorm-R (fixed speed version), n = 960 rpm



Dimensions

Pump dimensions

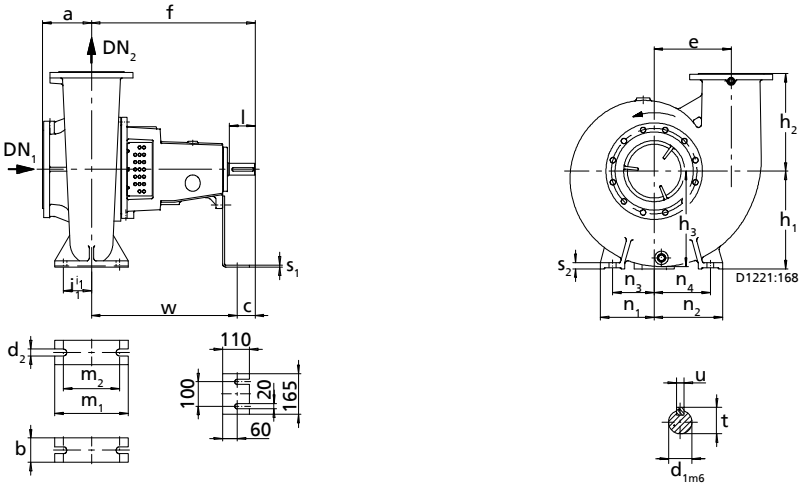


Fig. 4: Pump dimensions

Dimensions

Etanorm-R	DN_1	DN_2	a	b	c	d_{1m6}	d_2	e	f	h_1	h_2	h_3	i_1	l	m_1	m_2	n_1	n_2	n_3	n_4	s_1	s_2	t	u	w
			[mm]																						
125-500/2	150	125	245	120	121	60	24	270	703	355	300	297	95	140	250	190	270	300	220	250	6	22	64	18	582
150-500.1	200	150	150	100	115	60	28	315	715	400	450	359	115	140	300	230	240	260	190	210	6	25	64	18	600
200-250	200	200	220	100	119	60	28	250	815	355	345	329	109	140	300	230	220	280	170	230	6	25	64	18	690
200-260	200	200	200	100	120	60	28	300	715	400	350	369	115	140	300	230	220	280	170	230	8	25	64	18	595
200-330	250	200	200	100	120	60	28	315	715	400	400	390	115	140	300	230	220	280	170	230	8	25	64	18	595
200-400	250	200	180	130	120	60	28	290	715	400	400	358	115	140	300	230	220	280	155	215	8	25	64	18	595
200-500	250	200	200	130	115	60	28	387	715	500	450	497	140	140	350	280	320	380	255	315	20	25	64	18	600
250-300	250	250	225	130	115	60	28	300	830	400	400	384	95	140	300	230	270	330	205	265	8	25	64	18	695
250-330	250	250	250	130	120	60	34	345	715	450	400	445	140	140	350	280	310	390	245	325	10	25	64	18	595
250-400	300	250	180	130	120	60	34	335	715	450	480	400	140	140	350	280	320	380	255	315	10	25	64	18	595
250-500	300	250	225	130	115	60	34	425	715	500	500	514	162,5	140	400	325	360	440	295	375	20	32	64	18	600
300-340	300	300	255	160	115	60	34	315	850	450	450	427	120	140	350	280	310	390	230	310	10	25	64	18	715
300-360	300	300	300	160	122	60	34	387	717	560	450	505	162,5	140	400	325	310	390	230	310	20	32	64	18	595
300-400	350	300	300	160	120	60	34	425	715	560	500	540	162,5	140	400	325	350	450	270	370	20	32	64	18	595
300-500	350	300	300	160	115	60	34	450	715	560	500	581	162,5	140	400	325	350	450	270	370	20	32	64	18	600

