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## Циркуляционные насосы с уплотнением вала KSB. Техническое описание

Process Pump

**RPH**

**Type Series Booklet**



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## Centrifugal Pumps with Shaft Seal

### Process Pumps

### RPH



#### Main applications

Pump for handling the large variety of crude oil products in refineries as well as in the chemical and petrochemical industry.

- Refineries
- Chemical industry
- Petrochemical industry

#### Operating data

Operating properties

Characteristic		Value
Flow rate	Q	Up to 4150 m <sup>3</sup> /h
Head	H	Up to 270 m
Operating temperature	T	-70 °C to +450 °C
Operating pressure <sup>1)</sup>	p	Up to 51 bar (at 20 °C) (ASME B 16.5 class 300) for A 216 Grade WBC

#### Designation

Example: RPH-H-I S1 80-280B

Key to the designation

Code	Description
RPH	Type series
H	Heatable model
I	Version with auxiliary impeller (inducer)
S1	Material variant to API 610
80	Nominal discharge nozzle diameter [mm]

<sup>1)</sup> Higher pressures and flange pressure ratings on request

Code	Description
280	Nominal impeller diameter [mm]
B	Special hydraulic system (type B)

#### Design details

##### Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Meets technical requirements to API 610, 11th edition / ISO 13709

##### Pump casing

- Volute casing with integrally cast pump feet
- Centreline pump feet
- Single or double volute, depending on the pump size
- Radially split volute casing
- Axial inlet nozzle, tangential discharge nozzle pointing vertically upwards.  
(From DN 250 / from impeller diameter 500 / pump size 200-401: radial discharge nozzle pointing vertically upwards)
- Volute casing with casing wear ring
- Casing cover (with casing wear ring, as required)

##### Optional:

- Casing and casing cover heatable/coolable, depending on size

##### Impeller type

- Closed radial impeller
- Impeller with impeller wear ring on the suction side (if required also on the discharge side)
- Sealing gap and balancing holes balance axial forces.

##### Optional:

- Inducer to improve the NPSH value

##### Shaft seal

- Cartridge seal to API 682

##### Bearings

- Uncooled

##### Optional:

- Cooled bearing bracket

##### Drive-end bearing:

- Fixed bearing
- Paired angular contact ball bearings
- Oil bath lubrication
- **Optional:** oil mist lubrication

##### Pump-end bearing:

- Radial bearing

- Cylindrical roller bearing
- Absorbs radial loads only
- Oil bath lubrication
- **Optional:** oil mist lubrication

### Bearing bracket designation

Example: B03

Bearing bracket designation

Designation	Description
B	Back pull-out bearing bracket
03	Size code (based on dimensions of seal chamber, shaft end and bearings)

### Bearings used

Bearing design

KSB designation	FAG designation	SKF designation
B.MUA	B-MP-UA	BECBM

Standard bearing assembly

Bearing bracket	Rolling element bearings	
	Pump end	Motor end
B02	NU211C3	2 x 7309B-MUA
B03	NU213C3	2 x 7311B-MUA
B05	NU316C3	2 x 7315B-MUA
B06	NU324C3	2 x 7224B-MUA
B07	NU324C3	2 x 7324B-MUA

Reinforced bearing assembly (triple bearing assembly)

Bearing bracket	Rolling element bearings	
	Pump end	Motor end
B02	NU211C3	3 x 7309B-MUA
B03	NU213C3	3 x 7311B-MUA
B05	NU316C3	3 x 7315B-MUA
B06	NU324C3	3 x 7224B-MUA
B07	NU324C3	3 x 7324B-MUA

### Bearing life

The calculated minimum bearing life is:

- 25,000 h to API 610

### Materials

Materials

Part No.	Description	Design						
		S1 <sup>2)</sup>	S5 <sup>3)4)</sup>	S6	S8	A8	C6	D1
102	Volute casing	CS				316AUS	12Cr	DSS
161	Casing cover (uncooled)	CS				316AUS	12Cr	DSS
	Casing cover (cooled)	CS				316AUS	12Cr	DSS
210	Shaft <sup>5)</sup>	CS	12Cr+H <sup>3)</sup> 4140AS <sup>4)</sup>	12Cr+H <sup>2)3)</sup> 4140AS <sup>4)</sup>	DSS	DSS 316AUS <sup>4)</sup>	12Cr+H <sup>2)3)</sup> 12Cr <sup>4)</sup>	DSS
230	Impeller	CI	CS	12Cr	316AUS	316AUS	12Cr	DSS

<sup>2)</sup> Europe

<sup>3)</sup> Asia

<sup>4)</sup> Americas

<sup>5)</sup> Above 250 °C: CrMo; -10 °C to 250 °C: CS; -40 °C to +300 °C: DSS

Part No.	Description	Design					
		S1 <sup>2)</sup>	S5 <sup>3)4)</sup>	S6	S8	A8	C6
330	Bearing bracket	CS					
411.10	Joint ring	AUS/ graphite					DSS/ graphite
502.01/02	Casing wear ring	27Cr	27Cr 12Cr+H <sup>3)4)</sup>	316AUS	316AUS 316AUS+HF <sup>3)</sup> 12Cr <sup>4)</sup>	27Cr 12Cr+H <sup>3)4)</sup>	AUS DSS <sup>3)4)</sup>
503.01/02	Impeller wear ring	12Cr+H	12Cr+H	316AUS	316AUS 12Cr <sup>4)</sup>	12Cr+H	AUS DSS <sup>3)4)</sup>
542.02	Throttling bush	12Cr+H	12Cr+H 12Cr <sup>4)</sup>	316AUS		12Cr+H 12Cr <sup>4)</sup>	AUS DSS <sup>3)4)</sup>
902.01/920.01	Casing screws/ hexagon nut	CrMoV / CrMo 4140AS <sup>3)4)</sup>					

Material variant for pump components

Description	Material class	Material		
		Europe	Asia	Americas
Cast components, general	CI	JS1025	-	-
	CS	A216 Gr WCB	A216 Gr WCB	A216 Gr WCB
	316AUS	1.4408 1.4409	A743 Gr CF3M A743 Gr CF8M	A743 Gr CF8M
	12Cr	1.4008	A743 Gr CA6NM	A743 Gr CA6NM
	27Cr	VG434	-	-
	DSS	1.4593 A890 Gr 1B	A890 Gr 1B	A890 Gr 1B
Pressure-retaining cast components	CS	A216 Gr WCB	A216 Gr WCB	A216 Gr WCB
	316AUS	A351 Gr CF3M A351 Gr CF8M	A351 Gr CF3M A351 Gr CF8M	A351 Gr CF8M
	12Cr	A217 Gr CA15	A487 Gr CA6NM	A487 Gr CA6NM
	DSS	1.4593 A995 Gr 1B	A995 Gr 1B	A995 Gr 1B
Bar stock (shaft)	CS	C45+N	-	-
	CrMo	1.7709	-	-
	316AUS	-	-	A276 Type 316
	4140AS	-	-	A434 Cl. BB
	12Cr	-	-	A276 Type 420
	12Cr+H	1.4021+QT700	A276 Type 410 H&T	-
Bar stock	DSS	1.4462	AISI 329 1.4462	1.4462
	AUS	1.4539	-	-
	316AUS	1.4571	A 276 Type 316	AISI 316 A276 Type 316
	12Cr	-	-	AISI 420 A276 Type 420
	12Cr+H	1.4027+QT	1.4024.19 A276 Type 410 H&T	AISI 420 Hard
	DSS	1.4462	AISI 329 1.4462	1.4462
Screw/bolt/stud	4140AS	-	A193 Gr B7	A193 Gr B7
	CrMo	1.7709	-	-
Nut	4140AS	-	A194 Gr 2H	A194 Gr 2H
	CrMo	1.7258	-	-

2) Europe  
3) Asia  
4) Americas

Abbreviations used

Abbreviation	Material
CI	Cast iron
CS	Unalloyed steel
316AUS	Austenitic stainless steel >2 % molybdenum
12Cr	12 % chrome steel
27Cr	27 % chrome steel
DSS	Duplex stainless steel
4140AS	4140 alloyed steel
+H	Hardened
+HF	Hard-faced

Table of comparison of materials

Material type	Code	Material No.	Standard	Closest ASTM equivalent
Cast iron	GJS-400-15	JS1030	EN 1563	A 536 Grade 60-40-18
	GJS-400-18-LT	JS1025	EN 1563	A 536
	GJL-250	JL1040	EN 1561	A 48 Class 30
Cast steel	GP240GH+N	1.0619+N	EN 10213-2	A 216 Grade WCB
Cast stainless steel	GX5CrNiMo19-11-2	1.4408	EN 10213-4	A 351 Grade CF8M
	GX5CrNiMo19-11-2	1.4408	EN 10213	A 743 Grade CF8M
	GX2CrNiMo19-11-2	1.4409	EN 10213-4	A 351 Grade CF3M
	GX2CrNiMo19-11-2	1.4409	EN 10213	A 743 Grade CF3M
	GX3CrNiMoCuN24-6-2-3	1.4593	-	-
	GX2CrNiMoCuN25-6-3-3	1.4517	EN 10213	-
Cast chrome steel	GX20Cr 14+QT	1.4027+QT	SEW 410	A 743 Grade CA15
	GX35CrNiMo25-4	VG 434	KSB materials data sheet Material identification code 2800	-
	GX7CrNiMo12-1	1.4008	EN 10283	A 743 Grade CA15
	GX8CrNi12	1.4107	EN 10213-2	A 217 Grade CA15
	GX25CrNi13-4	1.4317	EN 10213-2	A 487 CA6NM
	GXZ5CrNi13-4	1.4317	EN 10283	A 743 CA6NM
Stainless steel	X6CrNiMoTi17-12-2	1.4571	EN 10088	A 276 Type 316Ti
	X2CrNiMoN22-5-3	1.4462	EN 10088	A 182 Grade F51
Chrome steel	X20Cr13+QT700	1.4021+QT700	EN 10088	A 276 Type 420
	X20Cr13	1.4021	EN 10088	AISI 420 Hard
	X15Cr13	1.4024.19	KSB materials data sheet Material identification code 1219	A 276 Type 410
	X29CrS13	1.4029	EN 10088	-
	X12Cr13	1.4006	EN 10088	A 276 Type 410 H&T
	X5CrNiMo17-12-2	1.4401	EN 10088	A 276 Type 316
	X4CrNiMoN27-5-2	1.4460	EN 10088	AISI 329
	X2CrNiMoN17-13-3	1.4429	EN 10088	A 276 Type 316L
	Steel which is creep-resistant at elevated temperatures	21CrMoV5-7+QT	1.7709+QT	EN 10269
P355GH		1.0566	EN 10028-3	
Carbon steel	C45+N	1.0503+N	EN 10083	A 576 Grade 1045
	C22+N	1.0402+N	EN 10083	A 576 Grade 1020
Cast stainless steel, hard-faced	GX5CrNiMo19-11-Colm.6	1.4408-Colm.6	-	A 743 Grade CF8M-Colm.6

Coating and preservation

- Coating and preservation to KSB standard

Product benefits

- Double volute from DN 80 (3 in.): low radial load and less shaft deflection for longer service life of bearings and mechanical seal
- Easy to service thanks to back pull-out design

- Heatable casing covers optionally available for high-temperature applications
- Wide variety of flanges to all standards up to PN 100 equivalent (ASME Class 600)
- Max. shaft diameter in acc. with API 610 makes for very long service life of mechanical seal
- Dimensioned for longer service life than specified by API 610, reducing maintenance expenditure and work
- Tandem bearing arrangement optionally available to absorb high axial forces

- Cast steel bearing brackets with integrated cooling fins enable higher fluid temperatures and reduce bearing temperatures.
- Optional fan impeller: no cooling water supply required for high temperatures
- Seal chamber to API 610 accommodates all mechanical seals to API 682.
- Individual adjustment of axial thrust balancing for maximum bearing life
- "Low Nss hydraulic systems" (inducer on option) for optimum selection to API

#### Acceptance tests / Warranties

- Materials testing
  - Test report 2.2 on request
  - Test report 3.1 on request
- Final inspection
  - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test

The operating point of each pump is warranted according to ISO 9906/2B.

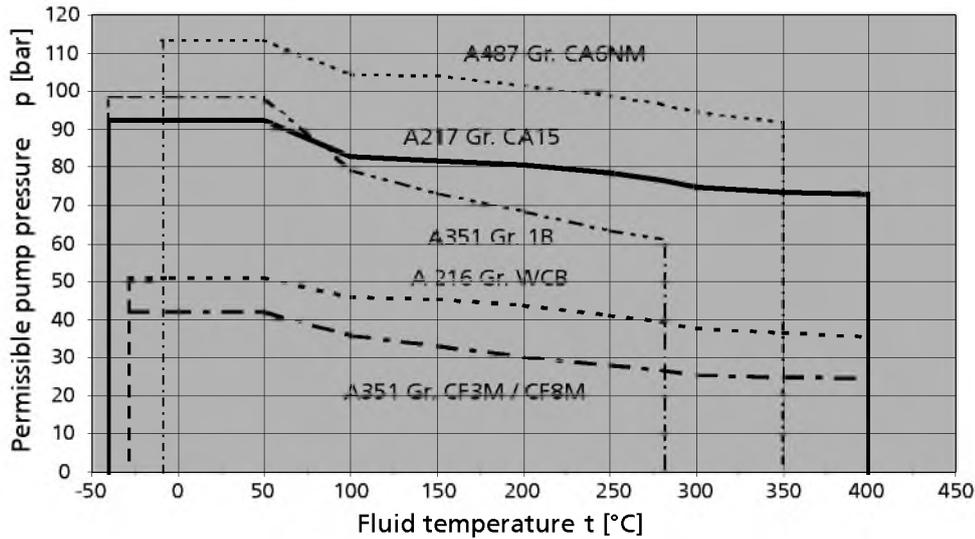
The following acceptance tests may be performed and certified at extra charge:

  - Performance test to ISO 9906
  - Performance test to API (API 610)
  - NPSH test
- Other tests (e.g. vibrations, strength) on request.
- Warranty

Warranties are given within the scope of the valid delivery conditions.

**Pressure and temperature limits**

Average values – the values of individual pump sizes may be higher or lower than the values indicated. (Contact KSB!)



Pressure and temperature limits of pump

**Sizes**

Nominal impeller diameters available

Nominal diameter of the discharge nozzle	Nominal impeller diameter																	
	180	181	230	231	280	281	360	361	400	401	450	500	501	504	506	630	670	710
25	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	X	X	X	X	X	X	-	X	-	-	-	-	-	-	-	-	-	-
50	X	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	-	-	X <sup>6)</sup>	-	-	-	-	-	-	-
80	X	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	-	-	X <sup>6)</sup>	-	-	-	-	-	-	-
100	X	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	-	-	X <sup>6)</sup>	-	-	-	-	-	-	-
150	-	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	-	X <sup>6)7)</sup>	X <sup>6)</sup>	-	X <sup>6)7)</sup>	-	-	X <sup>6)7)</sup>	-	X <sup>6)7)</sup>
200	-	-	-	-	X <sup>6)</sup>	-	X <sup>6)</sup>	-	-	X <sup>6)7)</sup>	X <sup>6)</sup>	-	X <sup>6)7)</sup>	-	-	-	X <sup>6)7)</sup>	-
250	-	-	-	-	-	-	-	-	-	X <sup>6)7)</sup>	-	-	X <sup>6)7)</sup>	-	-	X <sup>6)7)</sup>	-	X <sup>6)7)</sup>
300	-	-	-	-	-	-	-	-	X <sup>6)7)</sup>	-	-	X <sup>6)7)</sup>	-	-	-	X <sup>6)7)</sup>	-	X <sup>6)7)8)</sup>
350	-	-	-	-	-	-	-	-	X <sup>6)7)</sup>	-	-	X <sup>6)7)8)</sup>	-	-	-	X <sup>6)7)8)</sup>	-	X <sup>6)7)8)</sup>
400	-	-	-	-	-	-	-	-	-	-	-	-	-	X <sup>6)7)8)</sup>	X <sup>6)8)9)</sup>	X <sup>6)7)8)</sup>	-	X <sup>6)7)8)</sup>

6) Casing with double volute  
 7) Complementary sizes: only in combination with 4-pole drive  
 8) Size on request  
 9) Complementary sizes: only in combination with 6-pole drive

Technical data

Bearing brackets B02S - B06

Size	Bearing bracket <sup>10)</sup>	Impeller				Shaft diameter				Drive				
		Impeller outlet width	Impeller inlet diameter	Impeller diameter		In seal chamber	At bearings		At coupling	P/n value <sup>11)</sup>	Max. drive power at			
				Max.	Min.		Pump end	Drive end <sup>12)</sup>			n = 1450 rpm	n = 1750 rpm	n = 2900 rpm	n = 3500 rpm
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kW]	[kW]	[kW]	[kW]
25-180	BS02S	6	48	179	120	50	55	45	32	0,0226	32,77	39,55	65,54	79,10
25-230	BS02S	6	48	224	180	50	55	45	32	0,0226	32,77	39,55	65,54	79,10
40-180	BS02S	6	58	180	130	50	55	45	32	0,0226	32,77	39,55	65,54	79,10
40-230	BS02S	6,2	57	224	1	50	55	45	32	0,0226	32,77	39,55	65,54	79,10
40-181	BS02L	7,8	75	180	130	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
40-231	BS02L	7,7	75	230	180	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
40-280	BS02L	7,5	61	278	220	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
40-281	BS02L	7,7	71	278	230	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
40-361	BS02L	7,9	69	343	280	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
50-180	BS02L	10,9	88	180	140	50	55	45	32	0,0334	48,43	58,45	96,86	116,90
50-230	B03	10	95	230	180	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
50-280	B03	9,6	93	286	230	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
50-360	B03	9,6	88	343	280	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
50-450	B03	10	87	430	340	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
80-180	B03	17	110	190	140	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
80-230	B03	14	113	235	190	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
80-280	B03	12,5	110	286	230	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
80-360	B03	11,5	111	350	280	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
80-450	B05S	12	110	430	350	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
100-180	B03	28	133	190	150	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
100-230	B03	22,3	128	235	190	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
100-280	B03	17,8	130	295	230	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
100-360	B05S	15,5	136	355	295	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
100-450	B05S	14,5	140	440	355	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
150-230	B03	35	161	240	190	60	65	55	42	0,0675	97,88	118,13	195,75	236,25
150-280	B05S	28,5	164	295	230	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
150-360	B05S	22	160	365	295	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
150-450	B05L	19,5	171	450	360	80	80	75	60	0,3259	472,56	570,33	945,11	1140,65
150-501	B05L	23	190	504	400	80	80	75	60	0,3259	472,56	570,33	-	-
150-630	B06	20,9	201,9	636	520	100	120	120	95	0,8514	1234,53	1489,95	-	-
200-280	B05S	43,1	198	295	235	80	80	75	60	0,2141	311,32	375,73	622,63	751,45
200-360	B05L	35,5	204	360	295	80	80	75	60	0,3259	472,56	570,33	945,11	1140,65
200-401	B05L	40	222	408	320	80	80	75	60	0,3259	472,56	570,33	-	-
200-450	B05L	28	204	456	360	80	80	75	60	0,3259	472,56	570,33	945,11	1140,65
200-501	B05L	32	222	509	400	80	80	75	60	0,3259	472,56	570,33	-	-
200-670	B06	26	220	690	530	100	120	120	95	0,8514	1234,53	1489,95	-	-
250-401	B05L	63	294	404	320	80	80	75	60	0,3259	472,56	570,33	-	-
250-501	B05L	43	280	504	400	80	80	75	60	0,3259	472,56	570,33	-	-
250-630	B06	38	275	630	515	100	120	120	95	0,8514	1234,53	1489,95	-	-
250-710	B06	38	275	719	520	100	120	120	95	0,8514	1234,53	1489,95	-	-
300-400	B05L	68	294	404	353	80	80	75	60	0,3259	472,56	570,33	-	-
300-500	B05L	58	320	504	410	80	80	75	60	0,3259	472,56	570,33	-	-
300-630	B06	59	317	638	548	100	120	120	95	0,8514	1234,53	1489,95	-	-
350-400	B06	115,4	337	408	380	100	120	120	95	0,4530	656,70	792,60	-	-
400-506	B07	106,4	400	560	450	120	120	120	95	1,2357	1186,3 <sup>13)</sup>	1421,1 <sup>13)</sup>	-	-

10) Coolable on request

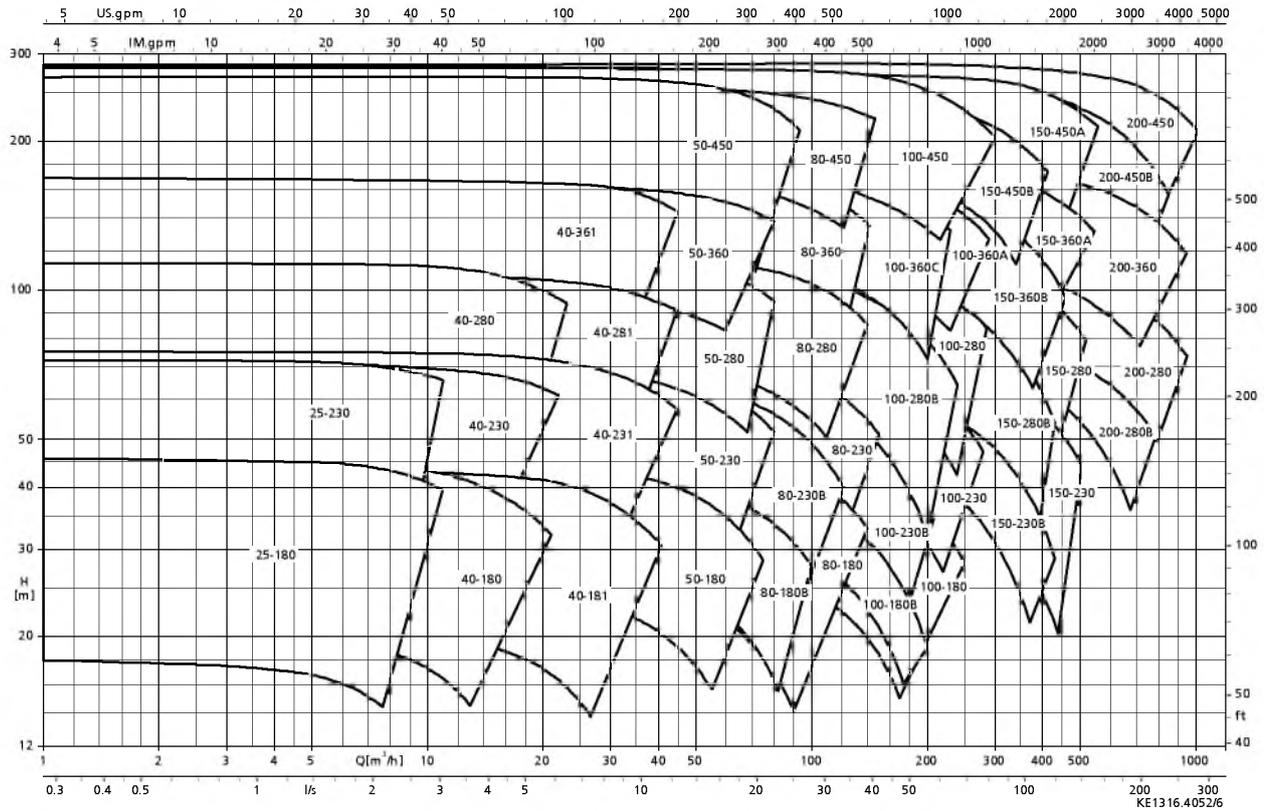
11) Values indicated refer to shaft in material C45+N, key in C45+K, impeller in JS1025 and T < 100 °C; for other materials and higher temperatures contact KSB.

12) For triple bearing assembly: 3 identical bearings as indicated, for high inlet pressures

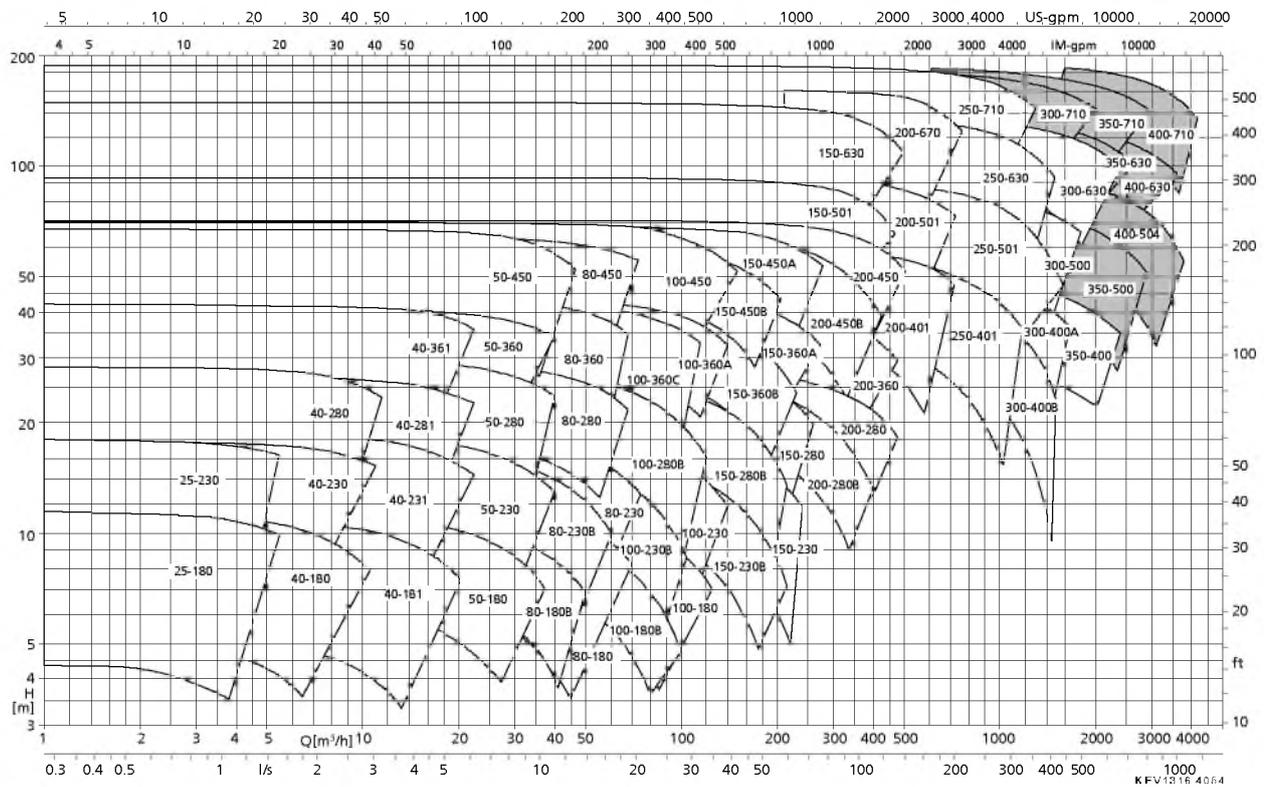
13) Only 6-pole operation is permissible for 960 rpm or 1150 rpm.

Selection charts

RPH, n = 2900 rpm

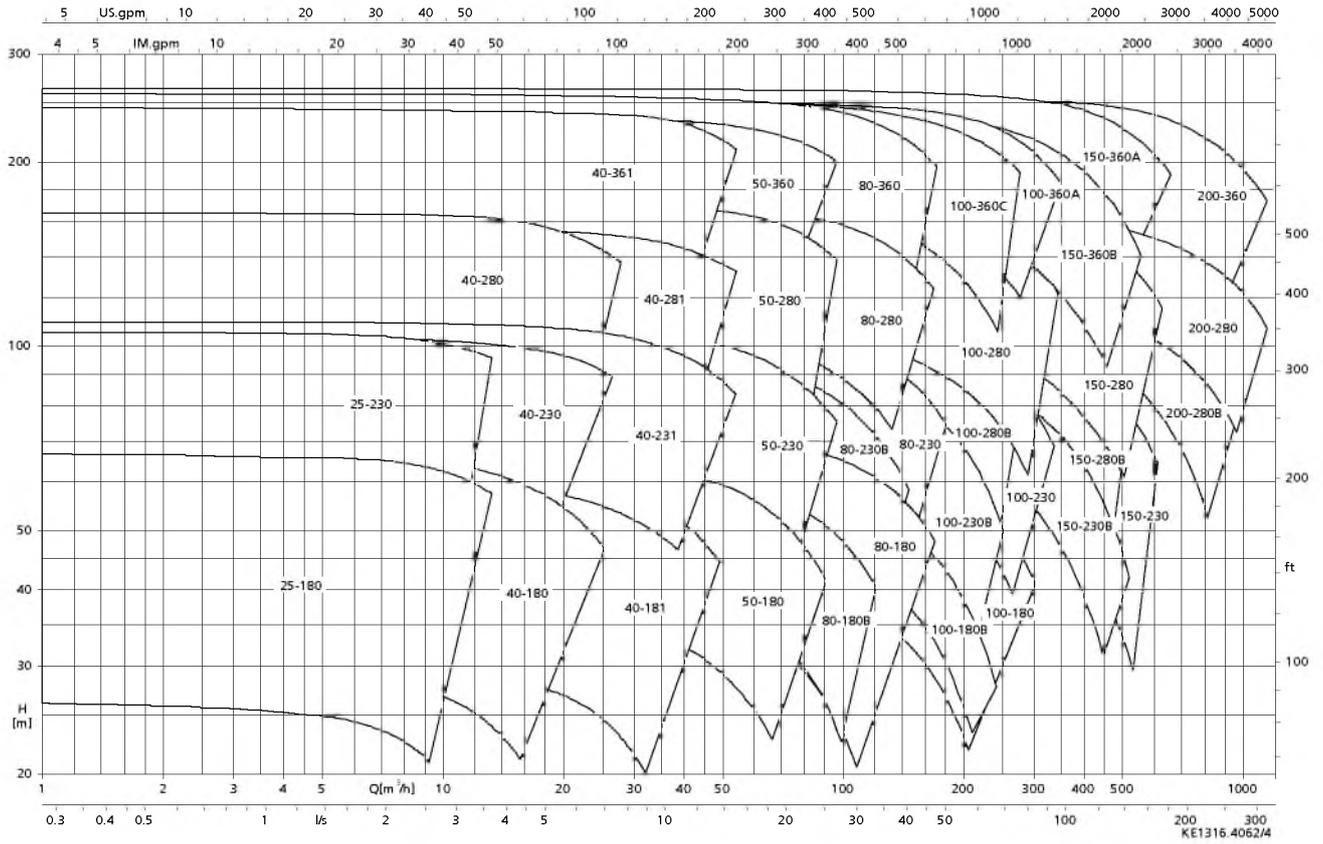


RPH, n = 1450 rpm

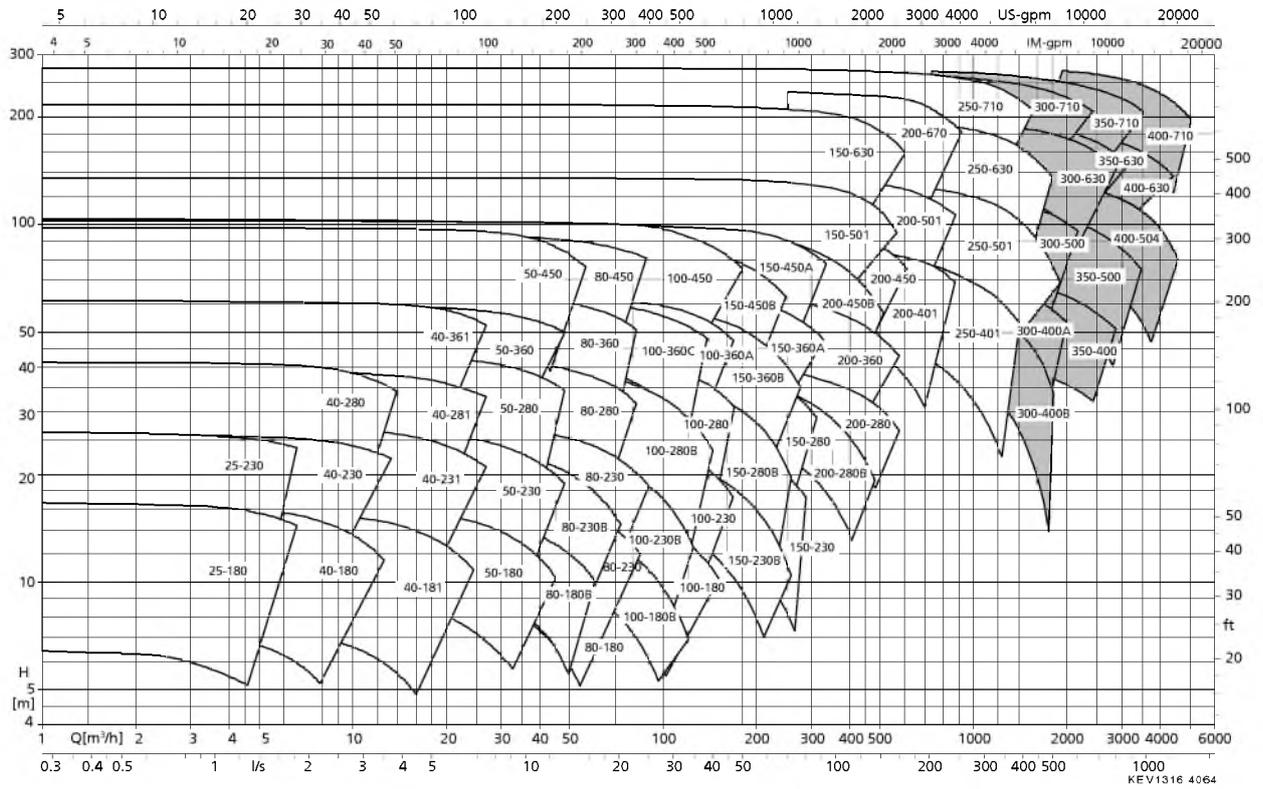


Size on request

RPH, n = 3500 rpm



RPH, n = 1750 rpm



■ Size on request

Dimensions and connections

Shaft seal connections

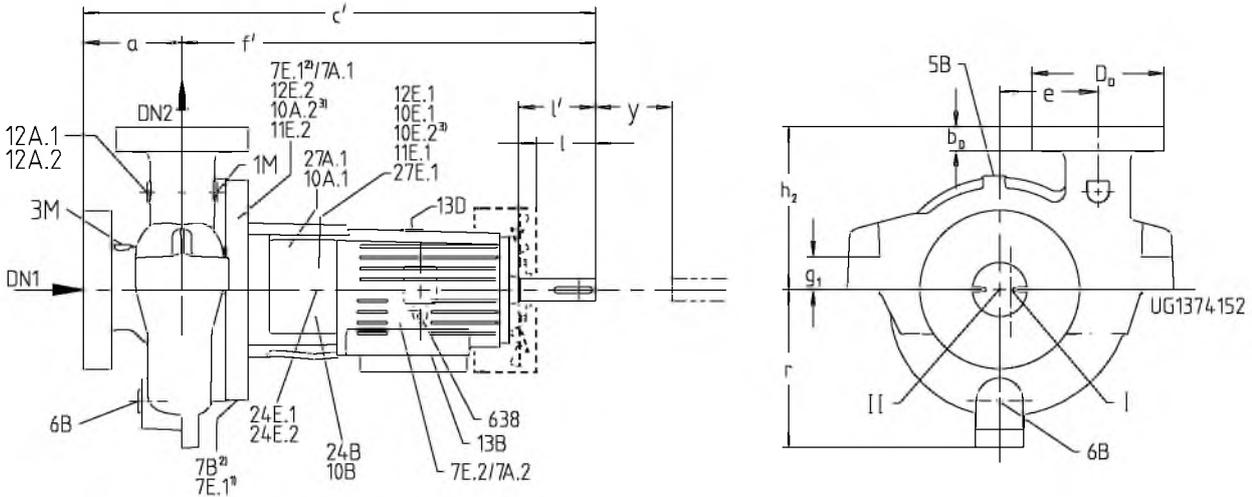
Design	Mechanical seal with quench supply, single	Mechanical seal, double (unpressurised tandem arrangement)	Mechanical seal, double (pressurised tandem arrangement)	Mechanical seal, back-to-back	Mechanical seal, single (API 23)
KSB standard	 API 11/61 (62-DAMPF) (1CW-FL)	 API 11/52/61 (2EW-LW)	 API 02/53/61 (3CW-FB)	 API 53/61 (3CW-BB)	 API 23/61 (1CW-FL)
API standard	 API 11/61 (62-DAMPF) (1CW-FL)	 API 11/52/61 (2EW-LW)	 API 02/53/61 (3CW-FB)	 API 53/61 (3CW-BB)	 API 23/61 (1CW-FL)

Connection types

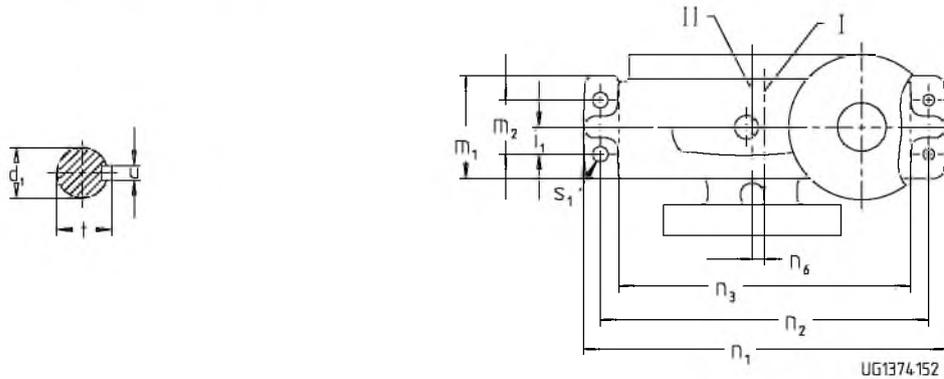
Connection	≤ DN 50	≥ DN 80	Description
1M	NPT 1/2-14	NPT 1/2-14	Pressure gauge
3M	NPT 1/2-14	NPT 1/2-14	Pressure gauge
5B	NPT 1/2-14	NPT 1/2-14	Vent
6B	DN15 ASME B16.5		Fluid drain
7B	NPT 1/2-14	NPT 1/2-14	Cooling liquid drain
7E.1/A.1	NPT 1/2-14	NPT 1/2-14	Cooling liquid IN/OUT
7E.2/A.2	NPT 1/2-14	NPT 1/2-14	Cooling liquid IN/OUT
10B	NPT 1/2-14	NPT 1/2-14	Barrier fluid drain
10E.1/A.1	NPT 1/2-14	NPT 1/2-14 <sup>14)</sup>	Barrier fluid IN/OUT
10E.2/A.2	NPT 1/2-14	NPT 1/2-14 <sup>14)</sup>	Barrier fluid IN/OUT
11E.1	NPT 1/2-14	NPT 1/2-14	Flushing liquid IN
11E.2	NPT 1/2-14	NPT 1/2-14	Flushing liquid IN
12E.1/A.1	NPT 1/2-14	NPT 1/2-14	Circulation liquid IN/OUT
12E.2/A.2	NPT 1/2-14	NPT 1/2-14	Circulation liquid IN/OUT
13B	NPT 1/2-14	NPT 1/2-14	Oil drain
13D	NPT 1/2-14	NPT 1/2-14	Vent plug
24B	NPT 3/8-18	NPT 3/8-18	Quench liquid drain
24 E.1/A.1	NPT 3/8-18	NPT 3/8-18	Quench liquid IN/OUT
24 E.2/A.2	NPT 3/8-18	NPT 3/8-18	Quench liquid IN/OUT
27B	NPT 1/2-14	NPT 1/2-14	Buffer liquid drain
27 E.1/A.1	NPT 1/2-14	NPT 1/2-14 <sup>14)</sup>	Buffer liquid inlet/outlet
638	NPT 3/8-18	NPT 3/8-18	Constant level oiler

<sup>14)</sup> NPT3/4-14 on bearing brackets B05 and B06

Standard sizes



Dimensions of standard pump sizes



Foot bolt and shaft end dimensions of standard pump sizes

1)	Not for material variant S and bearing bracket B06
2)	For pressurised tandem seals
3)	For "back-to-back" seals
I	Middle of pump foot
II	Middle of DN <sub>1</sub> shaft

Dimensions of standard pump sizes

Size	Bearing bracket	Weight [kg]	Pump dimensions												
			DN <sub>1</sub>	DN <sub>2</sub>	a	c'	e	f'	g <sub>1</sub>	h <sub>2</sub>	m <sub>1</sub>	n <sub>1</sub>	n <sub>3</sub>	n <sub>6</sub>	r
25-180	B02S	116	40	25	120	772	105	652	40	230	130	420	320	0	185
25-230	B02S	131	40	25	120	772	125	652	40	255	130	460	360	0	205
40-180	B02S	122	50	40	130	782	105	652	40	250	130	420	320	0	188
40-181	B02L	136	50	40	130	786	110	656	40	250	130	420	320	0	198
40-230	B02S	138	50	40	130	782	130	652	40	265	136	460	360	0	215
40-231	B02L	158	50	40	140	796	135	656	40	265	146	460	360	0	220
40-280	B02L	197	50	40	140	796	160	656	40	290	146	540	440	0	238
40-281	B02L	195	50	40	140	796	160	656	40	290	150	540	440	0	248
40-361	B02L	249	50	40	150	806	195	656	40	305	150	640	540	0	275
50-180	B02L	153	80	50	150	806	120	656	50	265	150	470	360	0	220
50-230	B03	240	80	50	155	910	140	755	50	265	150	510	400	0	230
50-280	B03	289	80	50	170	915	170	755	50	290	150	550	440	0	255
50-360	B03	347	80	50	170	915	200	755	50	310	150	650	540	0	285
50-450	B03	441	80	50	180	935	245	755	50	365	150	750	640	0	325
80-180	B03	242	100	80	175	945	140	770	60	290	170	510	400	0	235
80-230	B03	264	100	80	170	925	160	755	60	290	170	550	440	20	265
80-280	B03	317	100	80	180	935	180	755	60	300	170	590	480	20	290
80-360	B03	361	100	80	190	945	210	755	60	310	170	650	540	15	325

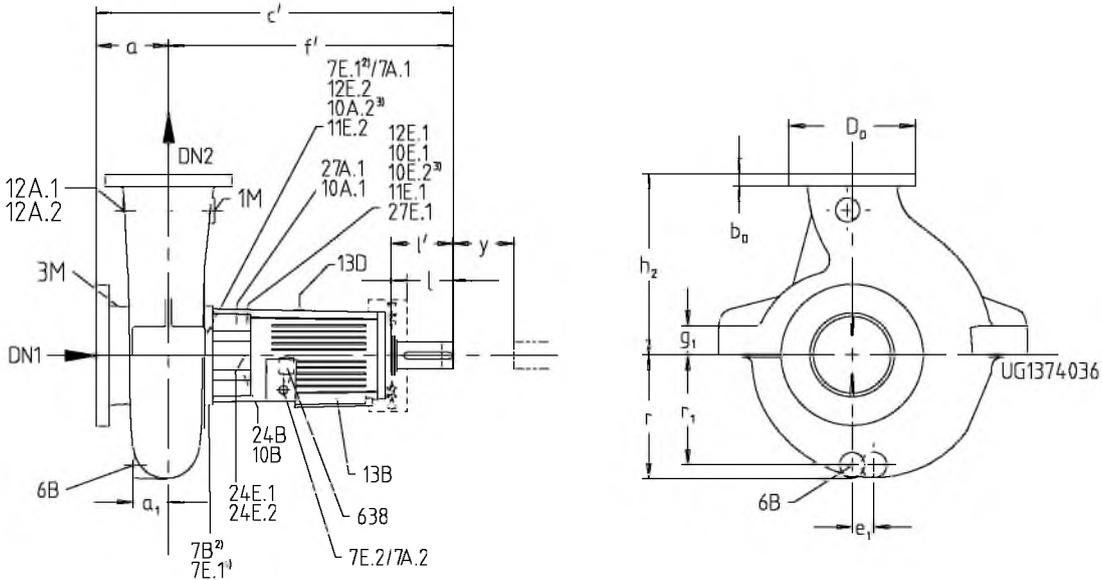
Size	Bearing bracket	Weight [kg]	Pump dimensions												
			DN <sub>1</sub>	DN <sub>2</sub>	a	c'	e	f'	g <sub>1</sub>	h <sub>2</sub>	m <sub>1</sub>	n <sub>1</sub>	n <sub>3</sub>	n <sub>6</sub>	r
80-450	B05S	547	100	80	200	1080	260	880	60	370	170	760	650	20	375
100-180	B03	289	150	100	185	955	170	770	70	325	190	590	480	25	275
100-230	B03	303	150	100	170	925	175	755	70	325	170	590	480	30	285
100-280	B03	345	150	100	170	925	200	755	70	335	190	650	540	30	315
100-360	B05S	477	150	100	200	1080	225	880	70	355	190	730	590	25	340
100-450	B05S	576	150	100	210	1090	270	880	70	385	190	860	720	30	395
150-230	B03	369	200	150	200	955	210	755	80	335	200	730	590	45	330
150-280	B05S	461	200	150	200	1080	225	880	80	365	200	730	590	40	355
150-360	B05S	533	200	150	230	1110	250	880	80	365	200	780	640	40	385
150-450	B05L	659	200	150	230	1110	280	880	80	415	200	870	720	35	420
200-280	B05S	575	250	200	230	1110	260	880	90	395	230	870	720	50	400
200-360	B05L	683	250	200	230	1110	275	880	90	395	230	910	760	60	430
200-450	B05L	804	250	200	250	1130	310	880	90	435	230	970	820	50	475

Shaft end and foot bolt dimensions of standard pump sizes

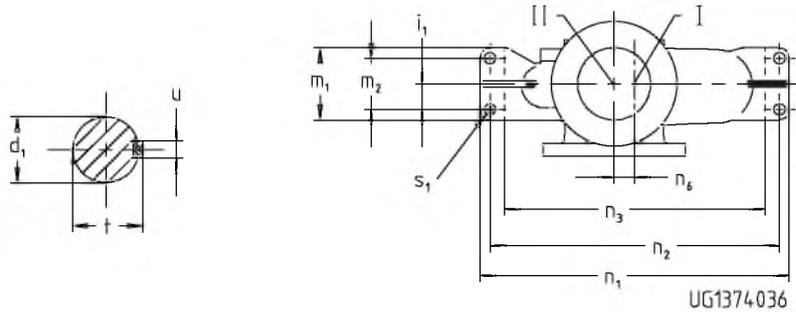
Size	Bearing bracket	Shaft end						Foot bolts			
		d <sub>1</sub> <sup>15)</sup>	l	l'	t	u	y	i <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	s <sub>1</sub>
25-180	B02S	32	80	115	35	10	140	30	60	380	17,5
25-230	B02S	32	80	115	35	10	140	30	60	420	17,5
40-180	B02S	32	80	115	35	10	140	30	60	380	17,5
40-230	B02S	32	80	115	35	10	140	30	60	420	17,5
40-181	B02L	32	80	115	35	10	140	30	60	380	17,5
40-231	B02L	32	80	115	35	10	140	30	60	420	17,5
40-280	B02L	32	80	115	35	10	140	35	70	500	17,5
40-281	B02L	32	80	115	35	10	140	35	70	500	17,5
40-361	B02L	32	80	115	35	10	140	35	70	600	17,5
50-180	B02L	32	80	115	35	10	140	35	70	420	22
50-230	B03	42	110	140	45	12	140	35	70	460	22
50-280	B03	42	110	140	45	12	140	35	70	500	22
50-360	B03	42	110	140	45	12	140	45	90	600	22
50-450	B03	42	110	140	45	12	140	45	90	700	22
80-180	B03	42	110	140	45	12	140	45	90	460	22
80-230	B03	42	110	140	45	12	140	45	90	500	22
80-280	B03	42	110	140	45	12	140	45	90	540	22
80-360	B03	42	110	140	45	12	140	45	90	600	22
80-450	B05S	60	140	182	64	18	180	45	90	710	22
100-180	B03	42	110	140	45	12	140	50	100	540	26
100-230	B03	42	110	140	45	12	140	50	100	540	26
100-280	B03	42	110	140	45	12	140	50	100	600	26
100-360	B05S	60	140	140	64	18	180	55	110	670	26
100-450	B05S	60	140	182	64	18	180	55	110	800	26
150-230	B03	42	110	140	45	12	140	50	100	670	33
150-280	B05S	60	140	182	64	18	180	60	120	670	33
150-360	B05S	60	140	182	64	18	180	60	120	720	33
150-450	B05L	60	140	182	64	18	180	55	110	800	33
200-280	B05S	60	140	182	64	18	180	55	110	800	36
200-360	B05L	60	140	182	64	18	180	55	110	840	36
200-450	B05L	60	140	182	64	18	180	55	110	900	36

15) d1 Ø k6 for bearing brackets B02 and B03; d1 Ø n6 for bearing bracket B05

Complementary sizes



Dimensions of complementary pump sizes



Foot bolt and shaft end dimensions of complementary pump sizes

1)	Not for material variant S and bearing bracket B06
2)	For pressurised tandem seals
3)	For "back-to-back" seals
I	Middle of pump foot
II	Middle of DN <sub>1</sub> , shaft

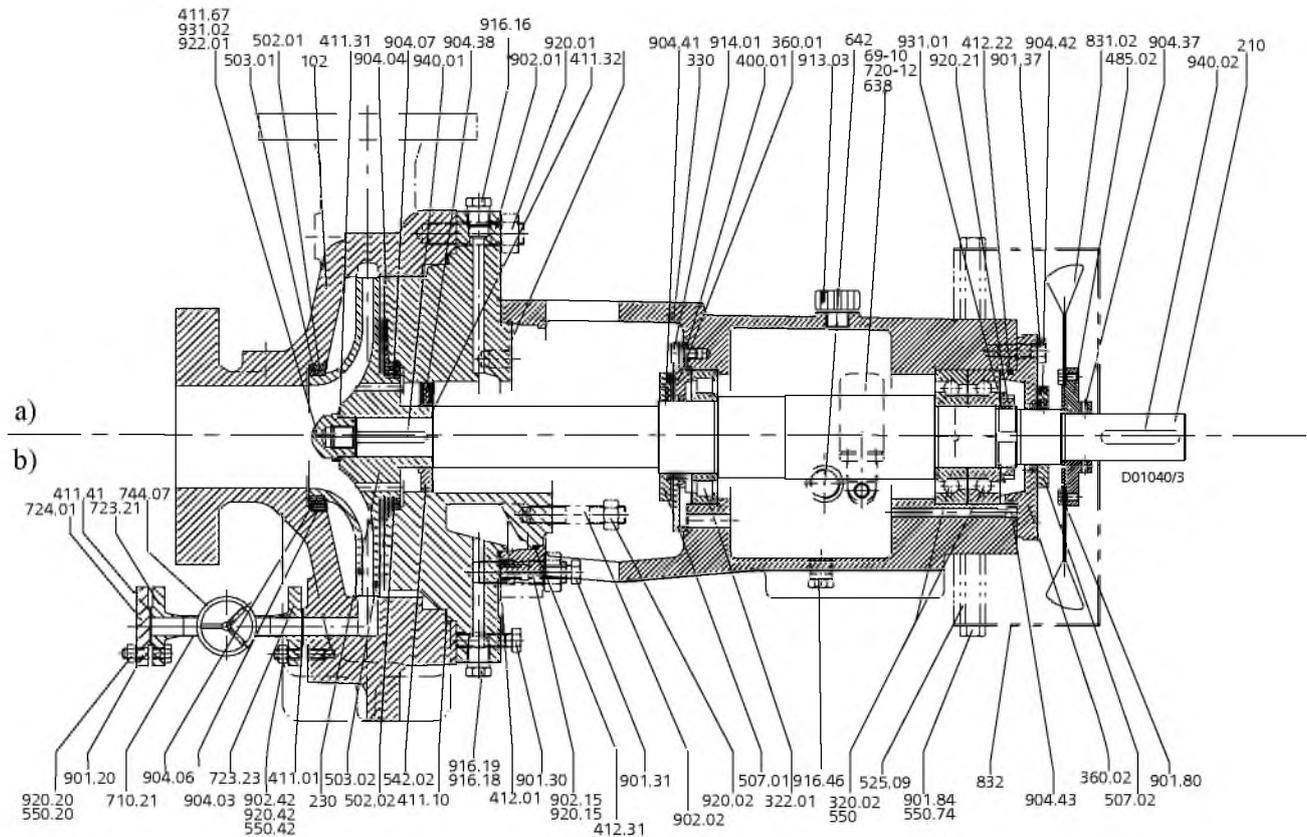
Dimensions of complementary pump sizes

Size	Bearing bracket	Weight [kg]	Pump dimensions										
			DN <sub>1</sub>	DN <sub>2</sub>	a	c'	f'	g <sub>1</sub>	h <sub>2</sub>	m <sub>1</sub>	n <sub>1</sub>	n <sub>3</sub>	n <sub>6</sub>
150-501	B05L	516	200	150	180	1080	900	90	500	180	960	820	0
150-630	B06	1190	200	150	250	1435	1185	90	670	310	1200	1020	60
200-401	B05L	528	250	200	190	1095	905	90	510	180	960	820	0
200-501	B05L	676	250	200	200	1085	885	90	560	180	1060	920	0
200-670	B06	1440	250	200	250	1430	1180	90	670	310	1360	1180	0
250-401	B05L	734	300	250	240	1140	900	90	600	210	1160	1000	0
250-501	B05L	926	300	250	200	1100	900	90	670	210	1200	1040	0
250-630	B06	1500	300	250	300	1440	1140	90	750	310	1200	1020	70
250-710	B06	1630	300	250	300	1430	1130	90	800	310	1460	1280	0
300-400	B05L	1135	350	300	310	1197	887	90	640	310	1200	1020	0
300-500	B05L	1255	350	300	300	1174	874	120	750	300	1270	1070	85
300-630	B06	1722	350	300	300	1489	1189	90	800	300	1460	1280	0
350-350	B06	1690	350	300	350	1509	1159	120	750	310	1370	1180	80
400-506	B07	2410	400	400	350	1615	1265	120	900	400	1560	1320	90

Shaft end and foot bolt dimensions of complementary pump sizes

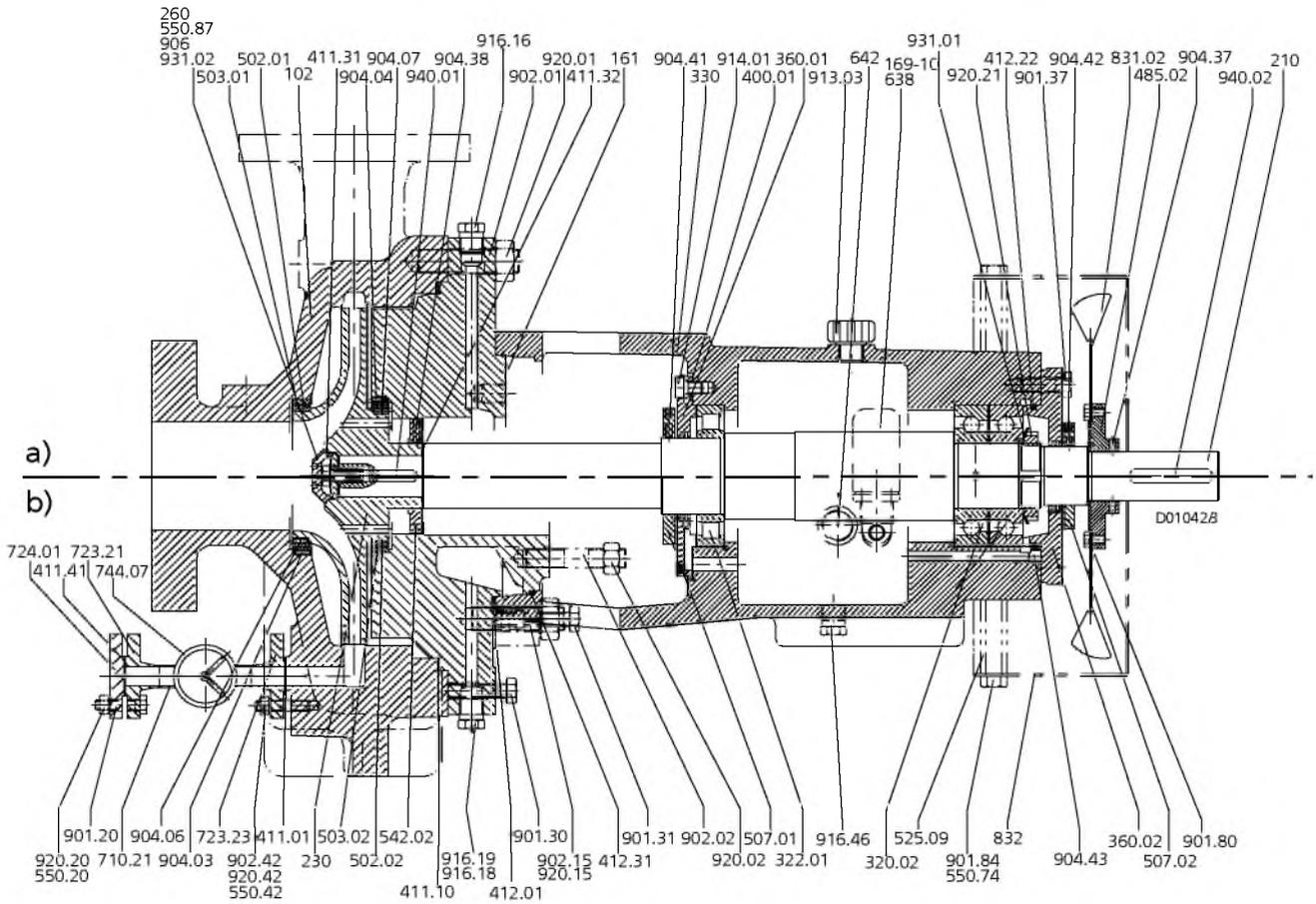
Size	Bearing bracket	Shaft end						Foot bolts				Drain line		
		d <sub>1</sub> <sup>16)</sup>	l	l'	t	u	y	i <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	s <sub>1</sub>	e <sub>1</sub>	r <sub>1</sub>	a <sub>1</sub>
150-501	B05L	60	140	182	64	18	180	60	120	900	33	0	315	63,5
150-630	B06	95	170	215	100	25	250	105	210	1120	36	85	412,5	80
200-401	B05L	60	140	182	64	18	180	60	120	900	33	0	330	64,5
200-501	B05L	60	140	182	64	18	180	60	120	1000	33	0	360	78,5
200-670	B06	95	170	215	100	25	250	105	210	1280	36	0	425	73
250-401	B05L	60	140	182	64	18	180	75	150	1080	33	0	365	105
250-501	B05L	60	140	182	64	18	180	75	150	1120	33	0	412	102
250-630	B06	95	170	215	100	25	250	105	210	1120	36	0	425	108
250-710	B06	95	170	215	100	25	250	105	210	1380	36	0	500	122
300-400	B05L	60	140	182	64	18	250	130	210	1120	33	0	395	167
300-500	B05L	60	140	182	64	18	250	105	210	1190	33	0	455	147
300-630	B06	95	170	215	100	25	250	105	210	1380	36	0	503	173
350-350	B06	95	170	215	100	25	330	105	210	1280	33	50	500	161
400-506	B07	110	205	255	116	28	350	150	300	1460	36	90	585	186

General assembly drawing with list of components



Bearing brackets B02 to B05, a) uncooled and b) cooled

16) d1 Ø n6



Bearing brackets B06 and B07, a) uncooled and b) cooled

List of components

Part No.	Comprising	Description
102	102	Volute casing
	411.10	Joint ring
	502.01	Casing wear ring
	902.01	Stud
	904.03	Grub screw
	916.01 <sup>17)</sup>	Plug
	920.01	Hexagon nut
161	161	Casing cover
	411.10	Joint ring
	412.01/.31 <sup>18)</sup>	O-ring
	502.02 <sup>25)</sup>	Casing wear ring
	901.30	Hexagon head bolt
	902.15	Stud
	904.04 <sup>25)</sup>	Grub screw
210	916.16	Plug
	920.15	Hexagon nut
	210	Shaft
	920.21	Slotted round nut
230	931.01	Lock washer
	940.01/.02	Key
	230	Impeller
931.02	931.02	Lock washer
	503.01/.02	Impeller wear ring

17) Not shown in drawing

18) For cooled design only

Part No.	Comprising	Description
	904.06/07	Grub screw
	411.31 <sup>19)</sup> /32 <sup>19)</sup> /67 <sup>19)20)</sup>	Joint ring
260 <sup>21)</sup>	260	Impeller hub cap
	550.87	Disc
	906	Impeller screw
320.02/550 <sup>22)</sup>	320.02 <sup>23)</sup>	Angular contact ball bearing
	550 <sup>24)</sup>	Adjusting washer
322.01	322.01	Cylindrical roller bearing
330	330	Bearing bracket
	69.10	Protective cage
	360.01/02	Bearing cover
	400.01	Gasket
	412.22	O-ring
	638	Constant level oiler
	642	Oil level sight glass
	710.21	Pipe
	901.31/37	Hexagon head bolt
	913.03	Vent plug
	916.46	Plug
	914.01	Hexagon socket head cap screw
360.01/02	360.01/02	Bearing cover
	400.01	Gasket
	412.22	O-ring
	914.01	Hexagon socket head cap screw
502.01/02 <sup>25)</sup>	502.01/02	Casing wear ring
	904.03/04 <sup>25)</sup>	Grub screw
503.01/02 <sup>25)</sup>	503.01/02	Impeller wear ring
	904.06/07 <sup>25)</sup>	Grub screw
507.01/02	507.01/02	Thrower
	904.41/42	Grub screw
542.02	542.02	Throttling bush
	904.38	Grub screw
638	638	Constant level oiler
70-3 <sup>20)</sup>	70-3	Drain line
	411.01	Joint ring
	902.42	Stud
	920.42	Hexagon nut
	550.42	Disc
	723.23	Flange
	744.07	Gate valve
	710.21	Pipe
	723.21	Flange
	411.41	Joint ring
	724.01	Blind flange
	901.20	Hexagon head bolt
	920.20	Hexagon nut
	550.20	Disc
831.02 <sup>20)</sup>	831.02	Fan impeller
	832	Fan hood
	485.02	Fan hub
	904.37	Grub screw
922.01 <sup>19)</sup>	922.01	Impeller nut
	931.02	Lock washer
99-g <sup>17)</sup>	99-g <sup>17)</sup>	Set of sealing elements, complete

- 19) For bearing brackets B02 to B05 only  
20) Optional  
21) For bearing brackets B06 and B07 only  
22) For bearing brackets B03 and B05 only  
23) For bearing brackets B03 and B05 only  
24) For bearing brackets B03 and B05 only  
25) For impellers with balancing of axial thrust only

Design variants

Design variants

Design	Detailed view
Design with coolable bearing bracket	
Design with thrower	
Design with plug	
Design with welded drain	

Design	Detailed view
<p>Design with bearings in tandem arrangement</p>	
<p>Design with heatable casing</p>	
<p>Design with auxiliary impeller</p>	



Heat Transfer Fluid / Hot Water Pump

**HPK-L**

**Type Series Booklet**



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## Centrifugal Pumps with Shaft Seal

### Heat Transfer Fluid / Hot Water Pumps

#### HPK-L



#### Main applications

Pump for handling hot water and organic or synthetic heat transfer fluids in piping or tank systems.

