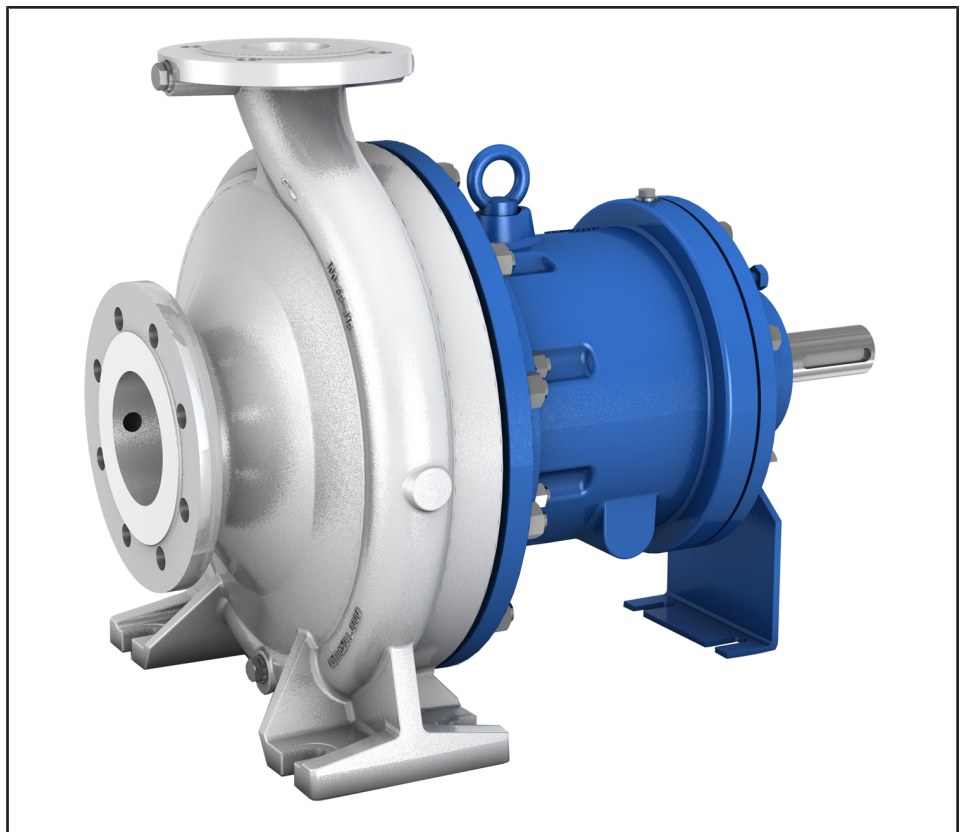


Mag-drive Pump

Magnochem

Type Series Booklet



Legal information/Copyright

Type Series Booklet Magnochem

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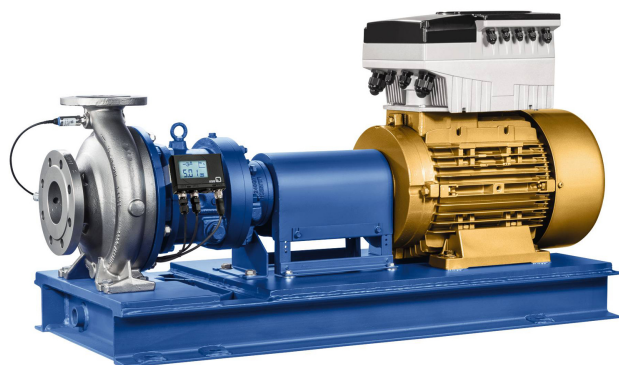
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Seal-less Pumps

Mag-drive Pumps

Magnochem (Fixed Speed / Variable Speed)



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

Main applications

- Chemical industry
- District heat supply system
- Industrial recirculation systems

Design details

Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Meets the technical requirements to ISO 5199
- Dimensions and ratings to ISO 2858 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
- Heatable
- Draining facility

Shaft seal

- Seal-less, with magnetic coupling
- Containment shroud as sealing element

- Air-conditioning systems
- Condensate transport
- Cooling circuits
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering
- Hot-water heating systems
- Sugar industry

Fluids handled

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

Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m ³ /h]	≤ 1160	≤ 1400
Head	H [m]	≤ 162	≤ 236
Fluid temperature	T ₁ [°C]	≥ -90	≥ -90
		≤ +300	≤ +300
Ambient temperature	T ₂ [°C]	≥ -20	≥ -20
		≥ +40	≥ +40
Operating pressure	p [bar]	≤ 40	≤ 40

Optional:

- With leakage barrier

Casing cover variants

- Internal circulation
- Low-boiling fluids
- External circulation
 - With fluid handled
 - With barrier fluid
- Dead-end configuration

In addition:

- Flushing connection
- Heatable
- Draining facility
- Internal ring filter or main flow 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

Bearings used

Type of lubrication	Pump nominal pressure	Leakage barrier model	Nominal diameter of magnetic coupling	Bearing bracket	Rolling element bearings	
					Pump end	Drive end
			[mm]		321.01	321.02
Grease-lubricated	PN16/25/40	Not available or shaft seal ring ¹⁾	85	CS40	6209-2Z-N C3	6209-2Z-N C3
				CS50		
				CS60		
			123	CS40	6209-2Z-N C3	6209-2Z-N C3
				CS50		
				CS60		
			172	CS50	6209-2Z-N C3	6209-2Z-N C3
				CS60		
				CS80		
			235	CS50	6212-2Z-N C3	6212-2Z-N C3
				CS60		
				CS80		
265	CS80	6212-2Z-N C3	6212-2Z-N C3			
Oil-lubricated	PN16/25/40	Not available or shaft seal ring ¹⁾	85	CS40	6209-Z-NB C3	6209-Z-NB C3
				CS50		
				CS60		
			123	CS40	6209-Z-NB C3	6209-Z-NB C3
				CS50		
				CS60		
			172	CS50	6209-Z-NB C3	6209-Z-NB C3
				CS60		
				CS80		
			235	CS50	6212-Z-NB C3	6212-Z-NB C3
				CS60		

1) Shaft seal ring up to PN16 max.

Type of lubrication	Pump nominal pressure	Leakage barrier model	Nominal diameter of magnetic coupling	Bearing bracket	Rolling element bearings	
					Pump end	Drive end
			[mm]		321.01	321.02
Oil-lubricated	PN16/25/40	Not available or shaft seal ring ¹⁾	235	CS80	6212-Z-NB C3	6212-Z-NB C3
			265	CS80	6212-Z-NB C3	6212-Z-NB C3

Automation

Automation options:

- PumpDrive
- PumpMeter

Designation

Designation example

Position																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
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											

Designation key

Position	Code	Description
1-4	Pump type	
	MACD	Magnochem
	MACB	Magnochem-Bloc
5-16	Size, e.g.	
	050	Nominal suction nozzle diameter [mm]
	032	Nominal discharge nozzle diameter [mm]
	2501	Nominal impeller diameter [mm]
17	Pump casing material	
	C	Stainless steel 1.4408 / A743CF8M
	D	NORIDUR 1.4593 / 1.4517 / A995 CD4MCuN
	E	Cast steel GP240GH + N / WCB
	V	Stainless steel 1.4408
	Y	Cast steel 1.7706
18	Impeller material	
	C	Stainless steel 1.4408 / A743CF8M
	D	NORIDUR 1.4593 / 1.4517 / A995 CD4MCuN
	G	Grey cast iron JL 1040 / A48CL35
19	Heatable version	
	²⁾	Standard
	H	Heatable casing
20	Design	
	²⁾	Standard
	E	Extended-flow hydraulic system
	L	Standard-flow hydraulic system
	X	Non-standard (BT3D, BT3)
21	Magnetic coupling diameter [mm]	
	1	85
	2	123
	3	172
	4	235
	5	265
22	Magnetic coupling length [mm]	
	A	10
	B	20
	C	30
	D	40

2) Blank

Position	Code	Description
22	E	50
	F	60
	G	70
	H	80
	I	90
	J	100
	K	110
	L	120
	M	130
	N	140
	O	150
	P	160
Q	170	
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

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	
102	Casing	Stainless steel 1.4408/ A743 Gr. CF8 M	S	S	-	-	-	-	-	-	-	-	-	
		Stainless steel 1.4408	-	-	S ³⁾	S ³⁾	-	-	-	-	-	-	-	
		Duplex stainless steel 1.4593/1.4517/ A995 Gr. 1B	-	-	-	-	-	-	-	-	-	-	-	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	-	-	-	-	-	-	-	-	-	
		Stainless steel 1.4408	-	-	S	S	-	-	-	-	-	-	-	
		Steel GP240GH+N/ A216 Gr. WCB	-	-	-	-	S	S	S	S	S	S	-	
		Duplex stainless steel 1.4593/ 1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	-	S

3) 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
161	Casing cover	Stainless steel 1.4408/ A743 GR CF8M	S ⁴⁾	S ⁴⁾	-	-	-	-	-	-	-	-	-
		Stainless steel 1.4408	-	-	S ⁴⁾	S ⁴⁾	-	-	-	-	-	-	-
		Duplex stainless steel 1.4593/1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	S ⁴⁾
		Steel GP240GH+N/ A216 Gr WCB	-	-	-	-	S ⁴⁾	S ⁴⁾	S ⁴⁾	S ⁴⁾	S ⁴⁾	S ⁴⁾	-
23-2.02	Auxiliary impeller	CrNiMo St INT	S	S	S	S	S	S	S	S	S	S	-
210.01	Shaft (ball bearings)	Steel C45+N/ A108 UNS G10450 ⁵⁾ steel 1.7709+QT+SR ⁶⁾	S	S	S	S	S	S	S	S	S	S	S
210.03	Shaft (plain bearings)	Duplex stainless steel 1.4462/ UNS S31803	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	-
230	Impeller	Stainless steel 1.4408/ A743 GR CF8M	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	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
		SiC, DLC-coated	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	-
		Duplex stainless steel 1.4593/ 1.4517/A995 Gr. CD4MCuN	-	-	-	-	-	-	-	-	-	-	S
411.10	Joint ring	CrNi steel/graphite	O	O	O	O	O	O	O	S	S	S	O
		Thermoplastic	S	S	S	S	S	S	S	-	-	-	S
		Gylon 3501E	O	O	O	O	O	O	O	-	-	-	O
420.97	Shaft seal ring	Steel GP240GH+N/ A216 Gr. WCB	O	O	O	O	O ⁷⁾	O ⁷⁾	O ⁷⁾	-	-	-	O ⁷⁾
		PS-SEAL® lip	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	-	-	-	-	-	-	-
		Duplex stainless steel	-	-	-	-	-	-	-	-	-	-	O
		CrNi steel VG 434	-	-	-	-	O	O	O	O	O	O	-
		None	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
		None	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
		SiC, DLC-coated	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
82-15	Containment shroud	1.4571-2.4610	S	S	S	S	S	S	S	S	S	S	-
		1.4462-2.4610	-	-	-	-	-	-	-	-	-	-	S
		Zirconium oxide	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾	O ⁸⁾
		Titanium B367, Grade C-5	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾	O ⁹⁾
818.01	Inner rotor	1.4571-SAMCO	S	S	S	S	S	S	S	S	S	S	-
		1.4462-SAMCO	-	-	-	-	-	-	-	-	-	-	S
818.02	Outer rotor	ST-SAMCO	S	S	S	S	S	S	S	S	S	S	S

- 4) Heatable casing cover optionally available.
5) Only applies to the nominal diameters of magnetic couplings 85/123/172/235.
6) Only applies to the nominal diameter of magnetic coupling 265.
7) Only applies up to PN16.
8) Only applies to the nominal diameters of magnetic couplings 85/123/172.
9) Only applies to the nominal diameters of magnetic couplings 235/265.