Dimensions of the pump set with foundation

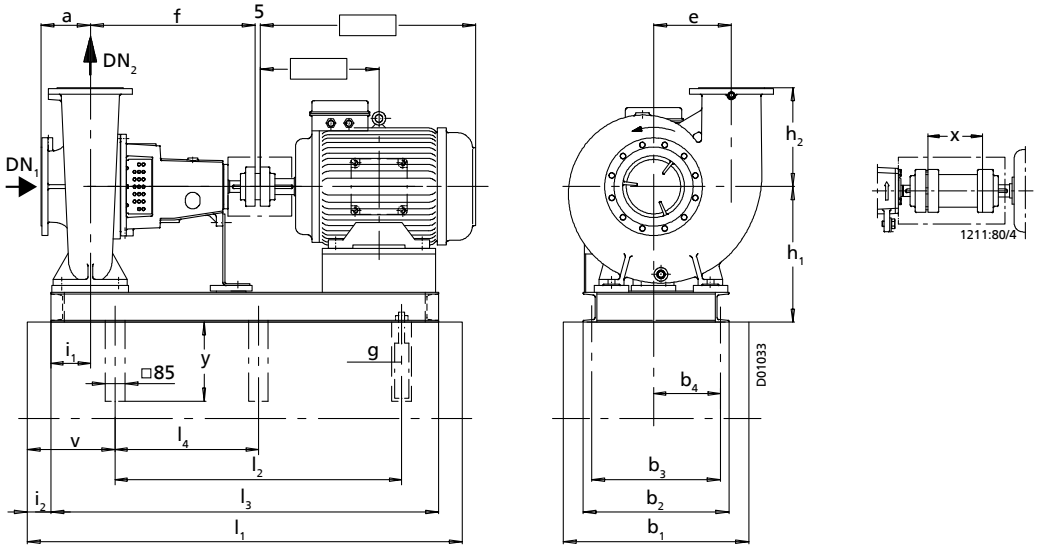


Fig. 5: Dimensions of the pump set with foundation

Dimensions

Etanorm-R	Motor	P_2		DN_1	DN_2	a	e	f	g	h_2	i	y	Coupling										Spacer-type coupling											
		960 rpm 1160 rpm	1450 rpm 1750 rpm										b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	v	b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	l_4	v	x
		[kW]				[mm]																													
125-500/2	160L	11,0	-	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	115	1920	1150	1695	-	310	200
125-500/2	180M	18,5	-	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	115	1920	1150	1695	-	310	200
125-500/2	180L	15,0	-	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	900	650	805	318	505	110	2000	1250	1780	-	280	200
125-500/2	200L	18,5	-	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	200L	22,0	-	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	200L	-	30,0	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	225S	-	37,0	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	225M	30,0	45,0	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	250M	37,0	55,0	150	125	245	270	703	M20 × 400	300	145	450	1010	760	710	370	525	115	1920	1150	1695	310	1010	760	710	370	525	110	2100	1300	1880	-	330	200
125-500/2	280S	45,0	75,0	150	125	245	270	703	M20 × 400	300	145	450	900	650	605	318	505	110	2000	1250	1780	280	1110	860	810	420	545	110	2260	1450	2040	-	330	200
125-500/2	280M	55,0	90,0	150	125	245	270	703	M20 × 400	300	145	450	900	650	605	318	505	110	2000	1250	1780	280	1110	860	810	420	545	110	2260	1450	2040	-	330	200
150-500.1	200L	18,5	-	200	150	150	315	715	M20 × 400	450	170	450	820	570	525	272	550	115	1920	1150	1695	285	1010	760	710	365	570	110	2100	1300	1880	-	330	200
150-500.1	200L	22,0	-	200	150	150	315	715	M20 × 400	450	170	450	820	570	525	272	550	115	1920	1150	1695	285	1010	760	710	365	570	110	2100	1300	1880	-	330	200
150-500.1	225S	37,0	-	200	150	150	315	715	M20 × 400	450	170	450	820	570	525	272	550	115	1920	1150	1695	285	1010	760	710	365	570	110	2100	1300	1880	-	330	200
150-500.1	225M	30,0	-	200	150	150	315	715	M20 × 400	450	170	450	820	570	525	272	550	115	1920	1150	1695	285	1010	760	710	365	570	110	2100	1300	1880	-	330	200
150-500.1	250M	37,0	-	200	150	150	315	715	M20 × 400	450	170	450	900	650	605	313	550	110	2000	1250	1780	280	1110	860	810	415	590	110	2260	1450	2040	-	330	200
150-500.1	280S	45,0	-	200	150	150	315	715	M20 × 400	450	170	450	900	650	605	313	550	110	2000	1250	1780	280	1110	860	810	415	590	110	2260	1450	2040	-	330	200