- Heating systems
- Forced-circulation boiler
- District heating
- Heat transfer systems

#### Operating data

Operating properties

Characteristic	Value	Value	
		50 Hz	60 Hz
Flow rate	Q [m³/h]	≤ 1160	≤ 1400
Head	H [m]	≤ 162	≤ 233
Fluid temperature	T [°C]	Version S/Z:	
		-40 to +350	
Operating pressure	p [bar]	Version E/Y:	
		-40 to +400	
Operating pressure	p [bar]	Version E/S:	
		≤ 25 bar	
		Version Y/Z:	
		≤ 40 bar	

#### Designation

Example: HPKL050-032-160 EGBS x

Key to the designation

Code	Description
HPKL	Type series
050	Nominal suction nozzle diameter [mm]
032	Nominal discharge nozzle diameter [mm]
160	Nominal impeller diameter [mm]
Y	Material of the casing and casing cover

Code	Description	
	S	Unalloyed steel and nodular cast iron
	E	Unalloyed steel and P250GH/ 1.7335/ P355NL1 (Europe) or unalloyed steel (Asia)
	Z	1.7706 and nodular cast iron
	Y	1.7706 and P250GH/ 1.7335/ P355NL1
G	Impeller material	
	G	Cast iron
	C	Stainless steel
BS	Mechanical seal, air-cooled	
	BS	Single mechanical seal
	TL	Tandem mechanical seals
x	Additional code	
	x	Special design

#### Further information on the designation

(→Page 21)

#### 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 diameters 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 (as required)

##### Impeller type

- Closed radial impeller with multiply curved vanes

##### Shaft seal

- KSB mechanical seal, optimised for installation in an HPK-L pump, with integrated shaft sleeve (standard Europe)
- Optional commercial single mechanical seals with replaceable shaft sleeve (standard Asia/Americas)
- Versions with two mechanical seals can be supplied for heat transfer applications.

##### Bearings

###### Bearings:

- Version with single mechanical seal
  - Radial bearing: plain bearing, product-lubricated
  - Fixed bearings: two angular ball bearings, grease-packed
- Version with two mechanical seals
  - Radial bearing: plain bearing, product-lubricated

- Fixed bearing: one deep groove ball bearing or one four-point bearing (depending on the pump size), grease-packed

### Bearing bracket designation

Example: CS50

Bearing bracket designation

Code	Description
CS	Bearing bracket
50	Size

Bearings used

Design	Bearing bracket	Plain bearing	Ball bearing
One mechanical seal	CS40	SSiC	2x7307
	CS50	SSiC	2x7307
	CS60	SSiC	2x7309
	CS80	SSiC	2x7313
Two mechanical seals	CS40	SSiC	1x6307 or QJ307
	CS50	SSiC	1x6307 or QJ307
	CS60	SSiC	1x6309
	CS80	SSiC	1x6313 or QJ313

### Automation (Europe only)

Automation options:

- Hyamaster
- hyatronic
- PumpDrive

### Materials

Overview of available materials (Europe)

Description	Material variant							
	SG	SC	EG	EC	ZG	ZC	YG	YC
Volute casing	GP240GH+N				1.7706			
Casing cover	EN-GJS-400-18-LT		P250GH/1.7335/P355NL <sup>1)</sup>		EN-GJS-40-18-LT		P250GH/1.7335/P355NL <sup>1)</sup>	
Impeller	EN-GJL-250	1.4408	EN-GJL-250	1.4408	EN-GJL-250	1.4408	EN-GJL-250	1.4408
Shaft	1.4021+QT800							
Shaft sleeve	1.4021+QT800							
Bearing bracket	EN-GJS-400-18-LT							
Support foot	Steel							
Casing wear ring	None <sup>2)</sup>	None <sup>3)</sup>	None <sup>2)</sup>	None <sup>3)</sup>	None <sup>2)</sup>	None <sup>3)</sup>	None <sup>2)</sup>	None <sup>3)</sup>
Impeller wear ring	None <sup>4)</sup>	None <sup>5)</sup>	None <sup>4)</sup>	None <sup>5)</sup>	None <sup>4)</sup>	None <sup>5)</sup>	None <sup>4)</sup>	None <sup>5)</sup>
Impeller nut	AISI316							
Gasket	CrNi graphite 1G							

Overview of available materials (Asia)

Description	Material variant	
	EG	EE
Volute casing	A216 Gr WCB	
Casing cover	A216 Gr WCB	
Impeller	A48CL35B	A216 Gr WCB
Shaft	A276 Type 410 COND. H	

<sup>1)</sup> Depending on the size

<sup>2)</sup> Optional casing wear ring made of EN-GJL-250 or VG434

<sup>3)</sup> Optional casing wear ring made of VG434

<sup>4)</sup> Optional impeller wear ring made of 1.4021+QT in combination with casing wear ring made of EN-GJL-250 or VG434

<sup>5)</sup> Optional impeller wear ring made of CrNiMoSt in combination with casing wear ring made of VG434

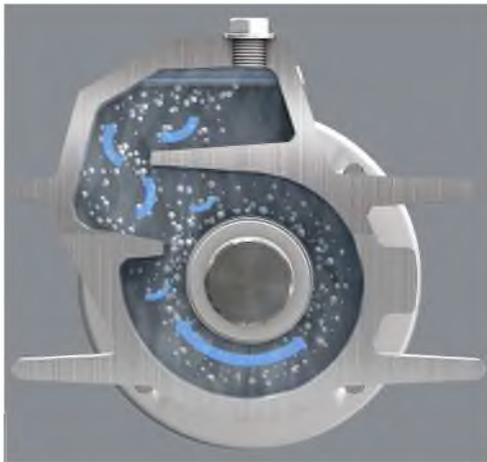
Description	Material variant	
	EG	EE
Shaft sleeve	A276 Type 410 COND. H	
Bearing bracket	A216 Gr WCB	
Support foot	Steel	
Casing wear ring	A48CL35B	None <sup>6)</sup>
Impeller wear ring	None	None <sup>6)</sup>
Impeller nut	AISI 316	
Gasket	CrNi graphite 1G	

### Coating and preservation

- Coating and preservation to KSB standard

### Product benefits

- Low temperature in the mechanical seal chamber; no cooling water required thanks to air-cooled bearing bracket with heat barrier.
- Increased operating reliability of versions for heat transfer applications by an optional two mechanical seals preventing leakage.
- Higher efficiencies than the previous HPK-L model by continued development of the flow passage within the hydraulic system.
- Optimised venting of mechanical seal chamber by patented VenJet profile.



VenJet profile

### 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:

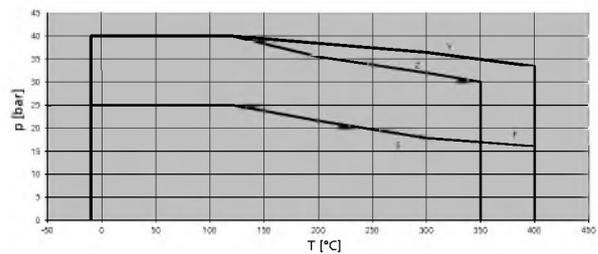
  - Performance test to ISO 9906

- NPSH test

- Other tests (e.g. vibrations, strength) on request.
- Warranty

Warranties are given within the scope of the valid delivery conditions.

### Pressure and temperature limits



Pressure and temperature limits of the pump

ASME flanges do not have any impact on the pressure and temperature limits of the pump.

<sup>6)</sup> Optional casing wear ring made of Chrome hard 400 in combination with impeller wear ring made of A743 Gr CA15

**Technical data**

Size	Bearing bracket						Impeller						Shaft diameter						Speed limit		Weights	Volute type <sup>7)</sup>
	[mm]	Impeller outlet width	[mm]	Free passage	[mm]	Impeller inlet width	[mm]	Max. impeller diameter	[mm]	Min. impeller diameter	[mm]	Without shaft sleeve	[mm]	Pump-end bearing	[mm]	Drive-end bearing	[mm]	Coupling	[mm]	Shaft sleeve		
040-025-160	C540	6	5,7	44	169	130	28	24	35	24	33	800	3600	50	E							
040-025-200	C540	6	5,7	44	209	160	28	24	35	24	33	800	3600	60	E							
050-032-125.1	C540	7	6,0	52	139	114	28	24	35	24	33	800	3600	47	E							
050-032-160.1	C540	6	5,4	52	170	138	28	24	35	24	33	800	3600	51	E							
050-032-200.1	C540	6	5,3	54	204	138	28	24	35	24	33	800	3600	60	E							
050-032-250.1	C550	6	5,2	58	254	220	38	35	35	32	43	800	3600	87	E							
050-032-125	C540	10	5,7	63	139	110	28	24	35	24	33	800	3600	47	E							
050-032-160	C540	9	5,8	63	174	135	28	24	35	24	33	800	3600	51	E							
050-032-200	C540	7	6,7	62	209	178	28	24	35	24	33	800	3600	61	E							
050-032-250	C550	8	7,1	63	261	212	38	35	35	32	43	800	3600	87	E							
065-040-160.1	C540	9	8,5	65	169	130	28	24	35	24	33	800	3600	50	E							
065-040-250.1	C550	7	6,6	68	260	200	28	24	35	24	43	800	3600	88	E							
065-040-125	C540	14	9,6	74	139	110	28	24	35	24	33	800	3600	48	E							
065-040-160	C540	13	11,5	70	174	135	28	24	35	24	33	800	3600	50	E							
065-040-200	C540	9	8,9	69	209	175	28	24	35	24	33	800	3600	64	E							
065-040-250	C550	8	8,0	73	260	214	38	35	35	32	43	800	3600	88	E							
065-040-315	C550	8	7,1	75	326	278	38	35	35	32	43	800	3600	119	E							
080-050-315.1	C550	8	7,6	85	320	260	38	35	35	32	43	800	3600	136	E							
080-050-125	C540	20	11,6	88	142	114	28	24	35	24	33	800	3600	55	E							
080-050-160	C540	17	11,6	87	174	135	28	24	35	24	33	800	3600	57	E							
080-050-200	C540	14	11,9	83	219	180	28	24	35	24	33	800	3600	66	E							
080-050-250	C550	11	10	84	260	220	38	35	35	32	43	800	3600	136	E							
100-065-125	C540	26	12,9	99	141	114	28	24	35	24	33	800	3600	56	E							
100-065-160	C550	21	12,2	92	174	132	38	35	35	32	43	800	3600	89	E							
100-065-200	C550	17	13,3	100	219	180	38	35	35	32	43	800	3600	91	E							
100-065-250	C550	15	14,3	101	260	220	38	35	35	32	43	800	3600	109	E							
100-065-315	C560	14	13,0	107	320	270	48	38	45	42	53	800	3600	152	E							
125-080-160	C550	32	15,1	124	174	122	38	35	35	32	43	800	3600	95	E							
125-080-200	C550	25	15,2	115	219	180	38	35	35	32	43	800	3600	98	E							
125-080-250	C550	19	15,8	115	269	220	38	35	35	32	43	800	3600	118	D							
125-080-315	C560	19	17,8	115	334	281	48	38	45	42	53	800	3600	159	D							
125-080-400	C560	15	14,3	129	398	330	48	38	45	42	53	800	1800	234	E							
125-100-160	C550	38	16,4	135	185	155	38	35	35	32	43	800	3600	115	E							
125-100-200	C550	33	17,9	142	219	179	38	35	35	32	43	800	3600	108	E							
125-100-250	C560	27	18,8	145	262	216	48	38	45	42	53	800	3600	134	D							
125-100-315	C560	23	19,9	142	334	280	48	38	45	42	53	800	3600	166	D							
125-100-400	C560	18	17,1	142	401	329	48	38	45	42	53	800	1800	243	E							
150-125-200	C560	41	21,1	160	224	162	48	38	45	42	53	800	3600	142	D							
150-125-250	C560	37	22,4	162	269	218	48	38	45	42	53	800	1800	167	E							
150-125-315	C560	31	22,6	162	334	280	48	38	45	42	53	800	1800	208	E							
150-125-400	C560	26	20,9	162	419	330	48	38	45	42	53	800	1800	263	D							
200-150-200	C560	60	25,2	179	224	158	48	38	45	42	53	800	1800	213	E							
200-150-250	C560	49	23,0	191	269	220	48	38	45	42	53	800	1800	201	E							
200-150-315	C580	40	26,9	192	334	264	60	47	65	48	65	800	1800	278	E							
200-150-400	C580	33	23,8	191	419	330	60	47	65	48	65	800	1800	327	D							
200-150-500	C580	23	19,1	190	504	400	60	47	65	48	65	800	1800	454	D							
200-200-250	C580	62	37,2	190	260	200	60	47	65	48	65	800	1800	327	E							
250-200-315	C580	50	20,8	222	320	260	60	47	65	48	65	800	1800	342	E							
250-200-400	C580	40	18,4	222	404	320	60	47	65	48	65	800	1800	409	D							

7) E = single volume, D = double volume

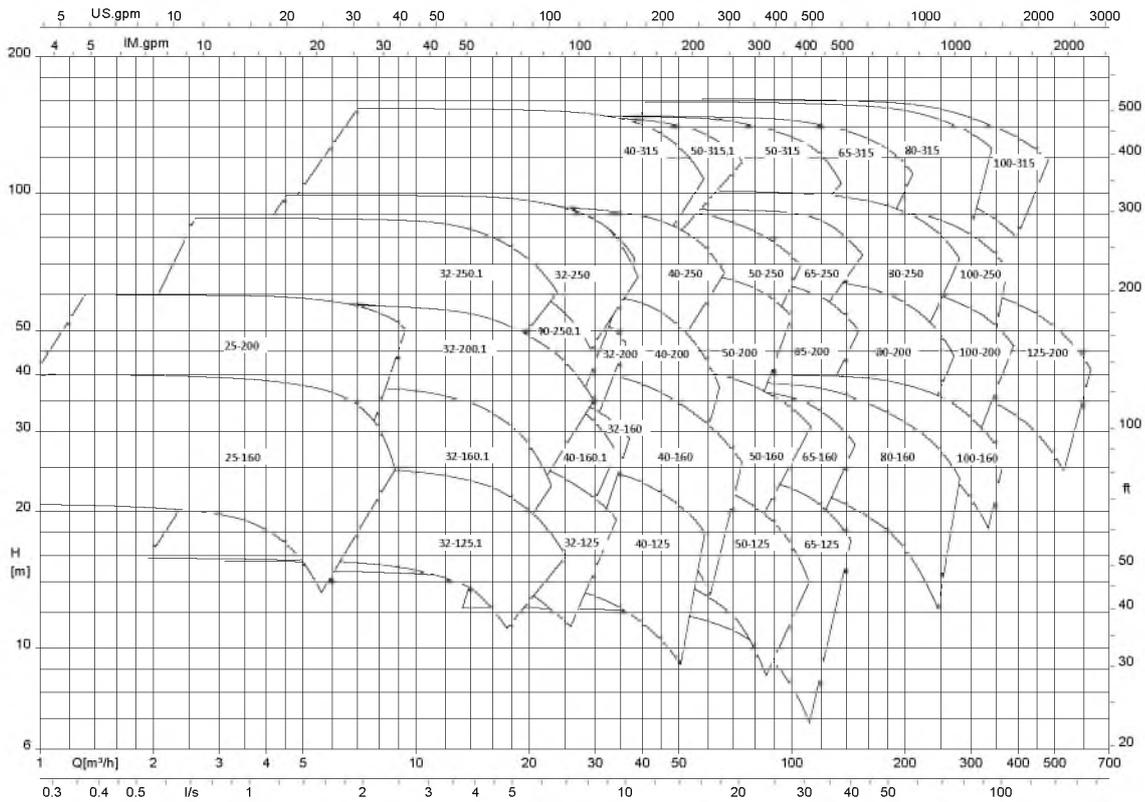
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7) E = single volume, D = double volume

Size	Bearing bracket		Impeller				Shaft diameter				Speed limit		Weights	Volute type <sup>7)</sup>	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[rpm]	[rpm]				
250-200-500	CS80	32	20,6	222	504	400	60	47	65	48	65	800	1800	565	D
300-250-315	CS80	73	26,7	270	324	260	60	47	65	48	65	800	1800	505	D

Selection charts

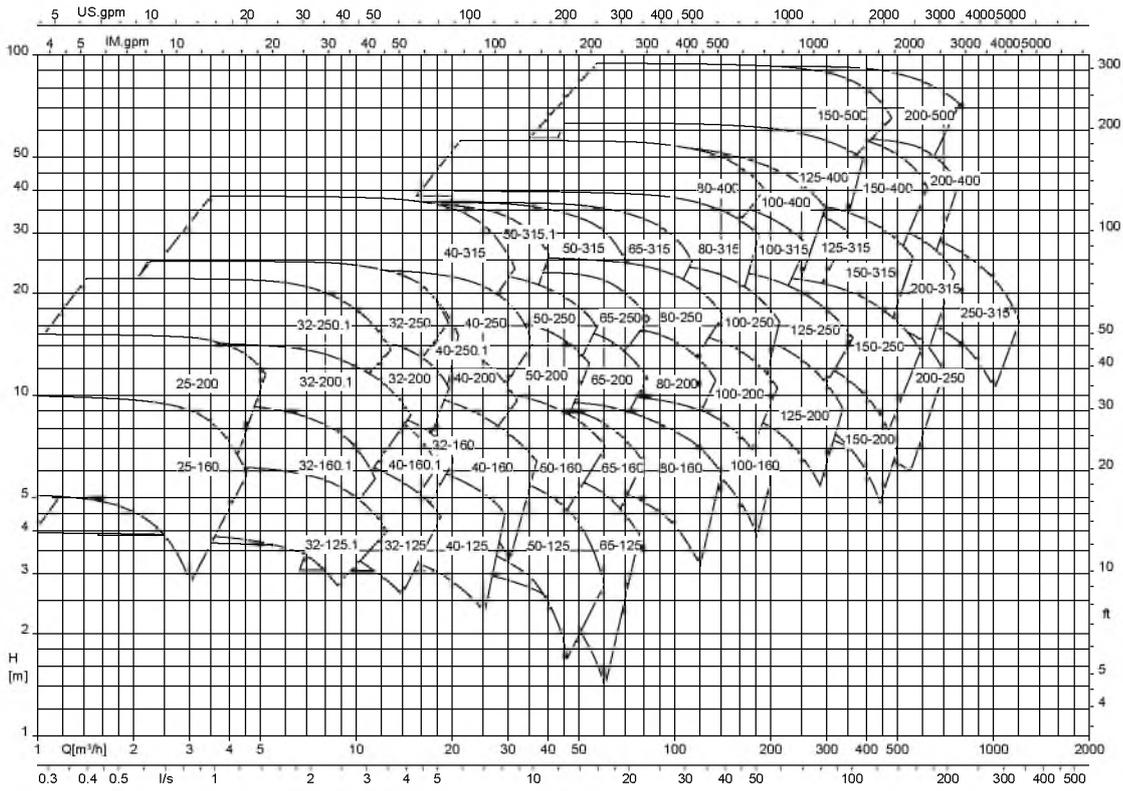
HPK-L, n = 2900 rpm



Size 065-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

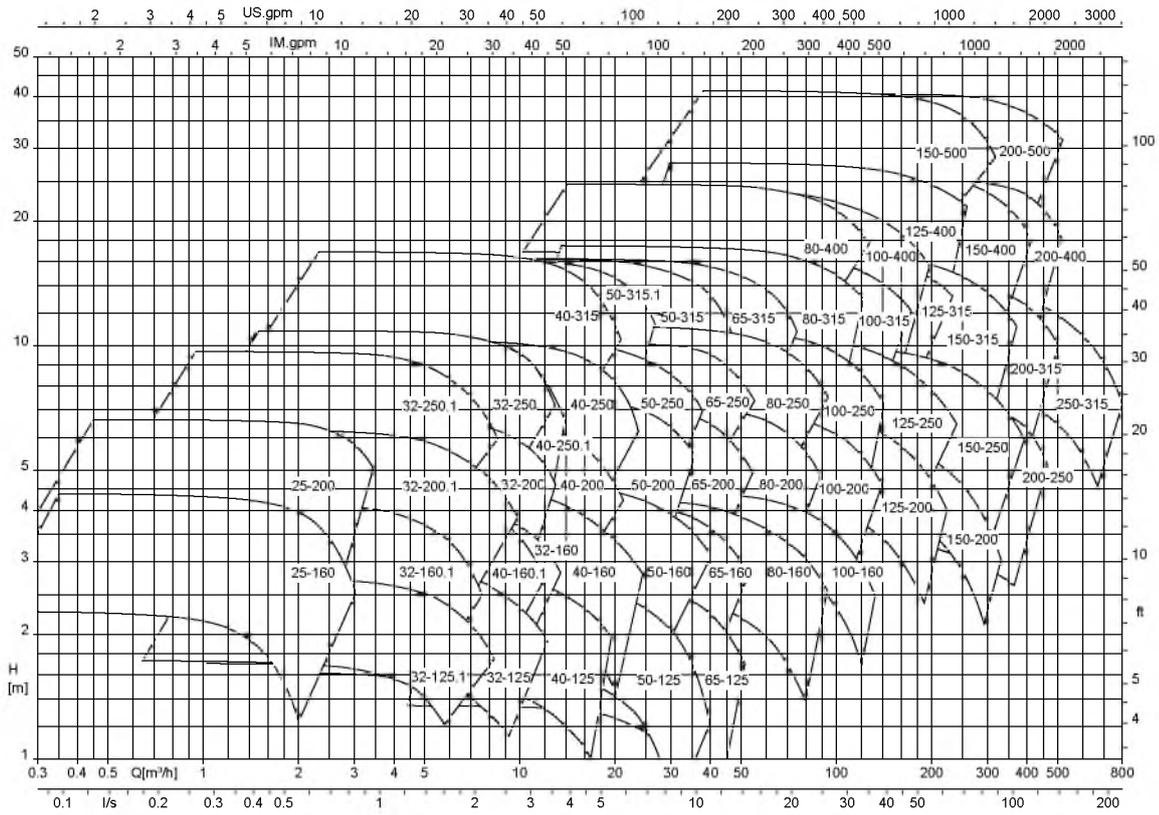
HPK-L, n = 1450 rpm



Size 65-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

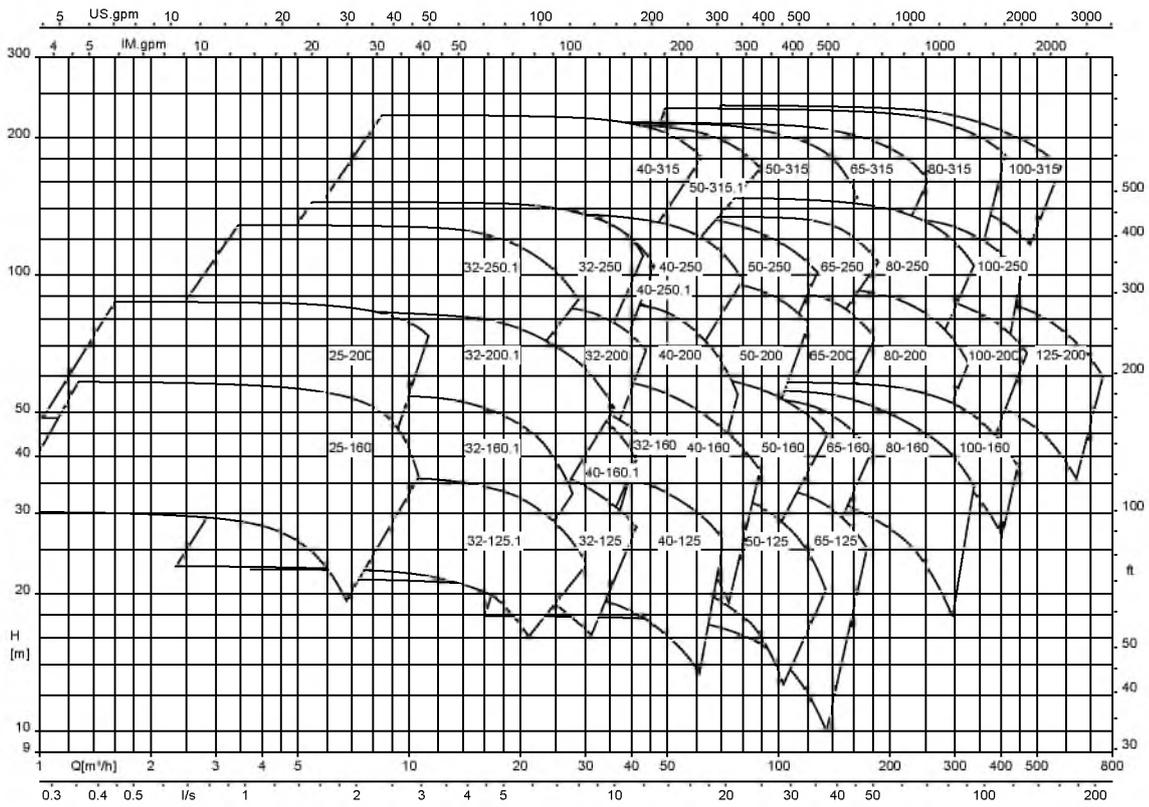
HPK-L, n = 960 rpm



Size 65-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

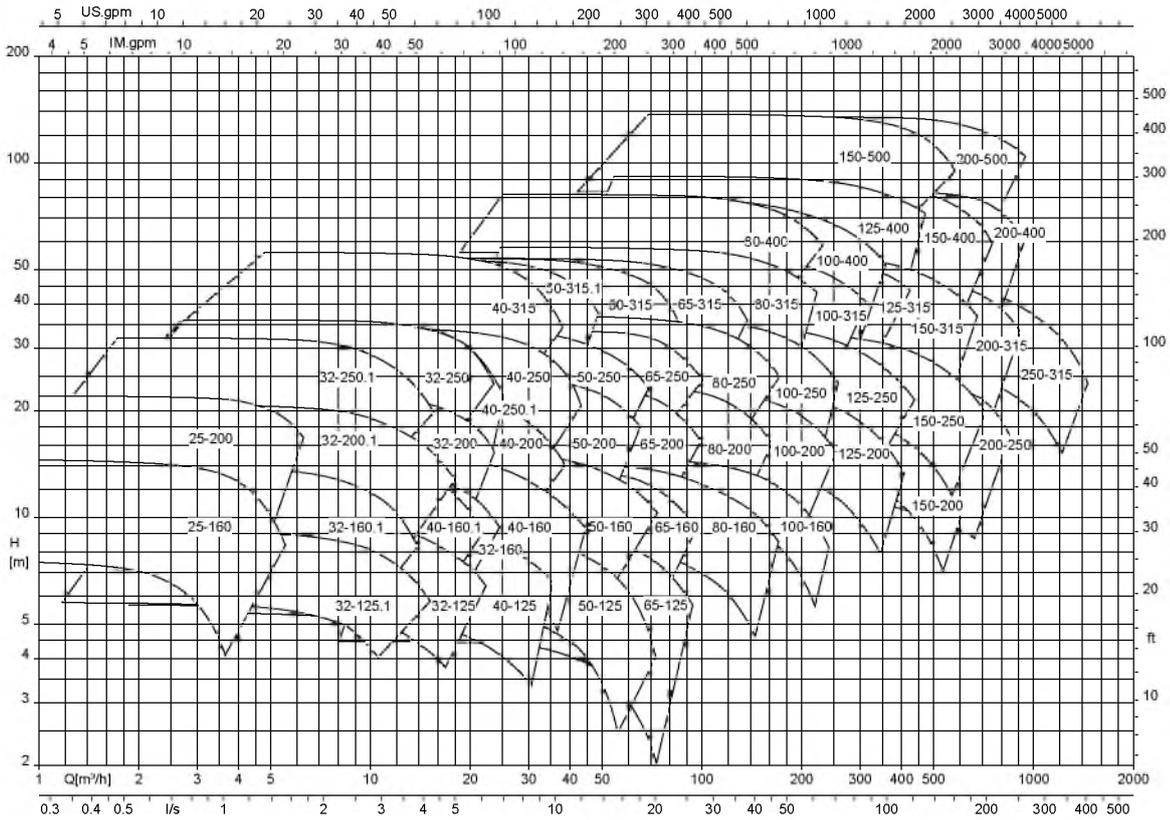
HPK-L, n = 3500 rpm



Size 65-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

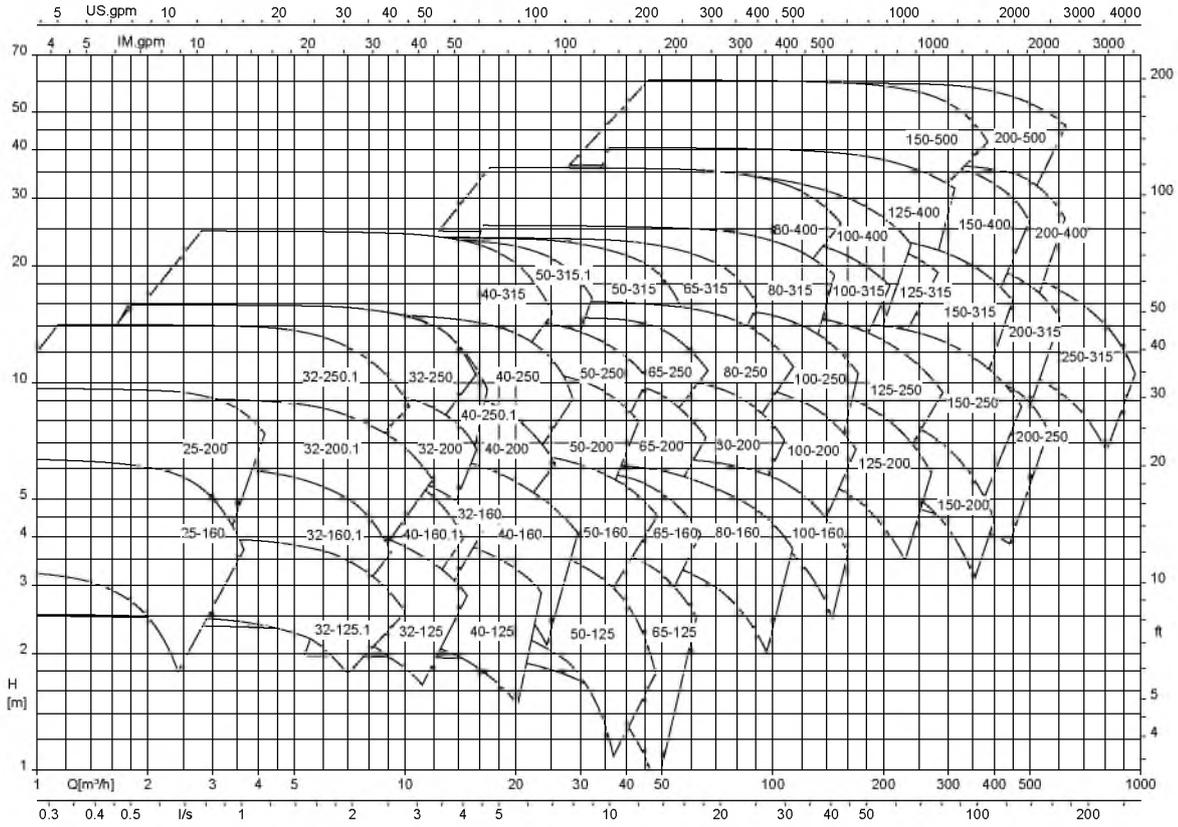
HPK-L, n = 1750 rpm



Size 65-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

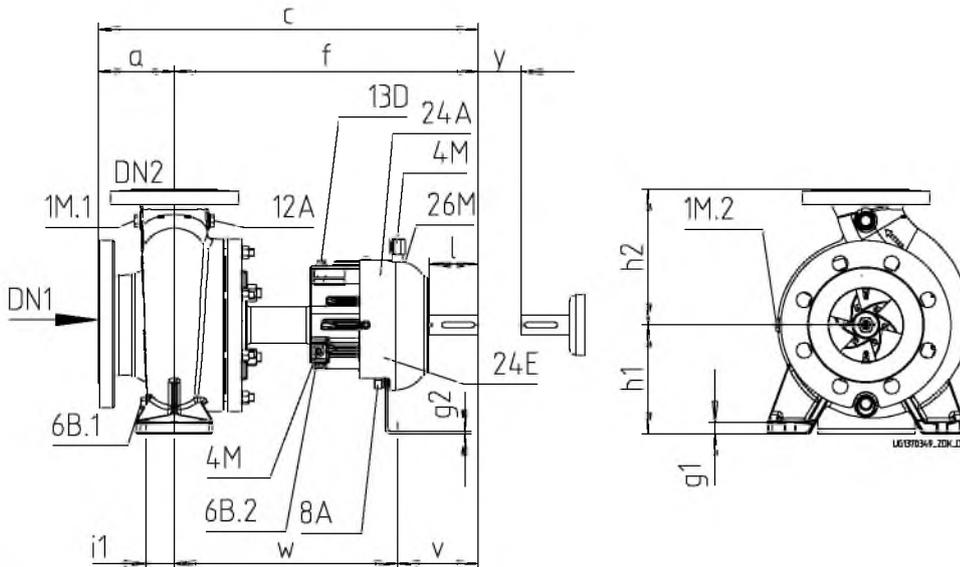
HPK-L, n = 1160 rpm



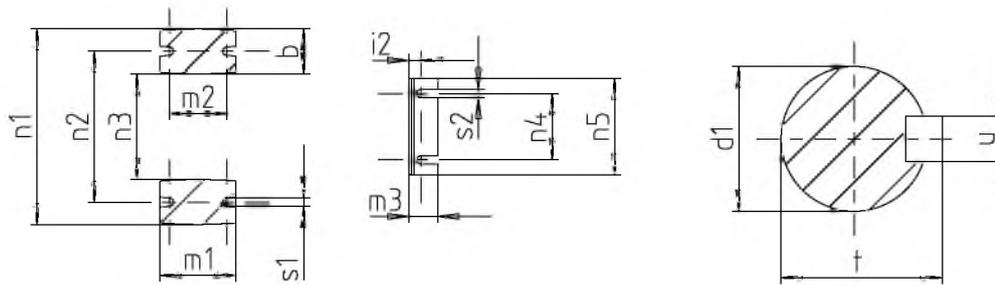
Size 65-125 not available in Asia

Sizes 040-160.1, 040-250.1 and 050-315.1 are only available in Europe.

Dimensions and connections



Dimensions and connections of the pump



Dimensions of pump feet and shaft end

Connection types, Europe

Connection	Discharge nozzle			Description
	≤ DN 50	DN 65 - DN 80	≥ DN 100	
1M.1	G1/4	G3/8	G1/2	Pressure gauge
1M.2	G1/4	G3/8	G1/2	Pressure gauge
4M		G1/4		Temperature measuring instrument
6B.1	G1/4	G3/8	G1/2	Fluid drain
6B.2		G1/4		Fluid drain
8A		R1/4		Leakage drain
12A	G1/4	G3/8	G1/2	Auxiliary connection
13D		G1/4		Vent plug
24 E/A		G1/2		Quench fluid IN/OUT
26M		M8		Vibration measurement

Connection types, Asia/Americas

Connection	Discharge nozzle			Description
	≤ DN 50	DN 65 - DN 80	≥ DN 100	
1M.1	NPT1/4	NPT3/8	NPT1/2	Pressure gauge
1M.2	NPT1/4	NPT3/8	NPT1/2	Pressure gauge
4M		G1/4		Temperature measuring instrument
6B.1	NPT1/4	NPT3/8	NPT1/2	Fluid drain
6B.2		G1/4		Fluid drain
8A		R1/4		Leakage drain
12A	NPT1/4	NPT3/8	NPT1/2	Auxiliary connection
13D		G1/4		Vent plug
24 E/A		NPT1/2		Quench fluid IN/OUT
26M		M8		Vibration measurement

Pump dimensions

Size	Bearing bracket	Pump dimensions														
		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
050-032-160.1	CS40	50	32	80	50	465	385	15	4	132	160	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
050-032-250.1	CS50	50	32	100	65	600	500	18	4	180	225	125	48	320	190	160
050-032-160	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
050-032-250	CS50	50	32	100	65	600	500	18	4	180	225	125	48	320	190	160
065-040-160.1	CS40	65	40	80	50	465	385	15	4	132	160	100	48	240	140	160

Size	Bearing bracket	Pump dimensions														
		DN1	DN2	a	b	c	f	g1	g2	h1	h2	m1	m3	n1	n3	n5
065-040-250.1	CS50	65	40	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
065-040-200	CS40	65	40	100	50	485	385	18	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
065-040-315	CS50	65	40	125	65	625	500	18	6	200	250	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
080-050-125	CS40	80	50	100	50	465	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
080-050-200	CS40	80	50	100	50	485	385	18	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
080-050-315	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
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
125-080-250	CS50	125	80	125	80	625	500	18	6	225	280	160	48	400	240	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
125-100-160	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
125-100-250	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	12	315	400	200	60	550	350	200
200-150-400	CS80	200	150	160	100	830	670	20	12	315	450	200	60	550	350	200
200-150-500	CS80	200	150	180	100	850	670	22	12	375	500	200	60	550	350	200
200-200-250	CS80	200	200	180	100	850	670	22	12	355	425	200	60	550	350	200
250-200-315	CS80	250	200	200	100	870	670	22	12	355	450	200	60	550	350	200
250-200-400	CS80	250	200	180	100	850	670	22	12	355	500	200	60	550	350	200
250-200-500	CS80	250	200	200	100	870	670	22	12	425	560	200	60	660	460	200
300-250-315	CS80	300	250	250	130	920	670	26	12	400	560	260	60	690	430	200

Dimensions of shaft end and foot bolts

Size	Bearing bracket	Shaft end					Foot bolts									
		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	
050-032-160.1	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	
050-032-250.1	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370	
050-032-160	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	
050-032-250	CS50	32	80	35	10	100	47,5	20	95	250	110	14	14	130	370	

Size	Bearing bracket	Shaft end					Foot bolts									
		d1	l	t	u	y	i1	i2	m2	n2	n4	s1	s2	v	w	
065-040-160.1	CS40	24	50	27	8	100	35	20	70	190	110	14	14	100	285	
065-040-250.1	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	
065-040-200	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	
065-040-315	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	
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	
080-050-200	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	
080-050-315	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	
125-080-250	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	

### Flange design

Flange design by materials

Material	Standard	Pressure class
E/S	EN 1092-1	PN 25
	Drilled to ASME B16.5	Class 300 <sup>8)</sup>
Y/Z	EN 1092-1	PN 40
	Drilled to ASME B16.5	Class 300

### Scope of supply

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

- Pump

#### Drive

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

#### Coupling

- Flexible coupling with or without spacer

#### Contact guard

- Coupling guard

#### Baseplate

Europe:

<sup>8)</sup> Not possible for size 100-065-125

- Baseplate (to ISO 3661), cast or welded, for pump and motor, in torsion-resistant design
- Channel section steel or folded steel plate

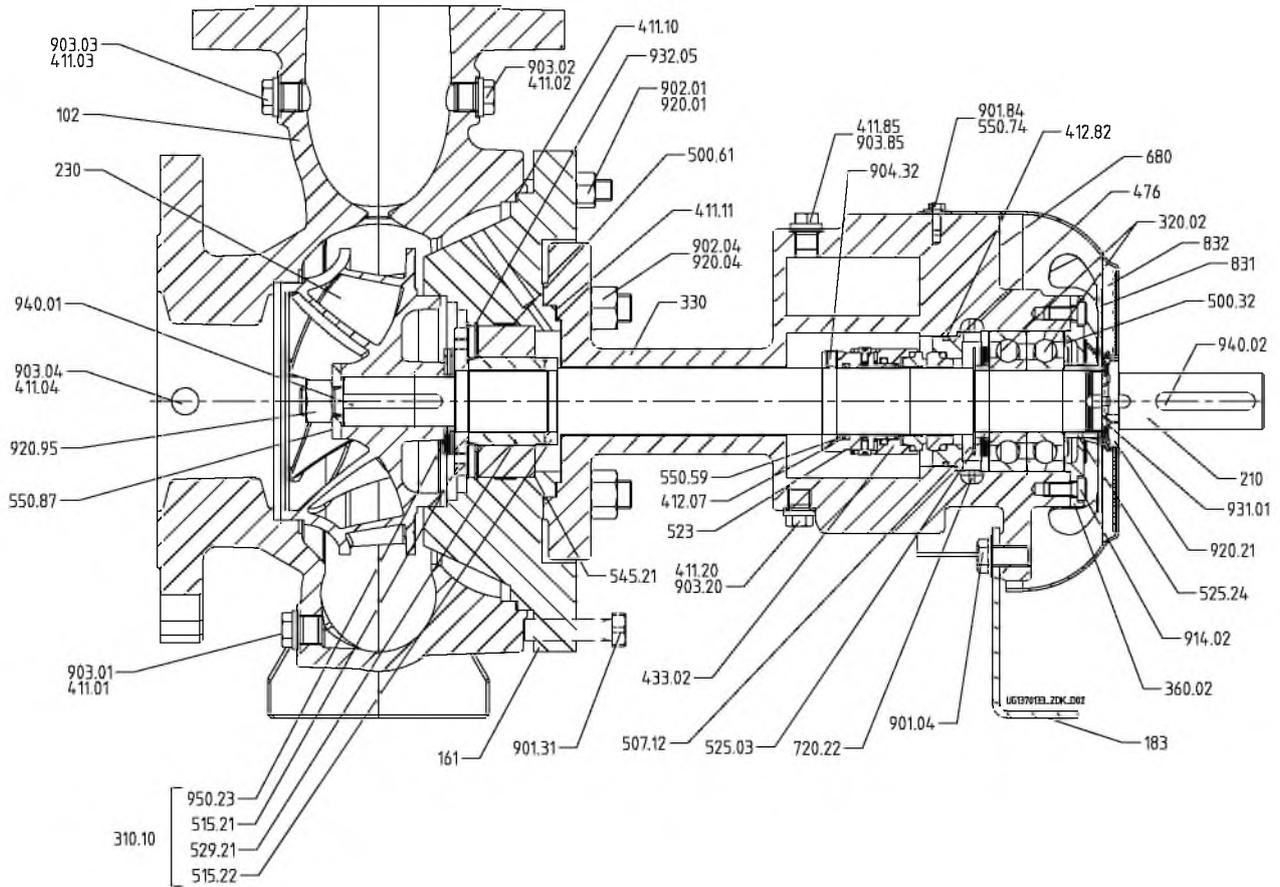
Asia/Americas:

- Baseplate to local KSB standard

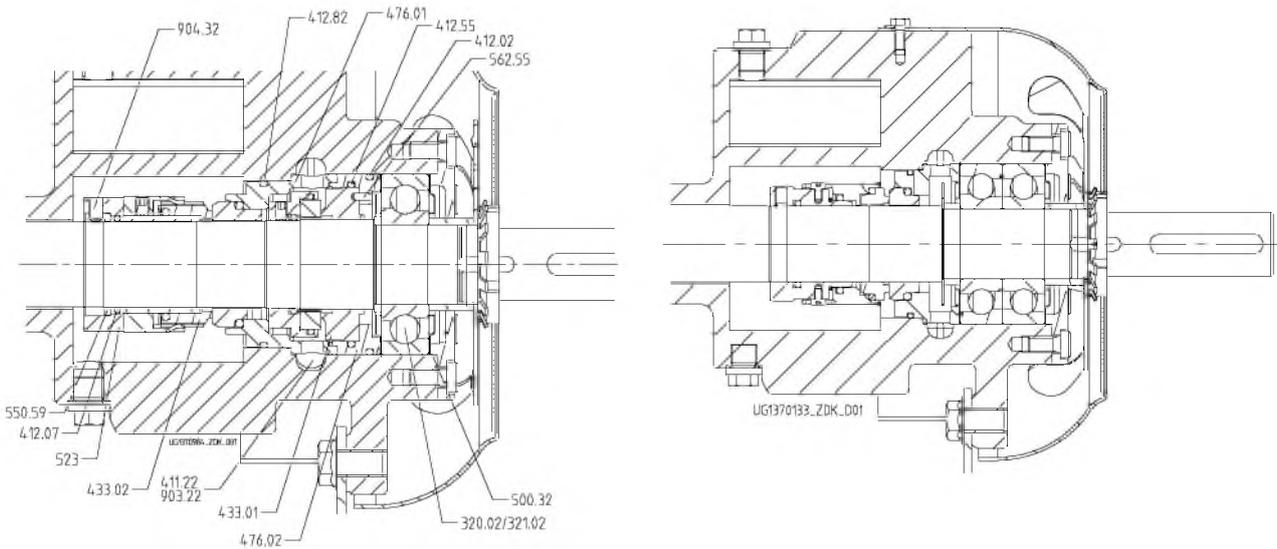
**Special accessories**

- As required

General assembly drawing with list of components

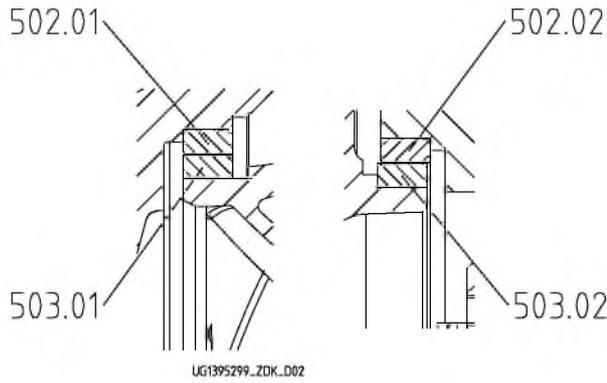


General assembly drawing, version with single mechanical seal

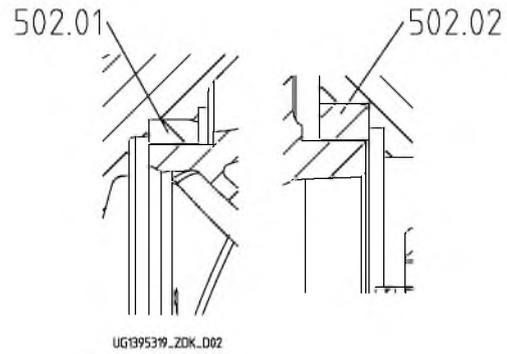


Version with two mechanical seals

Dead-end seal arrangement



Version with casing wear ring and impeller wear ring



Version with casing wear ring

List of components

Part No.	Comprising	Description
102	102	Volute casing
	411.01/.02/.03/.04/.10	Joint ring
	502.01 <sup>9)</sup>	Casing wear ring
	902.01	Stud
	903.01/.02/.03/.04	Screw plug
	920.01	Hexagon nut
161	161	Casing cover
	411.11	Joint ring
	500.61	Tolerance ring
	502.02 <sup>9)</sup>	Casing wear ring
	545.21	Bearing bush
	901.31	Hexagon head bolt
	902.04	Stud
	920.04	Hexagon nut
932.05	Circlip	
183	183	Support foot
210	210	Shaft
	550.87	Disc
	920.21	Slotted round nut
	920.95	Hexagon nut
	931.01	Lock washer
	940.01/02	Key
230	230	Impeller
	503.01/.02 <sup>10)</sup>	Impeller wear ring
310.10	310.10	Plain bearing
	515.21/.22	Locking ring
	529.21	Bearing sleeve
	950.23	Disc spring
320.02 <sup>11)</sup>	320.02 <sup>11)</sup>	Angular contact ball bearing
321.02 <sup>11)</sup>	321.02 <sup>11)</sup>	Deep groove ball bearing
330	330	Bearing bracket
360.02	360.02	Bearing cover
411.20/.22/.35 <sup>12)</sup> /.36 <sup>12)</sup> /.55/.85	411.20/.22/.35 <sup>12)</sup> /.36 <sup>12)</sup> /.55/.85	Joint ring
412.02/.82	412.02/.82	O-ring
412.07 <sup>13)</sup>	412.07 <sup>13)</sup>	O-ring
433.01	433.01	Mechanical seal
433.02	433.02	Mechanical seal
476/.01/.02	476/.01/.02	Mating ring carrier

9) On pumps with casing wear ring only  
 10) On pumps with casing wear ring and impeller wear ring only  
 11) Depending on the design  
 12) On pumps with two mechanical seals only  
 13) Not fitted on pumps with KSB mechanical seal

Part No.	Comprising	Description
500.32	500.32	Nilos ring
507.12	507.12	Thrower
523 <sup>13)</sup>	523 <sup>13)</sup>	Shaft sleeve
525.03/.24	525.03/.24	Spacer sleeve
550.59 <sup>13)</sup>	550.59 <sup>13)</sup>	Support disc
550.74	550.74	Disc
562.55	562.55	Parallel pin
680	680	Guard
720.22	720.22	Hexagon nipple
720.35 <sup>12)</sup> /.36 <sup>12)</sup>	720.35 <sup>12)</sup> /.36 <sup>12)</sup>	Extension
831	831	Fan impeller
832	832	Fan hood
901.04/.84	901.04/.84	Hexagon head bolt
902.04	902.04	Stud
903.20/.22/.85	903.20/.22/.85	Screw plug
904.32 <sup>13)</sup>	904.32 <sup>13)</sup>	Grub screw
914.02	914.02	Hexagon socket head cap screw
920.04	920.04	Hexagon nut

### Detailed designation

Product code 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
H	P	K	L	0	5	0	-	0	3	2	-	2	5	0	1	E	G	B	S		X	W		W	0	0	7	5	4		B
See name plate and data sheet																				See data sheet											

### Key to the designation

Position	Code	Description
1-4	Pump type	
	HPK-L	Type series
5-16	Size	
	050	Nominal suction nozzle diameter [mm]
	032	Nominal discharge nozzle diameter [mm]
17	Material of pump casing and casing cover	
	S	<b>Pump casing:</b> GP240GH+N/ A216 Gr WCB <b>Casing cover:</b> EN-GJS-400-18-18-LT
	E	<b>Pump casing:</b> GP240GH+N/ A216 Gr WCB <b>Casing cover:</b> P250GH/1.7335/P355NL1 (Europe) or <b>Casing cover:</b> GP240GH+N/ A216 Gr WCB (Asia)
	Z	<b>Pump casing:</b> 1.7706 <b>Casing cover:</b> EN-GJS-400-18-18-LT
18	Impeller material	
	G	Grey cast iron EN-GJL-250 / grey cast iron A 48 CL 35B
	C	Stainless steel 1.4408 / A743 GR CF8M
19-21	Seal variants	
	BS	Single mechanical seal, dead-end arrangement, air-cooled
22	Special design	
	TL	Tandem mechanical seals, dead-end arrangement, air-cooled
23	Fluid handled	
	X	Special design
24	Blank	
	-	Standard
	W	Hot water
25	Bearing bracket design	
	O	Heat transfer fluids
	W	Bearing bracket for heat transfer applications

Position		Code	Description
26-29	Motor rating		
		1 3 2 0	132 kW
		0 0 7 5	7.5 KW
		0 0 0 7	0.75 KW
30	Number of poles		
		2	2 poles
		4	4 poles
		6	6 poles
31-32	Product generation		
		B	Product generation HPK-L 2013 Global Pump
		A	Product generation HPK-L 2001





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Hygienic Pump

**Vitachrom**

**Type Series Booklet**



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Type Series Booklet Vitachrom

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## Close-coupled Pump

## Hygienic Pump

## Vitachrom



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

### Main applications

- Food and beverages industry
- Pharmaceutical industry
- Chemical industry

### Fluids handled

- Fluids not chemically or mechanically aggressive to the materials

### Further information on fluids handled

(⇒Page 7)

### Operating data

Operating properties

Characteristic	Value	
	50 Hz	60 Hz
Flow rate	Q [m³/h] ≤ 340	≤ 320
Head	H [m] ≤ 100	≤ 112
Operating pressure	p [bar] ≤ 12	
Fluid temperature	T [°C] ≤ 110	
Connection sizes	DN 50 - 125	

### Designation

Example: VC 050-050-125 CC IO1MM1

Designation key

Code	Description
VC	Type series VC   Vitachrom
050	Nominal suction nozzle diameter [mm]
050	Nominal discharge nozzle diameter [mm]
125	Nominal impeller diameter [mm]
C	Casing material C   1.4404
C	Impeller material C   1.4409
IO1	Seal code of the mechanical seal I O 1   Q12Q1E1-04GG (SiC/SiC/EPDM)
M	Mounting arrangement M   Motor foot
M	Pipe connection M   Pipe union to DIN 11851
1	Material of O-rings 1   EPDM

### Further information on the designation

(⇒Page 52)

### Design details

#### Design

- Standard design with materials to Regulation (EC) No. 1935/2004
- Design to ATEX

#### Design

- Centrifugal pump
- Close-coupled design
- Single-stage
- Wetted parts made of stainless steel 1.4404/1.4409 (AISI 316L/CF3M)
- CIP/SIP-compatible
- Pump version with inducer for fluids pumped from vessels under vacuum (pump sizes 65-160-IND, 80-250-IND and 80-250.1-IND only) and for low NPSH values.

#### Pump casing

- Circular casing

#### Impeller type

- Semi-open multi-vane impeller

#### Shaft seal

- Single mechanical seal surrounded by fluid handled to EN 12756, hygienic or sterile design  
Hygienic design: inboard seal with spring surrounded by fluid handled, uni-directional  
Sterile design: inboard seal with covered spring, polished surface, bi-directional
- Double mechanical seal in tandem arrangement with quench to EN 12756 in hygienic or sterile design

#### Bearings

- No separate pump bearings

#### Drive

- Surface-cooled KSB squirrel-cage motor
- Type of construction V1, V15 / B5, B35

- IP55 enclosure
- Thermal class F; 3 PTC thermistors
- Mode of operation: continuous operation S1
- 50 Hz winding:  
Up to 2.2 kW: 220-240 V/380-420 V  
3 kW and higher: 380-420 V/660-725 V
- 60 Hz winding, 440 - 480 V

Explosion-proof version:

- KSB surface-cooled IEC frame three-phase current squirrel-cage motor

Winding	<b>50 Hz</b> Up to 1.85 kW: 220-240 V/380-420 V 2.5 kW and higher: 380-420 V/ 660-725 V
Type of construction	Up to 3.3 kW: IM V1 4.6 kW and higher: IM V15
Enclosure	IP55 or IP54
Type of protection	EExe II and EExde II
Temperature class	T3
Mode of operation	Continuous operation S1

### Automation

Automation options:

- PumpDrive
- PumpMeter

### Connections

Axial suction nozzle, tangential discharge nozzle

Adjustable through 360°

Standard:

- Threaded connection to DIN 11851
- Flange to EN 1092-1

Alternative:

- Flange to DIN 11864-2-NF-A
- Flange to EN 1092-1-F
- Flange to APV-FN
- Threaded connection to DIN 11864-1-GS-A
- Threaded connection to IDF (ISO 2853)
- Threaded connection to SMS standard
- Clamped connection to DIN 32676-A and ISO 2852
- Other variants on request.

### Materials

Overview of available materials

Component	Material
Circular casing <sup>1)</sup>	1.4404/1.4409 (AISI 316L/CF3M)
Discharge cover <sup>1)</sup>	1.4409 (AISI CF3M)
Impeller <sup>1)</sup>	1.4409 (AISI CF3M)
Inducer <sup>1)</sup>	1.4409 (AISI CF3M)
Impeller nut <sup>1)</sup>	1.4404 (AISI 316L)
Pump shaft	1.4571 (AISI 316 Ti)
Drive lantern	GJL with cataphoretic coating

All materials that will be in contact with the fluid handled conform with Regulation (EC) No. 1935/2004 and Commission Regulation (EC) No. 2023/2006.

<sup>1)</sup> Wetted components

### Coating and preservation

- Coating and preservation to KSB standard

### Product benefits

- Easy to clean due to little dead volume and excellent flushability
- Service-friendly design, easy and fast to dismantle
- Stub shaft allows combination with all commercial standardised motors
- High surface quality thanks to special polishing techniques
- Corrosion-resistant by using high-quality stainless steel
- Operating costs reduced by trimming the impeller diameter to match the specified duty point
- Highly suitable for CIP/SIP routines

### Certifications

Overview

Label	Valid in:	Comment
	All countries	Certified quality management to ISO 9001
	All countries	EHEDG-certified cleanability
	All countries	Elastomers certified to FDA, 3A, USP Class VI
	France	French drinking water approval

### Acceptance tests and warranty

- Materials testing
  - Material test report 2.2 on request
  - Material test report 3.1 on request
- Final inspection
  - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test against surcharge
  - To ISO 9906/2B or ISO 9906/3B
  - NPSH test
- Other tests  
Other tests (e.g. vibrations, strength, noise characteristics) on request.

