



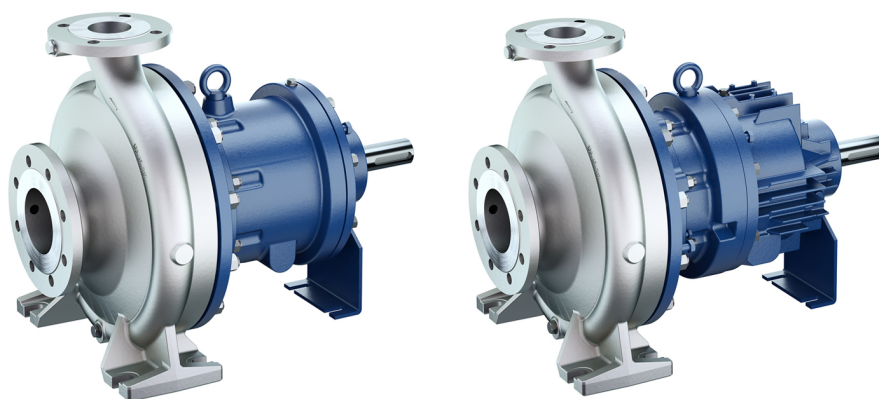
AMCAL
INDUSTRIAL PUMP SOLUTIONS

KSB
DATA BOOKLET

Mag-drive Pump

Magnochem

Type Series Booklet



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Type Series Booklet Magnochem

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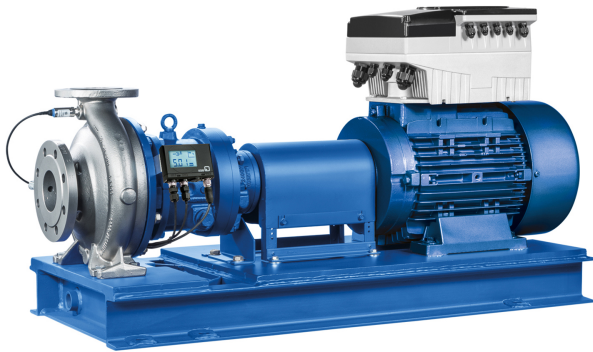
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Seal-less Pumps

Mag-drive Pumps

Magnochem



- Pipelines and tank farms
- Refineries
- Process engineering
- Hot-water heating systems
- Sugar industry
- Heat transfer fluids / thermal oil systems
- Industry

Fluids handled

- Aggressive fluids
- Explosive fluids
- Flammable fluids
- Toxic fluids
- Valuable fluids
- Fluids which are injurious to health
- Malodorous fluids
- Thermal oil

Operating data

Table 1: Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m ³ /h]	≤ 1160	≤ 1400
Head	H [m]	≤ 162	≤ 236
Fluid temperature ¹⁾	T ₁ [°C]	≥ -90	≥ -90
		≤ +400	≤ +400
Ambient temperature	T ₂ [°C]	≥ -20	≥ -20
		≤ +40	≤ +40
Operating pressure	p [bar]	≤ 40	≤ 40

Main applications

- Chemical industry
- District heating
- Industrial recirculation systems
- Air-conditioning systems
- Condensate transport
- Cooling circuits
- Petrochemical industry

Design details

Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Technical requirements to ISO 5199
- Dimensions and ratings to ISO 2858²⁾ complemented by pumps of nominal sizes DN 25, DN 200 and above

Pump casing

- Single or double volute, depending on the pump size
- Radially split volute casing
- Volute casing with integrally cast pump feet
- Replaceable casing wear rings (optional depending on the pump casing material)
- Optional: heatable
- Draining facility

¹ Extended application limits on request

² Deviations for variant with heat barrier

Shaft seal

- Seal-less, with magnetic coupling
- Containment shroud as sealing element
- Optional: with leakage barrier
 - Shaft seal ring
 - Shaft seal rings arranged in series, with controlled leakage drain
 - Gas-lubricated mechanical seal and shaft seal ring arranged in series, with controlled leakage drain

Casing cover variants

- Internal circulation
- Low-boiling fluids
- External circulation
 - With fluid handled (optionally with main flow filter and/or magnetic filter)
 - With barrier fluid
- Dead-end configuration

In addition:

- Flushing connection
- Optional: heatable
- Draining facility
- Internal ring filter

Impeller type

- Closed radial impeller with multiply curved vanes
- Discharge-side sealing clearance reduces axial thrust

Bearings

Drive-end bearings:

- Radial ball bearings with internal clearance C3
- Grease-packed for life (high melting point grease)
- **Optional:** oil lubrication

Pump-end bearing:

- Hydrodynamic plain bearings
- Product-lubricated

Table 2: Bearings used

Bearing bracket	Nominal diameter of mag-netic coupling	MACD		MACW	
	[mm]	Grease-lubric-ated	Oil-lubricated	Grease-lubric-ated	Oil-lubricated
CS40, CS50, CS60	85, 123, 172	6209-2Z-N C3	6209-Z-NB C3	6209-2Z C3 ³⁾	6209-Z C3 ⁴⁾
CS50, CS60	235	6212-2Z-N C3	6212-Z-NB C3	6212-2Z C3 ⁵⁾	6212-Z C3 ⁶⁾
CS80	172, 235, 265				

Automation

Automation options:

- PumpDrive
- PumpMeter
- KSB Guard
- Various instrumentation and monitoring devices

- 3** Pump-end (rolling element bearing 321.01) for PN40 and model with gas-lubricated mechanical seal: 7209B-2RS-TVP
- 4** Pump-end (rolling element bearing 321.01) for PN40 and model with gas-lubricated mechanical seal: 7209B-JP
- 5** Pump-end (rolling element bearing 321.01) for PN40 and model with gas-lubricated mechanical seal: 7212B-2RS-TVP
- 6** Pump-end (rolling element bearing 321.01) for PN40 and model with gas-lubricated mechanical seal: 7212B-JP

Designation

Table 3: 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
M	A	C	D	0	5	0	-	0	3	2	-	2	5	0	1	C	C	-	X	1	A	E	N	-	-	1	3	2	S	6	B
See name plate and data sheet																						See data sheet									

Table 4: Designation key

Position	Code	Description	
1-4	Pump type		
	MACB	Magnochem-Bloc	
	MACD	Magnochem (long-coupled design)	
	MACW	Magnochem (long-coupled design with heat barrier)	
5-16	Size, e.g.		
	050	Nominal suction nozzle diameter [mm]	
	032	Nominal discharge nozzle diameter [mm]	
	250	Nominal impeller diameter [mm]	
17	1	Impeller type	
	Pump casing material		
	C	Stainless steel	1.4408 / A743CF8M
	D	Duplex steel	1.4593 / 1.4517 / A995 CD4MCuN
	E	Cast steel	GP240GH + N / WCB
	V	Stainless steel	1.4408
18	Y	Cast steel	1.7706
	Impeller material		
	C	Stainless steel	1.4408 / A743CF8M
	D	Duplex steel	1.4593 / 1.4517 / A995 CD4MCuN
19	G	Grey cast iron	JL 1040 / A48CL35
	Version	Volute casing	Containment shroud material
	_7)	Unheated	Metal 2.4610
	H	Heated	
	Z	Unheated	Ceramics (zirconium oxide)
	Y	Heated	
	T	Unheated	Titanium
	S	Heated	
20	M	Unheated	Containment shroud MagnoProtect Noribeam Alloy 718+U
	L	Heated	
	Version	Hydraulic system	Leakage barrier
	_7)	Standard	Without
	R		Lip seal
	P		Double lip seal
	G		Air-lubricated gas mechanical seal
	D	With orifice plate	Without
	U		Lip seal
	V		Double lip seal
	W		Air-lubricated gas mechanical seal
	I	Inducer	
21	Y	Casing mounted on centreline feet	
	C	Other documented variant (BT3D)	
	X	Special design (BT3)	
	Magnetic coupling diameter [mm]		
	1	85	
	2	123	
	3	172	
	4	235	
	5	265	

7 Not specified

Position	Code	Description
22	Magnetic coupling length [mm]	
	A	10
	B	20
	C	30
	D	40
	E	50
	F	60
	G	70
	H	80
	I	90
	J	100
	K	110
	L	120
	M	130
	N	140
	O	150
	P	160
23-26	Operating modes	
	EF--	External circulation with barrier fluid
	EN--	External circulation with fluid handled
	EP--	Dead-end configuration
	EP-H	Dead-end configuration, heatable
	IN--	Internal circulation
	IN-H	Internal circulation, heatable
	INR-	Internal circulation, ring filter
	INRH	Internal circulation, ring filter, heatable
	IP--	Low-boiling fluids
	IP-H	Low-boiling fluids, heatable
	IPR-	Low-boiling fluids, ring filter
	IPRH	Low-boiling fluids, ring filter, heatable
27-30	IEC motor frame size	
	090S	090S
	100L	100L
	112M	112M
	...	...
31	Number of motor poles	
32	Product generation	
	B	Magnochem Global Pump

Materials

Table 5: Overview of available materials

Part No.	Description	Material	Material variant S = standard, O = option											
			CC	CD	VC	VD	EG	EC	ED	YG	YC	YD	DD	DC
102	Casing	Stainless steel 1.4408/ A743 Gr. CF8 M	S	S	-	-	-	-	-	-	-	-	-	-
		Stainless steel 1.4408	-	-	S ⁸⁾	S ⁸⁾	-	-	-	-	-	-	-	-
		Duplex stainless steel 1.4593/1.4517/ A995 Gr. 1B	-	-	-	-	-	-	-	-	-	-	S	S
		Steel GP240GH+N/ A216 Gr WCB	-	-	-	-	S	S	S	-	-	-	-	-
		1.7706	-	-	-	-	-	-	-	S	S	S	-	-
132.01	Intermediate piece, containment shroud	Stainless steel 1.4408/ A743 Gr. CF8M	S	S	-	-	-	-	-	-	-	-	-	S
		Stainless steel 1.4408	-	-	S	S	-	-	-	-	-	-	-	-

8 Heatable casing optionally available.

Part No.	Description	Material	Material variant S = standard, O = option											
			CC	CD	VC	VD	EG	EC	ED	YG	YC	YD	DD	DC
132.01	Intermediate piece, containment shroud	Steel GP240GH+N/ A216 Gr. WCB	-	-	-	-	S	S	S	S	S	S	-	-
		Duplex stainless steel 1.4593/ 1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	S	-
161	Casing cover	Stainless steel 1.4408/ A743 GR CF8M	S ⁹⁾	S ⁹⁾	-	-	-	-	-	-	-	-	-	S ⁹⁾
		Stainless steel 1.4408	-	-	S ⁹⁾	S ⁹⁾	-	-	-	-	-	-	-	-
		Duplex stainless steel 1.4593/1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	S ⁹⁾	-
		Steel GP240GH+N/ A216 Gr WCB	-	-	-	-	S ⁹⁾	S ⁹⁾	S ⁹⁾	S ⁹⁾	S ⁹⁾	S ⁹⁾	-	-
23-2.02	Auxiliary impeller	CrNiMo St INT	S	S	S	S	S	S	S	S	S	S	-	S
210.01	Shaft (ball bearings)	Steel C45+N/ A108 UNS G10450 ¹⁰⁾ steel 1.7709+QT+SR ¹¹⁾	S	S	S	S	S	S	S	S	S	S	S	S
		1.4462 / UNS S31803 ¹²⁾	O	O	O	O	O	O	O	O	O	O	O	O
210.03	Shaft (plain bearing)	Duplex stainless steel 1.4462/ UNS S31803	S	S	S	S	S	S	S	S	S	S	S	S
		1.4313+QT780/ A479 UNS S41500	O	O	O	O	O	O	O	O	O	O	-	-
		1.4021+QT800 ¹³⁾	O	O	O	O	O	O	O	O	O	O	-	-
230	Impeller	Stainless steel 1.4408/ A743 GR CF8M	S	-	S	-	-	S	-	-	S	-	-	S
		Grey cast iron EN-GJL-250/ A48 Cl. 35B	-	-	-	-	S	-	-	S	-	-	-	-
		Duplex stainless steel 1.4593/1.4517/A995 Gr. 1B	-	S	-	S	-	-	S	-	-	S	S	-
344	Bearing bracket lantern	Steel GP240GH+N/ A216 Gr WCB ¹⁴⁾	S	S	S	S	S	S	S	S	S	S	S	S
		Stainless steel 1.4408/ A743 Gr. CF8M ¹⁵⁾	S	S	S	S	S	S	S	S	S	S	S	S
386.01/ 386.02	Thrust bearing ring	SSiC	S	S	S	S	S	S	S	S	S	S	S	S
		SiC, DLC-coated	O	O	O	O	O	O	O	O	O	O	O	O
391.01	Bearing ring carrier	Stainless steel 1.4408/ A743 Gr CF8M	S	S	S	S	S	S	S	S	S	S	-	S
		Duplex stainless steel 1.4593/ 1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	S	-
		Steel GP240GH+N/A216 Gr. WCB ¹⁵⁾	-	-	-	-	S	S	S	S	S	S	-	-
411.10	Joint ring	CrNi steel/graphite	O	O	O	O	O	O	O	S	S	S	O	O
		PTFE-GF25	S	S	S	S	S	S	S	-	-	-	S	S
		Gylon 3510	O	O	O	O	O	O	O	-	-	-	O	O
420.97	Shaft seal ring	Steel GP240GH+N/ A216 Gr. WCB	O	O	O	O	O ¹⁶⁾	O ¹⁶⁾	O ¹⁶⁾	-	-	-	O ¹⁶⁾	O
	Sealing lip	GYLON-MS	O	O	O	O	O	O	O	O	-	-	-	O
433.12	Gas-lubricated mechanical seal	SiC carbon	O	O	O	O	O	O	O	O	O	O	O	O
502.01/ 502.02	Casing wear ring	Grey cast iron GG/cast iron	-	-	-	-	O	O	O	O	O	O	-	-
		CrNiMo steel	O	O	O	O	-	-	-	-	-	-	-	O
		Duplex stainless steel	-	-	-	-	-	-	-	-	-	-	O	-
		CrNi steel VG 434	-	-	-	-	O	O	O	O	O	O	-	-

- 9** Heatable casing cover optionally available.
10 Only applies to the nominal diameters of magnetic couplings 85/123/172/235.
11 Only applies to the nominal diameter of magnetic coupling 265.
12 S for fluid temperature > 250 °C
13 S for fluid temperature > 350 °C for E+Y
14 For variant MACD only
15 For variant MACW only
16 Only applies up to PN25.

Part No.	Description	Material	Material variant S = standard, O = option											
			CC	CD	VC	VD	EG	EC	ED	YG	YC	YD	DD	DC
502.01/ 502.02	Casing wear ring	502 CrNiMo	-	-	-	-	-	-	-	-	-	-	-	O
		CrNi steel VG 434 ¹⁷⁾	-	-	-	-	O	O	O	O	O	O	-	-
		None	S	S	S	S	S	S	S	S	S	S	S	S
503	Impeller wear ring	CrNiMo steel	O	-	O	-	-	O	-	-	O	-	-	-
		Stainless steel 1.4027+QT	-	-	-	-	O	-	-	O	-	-	-	-
		Duplex stainless steel	-	O	-	O	-	-	O	-	-	O	O	O
		CrNiMo ¹⁷⁾	-	-	-	-	-	-	-	-	-	-	-	O
		None	S	S	S	S	S	S	S	S	S	S	S	S
529.21/ 529.22	Bearing sleeve	SSiC	S	S	S	S	S	S	S	S	S	S	S	S
		SiC, DLC-coated	O	O	O	O	O	O	O	O	O	O	O	O
545.21/ 545.22	Bearing bush	SSiC	S	S	S	S	S	S	S	S	S	S	S	S
82-15	Containment shroud	1.4571-2.4610	S	S	S	S	-	-	-	-	-	-	-	S
		1.0571-2.4610	-	-	-	-	S	S	S	S	S	S	-	-
		1.4462-2.4610	-	-	-	-	-	-	-	-	-	-	S	-
		Zirconium oxide	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾	O ¹⁸⁾
		Titanium B367, Grade C-5	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾	O ¹⁹⁾
818.01	Inner rotor	1.4571-SAMCO	S	S	S	S	S	S	S	S	S	S	-	S
		1.4462-SAMCO	-	-	-	-	-	-	-	-	-	-	S	-
		1.4571-SMCO HT450+NIP ¹⁷⁾	-	-	-	-	S	S	S	S	S	S	-	-
818.02	Outer rotor	ST-SAMCO	S	S	S	S	S	S	S	S	S	S	S	S
		ST-SMCO HT450+NIP ¹⁷⁾	-	-	-	-	S	S	S	S	S	S	-	-
920.95	Impeller nut	A4/AISI 316	S	S	S	S	S	S	S	S	S	S	-	S
		Duplex stainless steel 1.4462/ UNS S31803	-	-	-	-	-	-	-	-	-	-	S	-
940.01	Key	1.4571+C/A276 TP316 COND B	S	S	S	S	S	S	S	S	S	S	-	S
		Duplex stainless steel 1.4462/ UNS S31803	-	-	-	-	-	-	-	-	-	-	S	-

Product benefits

- **High operating reliability:**
 - Only static sealing elements are required.
 - Optional leakage barrier
 - Containment shroud protected by anti-rub feature on outer rotor and inner rotor
 - Self-draining facility of containment shroud
 - Pump does not need to be drained before drive unit is fitted/removed.
- Broad application range:
 - Product-lubricated plain bearings made of silicon carbide (DLC coating optionally available)
 - Modular design principle for hydraulic system and magnetic coupling
 - Large number of operating modes
 - Temperature maintenance and heating facility for casing and casing cover
- Low-maintenance design:
 - Product-lubricated plain bearings made of silicon carbide (wear-free)
 - Grease-packed rolling element bearings sealed for life (30,000 hours at operating temperatures under 80 °C) or oil-lubricated rolling element bearings (35,000 hours)

Additional product benefits of MACW

- Ideally suited for high fluid temperatures:
 - Lower surface temperatures thanks to heat barrier.
 - Temperature of rolling element bearings is reduced by cooling fins.
 - Temperature range extended up to 400 °C by optional fan impeller
- Can be used with special measures in atmospheres of ATEX temperature classes whose defined temperature is lower than that of the fluid.
- High safety with optional secondary and tertiary sealing elements arranged in series
- Controlled leakage drain by means of optional connection between barriers

Acceptance tests and warranty

- Materials inspection and testing
 - Material certificates on request
- Hydraulic test

The duty point of each pump is guaranteed to ISO 9906/3B. Other tolerances on request (2B, 2U, 1B, 1U).