Etanorm-R	Motor	P_2		DN_1	DN_2	a	e	f	g	h_2	i	y	Coupling										Spacer-type coupling											
		960 rpm 1160 rpm	1450 rpm 1750 rpm										b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	v	b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	l_4	v	x
		[kW]				[mm]																													
150-500.1	280S	-	75,0	200	150	150	315	715	M20 × 400	450	170	450	900	650	605	313	550	110	2000	1250	1780	280	1110	860	810	415	590	110	2260	1450	2040	-	330	200
150-500.1	280M	55,0	90,0	200	150	150	315	715	M20 × 400	450	170	450	1010	760	710	365	570	110	2100	1300	1880	330	1110	860	810	415	590	110	2260	1450	2040	-	330	200
150-500.1	315S	75,0	110,0	200	150	150	315	715	M20 × 400	450	170	450	1010	760	710	365	570	110	2100	1300	1880	330	1110	860	800	410	610	110	2450	1650	2230	825	330	200
150-500.1	315M	-	132,0	200	150	150	315	715	M20 × 400	450	170	450	1110	860	810	415	590	110	2260	1450	2040	330	1110	860	800	410	610	110	2450	1650	2230	825	330	200
200-250	132M	4,0	-	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	900	650	605	333	505	110	2000	1250	1780	-	280	200
200-250	132M	5,5	-	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	900	650	605	333	505	110	2000	1250	1780	-	280	200
200-250	160M	7,5	-	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	1010	760	710	385	525	110	2100	1300	1880	-	330	200
200-250	160L	11,0	15,0	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	1010	760	710	385	525	110	2100	1300	1880	-	330	200
200-250	180M	-	18,5	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	1010	760	710	385	525	110	2100	1300	1880	-	330	200
200-250	180L	15,0	22,0	200	200	220	250	815	M20 × 400	345	170	450	820	570	525	293	505	115	1920	1150	1695	285	1010	760	710	385	525	110	2100	1300	1880	-	330	200
200-250	200L	-	30,0	200	200	220	250	815	M20 × 400	345	170	450	900	650	605	333	505	110	2000	1250	1780	280	1110	860	810	435	545	110	2260	1450	2040	-	330	200
200-250	225S	-	37,0	200	200	220	250	815	M20 × 400	345	170	450	900	650	605	333	505	110	2000	1250	1780	280	1110	860	810	435	545	110	2260	1450	2040	-	330	200
200-250	225M	-	45,0	200	200	220	250	815	M20 × 400	345	170	450	900	650	605	333	505	110	2000	1250	1780	280	1110	860	810	435	545	110	2260	1450	2040	-	330	200
200-260	160M	7,5	-	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	820	570	525	293	550	115	1920	1150	1695	-	285	200
200-260	160L	11,0	18,5	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-260	180L	15,0	22,0	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-260	180L	15,0	22,0	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-260	200L	18,5	30,0	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-260	225S	-	37,0	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-260	225M	-	45,0	200	200	200	300	715	M20 × 400	350	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-260	250M	-	55,0	200	200	200	300	715	M20 × 400	350	170	450	900	650	605	333	550	110	2000	1250	1780	280	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-330	160L	11,0	-	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-330	180M	15,0	18,5	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-330	180L	15,0	22,0	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	900	650	605	333	550	110	2000	1250	1780	-	280	200
200-330	200L	18,5	-	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-330	200L	22,0	30,0	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-330	225S	-	37,0	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-330	225M	30,0	45,0	250	200	200	315	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-330	250M	-	55,0	250	200	200	315	715	M20 × 400	400	170	450	900	650	605	333	550	110	2000	1250	1780	280	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-330	280S	-	75,0	250	200	200	315	715	M20 × 400	400	170	450	900	650	605	333	550	110	2000	1250	1780	280	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-330	280M	-	90,0	250	200	200	315	715	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-330	315S	-	110,0	250	200	200	315	715	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	800	430	610	110	2450	1650	2230	825	330	200
200-400	200L	18,5	-	250	200	180	290	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-400	200L	22,0	-	250	200	180	290	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-400	225M	30,0	-	250	200	180	290	715	M20 × 400	400	170	450	820	570	525	293	550	115	1920	1150	1695	285	1010	760	710	385	570	110	2100	1300	1880	-	330	200
200-400	250M	37,0	-	250	200	180	290	715	M20 × 400	400	170	450	900	650	605	333	550	110	2000	1250	1780	280	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-400	280S	45,0	75,0	250	200	180	290	715	M20 × 400	400	170	450	900	650	605	333	550	110	2000	1250	1780	280	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-400	280M	55,0	90,0	250	200	180	290	715	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	810	435	590	110	2260	1450	2040	-	330	200
200-400	315S	75,0	110,0	250	200	180	290	715	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	800	430	610	110	2450	1650	2230	825	330	200
200-400	315M	-	132,0	250	200	180	290	715	M20 × 400	400	170	450	1110	860	810	435	590	110	2260	1450	2040	330	1110	860	800	430	610	110	2450	1650	2230	825	330	200
200-500	225M	30,0	-	250	200	200	387	715	M20 × 400	450	195	450	1010	760	710	385	670	110	2000	1200	1780	330	1010	760	710	385	670	110	2100	1300	1880	-	330	200
200-500	250M	37,0	-	250	200	200	387	715	M20 × 400	450	195	450	1010	760	710	385	670	110	2000	1200	1780	330	1110	860	810	435	690	110	2260	1450	2040	-	330	200
200-500	280S	45,0	-	250	200	200	387	715	M20 × 400	450	195	450	1010	760	710	385	670	110	2100	1300	1880	330	1110	860	810	435	690	110	2260	1450	2040	-	330	200
200-500	280M	55,0	-	250	200	200	387	715	M20 × 400	450	195	450	1010	760	710	385	670	110	2100	1300	1880	330	1110	860	810	435	690	110	2260	1450	2040	-	330	200
200-500	315S	75,0	-	250	200	200	387	715	M20 × 400	450	195	450	1110	860	810	435	690	110	2260	1450	2040	330	1110	860	800	430	710	110	2450	1650	2230	825	330	200