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

### Overview of fluids handled

Fluid selection table

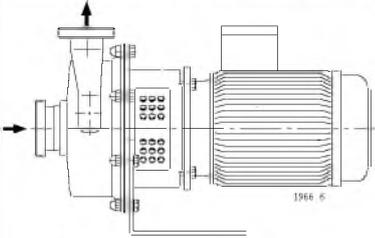
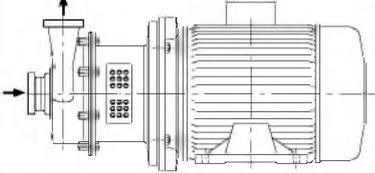
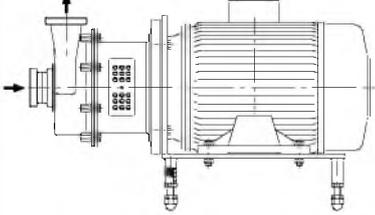
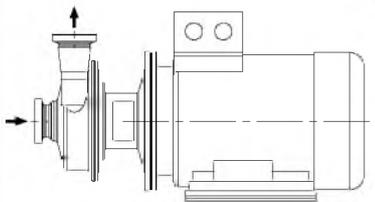
			Mechanical seal design											
			Single mechanical seal					Double mechanical seal in tandem arrangement						
			Secondary seal BQ1EGG											
			BQ1E1-04GG	Q12Q1E1-04GG	BQ1V26GG	Q12Q1V26GG	Q22Q2E1-04GG	Q12Q1M1GG	BQ1E1-04GG	Q12Q1E1-04GG	BQ1V26GG	Q12Q1V26GG	Q22Q2E1-04GG	Q12Q1M1GG
Design code														
Mechanical seal with spring surrounded by fluid handled			I01	I03	I02	I04	-	I21	T11	T13	T12	T14	-	T31
Mechanical seal with covered spring			I06	I08	I07	I09	I10	-	T16	T18	T17	T19	T20	-
Fluid handled	Concentration [%]	t <sub>max</sub> [°C]												
Alcohol (ethanol)	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Alcohol (methanol)	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Alcohol (propanol)	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Aluminium sulphate	Up to 5 %	30	-	X	-	-	-	-	-	-	-	-	-	-
	Up to 10	30	-	-	-	-	-	-	-	X	-	-	-	-
Formic acid	10	20	X	-	-	-	-	-	-	-	-	-	-	-
Malic acid	Unsaturated solution	60	-	X	-	-	-	-	-	-	-	-	-	-
Apple purée	-	20	X	-	-	-	-	-	-	-	-	-	-	-
Apple juice	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Cider	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Benzoic acid	10	100	-	-	-	X	-	-	-	-	-	-	-	-
Beer	-	100	X	-	-	-	-	-	-	-	-	-	-	-
Beer hops	-	100	-	-	-	-	-	-	-	X	-	-	-	-
Beer mash	-	100	-	X	-	-	-	-	-	-	-	-	-	-
Beer trub	-	100	-	X	-	-	-	-	-	-	-	-	-	-
Beer wort	-	100	-	-	-	-	-	-	-	X	-	-	-	-
Spirits	10	60	X	-	-	-	-	-	-	-	-	-	-	-
Buttermilk	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Calcium nitrate	10	30	-	X	-	-	-	-	-	-	-	-	-	-
Potassium acetate	Unsaturated solution	100	X	-	-	-	-	-	-	-	-	-	-	-
Fluids for CIP	-	90	-	-	-	-	-	X	-	-	-	-	-	-
Coke	-	20	X	-	-	-	-	-	-	-	-	-	-	-
Coke concentrate	-	20	-	X	-	-	-	-	-	-	-	-	-	-
Deionised water (fully desalinated water)	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Egg, liquid	-	100	-	-	-	X	-	-	-	-	-	-	-	-
Egg, liquid mixed with sugar	-	100	-	-	-	-	-	-	-	-	X	-	-	-
Liqueur with egg yolks	-	50	X	-	-	-	-	-	-	-	-	-	-	-
Vinegar (wine vinegar)	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Vinegar concentrate	25	25	X	-	-	-	-	-	-	-	-	-	-	-
Acetic acid	10	60	X	-	-	-	-	-	-	-	-	-	-	-
	50	20	-	-	-	-	-	-	X	-	-	-	-	-
Fruit juices and fruit acids	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Fruit liqueur	-	60	-	-	-	-	-	-	X	-	-	-	-	-
Gallic acid	Unsaturated solution	100	-	-	X	-	-	-	-	-	-	-	-	-
Vegetable juice	-	100	X	-	-	-	-	-	-	-	-	-	-	-
Tannic acid	Unsaturated solution	100	X	-	-	-	-	-	-	-	-	-	-	-
Glucose	Unsaturated aqueous solution	50	-	X	-	-	-	-	-	-	-	-	-	-
Glycerine	45	100	X	-	-	-	-	-	-	-	-	-	-	-
Glycol (ethylene glycol)	100	60	-	-	-	-	-	-	X	-	-	-	-	-
	50	60	X	-	-	-	-	-	-	-	-	-	-	-
Yeast	-	60	-	X	-	-	-	-	-	-	-	-	-	-
Sal volatile (ammonium carbonate) (ammonium bicarbonate)	Unsaturated solution	20	X	-	-	-	-	-	-	-	-	-	-	-
Coffee (extract)	-	60	-	-	-	X	-	-	-	-	-	-	-	-
Cocoa milk	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Evaporated milk	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Evaporated milk, with sugar (condensed milk)	-	60	-	X	-	-	-	-	-	-	-	-	-	-
Herbal liqueur	-	60	X	X	-	-	-	-	-	-	-	-	-	-
Linseed oil	-	60	-	-	X	-	-	-	-	-	-	-	-	-

			Mechanical seal design											
			Single mechanical seal						Double mechanical seal in tandem arrangement					
									Secondary seal BQ1EGG					
									BQ1E1-04GG	Q12Q1E1-04GG	BQ1V26GG	Q12Q1V26GG	Q22Q2E1-04GG	Q12Q1M1GG
			Design code											
Mechanical seal with spring surrounded by fluid handled			I01	I03	I02	I04	-	I21	T11	T13	T12	T14	-	T31
Mechanical seal with covered spring			I06	I08	I07	I09	I10	-	T16	T18	T17	T19	T20	-
Fluid handled	Concentration [%]	t <sub>max</sub> [°C]												
Linseed oil (3 % sulphuric acid)	-	20	-	-	X	-	-	-	-	-	-	-	-	-
Lemonade	-	90	-	X	-	-	-	-	-	-	-	-	-	-
Lysol	-	60	-	-	X	-	-	-	-	-	-	-	-	-
Skim milk	-	40	X	-	-	-	-	-	-	-	-	-	-	-
Skim milk, sour	-	40	X	-	-	-	-	-	-	-	-	-	-	-
Malt	-	100	-	X	-	-	-	-	-	-	-	-	-	-
Methyl alcohol	-	60	-	-	-	-	-	-	X	-	-	-	-	-
Milk	-	40	X	-	-	-	-	-	-	-	-	-	-	-
Milk concentrate	15	50	-	-	-	-	-	-	-	-	-	X	-	-
Lactic acid	10	20	X	-	-	-	-	-	-	-	-	-	-	-
	Unsaturated solution	80	-	-	X	-	-	-	-	-	-	-	-	-
Must	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Sodium chloride (= common table salt)	2	20	X	-	-	-	-	-	-	-	-	-	-	-
Sodium hydroxide	Up to 20	80	-	X	-	-	-	-	-	-	-	-	-	-
	Up to 50	80	-	-	-	-	-	-	-	X	-	-	-	-
Fruit pulp	-	20	-	X	-	-	-	-	-	-	-	-	-	-
Oxalic acid	Unsaturated solution	20	-	-	-	-	-	-	X	-	-	-	-	-
Orange juice	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Sap	-	50	X	-	-	-	-	-	-	-	-	-	-	-
Cream (sour/sweet)	-	40	X	-	-	-	-	-	-	-	-	-	-	-
High-purity water, ultra-pure water	-	100	-	-	-	-	X	-	-	-	-	-	-	-
Sparkling wine	-	50	-	X	-	-	-	-	-	-	-	-	-	-
Syrup	-	40	-	X	-	-	-	-	-	-	-	-	-	-
Sweet permeate (milk)	-	90	-	-	X	-	-	-	-	-	-	-	-	-
Water (fresh water) <sup>2)</sup>	-	110	X	-	-	-	-	-	-	-	-	-	-	-
Wine (white and red wine)	-	60	X	-	-	-	-	-	-	-	-	-	-	-
Wine vinegar	See vinegar	-	X	-	-	-	-	-	-	-	-	-	-	-
Spirits of wine	See alcohol	-	X	-	-	-	-	-	-	-	-	-	-	-
Tartaric acid	Unsaturated solution	60	X	-	-	-	-	-	-	-	-	-	-	-
Water for injection	-	100	-	-	-	-	X	-	-	-	-	-	-	-
Wort, hot wort	-	100	-	-	-	-	-	-	-	X	-	-	-	-
Citric acid	Unsaturated solution	80	X	-	-	-	-	-	-	-	-	-	-	-
Sugar solution	< 65	100	X	-	-	-	-	-	-	-	-	-	-	-
	> 65	100	-	-	-	-	-	-	-	X	-	-	-	-
<b>Oils</b>														
Anise oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Cotton seed oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Peanut oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Lavender oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Corn oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Olive oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Rapeseed oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Castor oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Soy-bean oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Sunflower oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Edible oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-
Walnut oil	-	100	-	-	X	-	-	-	-	-	-	-	-	-

<sup>2)</sup> General assessment criteria for results of water analysis: pH ≥ 7; chloride content (Cl) ≤ 250 mg/kg. Chlorine (Cl<sub>2</sub>) ≤ 0.6 mg/kg.

## Mounting arrangements

Mounting arrangements for horizontal installation

Mounting arrangement	Description
	Pump set angle foot mounted <ul style="list-style-type: none"> <li>Motor frame size 90 to 112</li> </ul>
	Pump set motor foot mounted <ul style="list-style-type: none"> <li>Motor frame size 90 to 280</li> </ul>
	Pump set ball feet mounted <ul style="list-style-type: none"> <li>Motor frame size 90 to 280</li> <li>Alternatively mounted on rubber-padded round base feet</li> </ul>
	Pump set soleplate mounted <ul style="list-style-type: none"> <li>Motor frame size 90 to 280</li> </ul>

## Technical data

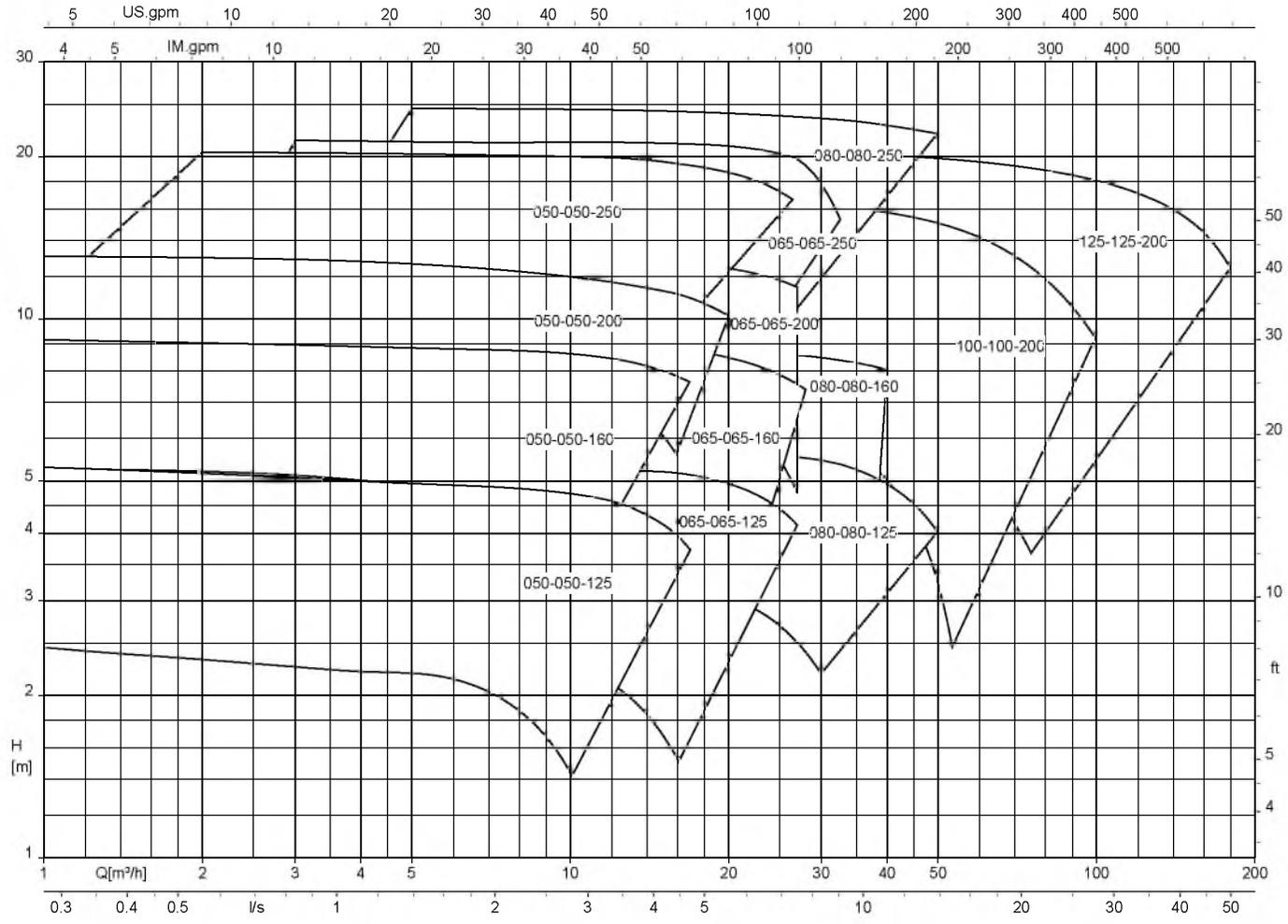
Technical data

Size	Shaft unit	Impeller diameter	Impeller outlet width	Free passage	Speed limits	
					Max.	Min.
					[rpm]	
050-050-125	25.1	138 - 100	16	11	3600	500
050-050-160	25.1	166 - 130	14.8	11	3600	500
050-050-200	25.1	196 - 160	13.5	11	3600	500
050-050-250	25.2	265 - 180	4	4	3600	500
065-065-125	25.1	136 - 100	21,5	11	3600	500
065-065-160	25.1	166 - 130	20,3	11	3600	500
065-065-200	25.1	196 - 160	19	11	3600	500
065-065-250	25.2	265 - 180	10	10	3600	500
080-080-125	25.1	145 - 110	31,3	11	3600	500
080-080-160	25.1	170 - 130	30	11	3600	500
080-080-250	25.2	265 - 180	22	16	3600	500
100-100-200	25.2	220 - 150	20	16	3600	500
125-125-200	35	240 - 150	40	25	3600 <sup>3)</sup>	500

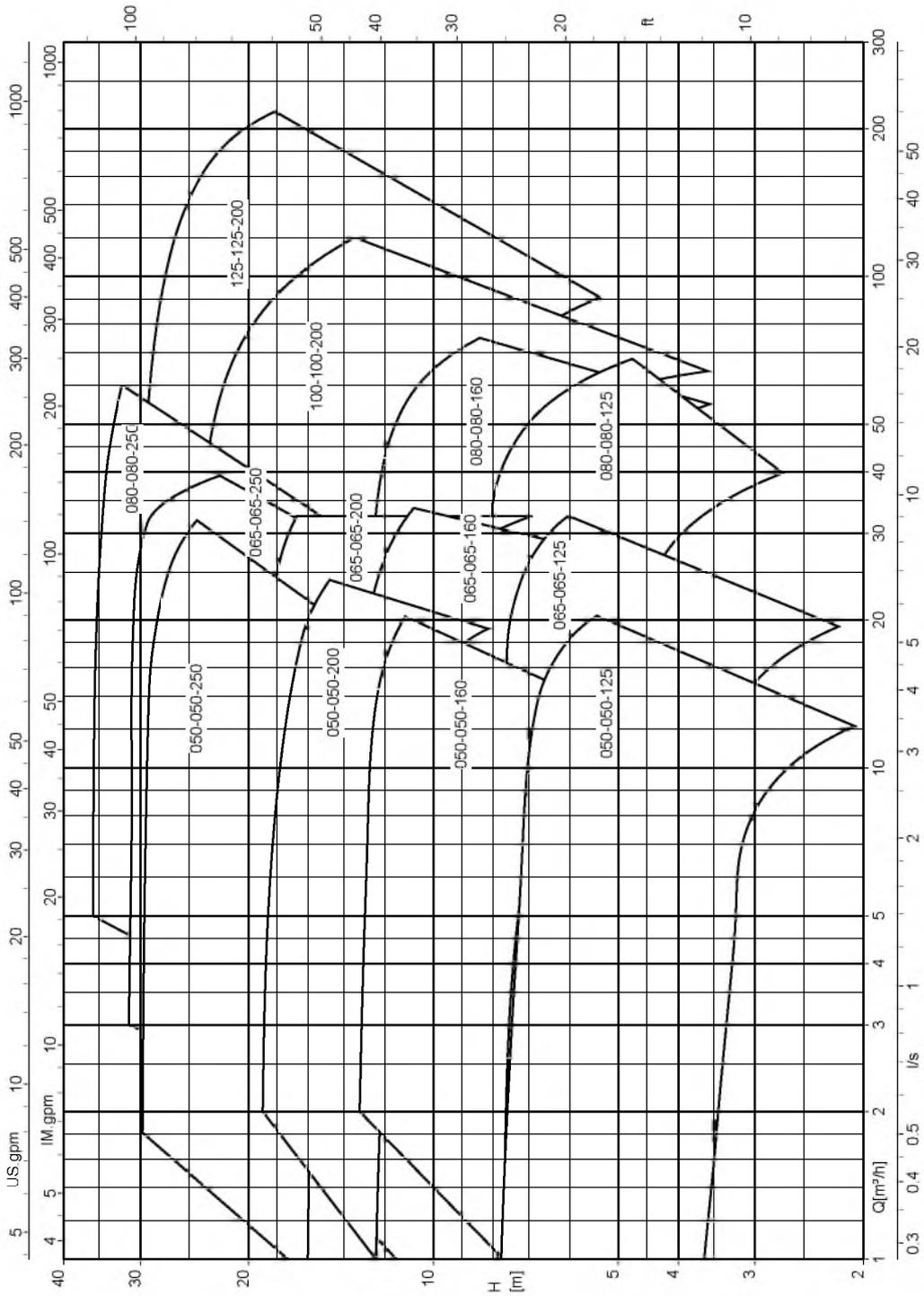
<sup>3)</sup> For impeller diameters of 220 mm and larger, the maximum speed equals 3000 rpm

Selection charts

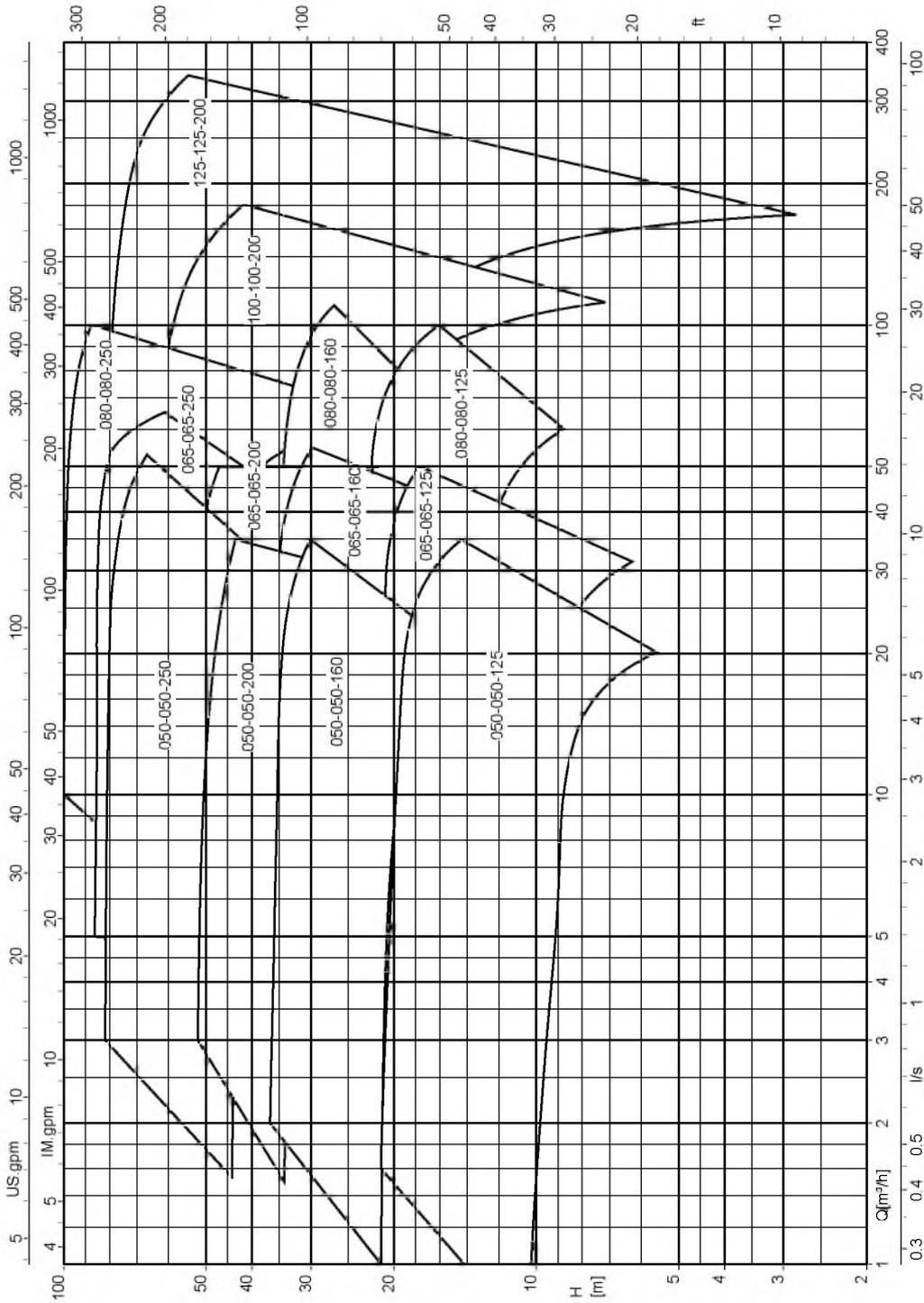
Vitachrom, n = 1450 rpm



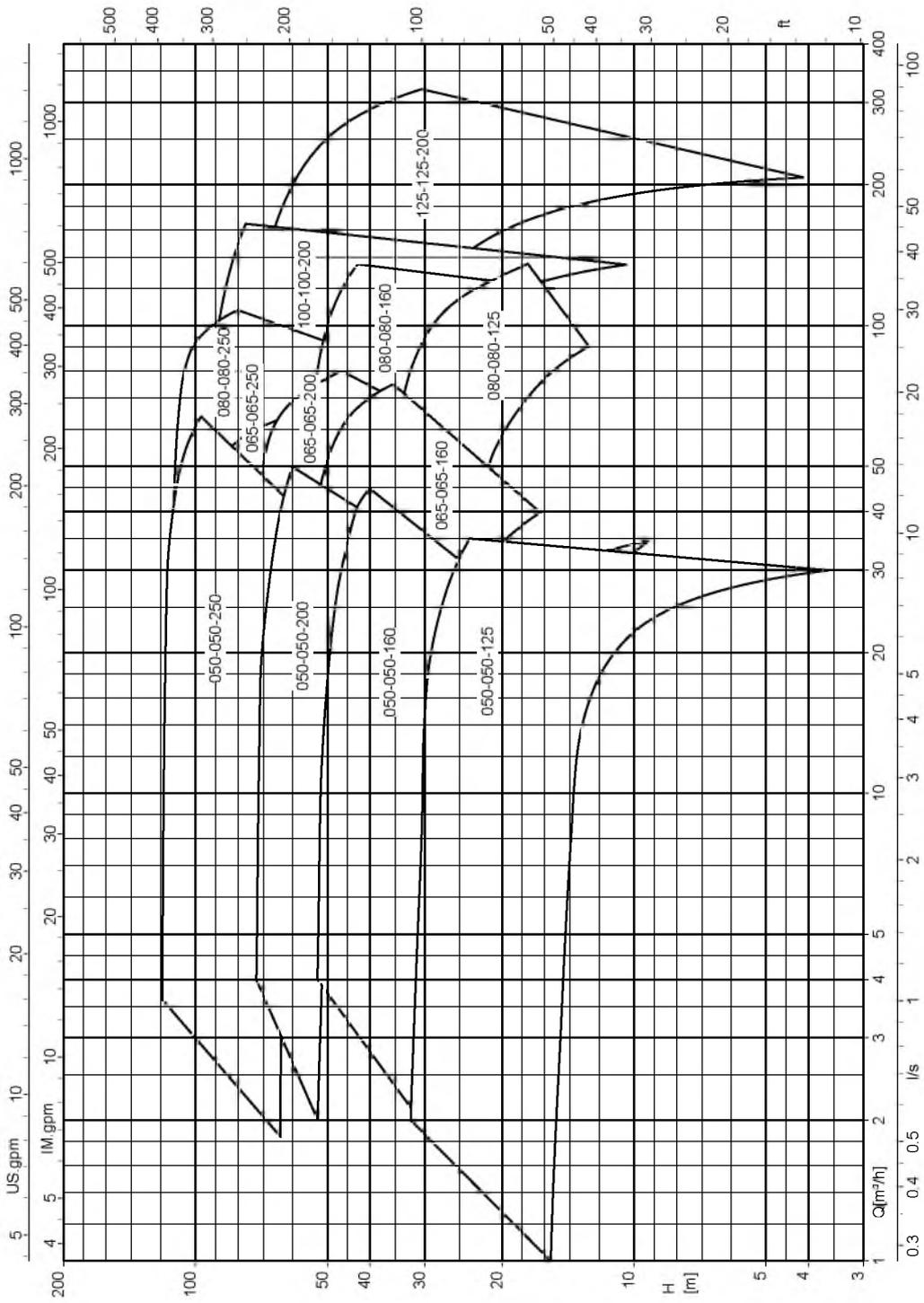
Vitachrom, n = 1750 rpm



Vitachrom, n = 2900 rpm



Vitachrom, n = 3500 rpm



Dimensions and connections

Overview of general arrangement drawings

Overview

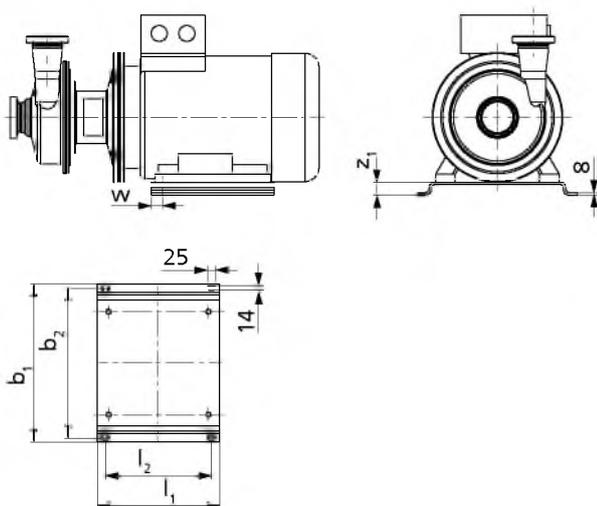
Size	Speed [rpm]				Mounting arrangement				With motor shroud	See
	1450	1750	2900	3500	With inducer	With motor feet	With angle foot	With ball feet		
DN 50	-	-	X	X	-	X	X	-	-	(⇒Page 16)
	-	-	X	X	-	-	-	X	X	(⇒Page 18)
	X	X	-	-	-	X	X	-	-	(⇒Page 38)
	X	X	-	-	-	-	-	X	X	(⇒Page 39)
DN 65	-	-	X	X	-	X	X	-	-	(⇒Page 20)
	-	-	X	X	-	-	-	X	X	(⇒Page 22)
	X	X	-	-	-	X	X	-	-	(⇒Page 40)
	X	X	-	-	-	-	-	X	X	(⇒Page 41)
	-	-	X	X	X	X	X	-	-	(⇒Page 24)
	-	-	X	X	X	-	-	X	X	(⇒Page 25)
DN 80	-	-	X	X	-	X	X	-	-	(⇒Page 26)
	-	-	X	X	-	-	-	X	X	(⇒Page 28)
	X	X	-	-	-	X	X	-	-	(⇒Page 42)
	X	X	-	-	-	-	-	X	X	(⇒Page 43)
	-	-	X	-	X	X	-	-	-	(⇒Page 29)
	-	-	X	-	X	-	-	X	X	(⇒Page 31)
	-	-	-	X	X	X	-	-	-	(⇒Page 32)
DN 100	-	-	X	X	-	X	X	-	-	(⇒Page 34)
	-	-	X	X	-	-	-	X	X	(⇒Page 35)
	X	X	-	-	-	X	X	-	-	(⇒Page 44)
	X	X	-	-	-	-	-	X	X	(⇒Page 45)
	-	-	X	X	-	X	X	-	-	(⇒Page 36)
DN 125	-	-	X	X	-	-	-	X	X	(⇒Page 37)
	X	X	-	-	-	X	X	-	-	(⇒Page 46)
	X	X	-	-	-	-	-	X	X	(⇒Page 47)
	X	X	-	-	-	-	-	X	X	(⇒Page 47)

Applies to all of the following general arrangement drawings:

- Tolerances of mating dimensions to EN 735

- Mating dimensions for pumps with different pump connections on request

Overview of motor soleplates

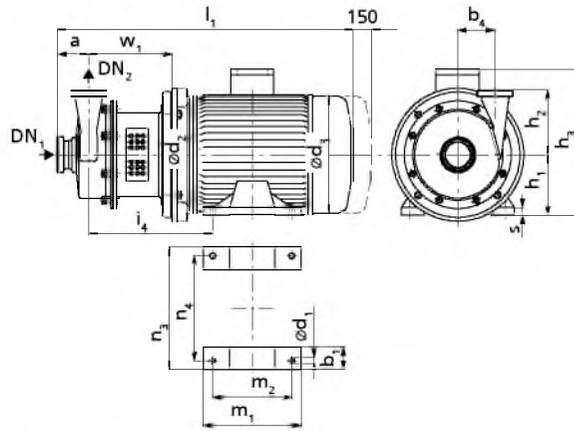


Motor soleplate dimensions [mm]

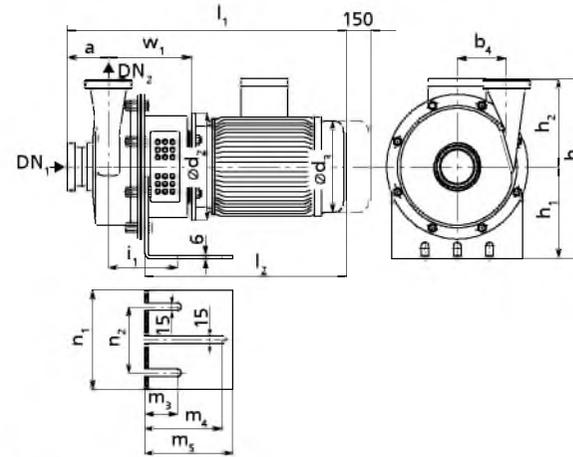
Combinations

Motor	Motor soleplate	Dimensions [mm]						Variant
		b <sub>1</sub>	b <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w	z <sub>1</sub>	
90S	G1	400	375	350	300	28	70	05
90L	G1	400	375	350	300	28	70	08
100L	G1	400	375	350	300	28	70	04
112M	G1	400	375	350	300	28	70	01
132S	G1	400	375	350	300	30	70	06
132M	G1	400	375	350	300	30	70	07
160M	G2	488	463	375	325	33	40	04
160L	G2	488	463	375	325	33	40	05
180M	G2	488	463	375	325	33	40	02
180L	G2	488	463	375	325	33	40	07
200L	G2	488	463	375	325	35	40	03

## Vitachrom DN 50, n ≈ 2900 rpm and 3500 rpm



Pump set with motor feet



Pump set with angle foot

Overview of mating dimensions DN 50, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>4)</sup>	h <sub>2</sub> <sup>5)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~i <sub>1</sub> <sup>4)</sup>	~i <sub>1</sub> <sup>5)</sup>	~i <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
050-050-125 /152	50	50	70	-	70	10	200	190	160	145	160	288	140	220	516	516	371	165	140	65	155	176	225	130	143	100	164	10
050-050-125 /222	50	50	70	-	70	10	200	190	160	145	160	288	140	220	542	542	397	165	140	65	155	176	225	130	143	125	164	10
050-050-125 /302	50	50	70	-	70	12	250	213	160	145	160	295	140	237	591	591	446	196	160	65	155	176	225	130	176	140	174	12
050-050-125 /402	50	50	70	-	70	12	250	234	160	145	160	308	140	244	615	615	470	226	190	65	155	176	225	130	176	140	174	12
050-050-160 /222	50	50	70	-	85	10	200	190	160	170	185	288	140	220	542	542	397	165	140	65	155	176	236	130	143	125	164	10
050-050-160 /302	50	50	70	-	85	12	250	213	160	170	185	295	140	237	591	591	446	196	160	65	155	176	236	130	176	140	174	12
050-050-160 /402	50	50	70	-	85	12	250	234	160	170	185	308	140	244	615	615	470	226	190	65	155	176	236	130	176	140	174	12
050-050-160 /552	50	50	70	55	85	12	300	266	132	170	185	299	-	283	677	677	-	220	140	-	-	-	-	-	270	216	194	15
050-050-160 /752	50	50	70	55	85	12	300	266	132	170	185	299	-	283	677	677	-	220	140	-	-	-	-	-	270	216	194	15
050-050-160 /1102	50	50	70	70	85	15	350	325	160	170	185	357	-	332	840	840	-	300	210	-	-	-	-	-	320	254	224	21
050-050-160 /1502	50	50	70	70	85	15	350	325	160	170	185	357	-	332	840	840	-	300	210	-	-	-	-	-	320	254	224	21
050-050-200 /302	50	50	70	-	100	12	250	213	160	170	185	295	140	237	591	591	446	196	160	65	155	176	264	130	176	140	174	12
050-050-200 /402	50	50	70	-	100	12	250	234	160	170	185	308	140	244	615	615	470	226	190	65	155	176	264	130	176	140	174	12
050-050-200 /552	50	50	70	55	100	12	300	266	132	170	185	299	-	283	677	677	-	220	140	-	-	-	-	-	270	216	194	15
050-050-200 /752	50	50	70	55	100	12	300	266	132	170	185	299	-	283	677	677	-	220	140	-	-	-	-	-	270	216	194	15
050-050-200 /1102	50	50	70	70	100	15	350	325	160	170	185	357	-	332	840	840	-	300	210	-	-	-	-	-	320	254	224	21
050-050-200 /1502	50	50	70	70	100	15	350	325	160	170	185	357	-	332	840	840	-	300	210	-	-	-	-	-	320	254	224	21
050-050-200 /1852	50	50	70	70	100	15	350	325	160	170	185	357	-	332	846	846	-	314	254	-	-	-	-	-	320	254	224	21
050-050-200 /2202	50	50	70	80	100	15	350	370	180	170	185	442	-	345	904	904	-	320	241	-	-	-	-	-	360	279	224	23

4) Applicable to connections as per DIN 11851 (hygienic pipe union)

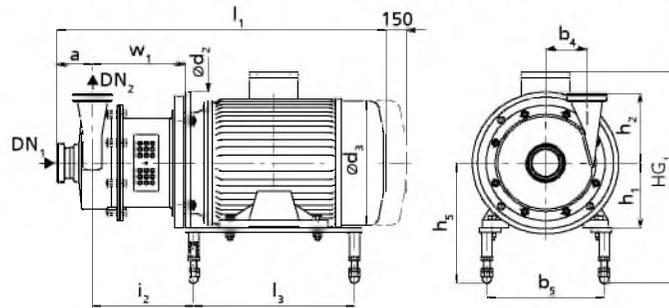
5) Applicable to flanged connections to EN 1092-1

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>4)</sup>	h <sub>2</sub> <sup>5)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~i <sub>1</sub> <sup>4)</sup>	~i <sub>1</sub> <sup>5)</sup>	~i <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s	
050-050-250 /552	50	50	95 <sup>4)</sup>	55	125	12	300	266	132	185	195	299	-	285,5	711	706	-	220	140	-	-	-	-	-	-	270	216	196,5	15
050-050-250 /752	50	50	(90) <sup>5)</sup>	55	125	12	300	266	132	185	195	299	-	285,5	711	706	-	220	140	-	-	-	-	-	-	270	216	196,5	15
050-050-250 /1102	50	50		70	125	15	350	325	160	185	195	357	-	337,5	877	872	-	300	210	-	-	-	-	-	-	320	254	229,5	21
050-050-250 /1502	50	50		70	125	15	350	325	160	185	195	357	-	337,5	877	872	-	300	210	-	-	-	-	-	-	320	254	229,5	21
050-050-250 /1852	50	50		70	125	15	350	325	160	185	195	357	-	337,5	883	878	-	314	254	-	-	-	-	-	-	320	254	229,5	21
050-050-250 /2202	50	50		80	125	15	350	370	180	185	195	442	-	350,5	941	936	-	320	241	-	-	-	-	-	-	360	279	229,5	23
050-050-250 /3002	50	50		85	125	19	400	422	200	185	195	505	-	362,5	1000	995	-	388	305	-	-	-	-	-	-	400	318	229,5	30
050-050-250 /3702	50	50		85	125	19	400	422	200	185	195	505	-	362,5	1000	995	-	388	305	-	-	-	-	-	-	400	318	229,5	30
050-050-250 /4502	50	50		100	125	19	450	468	225	185	195	550	-	378,5	1086	1081	-	410	311	-	-	-	-	-	-	450	356	229,5	35
050-050-250 /5502	50	50		100	125	24	550	520	250	185	195	642	-	431,5	1182	1177	-	425	349	-	-	-	-	-	-	506	406	263,5	40

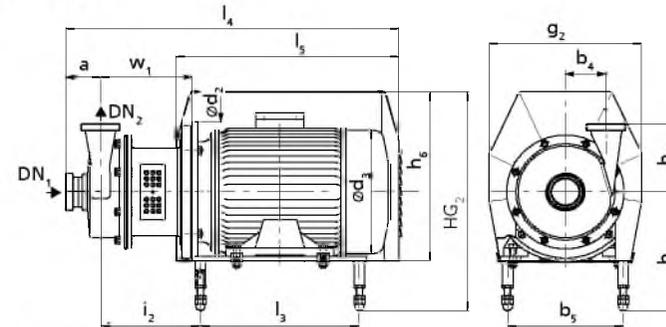
4) Applicable to connections as per DIN 11851 (hygienic pipe union)

5) Applicable to flanged connections to EN 1092-1

## Vitachrom DN 50, n ≈ 2900 rpm and 3500 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

## Overview of mating dimensions DN 50, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN 1	DN 2	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>6)</sup>	h <sub>2</sub> <sup>7)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>6)</sup>	l <sub>1</sub> <sup>7)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
050-050-125 /152	50	50	70	70	200	200	190	264	90	145	160	213	248	305	376	437	158	516	516	225	646,5	450	164
050-050-125 /222	50	50	70	70	200	200	190	264	90	145	160	213	248	305	376	437	170	542	542	225	646,5	450	164
050-050-125 /302	50	50	70	70	200	250	213	264	100	145	160	223	258	305	393	437	175	591	591	265	686,5	470	174
050-050-125 /402	50	50	70	70	200	250	234	264	112	145	160	222	257	305	405	437	182	615	615	265	682,5	470	174
050-050-160 /222	50	50	70	85	200	200	190	264	90	170	185	213	248	305	376	437	170	542	542	225	646,5	450	164
050-050-160 /302	50	50	70	85	200	250	213	264	100	170	185	223	258	305	393	437	175	591	591	265	686,5	470	174
050-050-160 /402	50	50	70	85	200	250	234	264	112	170	185	222	257	305	405	437	182	615	615	265	682,5	470	174
050-050-160 /552	50	50	70	85	230	300	266	314	132	170	185	242	277	350	444	482	211	677	677	285	749,5	550	194
050-050-160 /752	50	50	70	85	230	300	266	314	132	170	185	242	277	350	444	482	211	677	677	285	749,5	550	194
050-050-160 /1102	50	50	70	85	280	350	325	372	160	170	185	270	305	423	502	555	245	840	840	385	915,5	720	224
050-050-160 /1502	50	50	70	85	280	350	325	372	160	170	185	270	305	423	502	555	245	840	840	385	915,5	720	224
050-050-200 /302	50	50	70	100	200	250	213	264	100	170	185	223	258	305	393	437	175	591	591	265	686,5	470	174
050-050-200 /402	50	50	70	100	200	250	234	264	112	170	185	222	257	305	405	437	182	615	615	265	682,5	470	174
050-050-200 /552	50	50	70	100	230	300	266	314	132	170	185	242	277	350	444	482	211	677	677	285	749,5	550	194
050-050-200 /752	50	50	70	100	230	300	266	314	132	170	185	242	277	350	444	482	211	677	677	285	749,5	550	194
050-050-200 /1102	50	50	70	100	280	350	325	372	160	170	185	270	305	423	502	555	245	840	840	385	915,5	720	224
050-050-200 /1502	50	50	70	100	280	350	325	372	160	170	185	270	305	423	502	555	245	840	840	385	915,5	720	224
050-050-200 /1852	50	50	70	100	280	350	325	372	160	170	185	270	305	423	502	555	267	846	846	385	915,5	720	224
050-050-200 /2202	50	50	70	100	305	350	370	402	180	170	185	290	325	493	587	626	292	904	904	385	970,5	740	224
050-050-250 /552	50	50	95 <sup>6)</sup>	125	230	300	266	314	132	185	195	242	277	350	444	482	153	711	706	345	870,0	550	196,5
050-050-250 /752	50	50	(90) <sup>7)</sup>	125	230	300	266	314	132	185	195	242	277	350	444	482	153	711	706	345	870,0	550	196,5
050-050-250 /1102	50	50		125	280	350	325	372	160	185	195	270	305	423	502	555	250	877	872	385	991,0	720	229,5
050-050-250 /1502	50	50		125	280	350	325	372	160	185	195	270	305	423	502	555	250	877	872	385	991,0	720	229,5

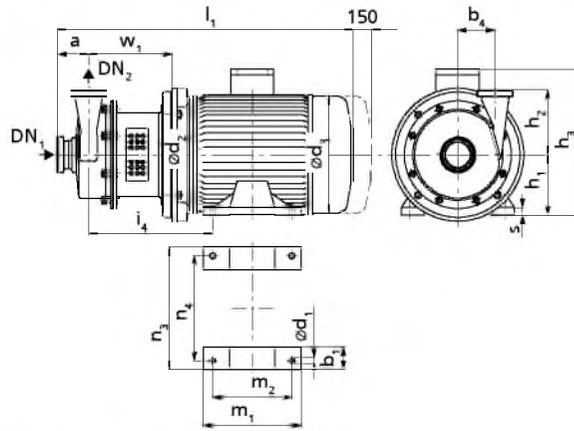
6) Applicable to connections as per DIN 11851 (hygienic pipe union)

7) Application to flanged connections to EN 1092-1

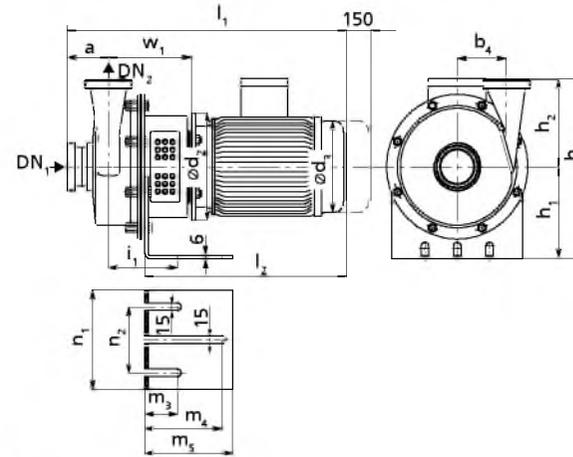
Vitachrom	DN 1	DN 2	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>6)</sup>	h <sub>2</sub> <sup>7)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>6)</sup>	l <sub>1</sub> <sup>7)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
050-050-250 /1852	50	50		125	280	350	325	372	160	185	195	270	305	423	502	555	272	883	878	385	991,0	720	229,5
050-050-250 /2202	50	50		125	305	350	370	402	180	185	195	290	325	493	587	626	297,5	941	936	385	1075	740	229,5
050-050-250 /3002	50	50		125	345	400	422	452	200	185	195	331	353	545	658	686	307,5	1000	995	415	1144	830	229,5
050-050-250 /3702	50	50		125	345	400	422	452	200	185	195	331	353	545	658	686	307,5	1000	995	415	1144	830	229,5
050-050-250 /4502	50	50		125	390	450	468	527	225	185	195	356	378	616	703	744	306,5	1086	1081	455	1279	950	229,5
050-050-250 /5502	50	50		125	440	550	520	602	250	185	195	381	403	716	795	844	358,5	1182	1177	495	1411	1055	263,5

6) Applicable to connections as per DIN 11851 (hygienic pipe union)

7) Application to flanged connections to EN 1092-1

Vitachrom DN 65,  $n \approx 2900$  rpm and 3500 rpm

Pump set with motor feet



Pump set with angle foot

Overview of mating dimensions DN 65, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>8)</sup>	h <sub>2</sub> <sup>9)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>8)</sup>	~l <sub>1</sub> <sup>9)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
065-065-125 /152	65	65	85	-	70	10	200	190	160	145	160	288	137	217	528	528	371	165	140	65	155	176	225	130	143	100	161	10
065-065-125 /222	65	65	85	-	70	10	200	190	160	145	160	288	137	217	554	554	397	165	140	65	155	176	225	130	143	125	161	10
065-065-125 /302	65	65	85	-	70	12	250	213	160	145	160	295	137	234	603	603	446	196	160	65	155	176	225	130	176	140	171	12
065-065-125 /402	65	65	85	-	70	12	250	234	160	145	160	308	137	241	627	627	470	226	190	65	155	176	225	130	176	140	171	12
065-065-160 /302	65	65	85	-	85	12	250	213	160	170	185	295	137	234	603	603	446	196	160	65	155	176	236	130	176	140	171	12
065-065-160 /402	65	65	85	-	85	12	250	234	160	170	185	308	137	241	627	627	470	226	190	65	155	176	236	130	176	140	171	12
065-065-160 /552	65	65	85	55	85	12	300	266	132	170	185	299	-	280	689	689	-	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /752	65	65	85	55	85	12	300	266	132	170	185	299	-	280	689	689	-	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /1102	65	65	85	70	85	15	350	325	160	170	185	357	-	329	852	852	-	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1502	65	65	85	70	85	15	350	325	160	170	185	357	-	329	852	852	-	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1852	65	65	85	70	85	15	350	325	160	170	185	357	-	329	858	858	-	314	254	-	-	-	-	-	320	254	221	21
065-065-200 /402	65	65	85	80	100	15	350	370	160	170	185	442	-	292	866	866	-	320	241	-	-	-	-	-	360	279	171	23
065-065-200 /552	65	65	85	55	100	12	300	266	132	170	185	299	-	280	689	689	-	220	140	-	-	-	-	-	270	216	191	15
065-065-200 /752	65	65	85	55	100	12	300	266	132	170	185	299	-	280	689	689	-	220	140	-	-	-	-	-	270	216	191	15
065-065-200 /1102	65	65	85	70	100	15	350	325	160	170	185	357	-	329	852	852	-	300	210	-	-	-	-	-	320	254	221	21
065-065-200 /1502	65	65	85	70	100	15	350	325	160	170	185	357	-	329	852	852	-	300	210	-	-	-	-	-	320	254	221	21
065-065-200 /1852	65	65	85	70	100	15	350	325	160	170	185	357	-	329	858	858	-	314	254	-	-	-	-	-	320	254	221	21
065-065-200 /2202	65	65	85	80	100	15	350	370	180	170	185	442	-	342	916	916	-	320	241	-	-	-	-	-	360	279	221	23

8) Applicable to connections as per DIN 11851 (hygienic pipe union)

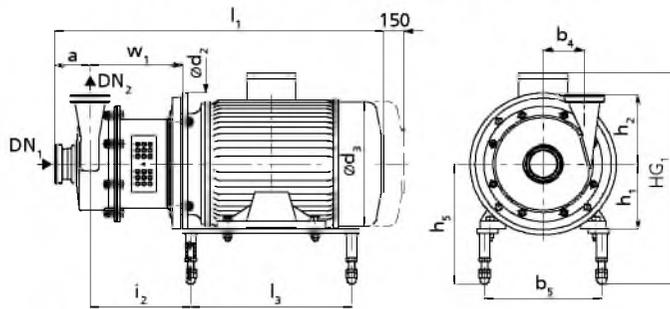
9) Application to flanged connections to EN 1092-1

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>8)</sup>	h <sub>2</sub> <sup>9)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>8)</sup>	~l <sub>1</sub> <sup>9)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s	
065-065-250 /552	65	65	105 <sup>8)</sup>	55	130	12	300	266	132	220	205	299	-	282	717	702	-	220	140	-	-	-	-	-	-	270	216	193	15
065-065-250 /752	65	65	(90) <sup>9)</sup>	55	130	12	300	266	132	220	205	299	-	282	717	702	-	220	140	-	-	-	-	-	-	270	216	193	15
065-065-250 /1102	65	65		70	130	15	350	325	160	220	205	357	-	334	883	868	-	300	210	-	-	-	-	-	-	320	254	226	21
065-065-250 /1502	65	65		70	130	15	350	325	160	220	205	357	-	334	883	868	-	300	210	-	-	-	-	-	-	320	254	226	21
065-065-250 /1852	65	65		70	130	15	350	325	160	220	205	357	-	334	889	874	-	314	254	-	-	-	-	-	-	320	254	226	21
065-065-250 /2202	65	65		80	130	15	350	370	180	220	205	442	-	347	947	932	-	320	241	-	-	-	-	-	-	360	279	226	23
065-065-250 /3002	65	65		85	130	19	400	422	200	220	205	505	-	359	1006	991	-	388	305	-	-	-	-	-	-	400	318	226	30
065-065-250 /3702	65	65		85	130	19	400	422	200	220	205	505	-	359	1006	991	-	388	305	-	-	-	-	-	-	400	318	226	30
065-065-250 /4502	65	65		100	130	19	450	468	250	220	205	550	-	375	1092	1077	-	410	311	-	-	-	-	-	-	450	356	226	35
065-065-250 /5502	65	65		100	130	24	550	520	250	220	205	642	-	428	1188	1173	-	425	349	-	-	-	-	-	-	506	406	260	40

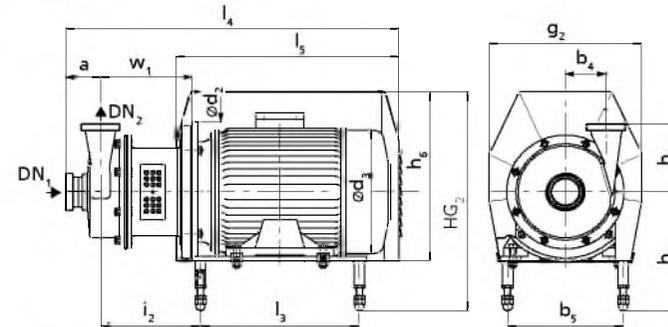
8) Applicable to connections as per DIN 11851 (hygienic pipe union)

9) Application to flanged connections to EN 1092-1

## Vitachrom DN 65, n ≈ 2900 rpm and 3500 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

## Overview of mating dimensions DN 65, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>10)</sup>	h <sub>2</sub> <sup>11)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>10)</sup>	l <sub>1</sub> <sup>11)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Max.	Max.		Max.	Max.							
065-065-125 /152	65	65	85	70	200	200	190	264	90	145	160	213	248	305	376	437	155	528	528	225	658,5	450	161
065-065-125 /222	65	65	85	70	200	200	190	264	90	145	160	213	248	305	376	437	167	554	554	225	658,5	450	161
065-065-125 /302	65	65	85	70	200	250	213	264	100	145	160	223	258	305	393	437	172	603	603	265	698,5	470	171
065-065-125 /402	65	65	85	70	200	250	234	264	112	145	160	222	257	305	405	437	179	627	627	265	698,5	470	171
065-065-160 /302	65	65	85	85	200	250	213	264	100	170	185	223	258	305	393	437	172	603	603	265	698,5	470	171
065-065-160 /402	65	65	85	85	200	250	234	264	112	170	185	222	257	305	405	437	179	627	627	265	694,5	470	171
065-065-160 /552	65	65	85	85	230	300	266	314	132	170	185	242	277	350	444	482	208	689	689	285	761,5	550	191
065-065-160 /752	65	65	85	85	230	300	266	314	132	170	185	242	277	350	444	482	208	689	689	285	761,5	550	191
065-065-160 /1102	65	65	85	85	280	350	325	372	160	170	185	270	305	423	502	555	242	852	852	385	927,5	720	221
065-065-160 /1502	65	65	85	85	280	350	325	372	160	170	185	270	305	423	502	555	242	852	852	385	927,5	720	221
065-065-160 /1852	65	65	85	85	280	350	325	372	160	170	185	270	305	423	502	555	264	858	858	385	927,5	720	221
065-065-200 /402	65	65	85	100	200	350	370	264	180	170	185	290	325	305	587	437	230	866	866	265	694,5	470	171
065-065-200 /552	65	65	85	100	230	300	266	314	132	170	185	242	277	350	444	482	208	689	689	285	761,5	550	191
065-065-200 /752	65	65	85	100	230	300	266	314	132	170	185	242	277	350	444	482	208	689	689	285	761,5	550	191
065-065-200 /1102	65	65	85	100	280	350	325	372	160	170	185	270	305	423	502	555	242	852	852	385	927,5	720	221
065-065-200 /1502	65	65	85	100	280	350	325	372	160	170	185	270	305	423	502	555	242	852	852	385	927,5	720	221
065-065-200 /1852	65	65	85	100	280	350	325	372	160	170	185	270	305	423	502	555	264	858	858	385	927,5	720	221
065-065-200 /2202	65	65	85	100	305	350	370	402	180	170	185	290	325	493	587	626	251	916	916	385	982,5	740	221
065-065-250 /552	65	65	105 <sup>10)</sup>	130	230	300	266	314	132	220	205	242	277	350	444	482	149,5	717	702	345	876,0	550	193
065-065-250 /752	65	65	(90) <sup>11)</sup>	130	230	300	266	314	132	220	205	242	277	350	444	482	168,5	717	702	345	876,0	550	193
065-065-250 /1102	65	65		130	280	350	325	372	160	220	205	270	305	423	502	555	246,5	883	868	385	997,0	720	226
065-065-250 /1502	65	65		130	280	350	325	372	160	220	205	270	305	423	502	555	246,5	883	868	385	997,0	720	226
065-065-250 /1852	65	65		130	280	350	325	372	160	220	205	270	305	423	502	555	268,5	889	874	385	997,0	720	226

10) Applicable to connections as per DIN 11851 (hygienic pipe union)

11) Application to flanged DN connections to EN 1092-1

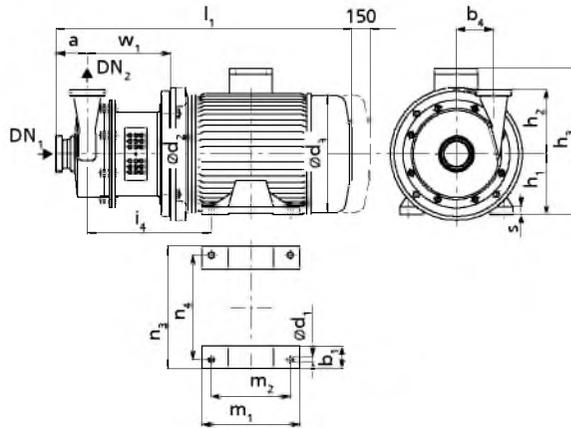
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>10)</sup>	h <sub>2</sub> <sup>11)</sup>	h <sub>5</sub>	h <sub>5</sub>	h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>10)</sup>	l <sub>1</sub> <sup>11)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
065-065-250 /2202	65	65		130	305	350	370	402	180	220	205	290	325	493	587	626	294	947	932	385	1081	740	226
065-065-250 /3002	65	65		130	345	400	422	452	200	220	205	331	353	545	658	686	304	1006	991	415	1148	830	226
065-065-250 /3702	65	65		130	345	400	422	452	200	220	205	331	353	545	658	686	304	1006	991	415	1148	830	226
065-065-250 /4502	65	65		130	390	450	468	527	225	220	205	356	378	616	703	744	303	1092	1077	455	1285	950	226
065-065-250 /5502	65	65		130	440	550	520	602	250	220	205	381	403	716	795	844	355	1188	1173	495	1417	1055	260

<sup>10)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>11)</sup> Application to flanged connections to EN 1092-1

## Vitachrom DN 65 with inducer, n ≈ 2900 rpm and 3500 rpm

## Pump set with inducer and motor feet



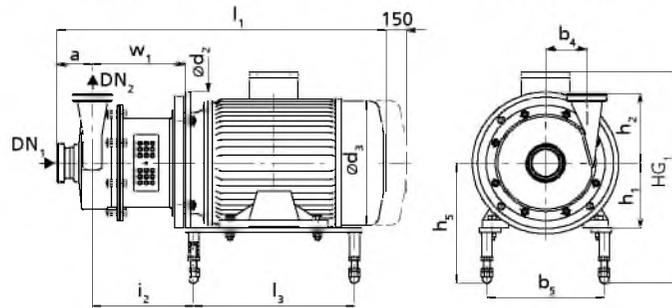
Overview of mating dimensions DN 65, pump set with inducer and motor feet, dimensions in [mm]

Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	≈b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	≈d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>12)</sup>	h <sub>2</sub> <sup>13)</sup>	≈h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	≈l <sub>1</sub> <sup>8)</sup>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
065-065-160 /552	0	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /752	0	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /1102	0	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1502	0	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1852	0	100	65	115	70	85	15	350	325	160	170	185	357	-	329	888	314	254	-	-	-	-	-	320	254	221	21
065-065-160 /2202	0	100	65	115	80	85	15	350	370	180	170	185	442	-	342	946	320	241	-	-	-	-	-	360	279	221	23
065-065-160 /552	1	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /752	1	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /1102	1	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1502	1	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1852	1	100	65	115	70	85	15	350	325	160	170	185	357	-	329	888	314	254	-	-	-	-	-	320	254	221	21
065-065-160 /2202	1	100	65	115	80	85	15	350	370	180	170	185	442	-	342	946	320	241	-	-	-	-	-	360	279	221	23
065-065-160 /552	2	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /752	2	100	65	115	55	85	12	300	266	132	170	185	299	-	280	719	220	140	-	-	-	-	-	270	216	191	15
065-065-160 /1102	2	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1502	2	100	65	115	70	85	15	350	325	160	170	185	357	-	329	882	300	210	-	-	-	-	-	320	254	221	21
065-065-160 /1852	2	100	65	115	70	85	15	350	325	160	170	185	357	-	329	888	314	254	-	-	-	-	-	320	254	221	21
065-065-160 /2202	2	100	65	115	80	85	15	350	370	180	170	185	442	-	342	946	320	241	-	-	-	-	-	360	279	221	23

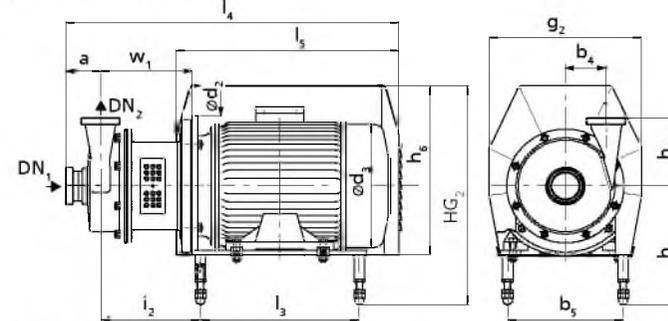
<sup>12)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>13)</sup> Applicable to flanged connections to EN 1092-1

## Vitachrom DN 65 with inducer, n ≈ 2900 rpm and 3500 rpm, pump set with ball feet and motor shroud



Pump set with inducer and ball feet



Pump set with inducer, ball feet and motor shroud

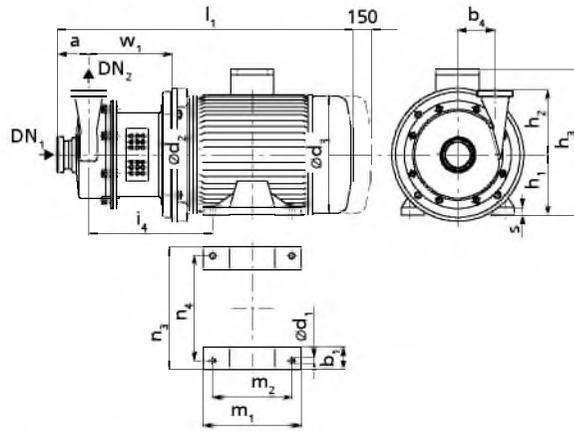
## Overview of mating dimensions DN 65, pump set with inducer, ball feet and motor shroud, dimensions in [mm]

Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	≈d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>14)</sup>	h <sub>2</sub> <sup>15)</sup>	h <sub>5</sub>		h <sub>6</sub>	≈HG		l <sub>2</sub>	≈l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
													Min.	Max.		Max.	Max.						
065-065-160 /552	0	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /752	0	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /1102	0	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1502	0	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1852	0	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	264	888	385	928	720	221
065-065-160 /2202	0	100	65	115	85	305	350	370	402	180	170	185	290	325	493	587	626	289	946	385	1013	740	221
065-065-160 /552	1	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /752	1	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /1102	1	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1502	1	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1852	1	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	264	888	385	928	720	221
065-065-160 /2202	1	100	65	115	85	305	350	370	402	180	170	185	290	325	493	587	626	289	946	385	1013	740	221
065-065-160 /552	2	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /752	2	100	65	115	85	230	300	266	314	132	170	185	242	277	350	444	482	208	719	285	762	550	191
065-065-160 /1102	2	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1502	2	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	242	882	385	928	720	221
065-065-160 /1852	2	100	65	115	85	280	350	325	372	160	170	185	270	305	423	502	555	264	888	385	928	720	221
065-065-160 /2202	2	100	65	115	85	305	350	370	402	180	170	185	290	325	493	587	626	289	946	385	1013	740	221