The following acceptance tests can be performed and certified at extra charge:

- Performance test to ISO 9906

17 For fluid temperature > 350 °C

18 Only applies to the nominal diameters of magnetic couplings 85/123/172.

19 Only applies to the nominal diameters of magnetic couplings 235/265.

- NPSH test
- Numerous other tests (e.g. vibrations, strength) and certificates available on request.

▪ Warranty

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

Pressure limits and temperature limits

Pressure limits and temperature limits of the hydraulic system

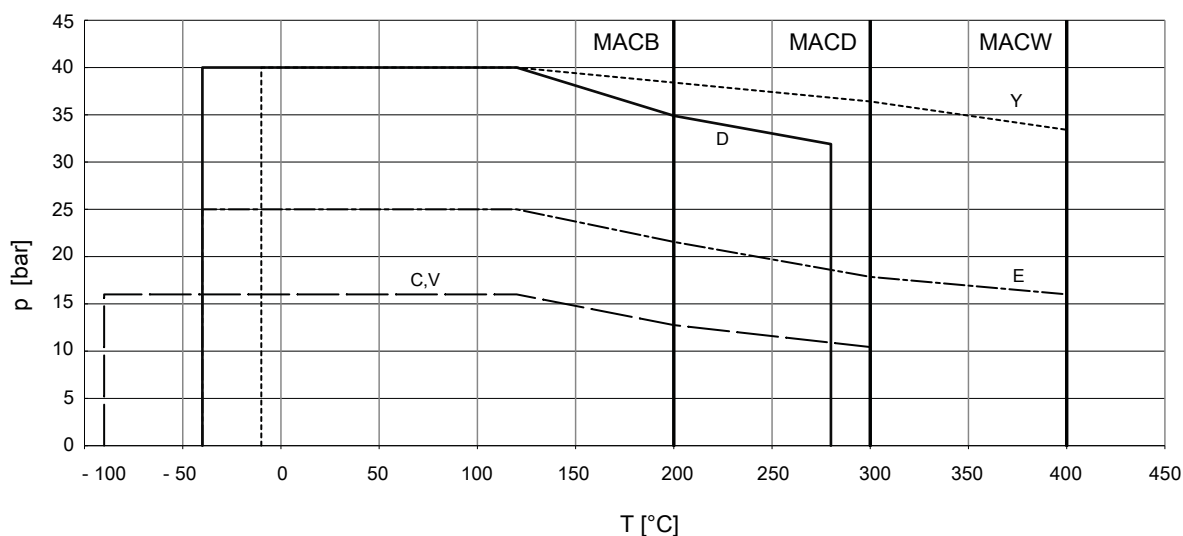


Fig. 1: Pressure limits and temperature limits of the hydraulic system

The pressure limits and temperature limits depend on the configuration.

The pressure limits shown for E apply to PN25 and the pressure limits shown for D apply to PN40. When lower flange pressure ratings are used, the corresponding lower pressure limits apply.

Pressure limits and temperature limits of ASME flanges

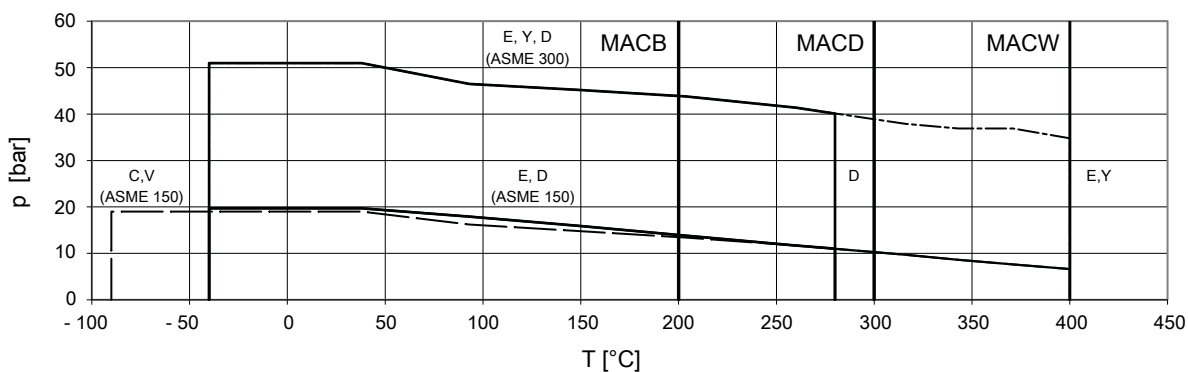


Fig. 2: Pressure limits and temperature limits of ASME flanges²⁰⁾

On models with ASME flanges, the pressure limits and temperature limits are determined by the lowest value given in the "Pressure limits and temperature limits of the hydraulic system" diagram and the "Pressure and temperature limits of ASME flanges" diagram.

20 If material Y (ASME 300) is used, the pressure limits and temperature limits are higher than those stipulated for the hydraulic system.

Technical data
Table 6: Technical data

Size	Bearing bracket	Impeller					Shaft diameter at the coupling	Volute casing design ²¹⁾	Hydraulic system design ²²⁾	Heatable casing	Heatable casing cover	Nominal diameter [mm]									
		Impeller outlet width	Free passage	Impeller inlet dia- meter	Impeller diameter							85		123		172		235		265	
												Magnetic coupling length [mm]									
					Min.	Max.						Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
		10	60	10	70	10	100					10	80	10	160						
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]															
040-025-160	CS40	6	5,7	44	169	130	24	E	L	X	X	X	X	-	-	-	-	-	-	-	
040-025-200	CS40	6	5,7	44	209	160	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
050-032-125	CS40	10	5,7	63	139	110	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
050-032-125.1	CS40	7	6,0	52	139	114	24	E	E	-	X	X	X	-	-	-	-	-	-	-	
050-032-160	CS40	9	5,8	63	174	135	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
050-032-160.1	CS40	6	5,4	52	170	138	24	E	L	X	X	X	X	-	-	-	-	-	-	-	
050-032-200	CS40	7	6,7	62	209	178	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
050-032-200.1	CS40	6	5,3	54	204	138	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
050-032-200.2	CS40	6	5,3	54	204	138	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
065-040-125	CS40	14	9,6	74	139	110	24	E	E	-	X	X	X	-	-	-	-	-	-	-	
065-040-160	CS40	13	11,5	70	174	135	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
065-040-160.1	CS40	9	8,5	65	169	130	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
065-040-200	CS40	9	8,9	69	209	175	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
065-040-200.1	CS40	7	6,6	65	209	160	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
080-050-125	CS40	20	11,6	88	142	114	24	E	E	-	X	X	X	-	-	-	-	-	-	-	
080-050-160	CS40	17	11,6	87	174	135	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
080-050-160.1	CS40	15	9	82	169	130	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
080-050-200	CS40	14	11,9	83	219	180	24	E	E	X	X	X	X	-	-	-	-	-	-	-	
080-050-200.1	CS40	12	6,7	82	209	160	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
100-065-125	CS40	26	12,9	99	141	114	24	E	L	-	X	X	X	-	-	-	-	-	-	-	
050-032-250	CS50	8	7,1	63	261	212	32	E	E	X	X	X	X	X	-	-	-	-	-	-	
050-032-250.1	CS50	6	5,2	58	254	220	32	E	E	X	X	X	X	X	-	-	-	-	-	-	
065-040-250	CS50	8	8,0	73	260	214	32	E	E	X	X	X	X	X	-	-	-	-	-	-	
065-040-250.1	CS50	7	6,6	68	260	200	32	E	L	X	X	X	X	X	-	-	-	-	-	-	
065-040-315	CS50	8	7,1	75	326	278	32	E	E	X	X	X	X	X	X	-	-	-	-	-	
080-050-250	CS50	11	10,0	84	260	220	32	E	E	X	X	X	X	X	-	-	-	-	-	-	
080-050-250.1	CS50	10	7,0	85	260	200	32	E	L	-	X	X	X	X	-	-	-	-	-	-	
080-050-315	CS50	10	9,5	86	323	270	32	E	E	X	X	X	X	X	X	-	-	-	-	-	
080-050-315.1	CS50	8	7,6	85	320	260	32	E	L	X	X	X	X	X	X	-	-	-	-	-	
100-065-160	CS50	21	12,2	92	174	132	32	E	L	-	X	X	X	X	-	-	-	-	-	-	
100-065-200	CS50	17	13,3	100	219	180	32	E	L	X	X	X	X	X	-	-	-	-	-	-	
100-065-250	CS50	15	14,3	101	260	220	32	E	L	-	X	X	X	X	-	-	-	-	-	-	
125-080-160	CS50	32	15,1	124	174	122	32	E	E	-	X	X	X	X	-	-	-	-	-	-	
125-080-200	CS50	25	15,2	115	219	180	32	D	L	X	X	X	X	X	-	-	-	-	-	-	
125-080-200.1	CS50	22	11,9	116	209	140	32	D	L	-	X	X	X	X	-	-	-	-	-	-	
125-080-250	CS50	19	15,8	115	269	220	32	D	L	X	X	X	X	X	-	-	-	-	-	-	
125-100-160	CS50	38	16,4	135	185	155	32	E	L	-	X	X	X	X	-	-	-	-	-	-	
125-100-200	CS50	33	17,9	142	219	179	32	D	L	-	X	X	X	X	-	-	-	-	-	-	
100-065-315	CS60	14	13	107	320	270	42	E	E	-	X	X	X	X	X	-	-	-	-	-	
125-080-315	CS60	19	17,8	115	334	281	42	D	L	X	X	X	X	X	X	-	-	-	-	-	
125-080-400	CS60	15	14,3	129	398	330	42	E	E	X	X	X	X	X	X	-	-	-	-	-	
125-100-250	CS60	27	18,8	145	262	216	42	D	L	X	X	X	X	X	-	-	-	-	-	-	
125-100-315	CS60	23	19,9	142	334	280	42	D	E	-	X	X	X	X	X	-	-	-	-	-	
125-100-400	CS60	18	17,1	142	401	329	42	E	E	-	X	X	X	X	X	-	-	-	-	-	
150-125-200	CS60	41	21,1	160	224	162	42	D	L	-	X	X	X	X	-	-	-	-	-	-	
150-125-250	CS60	37	22,4	162	269	218	42	E	E	-	X	X	X	X	-	-	-	-	-	-	
150-125-315	CS60	31	22,6	162	334	280	42	D	E	X	X	X	X	X	X	-	-	-	-	-	
150-125-400	CS60	26	20,9	162	419	330	42	D	E	X	X	X	X	X	X	-	-	-	-	-	
200-150-200	CS60	60	25,2	179	224	158	42	E	-	-	X	X	X	X	-	-	-	-	-	-	
200-150-250	CS60	49	23,0	191	269	220	42	E	L	X	X	X	X	X	-	-	-	-	-	-	

21 E = single volute, D = double volute

22 E = extended-flow hydraulic system, L = standard-flow hydraulic system

Size	Bearing bracket	Impeller					Shaft diameter at the coupling	Volute casing design ²¹⁾	Hydraulic system design ²²⁾	Heatable casing	Heatable casing cover	Nominal diameter [mm]									
		Impeller outlet width	Free passage	Impeller inlet dia- meter	Impeller diameter							85		123		172		235		265	
												Magnetic coupling length [mm]									
												Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
		10	60	10	70	10	100	10	80	10	160										
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]														
200-150-315	CS80	40	26,9	192	334	264	48	E	L	X	X	-	-	X	X	X					
200-150-400	CS80	33	23,8	191	419	330	48	D	L	-	X	-	-	X	X	X					
200-150-500	CS80	23	19,1	190	504	400	48	D	-	-	X	-	-	X	X	X					
200-200-250	CS80	62	37,2	190	260	200	48	E	-	-	X	-	-	X	X	-					
250-200-315	CS80	50	20,8	222	320	260	48	D	-	X	X	-	-	X	X	X					
250-200-400	CS80	40	18,4	222	404	320	48	D	-	X	X	-	-	X	X	X					
250-200-500	CS80	32	20,6	222	504	400	48	D	-	-	X	-	-	X	X	X					
300-250-315	CS80	73	26,7	270	324	260	48	D	-	X	X	-	-	X	X	X					

Weight

Table 7: Weight

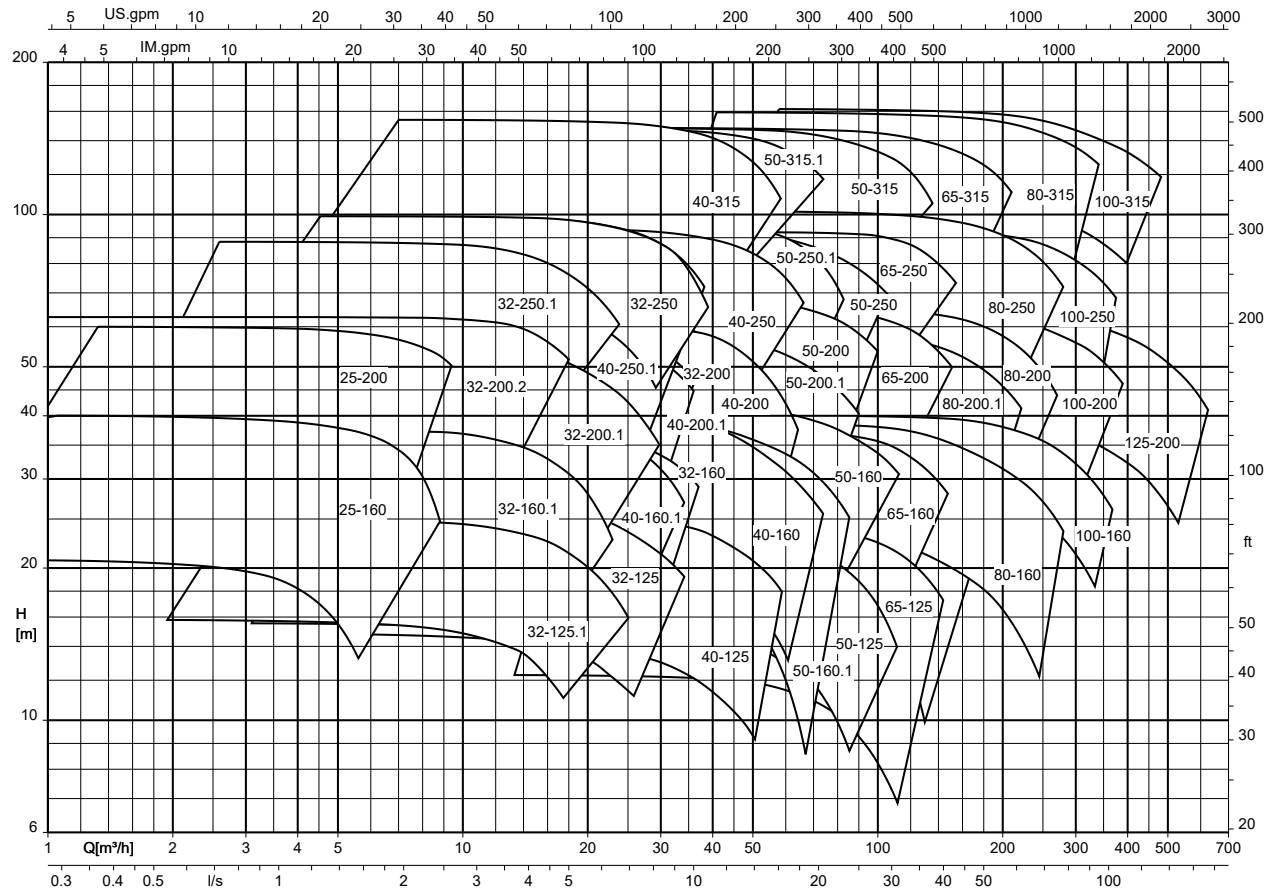
Size	Bearing bracket	Weight ²³⁾ [kg]	
		MACD	MACW
40-25-160	CS40	72	77
40-25-200	CS40	85	90
50-32-125	CS40	69	75
50-32-125.1	CS40	69	75
50-32-160	CS40	72	77
50-32-160.1	CS40	72	78
50-32-200	CS40	85	91
50-32-200.1	CS40	86	92
50-32-200.2	CS40	86	92
50-32-250	CS50	148	157
50-32-250.1	CS50	148	157
65-40-125	CS40	70	76
65-40-160	CS40	74	79
65-40-160.1	CS40	76	81
65-40-200	CS40	87	93
65-40-200.1	CS40	90	96
65-40-250	CS50	149	158
65-40-250.1	CS50	148	157
65-40-315	CS50	250	289
65-40-315.1	CS50	250	289
80-50-125	CS40	75	81
80-50-160	CS40	77	82
80-50-160.1	CS40	81	86
80-50-200	CS40	90	96
80-50-200.1	CS40	91	96
80-50-250	CS50	152	161
80-50-250.1	CS50	156	165
80-50-315	CS50	255	294
80-50-315.1	CS50	249	294
100-65-125	CS40	80	86
100-65-160	CS50	140	149
100-65-200	CS50	141	150
100-65-250	CS50	163	172
100-65-315	CS60	266	305

Size	Bearing bracket	Weight ²³⁾ [kg]	
		MACD	MACW
125-80-160	CS50	143	152
125-80-200	CS50	155	164
125-80-200.1	CS50	156	165
125-80-250	CS50	179	188
125-80-315	CS60	285	324
125-80-400	CS60	323	362
125-100-160	CS50	159	168
125-100-200	CS50	167	176
125-100-250	CS60	189	198
125-100-315	CS60	294	333
125-100-400	CS60	336	375
150-125-200	CS60	191	200
150-125-250	CS60	197	206
150-125-315	CS60	319	358
150-125-400	CS60	390	429
200-150-200	CS60	231	239
200-150-250	CS60	225	233
200-150-315	CS80	412	430
200-150-400	CS80	501	519
200-150-500	CS80	588	606
200-200-250	CS80	457	476
250-200-315	CS80	501	519
250-200-400	CS80	548	566
250-200-500	CS80	653	671
300-250-315	CS80	634	652

23 The weight data applies to a pump of maximum possible length and largest magnetic coupling diameter, only for unheated versions, without fill.