Etanorm-R	Motor	P_2		DN_1	DN_2	a	e	f	g	h_2	i	y	Coupling										Spacer-type coupling											
		960 rpm 1160 rpm	1450 rpm 1750 rpm										b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	v	b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	l_4	v	x
		[kW]				[mm]																													
200-500	315S	-	110,0	250	200	200	387	715	M20 × 400	450	195	450	1110	860	810	435	690	110	2260	1450	2040	330	1110	860	800	430	710	110	2450	1650	2230	825	330	200
200-500	315M	90,0	132,0	250	200	200	387	715	M20 × 400	450	195	450	1110	860	810	435	690	110	2260	1450	2040	330	1110	860	800	430	710	110	2450	1650	2230	825	330	200
250-300	160L	11	-	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	115	1920	1150	1695	310	1010	760	710	385	570	110	2100	1300	1880	-	330	250
250-300	180M	-	18,5	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	115	1920	1150	1695	310	1010	760	710	385	570	110	2100	1300	1880	-	330	250
250-300	180L	15	-	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	115	1920	1150	1695	310	1110	860	810	445	590	110	2260	1450	2040	-	330	250
250-300	200L	18,5	30	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2000	1200	1780	330	1110	860	810	445	590	110	2260	1450	2040	-	330	250
250-300	200L	22	-	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2000	1200	1780	330	1110	860	810	445	590	110	2260	1450	2040	-	330	250
250-300	225S	-	37	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2000	1200	1780	330	1110	860	810	445	590	110	2260	1450	2040	-	330	250
250-300	225M	30	45	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2000	1200	1780	330	1110	860	810	445	590	110	2260	1450	2040	-	330	250
250-300	250M	-	55	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	800	430	610	110	2450	1650	2230	825	330	250
250-300	280S	-	75	250	250	225	300	830	M20 × 400	400	170	450	1010	760	710	385	570	110	2100	1300	1880	330	1110	860	800	430	610	110	2450	1650	2230	825	330	250
250-300	280M	-	90	250	250	225	300	830	M20 × 400	400	170	450	1110	860	810	435	590	110	2260	1450	2040	330	1110	860	800	430	610	110	2450	1650	2230	825	330	250
250-330	180L	15	-	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	115	1920	1150	1695	310	1010	760	710	395	620	110	2100	1300	1880	-	330	200
250-330	200L	18,5	-	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	115	1920	1150	1695	310	1010	760	710	395	620	110	2100	1300	1880	-	330	200
250-330	200L	22	-	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	115	1920	1150	1695	310	1010	760	710	395	620	110	2100	1300	1880	-	330	200
250-330	225S	37	-	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	115	1920	1150	1695	310	1010	760	710	395	620	110	2100	1300	1880	-	330	200
250-330	225M	30	-	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	110	2000	1200	1780	330	1010	760	710	395	620	110	2100	1300	1880	-	330	200
250-330	250M	37	55	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	110	2000	1200	1780	330	1110	860	810	445	640	110	2240	1450	2040	-	330	200
250-330	280S	45	75	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	110	2100	1300	1880	330	1110	860	810	445	640	110	2240	1450	2040	-	330	200
250-330	280M	-	90	250	250	250	345	715	M20 × 400	400	195	450	1010	760	710	395	620	110	2100	1300	1880	330	1110	860	810	445	640	110	2240	1450	2040	-	330	200
250-330	315S	-	110	250	250	250	345	715	M20 × 400	400	195	450	1110	860	810	445	640	110	2260	1450	2040	330	1110	860	800	440	660	110	2450	1650	2230	825	330	200
250-330	315M	-	132	250	250	250	345	715	M20 × 400	400	195	450	1110	860	810	445	640	110	2260	1450	2040	330	1110	860	800	440	660	110	2450	1650	2230	825	330	200
250-400	200L	18,5	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	115	1920	1150	1695	310	1010	760	710	385	620	110	2100	1300	1880	-	330	200
250-400	200L	22	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	115	1920	1150	1695	310	1010	760	710	385	620	110	2100	1300	1880	-	330	200
250-400	225S	37	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	115	1920	1150	1695	310	1010	760	710	385	620	110	2100	1300	1880	-	330	200
250-400	225M	30	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	110	2000	1200	1780	330	1010	760	710	385	620	110	2100	1300	1880	-	330	200
250-400	250M	37	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	110	2000	1200	1780	330	1110	860	810	435	640	110	2260	1450	2040	-	330	200
250-400	280S	45	-	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	810	435	640	110	2260	1450	2040	-	330	200
250-400	280S	-	75	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	810	435	640	110	2260	1450	2040	-	330	200
250-400	280M	55	90	300	250	180	335	715	M20 × 400	480	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	810	435	640	110	2260	1450	2040	-	330	200
250-400	315S	75	110	300	250	180	335	715	M20 × 400	480	195	450	1110	860	810	435	640	110	2260	1450	2040	330	1110	860	800	430	660	110	2450	1650	2230	825	330	200
250-400	315M	-	132	300	250	180	335	715	M20 × 400	480	195	450	1110	860	810	435	640	110	2260	1450	2040	330	1110	860	800	430	660	110	2450	1650	2230	825	330	200
250-500	280S	45	-	300	250	225	425	715	M20 × 400	500	220	450	1110	860	810	445	690	110	2260	1450	2040	330	1110	860	810	445	690	110	2260	1450	2040	-	330	200
250-500	280M	55	-	300	250	225	425	715	M20 × 400	500	220	450	1110	860	810	445	690	110	2260	1450	2040	330	1110	860	800	440	710	110	2450	1650	2230	825	330	200
250-500	315S	75	-	300	250	225	425	715	M20 × 400	500	220	450	1110	860	810	445	690	110	2260	1450	2040	330	1110	860	800	440	710	110	2450	1650	2230	825	330	200
250-500	315M	90	-	300	250	225	425	715	M20 × 400	500	220	450	1110	860	810	445	690	110	2260	1450	2040	330	1110	860	800	440	710	110	2450	1650	2230	825	330	200
300-340	180L	15,0	-	300	300	255	315	850	M20 × 400	450	195	450	1010	760	710	395	620	110	2000	1200	1780	330	1110	860	810	445	640	110	2260	1450	2040	-	330	250
300-340	200L	18,5	-	300	300	255	315	850	M20 × 401	450	195	450	1010	760	710	395	620	110	2000	1200	1780	330	1110	860	810	445	640	110	2260	1450	2040	-	330	250
300-340	200L	22,0	-	300	300	255	315	850	M20 × 402	450	195	450	1010	760	710	395	620	110	2000	1200	1780	330	1110	860	810	445	640	110	2260	1450	2040	-	330	250
300-340	225S	-	37,0	300	300	255	315	850	M20 × 403	450	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	810	445	640	110	2260	1450	2040	-	330	250
300-340	225M	30,0	45,0	300	300	255	315	850	M20 × 404	450	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	800	440	660	110	2450	1650	2230	-	330	250
300-340	250M	30,0	55,0	300	300	255	315	850	M20 × 405	450	195	450	1010	760	710	385	620	110	2100	1300	1880	330	1110	860	800	440	660	110	2450	1650	2230	825	330	250
300-340	250M	37,0	-	300	300	255	315	850	M20 × 406	450	195	450	1010	760	710	395	620	110	2100	1300	1880	330	1110	860	800	440	660	110	2450	1650	2230	825	330	250
300-340	280S	45,0	75,0	300	300	255	315	850	M20 × 407	450	195	450	1110	860	810	445	640	110	2260	1450	2040	330	1110	860	800	440	660	110	2450	1650	2230	825	330	250
300-340	280M	-	90,0	300	300	255	315	850	M20 × 408	450	195	450	1110	860	810	445	640	110	2260	1450	2040	330	1110	860	800	440	660	110	2450	1650	2230	825	330	250