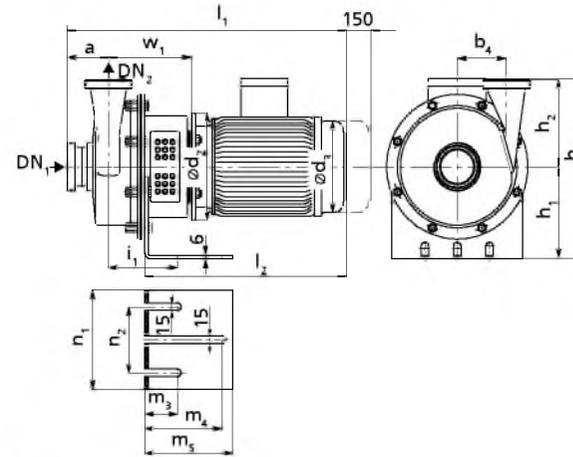
14) Applicable to connections as per DIN 11851 (hygienic pipe union)

15) Applicable to flanged connections to EN 1092-1

## Vitachrom DN 80, n ≈ 2900 rpm and 3500 rpm



Pump set with motor feet



Pump set with angle foot

Overview of mating dimensions DN 80, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>(16)</sup>	h <sub>2</sub> <sup>(17)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>(16)</sup>	~l <sub>1</sub> <sup>(17)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
080-080-125 /402	80	80	100	-	85	12	250	234	160	170	185	308	144,5	248,5	650	650	470	226	190	65	155	176	236	130	176	140	178,5	12
080-080-125 /552	80	80	100	55	85	12	300	266	132	170	185	299	-	287,5	712	712	-	220	140	-	-	-	-	-	270	216	198,5	15
080-080-125 /752	80	80	100	55	85	12	300	266	132	170	185	299	-	287,5	712	712	-	220	140	-	-	-	-	-	270	216	198,5	15
080-080-125 /1102	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	875	875	-	300	210	-	-	-	-	-	320	254	228,5	21
080-080-125 /1502	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	875	875	-	300	210	-	-	-	-	-	320	254	228,5	21
080-080-125 /1852	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	881	881	-	314	254	-	-	-	-	-	320	254	228,5	21
080-080-160 /552	80	80	100	55	85	12	300	266	132	170	185	299	-	287,5	712	712	-	220	140	-	-	-	-	-	270	216	198,5	15
080-080-160 /752	80	80	100	55	85	12	300	266	132	170	185	299	-	287,5	712	712	-	220	140	-	-	-	-	-	270	216	198,5	15
080-080-160 /1102	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	875	875	-	300	210	-	-	-	-	-	320	254	228,5	21
080-080-160 /1502	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	875	875	-	300	210	-	-	-	-	-	320	254	228,5	21
080-080-160 /1852	80	80	100	70	85	15	350	325	160	170	185	357	-	336,5	881	891	-	314	254	-	-	-	-	-	320	254	228,5	21
080-080-160 /2202	80	80	100	80	85	15	350	370	180	170	185	442	-	349,5	939	939	-	320	241	-	-	-	-	-	360	279	228,5	23
080-080-250 /752	80	80	115 <sup>(16)</sup>	55	125	12	300	266	132	225	205	299	-	279,5	725	705	-	220	140	-	-	-	-	-	270	216	190,5	15
080-080-250 /1102	80	80	(95) <sup>(17)</sup>	70	125	15	350	325	160	225	205	357	-	331,5	891	871	-	300	210	-	-	-	-	-	320	254	223,5	21
080-080-250 /1502	80	80		70	125	15	350	325	160	225	205	357	-	331,5	891	871	-	300	210	-	-	-	-	-	320	254	223,5	21
080-080-250 /1852	80	80		70	125	15	350	325	160	225	205	357	-	331,5	897	877	-	314	254	-	-	-	-	-	320	254	223,5	21
080-080-250 /2202	80	80		80	125	15	350	370	180	225	205	442	-	344,5	955	935	-	320	241	-	-	-	-	-	360	279	223,5	23
080-080-250 /3002	80	80		85	125	19	400	422	200	225	205	505	-	356,5	1014	994	-	388	305	-	-	-	-	-	400	318	223,5	30
080-080-250 /3702	80	80		85	125	19	400	422	200	225	205	505	-	356,5	1014	994	-	388	305	-	-	-	-	-	400	318	223,5	30

<sup>16)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

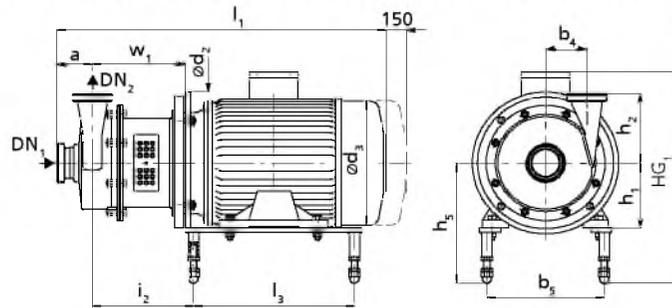
<sup>17)</sup> Applicable to flanged connections to EN 1092-1

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>16)</sup>	h <sub>2</sub> <sup>17)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>16)</sup>	~l <sub>1</sub> <sup>17)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s	
080-080-250 /4502	80	80		100	125	19	450	468	225	225	205	550	-	372,5	1100	1080	-	410	311	-	-	-	-	-	-	450	356	223,5	35
080-080-250 /5502	80	80		100	125	24	550	520	250	225	205	642	-	425,5	1196	1176	-	425	349	-	-	-	-	-	-	506	406	257,5	40

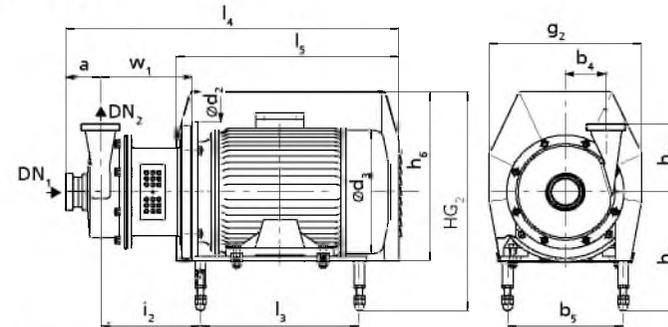
<sup>16)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>17)</sup> Applicable to flanged connections to EN 1092-1

## Vitachrom DN 80, n ≈ 2900 rpm and 3500 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

## Overview of mating dimensions DN 80, pump set with ball feet and motor shroud, dimensions in [mm]

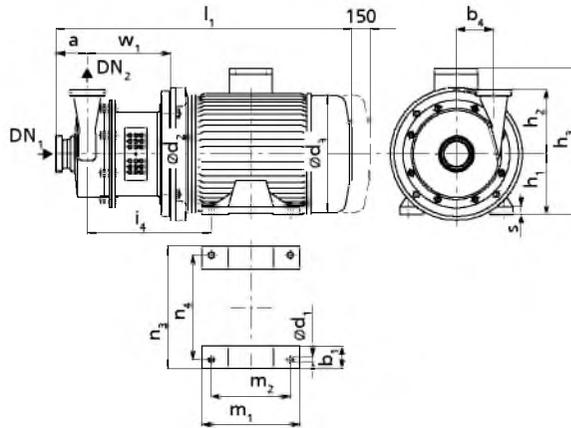
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>18)</sup>	h <sub>2</sub> <sup>19)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>18)</sup>	l <sub>1</sub> <sup>19)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
080-080-125 /402	80	80	100	85	200	250	234	264	112	170	185	222	257	305	405	437	186	650	650	265	717	470	179
080-080-125 /552	80	80	100	85	230	300	266	314	132	170	185	242	277	350	444	482	215	712	712	285	784	550	199
080-080-125 /752	80	80	100	85	230	300	266	314	132	170	185	242	277	350	444	482	215	712	712	285	784	550	199
080-080-125 /1102	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	249	875	875	385	950	720	229
080-080-125 /1502	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	249	875	875	385	950	720	229
080-080-125 /1852	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	271	881	881	385	950	720	229
080-080-160 /552	80	80	100	85	230	300	266	314	132	170	185	242	277	350	444	482	215	712	712	285	784	550	199
080-080-160 /752	80	80	100	85	230	300	266	314	132	170	185	242	277	350	444	482	215	712	712	285	784	550	199
080-080-160 /1102	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	249	875	875	385	950	720	229
080-080-160 /1502	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	249	875	875	385	950	720	229
080-080-160 /1852	80	80	100	85	280	350	325	372	160	170	185	270	305	423	502	555	271	881	881	385	950	720	229
080-080-160 /2202	80	80	100	85	305	350	370	402	180	170	185	290	325	493	587	626	259	939	939	385	1005	740	229
080-080-250 /752	80	80	115 <sup>18)</sup> (95) <sup>19)</sup>	125	230	300	266	314	132	225	205	242	277	350	444	482	147	725	705	345	884	550	190,5
080-080-250 /1102	80	80		125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	871	385	1005	720	223,5
080-080-250 /1502	80	80		125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	871	385	1005	720	223,5
080-080-250 /1852	80	80		125	280	350	325	372	160	225	205	270	305	423	502	555	266	897	877	385	1005	720	223,5
080-080-250 /2202	80	80		125	305	350	370	402	180	225	205	290	325	493	587	626	291	955	935	385	1091	740	223,5
080-080-250 /3002	80	80		125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	994	415	1156	830	223,5
080-080-250 /3702	80	80		125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	994	415	1156	830	223,5
080-080-250 /4502	80	80		125	390	450	468	527	225	225	205	356	378	616	703	744	300,5	1100	1080	455	1148	950	223,5
080-080-250 /5502	80	80		125	440	550	520	602	250	225	205	381	403	716	795	844	352,5	1196	1176	495	1425	1055	257,5

<sup>18)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>19)</sup> Applicable to flanged DN connections to EN 1092-1

## Vitachrom DN 80 with inducer, n ≈ 2900 rpm

## Pump set with inducer and motor feet



Overview of mating dimensions DN 80, pump set with inducer and motor feet, dimensions in [mm]

Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	≈b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>20)</sup>	h <sub>2</sub> <sup>21)</sup>	≈h <sub>3</sub>	i <sub>4</sub>	≈l <sub>1</sub>	m <sub>1</sub>	m <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
080-080-250 /1502	0	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-080-250 /1852	0	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-080-250 /2202	0	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-080-250 /3002	0	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-080-250 /3702	0	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-080-250 /4502	0	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-080-250 /5502	0	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40
080-080-250 /1502	1	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-080-250 /1852	1	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-080-250 /2202	1	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-080-250 /3002	1	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-080-250 /3702	1	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-080-250 /4502	1	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-080-250 /5502	1	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40
080-080-250 /1502	2	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-080-250 /1852	2	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-080-250 /2202	2	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-080-250 /3002	2	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-080-250 /3702	2	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30

20) Applicable to connections as per DIN 11851 (hygienic pipe union)

21) Applicable to flanged connections to EN 1092-1

Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>20)</sup>	h <sub>2</sub> <sup>21)</sup>	~h <sub>3</sub>	i <sub>4</sub>	~l <sub>1</sub>	m <sub>1</sub>	m <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
080-080-250 /4502	2	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-080-250 /5502	2	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40

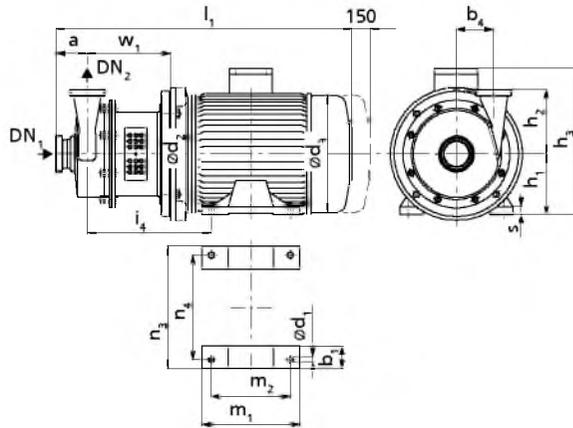
<sup>20)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>21)</sup> Applicable to flanged connections to EN 1092-1



## Vitachrom DN 80 with inducer, n ≈ 3500 rpm

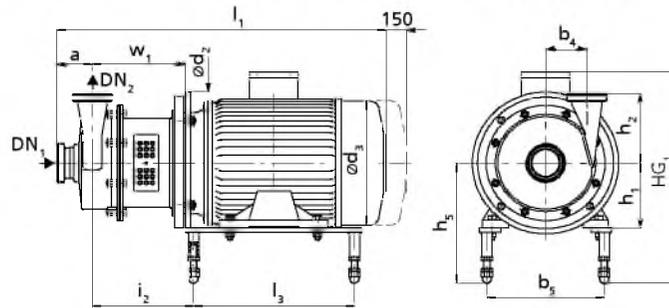
## Pump set with inducer and motor feet



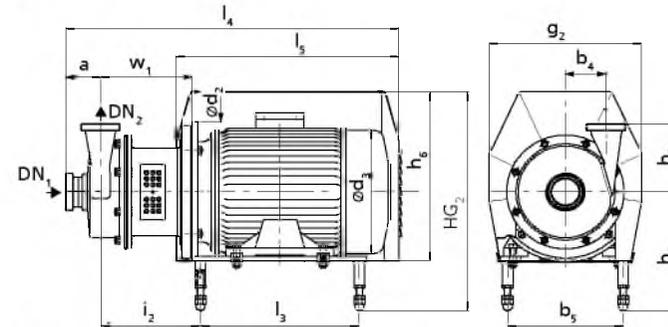
Overview of mating dimensions DN 80, pump set with inducer and motor feet, dimensions in [mm]

Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>20)</sup>	h <sub>2</sub> <sup>21)</sup>	~h <sub>3</sub>	i <sub>4</sub>	l <sub>1</sub>	m <sub>1</sub>	m <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
080-880-250.1 /1502	0	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-880-250.1 /1852	0	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-880-250.1 /2202	0	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-880-250.1 /3002	0	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /3702	0	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /4502	0	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-880-250.1 /5502	0	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40
080-880-250.1 /1502	1	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-880-250.1 /1852	1	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-880-250.1 /2202	1	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-880-250.1 /3002	1	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /3702	1	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /4502	1	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-880-250.1 /5502	1	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40
080-880-250.1 /1502	2	100	80	115	70	125	15	350	325	160	225	205	357	331,5	891	300	210	320	254	223,5	21
080-880-250.1 /1852	2	100	80	115	70	125	15	350	325	160	225	205	357	331,5	897	314	254	320	254	223,5	21
080-880-250.1 /2202	2	100	80	115	80	125	15	350	370	180	225	205	442	344,5	955	320	241	360	279	223,5	23
080-880-250.1 /3002	2	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /3702	2	100	80	115	85	125	19	400	422	200	225	205	505	356,5	1014	388	305	400	318	223,5	30
080-880-250.1 /4502	2	100	80	115	100	125	19	450	468	225	225	205	550	372,5	1100	410	311	450	356	223,5	35
080-880-250.1 /5502	2	100	80	115	100	125	24	550	520	250	225	205	642	425,5	1196	425	349	506	406	257,5	40

## Vitachrom DN 80 with inducer, n ≈ 3500 rpm, pump set with ball feet and motor shroud



Pump set with inducer and ball feet



Pump set with inducer, ball feet and motor shroud

Overview of mating dimensions DN 80, pump set with inducer, ball feet and motor shroud, dimensions in [mm]

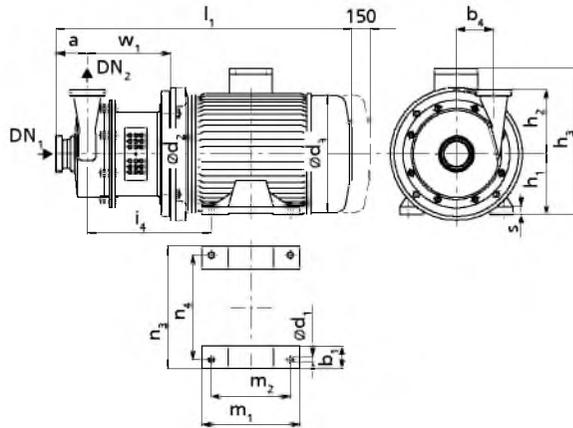
Vitachrom with inducer	Inducer	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	≈d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>22)</sup>	h <sub>2</sub> <sup>23)</sup>	h <sub>5</sub>		h <sub>6</sub>	≈HG		i <sub>2</sub>	≈l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
													Min.	Max.		Max.	Max.						
080-080-250.1 /1502	0	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	385	1005	720	223,5
080-080-250.1 /1852	0	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	266	897	385	1005	720	223,5
080-080-250.1 /2202	0	100	80	115	125	305	350	370	402	180	225	205	290	325	493	587	626	291,5	955	385	1091	740	223,5
080-080-250.1 /3002	0	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /3702	0	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /4502	0	100	80	115	125	390	450	468	527	225	225	205	356	378	616	703	744	300,5	1100	455	950	950	223,5
080-080-250.1 /5502	0	100	80	115	125	440	550	520	602	250	225	205	381	403	716	795	844	352,5	1196	495	1055	1055	257,5
080-080-250.1 /1502	1	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	385	1005	720	223,5
080-080-250.1 /1852	1	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	266	897	385	1005	720	223,5
080-080-250.1 /2202	1	100	80	115	125	305	350	370	402	180	225	205	290	325	493	587	626	291,5	955	385	1091	740	223,5
080-080-250.1 /3002	1	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /3702	1	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /4502	1	100	80	115	125	390	450	468	527	225	225	205	356	378	616	703	744	300,5	1100	455	950	950	223,5
080-080-250.1 /5502	1	100	80	115	125	440	550	520	602	250	225	205	381	403	716	795	844	352,5	1196	495	1055	1055	257,5
080-080-250.1 /1502	2	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	385	1005	720	223,5
080-080-250.1 /1852	2	100	80	115	125	280	350	325	372	160	225	205	270	305	423	502	555	266	897	385	1005	720	223,5
080-080-250.1 /2202	2	100	80	115	125	305	350	370	402	180	225	205	290	325	493	587	626	291,5	955	385	1091	740	223,5
080-080-250.1 /3002	2	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /3702	2	100	80	115	125	345	400	422	452	200	225	205	331	353	545	658	686	301,5	1014	415	1155	830	223,5
080-080-250.1 /4502	2	100	80	115	125	390	450	468	527	225	225	205	356	378	616	703	744	300,5	1100	455	950	950	223,5
080-080-250.1 /5502	2	100	80	115	125	440	550	520	602	250	225	205	381	403	716	795	844	352,5	1196	495	1055	1055	257,5

22) Applicable to connections as per DIN 11851 (hygienic pipe union)

23) Applicable to flanged connections as per EN 1092-1

Vitachrom DN 100,  $n \approx 2900$  rpm and 3500 rpm

Pump set with motor feet



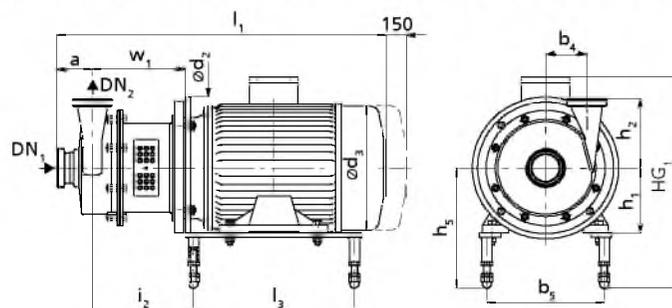
Overview of mating dimensions DN 100, pump set with motor feet, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>24)</sup>	h <sub>2</sub> <sup>25)</sup>	~h <sub>3</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>24)</sup>	~l <sub>1</sub> <sup>25)</sup>	m <sub>1</sub>	m <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
100-100-200 /752	100	100	100 <sup>24)</sup>	55	110	12	300	266	132	250	235	299	277	707	722	220	140	270	216	188	15
100-100-200 /1102	100	100	(115) <sup>25)</sup>	70	110	15	350	325	160	250	235	357	329	873	888	300	210	320	254	221	21
100-100-200 /1502	100	100		70	110	15	350	325	160	250	235	357	329	873	888	300	210	320	254	221	21
100-100-200 /1852	100	100		70	110	15	350	325	160	250	235	357	329	879	894	314	254	320	254	221	21
100-100-200 /2202	100	100		80	110	15	350	370	180	250	235	442	342	937	952	320	241	360	279	221	23
100-100-200 /3002	100	100		85	110	19	400	422	200	250	235	505	354	996	1011	388	305	400	318	221	30
100-100-200 /3702	100	100		85	110	19	400	422	200	250	235	505	354	996	1011	388	305	400	318	221	30
100-100-200 /4502	100	100		100	110	19	450	468	225	250	235	550	370	1082	1097	410	311	450	356	221	35
100-100-200 /5502	100	100		100	110	24	550	520	250	250	235	642	423	1178	1193	425	349	506	406	255	40

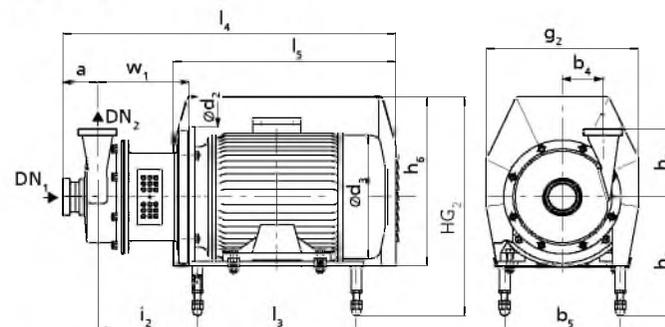
24) Applicable to connections as per DIN 11851 (hygienic pipe union)

25) Applicable to flanged connections to EN 1092-1

## Vitachrom DN 100, n ≈ 2900 rpm and 3500 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

Overview of mating dimensions DN 100, pump set with ball feet and motor shroud, dimensions in [mm]

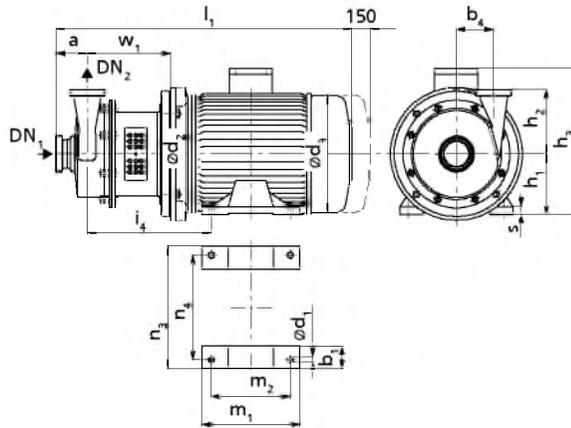
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	~d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>26)</sup>	h <sub>2</sub> <sup>27)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG		l <sub>2</sub>	~l <sub>1</sub> <sup>26)</sup>	l <sub>1</sub> <sup>27)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
100-100-200 /752	100	100	100 <sup>26)</sup> (115) <sup>27)</sup>	110	230	300	266	314	132	250	235	242	277	350	444	482	144,5	707	722	345	881	550	188
100-100-200 /1102	100	100		110	280	350	325	372	160	250	235	270	305	423	502	555	241,5	873	888	385	1002	720	221
100-100-200 /1502	100	100		110	280	350	325	372	160	250	235	270	305	423	502	555	241,5	873	888	385	1002	720	221
100-100-200 /1852	100	100		110	280	350	325	372	160	250	235	270	305	423	502	555	273,5	879	894	385	1002	720	221
100-100-200 /2202	100	100		110	305	350	370	402	180	250	235	290	325	493	587	626	289	937	952	385	1086	740	221
100-100-200 /3002	100	100		110	345	400	422	452	200	250	235	331	353	545	658	686	299	996	1011	415	1153	830	221
100-100-200 /3702	100	100		110	345	400	422	452	200	250	235	331	353	545	658	686	299	996	1011	415	1153	830	221
100-100-200 /4502	100	100		110	390	450	468	527	225	250	235	356	378	616	703	744	298	1082	1097	455	1290	950	221
100-100-200 /5502	100	100		110	440	550	520	602	250	250	235	381	403	716	795	844	350	1178	1193	495	1422	1055	255

26) Applicable to connections as per DIN 11851 (hygienic pipe union)

27) Applicable to flanged connections to EN 1092-1

Vitachrom DN 125,  $n \approx 2900$  rpm

## Pump set with motor feet



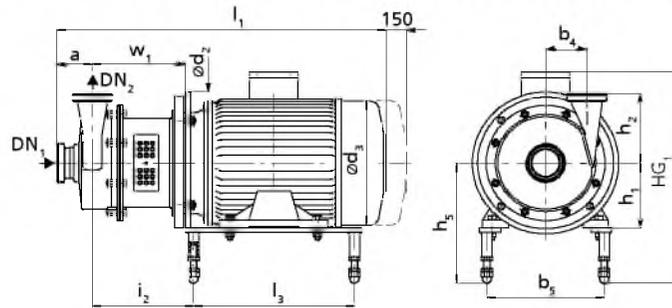
Overview of mating dimensions DN 125, pump set with motor feet, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>28)</sup>	h <sub>2</sub> <sup>29)</sup>	~h <sub>3</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>24)</sup>	~l <sub>1</sub> <sup>25)</sup>	m <sub>1</sub>	m <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
125-125-200 /752	125	125	120 <sup>24)</sup>	55	110	12	300	266	132	250	235	299	298	748	763	220	140	270	216	209	15
125-125-200 /1102	125	125	(135) <sup>25)</sup>	70	110	15	350	325	160	250	235	357	350	914	929	300	210	320	254	242	21
125-125-200 /1502	125	125		70	110	15	350	325	160	250	235	357	350	914	929	300	210	320	254	242	21
125-125-200 /1852	125	125		70	110	15	350	325	160	250	235	357	350	920	935	314	254	320	254	242	21
125-125-200 /2202	125	125		80	110	15	350	370	180	250	235	442	363	978	993	320	241	360	279	242	23
125-125-200 /3002	125	125		85	110	19	400	422	200	250	235	505	375	1037	1052	388	305	400	318	242	30
125-125-200 /3702	125	125		85	110	19	400	422	200	250	235	505	375	1037	1052	388	305	400	318	242	30
125-125-200 /4502	125	125		100	110	19	450	468	225	250	235	550	391	1123	1138	410	311	450	356	242	35
125-125-200 /5502	125	125		100	110	24	550	520	250	250	235	642	444	1219	1234	425	349	506	406	276	40
125-125-200 /7502	125	125		100	110	24	550	575	280	250	235	712	466	1327	1342	480	368	557	457	276	40
125-125-200 /9002	125	125		100	110	24	550	575	280	250	235	712	466	1382	1397	530	419	557	457	276	40

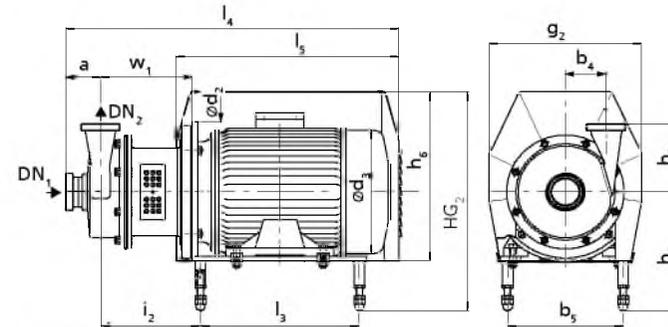
28) Applicable to connections as per DIN 11851 (hygienic pipe union)

29) Applicable to flanged connections to EN 1092-1

## Vitachrom DN 125, n ≈ 2900 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

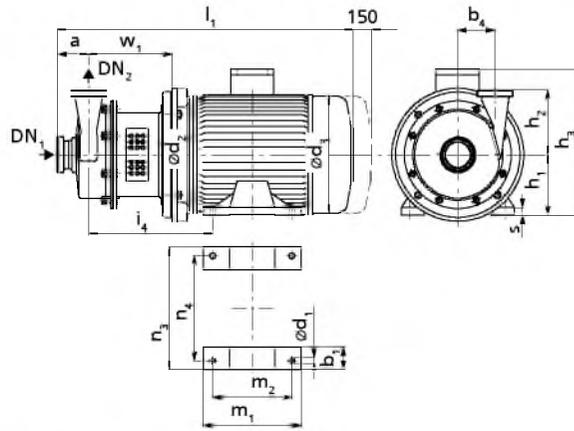
## Overview of mating dimensions DN 125, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	~d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>30)</sup>	h <sub>2</sub> <sup>31)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>		~HG <sub>2</sub>		i <sub>2</sub>	~l <sub>1</sub> <sup>26)</sup>	l <sub>1</sub> <sup>27)</sup>	i <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.									
125-125-200 /752	125	125	120 <sup>26)</sup> (135) <sup>27)</sup>	110	230	300	266	314	132	250	235	242	277	350	444	482	165,5	748	763	345	954	550	209		
125-125-200 /1102	125	125		110	280	350	325	372	160	250	235	270	305	423	502	555	262,5	914	929	385	1042	720	242		
125-125-200 /1502	125	125		110	280	350	325	372	160	250	235	270	305	423	502	555	262,5	914	929	385	1042	720	242		
125-125-200 /1852	125	125		110	280	350	325	372	160	250	235	270	305	423	502	555	284,5	920	935	385	1042	720	242		
125-125-200 /2202	125	125		110	305	350	370	402	180	250	235	290	325	493	587	626	310	978	993	385	1126	740	242		
125-125-200 /3002	125	125		110	345	400	422	452	200	250	235	331	353	545	658	686	320	1037	1052	415	1193	830	242		
125-125-200 /3702	125	125		110	345	400	422	452	200	250	235	331	353	545	658	686	320	1037	1052	415	1193	830	242		
125-125-200 /4502	125	125		110	390	450	468	527	225	250	235	356	378	616	703	744	319	1123	1138	455	1330	950	242		
125-125-200 /5502	125	125		110	440	550	520	602	250	250	235	381	403	716	795	844	371	1219	1234	495	1471	1055	276		
125-125-200 /7502	125	125		110	490	550	575	672	280	250	235	411	433	786	865	914	393	1327	1342	565	1669	1250	276		
125-125-200 /9002	125	125	110	490	550	575	672	280	250	235	411	433	786	865	914	393	1382	1397	565	1669	1250	276			

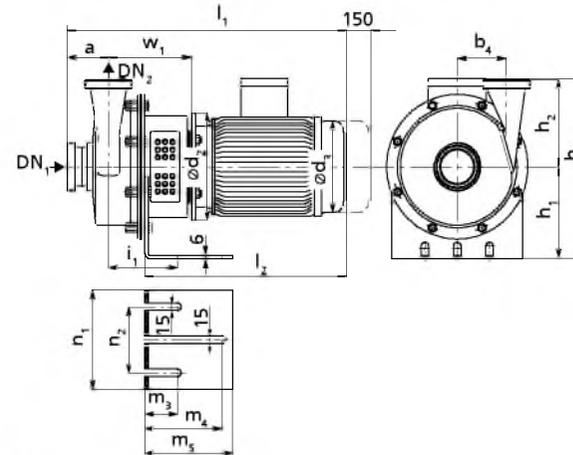
30) Applicable to connections as per DIN 11851 (hygienic pipe union)

31) Applicable to flanged connections to EN 1092-1

## Vitachrom DN 50, n ≈ 1450 rpm and 1750 rpm



Pump set with motor feet



Pump set with angle foot

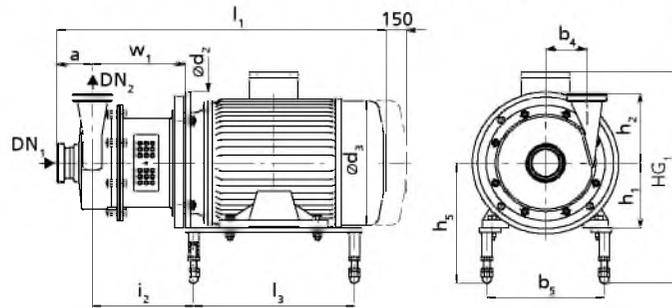
Overview of mating dimensions DN 50, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>32)</sup>	h <sub>2</sub> <sup>33)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>32)</sup>	~l <sub>1</sub> <sup>33)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
050-050-125 /154	50	50	70	-	70	10	200	190	160	145	160	288	138,5	220	542	542	397	165	140	65	155	176	225	130	143	125	164	10
050-050-160 /154	50	50	70	-	85	10	200	190	160	170	185	288	138,5	220	542	542	397	165	140	65	155	176	236	130	143	125	164	10
050-050-160 /224	50	50	70	-	85	12	250	213	160	170	185	295	138,5	237	591	591	446	196	160	65	155	176	236	130	176	140	174	12
050-050-200 /154	50	50	70	-	100	10	200	190	160	170	185	288	138,5	220	542	542	397	165	140	65	155	176	264	130	143	125	164	10
050-050-200 /224	50	50	70	-	100	12	250	213	160	170	185	295	138,5	237	591	591	446	196	160	65	155	176	264	130	176	140	174	12
050-050-200 /304	50	50	70	-	100	12	250	213	160	170	185	295	138,5	237	626	626	481	196	160	65	155	176	264	130	176	140	174	12
050-050-250 /154	50	50	95 <sup>32)</sup>	-	125	10	200	190	180	185	195	308	121,5	215,5	569	564	399	165	140	30	120	160	225	130	143	125	159,5	10
050-050-250 /224	50	50	(90) <sup>33)</sup>	-	125	12	250	213	180	185	195	315	121,5	236,5	622	617	452	196	160	30	120	160	225	130	176	140	173,5	12
050-050-250 /304	50	50		-	125	12	250	213	180	185	195	315	121,5	236,5	657	652	487	196	160	30	120	160	225	130	176	140	173,5	12
050-050-250 /404	50	50		-	125	12	250	234	180	185	195	328	121,5	243,5	646	641	476	226	190	30	120	160	225	130	176	140	173,5	12
050-050-250 /554	50	50		55	125	12	300	266	132	185	195	299	-	285,5	711	706	-	220	140	-	-	-	-	-	270	216	196,5	15
050-050-250 /754	50	50		59	125	12	300	298	132	185	195	299	-	285,5	739	734	-	240	178	-	-	-	-	-	270	216	196,5	15
050-050-250 /1104	50	50		70	125	15	350	325	160	185	195	357	-	337,5	877	872	-	300	210	-	-	-	-	-	320	254	229,5	21
050-050-250 /1504	50	70		70	125	15	350	325	160	185	195	357	-	337,5	883	878	-	314	254	-	-	-	-	-	320	254	229,5	21

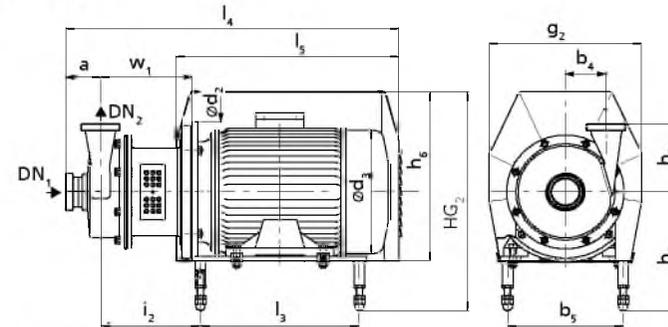
<sup>32)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>33)</sup> Applicable to flanged connections to EN 1092-1

## Vitachrom DN 50, n ≈ 1450 rpm and 1750 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

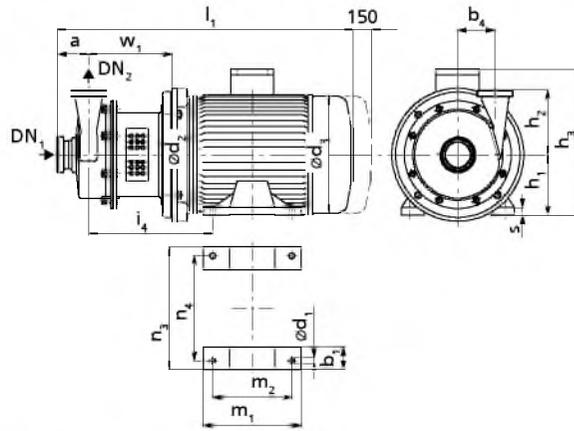
Overview of mating dimensions DN 50, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>34)</sup>	h <sub>2</sub> <sup>35)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG		i <sub>2</sub>	l <sub>1</sub> <sup>34)</sup>	l <sub>1</sub> <sup>35)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
050-050-125 /154	50	50	70	70	200	200	190	264	90	145	160	213	247,5	304,7	376	437	150	542	542	225	646,5	450	164
050-050-160 /154	50	50	70	85	200	200	190	264	90	170	185	213	247,5	304,7	376	437	150	542	542	225	646,5	450	164
050-050-160 /224	50	50	70	85	200	250	213	264	100	170	185	223	257,5	304,7	393	437	174,5	591	591	265	686,5	470	174
050-050-200 /154	50	50	70	100	200	200	190	264	90	170	185	213	247,5	304,7	376	437	150	542	542	225	646,5	450	164
050-050-200 /224	50	50	70	100	200	250	213	264	100	170	185	223	257,5	304,7	393	437	174,5	591	591	265	686,5	470	174
050-050-200 /304	50	50	70	100	200	250	213	264	100	170	185	223	257,5	304,7	393	437	174,5	626	626	265	686,5	470	174
050-050-250 /154	50	50	95 <sup>34)</sup> (90) <sup>35)</sup>	125	200	200	190	264	90	185	195	213	247,5	304,7	376	437	105,5	568,5	563,5	285	722	450	159,5
050-050-250 /224	50	50		125	200	250	213	264	100	185	195	223	257,5	304,7	393	437	129	621,5	616,5	310	751	470	173,5
050-050-250 /304	50	50		125	200	250	213	264	100	185	195	223	257,5	304,7	393	437	129	656,5	651,5	310	751	470	173,5
050-050-250 /404	50	50		125	200	250	234	264	112	185	195	222	256,5	304,7	405	437	116	645,5	640,5	330	757	470	173,5
050-050-250 /554	50	50		125	230	300	266	314	132	185	195	242	276,5	349,7	444	482	153	710,5	705,5	345	814	550	196,5
050-050-250 /754	50	50		125	230	300	298	314	132	185	195	242	276,5	349,7	444	482	172	738,5	733,5	345	814	550	196,5
050-050-250 /1104	50	50		125	280	350	325	372	160	185	195	270	304,5	422,7	502	555	250	876,5	871,5	385	986	720	229,5
050-050-250 /1504	50	50		125	280	350	325	372	160	185	195	270	304,5	422,7	502	555	272	882,5	877,5	385	986	720	229,5

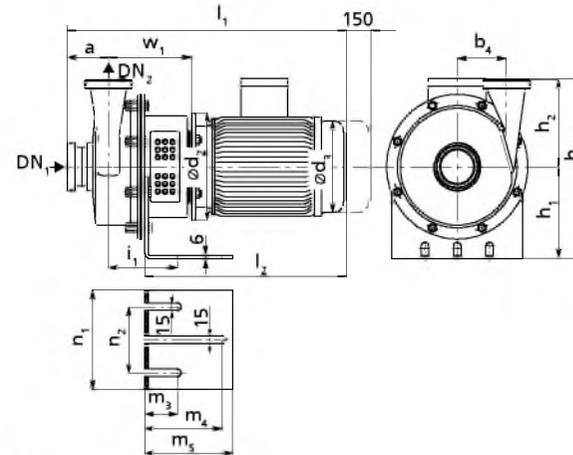
<sup>34)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>35)</sup> Applicable to flanged connections as per EN 1092-1

## Vitachrom DN 65, n ≈ 1450 rpm and 1750 rpm



Pump set with motor feet



Pump set with angle foot

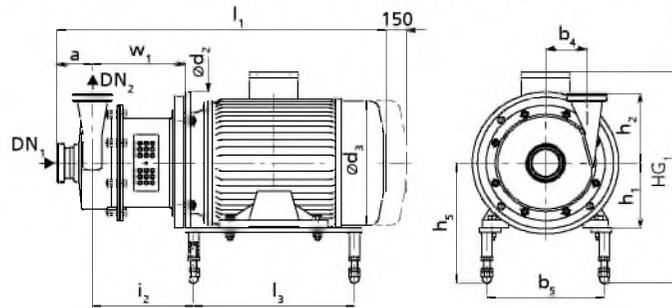
Overview of mating dimensions DN 65, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>36)</sup>	h <sub>2</sub> <sup>37)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>36)</sup>	~l <sub>1</sub> <sup>37)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
065-065-125 /154	65	65	85	-	70	10	200	190	160	145	160	288	135,5	217	554	554	397	165	140	65	155	176	225	130	143	125	161	10
065-065-125 /224	65	65	85	-	70	12	250	213	160	145	160	295	135,5	234	603	603	446	196	160	65	155	176	225	130	176	140	171	12
065-065-160 /154	65	65	85	-	85	10	200	190	160	170	185	288	135,5	217	554	554	397	165	140	65	155	176	236	130	143	125	161	10
065-065-160 /224	65	65	85	-	85	12	250	213	160	170	185	295	135,5	234	603	603	446	196	160	65	155	176	236	130	176	140	171	12
065-065-160 /304	65	65	85	-	85	12	250	213	160	170	185	295	135,5	234	638	638	481	196	160	65	155	176	236	130	176	140	171	12
065-065-200 /154	65	65	85	-	100	10	200	190	160	170	185	288	135,5	217	554	554	397	165	140	65	155	176	264	130	143	125	161	10
065-065-200 /224	65	65	85	-	100	12	250	213	160	170	185	295	135,5	234	603	603	446	196	160	65	155	176	264	130	176	140	171	12
065-065-200 /304	65	65	85	-	100	12	250	213	160	170	185	295	135,5	234	638	638	481	196	160	65	155	176	264	130	176	140	171	12
065-065-200 /404	65	65	85	-	100	12	250	234	160	170	185	308	135,5	241	627	627	470	226	190	65	155	176	264	130	176	140	171	12
065-065-250 /154	65	65	90 <sup>37)</sup> (105) <sup>36)</sup>	-	130	10	200	190	180	220	205	308	118	212	575	560	399	165	140	30	120	160	225	130	143	125	156	10
065-065-250 /224	65	65		-	130	12	250	213	180	220	205	315	118	233	628	613	452	196	160	30	120	160	225	130	176	140	170	12
065-065-250 /304	65	65	-	130	12	250	213	180	220	205	315	118	233	663	648	487	196	160	30	120	160	225	130	176	140	170	12	
065-065-250 /404	65	65	-	130	12	250	234	180	220	205	328	118	240	652	637	476	226	190	30	120	160	225	130	176	140	170	12	
065-065-250 /554	65	65	55	130	12	300	266	132	220	205	299	-	282	717	702	-	220	140	-	-	-	-	-	-	270	216	193	15
065-065-250 /754	65	65	59	130	12	300	298	132	220	205	299	-	282	745	730	-	240	178	-	-	-	-	-	-	270	216	193	15
065-065-250 /1104	65	65	70	130	15	350	325	160	220	205	357	-	334	883	868	-	300	210	-	-	-	-	-	-	320	254	226	21
065-065-250 /1504	65	65	70	130	15	350	325	160	220	205	357	-	334	889	874	-	314	254	-	-	-	-	-	-	320	254	226	21

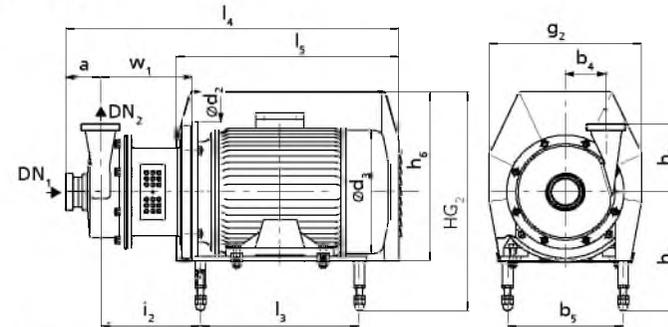
<sup>36)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>37)</sup> Applicable to flanged connections as per EN 1092-1

## Vitachrom DN 65, n ≈ 1450 rpm and 1750 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

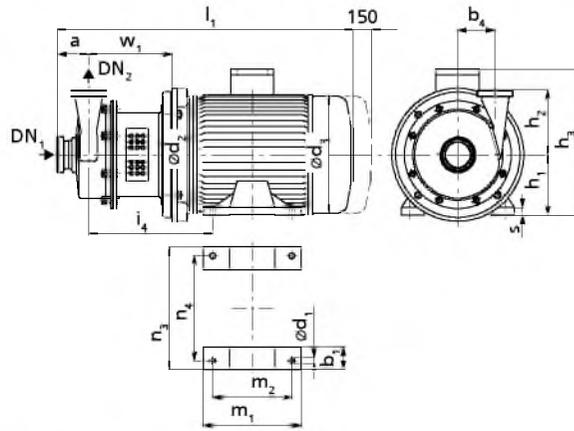
## Overview of mating dimensions DN 65, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>38)</sup>	h <sub>2</sub> <sup>39)</sup>	h <sub>5</sub>	h <sub>6</sub>		~HG		i <sub>2</sub>	l <sub>1</sub> <sup>38)</sup>	l <sub>1</sub> <sup>39)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
													Min.	Max.	Max.	Max.							
065-065-125 /154	65	65	85	70	200	200	190	264	90	145	160	213	247,5	304,7	376	437	147	554	554	225	658,5	450	161
065-065-125 /224	65	65	85	70	200	250	213	264	100	145	160	223	257,5	304,7	393	437	171,5	603	603	265	698,5	470	171
065-065-160 /154	65	65	85	85	200	200	190	264	90	170	185	213	247,5	304,7	376	437	147	554	554	225	658,5	450	161
065-065-160 /224	65	65	85	85	200	250	213	264	100	170	185	223	257,5	304,7	393	437	171,5	603	603	265	698,5	470	171
065-065-160 /304	65	65	85	85	200	250	213	264	100	170	185	223	257,5	304,7	393	437	171,5	638	638	265	698,5	470	171
065-065-200 /154	65	65	85	100	200	200	190	264	90	170	185	213	247,5	304,7	376	437	147	554	554	225	658,5	450	161
065-065-200 /224	65	65	85	100	200	250	213	264	100	170	185	223	257,5	304,7	393	437	171,5	603	603	265	698,5	470	171
065-065-200 /304	65	65	85	100	200	250	213	264	100	170	185	223	257,5	304,7	393	437	171,5	638	638	265	698,5	470	171
065-065-200 /404	65	65	85	100	200	250	234	264	112	170	185	222	256,5	304,7	405	437	178,5	627	627	265	694,5	470	171
065-065-250 /154	65	65	90 <sup>39)</sup> (105) <sup>38)</sup>	130	200	200	190	264	90	220	205	213	247,5	304,7	376	437	102	575	560	285	733	450	156
065-065-250 /224	65	65		130	200	250	213	264	100	220	205	223	257,5	304,7	393	437	125,5	628	613	310	762	470	170
065-065-250 /304	65	65		130	200	250	213	264	100	220	205	223	257,5	304,7	393	437	125,5	663	648	310	762	470	170
065-065-250 /404	65	65		130	200	250	234	264	112	220	205	222	256,5	304,7	405	437	112,5	652	637	330	778	470	170
065-065-250 /554	65	65		130	230	300	266	314	132	220	205	242	276,5	349,7	444	482	149,5	717	702	345	876	550	193
065-065-250 /754	65	65		130	230	300	298	314	132	220	205	242	276,5	349,7	444	482	168,5	745	730	345	876	550	193
065-065-250 /1104	65	65		130	280	350	325	372	160	220	205	270	304,5	422,7	502	555	246,5	883	868	385	997	720	226
065-065-250 /1504	65	65		130	280	350	325	372	160	220	205	270	304,5	422,7	502	555	268,5	889	874	385	997	720	226

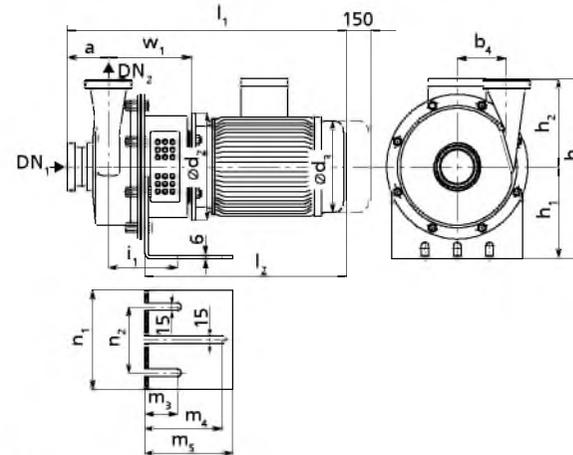
<sup>38)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>39)</sup> Applicable to flanged connections to EN 1092-1

## Vitachrom DN 80, n ≈ 1450 rpm and 1750 rpm



Pump set with motor feet



Pump set with angle foot

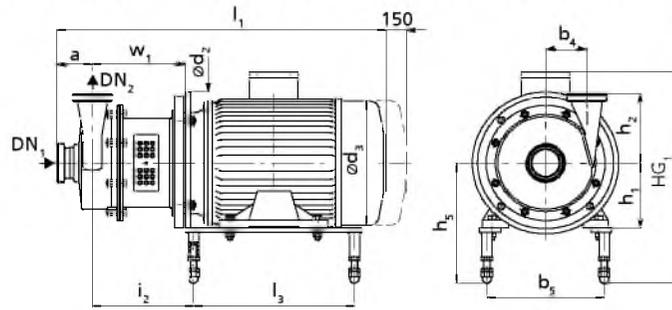
Overview of mating dimensions DN 80, pump set with motor feet or angle foot, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>40)</sup>	h <sub>2</sub> <sup>41)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>40)</sup>	~l <sub>1</sub> <sup>41)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
080-080-125 /154	80	80	100	-	85	10	200	190	160	170	185	288	143	224,5	577	577	397	165	140	65	155	176	236	130	143	125	168,5	10
080-080-125 /224	80	80	100	-	85	12	250	213	160	170	185	295	143	241,5	626	626	446	196	160	65	155	176	236	130	176	140	178,5	12
080-080-125 /304	80	80	100	-	85	12	250	213	160	170	185	295	143	241,5	661	661	481	196	160	65	155	176	236	130	176	140	178,5	12
080-080-160 /154	80	80	100	-	85	10	200	190	160	170	185	288	143	224,5	577	577	397	165	140	65	155	176	236	130	143	125	168,5	10
080-080-160 /224	80	80	100	-	85	12	250	213	160	170	185	295	143	241,5	626	626	446	196	160	65	155	176	236	130	176	140	178,5	12
080-080-160 /304	80	80	100	-	85	12	250	213	160	170	185	295	143	241,5	661	661	481	196	160	65	155	176	236	130	176	140	178,5	12
080-080-160 /404	80	80	100	-	85	12	250	234	160	170	185	308	143	248,5	650	650	470	226	190	65	155	176	236	130	176	140	178,5	12
080-080-160 /554	80	80	100	55	85	12	300	266	132	170	185	299	-	287,5	712	712	-	220	140	-	-	-	-	-	270	216	198,5	15
080-080-250 /154	80	80	95 <sup>41)</sup>	-	125	10	200	190	180	225	205	308	115,5	209,5	583	563	399	165	140	30	120	160	225	130	143	125	153,5	10
080-080-250 /224	80	80	(115) <sup>40)</sup>	-	125	12	250	213	180	225	205	315	115,5	230,5	636	616	452	196	160	30	120	160	225	130	176	140	167,5	12
080-080-250 /304	80	80		-	125	12	250	213	180	225	205	315	115,5	230,5	671	651	487	196	160	30	120	160	225	130	176	140	167,5	12
080-080-250 /404	80	80		-	125	12	250	234	180	225	205	328	115,5	237,5	660	640	476	226	190	30	120	160	225	130	176	140	167,5	12
080-080-250 /554	80	80		55	125	12	300	266	132	225	205	299	-	279,5	725	705	-	220	140	-	-	-	-	-	270	216	190,5	15
080-080-250 /754	80	80		59	125	12	300	298	132	225	205	299	-	279,5	753	733	-	240	178	-	-	-	-	-	270	216	190,5	15
080-080-250 /1104	80	80		70	125	15	350	325	160	225	205	357	-	331,5	891	871	-	300	210	-	-	-	-	-	320	254	223,5	21
080-080-250 /1504	80	80		70	125	15	350	325	160	225	205	357	-	331,5	897	877	-	314	254	-	-	-	-	-	320	254	223,5	21

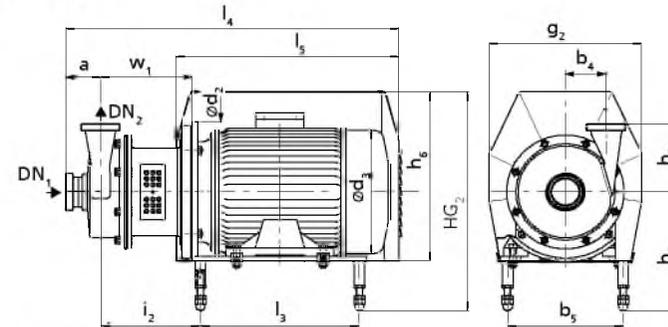
<sup>40)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>41)</sup> Applicable to flanged connections to EN 1092-1

## Vitachrom DN 80, n ≈ 1450 rpm and 1750 rpm, pump set with ball feet and motor shroud



Pump set with ball feet



Pump set with ball feet and motor shroud

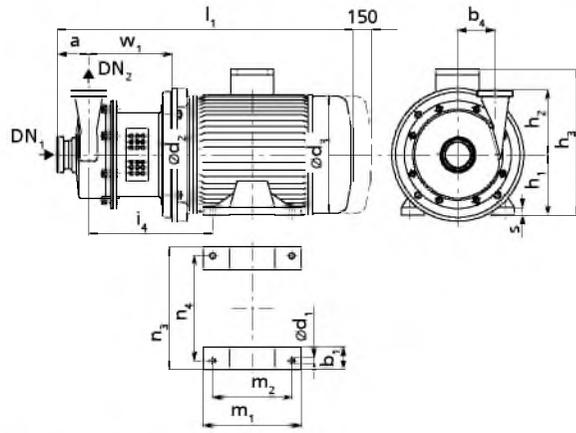
Mating dimensions DN 80, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>42)</sup>	h <sub>2</sub> <sup>43)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG		i <sub>2</sub>	l <sub>1</sub> <sup>42)</sup>	l <sub>1</sub> <sup>43)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
080-080-125 /154	80	80	100	85	200	200	190	264	90	170	185	213	248	305	376	437	154,5	577	577	225	681	450	168,5
080-080-125 /224	80	80	100	85	200	250	213	264	100	170	185	223	258	305	393	437	179	626	626	265	721	470	178,5
080-080-125 /304	80	80	100	85	200	250	213	264	100	170	185	223	258	305	393	437	179	661	661	265	721	470	178,5
080-080-160 /154	80	80	100	85	200	200	190	264	90	170	185	213	248	305	376	437	154,5	577	577	225	681	450	168,5
080-080-160 /224	80	80	100	85	200	250	213	264	100	170	185	223	258	305	393	437	179	626	626	265	721	470	178,5
080-080-160 /304	80	80	100	85	200	250	213	264	100	170	185	223	258	305	393	437	179	661	661	265	721	470	178,5
080-080-160 /404	80	80	100	85	200	250	234	264	112	170	185	222	257	305	405	437	186	650	650	265	628	470	178,5
080-080-160 /554	80	80	100	85	230	300	266	314	132	170	185	242	277	350	444	482	215	712	712	285	784	550	198,5
080-080-250 /154	80	80	95 <sup>43)</sup> (115) <sup>42)</sup>	125	200	200	190	264	90	225	205	213	248	305	376	437	99,5	583	562,5	285	628	450	153,5
080-080-250 /224	80	80		125	200	250	213	264	100	225	205	223	258	305	393	437	123	636	615,5	310	681	470	167,5
080-080-250 /304	80	80		125	200	250	213	264	100	225	205	223	258	305	393	437	123	671	650,5	310	681	470	167,5
080-080-250 /404	80	80		125	200	250	234	264	112	225	205	222	257	305	405	437	110	660	639,5	330	786	470	167,5
080-080-250 /554	80	80		125	230	300	266	314	132	225	205	242	277	350	444	482	147	725	704,5	345	884	550	190,5
080-080-250 /754	80	80		125	230	300	298	314	132	225	205	242	277	350	444	482	166	753	732,5	345	884	550	190,5
080-080-250 /1104	80	80		125	280	350	325	372	160	225	205	270	305	423	502	555	244	891	870,5	385	1005	720	223,5
080-080-250 /1504	80	80		125	280	350	325	372	160	225	205	270	305	423	502	555	266	897	876,5	385	1005	720	223,5

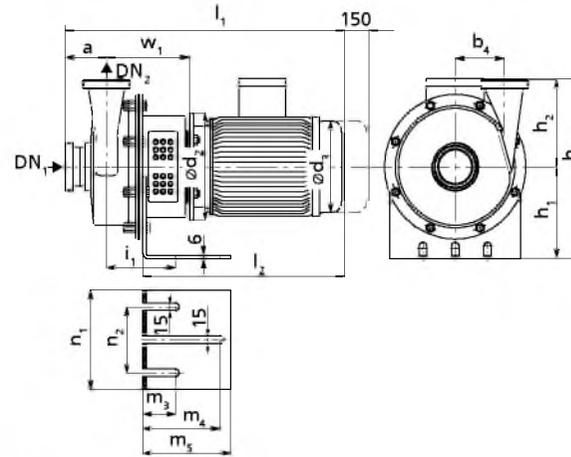
<sup>42)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>43)</sup> Applicable to flanged connections to EN 1092-1

Vitachrom DN 100, n ≈ 1450 rpm and 1750 rpm



Pump set with motor feet



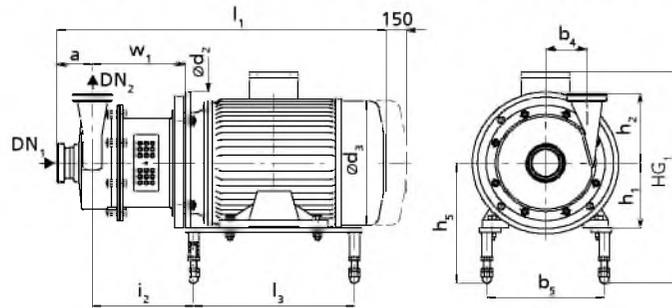
Pump set with angle foot

Overview of mating dimensions DN 100, pump set with motor feet or angle foot, dimensions in [mm]

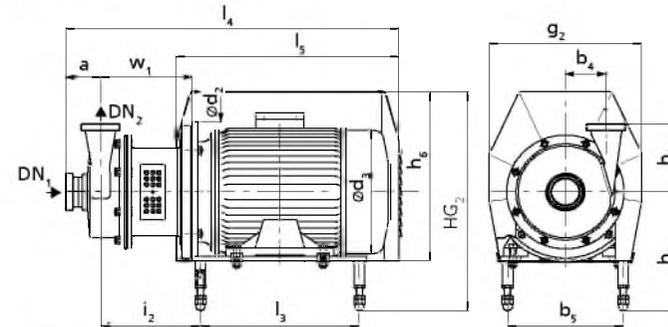
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>(44)</sup>	h <sub>2</sub> <sup>(45)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>(44)</sup>	~l <sub>1</sub> <sup>(45)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
100-100-200 /154	100	100	100 <sup>(45)</sup>	-	110	10	200	190	180	250	235	308	113	207	565	580	399	165	140	30	120	160	225	130	143	125	151	10
100-100-200 /224	100	100	(115) <sup>(44)</sup>	-	110	12	250	213	180	250	235	315	113	228	618	633	452	196	160	30	120	160	225	130	176	140	165	12
100-100-200 /304	100	100		-	110	12	250	213	180	250	235	315	113	228	653	668	487	196	160	30	120	160	225	130	176	140	165	12
100-100-200 /404	100	100		-	110	12	250	234	180	250	235	328	113	235	642	657	476	226	190	30	120	160	225	130	176	140	165	12
100-100-200 /554	100	100		55	110	12	300	266	132	250	235	299	-	277	707	722	-	220	140	-	-	-	-	-	270	216	188	15
100-100-200 /754	100	100		59	110	12	300	298	132	250	235	299	-	277	735	750	-	240	178	-	-	-	-	-	270	216	188	15
100-100-200 /1104	100	100		70	110	15	350	325	160	250	235	357	-	329	873	888	-	300	210	-	-	-	-	-	320	254	221	21
100-100-200 /1504	100	100		70	110	15	350	325	160	250	235	357	-	329	879	894	-	314	254	-	-	-	-	-	320	254	221	21