Part. No.	Description	Material	Material variant S=standard, O=option										
			CC	CD	VC	VD	EG	EC	ED	YG	YC	YD	DD
920.95	Impeller nut	A4/AISI 316	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	-
		Duplex stainless steel 1.4462/UNS S31803	-	-	-	-	-	-	-	-	-	-	S

Coating and preservation

- Coating and preservation to KSB standard

- Low-maintenance design:

- Grease-packed rolling element bearings sealed for life (30,000 h at operating temperatures under 80 °C) or oil-lubricated rolling element bearings (35,000 h)

Product benefits

- High operating reliability:
 - Only static seals 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

Acceptance tests and warranty

- Materials testing
 - Test report 2.2 on request
- Final inspection
 - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test
 - The duty point of each pump is guaranteed according to ISO 9906/2A.
 - The following acceptance tests can be performed and certified at extra charge:
 - Performance test to ISO 9906
 - NPSH test
- Other tests (e.g. vibrations, strength) on request.
- Warranty
 - Warranties are given within the scope of the valid terms and conditions of sale and delivery.

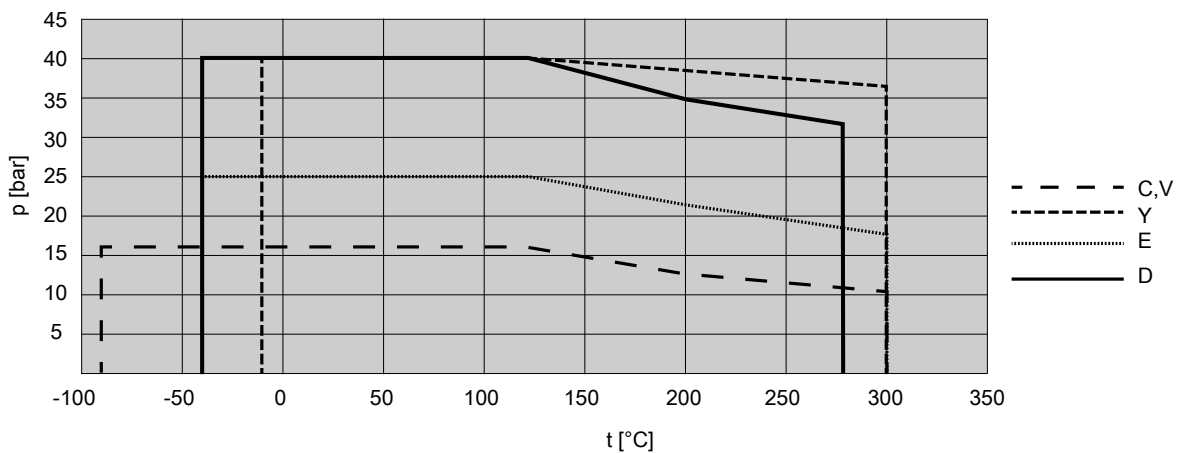
Pressure limits and temperature limits
Pressure limits and temperature limits of the hydraulic system


Fig. 1: Pressure limits and temperature limits of the hydraulic system
The pressure limits and temperature limits depend on the configuration.

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

Pressure limits and temperature limits of ASME flanges

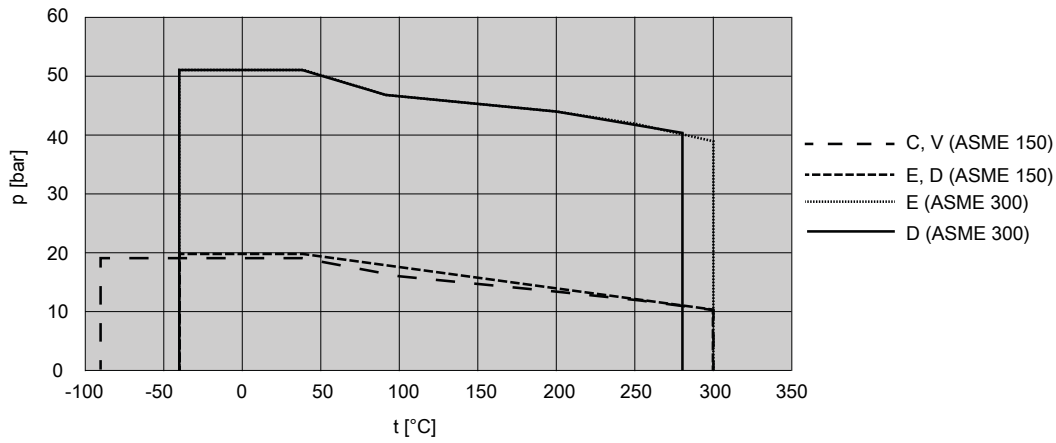


Fig. 2: Pressure limits and temperature limits of ASME flanges¹⁰⁾

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.

Size	Bearing bracket	Impeller					Shaft diameter at the coupling	Volute casing design ¹⁾	Hydraulic system design ²⁾	Heatable casing	Heatable casing cover	Nominal diameter [mm]									
		Impeller outlet width	Free passage	Impeller inlet diameter	Impeller diameter							Magnetic coupling length [mm]									
					Max.	Min.						85		123		172		235		265	
		[mm]	[mm]	[mm]	[mm]	[mm]						[mm]	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
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

Weight

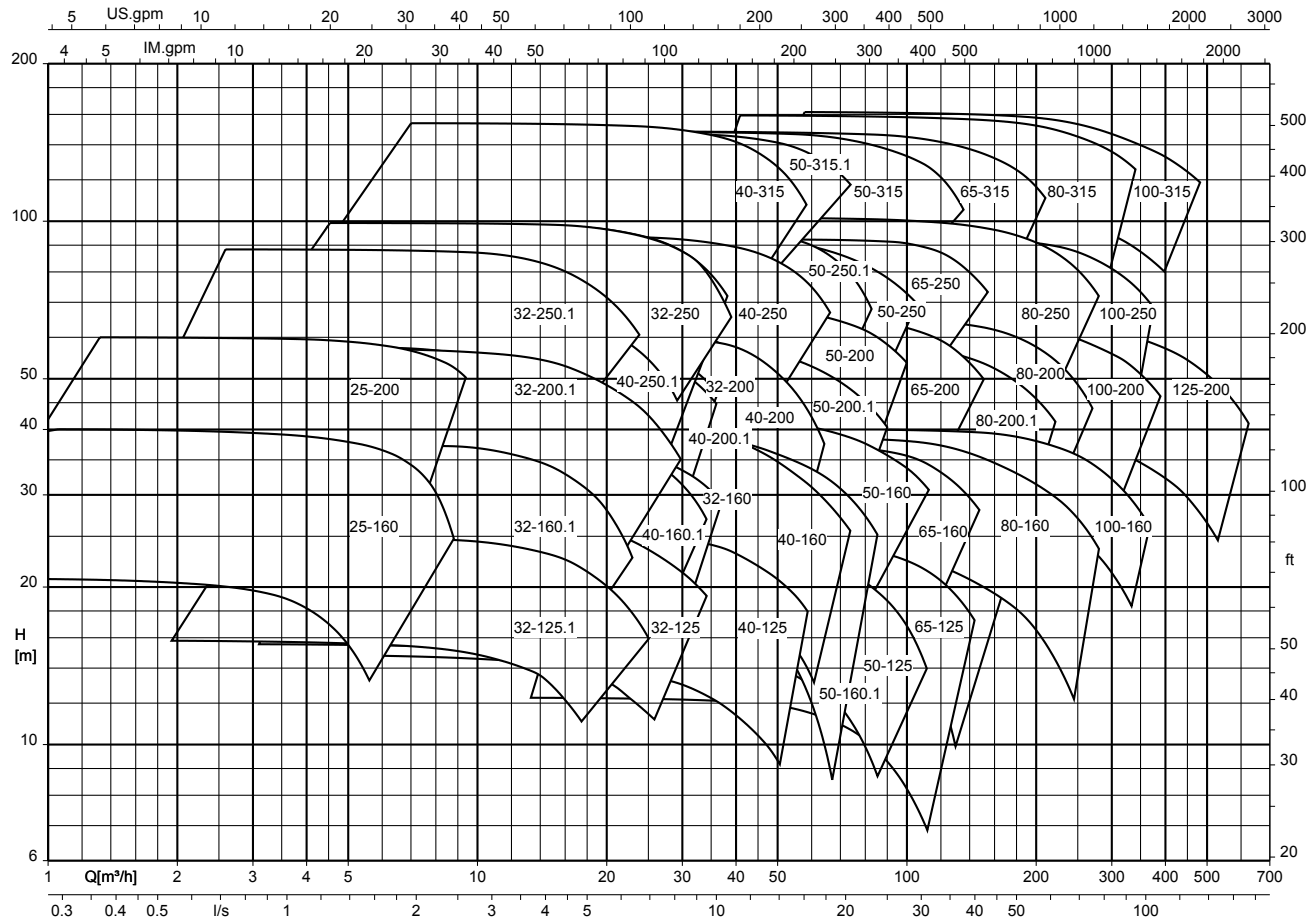
Size	Bearing bracket	Weight ¹³⁾ [kg]
040-025-160	CS40	72
040-025-200	CS40	85
050-032-125	CS40	69
050-032-125.1	CS40	69
050-032-160	CS40	72
050-032-160.1	CS40	72
050-032-200	CS40	85
050-032-200.1	CS40	86
050-032-250	CS50	148
050-032-250.1	CS50	148
065-040-125	CS40	70
065-040-160	CS40	74
065-040-160.1	CS40	76
065-040-200	CS40	87
065-040-200.1	CS40	90
065-040-250	CS50	149
065-040-250.1	CS50	148
065-040-315	CS50	250
080-050-125	CS40	75
080-050-160	CS40	77
080-050-160.1	CS40	81
080-050-200	CS40	90
080-050-200.1	CS40	91
080-050-250	CS50	152
080-050-250.1	CS50	156
080-050-315	CS50	255
080-050-315.1	CS50	249
100-065-125	CS40	80
100-065-160	CS50	140
100-065-200	CS50	141
100-065-250	CS50	163
100-065-315	CS60	266
125-080-160	CS50	143
125-080-200	CS50	155
125-080-200.1	CS50	156
125-080-250	CS50	179
125-080-315	CS60	285
125-080-400	CS60	323