Selection charts

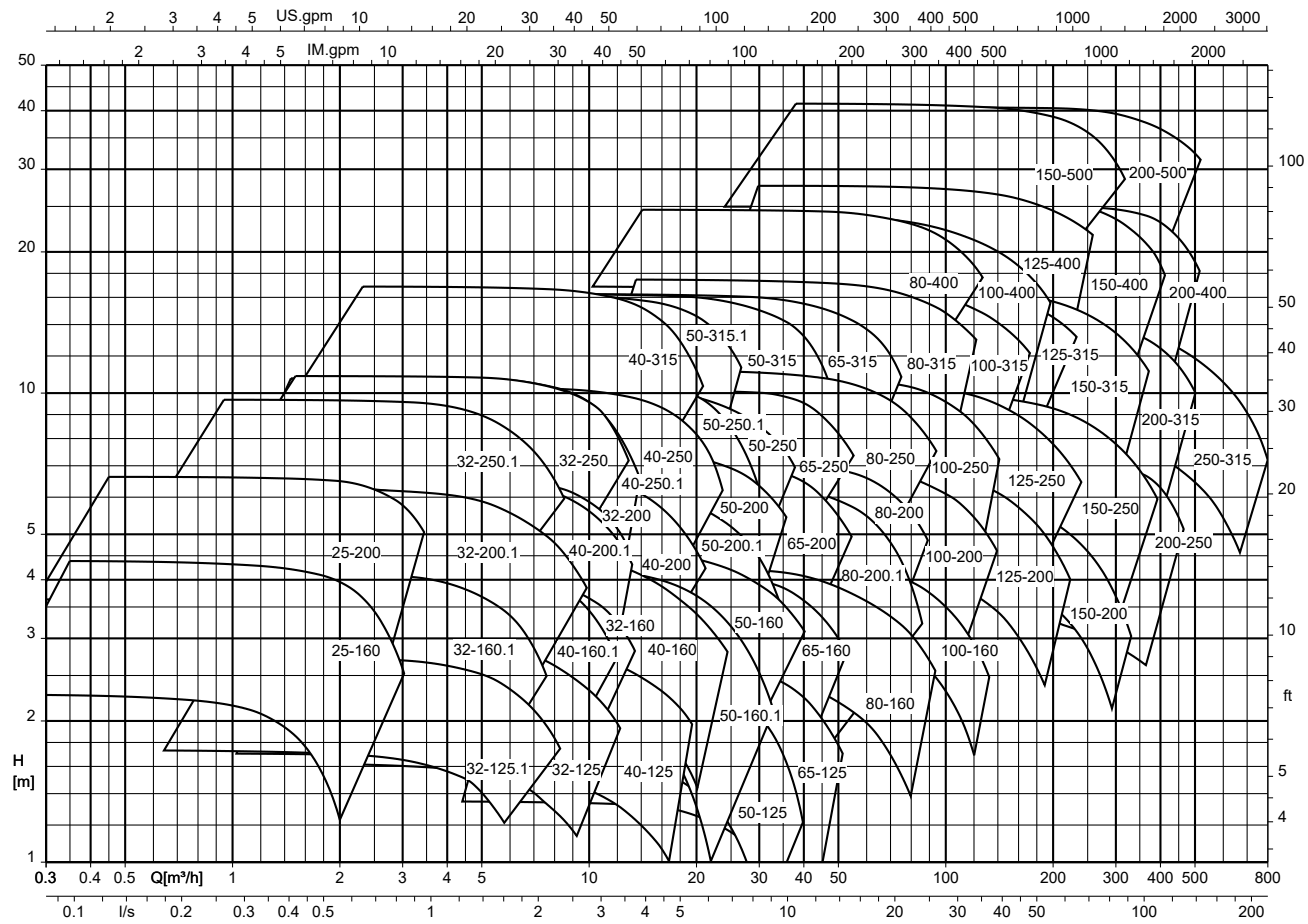
Magnochem, n = 2900 rpm



The following sizes are **only** available in the countries indicated:

- Europe: 040-200.1, 050-160.1, 050-200.1, 050-250.1, 080-200.1

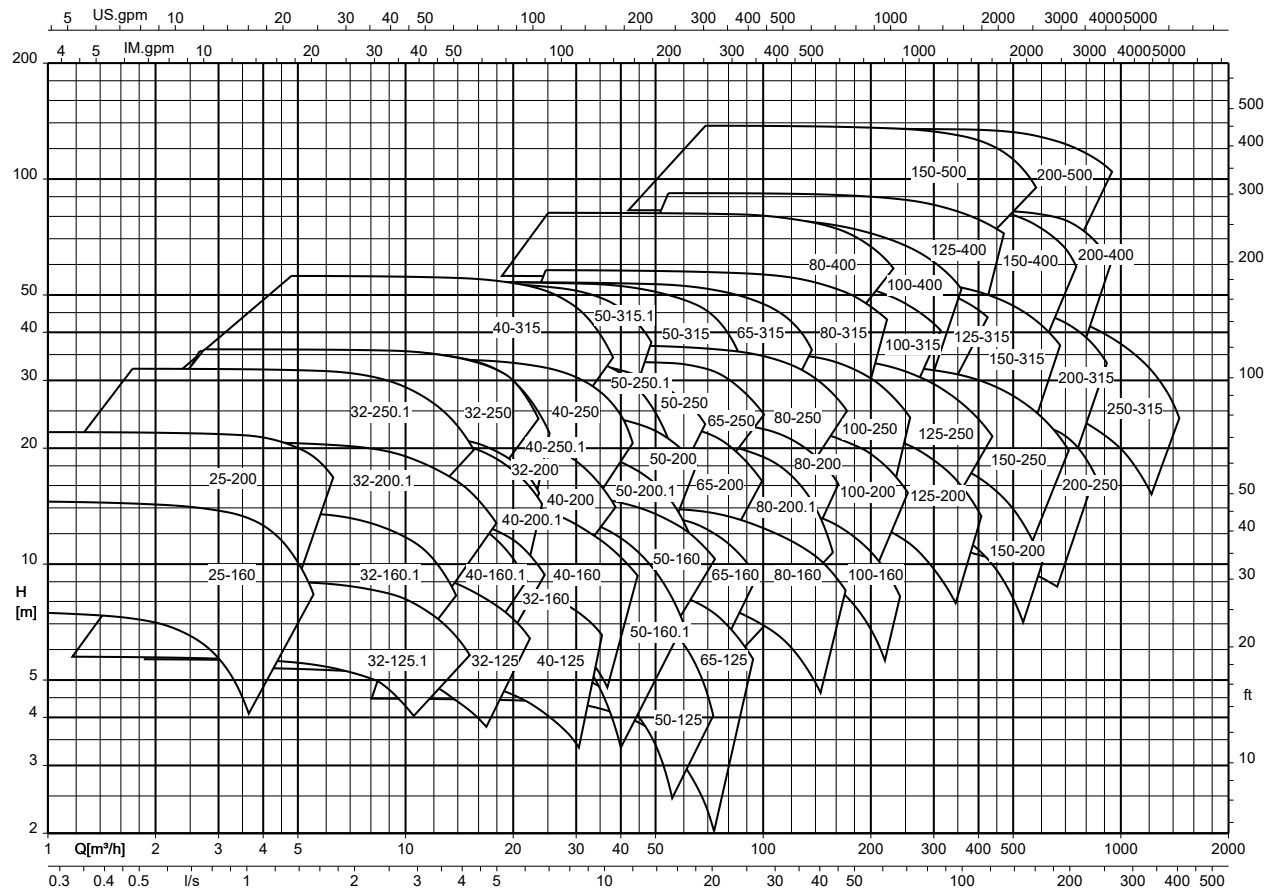
Magnochem, n = 960 rpm



The following sizes are **only** available in the countries indicated:

- Europe: 040-200.1, 050-160.1, 050-200.1, 050-250.1, 080-200.1

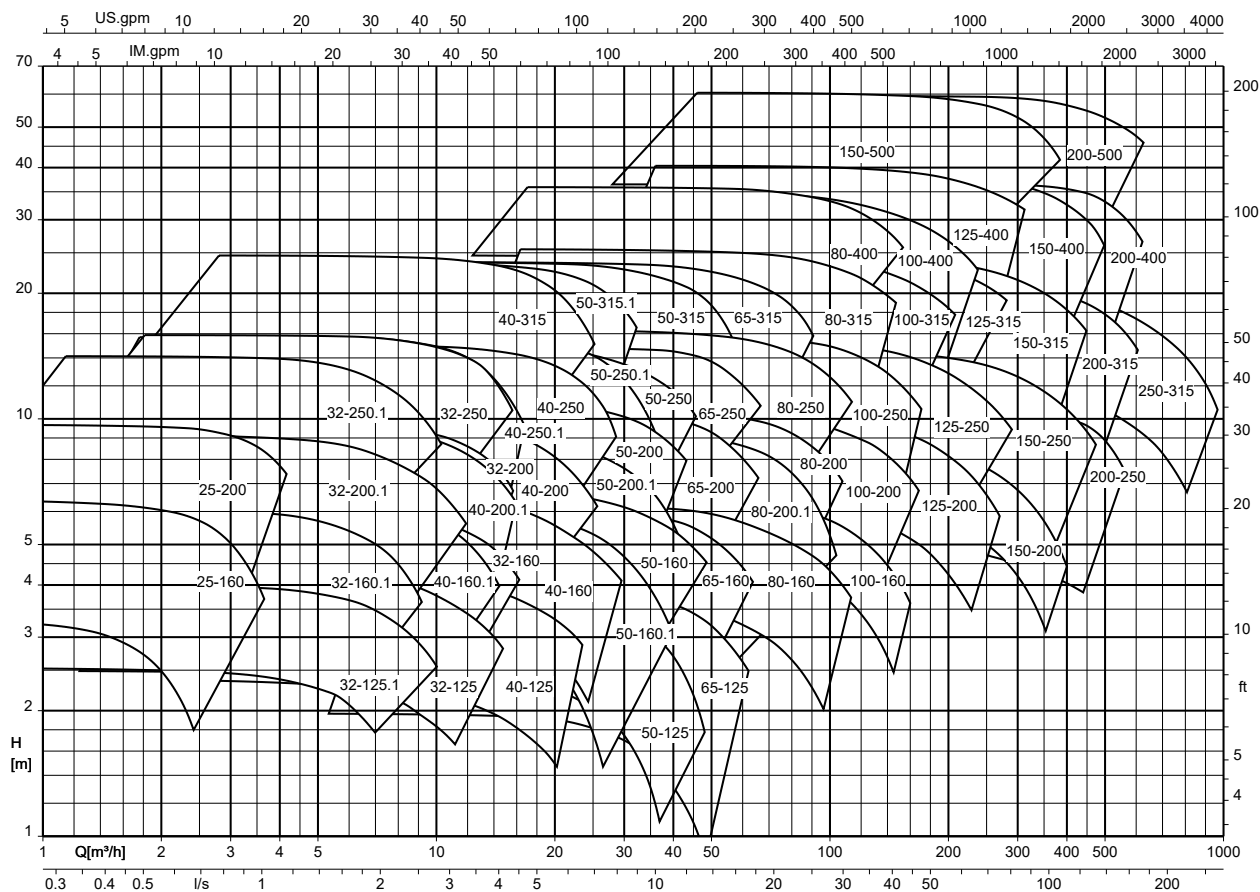
Magnochem, n = 1750 rpm



The following sizes are **only** available in the countries indicated:

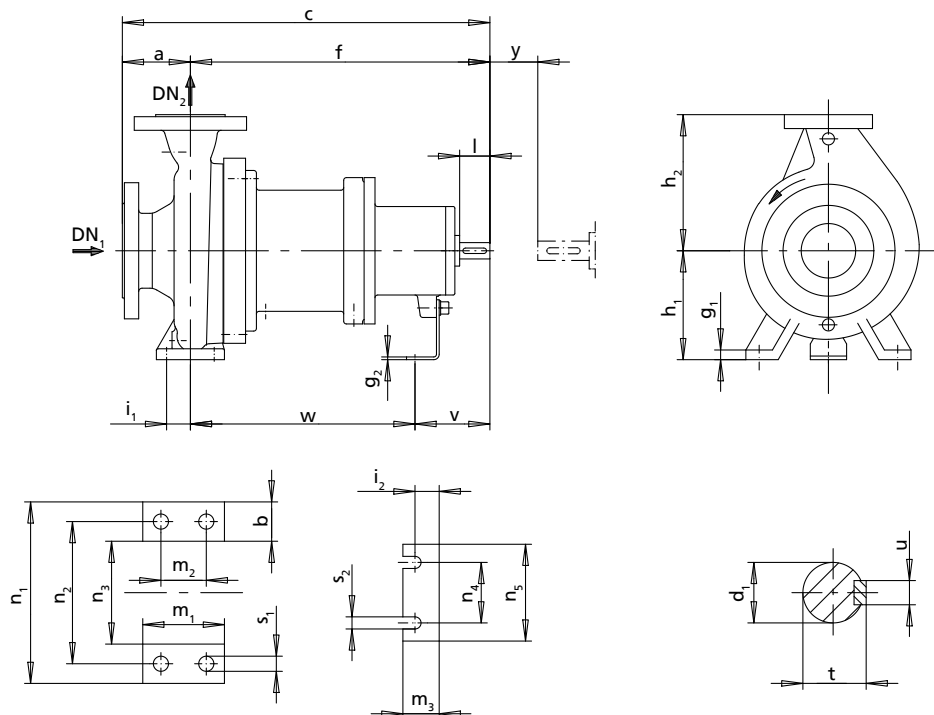
- Europe: 040-200.1, 050-160.1, 050-200.1, 050-250.1, 080-200.1

Magnocem, n = 1160 rpm



The following sizes are **only** available in the countries indicated:

- Europe: 040-200.1, 050-160.1, 050-200.1, 050-250.1, 080-200.1

Dimensions and connections

Fig. 3: Dimensions
Table 8: Pump dimensions (SI units)

Size	Bearing bracket	Pump dimensions [mm]														
		DN1	DN2	a	b	c	f	g1	g2	h1	h2	m1	m3	n1	n3	n5
040-025-160	CS40	40	25	80	50	465	385	15	4	132	160	100	48	240	140	160
040-025-200	CS40	40	25	80	50	465	385	15	4	160	180	100	48	240	140	160
050-032-125	CS40	50	32	80	50	465	385	15	4	112	140	100	48	190	90	160
050-032-125.1	CS40	50	32	80	50	465	385	15	4	112	140	100	48	190	90	160
050-032-160	CS40	50	32	80	50	465	385	15	4	132	160	100	48	240	140	160
050-032-160.1	CS40	50	32	80	50	465	385	15	4	132	160	100	48	240	140	160
050-032-200	CS40	50	32	80	50	465	385	18	4	160	180	100	48	240	140	160
050-032-200.1	CS40	50	32	80	50	465	385	18	4	160	180	100	48	240	140	160
050-032-200.2	CS40	50	32	80	50	465	385	18	4	160	180	100	48	240	140	160
050-032-250	CS50	50	32	100	65	600	500	18	4	180	225	125	48	320	190	160
050-032-250.1	CS50	50	32	100	65	600	500	18	4	180	225	125	48	320	190	160
065-040-125	CS40	65	40	80	50	465	385	15	4	112	140	100	48	210	110	160
065-040-160	CS40	65	40	80	50	465	385	15	4	132	160	100	48	240	140	160
065-040-160.1	CS40	65	40	80	50	465	385	15	4	132	160	100	48	240	140	160
065-040-200	CS40	65	40	100	50	485	385	18	4	160	180	100	48	265	165	160
065-040-200.1	CS40	65	40	100	50	485	385	15	4	160	180	100	48	265	165	160
065-040-250	CS50	65	40	100	65	600	500	18	4	180	225	125	48	320	190	160
065-040-250.1	CS50	65	40	100	65	600	500	18	4	180	225	125	48	320	190	160
065-040-315	CS50	65	40	125	65	625	500	18	6	200	250	125	48	345	215	160
080-050-125	CS40	80	50	100	50	485	385	18	4	132	160	100	48	240	140	160
080-050-160	CS40	80	50	100	50	485	385	18	4	160	180	100	48	265	165	160
080-050-160.1	CS40	80	50	100	50	485	385	15	4	160	180	100	48	262	162	160
080-050-200	CS40	80	50	100	50	485	385	18	4	160	200	100	48	265	165	160
080-050-200.1	CS40	80	50	100	50	485	385	15	4	160	200	100	48	265	165	160
080-050-250	CS50	80	50	125	65	625	500	18	4	180	225	125	48	320	190	160
080-050-250.1	CS50	80	50	125	65	625	500	18	4	180	225	125	48	320	190	160
080-050-315	CS50	80	50	125	65	625	500	18	6	225	280	125	48	345	215	160
080-050-315.1	CS50	80	50	125	65	625	500	18	6	225	280	125	48	345	215	160
100-065-125	CS40	100	65	100	65	485	385	18	4	160	180	125	48	280	150	160