<sup>44)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>45)</sup> Applicable to flanged connections to EN 1092-1

Vitachrom DN 100,  $n \approx 1450$  rpm and  $1750$  rpm, pump set with ball feet and motor shroud


Pump set with ball feet



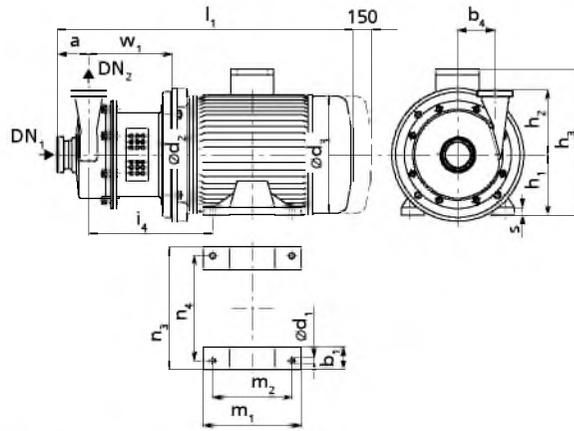
Pump set with ball feet and motor shroud

## Overview of mating dimensions DN 100, pump set with ball feet and motor shroud, dimensions in [mm]

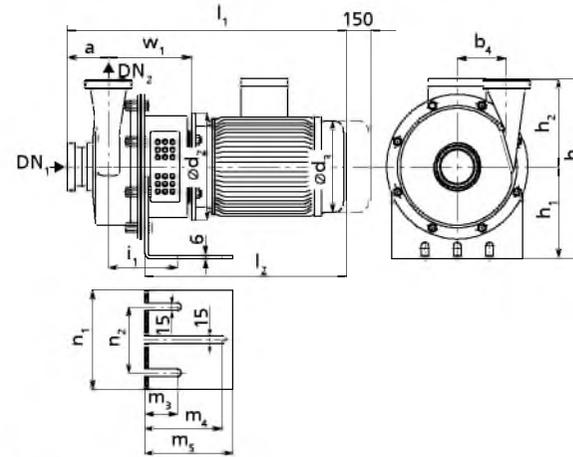
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>46)</sup>	h <sub>2</sub> <sup>47)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>46)</sup>	l <sub>1</sub> <sup>47)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
100-100-200 /154	100	100	100 <sup>46)</sup>	200	110	200	190	264	90	250	235	213	247,5	304,7	376	437	97	565	580	285	676	450	151
100-100-200 /224	100	100	(115) <sup>47)</sup>	200	110	250	213	264	100	250	235	223	257,5	304,7	393	437	120,5	618	633	310	720	470	165
100-100-200 /304	100	100		200	110	250	213	264	100	250	235	223	257,5	304,7	393	437	120,5	653	668	310	720	470	165
100-100-200 /404	100	100		200	110	250	234	264	112	250	235	222	256,5	304,7	405	437	107,5	642	657	330	716	470	165
100-100-200 /554	100	100		230	110	300	266	314	132	250	235	242	276,5	349,7	444	482	144,5	707	722	345	819	550	188
100-100-200 /754	100	100		230	110	300	298	314	132	250	235	242	276,5	349,7	444	482	163,5	735	750	345	819	550	188
100-100-200 /1104	100	100		280	110	350	325	372	160	250	235	270	304,5	422,7	502	555	241,5	873	888	385	1000	720	221
100-100-200 /1504	100	100		280	110	350	325	372	160	250	235	270	304,5	422,7	502	555	263,5	879	894	385	1000	720	221

<sup>46)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>47)</sup> Applicable to flanged connections to EN 1092-1

Vitachrom DN 125,  $n \approx 1450$  rpm and 1750 rpm

Pump set with motor feet



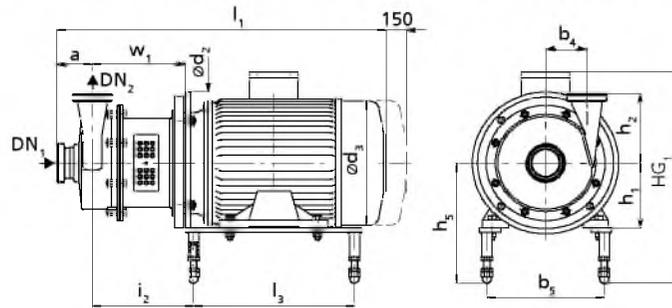
Pump set with angle foot

Overview of mating dimensions DN 125, pump set with motor feet or angle foot, dimensions in [mm]

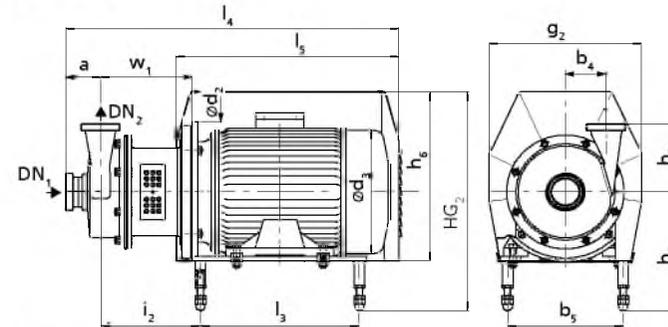
Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	~b <sub>1</sub>	b <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	~d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>48)</sup>	h <sub>2</sub> <sup>49)</sup>	~h <sub>3</sub>	i <sub>1</sub>	i <sub>4</sub>	~l <sub>1</sub> <sup>44)</sup>	~l <sub>1</sub> <sup>45)</sup>	~l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	w <sub>1</sub>	s
125-125-200 /224	125	125	120 <sup>44)</sup>	-	110	12	250	213	180	250	235	315	138	249	659	674	377	196	160	30	120	160	260	180	176	140	186	12
125-125-200 /304	125	125	(135) <sup>45)</sup>	-	110	12	250	213	180	250	235	315	138	249	694	709	412	196	160	30	120	160	260	180	176	140	186	12
125-125-200 /404	125	125		-	110	12	250	234	180	250	235	328	138	256	683	698	401	226	190	30	120	160	260	180	176	140	186	12
125-125-200 /554	125	125		55	110	12	300	266	132	250	235	299	-	298	748	763	-	220	140	-	-	-	-	-	270	216	209	15
125-125-200 /754	125	125		59	110	12	300	298	132	250	235	299	-	298	776	791	-	240	178	-	-	-	-	-	270	216	209	15
125-125-200 /1104	125	125		70	110	15	350	325	160	250	235	357	-	350	914	929	-	300	210	-	-	-	-	-	320	254	242	21
125-125-200 /1504	125	125		70	110	15	350	325	160	250	235	357	-	350	920	935	-	314	254	-	-	-	-	-	320	254	242	21
125-125-200 /1854	125	125		70	110	15	350	325	160	250	235	357	-	350	920	935	-	314	254	-	-	-	-	-	320	254	242	21
125-125-200 /2204	125	125		80	110	15	350	370	160	250	235	442	-	363	978	993	-	320	241	-	-	-	-	-	360	279	242	23
125-125-200 /3004	125	125		85	110	19	400	422	200	250	235	505	-	375	1037	1052	-	388	305	-	-	-	-	-	400	318	242	30

<sup>48)</sup> Applicable to connections as per DIN 11851 (hygienic pipe union)

<sup>49)</sup> Applicable to flanged connections to EN 1092-1

Vitachrom DN 125,  $n \approx 1450$  rpm and 1750 rpm, pump set with ball feet and motor shroud


Pump set with ball feet



Pump set with ball feet and motor shroud

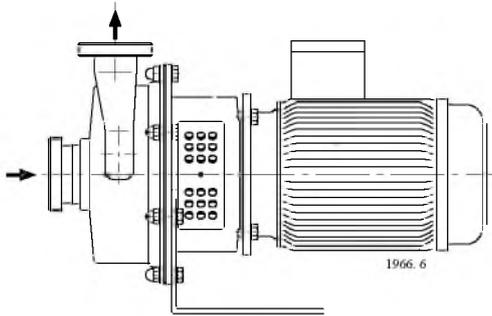
## Overview of mating dimensions DN 125, pump set with ball feet and motor shroud, dimensions in [mm]

Vitachrom	DN <sub>1</sub>	DN <sub>2</sub>	a	b <sub>4</sub>	b <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub> <sup>50)</sup>	h <sub>2</sub> <sup>51)</sup>	h <sub>5</sub>		h <sub>6</sub>	~HG <sub>1</sub>	~HG <sub>2</sub>	i <sub>2</sub>	l <sub>1</sub> <sup>46)</sup>	l <sub>1</sub> <sup>47)</sup>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>
												Min.	Max.		Max.	Max.							
125-125-200 /224	125	125	120 <sup>46)</sup>	200	110	250	213	264	100	250	235	223	257,5	304,7	393	437	141,5	659	674	310	807	470	186
125-125-200 /304	125	125	(135) <sup>47)</sup>	200	110	250	213	264	100	250	235	223	257,5	304,7	393	437	141,5	694	709	310	807	470	186
125-125-200 /404	125	125		200	110	250	234	264	112	250	235	222	256,5	304,7	405	437	128,5	683	698	330	823	470	186
125-125-200 /554	125	125		230	110	300	266	314	132	250	235	242	276,5	349,7	444	482	165,5	748	763	345	921	550	209
125-125-200 /754	125	125		230	110	300	298	314	132	250	235	242	276,5	349,7	444	482	184,5	776	791	345	921	550	209
125-125-200 /1104	125	125		280	110	350	325	372	160	250	235	270	304,5	422,7	502	555	262,5	914	929	385	1042	720	242
125-125-200 /1504	125	125		280	110	350	325	372	160	250	235	270	304,5	422,7	502	555	284,5	920	935	385	1042	720	242
125-125-200 /1854	125	125		280	110	350	325	372	160	250	235	270	304,5	422,7	502	555	284,5	920	935	385	1042	720	242
125-125-200 /2204	125	125		305	110	350	370	402	180	250	235	290	325	493	587	626	310	978	993	385	1126	740	242
125-125-200 /3004	125	125		345	110	400	422	452	200	250	235	331	353	545	658	686	320	1037	1052	415	1193	830	242

50) Applicable to connections as per DIN 11851 (hygienic pipe union)

51) Applicable to flanged connections to EN 1092-1

### Installation information



#### Pump with angle foot

As-delivered condition for horizontal installation, fastened below

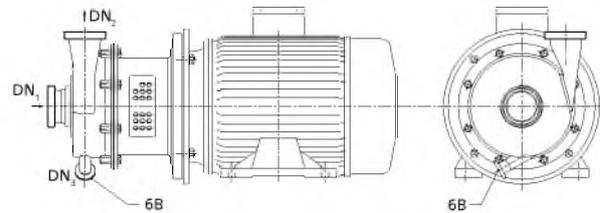
For any other installation positions, contact KSB.

#### NOTE!

Vertical installation with the motor below is impermissible.

### Pump accessories

- Design with inducer for sizes 065-065-160 and 080-080-250
- Standard pump foot (angle foot)
- Vertically adjustable ball feet
- Motor shroud made of stainless steel
- System for supplying the mechanical seal
- Motor soleplate
- Residual drainage of pump casing



Connection for residual drainage

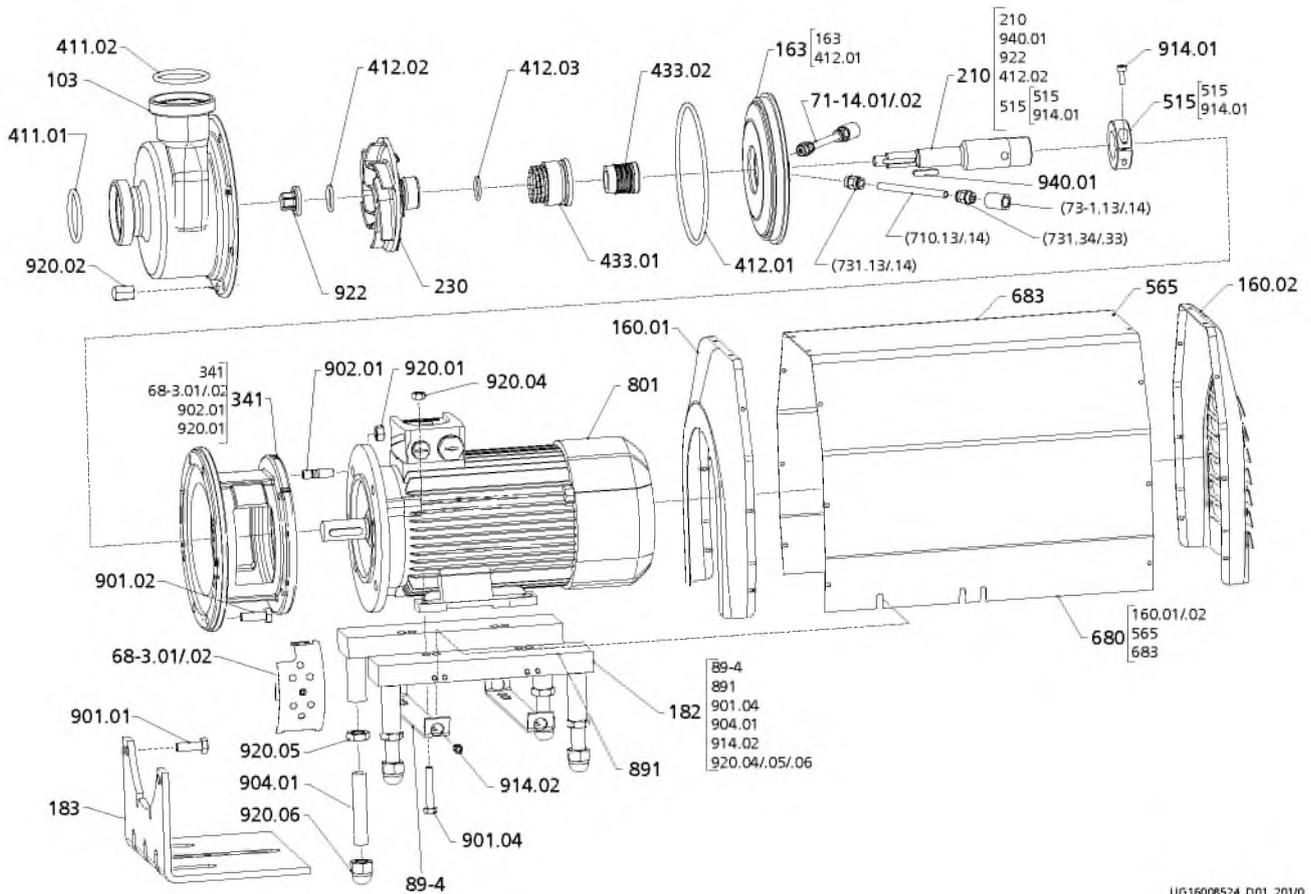
Exploded view / List of components

Exploded view, Vitachrom, size group I

This view applies to the following pump sizes:

050-050-125	065-065-125	080-080-125
050-050-160	065-065-160	080-080-160
050-050-200	065-065-200	

[ Supplied in packaging units only



UG16008524\_D01\_201/0

Exploded view

List of components

Part number	Description	Part number	Description
103	Pump casing	71-14.01/02	Connection pipe
160.01/02	Cover	73-1.13/14	Socket
163	Discharge cover	710.13/14	Pipe
182	Foot	731.13/14/33/34	Pipe union
183	Support foot <sup>52)</sup>	720	Barrel nipple
210	Shaft	89-4	Shim
230	Impeller	801	Flanged motor
341	Drive lantern	891	Base frame
411.01/02	Joint ring	901.01/02/04	Hexagon head bolt
412.01/02/03	O-ring	902.01	Stud

<sup>52)</sup> Up to motor size 112M

Part number	Description	Part number	Description
433.01/.02	Mechanical seal	904.01	Grub screw
515	Locking ring	914.01/.02	Hexagon socket head cap screw
565	Rivet	920.01/.02/.04/.05/.06	Nut
68-3.01/.02	Cover plate	922	Impeller nut
680	Guard	940.01	Key
683	Hood		

Exploded view, Vitachrom, size group II

This view applies to the following pump sizes:

050-050-250

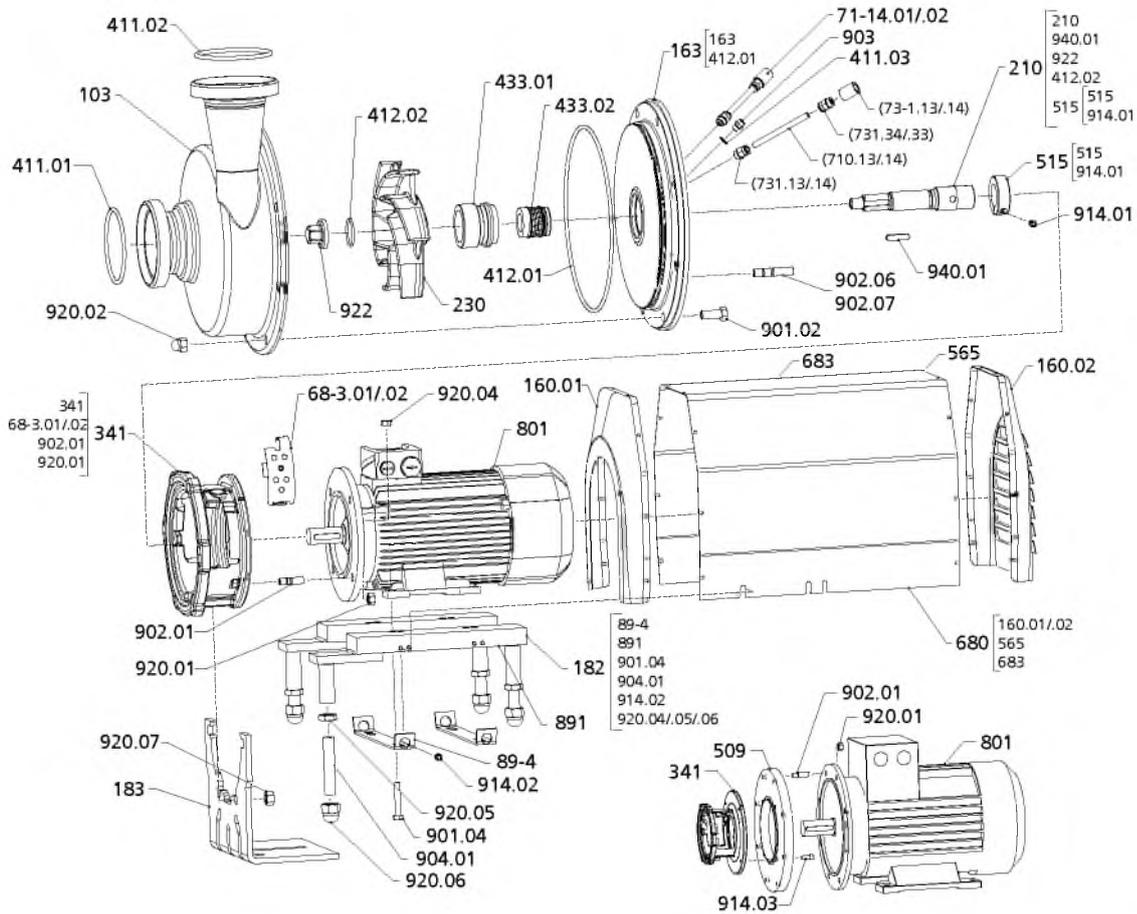
065-065-250

080-080-250

100-100-200

125-125-200

[ Supplied in packaging units only



UG1608999\_D01\_201/0

Exploded view

List of components

Part number	Description	Part number	Description
103	Circular casing	683	Hood
160.01/02	Cover	71-14.01/02	Connection pipe
163	Discharge cover	73-1.13/14	Socket
182	Foot	710.13/14	Pipe
183	Support foot	731.13/14/33/34	Pipe union
210	Shaft	801	Flanged motor
230	Impeller	89-4	Shim
341	Drive lantern	891	Base frame
411.01/02/03/04	Joint ring	901.02/04	Hexagon head bolt
412.01/02	O-ring	902.01/06/07	Stud
433.01/02	Mechanical seal	903	Screw plug
509	Intermediate ring	904.01	Grub screw
515	Locking ring	914.01/02/03	Hexagon socket head cap screw
565	Rivet	920.01/02/04/05/06/07	Nut
68-3.01/02	Cover plate	922	Impeller nut
680	Motor shroud	940.01	Key

### Detailed designation

Designation example

Position																																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
V	C			0	5	0	-	0	5	0	-	1	2	5		C	C	/	0	1	M	M	1	3	0	0	2			A	P	D	2					K	S	B	I	E	3
V	C	I	1	0	5	0	-	0	5	0	-	1	6	0		C	C	/	0	2	A	L	1	1	0	0	2	e	x	A	P	D	2	E	M	S	I	E	I	E	4		
See name plate and data sheet																							See data sheet																				

### Designation key

Position	Code	Description
1-3	<b>Pump type</b>	
	V C	Vitachrom
	V C I	Vitachrom Inducer
4	<b>Inducer</b>	
	<sup>53)</sup>	Without inducer
	0	Inducer 0
	1	Inducer 1
5-16	<b>Size</b>	
	0 5 0	Nominal suction nozzle diameter [mm]
	0 5 0	Nominal discharge nozzle diameter [mm]
	1 2 5	Nominal impeller diameter [mm]
17	<b>Casing material</b>	
	C	1.4404
18	<b>Impeller material</b>	
	C	1.4409
19	<b>Design</b>	
	<sup>53)</sup>	Standard
	X	Non-standard, BT3D, BT3
20-22	<b>Seal code</b>	
	I 0 1	BQ1E1-04GG (carbon/SiC/EPDM)
	I 0 2	BQ1V26GG (carbon/SiC/Viton)
	I 0 3	Q12Q1E1-04GG (SiC/SiC/EPDM)
	I 0 4	Q12Q1V26GG (SiC/SiC/Viton)
	I 2 1	Q12Q1M1GG (SiC/SiC/PTFE)
	I 0 6	BQ1E1-04GG (carbon/SiC/EPDM)
	I 0 7	BQ1V26GG (carbon/SiC/Viton)
	I 0 8	Q12Q1E1-04GG (SiC/SiC/EPDM)
	I 0 9	Q12Q1V26GG (SiC/SiC/Viton)
	I 1 0	Q22Q2E1-04GG (Si-SiC/Si-SiC/EPDM)
	T 1 1	BQ1E1-04GG (carbon/SiC/EPDM) + BQ1EGG (carbon/SiC/EPDM)
	T 1 2	BQ1V26GG (carbon/SiC/Viton) + BQ1EGG (carbon/SiC/EPDM)
	T 1 3	Q12Q1E1-04GG (SiC/SiC/EPDM) + BQ1EGG (carbon/SiC/EPDM)
	T 1 4	Q12Q1V26GG (SiC/SiC/Viton) + BQ1EGG (carbon/SiC/EPDM)
	T 1 6	BQ1E1-04GG (carbon/SiC/EPDM) + BQ1EGG (carbon/SiC/EPDM)
	T 1 7	BQ1V26GG (carbon/SiC/Viton) + BQ1EGG (carbon/SiC/EPDM)
	T 1 8	Q12Q1E1-04GG (SiC/SiC/EPDM) + BQ1EGG (carbon/SiC/EPDM)
	T 1 9	Q12Q1V26GG (SiC/SiC/Viton) + BQ1EGG (carbon/SiC/EPDM)
T 2 0	Q22Q2E1-04GG (Si-SiC/Si-SiC/EPDM) + BQ1EGG (carbon/SiC/EPDM)	
T 3 1	Q12Q1M1GG (SiC/SiC/PTFE) + BQ1EGG (carbon/SiC/EPDM)	
23	<b>Mounting arrangement</b>	
	M	Motor feet
	A	Angle foot
	K	Ball feet
	T	Round base feet
	B	Soleplate G1/G2
24	<b>Pipe connection</b>	
	M	Threaded connection (hygienic pipe union)
	I	Threaded connection to IDF ISO 2853
	B	Threaded connection to DIN 11864-1

<sup>53)</sup> Blank

Position	Code	Description
	S	Threaded connection to SMS standard
	C	Flange to DIN 11864-2
	R	Flange to DIN 2633 (EN 1092-1) with recess
	L	Flange to EN 1092-1
	N	Neumo flange
	A	Flange to APV-FN
	G	Varivent flange
	D	Clamped connection to DIN 11864-3
	T	Clamped connection to EN 32676 / ISO 2852 / BS 4825: part 3
25	<b>Material of O-rings</b>	
	1	EPDM
	2	Viton
	3	PTFE
26-31	<b>Drive</b>	
	7 5 0 2	7502
	3 0 0 2	3002
	1 0 0 2 e x	1002ex
32	<b>Product generation</b>	
	A	Vitachrom
33-36	<b>PumpDrive</b>	
	<sup>53)</sup>	Without PumpDrive
	P D 2	PumpDrive, 2nd generation
	P D 2 E	PumpDrive, 2nd generation, Eco
37	<b>PumpMeter</b>	
	<sup>53)</sup>	Without PumpMeter
	M	PumpMeter
38-40	<b>Motor manufacturer</b>	
	K S B	Made by KSB
	S I E	Made by Siemens
	L O H	Made by Loher
	H A L	Made by Halter
41-43	<b>Efficiency class</b>	
	I E 1	IE1
	I E 2	IE2
	I E 3	IE3
	I E 4	IE4

Hygienic Pump

**Vitacast Bloc**

**Type Series Booklet**



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## Close-coupled Pump

## Hygienic Pump

## Vitacast Bloc



### Designation

Example: VAB 032-025-145 0402KB T82ME

### Designation key

Code	Description
VAB	Type series VAB   Vitacast-Bloc
032	Nominal suction nozzle diameter [mm]
025	Nominal discharge nozzle diameter [mm]
145	Nominal impeller diameter [mm]
040	Motor rating 040   4 kW
2	Number of poles 2   2 poles
K	Mounting type K   3-point or 4-point ball feet
B	Operating mode / flushing system of mechanical seal B   Without flushing system
T82	Seal code T82   BQ1EGG
M	Connection types M   Pipe union to DIN 11851
E	Material of O-rings E   EPDM

### Further information on the designation

(⇒Page 28)

### Main applications

- Food and beverages industry
- Pharmaceutical industry
- Chemical industry

### Fluids handled

- Fluids not chemically or mechanically aggressive to the materials

### Further information on fluids handled

(⇒Page 6)

### Operating data

#### Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m <sup>3</sup> /h]	≤ 340	≤ 350
Head	H [m]	≤ 105	
Operating pressure	p [bar]	≤ 10 <sup>1)</sup>	
Fluid temperature	T [°C]	≤ 140 <sup>1)</sup>	
Connection sizes	DN	25 - 150	

1) Higher values on request for individual sizes

2) Hygienic design

3) Sterile design

### Design details

#### Design

- Standard design with materials to Regulation (EC) No 1935/2004
- Design to ATEX

#### Design

- Hygienic centrifugal pump
- Single-stage
- Close-coupled and long-coupled design
- Non-self-priming
- Wetted components made of stainless steel 1.4404/1.4409 (AISI 316L/CF3M)

#### Pump casing

- Volute casing

#### Impeller type

- Open multi-channel impeller

#### Bearings

- Grease-packed deep groove ball bearing

#### Shaft seal

- Single mechanical seal to EN 12756
  - Seal type T<sup>2)</sup>: pump-end seal with non-encapsulated spring surrounded by fluid handled, uni-directional
  - Seal type H<sup>3)</sup>: pump-end seal with encapsulated spring, polished surface, bi-directional

- Seal type Y: external seal
- Double mechanical seal to EN 12756
  - Seal type Q: back-to-back arrangement (pressurised barrier fluid)

- APV flange
- Varivent flange
- Other connection types on request

#### Drive

- Efficiency class IE3

#### Standard design:

- KSB surface-cooled IEC frame three-phase current squirrel-cage motor
- 50 Hz winding, 220-240 V/380-420 V  $\leq$  2.20 kW
- 50 Hz winding, 380-420 V/660-725 V  $\geq$  3.00 kW
- 60 Hz winding, 440-480 V  $\leq$  2.60 kW
- 60 Hz winding, 440-480 V  $\geq$  3.60 kW
- Type of construction IM V1  $\leq$  4.00 kW
- Type of construction IM V1  $\geq$  5.50 kW
- IP55 enclosure
- Mode of operation: continuous operation S1
- Thermal class F with temperature sensor, 3 PTC thermistors

#### Explosion-proof version:

- KSB surface-cooled IEC frame three-phase current squirrel-cage motor
- 50 Hz winding, 220-240 V/380-420 V  $\leq$  1.85 kW
- 50 Hz winding, 380-420 V/660-725 V  $\geq$  2.50 kW
- Type of construction IM V1  $\leq$  3.30 kW
- Type of construction IM V15  $\geq$  4.60 kW
- Enclosure IP55 or IP54
- Mode of operation: continuous operation S1
- Type of protection EExe II
- Temperature class T3

#### Automation

##### Automation options:

- PumpDrive
- PumpMeter

#### Connections

Axial suction nozzle, tangential discharge nozzle

Adjustable through 360°

##### Types of connection:

- Threaded connection to DIN 11851
- Threaded connection to DIN 11853
- Threaded connection to DIN 11864-1-GS-A
- Threaded connection to SMS standard
- Threaded connection to IDF standard
- Threaded connection to RJT standard
- TriClamp/TriClover fitting
- Clamped connection to DIN 11864-3-NKS-A
- Clamped connection to DIN 32676-A
- Clamped connection to ISO 2852
- Flange to EN 1092-1
- Flange to DIN 11864-2-NF-A
- Flange to ASA ASME 150

#### Materials

Pump section	Material
Volute casing <sup>4)</sup>	1.4409 (AISI CF3M)
Discharge cover <sup>4)</sup>	1.4409 (AISI CF3M)
Impeller <sup>4)</sup>	1.4409 (AISI CF3M)
Impeller nut <sup>4)</sup>	1.4404 (AISI 316L)
Inducer <sup>4)</sup>	1.4409 (AISI CF3M)
Pump shaft <sup>4)</sup>	1.4404 (AISI 316L)
Drive lantern	1.4308 (AISI CF8)
O-rings, moulded gaskets	EPDM, FPM, FEP, FFKM

Optional materials for wetted components:

- 1.4469/1.4410
- Hastelloy C276

 All materials that will be in contact with the fluid handled conform with Regulation (EC) No. 1935/2004 and Commission Regulation (EC) No. 2023/2006.

#### Coating and preservation

- Coating and preservation to KSB standard

#### Product benefits

- Easy to clean due to little dead volume and excellent flushability
- Service-friendly design, easy and fast to dismantle
- Stub shaft allows combination with all commercial standardised motors
- High surface quality thanks to special polishing techniques
- Corrosion-resistant by using high-quality stainless steel
- Operating costs reduced by trimming the impeller diameter to match the specified duty point
- A large variety of materials, sealing elements and connections are available to optimally match the pump to its application.
- Highly suitable for CIP/SIP cleaning processes
- Excellent hydraulic efficiency and low NPSH values

<sup>4)</sup> Wetted component

## Certifications

### Overview

Label	Effective in:	Note
	All countries	Certified quality management to ISO 9001
	All countries	EHEDG-certified cleanability
	All countries	Elastomers FDA, 3A, USP class VI certified

## Acceptance tests and warranty

- Materials testing
  - Material test report 2.2 on request
  - Material test report 3.1 on request
- Final inspection
  - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test against surcharge
  - To ISO 9906/2B or ISO 9906/3B
  - NPSH test
- Other tests  
Other tests (e.g. vibrations, strength, noise characteristics) on request.
- Warranties  
Warranties are given within the scope of the valid delivery conditions.

## Overview of fluids handled

Table of fluids handled and associated material combinations

X= standard

Fluid handled	Temperature		Seal code																	Operating mode	Comment		
	Min.	Max.	T19	T64	T66	T80	T81	T82	T83	T84	H0	H1	H1D	H2	H3	H3D	H4	H5	Q71			Q72	Q79
	[°C]	[°C]																					
<b>Alcohol, butanol</b>																							
Butanol	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	I	-
Isobutanol	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	I	-
<b>Alcohol, ethanol</b>																							
<sup>5)</sup>	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	I	-
<b>Alcohol, methanol</b>																							
-	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	X	-	I, BQ, DB	Provide water quench for indoor application (toxicity)
<b>Alcohol, propanol</b>																							
1-propanol	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	I	-
2-propanol	0	60	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	I	-

5) No details specified

Fluid handled	Temperature		Seal code															Operating mode	Comment				
	Min.	Max.	T19	T64	T66	T80	T81	T82	T83	T84	H0	H1	H1D	H2	H3	H3D	H4			H5	Q71	Q72	Q79
	°C																						
<b>Beer</b>																							
Beer mash	0	100	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
Beer wort	0	100	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
Brewer's yeast	0	30	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Hops	0	100	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
Trub (brewery)	0	90	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
<b>Cleaning-in-place (CIP)</b>	0	85	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	After cleaning, flush with hot water of 90 °C max.
<b>Beverages, alcoholic</b>																							
Spirits (40 % ethanol)	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	Brandy 40 %
Beer	0	70	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	Beer after primary fermentation
Fruit liqueur	0	60	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
Must	0	60	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	
Pernod	0	40	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Grappa	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Whiskey	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Wine (cider)	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Liqueur with egg yolks	0	50	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Herbal liqueur, alcohol content ≤ 50 %	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Sparkling wine	0	50	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
Sap (juice) with 24 % ethanol	0	50	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
<b>Beverages, non-alcoholic</b>																							
Coke	0	20	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	≤ 12°Bx
Coke concentrate	0	20	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	≤ 65°Bx
Coffee	0	60	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	Coffee extract
Lemonade	0	90	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	≤ 65°Bx
Caffeine crystals (liquid)	20	100	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	max. 5 % caffeine
<b>Glucose</b>																							
Unsaturated aqueous solution	0	50	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	X	-	B, BQ, DB	Observe the melting point or crystallisation point. If required, heat up the casing cover prior to commissioning/start-up. Use suitable hot water as quench liquid. Concentration < 65°Bx single mechanical seal w/o flushing is ok.
<b>Glycerine</b>																							
Concentration ≤ 40 %	0	100	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	B, I	
<b>Glycol (pure)</b>																							
Diethylene glycol	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	X	-	B, I, DB	Provide water quench for indoor application (toxicity)
Ethylene glycol	0	60	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	X	-	B, I, BQ	Glycol Provide water quench for indoor application (toxicity)
<b>Urea (carbamide)</b>																							
Concentration ≤ 35%	0	80	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	BQ, DB	Use suitable hot water as cooling liquid.
<b>Foodstuff (liquid)</b>																							
Egg (liquid)	0	20	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	BQ, DB	If containing sugar, use Q72 (U2U2EGG).
<b>Foodstuff (aqueous)</b>																							
Malt	0	100	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
<b>Dairy products</b>																							
Chocolate milk	0	90	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
Sweetened condensed milk	0	90	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	B, I	
Skimmed milk (fresh, sour)	0	90	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Milk	0	90	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	B, I	

Fluid handled	Temperature		Seal code															Operating mode	Comment				
	Min.	Max.	T19	T64	T66	T80	T81	T82	T83	T84	H0	H1	H1D	H2	H3	H3D	H4			H5	Q71	Q72	Q79
	°C																						
Cream (sweet, sour)	0	90	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Sweet permeate (milk)	0	90	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Concentrated milk (15 % bone dry)	0	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	BQ, DB	Use suitable water as liquid quench.
<b>Sodium hydroxide</b>																							
Concentration 0 to 50 %	0	80	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	B, I	Observe the melting point or crystallisation point. If required, heat up the casing cover prior to commissioning/start-up.  Use suitable hot water as continuous quench liquid
<b>Fruit pulp</b>																							
Apple purée	0	20	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	B, I	
Apricot purée with 40 % water	0	20	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.
<b>Oil, vegetable oil</b>																							
Anise oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Cotton seed oil	5	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Peanut oil	5	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Lavender oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Linseed oil	0	60	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Linseed oil with ≤ 3% H <sub>2</sub> SO <sub>4</sub>	0	20	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Corn oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Olive oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Palm oil	45	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Melting point = +27 °C to +42 °C T85 (Q1U2VGG) recommended for temperatures above 70 °C.
Rapeseed oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Castor oil	26	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Info: viscosity = 700 mm <sup>2</sup> /s at 25 °C
Soybean oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Sunflower oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Edible oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Non-heatable pumps can be used if the melting point < ambient temperature. Check the melting point and viscosity with the customer.
Walnut oil	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
<b>Juice (fruit and sugar solutions)</b>																							
Fruit juice	0	60	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Apple juice
Vegetable juice	0	100	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Orange juice	0	60	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Pressed sap	0	50	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
Sugar solutions	0	100	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Sugar solution > 65 Bx (for single seal)
	0	95	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	DB, BQ	Use suitable water as barrier fluid, concentration > 65°Bx.
<b>Acid, malic acid</b>																							
Unsaturated aqueous solution	0	60	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	Solubility = 65 % at 40 °C and 72.8 % at 60 °C
<b>Acid, citric acid</b>																							
Concentration 1 to 50 %	0	80	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	B, I	
<b>Acid, acetic acid</b>																							
Concentration 1 to 25 %	0	60	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	B, I	Vinegar
Concentration ≤ 30%	0	20	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	X	-	-	BQ, DB	Use suitable water as liquid quench.
Concentration ≤ 50%	0	20	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	X	-	-	BQ, DB	Use suitable water as liquid quench.
<b>Acid</b>																							
Unsaturated aqueous solution	0	100	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
<b>Acid, tannic acid</b>																							
Concentration 1 to 50%	0	100	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	B, I	
<b>Acid, lactic acid</b>																							
Concentration 1 to 50%	0	60	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
<b>Acid, oxalic acid</b>																							

Fluid handled	Temperature		Seal code															Operating mode	Comment						
	Min. °C	Max. °C	T19	T64	T66	T80	T81	T82	T83	T84	H0	H1	H1D	H2	H3	H3D	H4			H5	Q71	Q72	Q79		
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-
Concentration ≤ 5%	0	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	BQ, DB	Use suitable water as liquid quench.	
<b>Acid, tartaric acid</b>																									
Concentration ≤ 8%	0	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
Concentration ≤ 50%	0	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
<b>Sorbitol (solution)</b>																									
Unsaturated aqueous solution	0	80	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DB, BQ	Mechanical seal for solutions up to 40 % max. Use suitable water as liquid quench.
<b>Water, desalinated</b>																									
De-ionised water	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	Water quality: conductivity > 10 µS/cm < 250 µS/cm, SiO <sub>2</sub> content < 10 mg/l, solids content 5 mg/l max.
Ultrapure water	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	Use suitable water as quench liquid for temperature > 90 °C.
Water for injection	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	Use suitable water as quench liquid for temperature > 90 °C.
<b>Drinking water</b>																									
Mash, schnapps	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
Ice water (brewery)	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
Tap water	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
-	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	
Hot water (brewery)	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	
<b>Water</b>																									
Pure water	0	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B, I	

### Installation types

Installation type

Installation type	Illustration	Description
K		Horizontal installation, close-coupled pump set <ul style="list-style-type: none"> <li>Axial suction nozzle, radial discharge nozzle, adjustable through 360°</li> <li>Mounted on 3-point ball feet up to a drive rating of 4 kW.</li> <li>Mounted on 4-point ball feet for drive ratings from 5.5 to 22 kW.</li> </ul>
M		Horizontal installation, close-coupled pump set <ul style="list-style-type: none"> <li>Axial suction nozzle, radial discharge nozzle, adjustable through 360°</li> <li>Mounted on a motor foot for drive ratings from 0.33 to 22 kW.</li> </ul>
L		Horizontal installation, close-coupled pump set <ul style="list-style-type: none"> <li>Axial suction nozzle, radial discharge nozzle, adjustable through 360°</li> <li>Connected to the motor via a bearing pedestal for drive ratings of 30 kW.</li> </ul>

 Vertical installation requires a mechanical seal with flushing system.

Installation types per pump size

Pump size	Ball feet	Motor feet	Bearing pedestal	Trolley
032-025-145	X	X	-	X
032-025-175	X	X	-	X
040-032-110	X	X	-	X
040-032-145	X	X	-	X
040-032-175	X	X	-	X
040-032-210	X	X	-	X
050-032-260	X	X	-	X
050-040-145	X	X	-	X
050-040-175	X	X	-	X
050-040-210	X	X	-	X
050-040-260	X	X	-	X
065-050-145	X	X	-	X
065-050-175	X	X	-	X
065-050-210	X	X	-	X
065-050-260	X	X	X	X
080-065-145	X	X	-	X
080-065-175	X	X	-	X
080-065-210	X	X	-	X
080-065-260	X	X	X	X
100-080-175	X	X	X	X
100-080-210	X	X	X	X
100-080-260	X	X	X	X
100-080-310	X	X	X	X
125-100-210	X	X	X	X
125-100-260	X	X	X	X
125-100-310	X	X	X	X
150-125-260	X	X	X	X

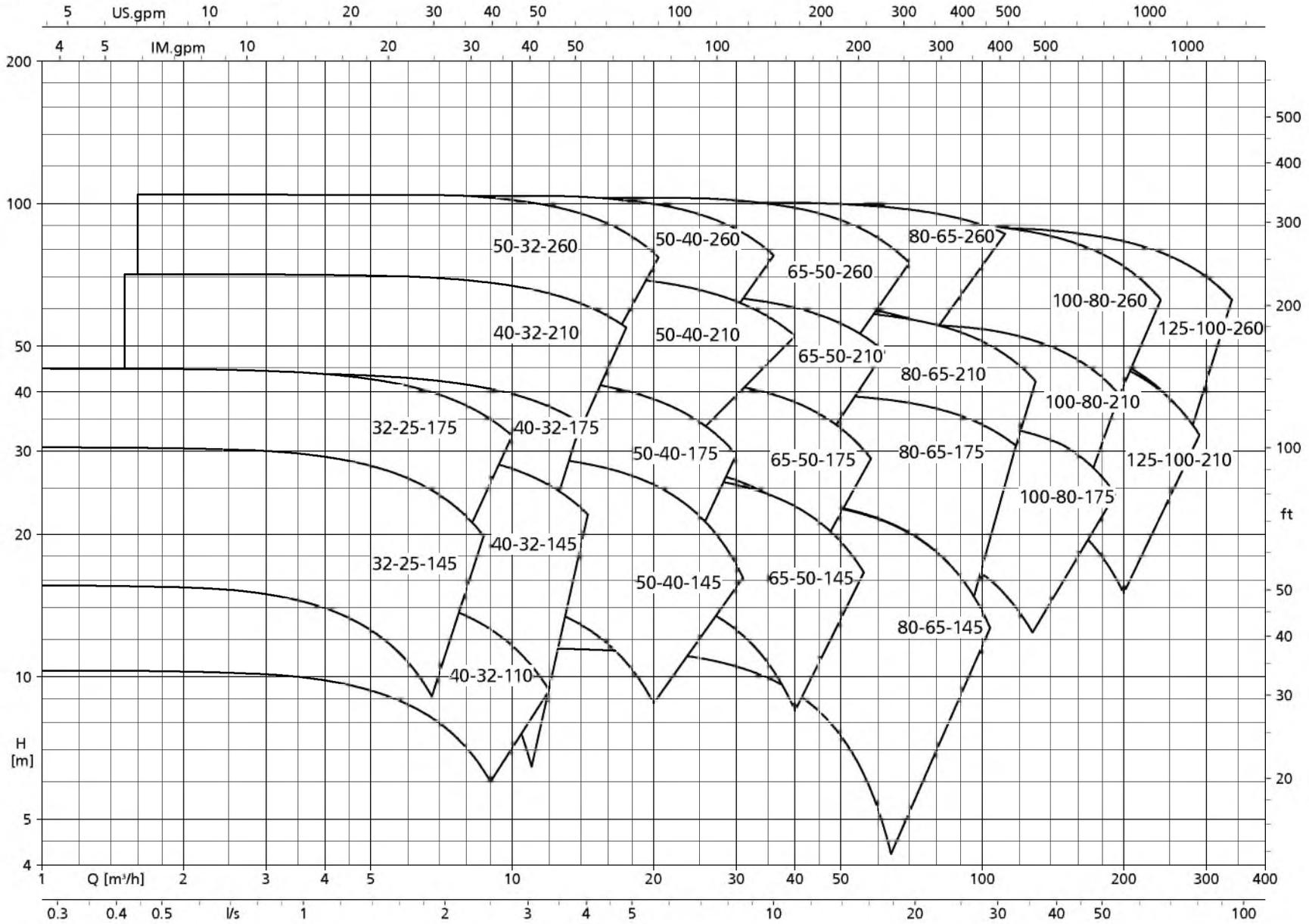
Technical data

Technical data

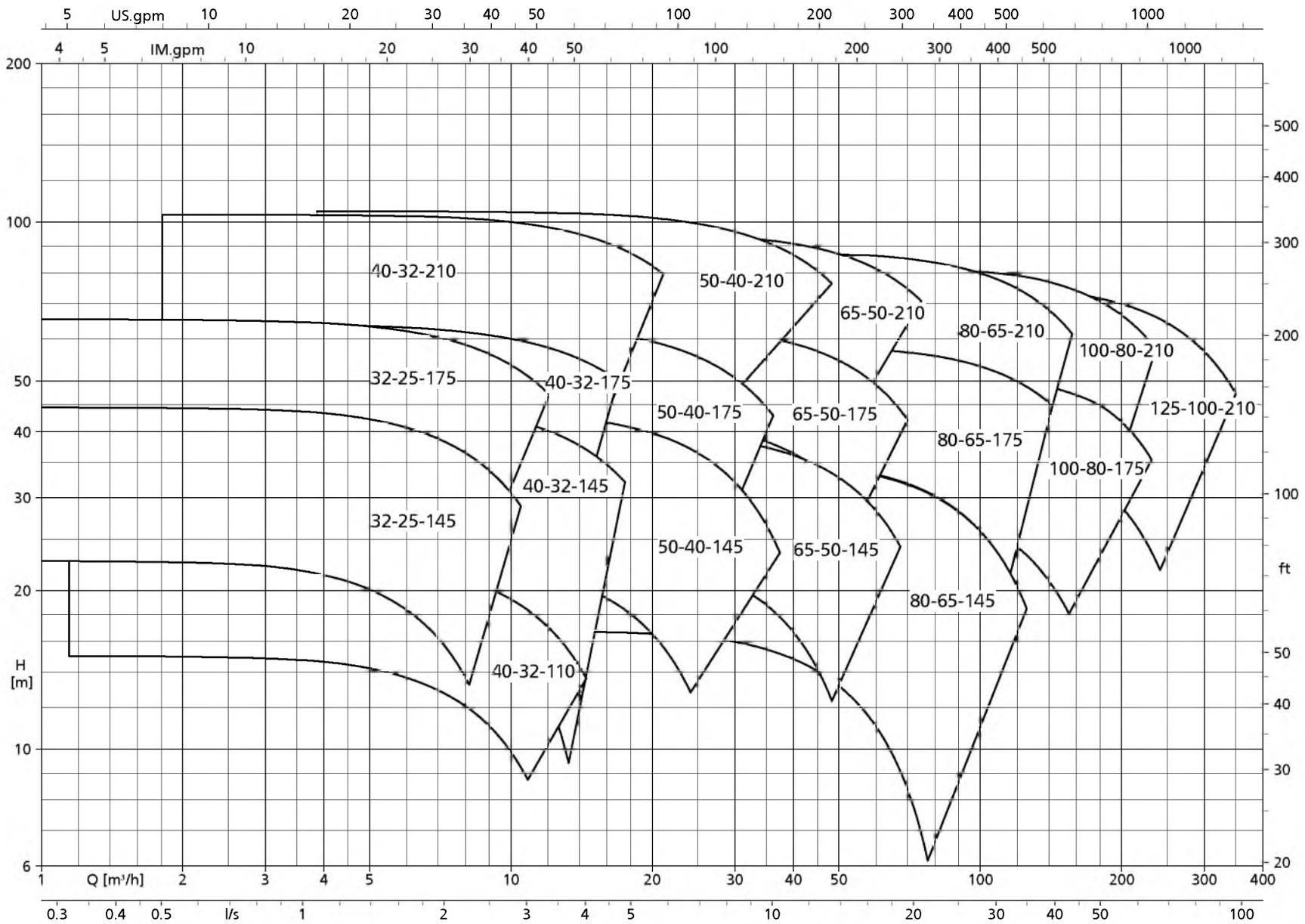
Pump size	Inducer	Shaft unit	Free passage		Minimum impeller diameter	Maximum impeller diameter	Speed limit
			4-pole	2-pole			
			[mm]	[mm]			
032-025-145	-	1	3,5	3,5	115	145	500 - 3600
032-025-175	-	1	3,5	3,5	145	175	500 - 3600
040-032-110	-	1	-	4	95	110	500 - 3600
040-032-145	X	2	5	5	115	145	500 - 3600
040-032-175	X	2	4	4	145	175	500 - 3600
040-032-210	X	2	4	4	165	210	500 - 3600
050-032-260	X	2	3,5	3,5	210	260	500 - 3000
050-040-145	X	2	6	11	115	145	500 - 3600
050-040-175	X	2	6,5	11	145	175	500 - 3600
050-040-210	X	2	6	6	165	210	500 - 3600
050-040-260	X	3	5	5	210	260	500 - 3000
065-050-145	X	2	10	16	115	145	500 - 3600
065-050-175	X	2	8	13	145	175	500 - 3600
065-050-210	X	2	8	8	165	210	500 - 3600
065-050-260	X	3	6	6	210	260	500 - 3000
080-065-145	X	2	18	23	115	145	500 - 3600
080-065-175	X	2	16	16	145	175	500 - 3600
080-065-210	X	3	12	12	165	210	500 - 3600
080-065-260	X	3	10,5	10,5	210	260	500 - 3000
100-080-175	X	3	22	22	150	177	500 - 3600
100-080-210	X	3	18	15	165	210	500 - 3600
100-080-260	X	3	14	14	200	260	500 - 3000
100-080-310	X	3	23	-	265	310	500 - 1800
125-100-210	X	3	15	28	165	210	500 - 3600
125-100-260	X	3	25	25	210	260	500 - 3000
125-100-310	X	3	30	-	265	310	500 - 1800
150-125-260	X	3	32	-	210	260	500 - 3000

Selection charts

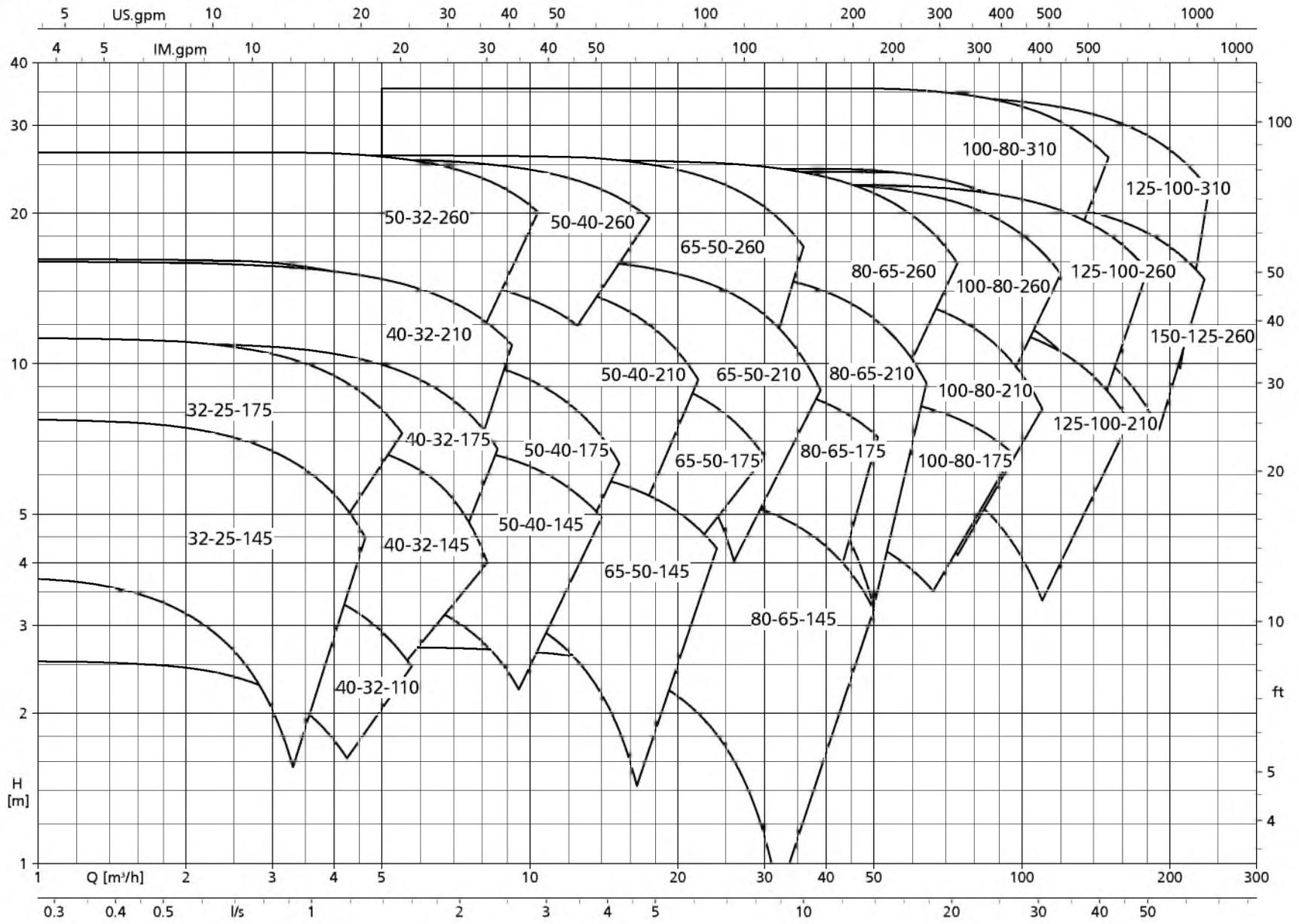
Vitacast, Vitacast Bloc, n = 2900 rpm



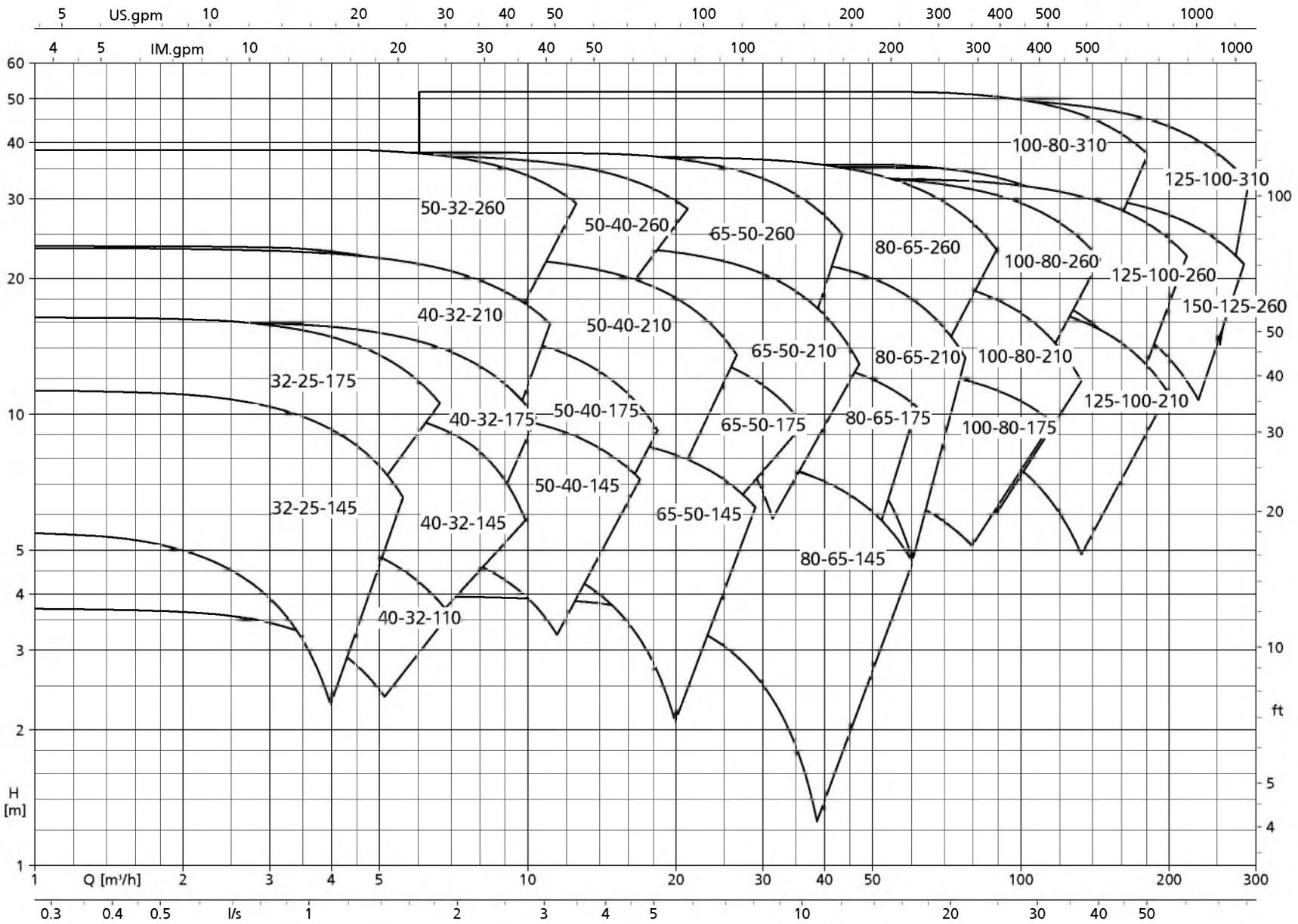
Vitacast, Vitacast Bloc, n = 3500 rpm



Vitacast, Vitacast Bloc, n = 1450 rpm



Vitacast, Vitacast Bloc, n = 1750 rpm



## Dimensions

## Pump set dimensions

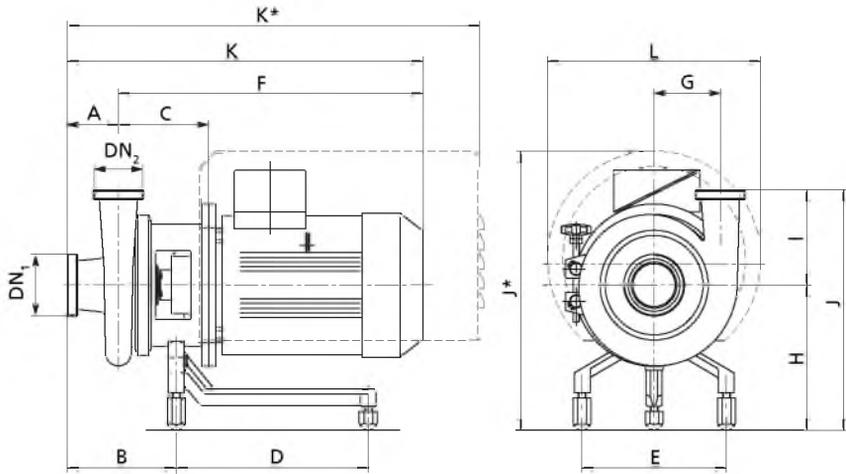


Figure 1

Pump set with 3-point ball feet

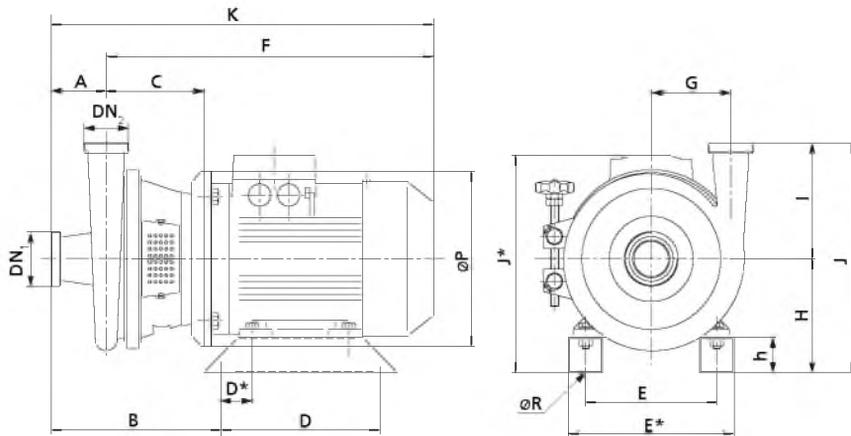
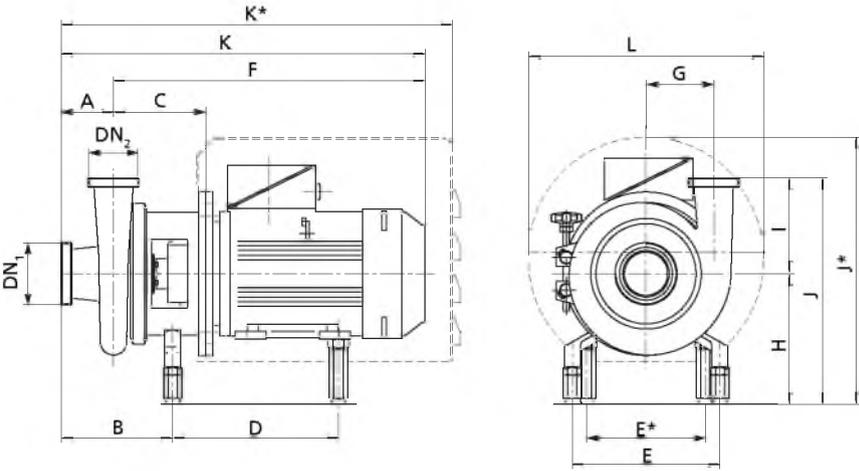
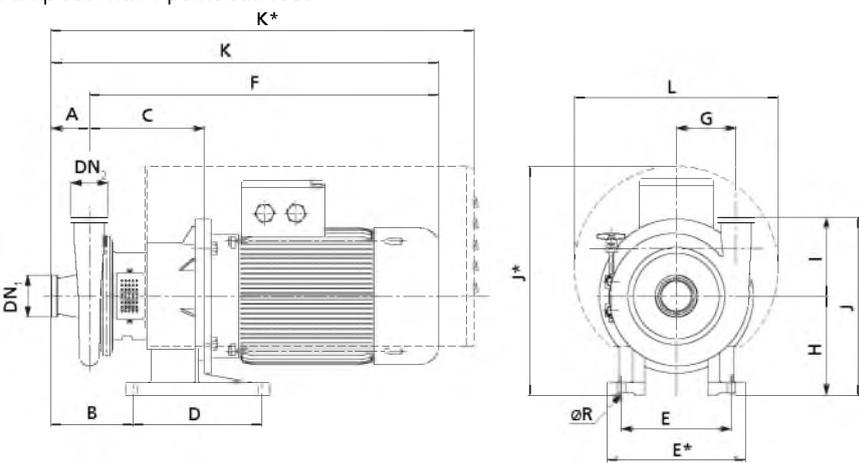