Size	Bearing bracket	Weight ¹³⁾ [kg]
125-100-160	CS50	159
125-100-200	CS50	167
125-100-250	CS60	189
125-100-315	CS60	294
125-100-400	CS60	336
150-125-200	CS60	191
150-125-250	CS60	197
150-125-315	CS60	319
150-125-400	CS60	390
200-150-200	CS60	231
200-150-250	CS60	225
200-150-315	CS80	412
200-150-400	CS80	501
200-150-500	CS80	588
200-200-250	CS80	457
250-200-315	CS80	501
250-200-400	CS80	419
250-200-500	CS80	653
300-250-315	CS80	634

13) The weight data applies to a pump of max. possible length and with the largest magnetic coupling diameter. The weight data only applies to unheated models.

Selection charts

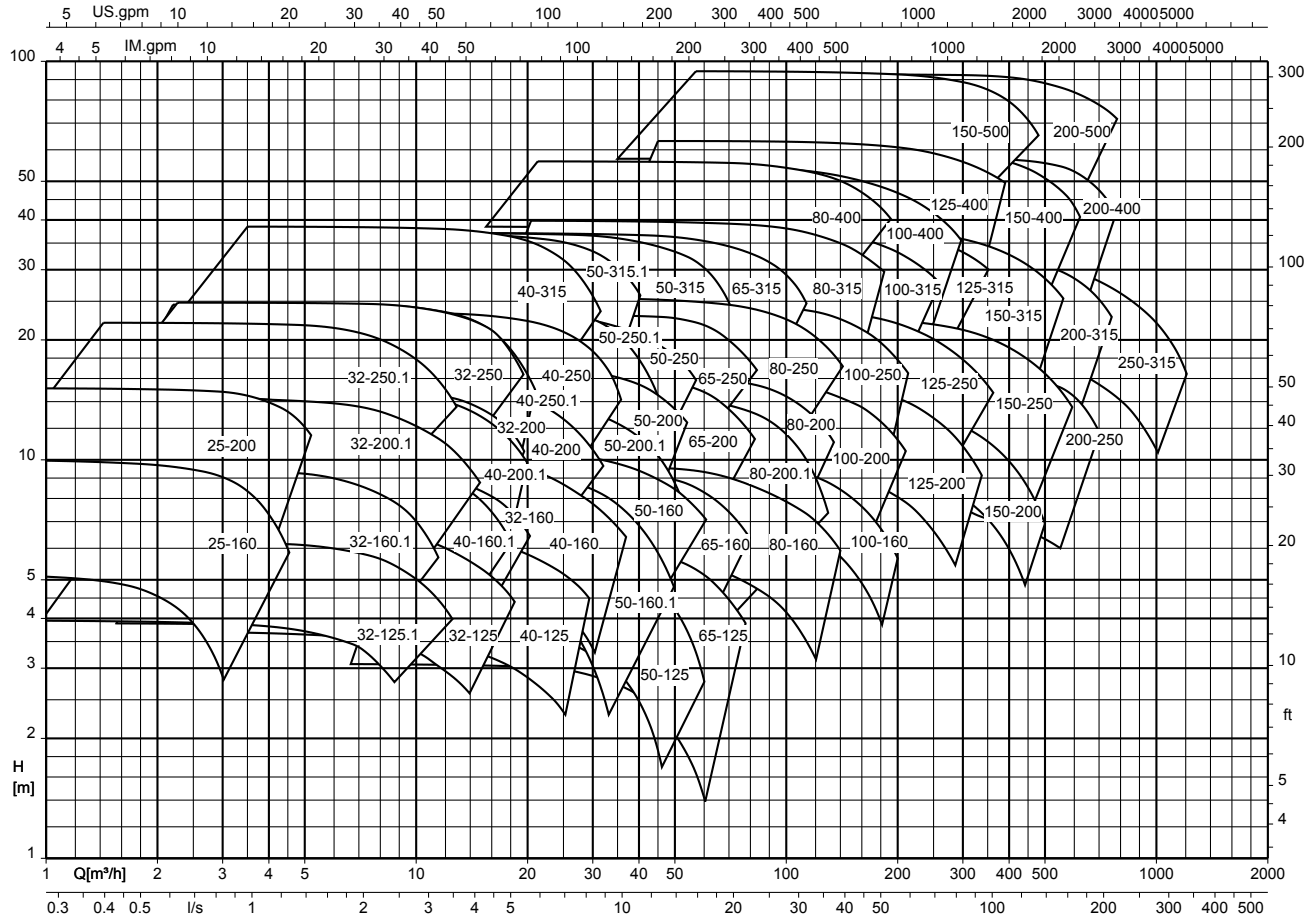
Magnochem, n = 2900 rpm



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

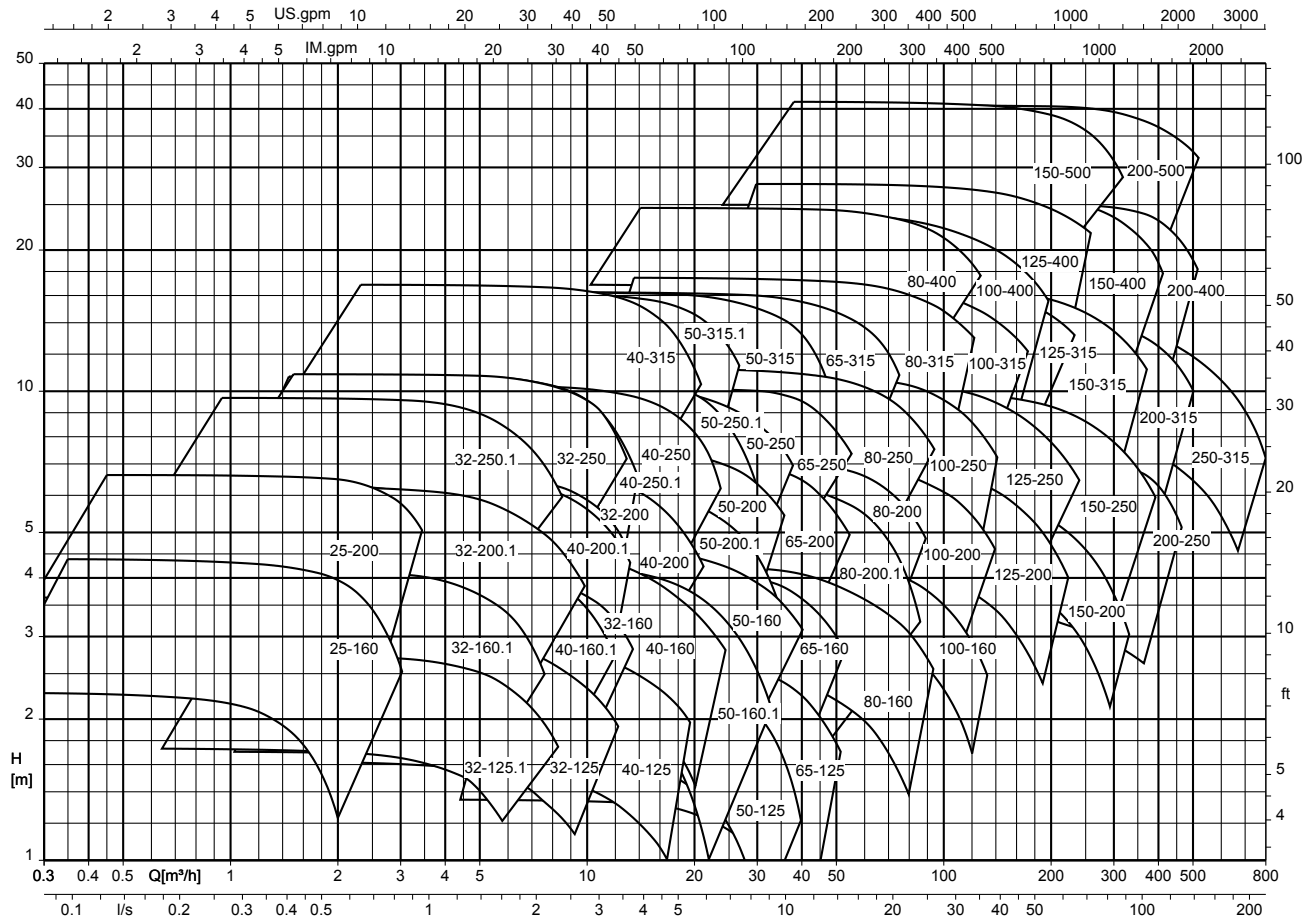
Magnochem, n = 1450 rpm



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

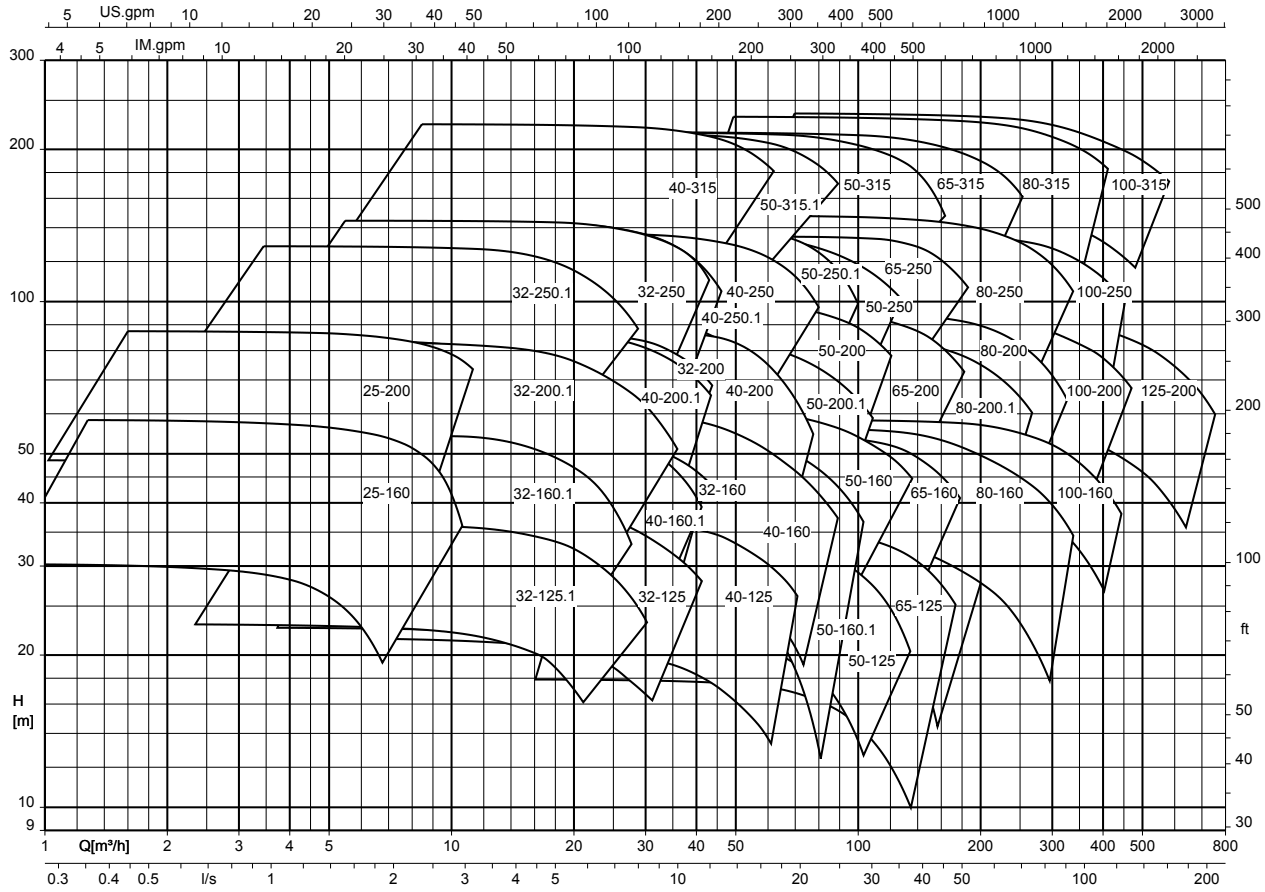
Magnochem, n = 960 rpm



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

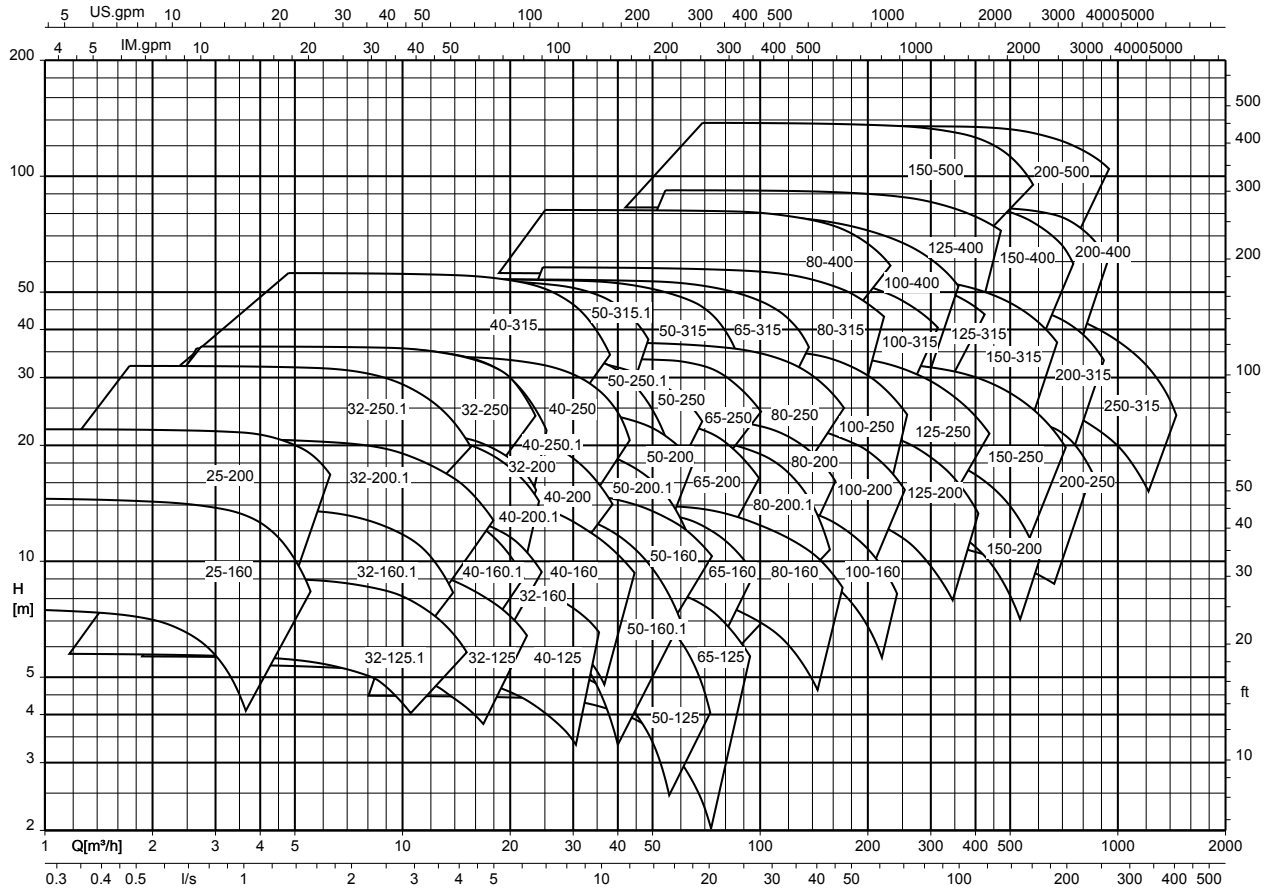
Magnochem, n = 3500 rpm



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