Etanorm-R	Motor	P_2		DN_1	DN_2	a	e	f	g	h_2	i	y	Coupling										Spacer-type coupling											
		960 rpm 1160 rpm	1450 rpm 1750 rpm										b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	v	b_1	b_2	b_3	b_4	h_1	i_2	l_1	l_2	l_3	l_4	v	x
		[kW]				[mm]																													
300-340	315S	-	110,0	300	300	255	315	850	M20 × 409	450	195	450	1110	860	810	445	640	110	2260	1450	2040	330	1110	860	800	440	660	110	2590	1800	2370	900	330	250
300-340	315M	-	132,0	300	300	255	315	850	M20 × 410	450	195	450	1110	860	800	440	660	110	2450	1650	2230	330	1110	860	800	440	660	110	2590	1800	2370	900	330	250
300-360	225M	30,0	-	300	300	300	387	717	M20 × 411	450	220	450	1010	760	710	395	730	110	2000	1200	1780	330	1110	860	810	445	750	110	2260	1450	2040	-	330	250
300-360	250M	37,0	-	300	300	300	387	717	M20 × 412	450	220	450	1010	760	710	395	730	110	2100	1300	1880	330	1110	860	810	445	750	110	2250	1450	2040	-	330	250
300-360	280S	45,0	-	300	300	300	387	717	M20 × 413	450	220	450	1010	760	710	395	730	110	2100	1300	1880	330	1110	860	800	440	750	110	2450	1650	2230	825	330	250
300-360	280M	55,0	90,0	300	300	300	387	717	M20 × 414	450	220	450	1010	760	710	395	730	110	2100	1300	1880	330	1110	860	800	440	750	110	2450	1650	2230	825	330	250
300-360	315S	75,0	110,0	300	300	300	387	717	M20 × 415	450	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	440	750	110	2450	1650	2230	825	330	250
300-360	315M	-	132,0	300	300	300	387	717	M20 × 416	450	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	440	750	110	2450	1650	2230	825	330	250
300-400	250M	37,0	-	350	300	300	425	715	M20 × 417	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	810	455	750	110	2260	1450	2040	-	330	250
300-400	280S	45,0	-	350	300	300	425	715	M20 × 418	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-400	280M	55,0	-	350	300	300	425	715	M20 × 419	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-400	315S	75,0	-	350	300	300	425	715	M20 × 420	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-400	315S	-	110,0	350	300	300	425	715	M20 × 421	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-400	315M	90,0	132,0	350	300	300	425	715	M20 × 422	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-500	315S	75,0	-	350	300	300	450	715	M20 × 423	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250
300-500	315M	75,0	-	350	300	300	450	715	M20 × 424	500	220	450	1110	860	810	445	750	110	2260	1450	2040	330	1110	860	800	450	770	110	2450	1650	2230	825	330	250