Figure 3

Pump set with motor feet



**Figure 2**  
Pump set with 4-point ball feet



**Figure 4**  
Pump set with bearing pedestal

Pump set dimensions, 50 Hz, 60 Hz [mm]

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
032-025-145	71M	0,37	0,25	X	-	-	-	75	144	117	190	40	178	-	331	81	50	158	406	532	145	303	301	239	-	-	-
	80M	0,75	0,55	X	-	-	-	75	144	123	190	40	178	-	410	81	55	158	485	532	145	303	301	239	-	-	-
	90S	1,5	1,1	X	-	-	-	75	144	123	190	40	178	-	460	81	70	158	535	611	145	303	340	298	-	-	-
	90L	2,2	1,5	X	-	-	-	75	144	123	190	40	178	-	460	81	57,5	158	535	611	145	303	340	298	-	-	-
	80M	0,75	0,55	-	X	X	-	75	248	123	100	40	125	150	410	81	55	80	485	532	145	225	223	239	91	200	9
	90S	1,5	1,1	-	X	X	-	75	254	123	100	40	140	165	460	81	70	90	535	611	145	235	272	298	91	200	10
90L	2,2	1,5	-	X	X	-	75	254	123	125	40	140	165	460	81	57,5	90	535	611	145	235	272	298	91	200	10	
032-025-175	71M	0,37	0,25	X	-	-	-	65	134	117	190	40	178	-	331	96	50	164	396	522	149	313	301	239	-	-	-
	80M	0,75	0,55	X	-	-	-	65	134	123	190	40	178	-	410	96	55	164	475	523	149	313	307	239	-	-	-
	90S	1,5	1,1	X	-	-	-	65	134	123	190	40	178	-	460	96	70	164	525	601	149	313	346	298	-	-	-
	90L	2,2	1,5	X	-	-	-	65	134	123	190	40	178	-	460	96	57,5	164	525	601	149	313	346	298	-	-	-
	100L	3,0	2,2	X	-	-	-	65	134	138	301	50	225	-	509	96	70	210	574	719	149	359	353	330	-	-	-
	112M	4,0	4,0	X	-	-	-	65	134	138	301	50	225	-	503	96	70	210	568	719	149	359	353	330	-	-	-
	80M	0,75	0,55	-	X	X	-	65	238	123	100	40	125	150	410	96	55	80	475	523	149	229	223	239	105	200	9
	90S	1,5	1,1	-	X	X	-	65	244	123	100	40	140	165	460	96	70	90	525	601	149	239	272	298	105	200	10
	90L	2,2	1,5	-	X	X	-	65	244	123	125	40	140	165	460	96	57,5	90	525	601	149	239	272	298	105	200	10
	100L	3,0	2,2	-	X	X	-	65	266	138	140	50	160	195	542	96	70	100	607	719	149	249	305	330	105	250	12
112M	4,0	4,0	-	X	X	-	65	273	138	140	50	190	226	525	96	70	112	590	719	149	261	317	330	105	250	12	
040-032-110	71M	0,37	0,25	X	-	-	-	70	137	117	190	40	178	-	331	65	50	149	401	527	110	259	292	239	-	-	-
	80M	0,75	0,55	X	-	-	-	70	137	123	190	40	178	-	410	65	55	149	480	527	110	259	292	239	-	-	-
	90S	1,5	1,1	X	-	-	-	70	137	123	190	40	178	-	460	65	70	149	530	606	110	259	331	298	-	-	-
	90L	2,2	1,5	X	-	-	-	70	137	123	190	40	178	-	460	65	70	149	530	606	110	259	331	298	-	-	-
	80M	0,75	0,55	-	X	X	-	70	243	123	100	40	125	150	410	65	55	80	480	527	110	190	223	239	78	200	9
	90S	1,5	1,1	-	X	X	-	70	249	123	100	40	140	165	460	65	70	90	530	606	110	200	233	298	78	200	10
90L	2,2	1,5	-	X	X	-	70	249	123	100	40	140	165	460	65	70	90	530	606	110	200	233	298	78	200	10	
040-032-145	80M	0,75	0,55	X	-	-	-	80	167	138	231	40	225	-	425	85	55	208	505	567	145	353	372	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	167	138	231	40	225	-	475	85	70	208	555	636	145	353	372	298	-	-	-
	90L	2,2	1,5	X	-	-	-	80	167	138	231	40	225	-	475	85	57,5	208	555	636	145	353	372	298	-	-	-
	100L	3	2,2	X	-	-	-	80	167	139	301	50	225	-	510	85	70	225	590	735	145	370	430	330	-	-	-
	112M	4	4	X	-	-	-	80	167	139	301	50	225	-	504	85	70	225	584	735	145	370	430	330	-	-	-
	80M	0,75	0,55	-	X	X	-	80	268	138	100	40	125	150	425	85	55	80	505	567	145	225	244	298	95	250	9
	90S	1,5	1,1	-	X	X	-	80	274	138	100	40	140	165	475	85	70	90	555	636	145	235	254	298	95	250	10
	90L	2,2	1,5	-	X	X	-	80	274	138	125	40	140	165	475	85	57,5	90	555	636	145	235	254	298	95	250	10
100L	3	2,2	-	X	X	-	80	282	139	140	50	160	196	543	85	70	100	623	735	145	245	305	330	95	250	12	

6) For 50 Hz

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	112M	4	4	-	X	X	-	80	289	139	140	50	190	226	526	85	70	112	606	735	145	257	317	330	95	250	12
040-032-175	80M	0,75	0,55	X	-	-	-	80	167	139	231	40	225	-	426	95	55	213	506	567	150	363	377	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	167	139	231	40	225	-	476	95	70	213	556	637	150	363	377	298	-	-	-
	90L	2,2	1,5	X	-	-	-	80	167	139	231	40	225	-	476	95	57,5	213	556	637	150	363	377	298	-	-	-
	100L	3	2,2	X	-	-	-	80	167	140	301	50	225	-	511	95	70	230	591	736	150	380	435	330	-	-	-
	112M	4	4	X	-	-	-	80	167	140	301	50	225	-	505	95	70	230	585	736	150	380	435	330	-	-	-
	80M	0,75	0,55	-	X	X	-	80	269	139	100	40	125	150	426	95	55	80	506	567	150	230	244	298	109	220	9
	90S	1,5	1,1	-	X	X	-	80	275	139	100	40	140	165	476	95	70	90	556	637	150	240	254	298	109	220	10
	90L	2,2	1,5	-	X	X	-	80	275	139	125	40	140	165	476	95	57,5	90	556	637	150	240	254	298	109	220	10
	100L	3	2,2	-	X	X	-	80	282	140	140	50	160	196	544	95	70	100	624	736	150	250	305	330	109	250	12
112M	4	4	-	X	X	-	80	290	140	140	50	190	226	527	95	70	112	607	736	150	262	317	330	109	250	12	
040-032-210	80M	0,75	0,55	X	-	-	-	80	158	139	231	40	225	-	426	110	55	221	506	567	165	386	385	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	158	139	231	40	225	-	476	110	70	221	556	637	165	386	426	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	158	139	231	40	225	-	476	110	57,5	221	556	637	165	386	426	330	-	-	-
	100L	3	2,2	X	-	-	-	80	158	140	301	50	225	-	511	110	70	238	591	736	165	403	443	330	-	-	-
	112M	4	4	X	-	-	-	80	158	140	301	50	225	-	505	110	70	238	585	736	165	403	443	330	-	-	-
	132S	5,5	5,5	X	X	-	-	80	158	161	298	60	225	115	596	110	103	238	676	815	165	403	501	430	-	-	-
	132M	-	7,5	X	X	-	-	80	158	161	298	60	225	115	596	110	103	238	676	815	165	403	501	430	-	-	-
	160M	11	11	X	X	-	-	80	158	206	430	50	225	140	730	110	95	238	810	944	165	403	550	480	-	-	-
	160L	18,5	15	X	X	-	-	80	158	206	430	50	225	140	760	110	95	238	840	944	165	403	550	480	-	-	-
	80M	0,75	0,55	-	X	X	-	80	269	139	100	40	125	150	426	110	55	80	506	567	165	245	254	298	126	220	9
	90S	1,5	1,1	-	X	X	-	80	275	139	100	40	140	165	476	110	70	90	556	637	165	255	295	330	126	220	10
	90L	2,2	1,5	-	X	X	-	80	275	139	125	40	140	165	476	110	57,5	90	556	637	165	255	295	330	126	220	10
	100L	3	2,2	-	X	X	-	80	283	140	140	50	160	196	544	110	70	100	624	736	165	265	317	330	126	250	12
	112M	4	4	-	X	X	-	80	290	140	140	50	190	226	527	110	70	112	607	736	165	277	317	330	126	250	12
	132S	5,5	5,5	-	X	X	-	80	330	161	140	60	216	256	596	110	103	132	676	815	165	297	395	430	126	300	12
	132M	-	7,5	-	X	X	-	80	330	161	140	60	216	256	596	110	103	132	676	815	165	297	395	430	126	300	12
	160M	11	11	-	X	X	-	80	394	206	210	50	254	300	730	110	95	160	810	944	165	325	472	480	126	350	15
160L	18,5	15	-	X	X	-	80	394	206	210	50	254	300	760	110	95	160	840	944	165	325	472	480	126	350	15	
050-032-260	90S	1,5	1,1	X	-	-	-	90	184	163	231	40	225	-	500	140	70	221	590	671	172	393	443	330	-	-	-
	90L	2,2	1,5	X	-	-	-	90	184	163	231	40	225	-	500	140	57,5	221	590	671	172	393	443	330	-	-	-
	100L	3	2,2	X	-	-	-	90	184	164	301	50	225	-	535	140	70	238	625	770	172	410	501	430	-	-	-
	112M	4	4	X	-	-	-	90	184	164	301	50	225	-	529	140	70	238	619	770	172	410	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	90	184	185	307	60	225	115	620	140	103	238	710	851	172	410	501	430	-	-	-
132M	-	7,5	X	X	-	-	90	184	185	307	60	225	115	620	140	103	238	710	851	172	410	501	430	-	-	-	

6) For 50 Hz

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	160M	11	11	X	X	-	-	90	184	225	434	50	225	140	749	140	95	247	839	977	172	419	557	480	-	-	-
	160L	18,5	15	X	X	-	-	90	184	225	434	50	225	140	779	140	95	247	869	977	172	419	557	480	-	-	-
	90S	1,5	1,1	-	X	X	-	90	309	163	100	40	140	165	500	140	70	90	590	671	172	262	295	330	153	200	10
	90L	2,2	1,5	-	X	X	-	90	309	163	125	40	140	165	500	140	57,5	90	590	671	172	262	295	330	153	200	10
	100L	3	2,2	-	X	X	-	90	317	164	140	50	160	196	568	140	70	100	658	770	172	272	363	430	153	250	12
	112M	4	4	-	X	X	-	90	324	164	140	50	190	226	551	140	70	112	641	770	172	284	375	330	153	250	12
	132S	5,5	5,5	-	X	X	-	90	364	185	140	60	216	256	620	140	103	132	710	851	172	304	395	430	153	300	12
	132M	-	7,5	-	X	X	-	90	364	185	140	60	216	256	620	140	103	132	710	851	172	304	395	430	153	300	12
	160M	11	11	-	X	X	-	90	423	225	210	50	254	300	749	140	95	160	839	977	172	332	472	480	153	350	15
	160L	18,5	15	-	X	X	-	90	423	225	210	50	254	300	779	140	95	160	869	977	172	332	472	480	153	350	15
050-040-145	80M	0,75	0,55	X	-	-	-	80	168	139	231	40	225	-	426	90	55	208	506	567	133	341	372	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	168	139	231	40	225	-	476	90	70	208	556	637	133	341	372	298	-	-	-
	90L	2,2	1,5	X	-	-	-	80	168	139	231	40	225	-	476	90	57,5	208	556	637	133	341	372	298	-	-	-
	100L	3	2,2	X	-	-	-	80	168	140	301	50	225	-	511	90	70	225	591	736	133	358	430	330	-	-	-
	112M	4	4	X	-	-	-	80	168	140	301	50	225	-	505	90	70	225	585	736	133	358	430	330	-	-	-
	80M	0,75	0,55	-	X	X	-	80	269	139	100	40	125	150	426	90	55	80	506	567	133	213	244	298	103	220	9
	90S	1,5	1,1	-	X	X	-	80	275	139	100	40	140	165	476	90	70	90	556	637	133	223	254	298	103	220	10
	90L	2,2	1,5	-	X	X	-	80	275	139	125	40	140	165	476	90	57,5	90	556	637	133	223	254	298	103	220	10
	100L	3	2,2	-	X	X	-	80	283	140	140	50	160	196	544	90	70	100	624	736	133	233	305	330	103	250	12
	112M	4	4	-	X	X	-	80	289	140	140	50	190	226	527	90	70	112	607	736	133	245	317	330	103	250	12
050-040-175	80M	0,75	0,55	X	-	-	-	80	169	141	231	40	225	-	428	95	55	213	508	567	150	363	377	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	169	141	231	40	225	-	478	95	70	213	558	639	150	363	393	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	169	141	231	40	225	-	478	95	57,5	213	558	639	150	363	377	298	-	-	-
	100L	3	2,2	X	-	-	-	80	169	142	301	50	225	-	513	95	70	230	593	738	150	380	435	330	-	-	-
	112M	4	4	X	-	-	-	80	169	142	301	50	225	-	507	95	70	230	587	738	150	380	435	330	-	-	-
	132S	5,5	5,5	X	X	-	-	80	169	164	290	60	225	115	599	95	103	230	679	817	150	380	493	430	-	-	-
	132M	-	7,5	X	X	-	-	80	169	164	290	60	225	115	599	95	103	230	679	817	150	380	493	430	-	-	-
	160M	11	11	X	X	-	-	80	161	208	422	50	225	140	732	115	95	238	812	946	165	403	542	480	-	-	-
	80M	0,75	0,55	-	X	X	-	80	271	141	100	40	125	150	428	95	55	80	508	567	150	230	244	298	113	220	9
	90S	1,5	1,1	-	X	X	-	80	277	141	100	40	140	165	478	95	70	90	558	639	150	240	295	330	113	220	10
	90L	2,2	1,5	-	X	X	-	80	277	141	125	40	140	165	478	95	57,5	90	558	639	150	240	254	298	113	220	10
	100L	3	2,2	-	X	X	-	80	284	142	140	50	160	196	546	95	70	100	626	738	150	250	305	330	113	250	12
	112M	4	4	-	X	X	-	80	291	142	140	50	190	226	529	95	70	112	609	738	150	262	317	330	113	250	12
	132S	5,5	5,5	-	X	X	-	80	333	164	140	60	216	256	599	95	103	132	679	817	150	282	395	430	113	300	12
	132M	-	7,5	-	X	X	-	80	333	164	140	60	216	256	599	95	103	132	679	817	150	282	395	430	113	300	12
	160M	11	11	-	X	X	-	80	396	208	210	50	254	300	732	95	95	160	812	946	150	310	472	480	113	350	15

6) For 50 Hz

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
050-040-210	80M	0,75	0,55	X	-	-	-	80	161	141	231	40	225	-	428	115	55	221	508	567	165	386	385	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	161	141	231	40	225	-	478	115	70	221	558	639	165	386	426	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	161	141	231	40	225	-	478	115	57,5	221	558	639	165	386	426	330	-	-	-
	100L	3	2,2	X	-	-	-	80	161	142	301	50	225	-	513	115	70	238	593	738	165	403	443	330	-	-	-
	112M	4	4	X	-	-	-	80	161	142	301	50	225	-	507	115	70	238	587	738	165	403	443	330	-	-	-
	132S	5,5	5,5	X	X	-	-	80	161	164	298	60	225	115	599	115	103	238	679	817	165	403	501	430	-	-	-
	132M	-	7,5	X	X	-	-	80	161	164	298	60	225	115	599	115	103	238	679	817	165	403	501	430	-	-	-
	160M	11	11	X	X	-	-	80	161	208	430	50	225	140	732	115	95	238	812	946	165	403	550	480	-	-	-
	80M	0,75	0,55	-	X	X	-	80	271	141	100	40	125	150	428	115	55	80	508	567	165	245	244	298	131	220	9
	90S	1,5	1,1	-	X	X	-	80	277	141	100	40	140	165	478	115	70	90	558	639	165	255	295	330	131	220	10
	90L	2,2	1,5	-	X	X	-	80	277	141	125	40	140	165	478	115	57,5	90	558	639	165	255	295	330	131	220	10
	100L	3	2,2	-	X	X	-	80	285	142	140	50	160	196	546	115	70	100	626	738	165	265	305	330	131	250	12
	112M	4	4	-	X	X	-	80	292	142	140	50	190	226	529	115	70	112	609	738	165	277	317	330	131	250	12
	132S	5,5	5,5	-	X	X	-	80	333	164	140	60	216	256	599	115	103	132	679	817	165	297	395	430	131	300	12
	132M	-	7,5	-	X	X	-	80	333	164	140	60	216	256	599	115	103	132	679	817	165	297	395	430	131	300	12
	160M	11	11	-	X	X	-	80	396	208	210/254	50	254	300	732	115	95	160	812	946	165	325	472	480	131	350	15
050-040-260	90S	1,5	1,1	X	-	-	-	100	194	163	231	40	225	-	500	145	70	221	600	681	172	393	401	330	-	-	-
	90L	2,2	1,5	X	-	-	-	100	194	163	231	40	225	-	500	145	57,5	221	600	681	172	393	401	330	-	-	-
	100L	3	2,2	X	-	-	-	100	194	164	301	50	225	-	535	145	70	238	635	780	172	410	493	430	-	-	-
	112M	4	4	X	-	-	-	100	194	164	301	50	225	-	529	145	70	238	629	770	172	410	493	430	-	-	-
	132S	5,5	5,5	X	X	-	-	100	194	185	307	60	225	115	620	145	103	238	720	861	172	410	501	430	-	-	-
	132M	-	7,5	X	X	-	-	100	194	185	307	60	225	115	620	145	84	238	720	861	172	410	501	430	-	-	-
	160M	11	11	X	X	-	-	100	194	225	434	50	225	140	749	145	95	247	849	987	172	419	559	480	-	-	-
	160L	18,5	15	X	X	-	-	100	194	225	434	50	225	140	779	145	73	247	879	987	172	419	559	480	-	-	-
	180M	22	18,5	X	X	-	-	100	194	225	532	60	225	279	860	145	103,5	247	960	1104	172	419	559	480	-	-	-
	90S	1,5	1,1	-	X	X	-	100	319	163	125	40	140	165	500	145	70	90	600	681	172	262	295	330	157	220	10
	90L	2,2	1,5	-	X	X	-	100	319	163	125	40	140	165	500	145	57,5	90	600	681	172	262	295	330	157	220	10
	100L	3	2,2	-	X	X	-	100	327	164	140	50	160	196	568	145	70	100	668	780	172	272	363	430	157	250	12
	112M	4	4	-	X	X	-	100	334	164	140	50	190	226	551	145	70	112	651	770	172	284	375	430	157	250	12
	132S	5,5	5,5	-	X	X	-	100	374	185	178	60	216	256	620	145	103	132	720	861	172	304	395	430	157	300	12
	132M	-	7,5	-	X	X	-	100	374	185	178	60	216	256	620	145	84	132	720	861	172	304	395	430	157	300	12
	160M	11	11	-	X	X	-	100	434	226	210	50	254	300	750	145	95	160	850	987	172	332	472	480	157	350	15
160L	18,5	15	-	X	X	-	100	434	226	254	50	254	300	780	145	73	160	880	987	172	332	472	480	157	350	15	
180M	22	18,5	-	X	X	-	100	447	226	241	60	279	340	861	145	103,5	180	961	1104	172	352	492	480	157	350	15	
065-050-145	80M	0,75	0,55	X	-	-	-	80	170	141	231	40	225	-	428	95	55	208	508	639	145	353	372	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	170	141	231	40	225	-	478	95	70	208	558	639	145	353	372	298	-	-	-

6) For 50 Hz

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	90L	2,2	1,5	X	-	-	-	80	170	141	231	40	225	-	478	95	57,5	208	558	639	145	353	413	330	-	-	-
	100L	3	2,2	X	-	-	-	80	170	142	301	50	225	-	513	95	70	225	593	738	145	370	430	330	-	-	-
	112M	4	4	X	-	-	-	80	170	142	301	50	225	-	507	95	70	225	587	738	145	370	430	330	-	-	-
	132S	5,5	5,5	X	X	-	-	80	170	164	289	60	225	115	599	95	103	225	679	817	145	370	493	430	-	-	-
	80M	0,75	0,55	-	X	X	-	80	271	141	100	40	125	150	428	95	55	80	508	639	145	225	244	298	118	220	9
	90S	1,5	1,1	-	X	X	-	80	277	141	100	40	140	165	478	95	70	90	558	639	145	235	295	330	118	220	10
	90L	2,2	1,5	-	X	X	-	80	277	141	125	40	140	165	478	95	57,5	90	558	639	145	235	295	330	118	220	10
	100L	3	2,2	-	X	X	-	80	285	142	140	50	160	196	546	95	70	100	626	738	145	245	305	330	118	250	12
	112M	4	4	-	X	X	-	80	292	142	140	50	190	226	529	95	70	112	609	738	145	257	317	330	118	250	12
	132S	5,5	5,5	-	X	X	-	80	333	164	140	60	216	256	599	95	103	132	679	817	145	277	488	430	118	300	12
065-050-175	80M	0,75	0,55	X	-	-	-	80	169	141	231	40	225	-	428	100	55	213	508	639	150	363	377	298	-	-	-
	90S	1,5	1,1	X	-	-	-	80	169	141	231	40	225	-	478	100	70	213	558	639	150	363	413	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	169	141	231	40	225	-	478	100	57,5	213	558	639	150	363	413	330	-	-	-
	100L	3	2,2	X	-	-	-	80	169	142	301	50	225	-	513	100	70	230	593	738	150	380	435	330	-	-	-
	112M	4	4	X	-	-	-	80	169	142	301	50	225	-	507	100	70	230	587	738	150	380	435	330	-	-	-
	132S	5,5	5,5	X	X	-	-	80	169	164	291	60	225	115	599	100	103	230	679	817	150	380	493	430	-	-	-
	132M	-	7,5	X	X	-	-	80	169	164	291	60	225	115	599	100	84	230	679	817	150	380	493	430	-	-	-
	160M	11	11	X	X	-	-	80	169	208	422	50	225	140	732	100	95	230	812	946	150	380	542	480	-	-	-
	80M	0,75	0,55	-	X	X	-	80	271	141	100	40	125	150	428	100	55	80	508	639	150	230	244	298	124	220	9
	90S	1,5	1,1	-	X	X	-	80	277	141	100	40	140	165	478	100	70	90	558	639	150	240	295	330	124	220	10
	90L	2,2	1,5	-	X	X	-	80	277	141	125	40	140	165	478	100	57,5	90	558	639	150	240	295	330	124	220	10
	100L	3	2,2	-	X	X	-	80	285	142	140	50	160	196	546	100	70	100	626	738	150	250	305	330	124	250	12
	112M	4	4	-	X	X	-	80	292	142	140	50	190	226	529	100	70	112	609	738	150	262	317	330	124	250	12
	132S	5,5	5,5	-	X	X	-	80	333	164	140	60	216	256	599	100	103	132	679	817	150	282	395	430	124	300	12
	132M	-	7,5	-	X	X	-	80	333	164	178	60	216	256	599	100	84	132	679	817	150	282	395	430	124	300	12
	160M	11	11	-	X	X	-	80	396	208	210/254	50	254	300	732	100	95	160	812	946	150	310	472	480	124	350	15
065-050-210	90S	1,5	1,1	X	-	-	-	80	161	141	231	40	225	-	478	120	70	221	558	639	165	385	426	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	161	141	231	40	225	-	478	120	57,5	221	558	639	165	385	426	330	-	-	-
	100L	3	2,2	X	-	-	-	80	161	142	301	50	225	-	513	120	70	238	593	738	165	402	501	430	-	-	-
	112M	4	4	X	-	-	-	80	161	142	301	50	225	-	507	120	70	238	587	738	165	402	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	80	161	164	298	60	225	115	599	120	103	238	679	817	165	403	501	430	-	-	-
	132M	-	7,5	X	X	-	-	80	161	164	298	60	225	115	599	120	84	238	679	817	165	403	501	430	-	-	-
	160M	11	11	X	X	-	-	80	161	208	429	50	225	140	732	120	95	238	812	946	165	403	550	480	-	-	-
	160L	18,5	15	X	X	-	-	80	161	208	429	50	225	140	762	120	73	238	842	946	165	403	550	480	-	-	-
	180M	22	18,5	X	X	-	-	80	171	223	532	60	225	279	858	120	103,5	248	938	1082	165	413	550	480	-	-	-
	90S	1,5	1,1	-	X	X	-	80	277	141	100	40	140	165	478	120	70	90	558	639	165	255	295	330	140	220	10

6) For 50 Hz

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	90L	2,2	1,5	-	X	X	-	80	277	141	125	40	140	165	478	120	57,5	90	558	639	165	255	295	330	140	220	10
	100L	3	2,2	-	X	X	-	80	285	142	140	50	160	196	546	120	70	100	626	738	165	265	363	430	140	250	12
	112M	4	4	-	X	X	-	80	292	142	140	50	190	226	529	120	70	112	609	738	165	277	375	430	140	250	12
	132S	5,5	5,5	-	X	X	-	80	333	164	140	60	216	256	599	120	103	132	679	817	165	297	395	430	140	300	12
	132M	-	7,5	-	X	X	-	80	333	164	140	60	216	256	599	120	84	132	679	817	165	297	395	430	140	300	12
	160M	11	11	-	X	X	-	80	396	208	210	50	254	300	732	120	95	160	812	946	165	325	472	480	140	350	15
	160L	18,5	15	-	X	X	-	80	396	208	254	50	254	300	762	120	73	160	842	946	165	325	472	480	140	350	15
	180M	22	18,5	-	X	X	-	80	424	223	241	60	279	340	858	120	103,5	180	938	1082	165	345	492	480	140	350	15
065-050-260	100L	3	2,2	X	-	-	-	90	185	165	301	50	225	-	536	145	70	238	626	772	175	413	501	430	-	-	-
	112M	4	4	X	-	-	-	90	185	165	301	50	225	-	530	145	70	238	620	772	175	413	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	90	185	187		60	225	115	622	145	103	238	712	970	175	413	501	430	-	-	-
	132M	-	7,5	X	X	-	-	90	185	187		60	225	115	622	145	84	238	712	970	175	413	501	430	-	-	-
	160M	11	11	X	X	-	-	90	186	228	434	50	225	140	752	145	95	247	842	979	175	422	559	480	-	-	-
	160L	18,5	15	X	X	-	-	90	186	228	434	50	225	140	782	145	73	247	872	979	175	422	559	480	-	-	-
	180M	22	18,5	X	X	-	-	90	186	228	532	60	225	279	863	145	103,5	247	953	1097	175	422	559	480	-	-	-
	180L	-	22	X	X	-	-	90	186	228	532	60	225	279	891	145	84,5	247	981	1097	175	422	559	480	-	-	-
	100L	3	2,2	-	X	X	-	90	319	165	140	50	160	196	569	145	70	100	659	772	175	275	363	430	165	250	12
	112M	4	4	-	X	X	-	90	324	165	140	50	190	226	552	145	70	112	642	772	175	287	375	430	165	250	12
	132S	5,5	5,5	-	X	X	-	90	185	187	140	60	216	256	622	145	103	132	712	970	175	307	501	430	165	300	12
	132M	-	7,5	-	X	X	-	90	185	187	178	60	216	256	622	145	84	132	712	970	175	307	501	430	165	300	12
	160M	11	11	-	X	X	-	90	426	228	210	50	254	300	752	145	95	160	842	979	175	335	472	480	165	350	15
	160L	18,5	15	-	X	X	-	90	426	228	254	50	254	300	782	145	73	160	872	979	175	335	472	480	165	350	15
	180M	22	18,5	-	X	X	-	90	439	228	241	60	279	340	863	145	103,5	180	953	1097	175	355	492	480	165	350	15
	180L	-	22	-	X	X	-	90	439	228	279	60	279	340	891	145	84,5	180	981	1097	175	355	492	480	165	350	15
200L	30	30	-	X	X	-	90	201	296	335	-	284	360	1032	145	-	258	1122	1247	175	433	613	529	-	-	21	
080-065-145	80M	0,75	0,55	X	-	-	-	79	173	145	231	40	225	-	432	112	55	208	511	642	145	353	372	298	-	-	-
	90S	1,5	1,1	X	-	-	-	79	173	145	231	40	225	-	482	112	70	208	561	642	145	353	413	330	-	-	-
	90L	2,2	1,5	X	-	-	-	79	173	145	231	40	225	-	482	112	57,5	208	561	642	145	353	413	330	-	-	-
	100L	3	2,2	X	-	-	-	79	173	146	301	50	225	-	517	112	70	225	596	741	145	370	430	330	-	-	-
	112M	4	4	X	-	-	-	79	173	146	301	50	225	-	511	112	70	225	590	741	145	370	430	330	-	-	-
	132S	5,5	5,5	X	X	-	-	79	173	168	289	60	225	115	603	112	103	225	682	821	145	370	488	430	-	-	-
	132M	-	7,5	X	X	-	-	79	173	168	289	60	225	115	603	112	84	225	682	821	145	370	488	430	-	-	-
	160M	11	11	X	X	-	-	79	173	212	420	50	225	140	736	112	95	225	815	950	145	370	537	480	-	-	-
	80M	0,75	0,55	-	X	X	-	79	274	145	100	40	125	150	432	112	55	80	511	642	145	225	244	298	140	220	9
	90S	1,5	1,1	-	X	X	-	79	280	145	100	40	140	165	482	112	70	90	561	642	145	235	295	330	140	220	10
	90L	2,2	1,5	-	X	X	-	79	280	145	125	40	140	165	482	112	57,5	90	561	642	145	235	295	330	140	220	10
	100L	3	2,2	-	X	X	-	79	288	146	140	50	160	196	550	112	70	100	629	741	145	245	305	330	140	250	12
	112M	4	4	-	X	X	-	79	295	146	140	50	190	226	533	112	70	112	612	741	145	257	317	330	140	250	12
	132S	5,5	5,5	-	X	X	-	79	336	168	140	60	216	256	603	112	103	132	682	821	145	277	395	430	140	300	12
	132M	-	7,5	-	X	X	-	79	336	168	178	60	216	256	603	112	84	132	682	821	145	277	395	430	140	300	12

Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	160M	11	11	-	X	X	-	79	399	212	210	50	254	300	736	112	95	160	815	950	145	305	472	480	140	350	15
080-065-175	90S	1,5	1,1	X	-	-	-	80	172	144	231	40	225	-	481	120	70	213	561	642	150	363	418	330	-	-	-
	90L	2,2	1,5	X	-	-	-	80	172	144	231	40	225	-	481	120	57,5	213	561	642	150	363	418	330	-	-	-
	100L	3	2,2	X	-	-	-	80	172	145	301	50	225	-	516	120	70	230	596	741	150	380	435	430	-	-	-
	112M	4	4	X	-	-	-	80	172	145	301	50	225	-	510	120	70	230	590	741	150	380	435	430	-	-	-
	132S	5,5	5,5	X	X	-	-	80	172	167	290	60	225	115	602	120	103	230	682	820	150	380	493	430	-	-	-
	132M	-	7,5	X	X	-	-	80	172	167	290	60	225	115	602	120	84	230	682	820	150	380	493	430	-	-	-
	160M	11	11	X	X	-	-	80	172	211	422	50	225	140	735	120	95	230	815	949	150	380	542	480	-	-	-
	160L	18,5	15	X	X	-	-	80	172	211	422	50	225	140	765	120	73	230	845	949	150	380	542	480	-	-	-
	180M	22	18,5	X	X	-	-	80	173	224	531	60	225	279	859	120	103,5	241	939	1085	150	391	542	480	-	-	-
	90S	1,5	1,1	-	X	X	-	80	280	144	100	40	140	165	481	120	70	90	561	642	150	240	295	330	148	220	10
	90L	2,2	1,5	-	X	X	-	80	280	144	125	40	140	165	481	120	57,5	90	561	642	150	240	295	330	148	220	10
	100L	3	2,2	-	X	X	-	80	288	145	140	50	160	196	549	120	70	100	629	741	150	250	363	430	148	250	12
	112M	4	4	-	X	X	-	80	295	145	140	50	190	226	532	120	70	112	612	741	150	262	375	430	148	250	12
	132S	5,5	5,5	-	X	X	-	80	336	167	140	60	216	256	602	120	103	132	682	820	150	282	395	430	148	300	12
	132M	-	7,5	-	X	X	-	80	336	167	178	60	216	256	602	120	84	132	682	820	150	282	395	430	148	300	12
	160M	11	11	-	X	X	-	80	399	211	210	50	254	300	735	120	95	160	815	949	150	310	472	480	148	350	15
	160L	18,5	15	-	X	X	-	80	399	211	254	50	254	300	765	120	73	160	845	949	150	310	472	480	148	350	15
180M	22	18,5	-	X	X	-	80	425	224	241	60	279	340	859	120	103,5	180	939	1085	150	330	492	480	148	350	15	
080-065-210	90S	1,5	1,1	X	-	-	-	90	189	168	231	40	225	-	505	135	70	221	595	676	165	386	426	330	-	-	-
	90L	2,2	1,5	X	-	-	-	90	189	168	231	40	225	-	505	135	57,5	221	595	676	165	386	426	330	-	-	-
	100L	3	2,2	X	-	-	-	90	189	169	301	50	225	-	540	135	70	238	630	775	165	403	501	430	-	-	-
	112M	4	4	X	-	-	-	90	189	169	301	50	225	-	534	135	70	238	624	775	165	403	501	430	-	-	-
	160M	11	11	X	X	-	-	90	189	231	434	50	225	140	755	135	95	247	845	983	165	412	559	480	-	-	-
	160L	18,5	15	X	X	-	-	90	189	231	434	50	225	140	785	135	73	247	875	983	165	412	559	480	-	-	-
	180M	22	18,5	X	X	-	-	90	189	231	532	60	225	279	866	135	103,5	247	956	983	165	412	559	480	-	-	-
	90S	1,5	1,1	-	X	X	-	90	314	168	100	40	140	165	505	135	70	90	595	676	165	255	295	330	160	220	10
	90L	2,2	1,5	-	X	X	-	90	314	168	125	40	140	165	505	135	57,5	90	595	676	165	255	295	330	160	220	10
	100L	3	2,2	-	X	X	-	90	322	169	140	50	160	196	573	135	70	100	663	775	165	265	363	430	160	250	12
	112M	4	4	-	X	X	-	90	329	169	140	50	190	226	556	135	70	112	646	775	165	277	375	430	160	250	12
160M	11	11	-	X	X	-	90	429	231	210	50	254	300	755	135	95	160	845	983	165	325	472	480	160	350	14	
160L	18,5	15	-	X	X	-	90	429	231	254	50	254	300	785	135	73	160	875	983	165	325	472	480	160	350	14	
180M	22	18,5	-	X	X	-	90	442	231	241	60	279	340	866	135	103,5	180	956	983	165	345	492	480	160	350	15	
080-065-260	100L	3	2,2	X	-	-	-	100	198	168	301	50	225	-	539	155	70	238	639	784	205	443	501	430	-	-	-
	112M	4	4	X	-	-	-	100	198	168	301	50	225	-	533	155	70	238	633	784	205	443	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	100	198	190	307	60	225	115	625	155	103	238	725	865	205	443	501	430	-	-	-
	132M	-	7,5	X	X	-	-	100	198	190	307	60	225	115	625	155	84	238	725	865	205	443	501	430	-	-	-
	160M	11	11	X	X	-	-	100	198	230	434	50	225	140	754	155	95	247	854	992	205	452	559	480	-	-	-
160L	18,5	15	X	X	-	-	100	198	230	434	50	225	140	784	155	73	247	884	992	205	452	559	480	-	-	-	

Pump size	Motor size	p <sup>6</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	180M	22	18,5	X	X	-	-	100	198	230	532	60	225	279	865	155	103,5	247	965	1109	205	452	559	480	-	-	-
	100L	3	2,2	-	X	X	-	100	331	168	140	50	160	196	572	155	70	100	672	784	205	305	363	430	182	250	12
	112M	4	4	-	X	X	-	100	338	168	140	50	190	226	555	155	70	112	655	784	205	317	375	430	182	250	12
	132S	5,5	5,5	-	X	X	-	100	379	190	140	60	216	256	625	155	103	132	725	865	205	337	395	430	182	300	12
	132M	-	7,5	-	X	X	-	100	379	190	178	60	216	256	625	155	84	132	725	865	205	337	395	430	182	300	12
	160M	11	11	-	X	X	-	100	438	230	210	50	254	300	754	155	95	160	854	992	205	365	472	480	182	350	14
	160L	18,5	15	-	X	X	-	100	438	230	254	50	254	300	784	155	73	160	884	992	205	365	472	480	182	350	14
	180M	22	18,5	-	X	X	-	100	451	230	241	60	279	340	865	155	103,5	180	965	1109	205	385	492	480	182	350	15
	200L	30	30	-	-	-	X	100	213	298	335	-	284	360	1034	155	-	258	1134	1259	205	463	613	529	-	-	21
100-080-175	100L	3	2,2	X	-	-	-	100	204	174	301	50	225	-	545	139	70	230	645	790	164	394	435	430	-	-	-
	112M	4	4	X	-	-	-	100	204	174	301	50	225	-	539	139	70	230	639	790	164	394	435	430	-	-	-
	132S	5,5	5,5	X	X	-	-	100	204	195	307	60	225	115	630	139	103	230	730	869	164	394	493	430	-	-	-
	132M	-	7,5	X	X	-	-	100	204	195	307	60	225	115	630	139	84	230	730	869	164	394	493	430	-	-	-
	160M	11	11	X	X	-	-	100	205	236	432	50	225	140	760	139	95	241	860	997	164	405	504	480	-	-	-
	160L	18,5	15	X	X	-	-	100	205	236	432	50	225	140	790	139	73	241	890	997	164	405	504	480	-	-	-
	180M	22	18,5	X	X	-	-	100	205	236	531	60	225	279	871	139	103,5	241	971	1115	164	405	553	480	-	-	-
	100L	3	2,2	-	X	X	-	100	335	174	140	50	160	196	578	139	70	100	678	790	164	264	305	430	169	250	12
	112M	4	4	-	X	X	-	100	343	174	140	50	190	226	561	139	70	112	661	790	164	276	317	430	169	250	12
	132S	5,5	5,5	-	X	X	-	100	384	195	140	60	216	256	630	139	103	132	730	869	164	296	395	430	169	300	12
	132M	-	7,5	-	X	X	-	100	384	195	178	60	216	256	630	139	84	132	730	869	164	296	395	430	169	300	12
	160M	11	11	-	X	X	-	100	444	235	210	50	254	300	759	139	95	160	859	997	164	324	472	480	169	350	14
	160L	18,5	15	-	X	X	-	100	444	235	254	50	254	300	789	139	73	160	889	997	164	324	472	480	169	350	14
	180M	22	18,5	-	X	X	-	100	457	235	241	60	279	340	870	139	103,5	180	970	1115	164	344	492	480	169	350	15
200L	30	30	-	-	-	X	100	219	304	335	-	284	360	1040	139	-	258	1140	1265	164	422	613	529	-	-	21	
100-080-210	100L	3	2,2	X	-	-	-	100	201	171	301	50	225	-	542	145	70	238	642	788	165	403	501	430	-	-	-
	112M	4	4	X	-	-	-	100	201	171	301	50	225	-	536	145	70	238	636	788	165	403	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	100	201	193	307	60	225	115	628	145	103	238	728	869	165	403	501	430	-	-	-
	132M	-	7,5	X	X	-	-	100	201	193	307	60	225	115	628	145	84	238	728	869	165	403	501	430	-	-	-
	160M	11	11	X	X	-	-	100	201	233	434	50	225	140	757	145	95	247	857	996	164	411	559	480	-	-	-
	160L	18,5	15	X	X	-	-	100	201	233	434	50	225	140	787	145	73	247	887	996	164	411	559	480	-	-	-
	180M	22	18,5	X	X	-	-	100	201	233	532	60	225	279	868	145	103,5	247	968	1113	164	411	559	480	-	-	-
	100L	3	2,2	-	X	X	-	100	334	171	140	50	160	196	575	145	70	100	675	788	165	265	363	430	179	250	12
	112M	4	4	-	X	X	-	100	341	171	140	50	190	226	558	145	70	112	658	788	165	277	375	430	179	250	12
	132S	5,5	5,5	-	X	X	-	100	382	193	140	60	216	256	628	145	103	132	728	869	165	297	395	430	179	300	12
	132M	-	7,5	-	X	X	-	100	382	193	178	60	216	256	628	145	84	132	728	869	165	297	395	430	179	300	12
	160M	11	11	-	X	X	-	100	441	233	210	50	254	300	757	145	95	160	857	996	164	324	472	480	179	350	14
	160L	18,5	15	-	X	X	-	100	441	233	254	50	254	300	787	145	73	160	887	996	164	324	472	480	179	350	14
	180M	22	18,5	-	X	X	-	100	454	233	241	60	279	340	868	145	103,5	180	968	1113	164	344	492	480	179	350	15
200L	30	30	-	-	-	X	100	216	301	335	-	284	360	1037	145	-	258	1137	1263	164	422	613	529	-	-	21	

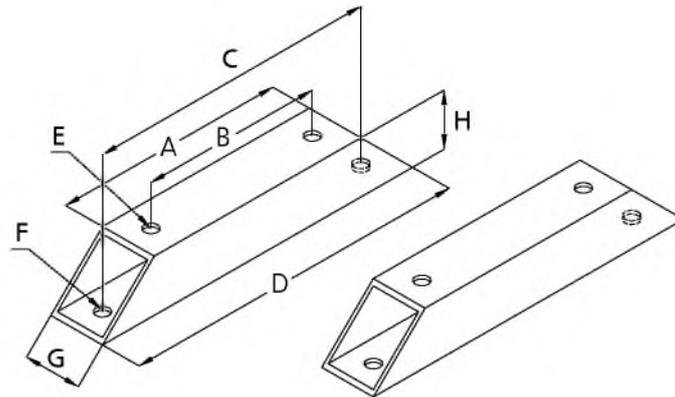


Pump size	Motor size	p <sup>6)</sup> [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
100-080-260	100L	3	2,2	X	-	-	-	100	201	171	301	50	225	-	542	165	70	238	642	787	209	447	501	430	-	-	-
	112M	4	4	X	-	-	-	100	201	171	301	50	225	-	536	165	70	238	636	787	209	447	501	430	-	-	-
	132S	5,5	5,5	X	X	-	-	100	201	193	307	60	225	115	628	165	103	238	728	868	209	447	501	430	-	-	-
	132M	-	7,5	X	X	-	-	100	201	193	307	60	225	115	628	165	84	238	728	868	209	447	501	430	-	-	-
	160M	11	11	X	X	-	-	100	201	233	434	50	225	140	757	165	95	247	857	995	209	456	559	480	-	-	-
	160L	18,5	15	X	X	-	-	100	201	233	434	50	225	140	787	165	73	247	887	995	209	456	559	480	-	-	-
	100L	3	2,2	-	X	X	-	100	334	171	140	50	160	196	575	165	70	100	675	787	209	309	363	430	196	250	12
	112M	4	4	-	X	X	-	100	341	171	140	50	190	226	558	165	70	112	658	787	209	321	375	430	196	250	12
	132S	5,5	5,5	-	X	X	-	100	382	193	140	60	216	256	628	165	103	132	728	868	209	341	395	430	196	300	12
	132M	-	7,5	-	X	X	-	100	382	193	178	60	216	256	628	165	84	132	728	868	209	341	395	430	196	300	12
	160M	11	11	-	X	X	-	100	441	233	210	50	254	300	757	165	95	160	857	995	209	369	472	480	196	350	15
	160L	18,5	15	-	X	X	-	100	441	233	254	50	254	300	787	165	73	160	887	995	209	369	472	480	196	350	15
200L	30	30	-	-	-	X	100	216	301	335	-	284	360	1037	165	-	258	1137	1262	209	467	613	529	-	-	21	
100-080-310	160M	11	11	X	X	-	-	100	202	235	495	50	225	254	759	200	95	250	859	997	250	500	562	480	-	-	-
	160L	18,5	15	X	X	-	-	100	202	235	495	50	225	254	789	200	73	250	889	997	250	500	562	480	-	-	-
	180M	22	18,5	X	X	-	-	100	202	235	533	60	225	279	870	200	103,5	250	970	1114	250	500	562	480	-	-	-
	180L	-	22	X	X	-	-	100	202	235	533	60	225	279	898	200	84,5	250	998	1114	250	500	562	480	-	-	-
	160M	11	11	-	X	X	-	100	443	235	254	50	254	314	759	200	95	160	859	997	250	410	562	480	226	350	14
	160L	18,5	15	-	X	X	-	100	443	235	254	50	254	314	789	200	73	160	889	997	250	410	562	480	226	350	14
	180M	22	18,5	-	X	X	-	100	456	235	279	60	279	350	870	200	103,5	180	970	1114	250	430	562	480	226	350	14
	180L	-	22	-	X	X	-	100	456	235	279	60	279	350	898	200	84,5	180	998	1114	250	430	562	480	226	350	14
200L	30	30	-	-	-	X	100	218	303	335	-	284	360	1039	200	-	258	1139	1264	250	508	613	529	-	-	21	
125-100-210	132S	5,5	5,5	X	X	-	-	111	219	200	307	60	225	115	635	161	103	238	746	885	214	452	501	430	-	-	-
	132M	-	7,5	X	X	-	-	111	219	200	307	60	225	115	635	161	84	238	746	885	214	452	501	430	-	-	-
	160M	11	11	X	X	-	-	111	219	240	210	50	225	140	764	161	95	247	875	1010	214	461	559	480	-	-	-
	160L	18,5	15	X	X	-	-	111	219	240	254	50	225	140	794	161	73	247	905	1010	214	461	559	480	-	-	-
	180M	22	18,5	X	X	-	-	111	219	240	532	60	225	279	875	161	103,5	247	986	1130	214	461	559	480	-	-	-
	132S	5,5	5,5	-	X	X	-	111	399	200	140	60	216	256	635	161	103	132	746	885	214	346	395	430	200	300	12
	132M	-	7,5	-	X	X	-	111	399	200	178	60	216	256	635	161	84	132	746	885	214	346	395	430	200	300	12
	160M	11	11	-	X	X	-	111	459	240	210	50	254	314	764	161	95	160	875	1010	214	374	472	480	200	350	14
	160L	18,5	15	-	X	X	-	111	459	240	254	50	254	314	794	161	73	160	905	1010	214	374	472	480	200	350	14
	180M	22	18,5	-	X	X	-	110	471	240	241	60	279	340	875	161	103,5	180	985	1130	214	394	492	480	200	350	15
200L	30	30	-	-	-	X	111	234	308	335	-	284	360	1044	161	-	258	1155	1280	214	472	613	529	-	-	21	
125-100-260	160M	11	11	X	X	-	-	115	218	235	434	50	225	140	759	186	95	247	874	1112	216	463	559	480	-	-	-
	160L	18,5	15	X	X	-	-	115	218	235	434	50	225	140	789	186	73	247	904	1112	216	463	559	480	-	-	-
	180M	22	18,5	X	X	-	-	115	218	235	532	60	225	279	870	186	103,5	247	985	1129	216	463	559	480	-	-	-
	160M	11	11	-	X	X	-	115	458	235	210	50	254	300	759	186	95	160	874	1112	216	376	472	480	218	350	15
	160L	18,5	15	-	X	X	-	115	458	235	254	50	254	300	789	186	73	160	904	1112	216	376	472	480	218	350	15
	180M	22	18,5	-	X	X	-	115	471	235	241	60	279	340	870	186	103,5	180	985	1129	216	396	492	480	218	350	15

Pump size	Motor size	p <sup>6</sup> ) [kW]		Figure 1	Figure 2	Figure 3	Figure 4	A	B	C	D	D*	E	E*	F <sub>max</sub>	G	h	H	K <sub>max</sub>	K* <sub>max</sub>	I	J	J* <sub>max</sub>	L <sub>max</sub>	V	Ø P	Ø R
		2-pole	4-pole																								
	180L	-	22	-	X	X	-	115	471	235	279	60	279	340	898	186	84,5	180	1013	1129	216	396	492	480	218	350	15
	200L	30	30	-	-	-	X	115	233	303	335	-	284	360	1039	186	-	258	1154	1279	216	474	613	529	-	-	21
125-100-310	160M	11	11	X	X	-	-	115	221	239	495	50	225	254	763	214	95	250	878	1015	259	509	562	480	-	-	-
	160L	18,5	15	X	X	-	-	115	221	239	495	50	225	254	793	214	73	250	908	1015	259	509	562	480	-	-	-
	180M	22	18,5	X	X	-	-	115	221	239	533	60	225	279	874	214	103,5	250	989	1132	259	509	562	480	-	-	-
	180L	-	22	X	X	-	-	115	221	239	533	60	225	279	902	214	84,5	250	1017	1132	259	509	562	480	-	-	-
	160M	11	11	-	X	X	-	115	462	239	254	50	254	314	763	214	95	160	878	1015	259	419	562	480	245	350	14
	160L	18,5	15	-	X	X	-	115	462	239	254	50	254	314	793	214	73	160	908	1015	259	419	562	480	245	350	14
	180M	22	18,5	-	X	X	-	115	475	239	279	60	279	350	874	214	103,5	180	989	1132	259	439	562	480	245	350	14
	180L	-	22	-	X	X	-	115	475	239	279	60	279	350	902	214	84,5	180	1017	1132	259	439	562	480	245	350	14
	200L	30	30	-	-	-	X	115	237	307	335	-	284	360	1043	215	-	258	1158	1282	259	517	613	529	-	-	21
150-125-260	160M	11	11	X	X	-	-	110	223	244	434	50	225	140	768	206	95	247	878	1015	216	463	559	480	-	-	-
	160L	18,5	15	X	X	-	-	110	223	244	434	50	225	140	798	206	73	247	908	1015	216	463	559	480	-	-	-
	180M	22	18,5	X	X	-	-	110	223	244	532	60	225	279	879	206	103,5	247	989	1133	216	463	559	480	-	-	-
	180L	-	22	X	X	-	-	110	223	244	532	60	225	279	907	206	84,5	247	1017	1133	216	463	559	480	-	-	-
	160M	11	11	-	X	X	-	110	462	244	210	50	254	300	768	206	95	160	878	1015	216	376	559	480	242	350	15
	160L	18,5	15	-	X	X	-	110	462	244	254	50	254	300	798	206	73	160	908	1015	216	376	559	480	242	350	15
	180M	22	18,5	-	X	X	-	110	475	244	241	60	279	340	879	206	103,5	180	989	1133	216	396	559	480	242	350	15
	180L	-	22	-	X	X	-	110	475	244	241	60	279	340	907	206	103,5	180	1017	1133	216	396	559	480	242	350	15
	200L	30	30	-	-	-	X	110	237	312	335	-	284	360	1048	206	-	258	1158	1274	216	474	613	529	242	-	-



Motor feet



Motor foot dimensions [mm]

Motor size (IEC-DIN)	p [kW]		A	B	C	D	E	F	G	H
	2-pole	4-pole								
71	0,37; 0,55	0,25; 0,37	110	90	150	190	10	10	40	40
80	0,75; 1,1	0,55; 0,75	130	100	170	210	10	10	40	40
90 S	1,5	1,1	160	100	200	240	10	10	40	40
90 L	2,2	1,5	160	125	200	240	10	10	40	40
100 L	3	3	180	140	230	280	12	12	50	50
112 M	4	4	180	140	230	280	12	12	50	50
132 S	5,5; 7,5	5,5	226	140	266	346	12	12	60	60
132 M	-	7,5	226	178	266	346	12	12	60	60
160 M	11; 15	11	310	210	330	400	14	14	50	50
160 L	18,5	15	310	254	330	400	14	14	50	50
180 M	22	18,5	328	241	387	448	15	15	60	60
180 L	-	22	328	279	387	448	15	15	60	60

Accessories

- Version with inducer for sizes 040-032-145 to 150-125-260
- Motor shroud made of stainless steel
- Vertically adjustable ball feet or motor feet
- Heatable casing/discharge cover
- Residual drainage of pump casing
- Mounted on a trolley, with switch and power cable
- System for supplying the mechanical seal

### Detailed designation

Designation example

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

Designation key

Position	Code	Description
1-4	Pump type	
	V A B	Vitacast Bloc
	V A B I	Vitacast Bloc Inducer
5-16	Size	
	040	Nominal suction nozzle diameter [mm]
	025	Nominal discharge nozzle diameter [mm]
	200	Nominal impeller diameter [mm]
17-19	Motor rating	
	0 0 7	0.7 kW
	0 4 0	4 kW
	5 5 0	55 kW
20	Number of poles	
	2	2 poles
	4	4 poles
	6	6 poles
21	Mounting type	
	K	Ball feet
	T	Round base feet
	M	Motor foot
	L	Bearing bracket
	V	Trolley
22-23	Seal code	
	I	Dead end, internal circulation
	B Q	Dead end, quench
	B	Dead end, without flushing system
24-26	Seal code	
	T 1 8	U2U2VGG
	T 1 9	U2U2EGG
	T 6 4	U2Q1EGG
	T 6 9	BQ1M3GG
	T 6 6	Q1Q1M3GG
	T 6 8	U2Q1VGG
	T 8 0	BQ1VGG
	T 8 1	Q1Q1VGG
	T 8 2	BQ1EGG
	T 8 3	Q1Q1EGG
	T 8 4	Q1U2EGG
	T 8 5	Q1U2VGG
	H 0	BGEGG
	H 0 D	BGVGG
	H 1	BQ1EGG
	H 1 D	BQ1VGG
	H 2	Q1U2EGG
	H 2 D	Q1U2VGG
	H 3	Q1Q1EGG
	H 3 D	Q1Q1VGG
	H 4	U2U2EGG
	H 5	QQEGG**
	H A	U2U2EGG
	Q 7 2	U2U2EGG / BU2EGG
	Q 7 4	U2U2VGG / BU2VGG
	Q 7 8	U2U2VGG / U2U2EGG
Q 7 9	U2U2M3GG / BU2EGG	

Position	Code	Description
	Y 0 6	U2U2EGG
	Y 0 7	BU2EGG
27	Piping connection	
	M	Threaded connection to DIN 11851
	E	Threaded connection to DIN 11853
	B	Threaded connection to DIN 11864-1-GS-A
	S	Threaded connection to SMS standard
	I	Threaded connection to IDF standard
	F	Threaded connection to RJT standard
	U	Tri-Clamp fitting
	D	Clamped connection to DIN 11864-3A
	T	Clamped connection to DIN 32676-A
	V	Clamped connection to ISO 2852
	L	Flange to EN 1092-1
	C	Flange to DIN 11864-2A
	Z	Flange to ASA ASME 150
	A	APV flange
	G	Varivent flange
28	O-ring material (casing/impeller)	
	E	EPDM 70 (FDA, USP Class VI, 3A)
	V	FPM 75 (FDA, USP Class VI, 3A)
	T	PTFE (FDA)
	M	FEP (encapsulated) (FDA)
	K	Kalrez (FFKM) (FDA)
29	Casing material	
	C	1.4409
	D	1.4469/1.4410
	X	Hastelloy C276
30	Impeller material	
	C	1.4409
	D	1.4469/1.4410
	X	Hastelloy C276
31	Motor shroud	
	S	With shroud
	O	Without shroud
32	Special design	
	7)	Standard
	X	Special design, incl. ATEX
33	Drain	
	P	Casing drain via pipeline
	V	Casing drain via valve
	D	Casing drain with plug
	O	No drain
34	Generation	
	A	Generation A, current

7) Blank

Hygienic Pump

# Vitastage

## Type Series Booklet



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## Hygienic Pumps

### Sterile Process Pumps in Close-coupled Design

## Vitastage



#### Main applications

- Food and beverage industry
- Chemical industry
- Further industrial applications with moderate hygienic requirements

#### Fluids handled

- Pure liquids not mechanically or chemically aggressive to the pump

#### Operating data

Operating properties

Characteristic		Value
Flow rate	Q [m <sup>3</sup> /h]	≤ 12,5
Head	H [m]	≤ 150
Operating pressure	p [bar]	≤ 16
Fluid temperature	T [°C]	≤ 140 (higher on request)

#### Designation

**Example: Vitastage 10/3/75 2 B T**

Designation key

Code	Description
Vitastage	Type series
10	Size
3	Number of stages
75	Motor rating (7.5 kW × 10)
2	Number of poles
B	Installation type
T	Seal design

#### Design details

##### Design

- Standard design with materials to Regulation (EC) No. 1935/2004

##### Design

- High-pressure centrifugal pump
- Casing in ring-section design
- Multistage

##### Installation

- Horizontal/vertical installation

##### Impeller type

- Closed radial impeller with multiply curved vanes

##### Shaft seal

- Standardised mechanical seal to EN 12756 (⇒ Page 5)

##### Drive

- Self-cooling IEC squirrel cage motor
- Winding 50 Hz, 230 V/400 V up to 4 kW
- Winding 50 Hz, 400 V/690 V from 5.5 kW
- Type of construction B5/B35
- IP55 enclosure
- Thermal class F
- Other motors on request

#### Materials

Component	Material
Pump casing	1.4408/1.4401 (AISI 316)
Impeller/diffuser	1.4401 (AISI 316)
Impeller nut	1.4401 (AISI 316)
Welle	1.4401 (AISI 316)
Motor housing	Aluminium/Cast iron
Motor shroud	1.4301 (AISI 304)
Connections	1.4408 (AISI 316)
Installation parts	1.4301 (AISI 304)

#### Certifications

Overview

Label	Effective in:	Note
	All countries	Certified quality management to ISO 9001
	All countries	Elastomers FDA, 3A, USP class VI certified

## Connections

### Horizontal installation

- Axial suction nozzle
- Tangential discharge nozzle

### Vertical installation

- Horizontal suction nozzle
- Tangential discharge nozzle

### Types of connection

- Threaded connection to DIN 11851
- Threaded connection to SMS standard
- Other connection types on request