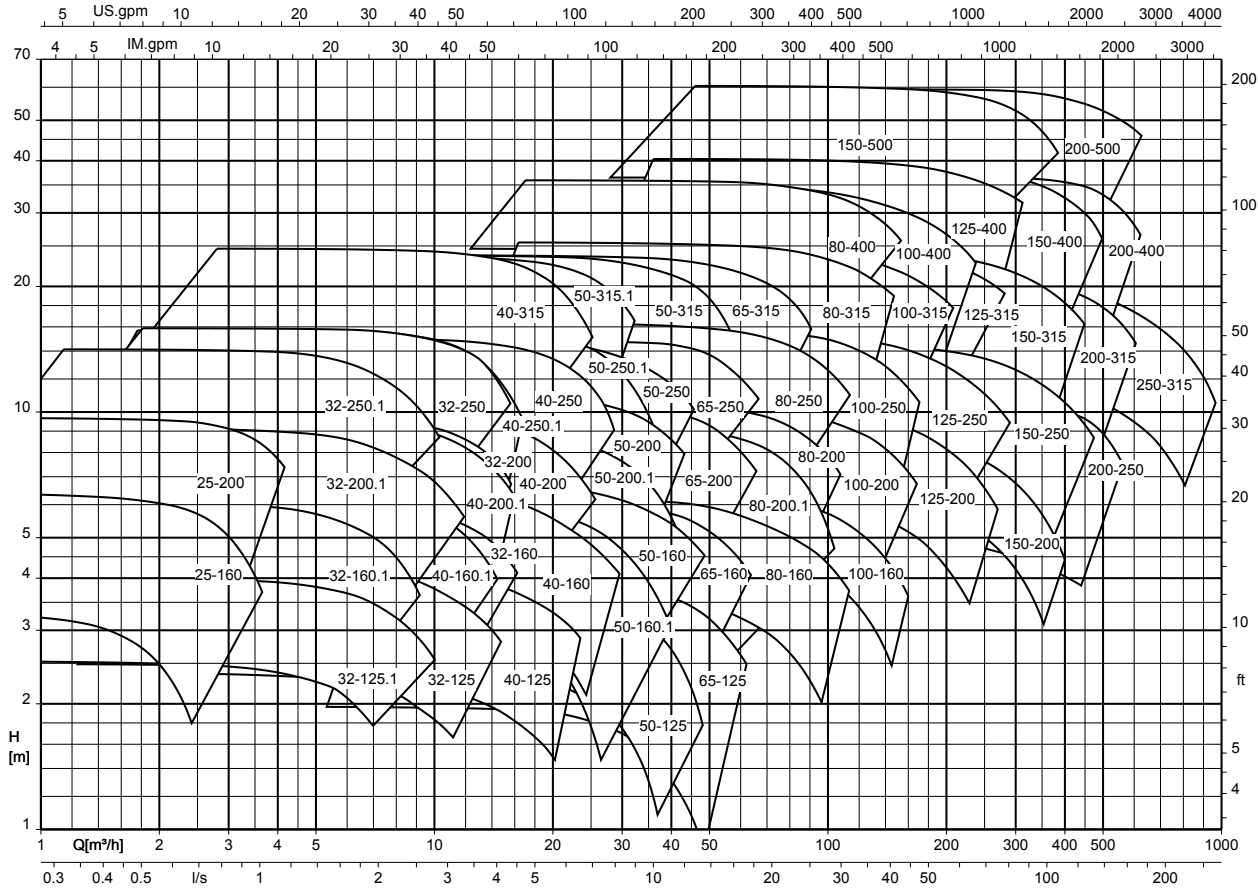
Magnochem, n = 1750 rpm



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

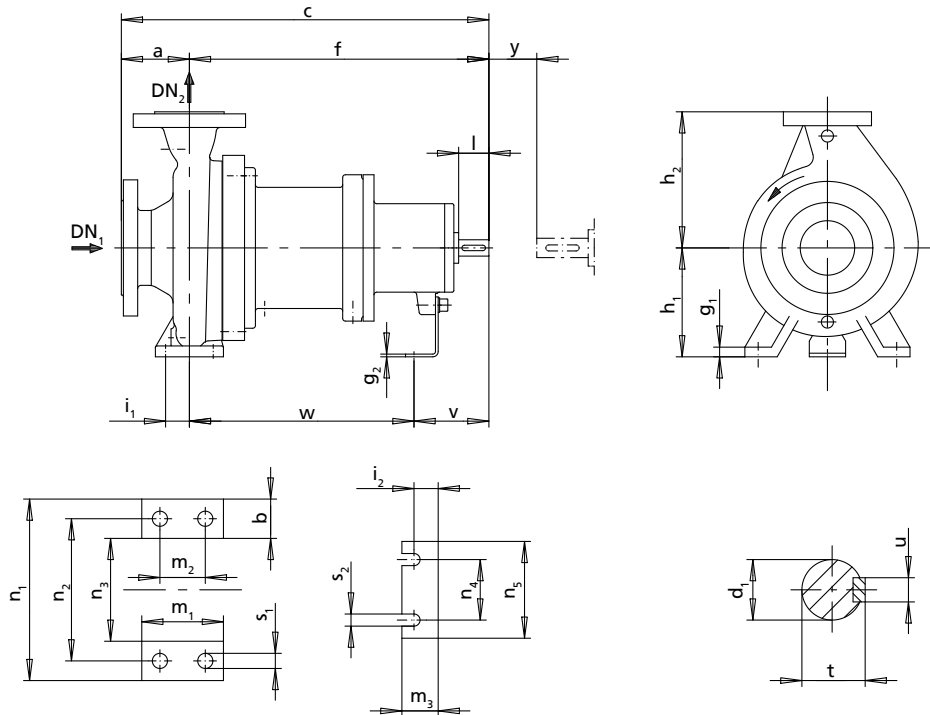
- Europe: 040-200.1, 050-160.1, 050-200.1, 050-250.1, 080-200.1

Magnochem, 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
Pump dimensions

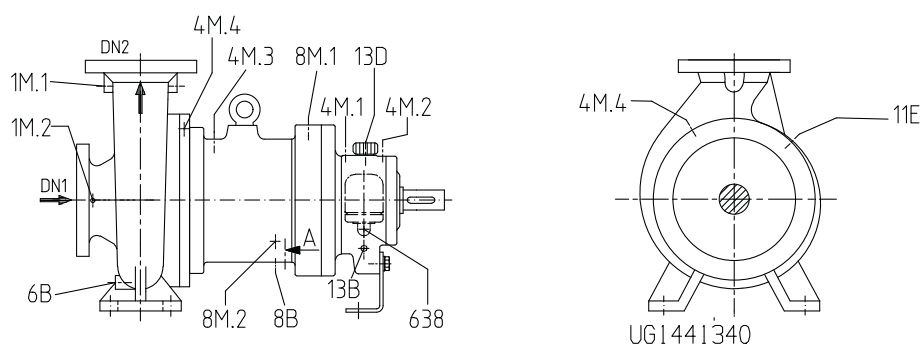
Size	Bearing bracket	Pump dimensions [mm]														
		DN1	DN2	a	b	c	f	g1	g2	h1	h2	m1	m3	n1	n3	n5
040-025-160	CS40	40	25	80	50	465	385	15	4	132	160	100	48	240	140	160
040-025-200	CS40	40	25	80	50	465	385	15	4	160	180	100	48	240	140	160
050-032-125	CS40	50	32	80	50	465	385	15	4	112	140	100	48	190	90	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
050-032-250	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
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

Size	Bearing bracket	Pump dimensions [mm]														
		DN1	DN2	a	b	c	f	g1	g2	h1	h2	m1	m3	n1	n3	n5
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

Dimensions of pump feet and shaft end

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	