Size	Bearing bracket	Pump dimensions [mm]														
		DN1	DN2	a	b	c	f	g1	g2	h1	h2	m1	m3	n1	n3	n5
100-065-160	CS50	100	65	100	65	600	500	18	4	160	200	125	48	280	150	160
100-065-200	CS50	100	65	100	65	600	500	18	4	180	225	125	48	320	190	160
100-065-250	CS50	100	65	125	80	625	500	20	6	200	250	160	48	360	200	160
100-065-315	CS60	100	65	125	80	655	530	20	6	225	280	160	48	400	240	160
125-080-160	CS50	125	80	125	65	625	500	18	4	180	225	125	48	320	190	160
125-080-200	CS50	125	80	125	65	625	500	18	4	180	250	125	48	345	215	160
125-080-200.1	CS50	125	80	125	65	625	500	18	4	180	250	125	48	345	215	160
125-080-250	CS50	125	80	125	80	625	500	18	6	225	280	160	48	400	240	160
125-100-160	CS50	125	100	125	80	625	500	18	6	200	280	160	48	360	200	160
125-100-200	CS50	125	100	125	80	625	500	18	6	200	280	160	48	360	200	160
125-080-315	CS60	125	80	125	80	655	530	20	6	250	315	160	48	400	240	160
125-080-400	CS60	125	80	125	80	655	530	20	6	280	355	160	48	435	275	160
125-100-250	CS60	125	100	140	80	670	530	18	6	225	280	160	48	400	240	160
125-100-315	CS60	125	100	140	80	670	530	18	6	250	315	160	48	400	240	160
125-100-400	CS60	125	100	140	100	670	530	20	6	280	355	200	48	500	300	160
150-125-200	CS60	150	125	140	80	670	530	20	6	250	315	160	48	400	240	160
150-125-250	CS60	150	125	140	80	670	530	20	6	250	355	160	48	400	240	160
150-125-315	CS60	150	125	140	100	670	530	20	6	280	355	200	48	500	300	160
150-125-400	CS60	150	125	140	100	670	530	20	6	315	400	200	48	500	300	160
200-150-200	CS60	200	150	180	100	710	530	20	6	280	400	200	48	550	350	160
200-150-250	CS60	200	150	160	100	690	530	20	6	280	375	200	48	500	300	160
200-150-315	CS80	200	150	160	100	830	670	20	8	315	400	200	60	550	350	200
200-150-400	CS80	200	150	160	100	830	670	20	8	315	450	200	60	550	350	200
200-150-500	CS80	200	150	180	100	850	670	22	8	375	500	200	60	550	350	200
200-200-250	CS80	200	200	180	100	850	670	22	8	355	425	200	60	550	350	200
250-200-315	CS80	250	200	200	100	870	670	22	8	355	450	200	60	550	350	200
250-200-400	CS80	250	200	180	100	850	670	22	8	355	500	200	60	550	350	200
250-200-500	CS80	250	200	200	100	870	670	22	8	425	560	200	60	660	460	200
300-250-315	CS80	300	250	250	130	920	670	26	8	400	560	260	60	690	430	200

Table 9: Dimensions of pump feet and shaft end (SI units)

Size	Bearing bracket	Shaft end [mm]					Pump feet [mm]								
		d1	l	t	u	y	i1	i2	m2	n2	n4	s1	s2	v	w
040-025-160	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
040-025-200	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-125	CS40	24	50	27	8	100	35	20	70	140	110	14	14	100	285
050-032-125.1	CS40	24	50	27	8	100	35	20	70	140	110	14	14	100	285
050-032-160	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-160.1	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-200	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-200.1	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-200.2	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
050-032-250	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
050-032-250.1	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
065-040-125	CS40	24	50	27	8	100	35	20	70	160	110	14	14	100	285
065-040-160	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
065-040-160.1	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
065-040-200	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285
065-040-200.1	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285
065-040-250	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
065-040-250.1	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
065-040-315	CS50	32	80	35	10	100	47,5	20	95	280	110	14	14	130	370
080-050-125	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285
080-050-160	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285
080-050-160.1	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285

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Size	Bearing bracket	Shaft end [mm]					Pump feet [mm]								
		d1	l	t	u	y	i1	i2	m2	n2	n4	s1	s2	v	w
080-050-200	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285
080-050-200.1	CS40	24	50	27	8	100	35	20	70	212	110	14	14	100	285
080-050-250	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
080-050-250.1	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370
080-050-315	CS50	32	80	35	10	100	47,5	20	95	280	110	14	14	130	370
080-050-315.1	CS50	32	80	35	10	100	47,5	20	95	280	110	14	14	130	370
100-065-125	CS40	24	50	27	8	100	47,5	20	95	212	110	14	14	100	285
100-065-160	CS50	32	80	35	10	100	47,5	20	95	212	110	14	14	130	370
100-065-200	CS50	32	80	35	10	140	47,5	20	95	250	110	14	14	130	370
100-065-250	CS50	32	80	35	10	140	60	20	120	280	110	18	14	130	370
100-065-315	CS60	42	110	45	12	140	60	20	120	315	110	18	14	160	370
125-080-160	CS50	32	80	35	10	140	47,5	20	95	250	110	14	14	130	370
125-080-200	CS50	32	80	35	10	140	47,5	20	95	280	110	14	14	130	370
125-080-200.1	CS50	32	80	35	10	140	47,5	20	95	280	110	14	14	130	370
125-080-250	CS50	32	80	35	10	140	60	20	120	315	110	18	14	130	370
125-080-315	CS60	42	110	45	12	140	60	20	120	315	110	18	14	160	370
125-080-400	CS60	42	110	45	12	140	60	20	120	355	110	18	14	160	370
125-100-160	CS50	32	80	35	10	140	60	20	120	280	110	19	14	130	370
125-100-200	CS50	32	80	35	10	140	60	20	120	280	110	18	14	130	370
125-100-250	CS60	42	110	45	12	140	60	20	120	315	110	18	14	160	370
125-100-315	CS60	42	110	45	12	140	60	20	120	315	110	18	14	160	370
125-100-400	CS60	42	110	45	12	140	75	20	150	400	110	23	14	160	370
150-125-200	CS60	42	110	45	12	140	60	20	120	315	110	19	14	160	370
150-125-250	CS60	42	110	45	12	140	60	20	120	315	110	18	14	160	370
150-125-315	CS60	42	110	45	12	140	75	20	150	400	110	23	14	160	370
150-125-400	CS60	42	110	45	12	140	75	20	150	400	110	23	14	160	370
200-150-200	CS60	42	110	45	12	180	75	20	150	450	110	24	14	160	370
200-150-250	CS60	42	110	45	12	180	75	20	150	400	110	23	14	160	370
200-150-315	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
200-150-400	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
200-150-500	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
200-200-250	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
250-200-315	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
250-200-400	CS80	48	110	51	14	180	75	39	150	450	140	23	18	170	500
250-200-500	CS80	48	110	51	14	180	75	39	150	560	140	23	18	170	500
300-250-315	CS80	48	110	51	14	180	95	39	190	560	140	28	18	170	500

Connections

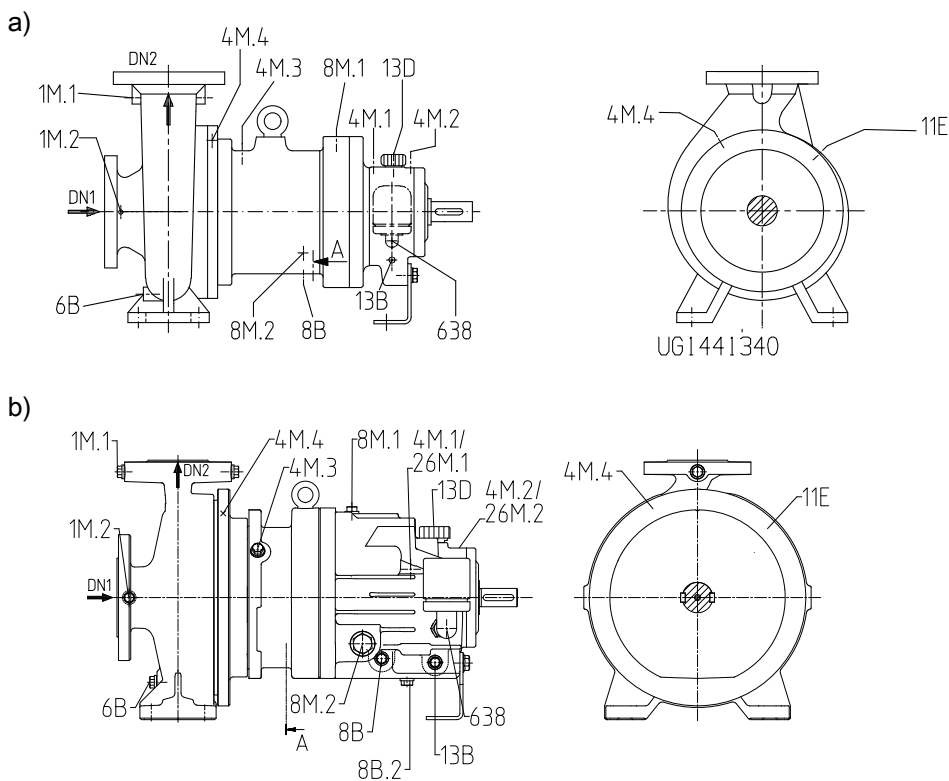


Fig. 4: Connections for operating modes internal circulation and low-boiling fluids: a) MACD, b) MACW

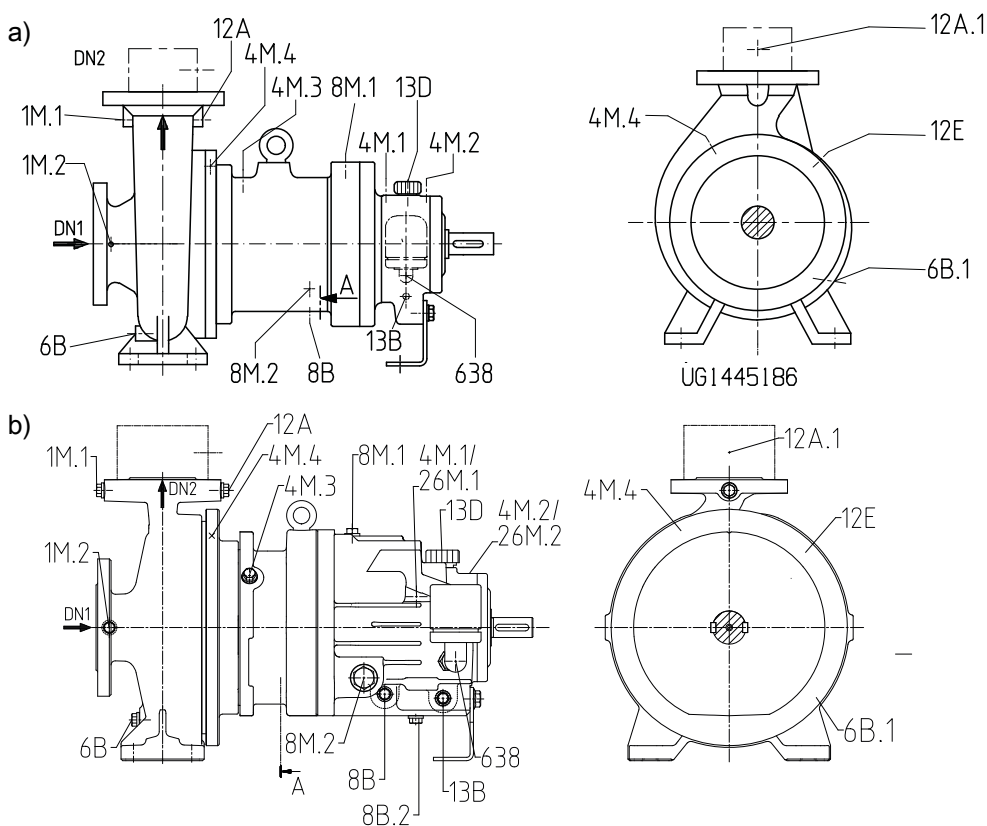


Fig. 5: Connections for operating modes external circulation and external circulation with main flow filter: a) MACD, b) MACW

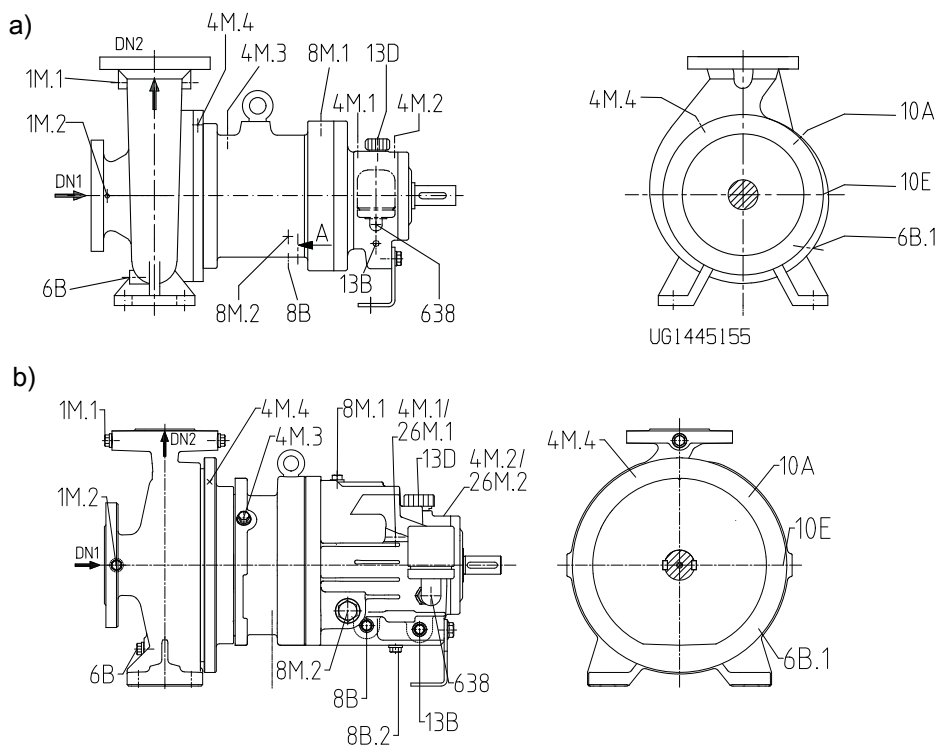


Fig. 6: Connections for operating mode dead-end configuration: a) MACD, b) MACW

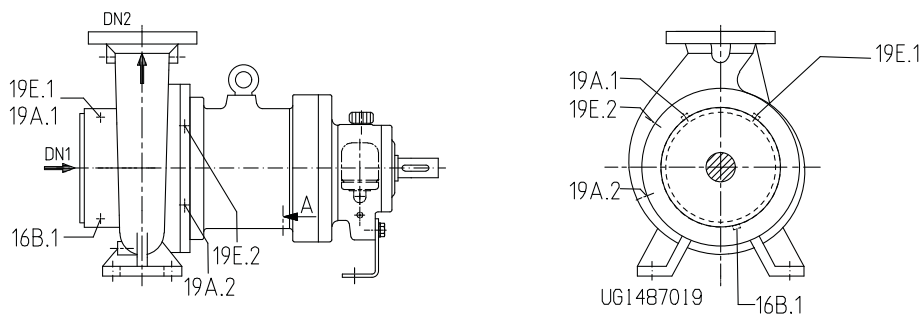


Fig. 7: Connections for heating (MACD and MACW)²⁴⁾

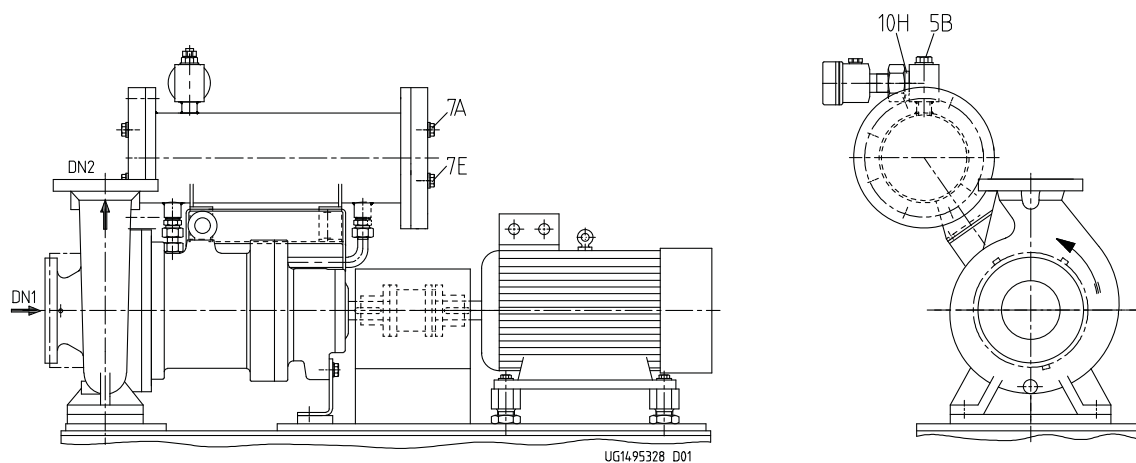


Fig. 8: Connections for heat exchanger

24 Only possible for operating modes internal circulation, low-boiling fluids and dead-end configuration

Table 10: Connections at the volute casing

Connection	Description	Discharge nozzle		
		≤ DN 50	DN 65 - DN 80	≥ DN 100
1M.1	Pressure gauge	G1/4	G3/8	G1/2
1M.2	Pressure gauge	G1/4	G3/8	G1/2
6B ²⁵⁾	Fluid drain (volute casing)	G1/4	G3/8	G1/2
12A	Circulation liquid OUT	G1/4	G3/8	G1/2
16B.1	Condensate drain (volute casing)		G1/4	
19A.1	Heating liquid OUT (volute casing)		G3/8	
19E.1	Heating liquid IN (volute casing)		G3/8	