## Technical details

### Mechanical seal design

Mechanical seal material, elastomers, static sealing elements

Description	Material
Mechanical seal (single internal mechanical seal)	SiC/CARB/EPDM <sup>1)</sup> , SiC/TUC/EPDM, SiC/SiC/EPDM
Elastomers	EPDM <sup>1)</sup> , FPM, FFPM, PTFE
Static sealing elements	EPDM <sup>1)</sup> , NBR, FPM, FFPM, FEP

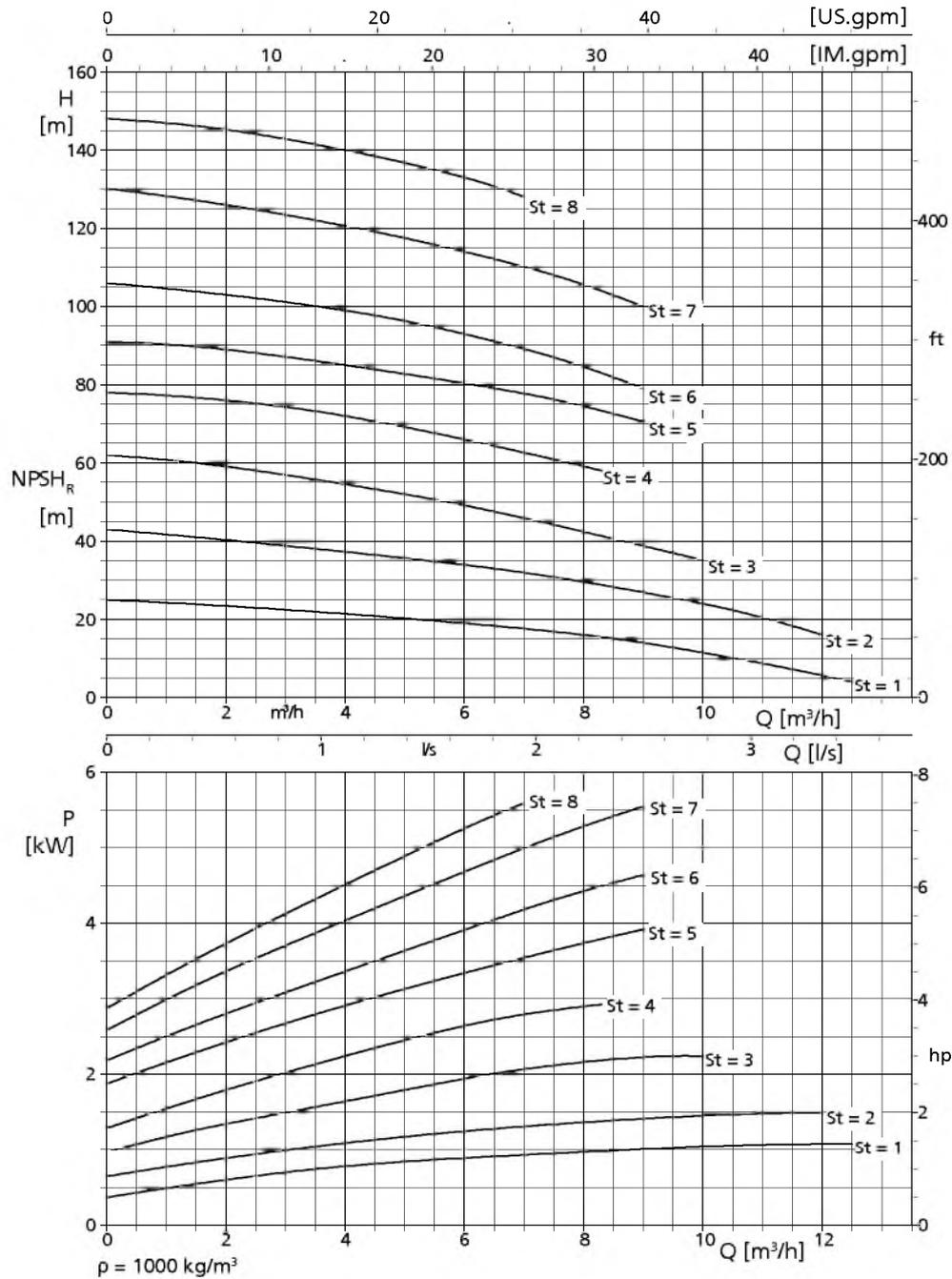
Key

Code	Material
CARB	Graphite
EPDM	Ethylene propylene diene rubber
TUC	Tungsten carbide
SiC	Silicon carbide
NBR	Nitrile rubber
FPM	Fluoroelastomer (Viton)
FFPM	Perfluoroelastomer
PTFE	Polytetrafluoroelastomer
FEP	Fluorocarbon (PTFE-encapsulated silicone)

---

1) Standard design

Characteristic curves



Dimensions

Horizontal installation – version without motor shroud

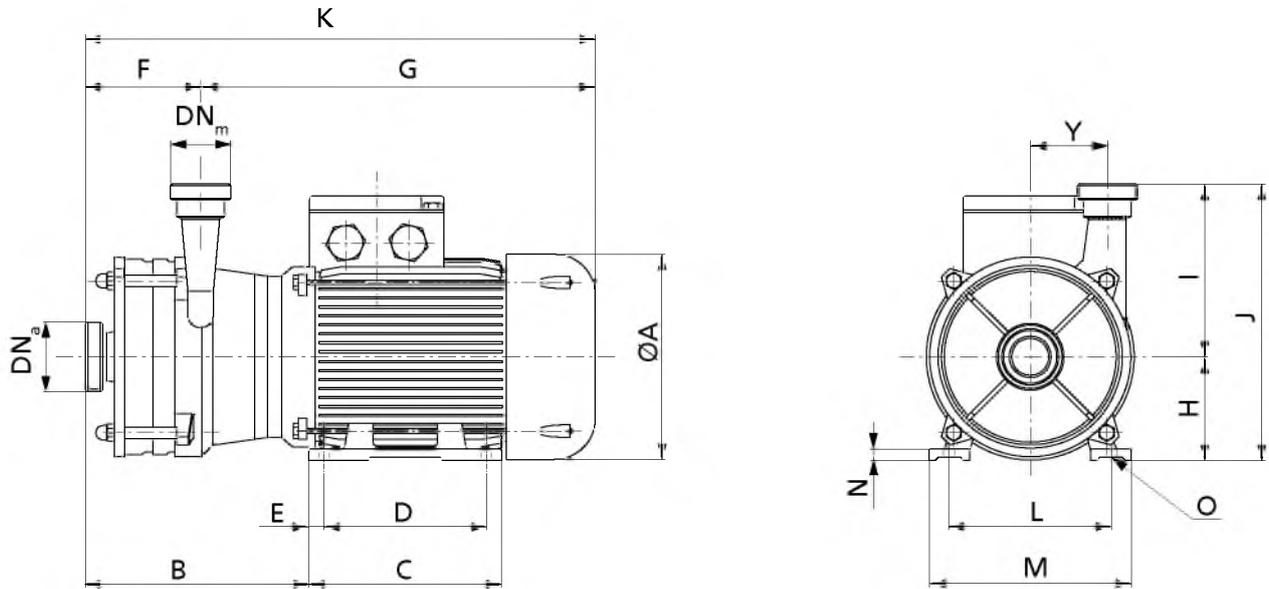


Fig. 1: Vitastage 05 without motor shroud

Dimensions

Size	P	DN <sub>s</sub>	DN <sub>m</sub>	ØA	B	C	D	E	F	G	K	H	J	I	L	M	N	O	Y	[kg]
	[kW]	[mm]																		
05/1	1,1	32	25	162	155	118	100	9	56	314	370	90	240	150	125	150	8	9,5	66,5	18
05/2	1,5	32	25	181	182	143	100	12,5	80	314	394	90	240	150	140	165	10	10	66,5	21
05/3	2,2	32	25	181	206	143	100	12,5	104	337	441	90	240	150	140	165	10	10	66,5	28
05/4	3,0	32	25	202	236	176	140	13	128	337	465	90	240	150	160	196	12	12	66,5	43

Horizontal installation – version with motor shroud

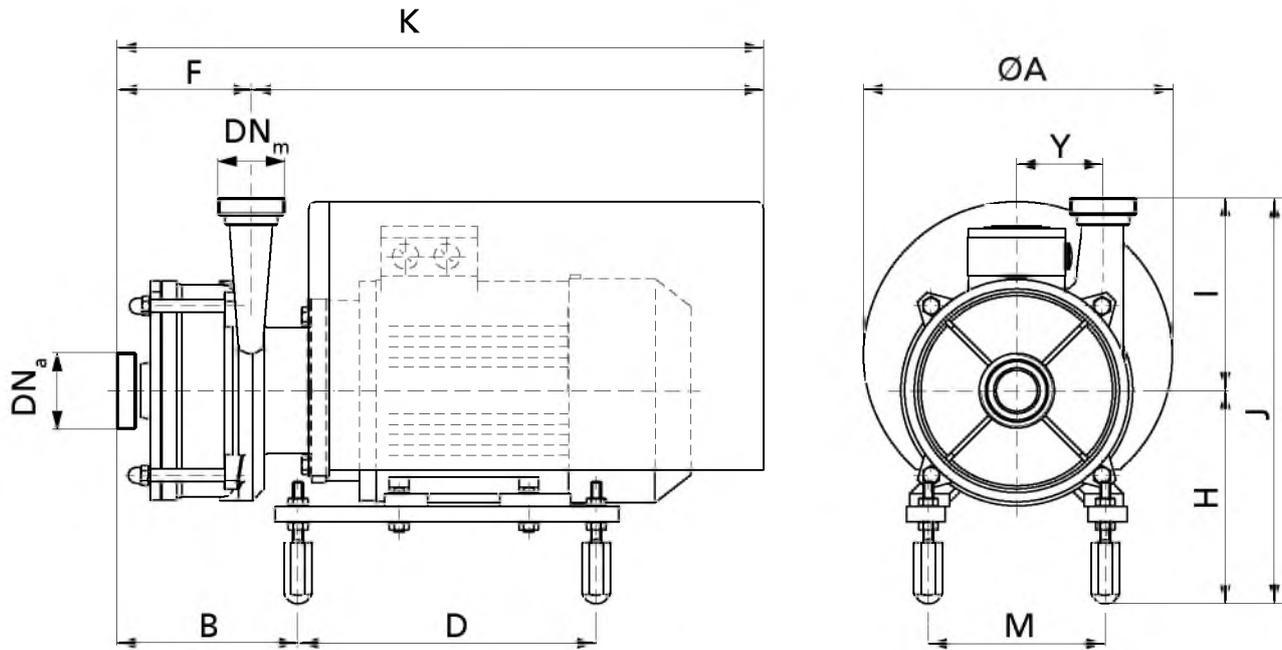


Fig. 2: Vitastage 05 with motor shroud

Dimensions

Size	P	DN <sub>a</sub>	DN <sub>m</sub>	ØA	B	D	F	G	H	I	K	J	M	Y	[kg]
	[kW]	[mm]													
05/1	1,1	32	25	238,5	92	230	56	395	178	150	451	315	136,5	66,5	22
05/2	1,5	32	25	238,5	118	230	80	395	178	150	477	315	136,5	66,5	25
05/3	2,2	32	25	238,5	140	230	104	395	178	150	499	315	136,5	66,5	32
05/4	3,0	32	25	238,5	164	230	128	395	178	150	523	315	136,5	66,5	48

Vertical installation

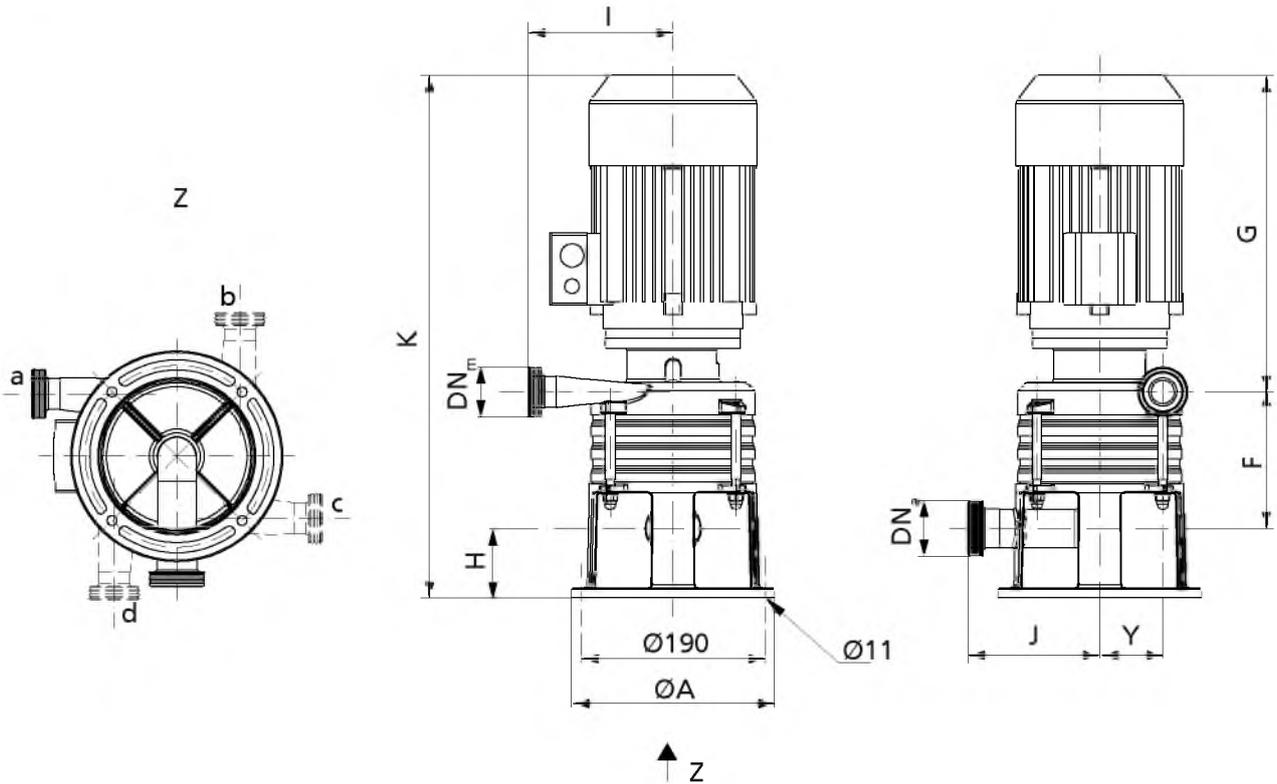


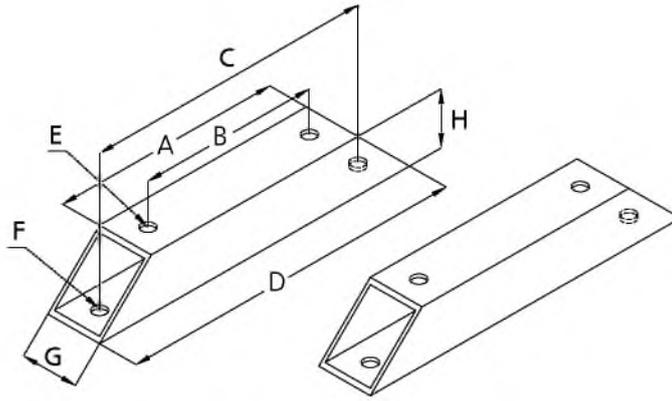
Fig. 3: Vitastage 05, vertical installation, discharge nozzle position

a	Discharge nozzle 270°
b	Discharge nozzle 0°/360°
c	Discharge nozzle 90°
d	Discharge nozzle 180°

Dimensions

Size	P	DN <sub>a</sub>	DN <sub>m</sub>	ØA	F	G	H	I	J	K	Y	[kg]
	[kW]	[mm]										
05/1	1,1	32	25	220	69	316	71	150	136	456	65	19
05/2	1,5	32	25	220	93	316	71	150	136	480	65	22
05/3	2,2	32	25	220	117	346	71	150	136	534	65	29
05/4	3,0	32	25	220	141	346	71	150	136	558	65	40
05/5	4,0	32	25	220	165	371	71	150	136	607	65	42
05/6	4,0	32	25	220	189	371	71	150	136	631	65	43
05/7	5,5	32	25	220	213	386	71	150	136	670	65	55
05/8	5,5	32	25	220	237	386	71	150	136	694	65	56

### Motor feet



Motor foot dimensions [mm]

Motor size (IEC-DIN)	p [kW]		A	B	C	D	E	F	G	H
	2-pole	4-pole								
	71	0,37; 0,55								
80	0,75; 1,1	0,55; 0,75	130	100	170	210	10	10	40	40
90 S	1,5	1,1	160	100	200	240	10	10	40	40
90 L	2,2	1,5	160	125	200	240	10	10	40	40
100 L	3	3	180	140	230	280	12	12	50	50
112 M	4	4	180	140	230	280	12	12	50	50
132 S	5,5; 7,5	5,5	226	140	266	346	12	12	60	60
132 M	-	7,5	226	178	266	346	12	12	60	60
160 M	11; 15	11	310	210	330	400	14	14	50	50
160 L	18,5	15	310	254	330	400	14	14	50	50
180 M	22	18,5	328	241	387	448	15	15	60	60
180 L	-	22	328	279	387	448	15	15	60	60

### Pump accessories

- Stainless steel motor shroud
- Mounted on a trolley, with switch and power cable
- Vertically adjustable ball feet

Dry-installed Volute Casing Pump

**KWP-Bloc**

**Type Series Booklet**



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## Centrifugal Pumps with Shaft Seal

### Dry-installed Volute Casing Pumps

## KWP-Bloc



#### Main applications

- Waste water management
- Process engineering
- General industry
- Plant engineering

#### Fluids handled

- Contaminated fluids
- Fluids containing solids
- Pre-treated waste water
- Industrial and municipal waste water
- All types of slurries without stringy material

#### Operating data

Operating properties

Characteristic		Value
Flow rate	Q [m³/h]	≤ 325
	Q [l/s]	≤ 90
Head	H [m]	≤ 100
Operating temperature	T [°C]	GNG: -10 to +100
		GDNG: -10 to +100
		DDDD: -20 to +100
Operating pressure	p [bar]	≤ 10
Density	ρ-[kg/dm³]	≤ 1.1

#### Designation

Example: KWP K 125-100-0250 GDNG 10

Designation key

Code	Description	
KWP	Type series	
K	Impeller type	
	K	Channel impeller
	O	Open multi-channel impeller <sup>1)</sup>
F	Free-flow impeller	
125	Nominal suction nozzle diameter [mm]	
100	Nominal discharge nozzle diameter [mm]	
0250	Nominal impeller diameter [mm]	
G	Casing material (⇒Page 5)	
D	Impeller material (⇒Page 5)	
N	Wear plate material (⇒Page 5)	
G	Discharge cover material (⇒Page 5)	
10	Design version	

#### Further information on the designation

(⇒Page 27)

#### Design details

##### Design

- Volute casing pump
- Radially split volute casing
- Close-coupled design
- Pump casing fitted with a wear plate
- Single-stage
- Single-entry

##### Installation types

- Horizontal installation
- Vertical installation

##### Shaft seal

- Uncooled mechanical seal with/without oil reservoir<sup>2)</sup>

##### Impeller type

- Various application-oriented impeller types (⇒Page 6)

##### Bearings

- Grease-packed deep groove ball bearings

##### Automation

Automation options:

- PumpDrive
- PumpMeter

##### Connections

- Suction flange with blind holes to DIN 2501, PN 10/16 with tapped blind holes of 1,25 d for hexagon head bolts
- Discharge flange with clearance holes to EN 1092-2, PN 16/21/B

<sup>1)</sup> Available on request only

<sup>2)</sup> Pump sets for vertical installation are fitted with an oil reservoir. For horizontal installation, an oil reservoir can be fitted as an option.

## Materials

Materials depending on material variant

Part No.	Description	Material variant		
		DDDD	GDNG	GNGG
101	Pump casing	Noridur 1.4593	EN-GJL-250	EN-GJL-250
135.01	Wear plate, suction side	Noridur 1.4593	ERN	ERN
146	Intermediate lantern	EN-GJL-250	EN-GJL-250	EN-GJL-250
163	Discharge cover	Noridur 1.4593	EN-GJL-250	EN-GJL-250
210	Shaft	1.4462	1.4021+QT700	1.4021+QT700
230	Impeller	Noridur 1.4593	Noridur 1.4593	ERN
509	Intermediate ring	EN-GJL-250	-	-
524.01	Shaft protecting sleeve	1.4539	1.4539	1.4539
906	Impeller screw	1.4539	C35E+N	C35E+N

## Coating and preservation

- Coating and preservation to KSB standard

## Warranty

Warranties are given within the scope of the valid delivery conditions.

## Product benefits

- Easy to dismantle due to back pull-out design; no need to remove the pump casing from the piping
- High operating reliability by mechanical seal in casing cover with conical seal chamber for enhanced circulation and self-venting
- Long service life through wear-resistant diagonal clearance and impeller with front vanes
- Back vanes for axial thrust balancing and shaft seal balancing
- Oil level gauge and overflow
- High operating reliability with all pressure-retaining components made of quality casting and corrosion/wear allowance
- Fixed bearing prevents axial loads on the motor bearing.
- Maintenance-free bearings grease-packed for life

## Selection information

### Oil supply

The pump is, as a rule, operated without an oil supply. If an oil supply is required (possible reasons: temporary negative pressure on suction side, toxicity of fluid handled, etc.), this must be specified.

## Certifications

Overview

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

## 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 operating point of each pump is guaranteed to ISO 9906/3B.

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

  - Performance test to ISO 9906
  - NPSH test
- Other inspections/tests on request

Programme overview / selection tables

Programme overview

Impeller types and material variants per pump size

Size	KWP K			KWP O			KWP F		
	DDDD	GDNG	GNNG	DDDD	GDNG	DDDD	GDNG	GNNG	
065-040-0250	X	X	X	-	-	-	-	-	
065-050-0200	X	X	X	X	X	-	-	-	
065-050-0201	-	-	-	-	-	X	X	X	
080-040-0315	X	X	X	-	-	-	-	-	
080-065-0200	X	X	X	X	X	-	-	-	
080-065-0201	-	-	-	-	-	X	X	X	
080-065-0313	X	X	X	-	-	-	-	-	
080-065-0315	X	X	X	X	X	-	-	-	
100-080-0250	X	X	X	X	X	-	-	-	
100-080-0251	-	-	-	-	-	X	X	X	
100-080-0311	-	-	-	-	-	X	X	X	
100-080-0315	X	X	X	-	-	-	-	-	
125-100-0250	X	X	X	X	X	-	-	-	
125-100-0251	-	-	-	-	-	X	X	X	
125-100-0253	X	X	X	-	-	-	-	-	
125-100-0315	X	X	X	-	-	-	-	-	

Impellers

	Closed multi-channel impeller (impeller type K)	Suitable for the following fluids contaminated, solids-laden, non-gaseous fluids without stringy material
	Open multi-vane impeller (impeller type O)	Suitable for the following fluids uncontaminated or slightly contaminated fluids with little entrapped gas as well as fluids liable to form deposits and bunch
	Free-flow impeller (impeller type F)	Suitable for the following fluids fluids containing solids and stringy material as well as fluids with entrapped air or entrapped gas

Pump/motor combinations

Motor rating and number of motor poles depending on the pump size<sup>3)</sup>

Size	Motor rating [kW]																																
	1,1		1,5		2,2		3,0		4,0		5,5		7,5		11,0		15,0		19,0		22,0												
	Number of motor poles																																
	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6									
Motor																																	
	90S	90L	90S	90L	100L	90L	100L	112L	100L	100L	132S	112M	112M	132M	132S	132S	132M	132S	132M	160M	160M	160M	160L	160M	160L	180L	160L	180M	200L	180M	180L	200L	
065-040-0250	-	X	X	-	X	X	-	X	-	-	X	-	X	X	-	X	X	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-
065-050-0200	-	-	X	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	-	X	-	-	X	-	-	X	-	-	-
065-050-0201	-	X	X	-	X	X	-	X	-	X	X	-	X	X	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-
080-040-0315	-	X	X	-	X	X	-	X	-	X	X	-	X	X	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-
080-065-0200	-	X	X	-	X	X	-	X	-	X	X	-	X	X	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-	X	-	-

<sup>3)</sup> Electric motors (< 5.5 kW: type of construction V1; ≥ 5.5 kW: type of construction V15) are used as standard.

Size	Motor rating [kW]																																
	1,1		1,5		2,2		3,0		4,0		5,5		7,5		11,0		15,0		19,0		22,0												
	Number of motor poles																																
	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6									
	Motor																																
	90S	90L	90S	90L	100L	90L	100L	112L	100L	100L	132S	112M	112M	132M	132S	132S	132M	132S	132M	160M	160M	160M	160L	160M	160L	180L	160L	180M	200L	180M	180L	200L	
080-065-0201	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
080-065-0313	-	-	X	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	
080-065-0315	-	-	X	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	
100-080-0250	-	-	X	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
100-080-0251	-	-	X	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
100-080-0311	-	-	-	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	
100-080-0315	-	-	-	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	
125-100-0250	-	-	X	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
125-100-0251	-	-	X	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
125-100-0253	-	-	X	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
125-100-0315	-	-	-	-	-	X	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	

### Bearings

Grease-packed deep groove ball bearing

Motor	Deep groove ball bearing (to DIN 625)
90S, 90L, 100L, 112M	6012 C3 2RS
132S, 132M, 160M, 160L, 180M, 180L	6312 C3 2RS

### Shaft seal

Overview of mechanical seals

Design <sup>4)</sup>	Make	Type	Material combination to EN 12756
Single mechanical seal, balanced	KSB	4 KBL	U <sub>1</sub> U <sub>1</sub> VGG <sub>1</sub>
			Q <sub>1</sub> Q <sub>1</sub> VGG <sub>1</sub>
Single mechanical seal, unbalanced	Burgmann <sup>5)</sup>	MG1 - G6	Q <sub>1</sub> Q <sub>1</sub> VGG
			Q <sub>1</sub> Q <sub>1</sub> EGG
	John Crane	2100	Q <sub>5</sub> Q <sub>5</sub> VGG
			Q <sub>5</sub> Q <sub>5</sub> EGG

### Pressure limits and temperature limits

Pressure limits and temperature limits of the pump

Material variant	Fluid temperature	Operating pressure	Test pressure
	[°C]	[bar]	[bar]
DDDD	-20 to +100	≤ 10	15
GDNG	-10 to +100	≤ 10	15
GNGG	-10 to +100	≤ 10	15

<sup>4)</sup> Only single mechanical seals are fitted in the conical discharge chamber.

<sup>5)</sup> Other mechanical seals to EN 12756 (DIN 24960), version I1k can be fitted

Technical data

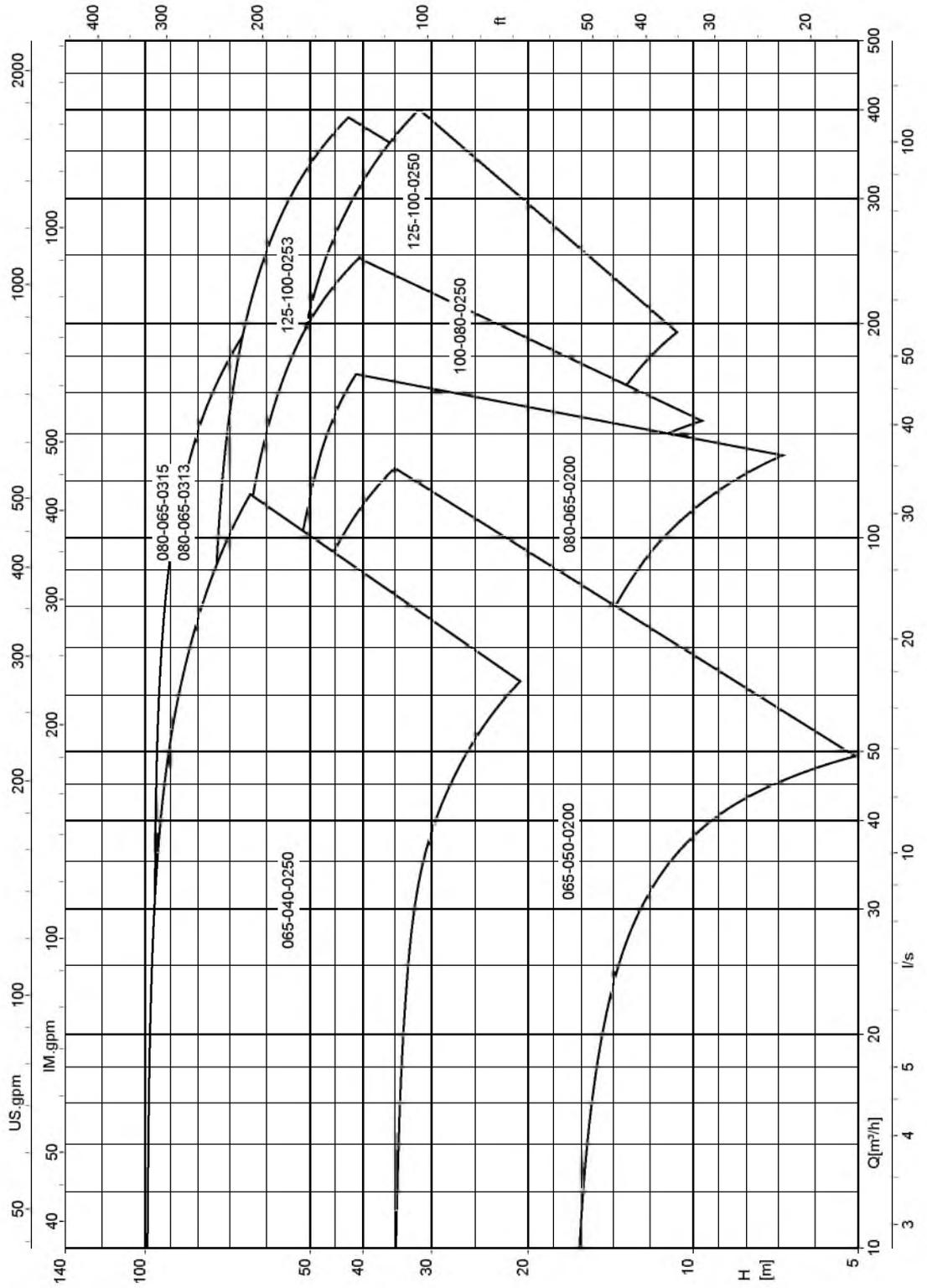
Technical data

Size	Impeller diameter						Free passage			Shaft diameter				Weight <sup>6)</sup>	
	KWP K		KWP O		KWP F		KWP K	KWP O	KWP F	Impeller	Shaft protecting sleeve 4KBL	Shaft protecting sleeve standardised mechanical seal	Bearing	Motor 90S, 90L, 100L, 112M	Motor 132S, 132M 160M, 160L, 180M, 180L
	Min.	Max.	Min.	Max.	Min.	Max.									
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]
065-040-0250	170	260	-	-	-	-	15	-	-	27	31	43	60	75	85
065-050-0200	120	209	160	209	-	-	34	-	-	30	38	43	60	70	80
065-050-0201	-	-	-	-	130	209	-	-	45	-	31	43	60	70	80
080-040-0315	230	320	-	-	-	-	15	-	-	27	31	43	60	115	125
080-065-0200	145	209	160	209	-	-	46	30	-	27	31	43	60	75	85
080-065-0201	-	-	-	-	145	209	-	-	55	27	31	43	60	75	85
080-065-0313	230	320	-	-	-	-	15	-	-	35	38	43	60	110	120
080-065-0315	230	320	230	320	-	-	42	25	-	35	38	43	60	110	120
100-080-0250	170	260	170	260	-	-	50	36	-	27	31	43	60	90	100
100-080-0251	-	-	-	-	170	260	-	-	60	27	31	43	60	90	100
100-080-0311	-	-	-	-	260	320	-	-	50	35	38	43	60	-	130
100-080-0315	260	320	-	-	-	-	44	-	-	35	38	43	60	-	130
125-100-0250	180	260	180	260	-	-	60	50	-	35	38	43	60	100	110
125-100-0251	-	-	-	-	180	260	-	-	50	35	38	43	60	100	110
125-100-0253	180	260	-	-	-	-	28	-	-	35	38	43	60	100	110
125-100-0315	230	320	-	-	-	-	54	-	-	35	38	43	60	125	135

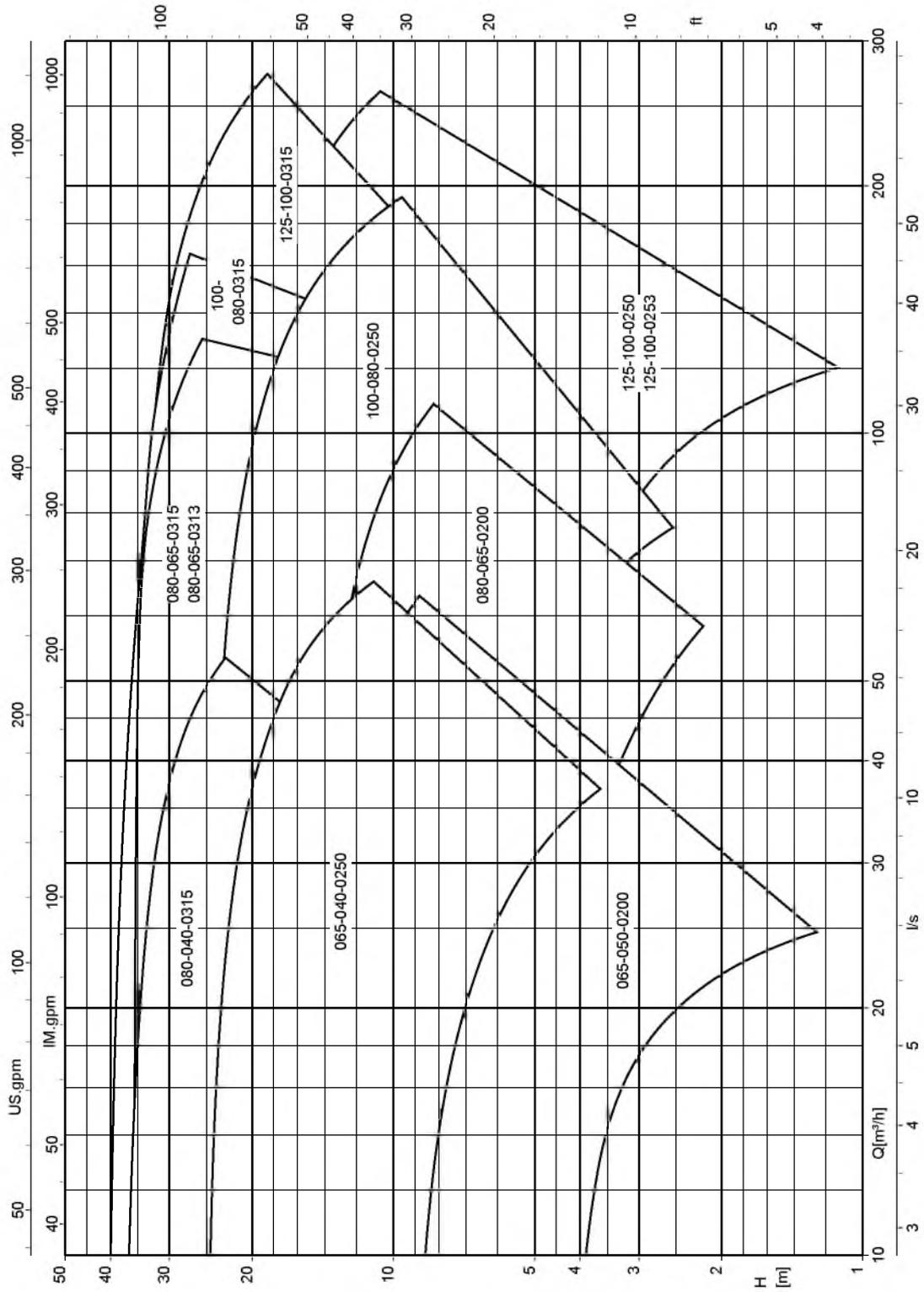
<sup>6)</sup> The weights indicated refer to the pump without motor, mounting plate or foundation rails

Selection charts

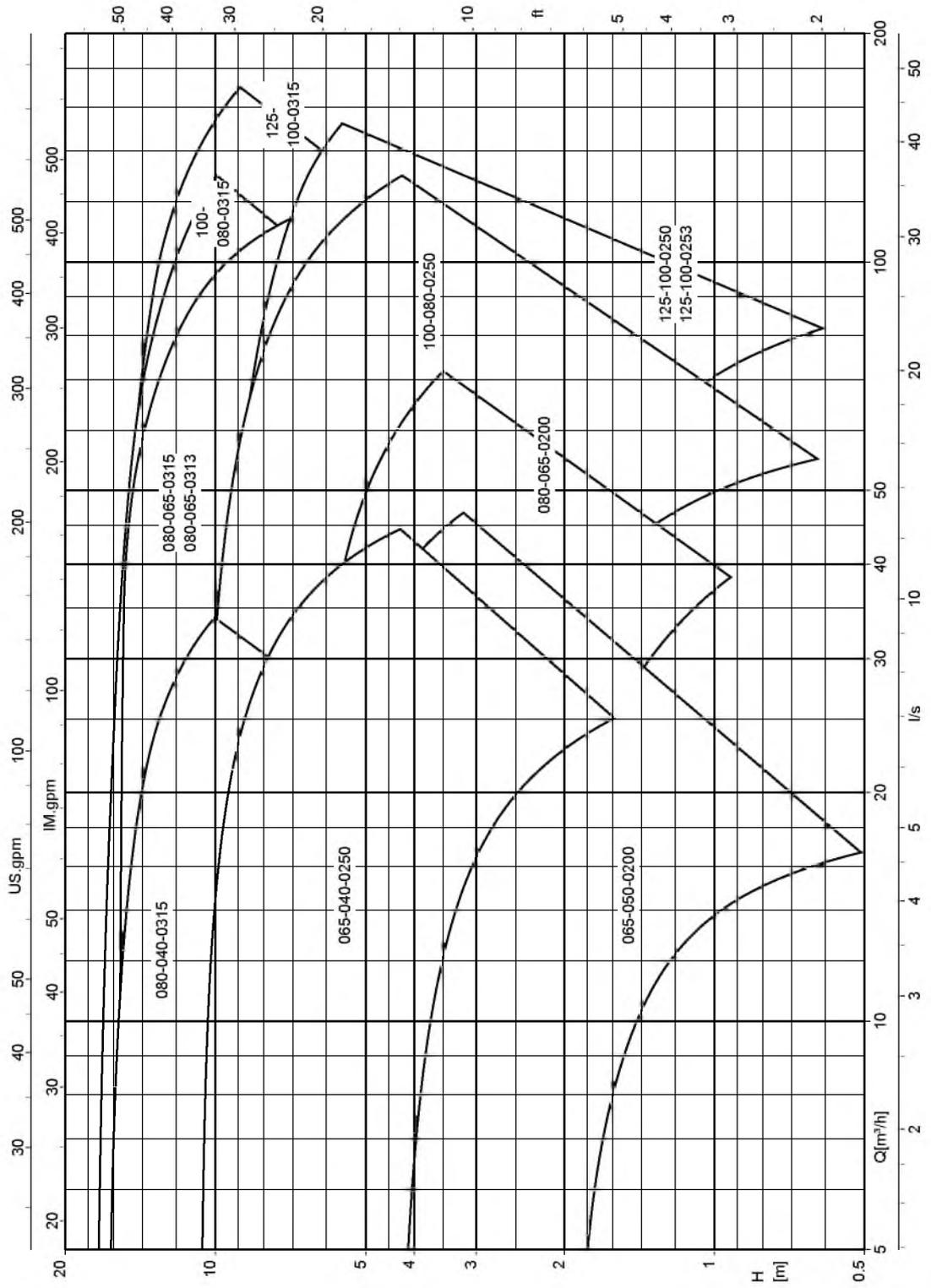
KWP K, n = 2900 rpm



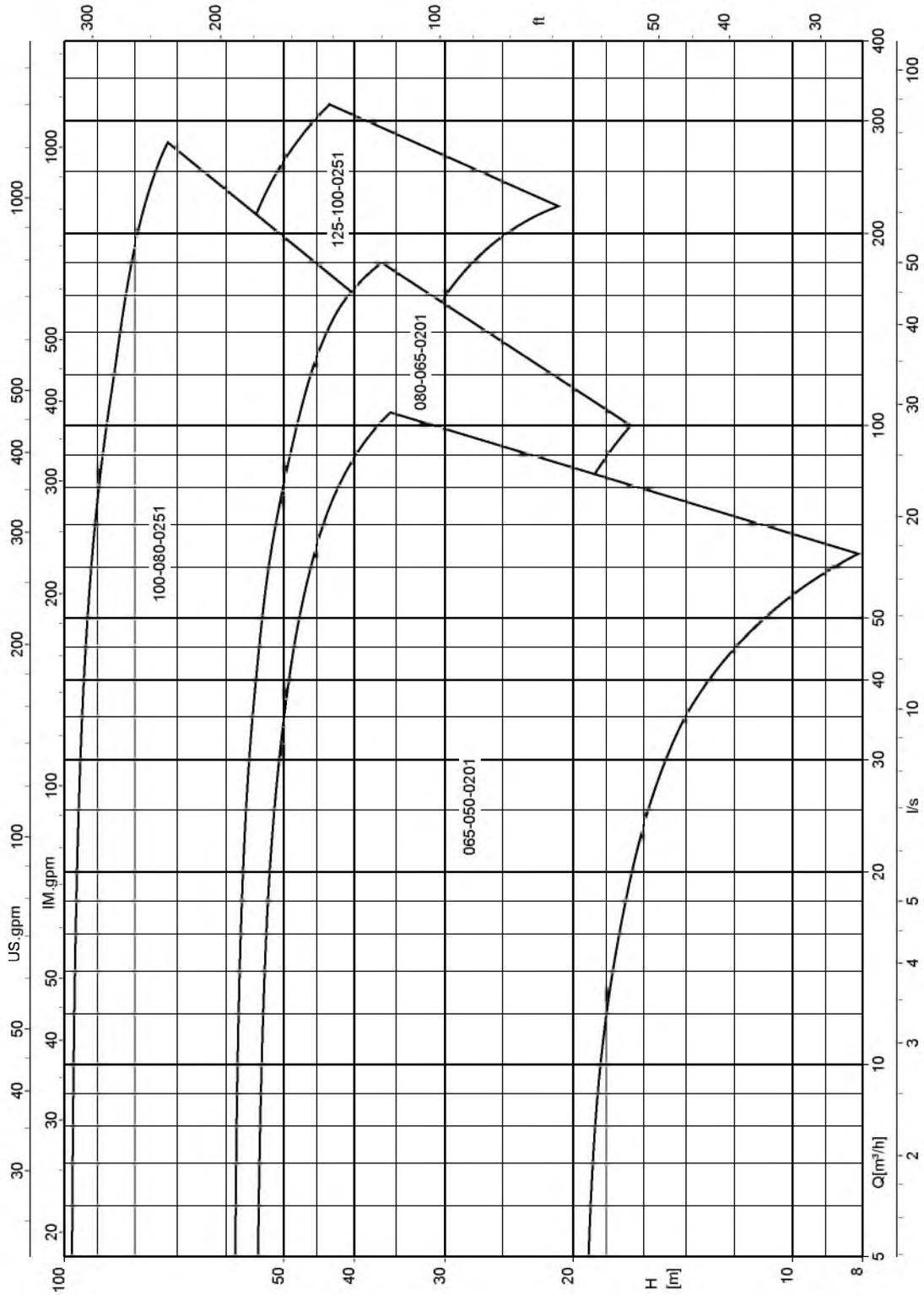
KWP K, n = 1450 rpm



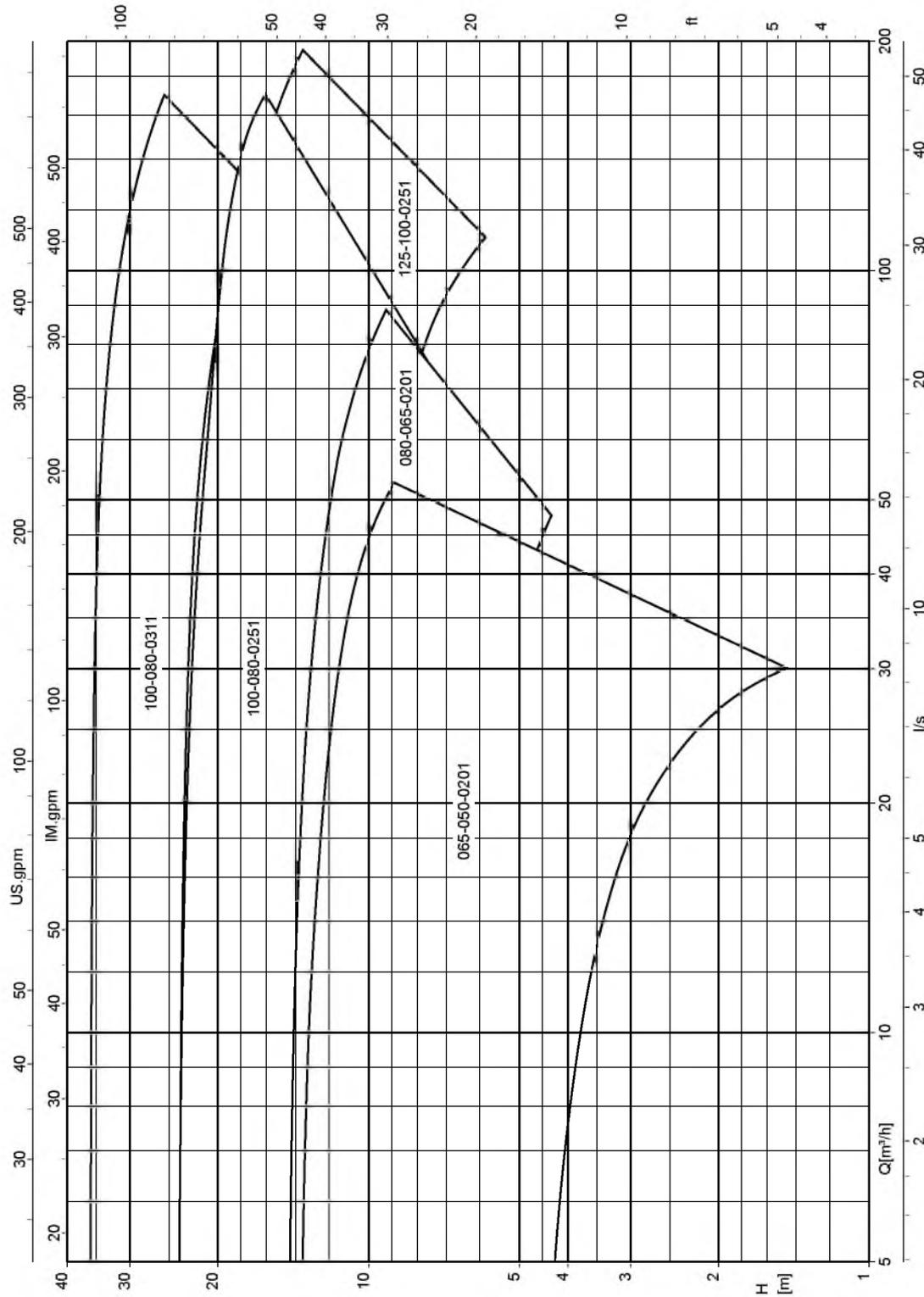
KWP K, n = 960 rpm



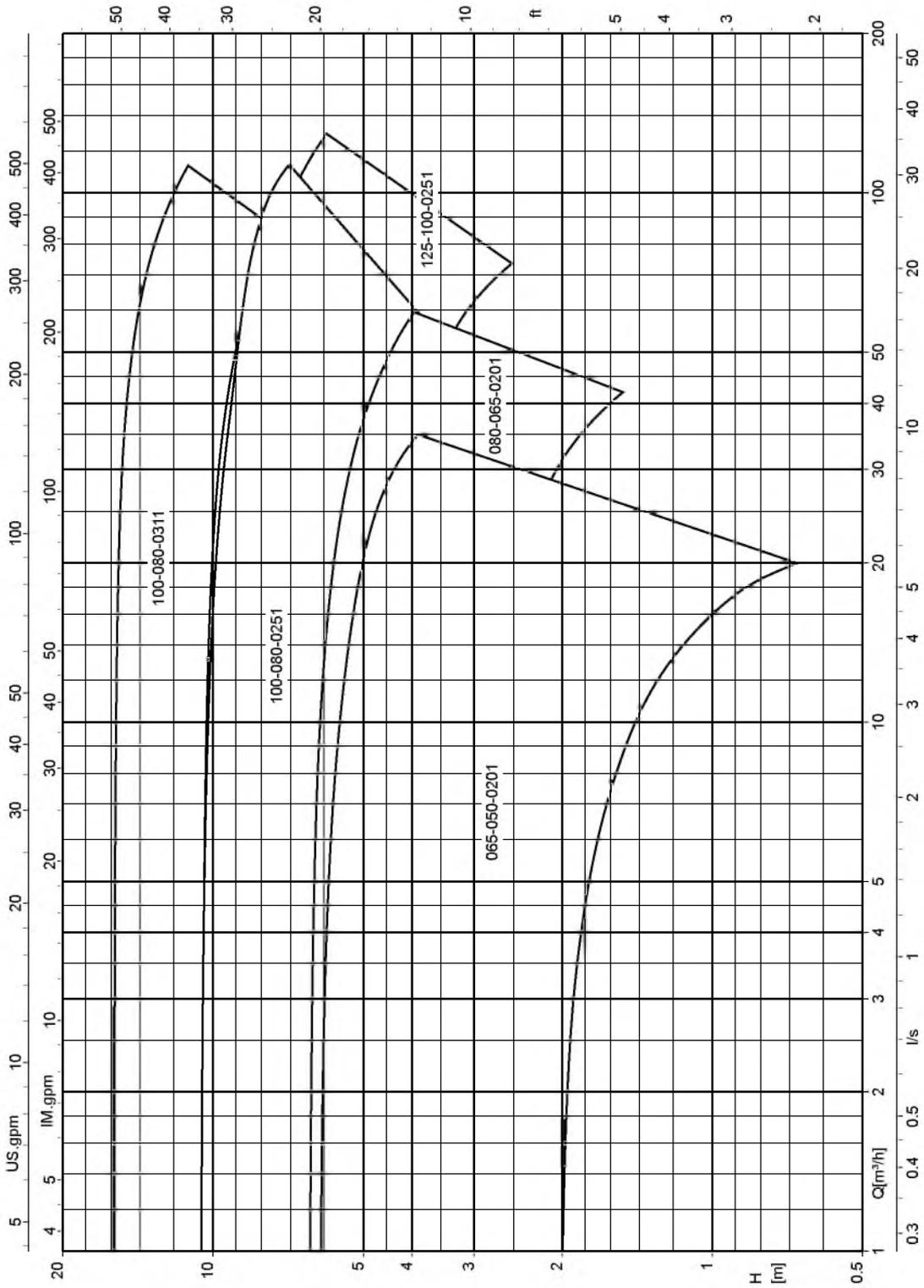
KWP F, n = 2900 rpm



KWP F, n = 1450 rpm

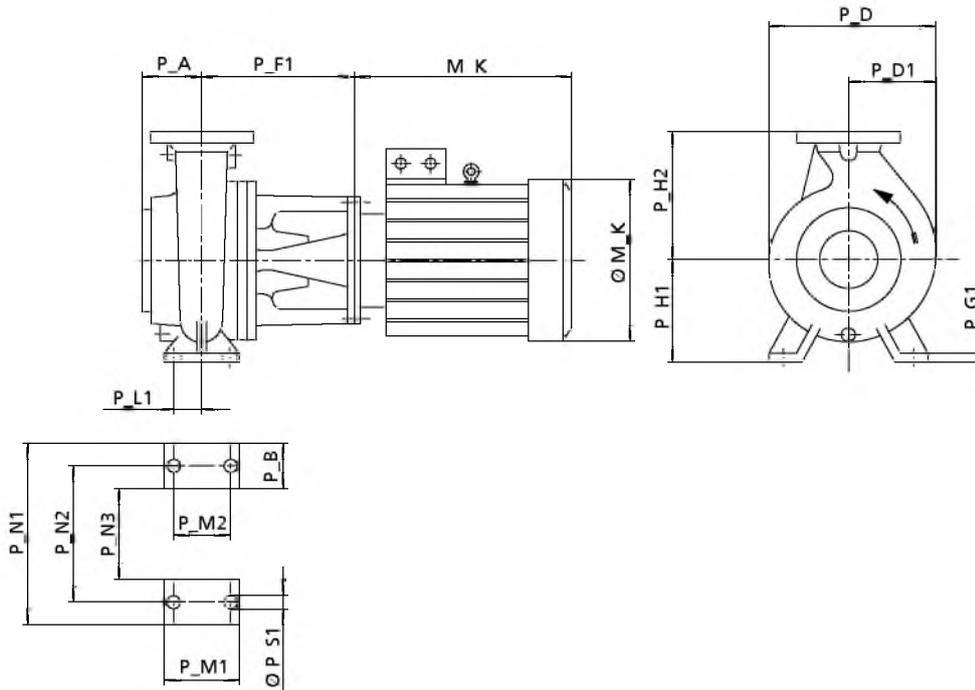


KWP F, n = 960 rpm



Dimensions and connections

Pump set dimensions



Dimensions

Pump dimensions in [mm] depending on the pump size

Size	P_A	P_B	P_D	P_D1	P_G1	P_H1	P_H2	P_L1	P_M1	P_M2	P_N1	P_N2	P_N3	P_S1
065-040-0250 <sup>7)</sup>	100	65	356	178	16	180	225	47,5	125	95	320	250	190	16
080-040-0315	125	80	402	204	18	225	250	60	160	120	400	315	1240	18
065-050-0200 <sup>7)</sup>	112	50	270	138	14	160	200	35	100	70	265	212	165	17
065-050-0201 <sup>7)</sup>	112	50	270	138	14	160	200	35	100	70	265	212	165	17
080-065-0200 <sup>7)</sup>	125	65	291	152	16	180	225	47,5	125	95	320	250	190	17
080-065-0201 <sup>7)</sup>	125	65	291	152	16	180	225	47,5	125	95	320	250	190	17
080-065-0313	140	80	388	193	18	225	280	60	160	120	400	315	240	21
080-065-0315	140	80	388	193	18	225	280	60	160	120	400	315	240	21
100-080-0250	125	80	352	183	18	225	280	60	160	120	400	315	240	21
100-080-0251	125	80	352	183	18	225	280	60	160	120	400	315	240	21
100-080-0311	140	80	411	206	18	225	280	60	160	120	400	315	240	21
100-080-0315	140	80	411	206	18	225	280	60	160	120	400	315	240	21
125-100-0250	140	80	379	199	18	225	280	60	160	120	400	315	240	21
125-100-0251	140	80	379	199	18	225	280	60	160	120	400	315	240	21
125-100-0253	140	80	379	199	18	225	280	60	160	120	400	315	240	21
125-100-0315	140	80	420	220	18	250	315	60	180	120	400	315	240	21

Dimensions [mm] of motors 90S, 90L, 100L, 112M, 132S depending on the pump size

Size	90S			90L			100L			112M			132S		
	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K
065-040-0250	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
080-040-0315	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
065-050-0200	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
065-050-0201	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220

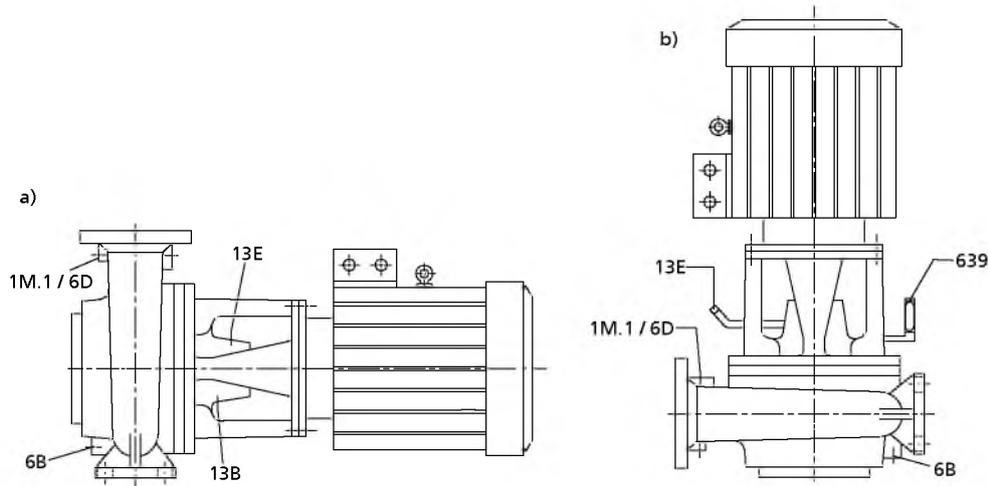
<sup>7)</sup> For combinations with motor 132S, 132M, 160M, 160L, 180M or 180L foundation rails or mounting plates are required. For all other combinations they are optional.

Size	90S			90L			100L			112M			132S		
	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K
080-065-0200	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
080-065-0201	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
080-065-0313	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
080-065-0315	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
100-080-0250	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
100-080-0251	262	235	186	262	260	186	262	302	200	262	323	224	323	354	220
100-080-0311	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
100-080-0315	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
125-100-0250	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
125-100-0251	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
125-100-0253	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220
125-100-0315	-	-	-	-	-	-	274	302	200	274	323	224	335	354	220

Dimensions [mm] of motors 132M, 160M, 160L, 180M, 180L depending on the pump size

Size	132M			160M			160L			180M			180L		
	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K	P_F1	M_K	Ø M_K
065-040-0250	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
080-040-0315	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
065-050-0200	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
065-050-0201	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
080-065-0200	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
080-065-0201	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
080-065-0313	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
080-065-0315	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
100-080-0250	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
100-080-0251	323	411	260	323	446	260	323	527	330	323	533	330	-	-	-
100-080-0311	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
100-080-0315	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
125-100-0250	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
125-100-0251	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
125-100-0253	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330
125-100-0315	335	411	260	335	446	260	335	527	330	335	533	330	335	552	330

Connections



Connections a) Horizontal installation b) Vertical installation

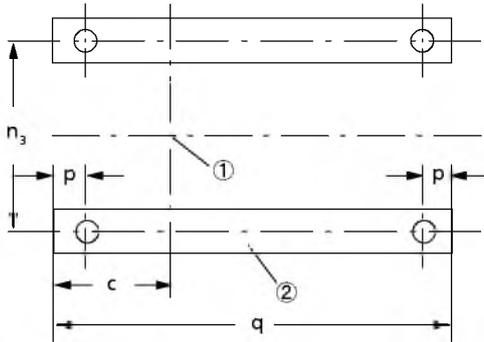
1M.1	Pressure gauge	13B	Oil drain / oil level gauge
6B	Casing drain	13D	Oil dip stick / vent
6D	Vent	639	Oil level gauge

Pump connections depending on the pump size

Size	1M.1	6B	6D	13B	13D	639
065-040-0250	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
065-050-0200	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
065-050-0201	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
080-040-0315	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
080-065-0200	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
080-065-0201	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
080-065-0313	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
080-065-0315	G 1/2	G 3/4	G 1/2	G 1/4	G 1/2	G 1/4
100-080-0250	G 1	G 3/4	G 1	G 1/4	G 1/2	G 1/4
100-080-0251	G 1	G 3/4	G 1	G 1/4	G 1/2	G 1/4
100-080-0311	G 1	G 3/4	G 1	G 1/4	G 1/2	G 1/4
100-080-0315	G 1	G 3/4	G 1	G 1/4	G 1/2	G 1/4
125-100-0250	G 1	G 1	G 1	G 1/4	G 1/2	G 1/4
125-100-0251	G 1	G 1	G 1	G 1/4	G 1/2	G 1/4
125-100-0253	G 1	G 1	G 1	G 1/4	G 1/2	G 1/4
125-100-0315	G 1	G 1	G 1	G 1/4	G 1/2	G 1/4

Accessories

Foundation rail



Foundation rail dimensions

①	Pump centre
②	U80 DIN 1026, overall height 45 mm

Foundation rail<sup>8)</sup>

Size	Motor										c [mm]	n <sub>3</sub> [mm]	p [mm]	q [mm]	[kg]
	90S	90L	100L	112M	132S	132M	160M	160L	180M	180L					
065-040-0250	X	X	X	X	-	-	-	-	-	-	163	250	50	550	10
	-	-	-	-	X	X	X	X	X	X	183	274	60	850	15
065-050-0200	X	X	X	X	-	-	-	-	-	-	150	212	50	550	10
	-	-	-	-	X	X	X	X	X	X	170	236	60	850	15
065-050-0201	X	X	X	X	-	-	-	-	-	-	150	212	50	550	10
	-	-	-	-	X	X	X	X	X	X	170	236	60	850	15
080-040-0315	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
080-065-0200	X	X	X	X	-	-	-	-	-	-	163	250	50	550	10
	-	-	-	-	X	X	X	X	X	X	183	274	60	850	15
080-065-0201	X	X	X	X	-	-	-	-	-	-	163	250	50	550	10
	-	-	-	-	X	X	X	X	X	X	183	274	60	850	15
080-065-0313	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
080-065-0315	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
100-080-0250	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
100-080-0251	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
100-080-0311	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
100-080-0315	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
125-100-0250	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
125-100-0251	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
125-100-0253	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15
125-100-0315	X	X	X	X	-	-	-	-	-	-	200	315	50	550	10
	-	-	-	-	X	X	X	X	X	X	200	315	60	850	15

<sup>8)</sup> For motors 132S, 132M, 160M, 160L, 180M, 180L foundation rails or mounting plates are required and included in the scope of supply. For all other combinations foundation rails can be supplied as an option.