050-032-250	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	
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	

Size	Bearing bracket	Shaft end [mm]					Pump feet [mm]									
		d1	l	t	u	y	i1	i2	m2	n2	n4	s1	s2	v	w	
080-050-315	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

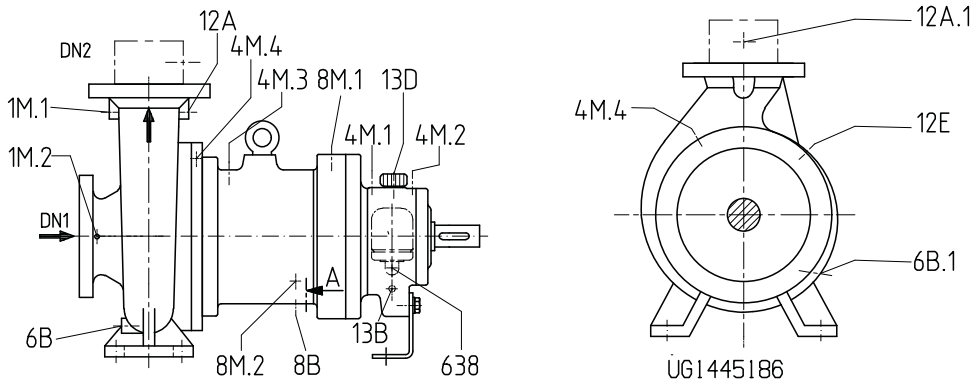


Fig. 5: Connections for operating modes: external circulation and external circulation with main flow filter

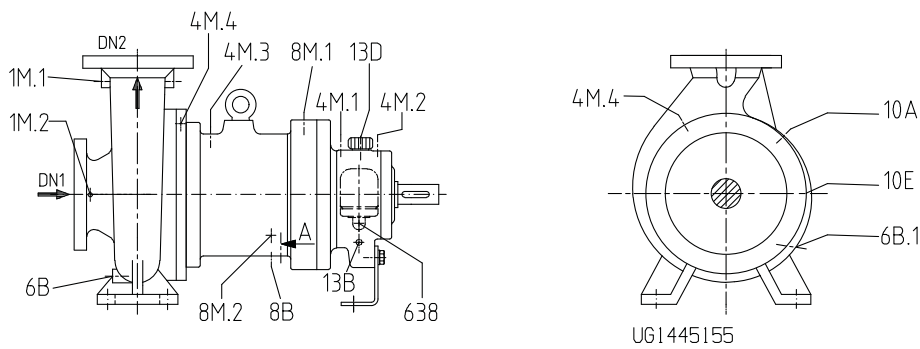


Fig. 6: Connections for dead-end configuration operating mode

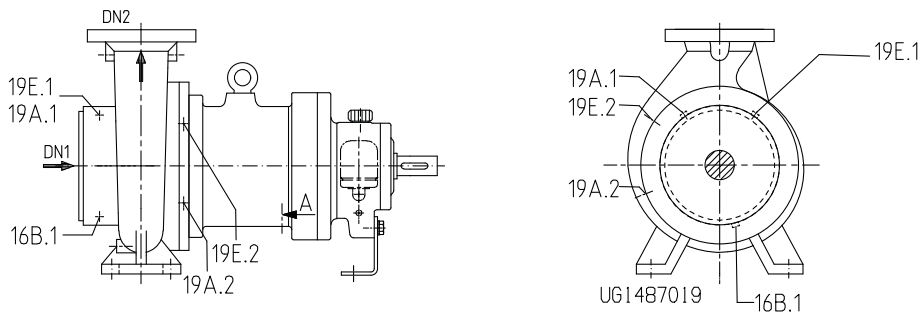


Fig. 7: Connections for heating¹⁴⁾

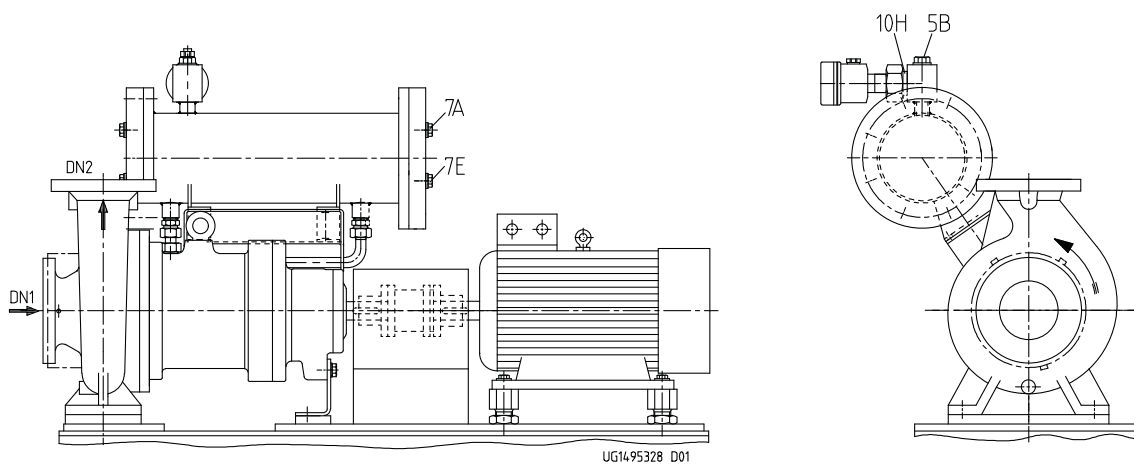


Fig. 8: Connections for heat exchanger

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

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 ¹⁵⁾	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	

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

Connection	Description	Bearing bracket CS40/CS50/CS60 with MD 85/123/172	Bearing bracket 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	
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	