Table 11: Connections for casing cover 161, bearing bracket lantern 344, bearing bracket 330, main flow filter

Connection	Description	Bearing brackets CS40/CS50/CS60 with MD 85/123/172	Bearing brackets CS50/CS60 with MD 235 Bearing bracket CS80 with MD 172/235/265
4M.1	Temperature monitoring of rolling element bearing, pump end		G1/4
4M.2	Temperature monitoring of rolling element bearing, motor end		G1/4
4M.3	Temperature monitoring of containment shroud, Pt100 resistance thermometer		G1/4
4M.4	Temperature monitoring of containment shroud, thermocouple		G1/4
6B.1	Containment shroud drain	G1/4	G1/2
8B	Bearing bracket lantern drain		G1/4
8B.2	Drain between secondary seal and tertiary seal		G1/4
8M.1	Leakage monitoring (gas, vapour)		G1/4
8M.2	Leakage monitoring (liquid)		G3/4
10A	Barrier fluid OUT	G1/4	G1/2
10E	Barrier fluid IN	G1/4	G1/2
11E	Flushing liquid, containment shroud IN	G1/4	G1/2
12A.1	Main flow filter OUT	G1/4	G1/2
12E	Circulation liquid IN	G1/4	G1/2
13B	Oil drain		G1/4
13D	Vent plug		Diameter 20
19A.2	Heating liquid OUT (casing cover)		G3/8
19E.2	Heating liquid IN (casing cover)		G3/8
638	Constant level oiler		Rp 1/4

Table 12: Connections for heat exchanger

Connection	Description	Heat exchanger size	Connection size
7A	Cooling liquid OUT	76	G 3/8
		115	G 3/4
		152	G 1
7E	Cooling liquid IN	76	G 3/8
		115	G 3/4
		152	G 1
5B	Vent	76	G 3/4
		115	
		152	
10H	Monitoring and check	76	G 1
		115	
		152	

25 Design with DN 15 flange if drain line is provided.

Flange design

Table 13: Overview of available flange designs

Material	Standard	Pressure class
C	EN 1092-1	PN16
	Drilled to ASME B16.5	Class 150
V	EN 1092-1	PN16
	Drilled to ASME B16.5	Class 150
E	EN 1092-1	PN16 / PN25
	Drilled to ASME B16.5	Class 150/ Class 300
Y	EN 1092-1	PN40
	Drilled to ASME B16.5	Class 300
D	EN 1092-1	PN16 / PN25 / PN40
	Drilled to ASME B16.5	Class 150/ Class 300
Heatable casing	EN 1092-1	PN16
	Drilled to ASME B16.5	Class 150

Scope of supply

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

- Pump

Drive

- Surface-cooled IEC three-phase current squirrel-cage motor

Coupling

- Flexible coupling with or without spacer
- Coupling guard
- Baseplate (to ISO 3661), cast or welded, for pump and motor, in torsion-resistant design

Special accessories

- As required

Accessories

- Temperature monitoring, metal containment shroud
 - Pt100 resistance thermometer
 - Mineral-insulated thermocouple
- Fill level monitoring as dry running protection
 - Liquiphant level transmitter
- Monitoring for containment shroud leakage (in combination with leakage barrier)
 - Liquiphant level transmitter
 - Contact pressure gauge
 - Pressure switch
 - Pressure transducer
- Monitoring of pump power to detect dry running and/or asynchronous operation of the magnetic coupling and to protect against overload operation
 - Motor load monitor
- Other accessories on request
 - Temperature monitoring of rolling element bearings by means of Pt100 resistance thermometer

Electronic analysis equipment as well as additional components for operation in potentially explosive atmospheres can also be ordered from KSB.

General assembly drawings

MACD

General assembly drawing of model with bolted cover

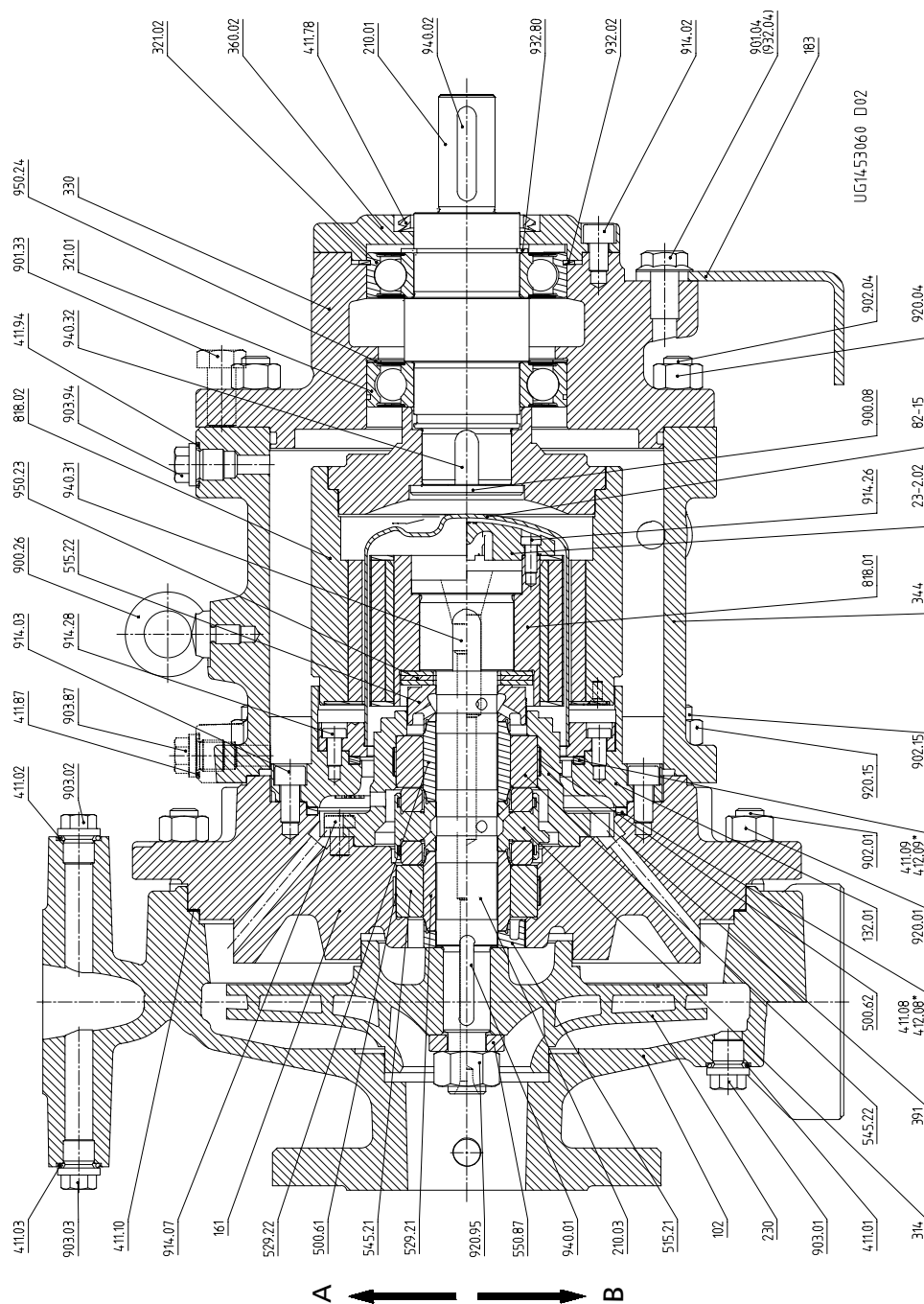


Fig. 9: General assembly drawing of version with bolted cover, with intermediate piece

A	Internal circulation, external circulation	B	Low-boiling fluids, dead-end configuration
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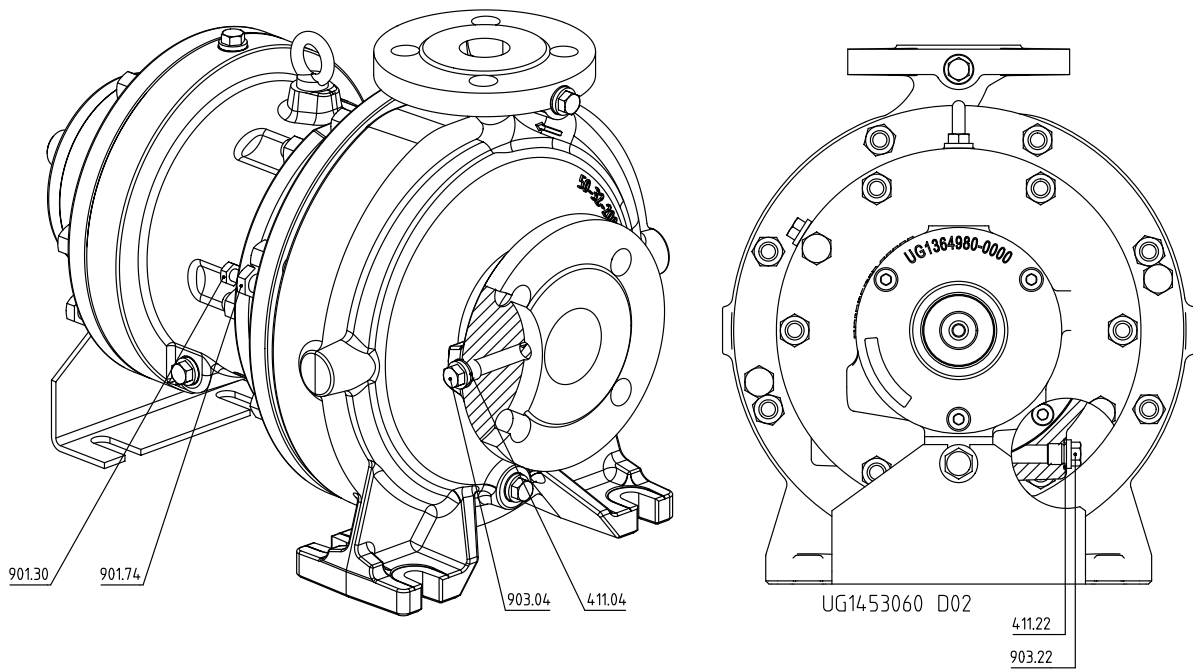


Fig. 10: Mounting of discharge cover on the pump casing of version with bolted cover

General assembly drawing of model with clamped cover

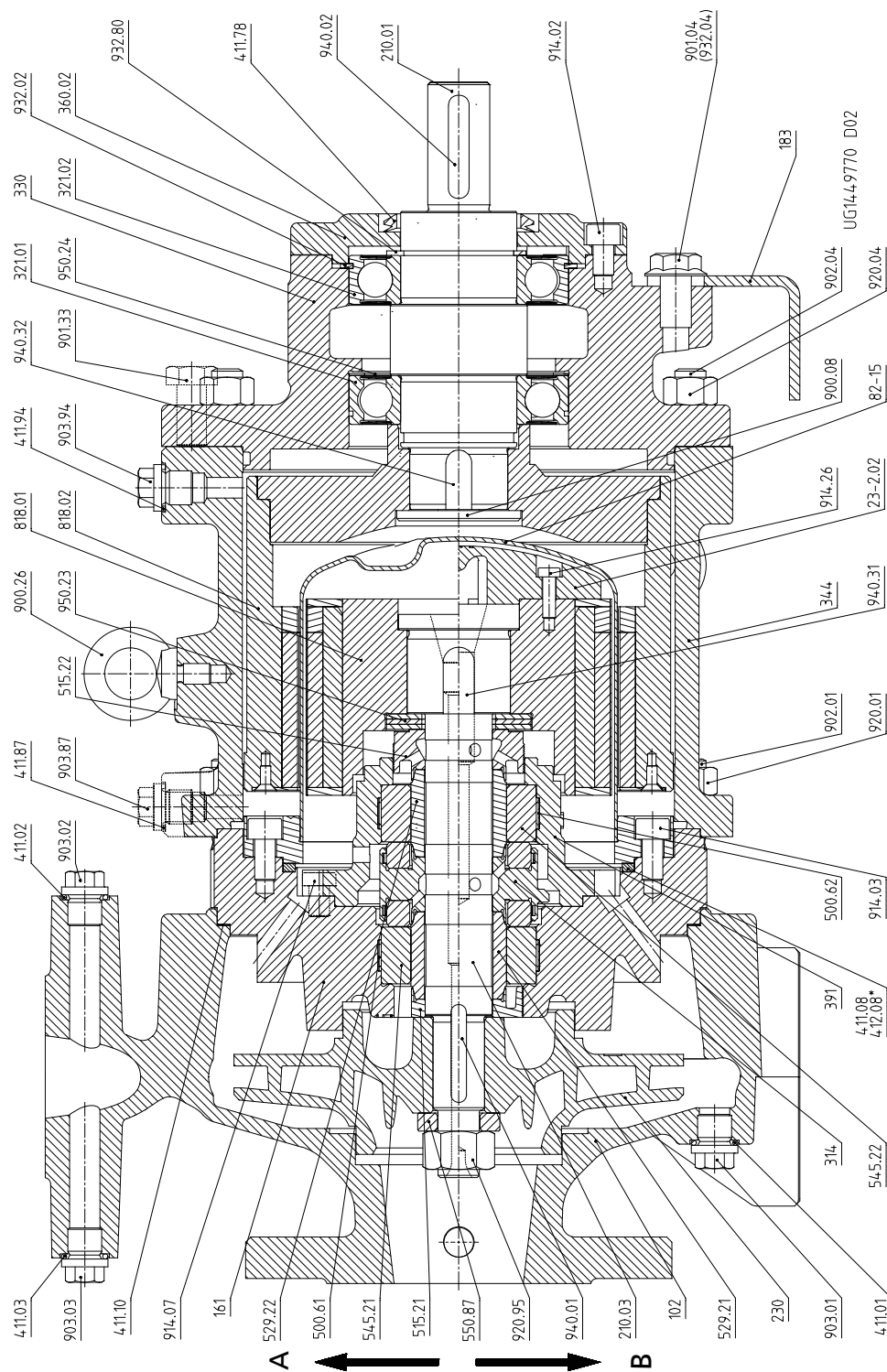


Fig. 11: General assembly drawing of version with clamped cover, without intermediate piece

A	Internal circulation, external circulation	B	Low-boiling fluids, dead-end configuration
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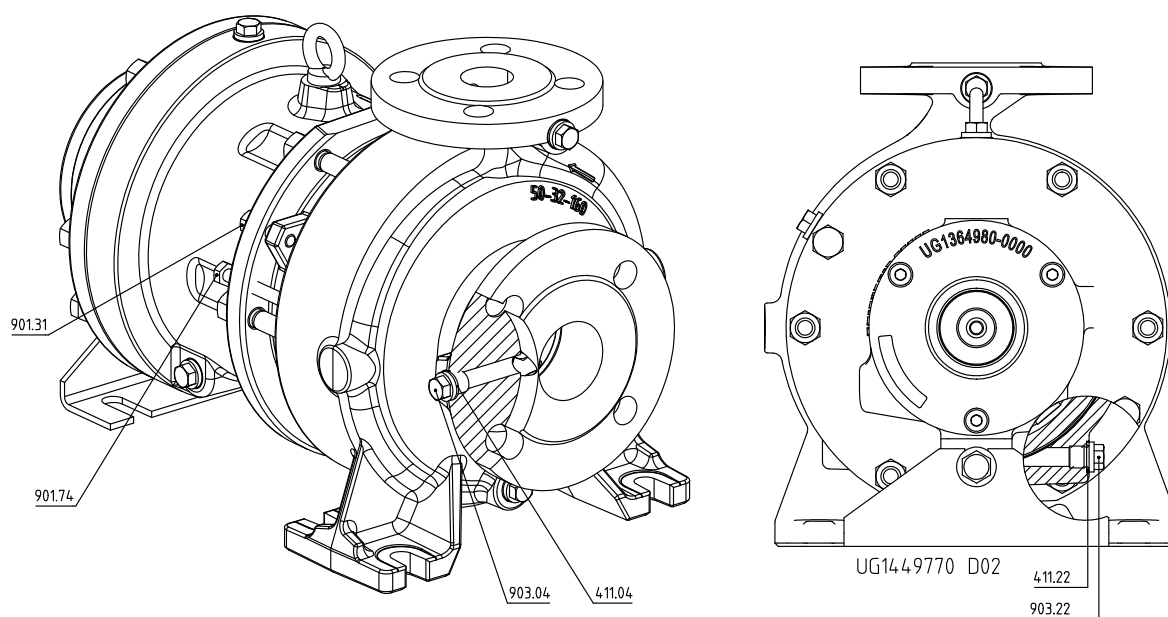