Connections

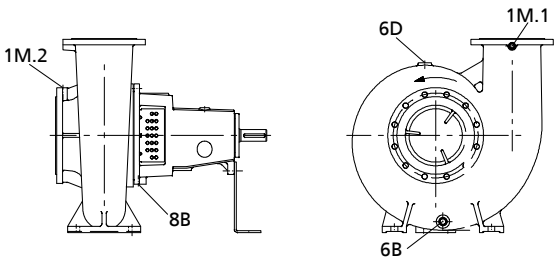


Fig. 6: Connections

1M	Connection for pressure gauge	6D	Fluid filling and venting
6B	Fluid drain	8B	Leakage drain

Connections

Etanorm-R	Connection			
	1M	6B	6D	8B
All	G 1/2	G 3/4[16)]	G 3/4[16)]	G 3/4

Flange design

Flange design by materials

Material variant	Standard	Nominal size	Pressure class	Material
G, M, GC1	EN 1092-2	DN 125, DN 150	PN 16	Grey cast iron EN-GJL-250/A48 Cl. 35B
		DN 200, DN 250, DN 300, DN 350	PN 10	Grey cast iron EN-GJL-250/A48 Cl. 35B
SG, SM, SC1	EN 1092-2	DN 125, DN 150, DN 200, DN 250, DN 300, DN 350	PN 16	Nodular cast iron, EN-GJS-400-15 / A536 Gr. 60-40-18

Optional: flange design to ASME Class 125, drilled

Etanorm-R	Suction nozzle	Discharge nozzle
125-500/2	✗	✗
150-500.1	✗	✗
200-250	✗	✗
200-260	✗	✗
200-330	✗	✗
200-400	✗	✗
200-500	✗	✗
250-300	✗	✗
250-330	✗	✗
250-400	-	✗
250-500	-	✗
300-340	-	-
300-360	-	-
300-400	✗	-
300-500	✗	-

16 Size 125-500/2: G 1/2

Interchangeability of pump components

Components featuring the same number in a column are interchangeable.

Interchangeability of pump components

Etanorm-R	Shaft unit	Description													
		Shaft	Radial ball bearing	Lip seal[17]	Mechanical seal	Casing cover[18]	Gland packing	Ring	Ring	Casing wear ring, suction side	Casing wear ring, discharge side	Thrower	Shaft sleeve	Shaft protecting sleeve	Spacer sleeve
		Part No. (⇨ Page 28)													
		210	321	421	433	161	461	500.1	500.3	502.1	502.2	507	523	524	525
125-500/2	65	-	1	1	1	-	1	1	1	-	-	1	-	-	-
150-500.1	65	1	1	1	1	1	1	1	1	1	1	1	1	1	-
200-250	65	2	1	1	1	-	1	1	1	-	3	1	2	2	-
200-260	65	1	1	1	1	-	1	1	1	1	3	1	1	1	-
200-330	65	1	1	1	1	4	1	1	1	-	4	1	1	1	-
200-400	65	1	1	1	1	-	1	1	1	2	2	1	1	1	-
200-500	65	1	1	1	1	1	1	1	1	-	1	1	1	1	-
250-300	65	2	1	1	1	4	1	1	1	-	4	1	2	2	-
250-330	65	1	1	1	1	-	1	1	1	2	4	1	1	1	-
250-400	65	1	1	1	1	-	1	1	1	-	1	1	1	1	-
250-500	65	1	1	1	1	2	1	1	1	-	1	1	1	1	-
300-340	65	2	1	1	1	-	1	1	1	-	2	1	2	2	-
300-360	65	1	1	1	1	3	1	1	1	-	1	1	1	1	-
300-400	65	1	1	1	1	3	1	1	1	3	1	1	1	1	-
300-500	65	1	1	1	1	2	1	1	1	3	1	1	1	1	-