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	

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

Flange design

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
	Drilled to ASME B16.5	Class 150/Class 300
E	EN 1092-1	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
	Drilled to ASME B16.5	Class 150/Class 300
D	EN 1092-1	PN25
	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
 - 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

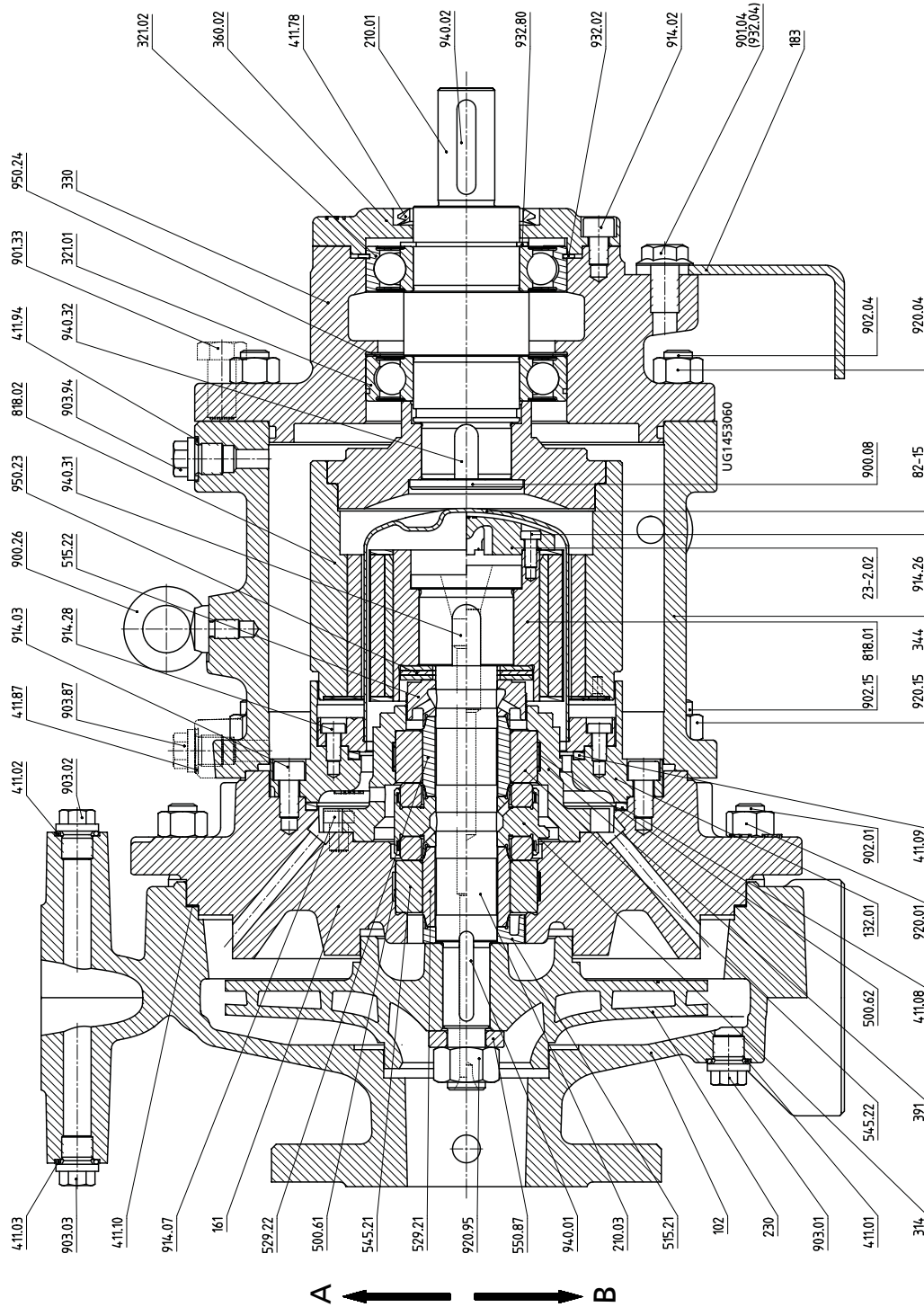


Fig. 9: General assembly drawing of model with bolted cover, with intermediate piece

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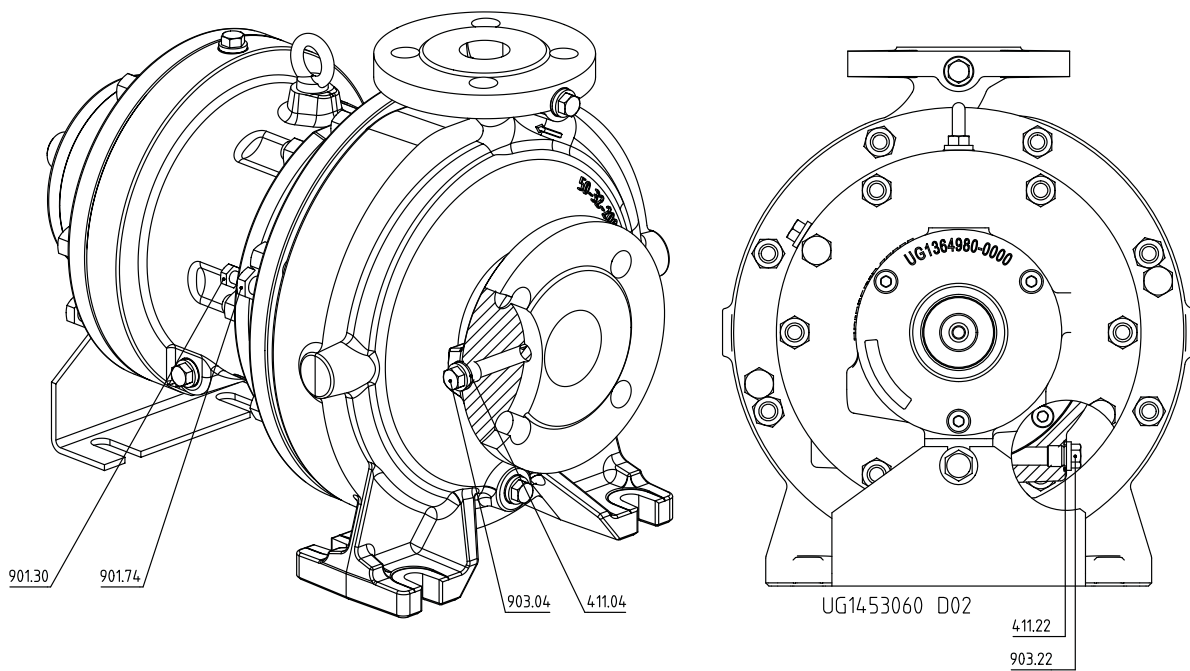


Fig. 10: Fastening of discharge cover on the pump casing on models with bolted cover

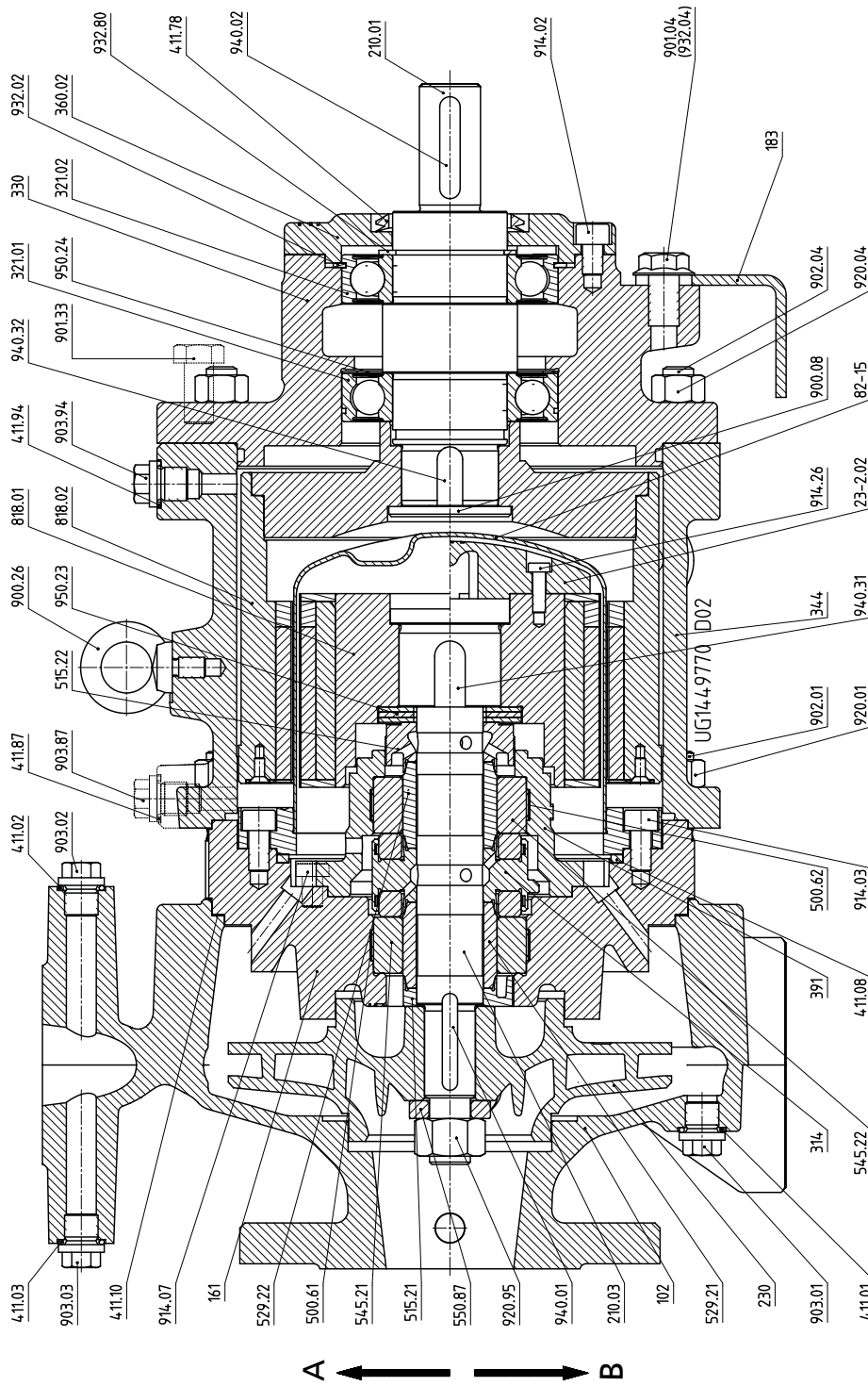


Fig. 11: General assembly drawing of model with clamped cover, without intermediate piece