Fig. 12: Mounting of discharge cover on the pump casing of version with clamped cover

Design variants

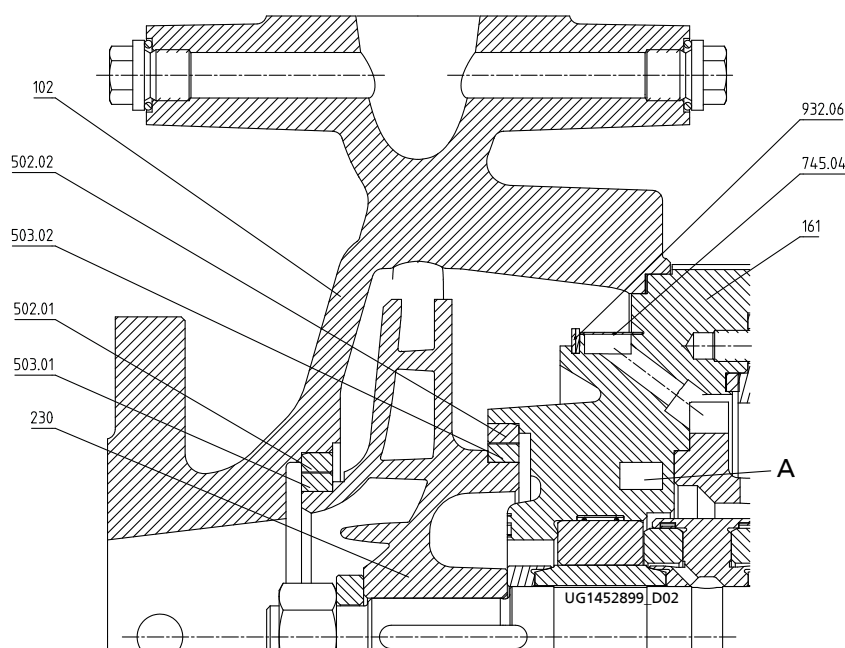


Fig. 13: Version with volute casing and ring filter, heating chamber, casing wear ring and impeller wear ring

A	Heating chamber
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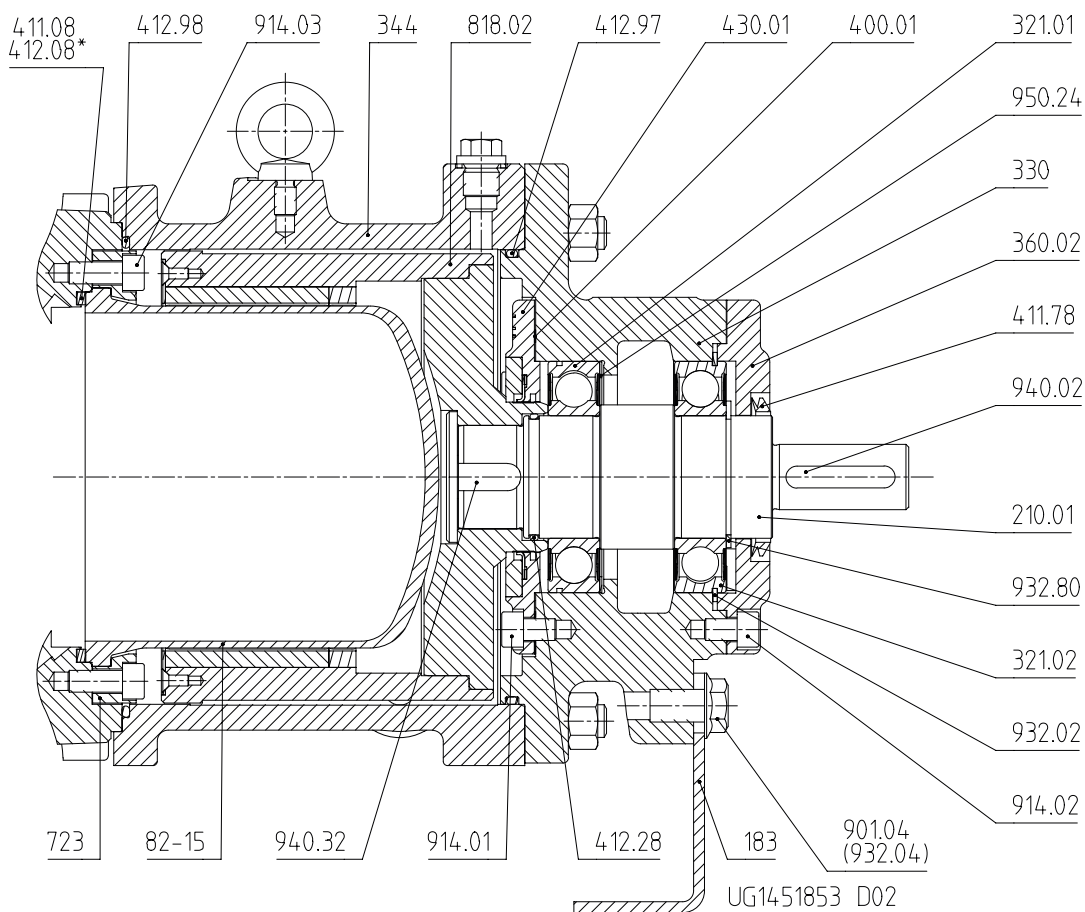


Fig. 14: Model with bearing bracket with grease lubrication and shaft seal ring as leakage barrier

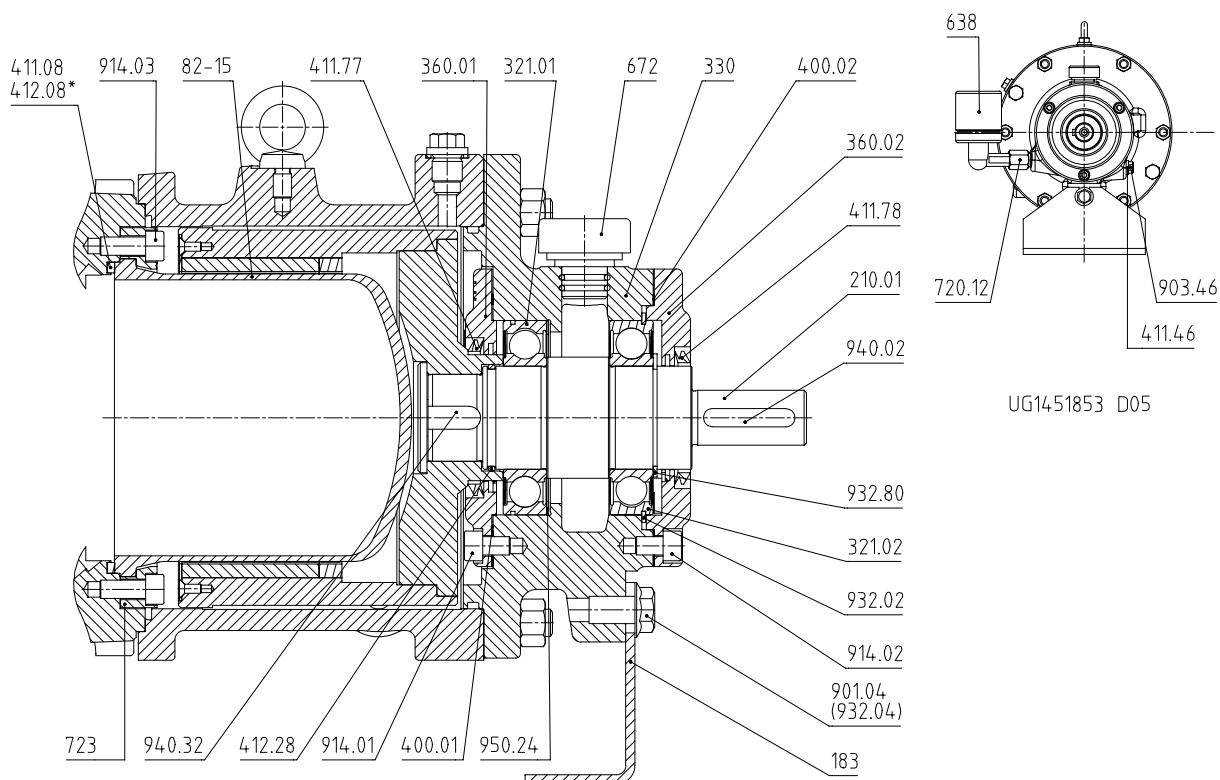


Fig. 15: Model with bearing bracket with oil lubrication without shaft seal ring as leakage barrier

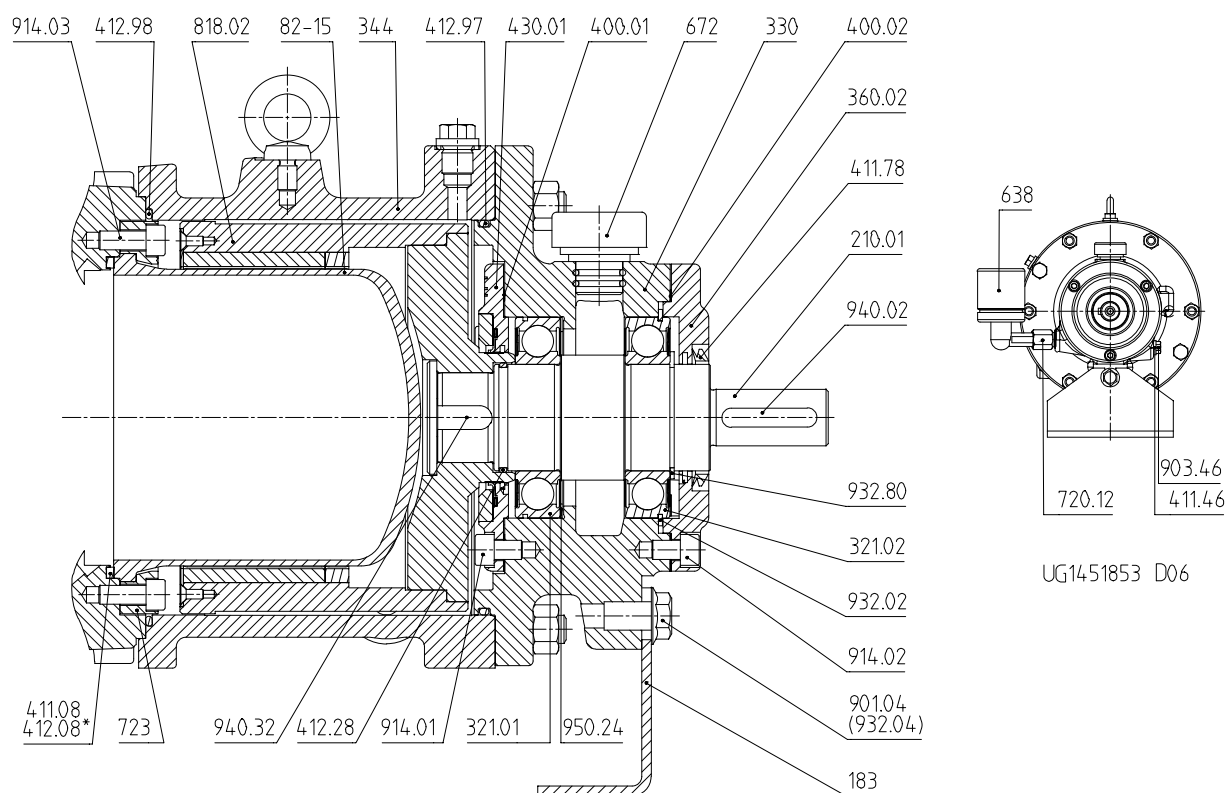


Fig. 16: Model with bearing bracket with oil lubrication and shaft seal ring as leakage barrier

List of components

Table 14: List of components

Part No.	Comprising	Description
102	102	Volute casing
	411.01 ²⁶⁾ /.02 ²⁶⁾ /.03 ²⁶⁾ /.04 ²⁶⁾	Joint ring
	502.01 ²⁶⁾	Casing wear ring
	902.01	Stud
	903.01 ²⁶⁾ /.02 ²⁶⁾ /.03 ²⁶⁾ /.04 ²⁶⁾	Screw plug
	920.01	Hexagon nut
161	161	Casing cover
502.02 ²⁶⁾	502.02 ²⁶⁾	Casing wear ring
183	183	Support foot
210.01	210.01	Shaft
	900.08	Bolt/screw
	932.02/80	Circlip
	940.02/.32	Key
210.03	210.03	Shaft
	550.87	Disc
	920.95	Nut
	940.01/.31	Key
230	230	Impeller
	503.01 ²⁶⁾ /.02 ²⁶⁾	Impeller wear ring
23-2.02	23-2.02 ²⁶⁾	Auxiliary impeller
	914.26 ²⁶⁾	Hexagon socket head cap screw
310	310	Plain bearing
	500.61	Locking element
	500.62	Locking element
	515.21	Taper lock ring

Part No.	Comprising	Description
310	515.22	Taper lock ring
	529.21	Plain bearing sleeve
	529.22	Plain bearing sleeve
	545.21	Plain bearing bush
	545.22	Plain bearing bush
314	314	Thrust bearing
314.01/.02	314.01/.02	Thrust bearing
321.01	321.01	Radial ball bearing
321.02	321.02	Radial ball bearing
330	330	Bearing bracket
344	344	Bearing bracket lantern
360.02	360.02	Bearing cover
391	391	Bearing ring carrier
411.08	411.08	Joint ring
411.09	411.09	Joint ring
411.10	411.10	Joint ring
411.22 /.87 /.94	411.22 /.87 /.94	Joint ring
411.78	411.78	Joint ring
412.08 ²⁷⁾	412.08	O-ring
412.09 ²⁷⁾	412.09	O-ring
509.02	509.02	Intermediate ring
818.01	818.01	Inner rotor
818.02	818.02	Outer rotor
82-15	82-15	Containment shroud
	132.01	Containment shroud intermediate piece
	723 ²⁸⁾	Containment shroud flange
	914.03	Hexagon socket head cap screw
	914.28	Hexagon socket head cap screw
900.26	900.26	Eyebolt
901.04	901.04	Hexagon head bolt
901.30	901.30	Hexagon head bolt
901.31	901.31	Hexagon head bolt
901.33	901.33	Hexagon head bolt
901.74	901.74	Hexagon head bolt
902.04	902.04	Stud
902.15	902.15	Stud
903.22 /.87 /.94	903.22 /.87 /.94	Screw plug
914.02	914.02	Hexagon socket head cap screw
914.07	914.07	Hexagon socket head cap screw
920.04	920.04	Nut
920.15	920.15	Nut
932.04	932.04	Locking disc
950.23	950.23	Disc spring
950.24	950.24	Wave spring
Version with oil-lubricated rolling element bearings		
360.01	360.01	Bearing cover
400.01	400.01	Gasket
	400.02	Gasket
	411.77	Joint ring
	411.78	Joint ring
	412.28	O-ring
411.46	411.46	Joint ring
638	638	Constant level oiler
672	672	Venting device
720.12	720.12	Fitting

27 Either sealing elements 411.08/.09 or O-rings 412.08/.09

28 For ceramic containment shroud only

Part No.	Comprising	Description
903.46	903.46	Screw plug
Version with leakage barrier and shaft seal ring		
412.28/.97/.98	412.28/.97/.98	O-ring
430.01	430.01	Shaft seal
	400.01	Gasket
	914.01	Hexagon socket head cap screw
Version with casing cover with ring filter		
745.04	745.04	Filter
932.06	932.06	Circlip