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17 For oil lubrication only
18 For gland packing or mechanical seal

Recommended spare parts stock for 2 years' operation to DIN 24296

Quantity of spare parts for recommended spare parts stock

Part No. (⇨ Page 28)	Description	Number of pumps (including stand-by pumps)						
		2	3	4	5	6 and 7	8 and 9	10 and more
171	Diffuser[19)]	1	1	1	2	2	2	20 %
210	Shaft	1	1	1	2	2	2	20 %
230	Impeller	1	1	1	2	2	2	20 %
230.01/.02	Impeller[19)]	1	1	1	2	2	2	20 %
321	Radial ball bearing	2	2	4	4	4	6	50 %
330	Bearing bracket	-	-	-	-	-	1	2
400./...	Gasket (set)	4	6	8	8	9	12	150 %
412	O-ring[19)]	4	6	8	8	9	12	150 %
-	Torque-transmitting coupling elements (set)	1	1	2	2	3	4	30 %
502.01/02.	Casing wear ring	2	2	2	3	3	4	50 %
502.03/.04	Casing wear ring[19)]	2	2	2	3	3	4	50 %
525.01	Spacer sleeve[19)]	1	1	1	2	2	2	20 %
For variants with mechanical seal:								
433	Mechanical seal	1	1	2	2	2	3	25 %
500.03	Ring	1	1	2	2	2	3	25 %
523	Shaft sleeve	2	2	2	3	3	4	50 %
For variants with gland packing:								
456.01	Neck bush	1	1	2	2	2	3	30 %
461	Gland packing (set)	4	4	6	6	6	8	100 %
524	Shaft protecting sleeve	2	2	2	3	3	4	50 %

Scope of supply

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

- Pump
- Drive
- Baseplate
- Coupling
- Coupling guard

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19 For Etanorm-R 125-500/2 only