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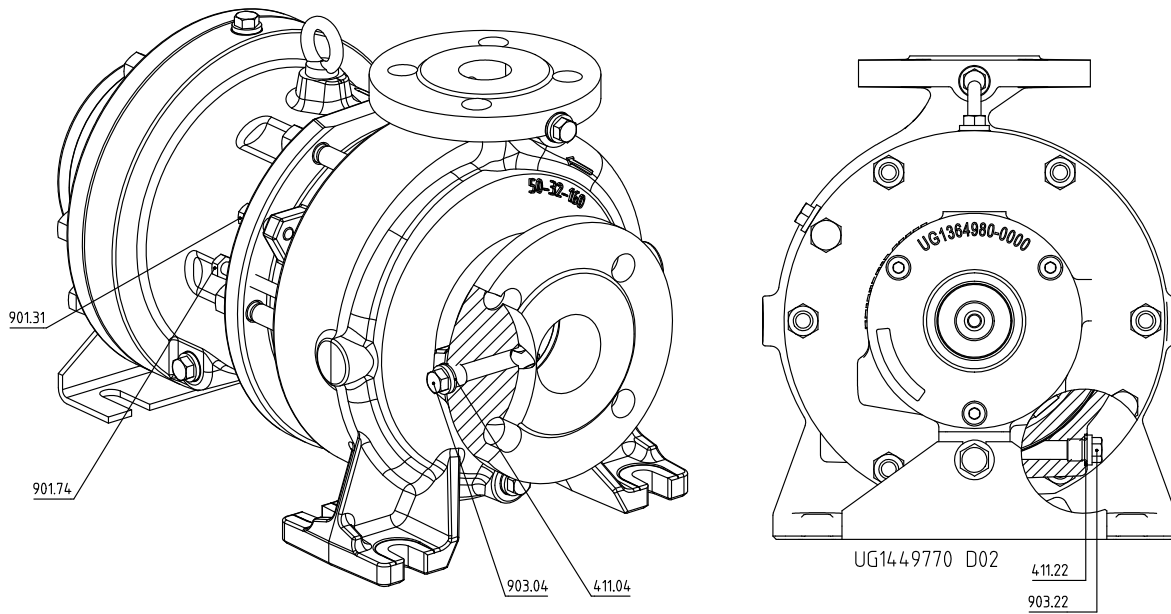


Fig. 12: Fastening of discharge cover on the pump casing on models with clamped cover

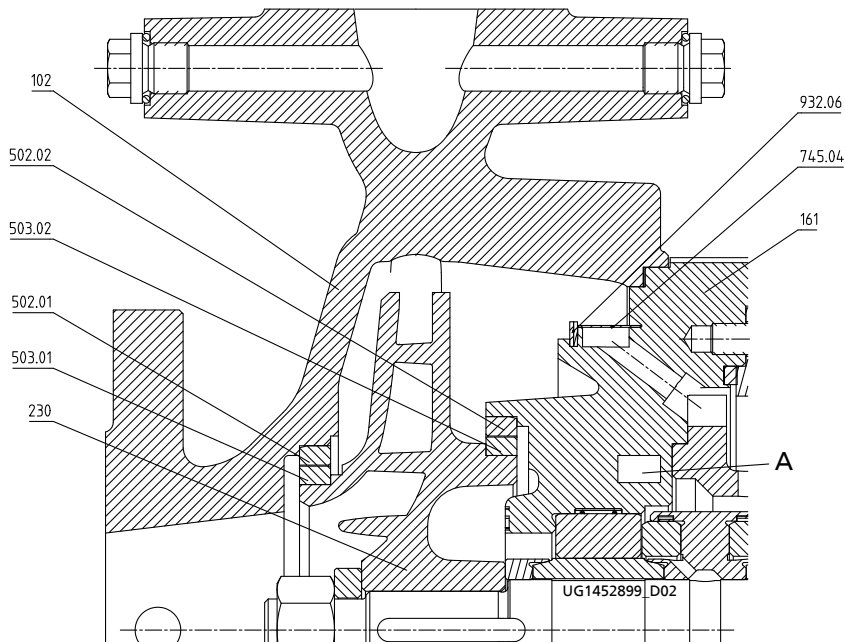


Fig. 13: Model with volute casing and ring filter, heating chamber, casing wear ring and impeller wear ring

A	Heating chamber
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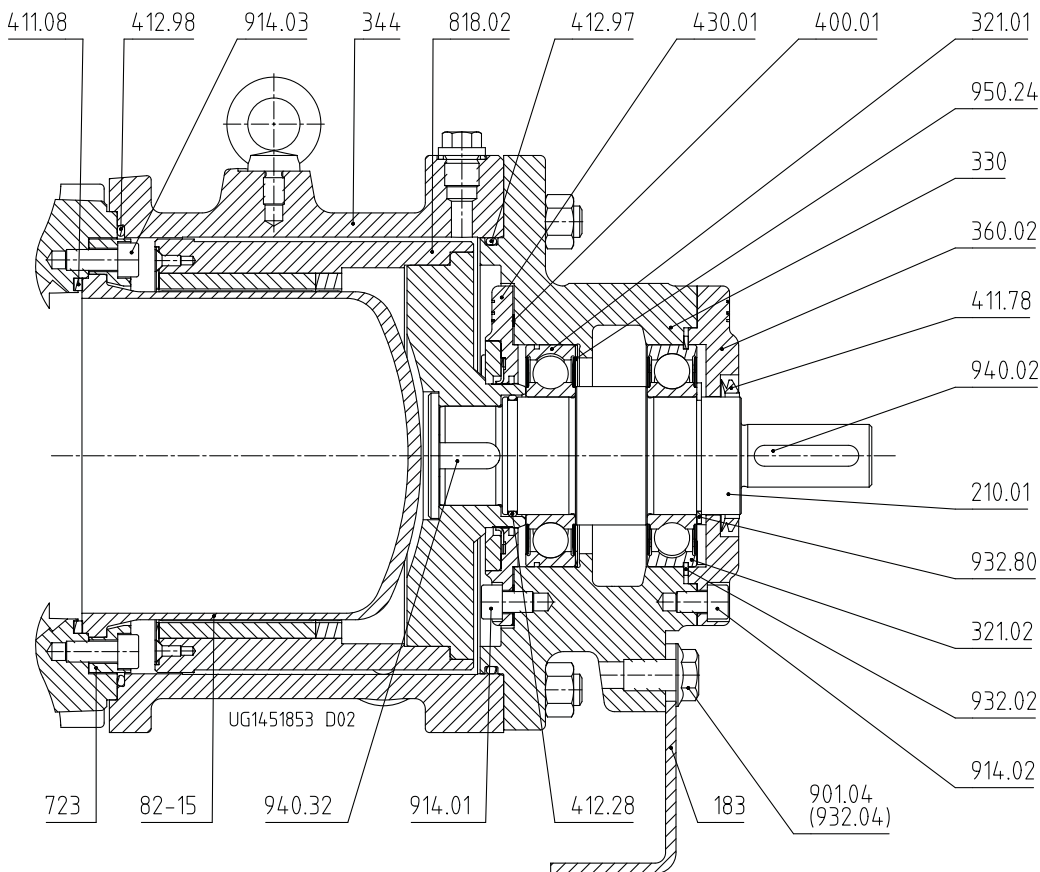


Fig. 14: Model with bearing bracket with grease lubrication and shaft seal ring as leakage barrier

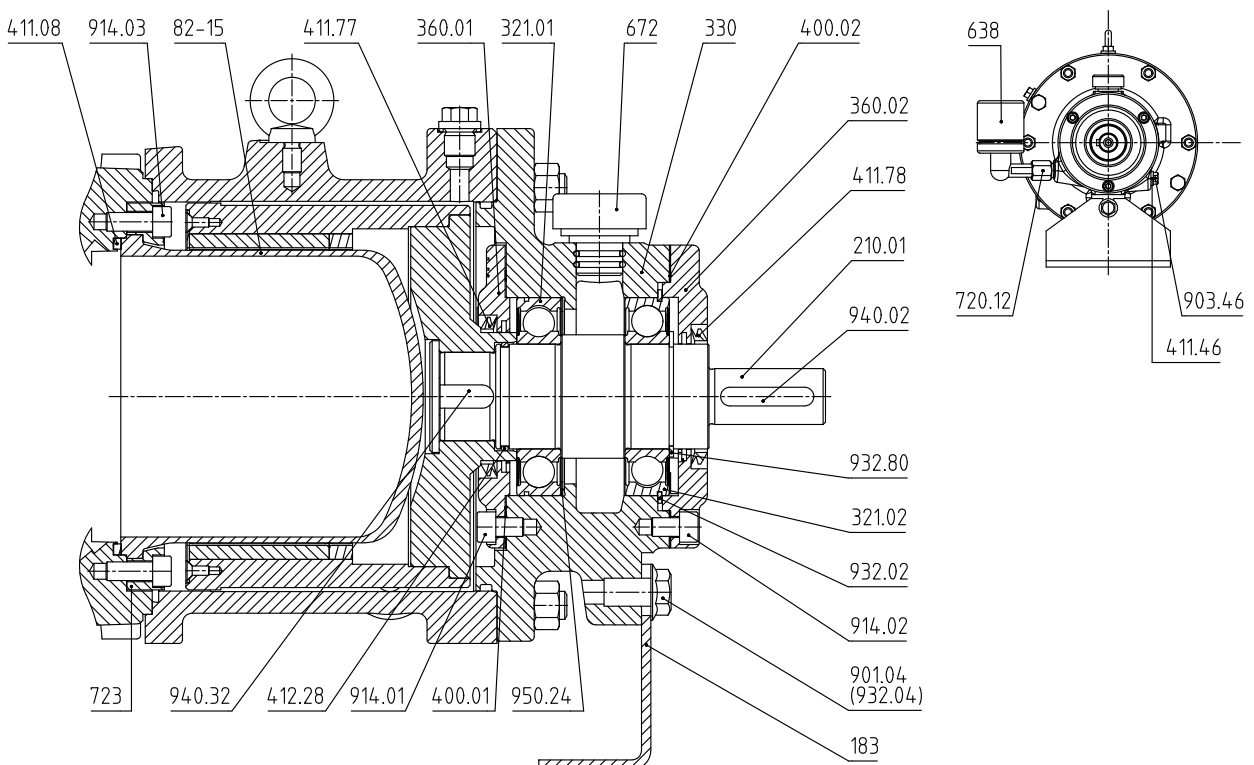


Fig. 15: Model with bearing bracket with oil lubrication without shaft seal ring as leakage barrier