MACW

General assembly drawing of model with clamped cover

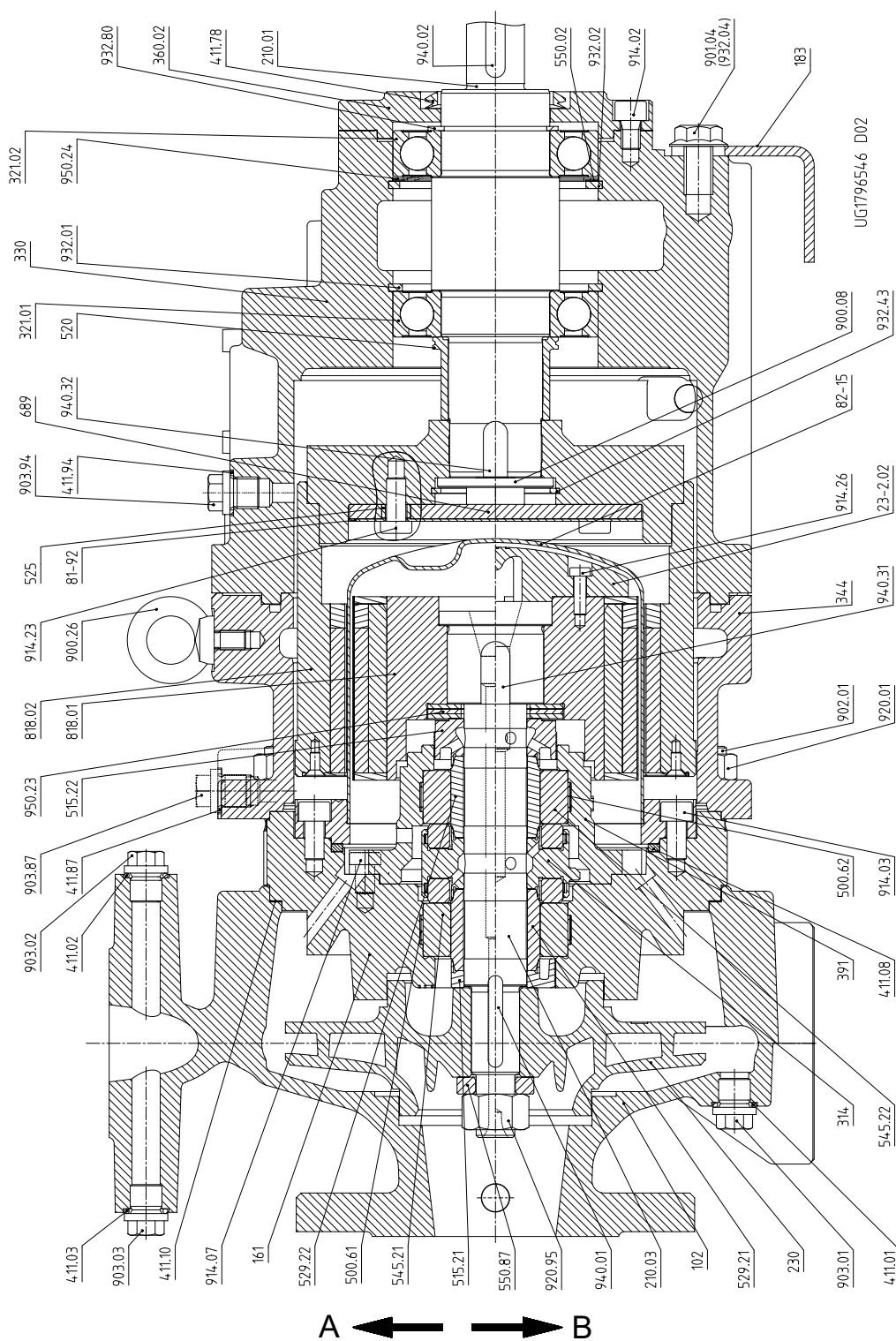


Fig. 17: General assembly drawing of model with clamped cover, without intermediate piece

A	Internal circulation, external circulation	B	Low-boiling fluids, dead-end configuration
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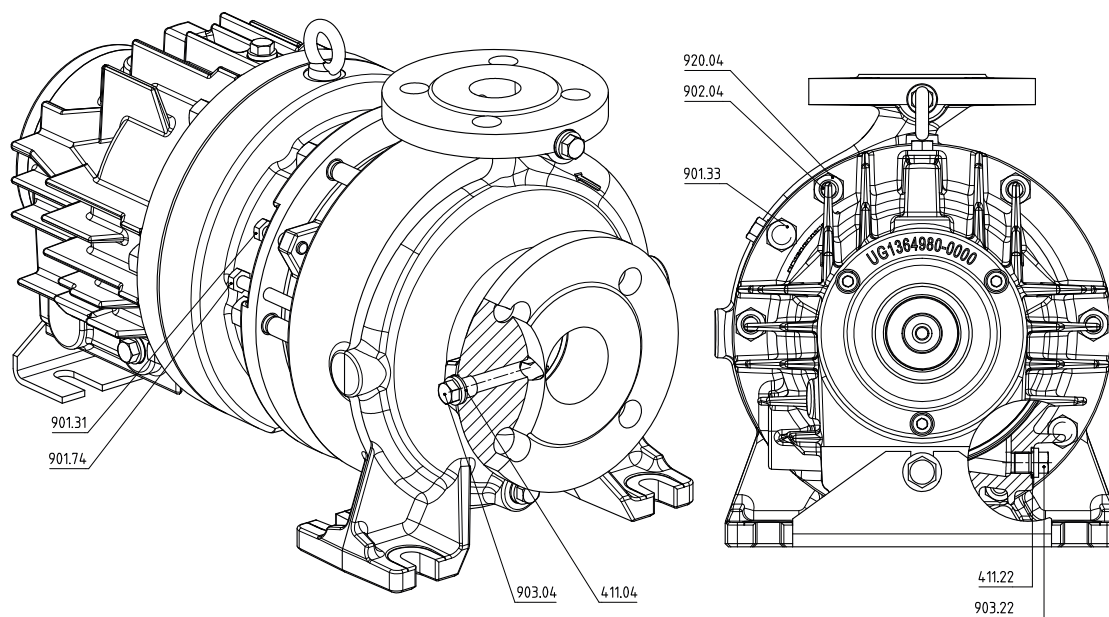


Fig. 18: Fastening of the discharge cover on the pump casing on models with clamped cover

General assembly drawing of model with bolted cover

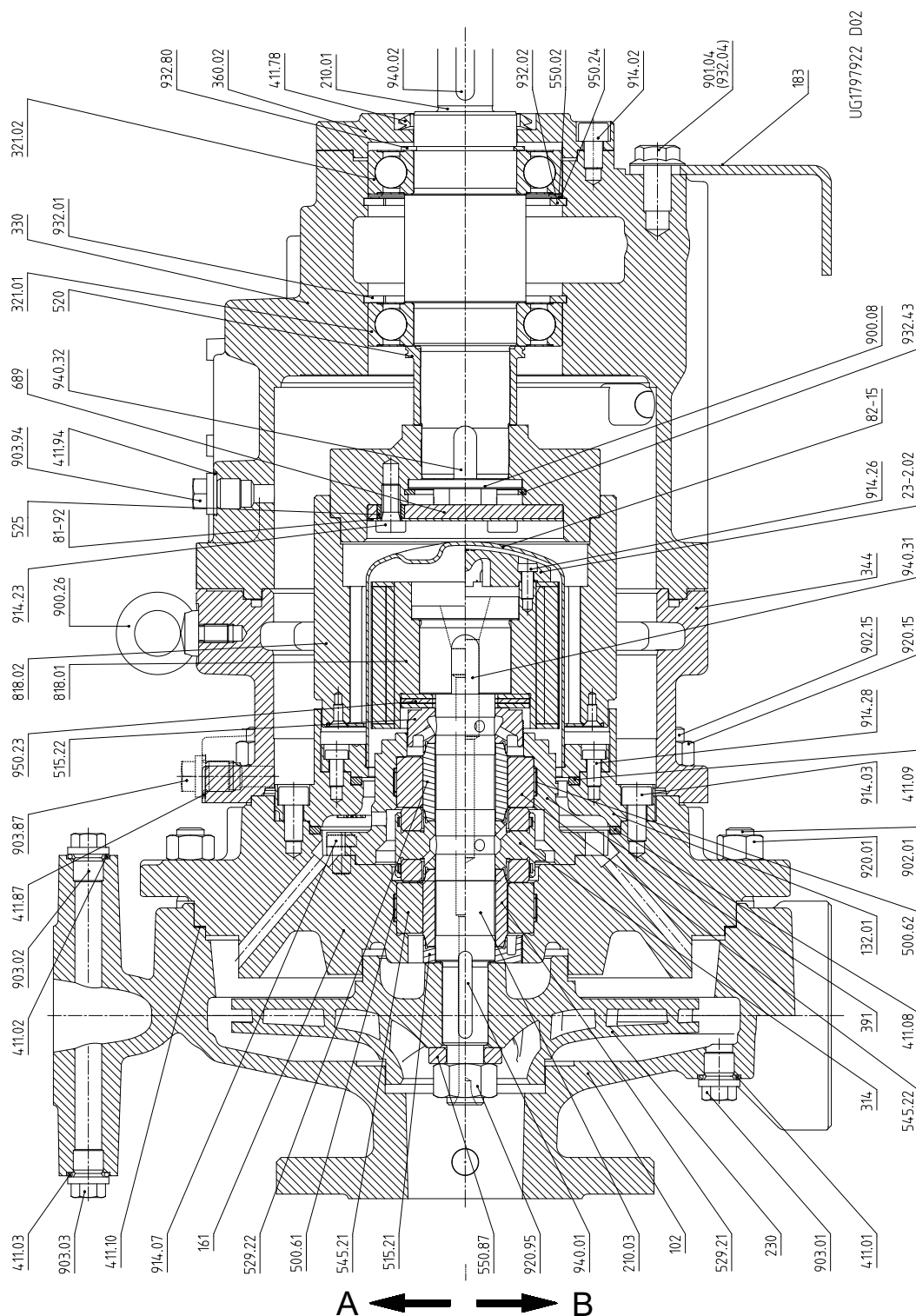


Fig. 19: General assembly drawing of model with bolted cover, with intermediate piece

A	Internal circulation, external circulation	B	Low-boiling fluids, dead-end configuration
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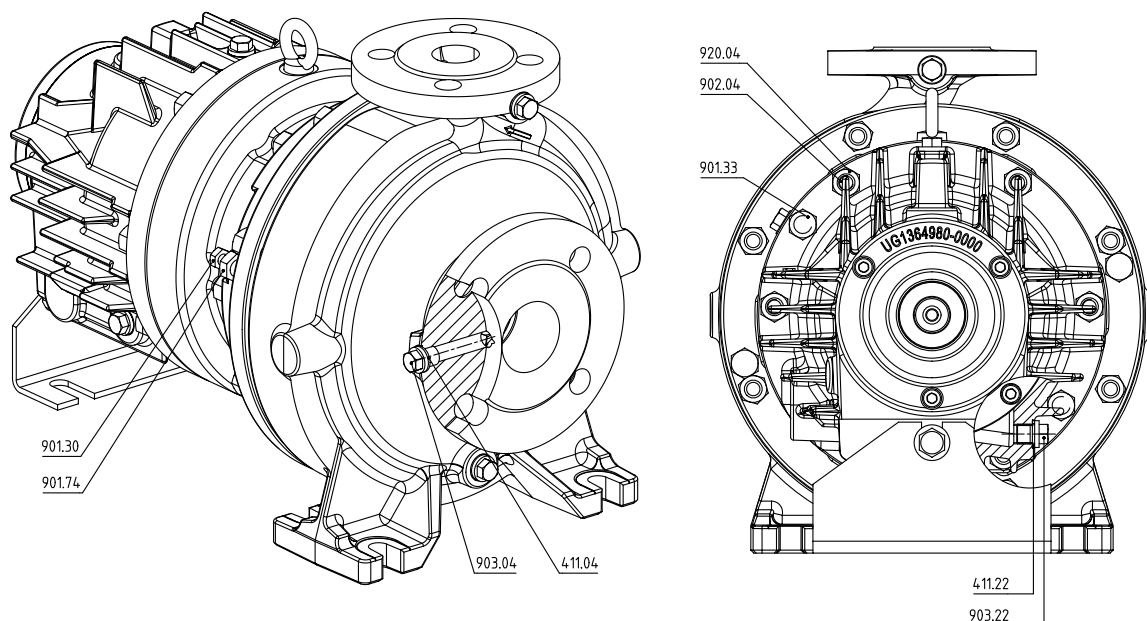


Fig. 20: Fastening of discharge cover on the pump casing on models with bolted cover

Design variants

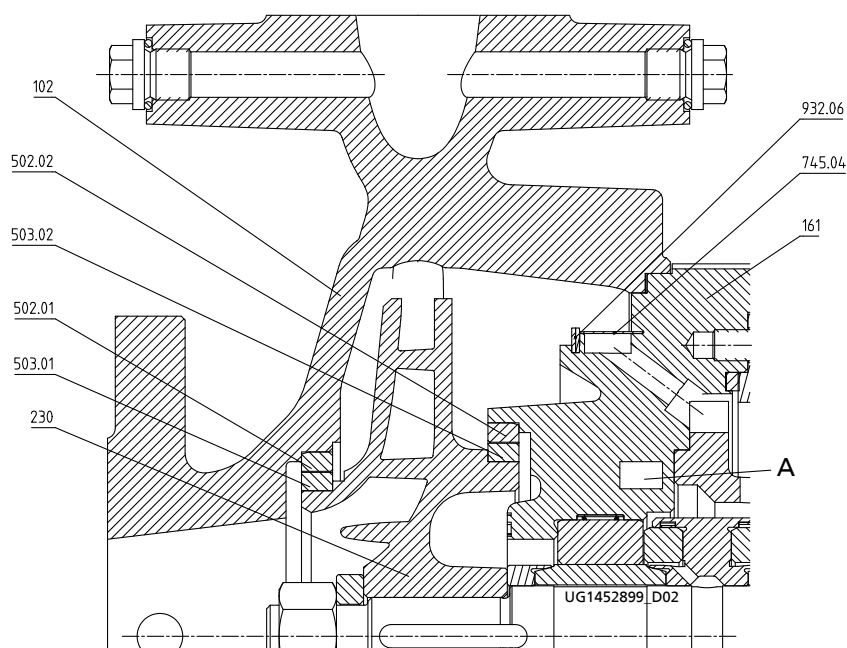
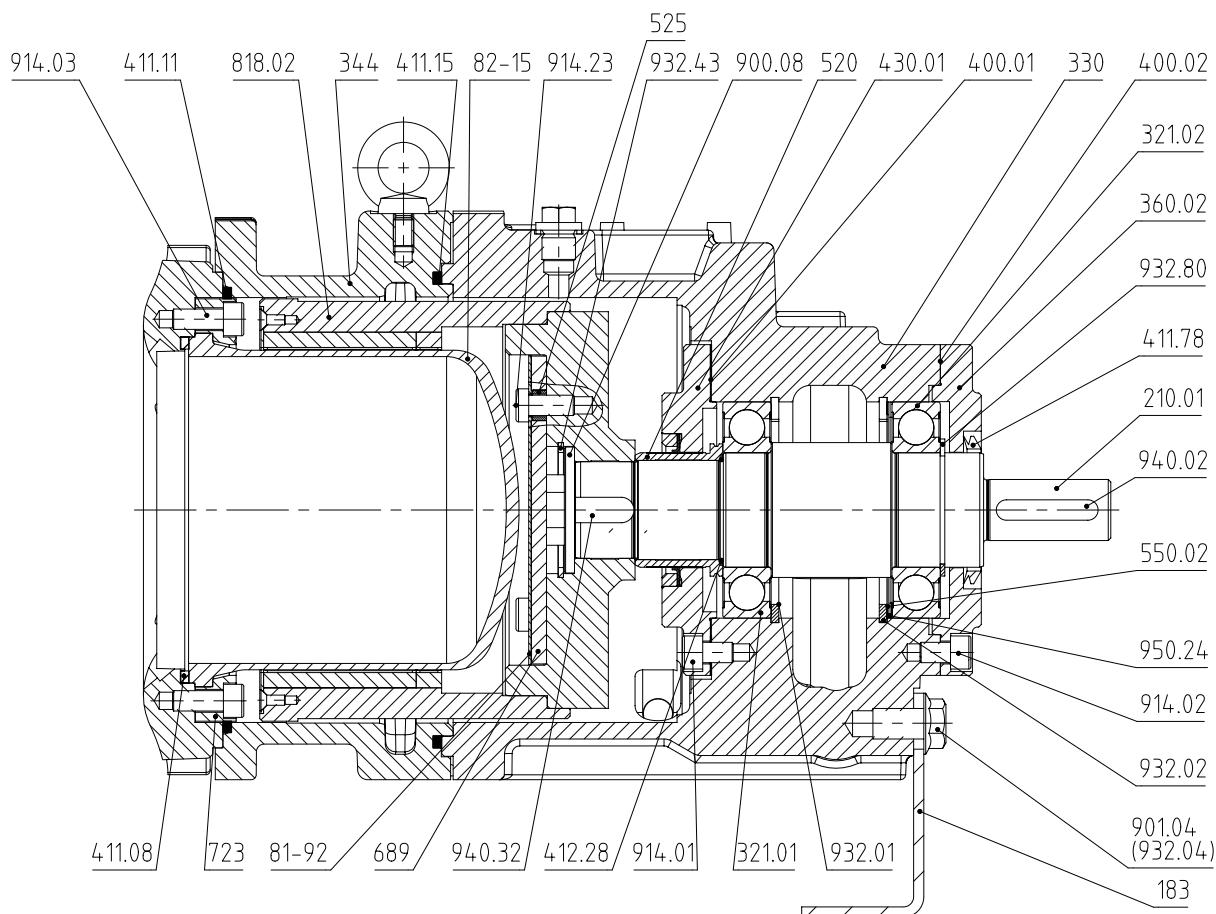