General assembly drawings

General assembly drawing with list of components

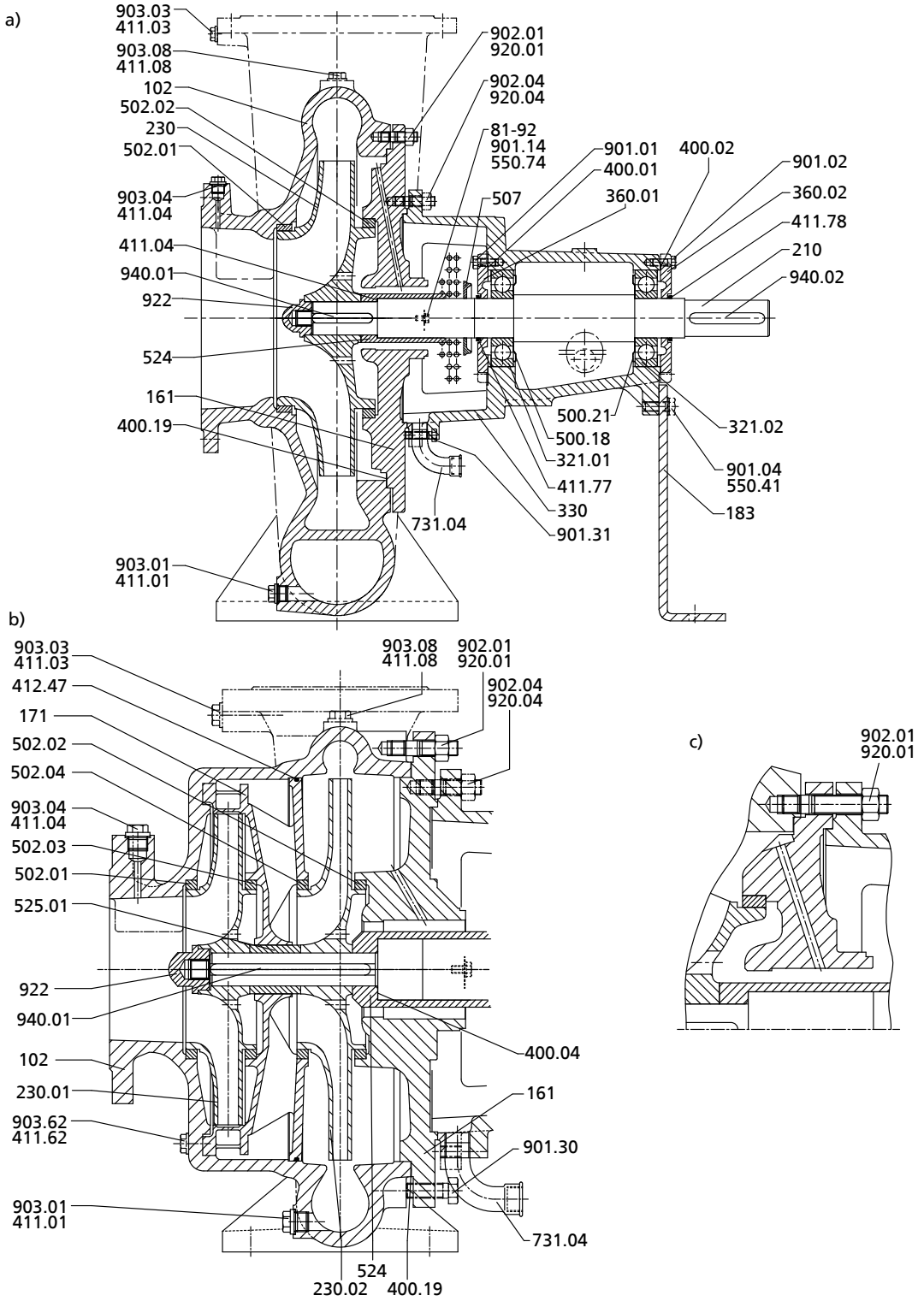

Fig. 7: a) Etanorm-R (single-entry) b) Etanorm-R (two-stage) c) Clamped casing cover[20)]

List of components

Part No.	Part No.	Description
102	102	Volute casing

20 On sizes 200-250, 200-260, 200-330, 250-300, 250-330 only

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Part No.	Part No.	Description
102	411.01/.03/.04/.08	Joint ring
	502.01	Casing wear ring
	902.01	Stud
	903.01/.03/.04/.08	Screw plug
	920.01	Nut
161	161	Casing cover
	400.19	Gasket
	502.02	Casing wear ring
	901.30	Hexagon head bolt
	902.04	Stud
	920.01/.04	Hexagon nut
171[21)]	171	With diffuser
183	183	Support foot
	901.04	Hexagon head bolt
	550.41	Disc
210	210	Shaft
	940.01/.02	Key
230	230	Impeller
230.01/.02	230.01/.02	Impeller
321.01/.02	321.01/.02	Deep groove ball bearing
330	330	Bearing bracket
330	330	Bearing bracket
	210	Shaft
	312.01/.02	Deep groove ball bearing
	360.01/.02	Bearing cover
	400.01/.02	Gasket
	411.77/.78	V-ring
	500.18/.21	Ring
	507	Thrower
	550.74	Disc
	731.04[22)]	Pipe union
	901.01/.02/.14/.31	Hexagon head bolt
	81-92	Cover plate
	922	Impeller nut
	940.01/.02	Key
360.01/.02	360.01/.02	Bearing cover
	400.01/.02	Gasket
	901.01/.02	Hexagon head bolt
400.01/.02/.04/.19	400.01/.02/.04/.19	Gasket
411.01/.03/.04/.08/.62	411.01/.03/.04/.08/.62[21)]	Joint ring
411.77/.78	411.77/.78	V-ring
412.47[21)]	412.47	O-ring
452.01[23)]	452.01	Gland follower
454.01[23)]	454.01	Stuffing box ring
456.01[23)]	456.01	Neck bush
458.01[23)]	458.01	Lantern ring, split
461	461	Gland packing
502.01/.02/.03[21)]/.04[21)]	502.01/.02/.03/.04	Casing wear ring
507	507	Thrower
524	524	Shaft protecting sleeve
	400.04	Joint ring
525.01[21)]	525.01	Spacer sleeve
731.04[22)]	731.04	Pipe union
81-92	81-92	Cover plate

21 On size 125-500/2 only
22 For oil lubrication only
23 Not shown

Part No.	Part No.	Description
81-92	550.74	Disc
	901.14	Hexagon head bolt
901.01/.02/.04/.14/.30/.31	901.01/.02/.04/.14/.30/.31	Hexagon head bolt
902.01/.04	902.01/.04	Stud
903.01/.03/.04/.08/.62	903.01/.03/.04/.08/.62	Screw plug
920.01/.04	920.01/.04	Hexagon nut
922	922	Impeller nut
940.01/.02	940.01/.02	Key

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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.

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)

WRAS

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

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30/09/2020

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