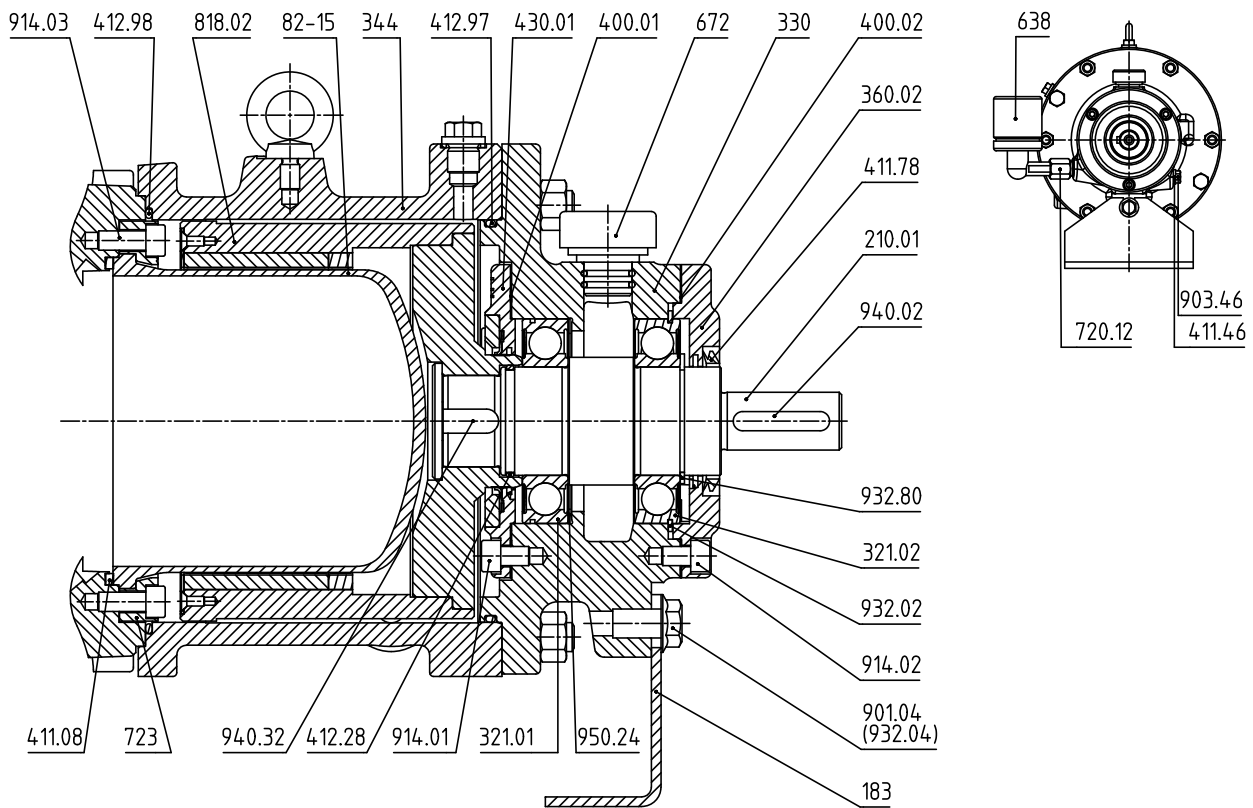


Fig. 16: Model with bearing bracket with oil lubrication and shaft seal ring as leakage barrier

List of components

Part No.	Comprising	Description
102	102	Volute casing
	411.01 ¹⁶⁾ / .02 ¹⁶⁾ / .03 ¹⁶⁾ / .04 ¹⁶⁾	Joint ring
	502.01 ¹⁶⁾	Casing wear ring
	902.01	Stud
	903.01 ¹⁶⁾ / .02 ¹⁶⁾ / .03 ¹⁶⁾ / .04 ¹⁶⁾	Screw plug
	920.01	Hexagon nut
161	161	Casing cover
502.02 ¹⁶⁾	502.02 ¹⁶⁾	Casing wear ring
183	183	Support foot
210.01	210.01	Shaft
	900.08	Screw/bolt
	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 ¹⁶⁾ / .02 ¹⁶⁾	Impeller wear ring
23-2.02	23-2.02 ¹⁶⁾	Auxiliary impeller
	914.26 ¹⁶⁾	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	

16) Not on all versions

Part No.	Comprising	Description
310	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
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 ¹⁷⁾	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
Models 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	Vent
720.12	720.12	Fitting
903.46	903.46	Screw plug
Models 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

17) For ceramic containment shroud only

Part No.	Comprising	Description
Casing cover design with ring filter		
745.04	745.04	Filter
932.06	932.06	Circlip

Plain bearings arrangement

Designation example for a magnetic coupling: A 31

Key to designation of magnetic coupling

Code	Description
A	Components and position
A	Without 509.02
B	With 509.02 / 950.23 left
C	With 509.02 / 950.23 right

Code	Description
3	Number of disc springs
2	2x 950.23
3	3x 950.23
1	Variant with 515.xx on thrust bearing
1	515.11, single-piece
2	515.11 / 515.12, two-piece

Overview of plain bearings arrangement

Size	Bearing bracket	Nominal diameter of magnetic coupling [mm]				
		85	123	172	235	265
		1	2 ¹⁸⁾	3 ¹⁸⁾	4 ¹⁸⁾	5 ¹⁸⁾
040-025-160	CS40	A31	A31	-	-	-
040-025-200	CS40	A31	A31	-	-	-
050-032-125	CS40	A31	A31	-	-	-
050-032-125.1	CS40	A31	A31	-	-	-
050-032-160	CS40	A31	A31	-	-	-
050-032-160.1	CS40	A31	A31	-	-	-
050-032-200	CS40	A31	A31	-	-	-
050-032-200.1	CS40	A31	A31	-	-	-
050-032-250	CS50	B21	B21	A21	-	-
050-032-250.1	CS50	B21	B21	A21	-	-
065-040-125	CS40	A31	A31	-	-	-
065-040-160	CS40	A31	A31	-	-	-
065-040-160.1	CS40	A31	A31	-	-	-
065-040-200	CS40	A31	A31	-	-	-
065-040-200.1	CS40	A31	A31	-	-	-
065-040-250	CS50	B21	B21	A21	-	-
065-040-250.1	CS50	B21	B21	A21	-	-
065-040-315	CS50	B21	B21	A21	A21	-
080-050-125	CS40	A31	A31	-	-	-
080-050-160	CS40	A31	A31	-	-	-
080-050-160.1	CS40	A31	A31	-	-	-
080-050-200	CS40	A31	A31	-	-	-
080-050-200.1	CS40	A31	A31	-	-	-
080-050-250	CS50	B21	B21	A21	-	-
080-050-250.1	CS50	B21	B21	A21	-	-
080-050-315	CS50	B21	B21	A21	A21	-
080-050-315.1	CS50	B21	B21	A21	A21	-
100-065-125	CS40	A31	A31	-	-	-
100-065-160	CS50	B21	B21	A21	-	-
100-065-200	CS50	B21	B21	A21	-	-
100-065-250	CS50	B21	B21	A21	-	-
100-065-315	CS60	B21	B21	A21	A21	-
125-080-160	CS50	B21	B21	A21	-	-
125-080-200	CS50	B21	B21	A21	-	-
125-080-200.1	CS50	B21	B21	A21	-	-
125-080-250	CS50	B21	B21	A21	-	-
125-080-315	CS60	B21	B21	A21	A21	-
125-080-400	CS60	B21	B21	A21	A21	-

18) Nominal diameter of magnetic coupling as per name plate

Size	Bearing bracket	Nominal diameter of magnetic coupling [mm]				
		85	123	172	235	265
		1	2 ¹⁸⁾	3 ¹⁸⁾	4 ¹⁸⁾	5 ¹⁸⁾
125-100-160	CS50	B21	B21	A21	-	-
125-100-200	CS50	B21	B21	A21	-	-
125-100-250	CS60	B21	B21	A21	-	-
125-100-315	CS60	B21	B21	A21	A21	-
125-100-400	CS60	B21	B21	A21	A21	-
150-125-200	CS60	B21	B21	A21	-	-
150-125-250	CS60	B21	B21	A21	-	-
150-125-315	CS60	B21	B21	A21	A21	-
150-125-400	CS60	B21	B21	A21	A21	-
200-150-200	CS60	B21	B21	A21	-	-
200-150-250	CS60	B21	B21	A21	-	-
200-150-315	CS80	-	-	B22	C22	A22
200-150-400	CS80	-	-	B22	C22	A22
200-150-500	CS80	-	-	B22	C22	A22
200-200-250	CS80	-	-	B22	C22	-
250-200-315	CS80	-	-	B22	C22	A22
250-200-400	CS80	-	-	B22	C22	A22
250-200-500	CS80	-	-	B22	C22	A22
300-250-315	CS80	-	-	B22	C22	A22

Plain bearings arrangement

Description	Illustration
Case A21 <ul style="list-style-type: none"> Bearing brackets CS50 and CS60 Magnetic coupling 172 Bearing brackets CS50 and CS60 Magnetic coupling 235 	
Case A22 <ul style="list-style-type: none"> Bearing bracket CS80 Magnetic coupling 265 	
Case A31 <ul style="list-style-type: none"> Bearing bracket CS40 Magnetic coupling 85/123 	

Description	Illustration
<p>Case B22</p> <ul style="list-style-type: none"> Bearing bracket CS80 Magnetic coupling 172 	
<p>Case C22</p> <ul style="list-style-type: none"> Bearing bracket CS80 Magnetic coupling 235 	
<p>Case B21</p> <ul style="list-style-type: none"> Bearing brackets CS50 and CS60 Magnetic couplings 85 and 123 	



KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com