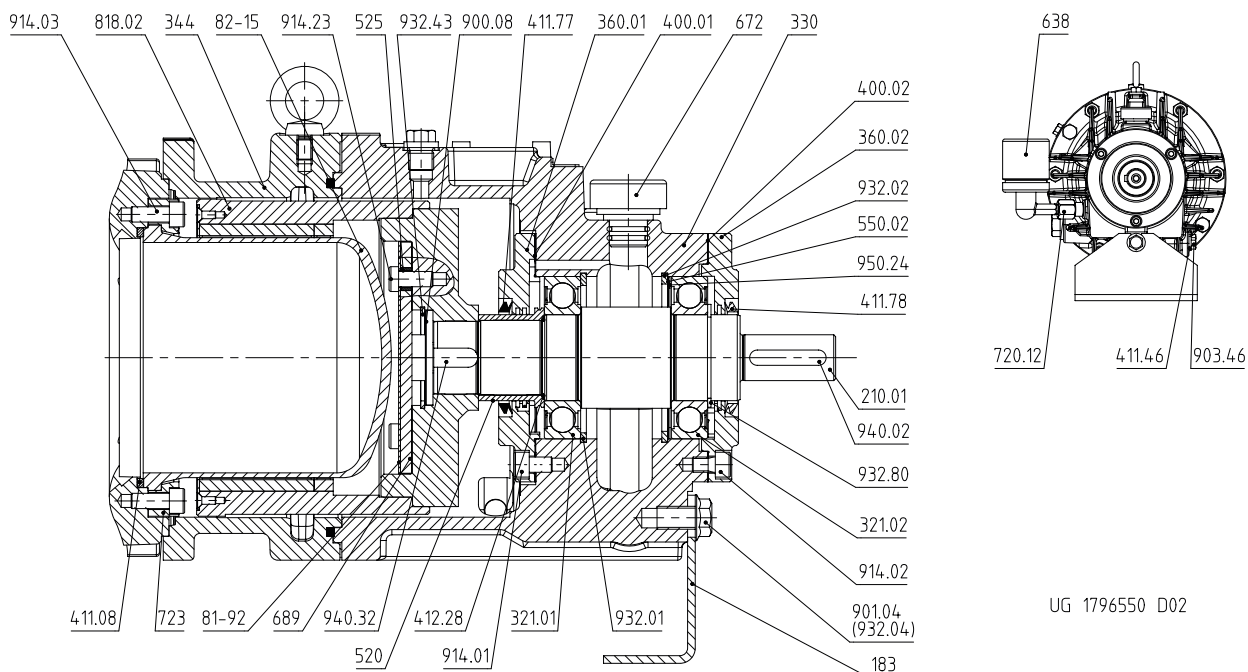
Fig. 21: Model with volute casing and ring filter, heating chamber, casing wear ring and impeller wear ring

A	Heating chamber
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UG 1796550 D04

Fig. 22: Model with bearing bracket with grease lubrication and shaft seal ring as leakage barrier



UG 1796550 D02

Fig. 23: Model with bearing bracket with oil lubrication without shaft seal ring as leakage barrier

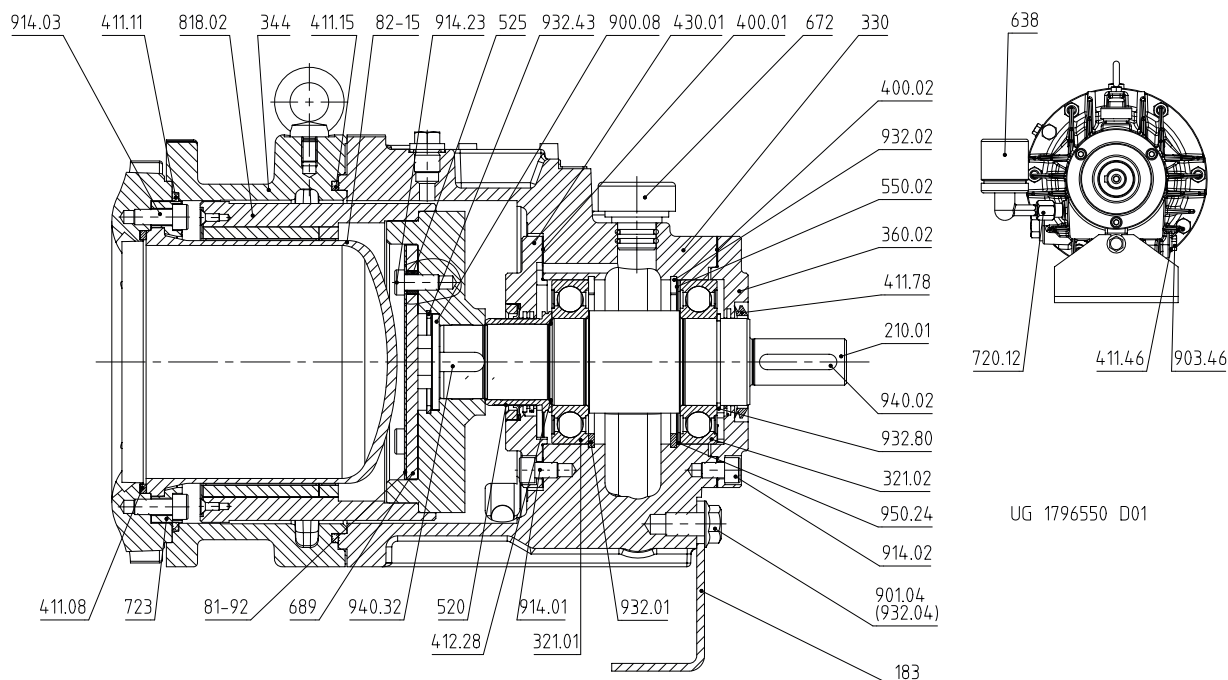


Fig. 24: Model with bearing bracket with oil lubrication and shaft seal ring as leakage barrier

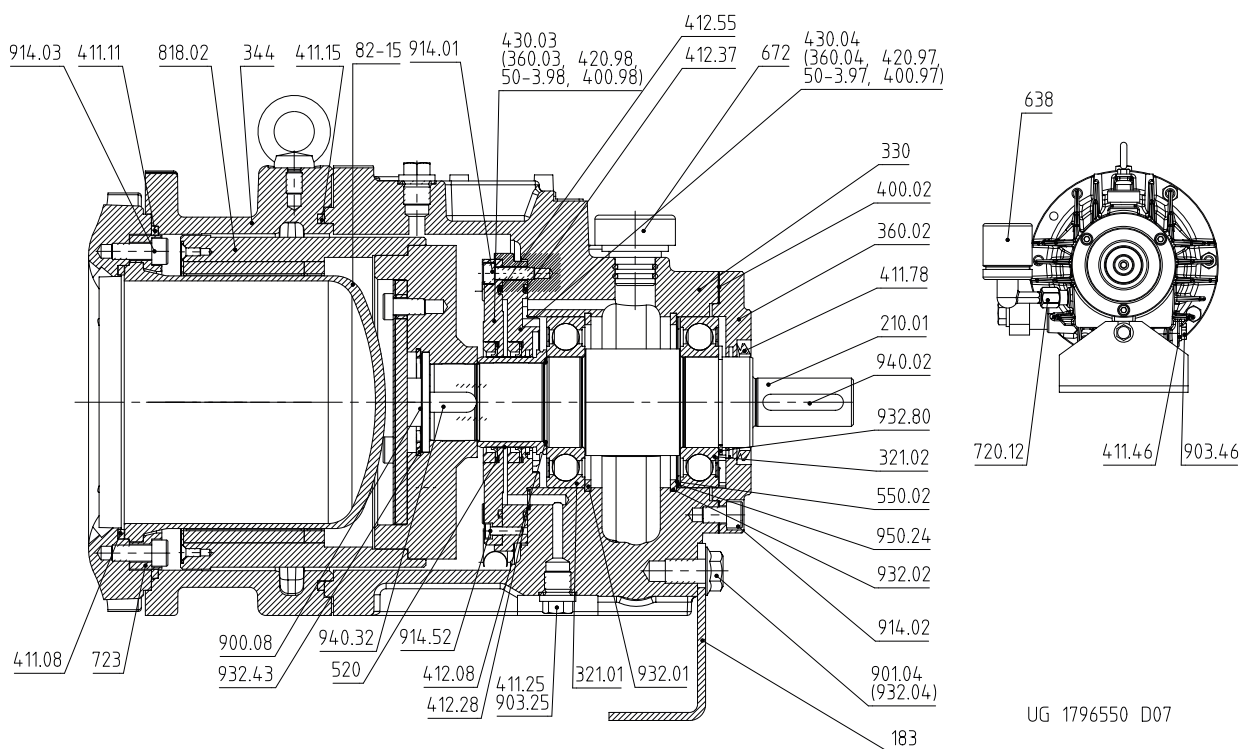


Fig. 25: Model with bearing bracket with oil lubrication and double shaft seal ring as leakage barrier

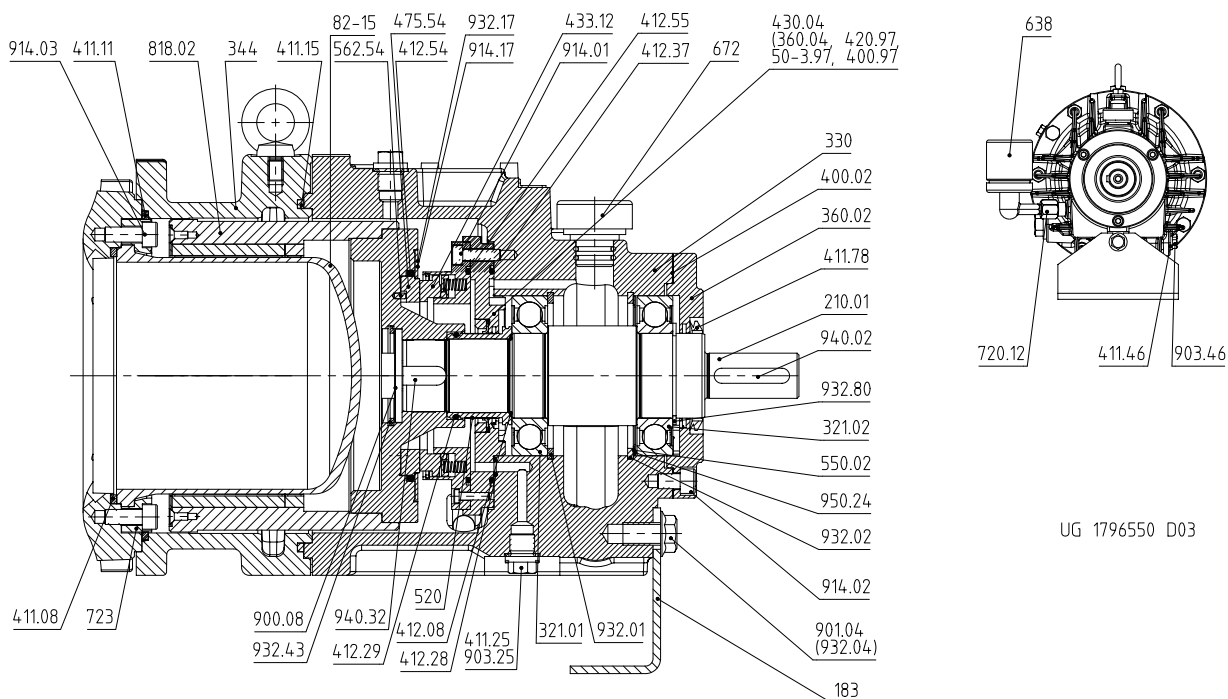


Fig. 26: Model with bearing bracket with oil lubrication and gas-lubricated mechanical seal as leakage barrier

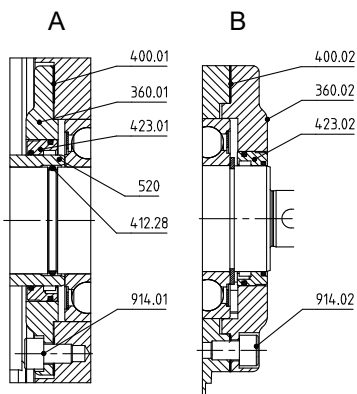


Fig. 27: Model with bearing bracket sealed by Labtecta sealing elements

A	Labyrinth, pump end
B	Labyrinth, drive end

For models with ceramic containment shroud only

Table 15: List of components

Part No.	Comprising	Description
102	102	Volute casing
	411.01 ²⁹⁾ /.02 ²⁹⁾ /.03 ²⁹⁾ /.04 ²⁹⁾	Joint ring
	502.01 ²⁹⁾	Casing wear ring
	902.01	Stud
	903.01 ²⁹⁾ /.02 ²⁹⁾ /.03 ²⁹⁾ /.04 ²⁹⁾	Screw plug
	920.01	Hexagon nut
161	161	Casing cover
502.02	502.02 ²⁹⁾	Casing wear ring
183	183	Support foot
210.01	210.01	Shaft

²⁹ Not on all models

Part No.	Comprising	Description
210.01	550.02 ³⁰⁾	Disc
	900.08	Bolt/screw
	932.01 ³⁰⁾ /.02/.80	Circlip
	940.32	Key
210.03	210.03	Shaft
	550.87	Disc
	920.95	Nut
	940.01/.31	Key
230	230	Impeller
	503.01 ²⁹⁾ /.02 ²⁹⁾	Impeller wear ring
23-2.02	23-2.02 ²⁹⁾	Auxiliary impeller
	914.26 ²⁹⁾	Hexagon socket head cap screw
310	310	Plain bearing
	500.61	Locking element
	500.62	Locking element
	515.21	Taper lock ring
	515.22	Taper lock ring
	529.21	Plain bearing sleeve
	529.22	Plain bearing sleeve
	545.21	Plain bearing bush
	545.22	Plain bearing bush
314	314	Thrust bearing
314.01/.02	314.01/.02	Thrust bearing
321.01	321.01	Radial ball bearing
321.02	321.02	Radial ball bearing
330	330	Bearing bracket
344	344	Bearing bracket lantern
360.02	360.02	Bearing cover
391	391	Bearing ring carrier
411.08	411.08	Joint ring
411.09	411.09	Joint ring
411.10	411.10	Joint ring
411.22 / .87 / .94	411.22 / .87 / .94	Joint ring
411.78	411.78	Joint ring
412.08 ³¹⁾	412.08	O-ring
412.09 ³¹⁾	412.09	O-ring
509.02	509.02	Intermediate ring
520	520	Sleeve
818.01	818.01	Inner rotor
818.02	818.02	Outer rotor
	932.43	Circlip
	900.08	Special bolt
	81-92 ³⁰⁾²⁹⁾	Cover plate
	689 ³⁰⁾²⁹⁾	Insulation
	525 ³⁰⁾²⁹⁾	Sleeve
	914.23 ³⁰⁾²⁹⁾	Hexagon socket head cap screw
82-15	923.43 ³⁰⁾	Circlip
	82-15	Containment shroud
	132.01	Containment shroud intermediate piece
	723 ³²⁾	Containment shroud flange
	914.03	Hexagon socket head cap screw
	914.28	Hexagon socket head cap screw

30 For MACW only

31 Either sealing elements 411.08/.09 or O-rings 412.08/.09

32 For ceramic containment shroud only

Part No.	Comprising	Description
900.26	900.26	Eyebolt
901.04	901.04	Hexagon head bolt
901.30	901.30	Hexagon head bolt
901.31	901.31	Hexagon head bolt
901.33	901.33	Hexagon head bolt
901.74	901.74	Hexagon head bolt
902.04	902.04	Stud
902.15	902.15	Stud
903.22 / .87 / .94	903.22 / .87 / .94	Screw plug
914.02	914.02	Hexagon socket head cap screw
914.07	914.07	Hexagon socket head cap screw
920.04	920.04	Nut
920.15	920.15	Nut
932.04	932.04	Locking disc
950.23	950.23	Disc spring
950.24	950.24	Wave spring
Version with oil-lubricated rolling element bearings		
360.01	360.01	Bearing cover
400.01	400.01	Gasket
	400.02	Gasket
	411.77	Joint ring
	411.78	Joint ring
	412.28	O-ring
411.46	411.46	Joint ring
638	638	Constant level oiler
672	672	Venting device
720.12	720.12	Fitting
903.46	903.46	Screw plug
Version with shaft seal ring as leakage barrier		
411.11/.15 ³⁰⁾	411.11/.15 ³⁰⁾	Joint ring
412.28	412.28	O-ring
412.97/.98 ³³⁾	412.97/.98 ³³⁾	O-ring
430.01	430.01	Shaft seal
	400.01	Gasket
	914.01	Hexagon socket head cap screw
Version with casing cover with ring filter		
745.04	745.04	Filter
932.06	932.06 ²⁹⁾	Circlip
Version with two shaft seal rings³⁰⁾		
411.11/.15/.25	411.11/.15/.25	Joint ring
412.08/.28/.37/.55	412.08/.28/.37/.55	O-ring
430.03/.04	430.03/.04	Shaft seal
903.25	903.25	Screw plug
914.01/.54	914.01/.54	Hexagon socket head cap screw
Version with mechanical seal and shaft seal ring³⁰⁾		
411.11/.15/.25	411.11/.15/.25	Joint ring
412.08/.28/.37/.54/.55	412.08/.28/.37/.54/.55	O-ring
430.04	430.04	Shaft seal
433.12	433.12	Mechanical seal
475.54	475.54	Mating ring
562.54	562.54	Parallel pin
903.25	903.25	Screw plug
914.01/.54	914.01/.54	Hexagon socket head cap screw
Version with labyrinth bearing seal, pump end³⁰⁾		
360.01	360.01	Bearing cover

33 For MACD only

Part No.	Comprising	Description
400.01	400.01	Gasket
423.01	423.01	AES SEAL Labtecta
914.01	914.01	Hexagon socket head cap screw
Version with labyrinth bearing seal, motor end³⁰⁾		
360.02	360.02	Bearing cover
400.02	400.02	Gasket
423.02	423.02	AES SEAL Labtecta
914.02	914.02	Hexagon socket head cap screw



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