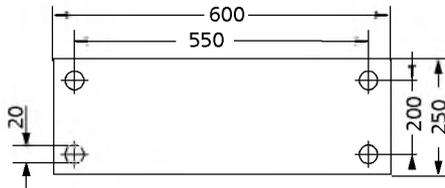
### Foundation bolts

Foundation bolts

Size	Foundation bolt	Expanding anchor bolt
065-040-0250	M 16 ×=200 MU	-
065-050-0200		
065-050-0201		
080-065-0200		
080-065-0201	M 16 ×=200 MU	F1/18-60 Ø 18 ×=160
080-040-0315		
080-065-0313		
080-065-0315		
100-080-0250		
100-080-0251		
100-080-0311		
100-080-0315		
125-100-0250		
125-100-0251		
125-100-0253		
125-100-0315		

### Mounting plate

Mounting plate dimensions and weight

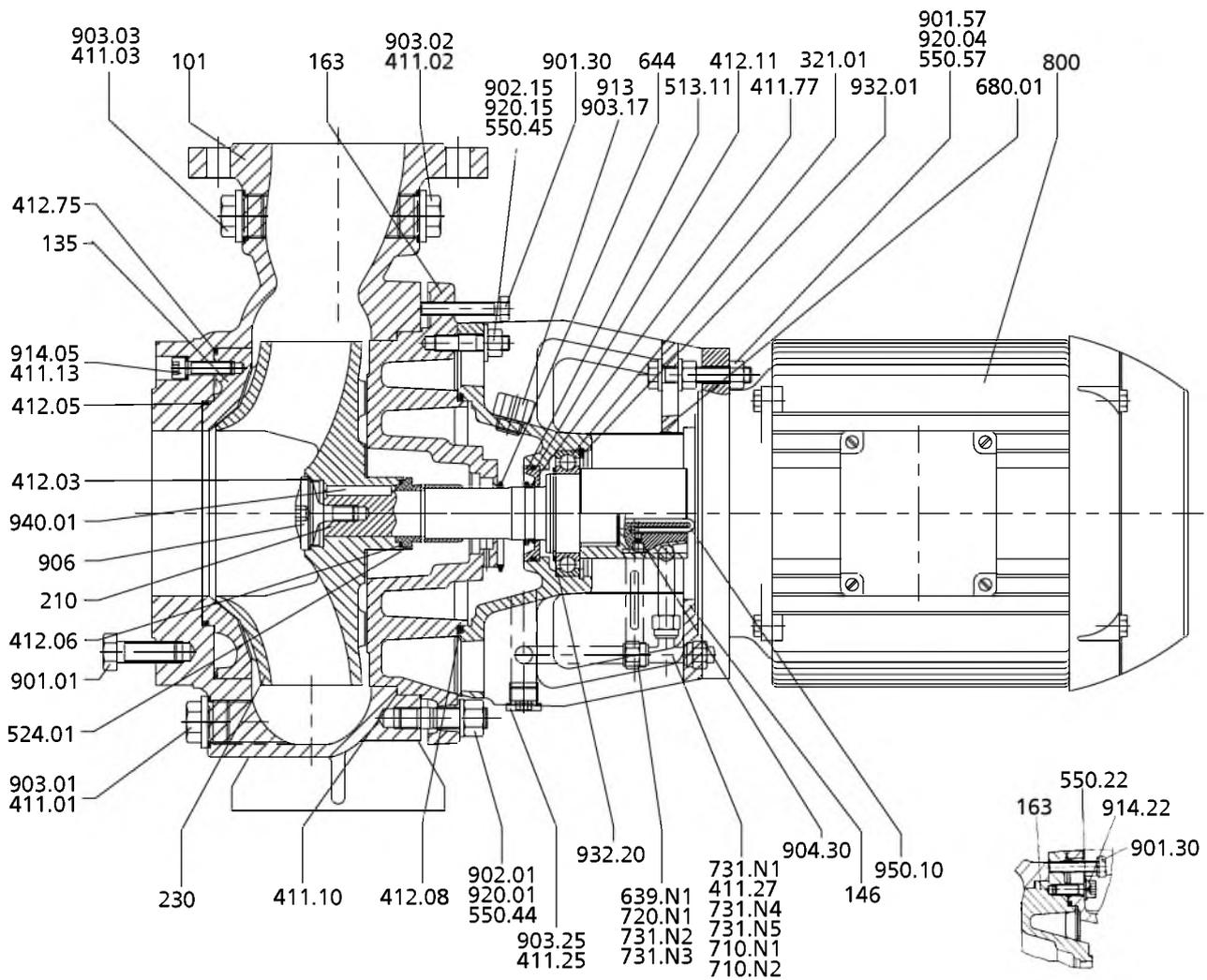


Mounting plate dimensions

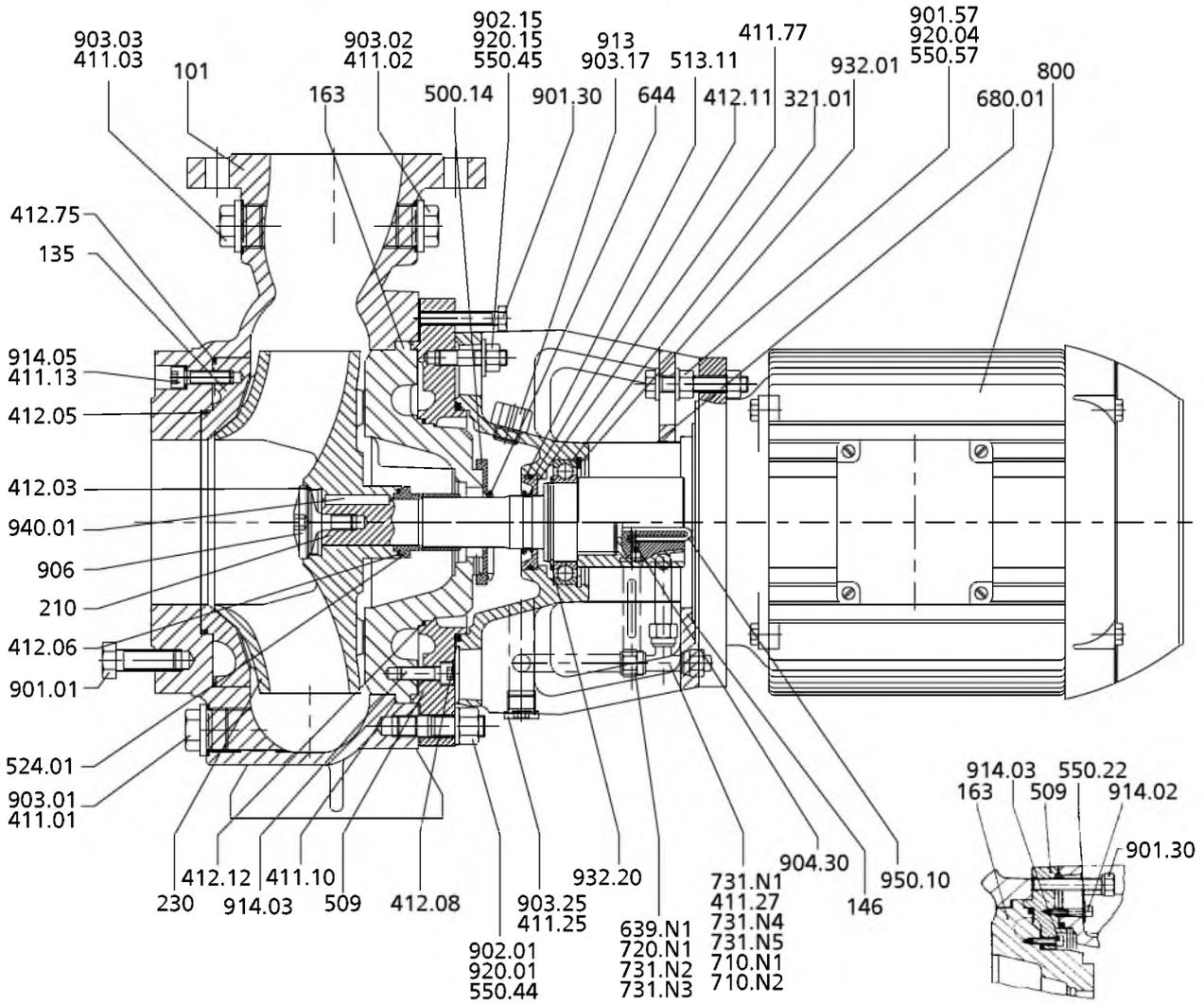
The mounting plate weighs 24 kg. The mounting plate is 25 mm high.

General assembly drawing with list of components

Horizontal installation

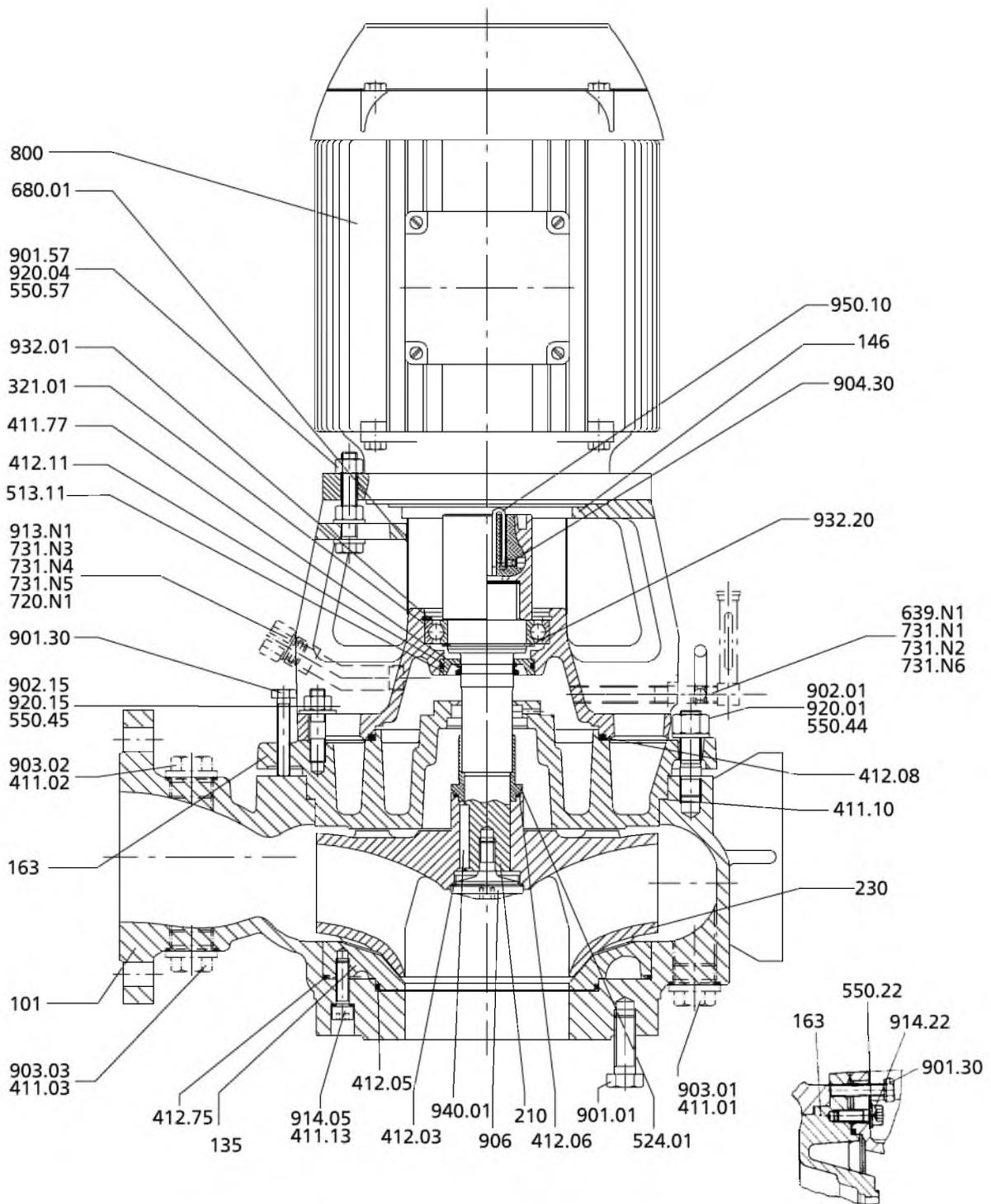


General assembly drawing of variants GNNG, GDNG

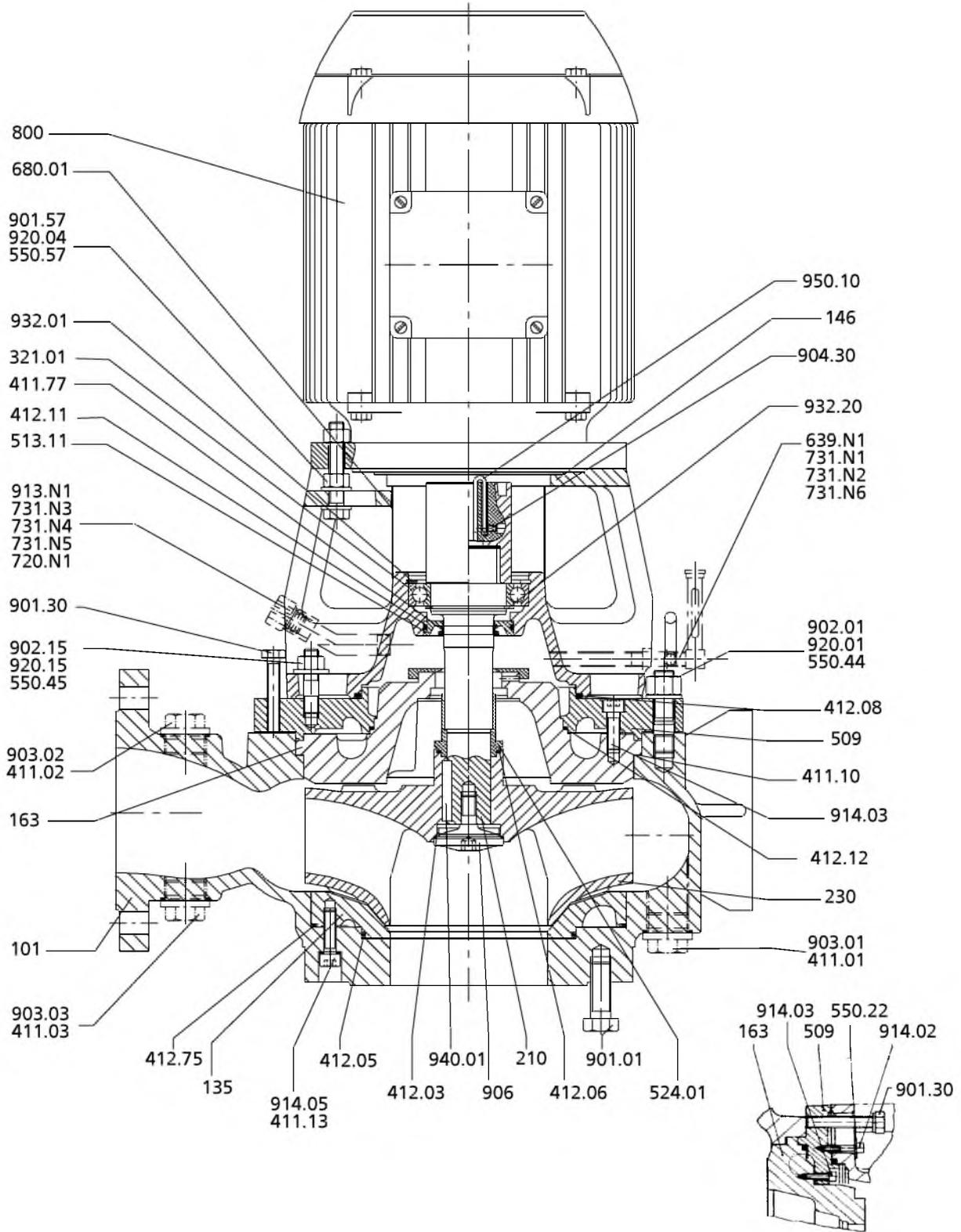


General assembly drawing of variant DDDD

Vertical installation

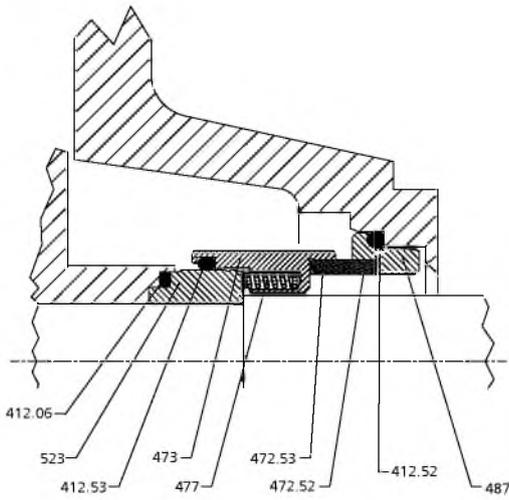


General assembly drawing of variants GNNG, GDNG



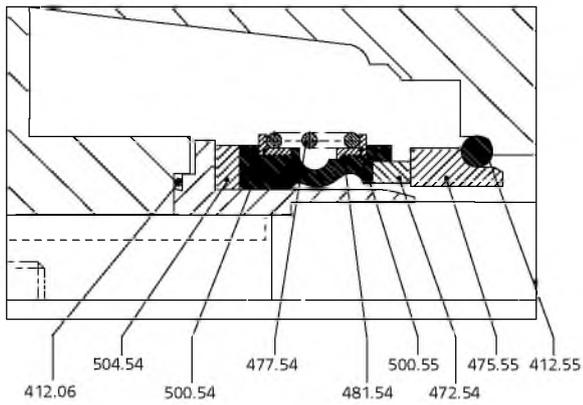
General assembly drawing of variant DDDD

Mechanical seal  
Mechanical seal KSB 4KBL



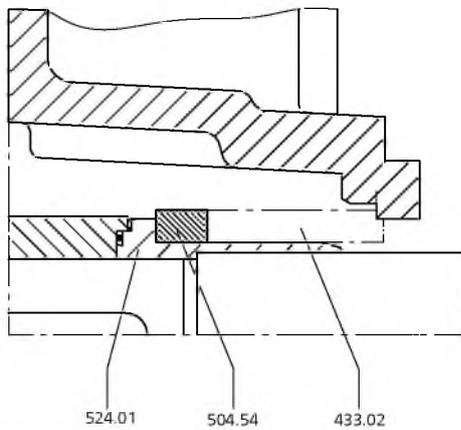
Mechanical seal KSB 4KBL

Mechanical seal, Burgmann MG1-G6



Mechanical seal, Burgmann MG1-G6

Mechanical seal, John Crane 2100



Mechanical seal, John Crane 2100

List of components

List of components<sup>9)</sup>

Part No.	Comprising	Scope of supply
101	101	Pump casing
	411.01 <sup>10)</sup> /02 <sup>10)</sup> /03 <sup>10)</sup> /10	Joint ring
	550.44	Disc
	901.01	Hexagon head bolt
	902.01	Stud
	903.01 <sup>10)</sup> /02 <sup>10)</sup> /03 <sup>10)</sup>	Screw plug
	920.01	Hexagon nut
135	135	Wear plate
	411.13	Joint ring
	412.05/75	O-ring
	914.05	Hexagon socket head cap screw
146	146	Intermediate lantern
	550.57	Disc
	913	Vent plug
	901.57	Hexagon head bolt
	903.17/25/26	Screw plug
	920.04	Hexagon nut
	932.01	Circlip
163	163	Discharge cover
	412.08	O-ring
	550.45/22	Disc
	901.30	Hexagon head bolt
	902.15	Stud
	920.15	Hexagon nut
	914.22	Hexagon socket head cap screw
210	210	Shaft
	904.30	Grub screw
	932.20	Circlip
	940.01	Key
	950.10	Spring
	230	230
321.01	321.01	Deep groove ball bearing
411.77	411.77	Joint ring
504.54 <sup>11)</sup>	504.54	Spacer ring
509	509	Intermediate ring
	412.12	O-ring
	914.02/03	Hexagon socket head cap screw
513.11	513.11	Insert ring
	412.11	O-ring
524.01	524.01 <sup>12)</sup>	Shaft protecting sleeve
	412.06	O-ring
639 <sup>13)</sup>	411.25/27	Joint ring
	639.N1	Oil level gauge, complete
	644	Lubricating ring
	710.N1/N2	Pipe
	720/731.N1	Barrel nipple
	731.N6	Pipe union
	731.N2/N3/N4/N5	Angle
	903.25	Screw plug
680.01	680.01	Guard
800	800	Motor, complete
906	906	Impeller screw
	412.03	O-ring

<sup>9)</sup> Depending on the design

<sup>10)</sup> If any

<sup>11)</sup> On pumps with standardised mechanical seal only

<sup>12)</sup> This is part of mechanical seal 4KBL

<sup>13)</sup> On pumps with oil reservoir only

Part No.	Comprising	Scope of supply
99-9	99-9	Set of sealing elements
	411.01/.02/.03/.10/.12/.13/.16/.17/.77	Joint ring
	412.03/.05/.06/.08/.11/.75	O-ring

List of components for mechanical seal 4KBL

Part No.	Comprising	Scope of supply
433	412.52/.53	O-ring
	472.53	Primary ring
	472.52	Mating ring
	473	Primary ring carrier
	477	Spring
	487	Mating ring carrier
	523	Shaft protecting sleeve

List of components for mechanical seal MG1-G6

Part No.	Comprising	Scope of supply
433	412.55	O-ring
	472.54	Primary ring
	475.55	Mating ring
	477.54	Spring
	481.54	Bellows
	500.54	Ring
	500.55	Ring

## Detailed designation

Designation example

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

Position 1-3: designation

Code	Description
KWP	Type series

Position 30-32: motor rating

Code	Description
7	7 kW

Position 4: impeller

Code	Description
K	Channel impeller
O	Open impeller <sup>14)</sup>
F	Free-flow impeller

Position 33: number of poles

Code	Description
2	2 poles
4	4 poles
6	6 poles

Position 5-17: size

Code	Description
125	Nominal suction nozzle diameter [mm]
100	Nominal discharge nozzle diameter [mm]
0250	Nominal impeller diameter [mm]

Position 18: casing material

Code	Description
G	EN-GJL-250
D	Noridur 1.4593

Position 19: impeller material

Code	Description
D	Noridur 1.4593
N	ERN

Position 20: wear plate / wear ring material

Code	Description
D	Noridur 1.4593
N	ERN

Position 21: discharge cover material

Code	Description
D	Noridur 1.4593
G	EN-GJL-250

Position 22-23: design version

Code	Description
10	Version

Position 24-25: shaft seal operating mode

Code	Description
A	Single mechanical seal in A-type cover

Position 26: standard

Code	Description
X	One or several non-standard components

Position 27-29: type of installation

Code	Description
0	Figure 0
BH	Close-coupled, horizontal
BV	Close-coupled, vertical

<sup>14)</sup> Available on request only

Process Pump

# RPHb

API 610/11th Edition

## Type Series Booklet



## Contents

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## Centrifugal Pumps with Shaft Seal

### Process Pumps

## RPHb



### Main applications

Pump for handling the large variety of petroleum products in refineries as well as in the chemical and petrochemical industry.

- Refineries

### Design details

#### Design

- Pump to API 610, 11th edition (type BB2)
- Volute casing pump
- Horizontal installation
- 2 stages
- Single-entry
- Between-bearings design

#### Pump casing

- Volute casing with integrally cast pump feet
- Centreline pump feet
- Radially split volute casing
- Suction nozzle and discharge nozzle in top-top arrangement
- Volute casing and casing cover with replaceable casing wear rings
- Casing sealed by spiral wound gasket
- Various flange designs
  - ASME B16.5 Class 600, RF
  - ASME B16.5 Class 300, RF
  - EN 1092-1 PN100
  - EN 1092-1 PN40

#### Impeller type

- Closed radial impeller
- Impellers with replaceable impeller wear rings on the suction side

- Chemical industry
- Petrochemical industry
- Onshore and offshore processes

### Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m <sup>3</sup> /h]	≤ 730	≤ 875
	Q [Usgpm]	≤ 3215	≤ 3855
Head	H [m]	≤ 450	≤ 650
	H [ft]	≤ 1475	≤ 2130
Operating temperature	T [°C]	-80 to +450	
	T [°F]	-112 to +842	
Operating pressure	p [bar]	≤ 100	
	p [psi]	≤ 1450	

### Designation

Example: RPHb S6 150-350/2

Designation key

Code	Description
RPHb	Type series
S6	Material variant to API 610
150	Nominal discharge nozzle diameter [mm]
350	Nominal impeller diameter [mm]
2	Two stages

- Impellers in back-to-back arrangement
- Diffuser design

### Shaft seal

- Cartridge seal to API 682 (KSB or other make)
- **Optional:** coolable / heatable shaft seal housing

### Bearing assembly

- Bearings:
  - Drive end: cylindrical roller bearing
  - Non-drive end: paired angular contact ball bearings
- Lubrication
  - Oil ring lubrication
  - Optional: oil mist lubrication
- Bearing bracket cooling
  - Air cooling by integrated cooling fins
  - Optional:
    - Additional fan cooling
    - Water cooling
- Bearing bracket sealing
  - Labyrinth seals (KSB or other make)

Design options per type of lubrication

Type of lubrication	Design options
Oil ring lubrication	With cooling fins only (standard)
	With additional fan cooling
	Water cooling
	Water cooling with additional fan cooling
Oil mist lubrication	With cooling fins only (standard)
	With additional fan cooling

### Bearing bracket designation

Example: BD120

Bearing bracket designation

Designation	Description
BD	Bearing diameter
120	Outer bearing diameter in mm

Standard bearing assembly

Size	Bearing bracket	Rolling element bearings	
		Non-drive end	Drive end
80-330/2	BD120	NU311E	2 x 7311B-MUA
80-351/2			
80-360/2			
100-290/2			
100-350/2			
150-290/2			
150-350/2	BD130	NU312E	2 x 7312B-MUA
200-290/2			

### Bearing life

Minimum calculated bearing life:

- 25,000 h to API 610, 11th edition

## Materials

Overview of available materials (Europe)

Part No.	Description	Variant							
		S5	S6	S8	C6	A8	D1	D2	
102	Volute casing	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A	
161	Casing cover	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A	
171/173	Diffuser/diffuser plate	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF3M	A743 Gr CA6NM	A743 Gr CF3M	A890 Gr 1B	A890 Gr 5A	
210	Shaft	1.4021		1.4462	1.4021	1.4462	1.4462	1.4501	
230	Impeller	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF3M	A743 Gr CA6NM	A743 Gr CF3M	A890 Gr 1B	A890 Gr 5A	
330	Bearing bracket	A216 Gr WCB							
411.x	Spiral wound gasket	CRNI/graphite					Duplex/graphite	Super duplex/graphite	
441	Shaft seal housing <sup>1)</sup>	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A	
502	Casing wear ring	VG434		1.4404 +Stellite	VG434	1.4404 +Stellite	1.4462 +Stellite	1.4501 +Stellite	
503	Impeller wear ring	1.4027+QT		1.4404 +Stellite	1.4027+QT	1.4404 +Stellite	1.4462 +Stellite	1.4501 +Stellite	
542	Throttling bush	VG434		1.4404 +Stellite	VG434	1.4404 +Stellite	1.4462 +Stellite	1.4501 +Stellite	
525.01	Spacer sleeve (stage)	1.4122 HV500+80		1.4404 +Stellite	1.4122 HV500+80	1.4404 +Stellite	1.4462 +Stellite	1.4501 +Stellite	
902	Stud	1.7225			1.6772				
-	Fasteners in contact with fluid handled				1.4571			1.4462	1.4501

Overview of available materials (Asia)

Part No.	Description	Variant						
		S5	S6	S8	C6	A8	D1	D2
102	Volute casing	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A
161	Casing cover	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A
171/173	Diffuser/diffuser plate	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF3M	A743 Gr CA6NM	A743 Gr CF3M	A890 Gr 1B	A890 Gr 5A
210	Shaft	A276 Type 410 Condition H		1.4462 / UNS - S31803	A276 Type 410 Condition H	1.4462 / UNS - S31803	1.4462 / UNS - S31803	UNS - S32760
				A276 Type 316		A276 Gr Type 316		
230	Impeller	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF3M	A743 Gr CA6NM	A743 Gr CF3M	A890 Gr 1B	A890 Gr 5A
330	Bearing bracket	A216 Gr WCB						
411.x	Spiral wound gasket	CRNI/graphite					Duplex/graphite	Super duplex/graphite
441	Shaft seal housing	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF3M	A995 Gr 1B	A995 Gr 5A
502	Casing wear ring	Chrome hard 400		CF3M +Colmonoy	Chrome hard 400	CF3M +Colmonoy	A890 Gr 1B +Stellite	A890 Gr 5A +Stellite

1) For sizes 80-360/2, 80-351/2, 80-330/2 only

Part No.	Description	Variant						
		S5	S6	S8	C6	A8	D1	D2
503	Impeller wear ring	1.4024.19		CF3M	1.4024.19	CF3M	A890 Gr 1B	A890 Gr 5A
542	Throttling bush	A276 Type 410 Hard		A276 Type 316L +Colmonoy	A276 Type 410 Hard	A276 Type 316L +Colmonoy	1.4462 +Stellite	1.4501 +Stellite
525.01	Spacer sleeve (stage)	A276 Type 410A		A276 Type 316L	A276 Type 410A	A276 Type 316L	1.4462	1.4501
902	Stud	A193 B7			A540 B24			
-	Fasteners in contact with fluid handled	A193 B8M				A276-S31803		A276-S32760

Overview of materials available (South America)

Part No.	Description	Variant						
		S5	S6	S8	C6	A8	D1	D2
102	Volute casing	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF8M	A995 Gr 1B	A995 Gr 5A
161	Casing cover	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF8M	A995 Gr 1B	A995 Gr 5A
171/173	Diffuser/diffuser plate	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF8M	A743 Gr CA6NM	A743 Gr CF8M	A890 Gr 1B	A890 Gr 5A
210	Shaft	A434 Type 4140		1.4462 / UNS - S31803	A276 Type 420	1.4462 / UNS - S31803	1.4462 / UNS - S31803	UNS - S32760
				A276 Type 316		A276 Type 316		
230	Impeller	A216 Gr WCB	A743 Gr CA6NM	A743 Gr CF8M	A743 Gr CA6NM	A743 Gr CF8M	A890 Gr 1B	A890 Gr 5A
330	Bearing bracket	A216 Gr WCB						
411.x	Spiral wound gasket	CRNI/graphite					Duplex/graphite	Super duplex/ graphite
441	Shaft seal housing	A216 Gr WCB			A487 Gr CA6NM	A351 Gr CF8M	A995 Gr 1B	A995 Gr 5A
502	Casing wear ring	AISI 420 hardened		AISI 316L +Colmonoy	AISI 420 hardened	AISI 316L +Colmonoy	1.4462	1.4501
503	Impeller wear ring	AISI 420 hardened		AISI 316L +Colmonoy	AISI 420 hardened	AISI 316L +Colmonoy	1.4462	1.4501
542	Throttling bush	AISI 420 hardened		AISI 316L +Colmonoy	AISI 420 hardened	AISI 316L +Colmonoy	1.4462	1.4501
525.01	Spacer sleeve (stage)	AISI 420 hardened		AISI 316L +Colmonoy	AISI 420 hardened	AISI 316L +Colmonoy	1.4462	1.4501
902	Stud	A193 B7			A540 B24			
-	Fasteners in contact with fluid handled	A193 B8M				A276-S31803		A276-S32760

### Coating and preservation

- Coating and preservation to KSB standard

### Product benefits

- The process pump in heavy-duty design meets the toughest of requirements to API 610 for high temperatures and pressures.
- Low operating costs due to reduced energy consumption, optimised spare parts concept and hard-wearing, service-friendly design
- With a comprehensive selection chart and a broad range of materials, mechanical seals, flange designs, bearing lubrication and bearing cooling options the pump can be ideally matched to the fluid handled and the operating conditions.
- The diffuser design and back-to-back arrangement of the impellers enable a reduction of radial and axial forces and extend the bearing life.
- Shaft deflection is reduced by the reinforced optimised shaft design, which increases the service life of mechanical seals and bearings, reduces wear and lowers the vibration level.
- The seal chamber to API 610 accommodates all mechanical seals to API.

- The coolable/heatable seal housing enables reliable operation of the mechanical seal also for critical applications or fluids.
- Bearing brackets made of cast steel with integrated cooling fins enable higher fluid temperatures and reduce bearing temperatures.
- If the (optional) fan impeller is used, no cooling water supply is required for high temperatures.
- "Top-top" flange arrangement makes monitoring and servicing easy.
- The modular design system reduces spare parts stock.

### Acceptance tests and warranty

- Materials testing
  - Material test report 2.2 on request
  - Material test report 3.1 on request
- Hydraulic test
  - Performance test to ISO 9906
  - Performance test to API (API 610)
  - NPSH test
- Final acceptance
  - Inspection certificate 3.1 to EN 10204 on request

Other tests (e.g. vibrations, bearing temperature) on request.

### Pressure and temperature limits (ASME Class 600)

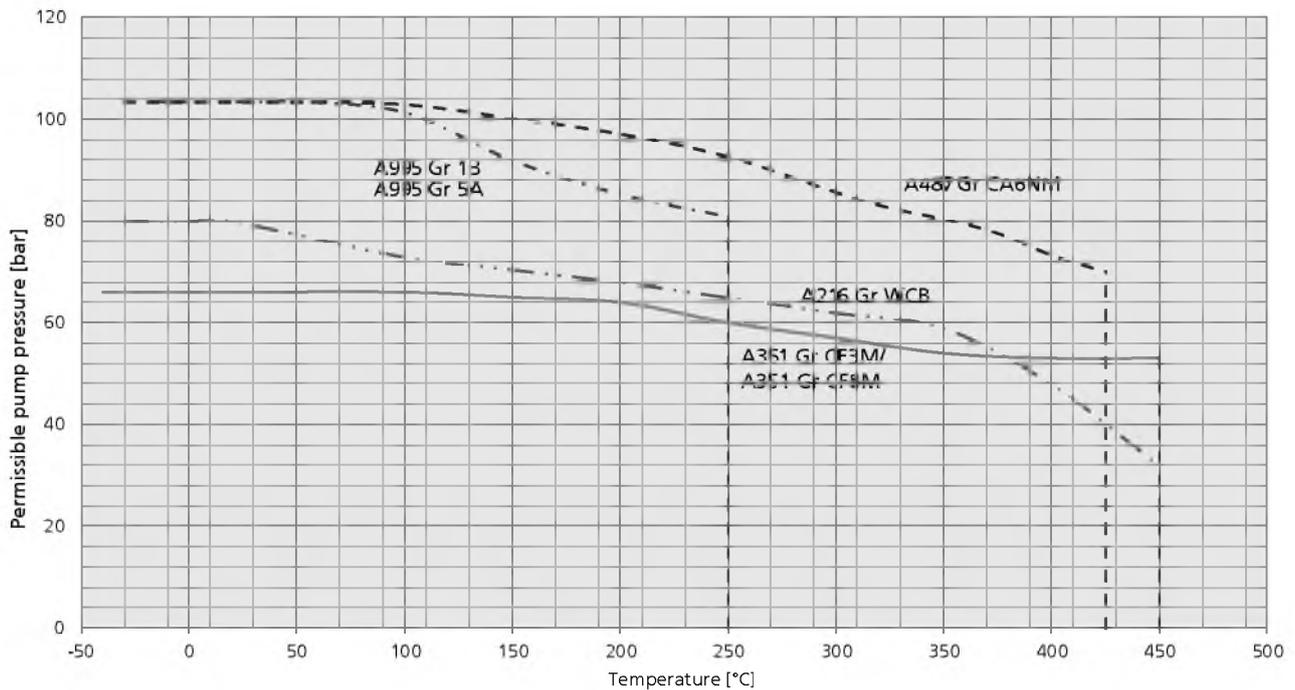


Fig. 1: Pressure limits and temperature limits of the pump

The values indicated are average values based on ASME Class 600 pumps. The actual values may differ, depending on the flange design.

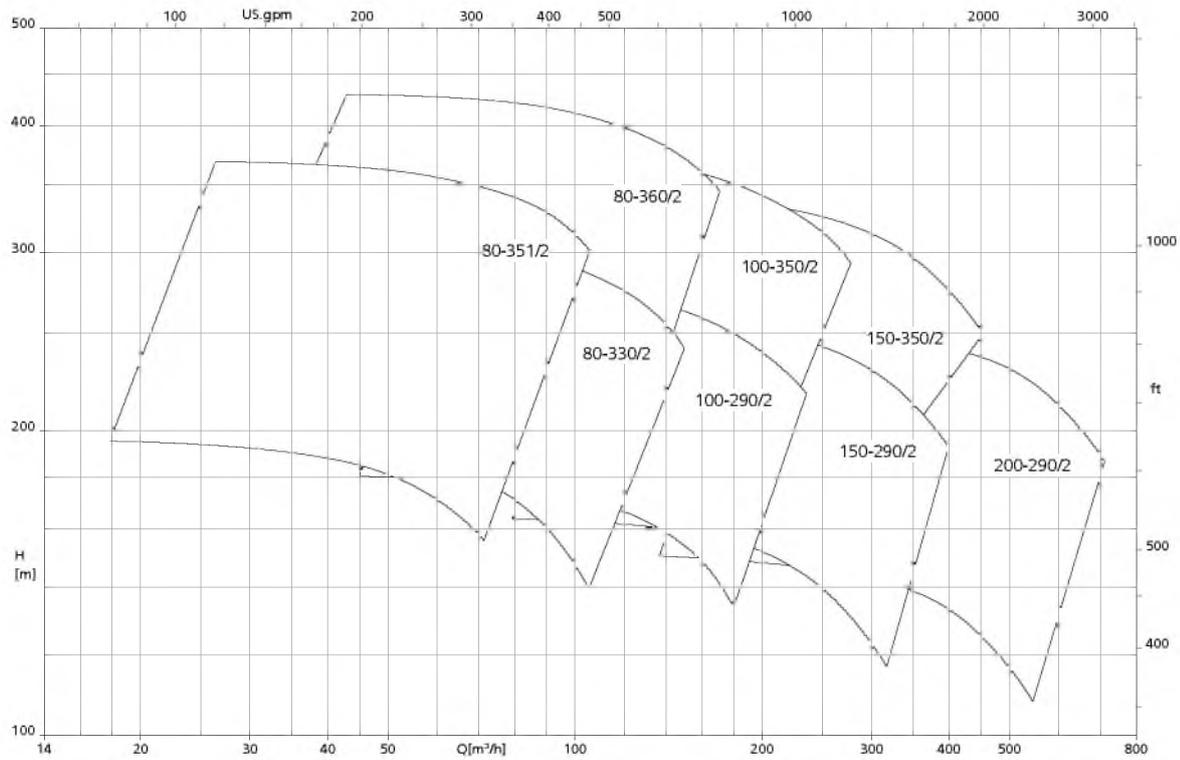
### Technical data

Technical data

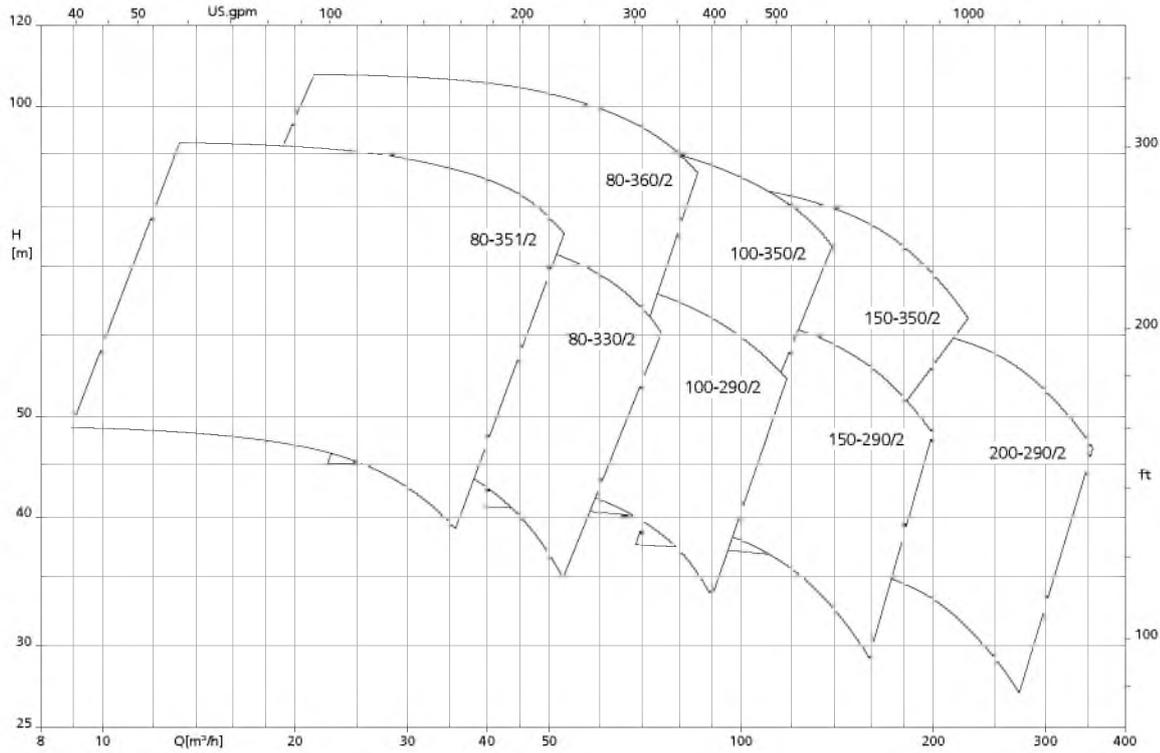
Size	Impeller				Shaft diameter					Pump weight [kg]
	Impeller outlet width	Impeller inlet diameter	Impeller diameter		In seal chamber	At bearings		At coupling		
			Max.	Min.		Pump end	Drive end			
			[mm]	[mm]		[mm]	[mm]			
80-330/2	12	130	326	260	70	55	55	48	750	
80-351/2	10	121	352	270	70	55	55	48	780	
80-360/2	12	130	380	300	70	55	55	48	850	
100-290/2	14	160	312	256	70	55	55	48	890	
100-350/2	14	160	352	290	70	55	55	48	960	
150-290/2	21	174	306	250	70	55	55	48	990	
150-350/2	21	174	346	290	70	55	55	48	1100	
200-290/2	35	206	306	245	80	60	60	55	1090	

### Selection charts

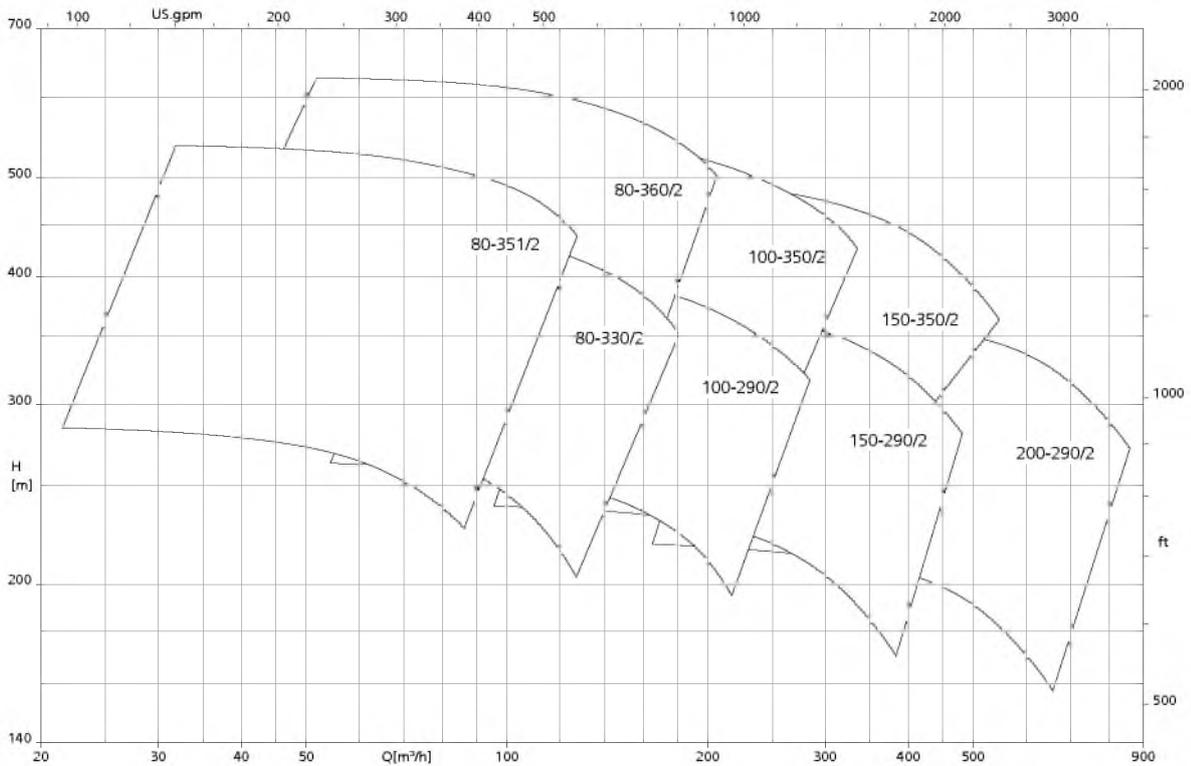
RPHb, n = 2900 rpm



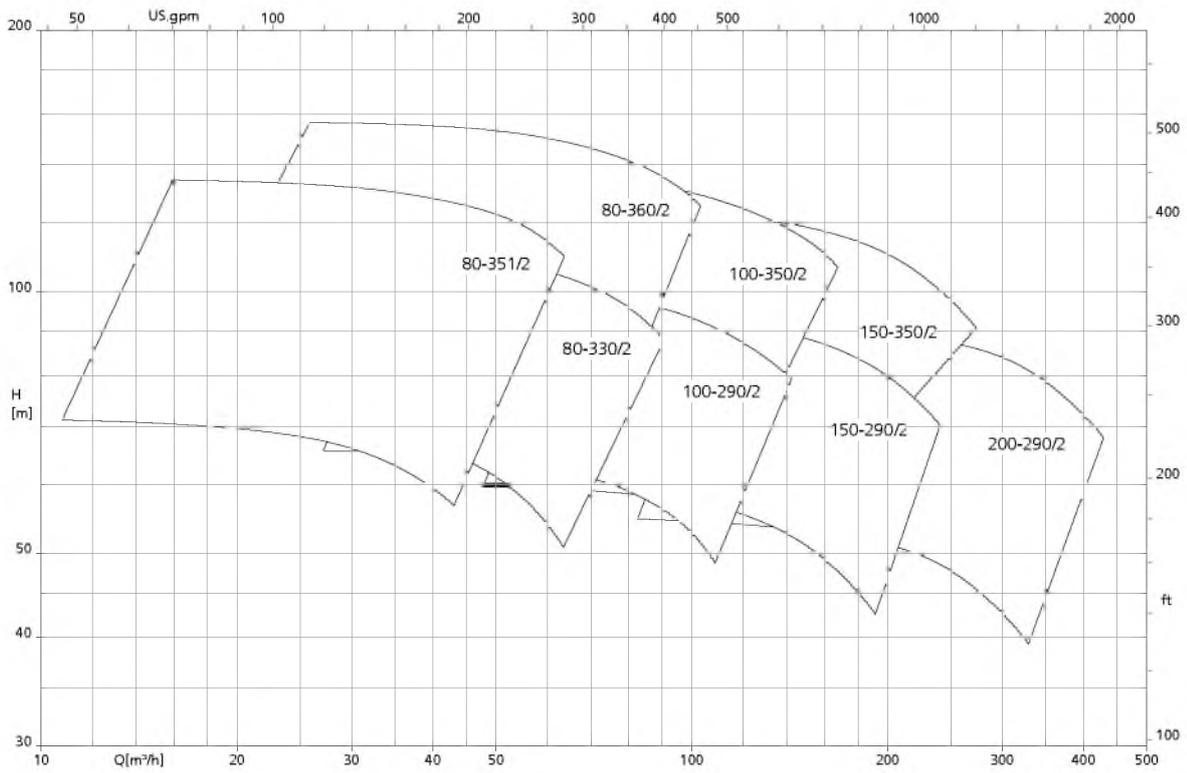
RPHb, n = 1450 rpm



RPHb, n = 3500 rpm



RPHb, n = 1750 rpm



## Dimensions and connections

### Dimensions

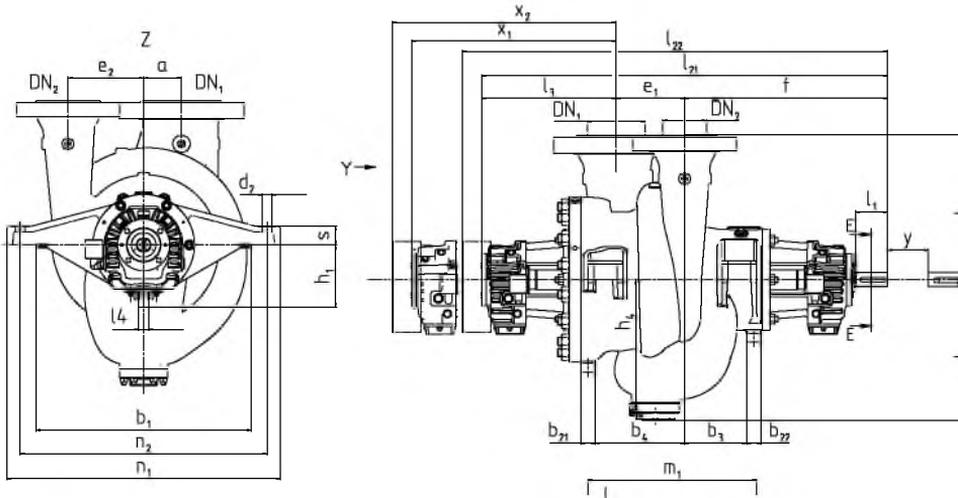


Fig. 2: Pump dimensions

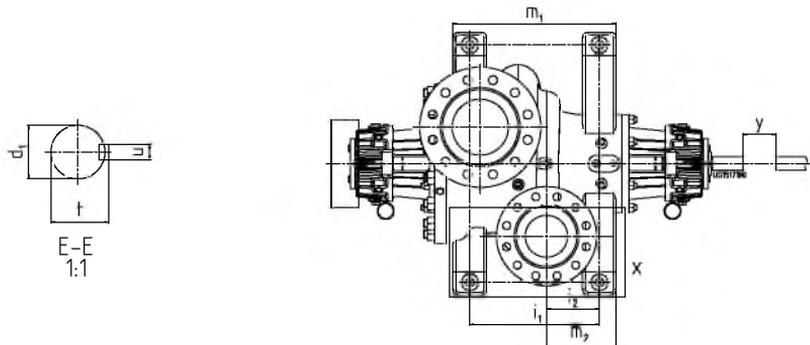
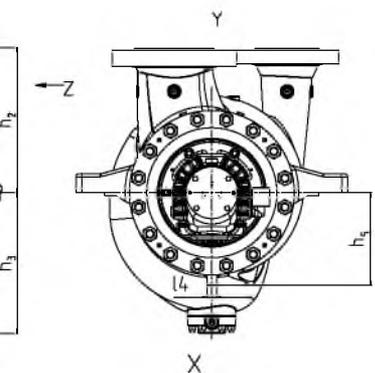
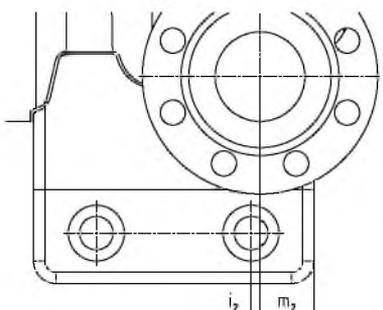


Fig. 3: Dimensions of shaft end and foot bolts



80-360/2  
80-351/2  
80-330/2



Pump dimensions

Size	Bearing bracket	DN1	DN2	a	b <sub>1</sub>	b <sub>21</sub>	b <sub>22</sub>	b <sub>3</sub>	b <sub>4</sub>	e <sub>1</sub>	e <sub>2</sub>	f	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	l <sub>21</sub>	l <sub>22</sub>	l <sub>3</sub>	l <sub>4</sub>	m <sub>1</sub>	m <sub>2</sub>	n <sub>1</sub>	x <sub>1</sub>	x <sub>2</sub>
80-330/2	BD120	100	80	200	650	30	30	149	222	157	200	648	210	400	428	390	301	1256	1324	451	35	220	27	800	1296	1364
80-351/2	BD120	100	80	200	650	30	30	152	225	154	200	651	210	400	423	385	310	1256	1324	451	35	220	33	800	1296	1364
80-360/2	BD120	100	80	120	720	40	40	114	217	160	260	651	340	421	428	390	350	1256	1324	445	35	250	48	890	1296	1364
100-290/2	BD120	150	100	250	650	30	30	192	290	224	205	653	210	400	488	450	315	1320	1388	443	35	510	205	850	1360	1428
100-350/2	BD120	150	100	250	650	30	30	192	309	224	205	653	210	400	468	430	330	1320	1388	443	35	510	213	850	1360	1428
150-290/2	BD120	200	150	250	740	50	51	205	315	245	230	690	215	450	476	438	295	1395	1463	460	35	580	240	940	1435	1503
150-350/2	BD120	200	150	130	740	50	51	213	307	235	260	698	215	500	487	449	320	1395	1463	462	35	580	248	940	1435	1503
200-290/2	BD130	250	200	285	730	40	40	239,5	355	285	245	718	235	550	491	453	290	1463	1531	460	35	625	277,5	930	1503	1571

Dimensions of shaft end and foot bolts

Size	Foot bolts					Shaft end				
	d <sub>2</sub>	i <sub>1</sub>	i <sub>2</sub>	n <sub>2</sub>	s	d <sub>1</sub>	l <sub>1</sub>	t	u	y
80-330/2	30	120	20	700	65	48	110	51,5	14	250
80-351/2	30	120	17	700	65	48	110	51,5	14	250
80-360/2	30	150	2	800	65	48	110	51,5	14	250
100-290/2	30	390	145	760	65	48	110	51,5	14	250
100-350/2	30	390	153	770	65	48	110	51,5	14	250
150-290/2	33	460	180	850	65	48	110	51,5	14	250
150-350/2	33	460	188	850	65	48	110	51,5	14	250
200-290/2	33	505	217,5	840	75	55	110	58,5	14	250

Connections

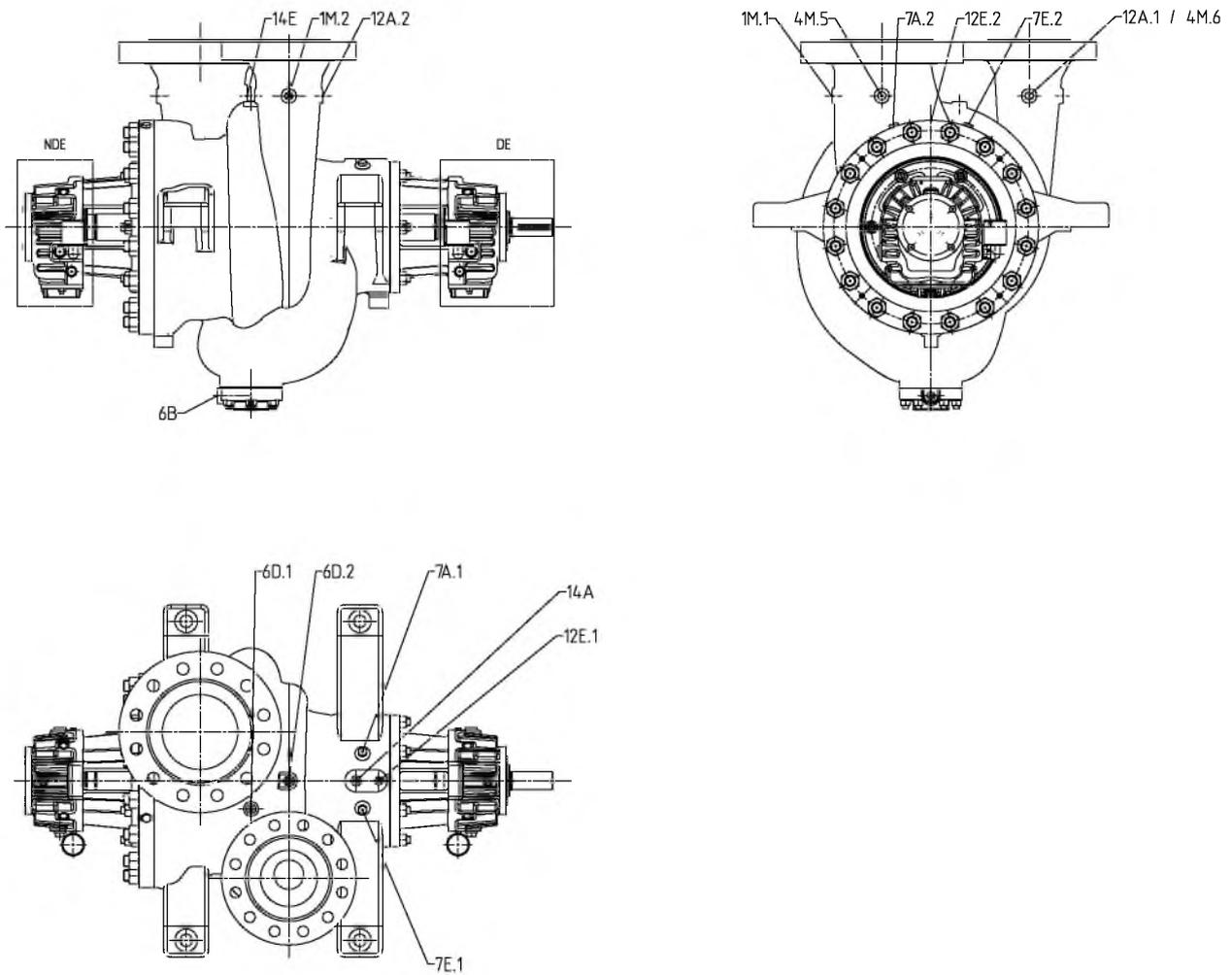


Fig. 4: Connections at the pump casing

Connections at the pump casing

Connection	Flange, welded	Thread (optional)	Designation
1M.1/ 1M.2	NPS 1/2 "	NPT 1/2 "	Pressure gauge (optional)
6D.1/ 6D.2	NPS 3/4 "	NPT 1/2 "	Vent (optional)
6B	NPS 3/4 "	NPT 3/4 "	Drain
7E.1/ 7E.2	-	NPT 1/2 "	Seal chamber cooling liquid IN (optional)
7A.1/ 7A.2	-	NPT 1/2 "	Seal chamber cooling liquid OUT (optional)
12E.1/ 12E.2	NPS 1/2 "	NPT 1/2 "	Circulation liquid IN (optional)
12A.1/ 12A.2	NPS 1/2 "	NPT 1/2 "	Circulation liquid OUT (optional)
14A	NPS 3/4 "	NPT 1/2 "	Balancing liquid OUT (optional)
14E	NPS 3/4 "	NPT 1/2 "	Balancing liquid IN (optional)
4M.5/ 4M.6	NPS 1/2 "	NPT 1/2 "	Temperature measurement (optional)

Bearing bracket connections - version with oil ring lubrication

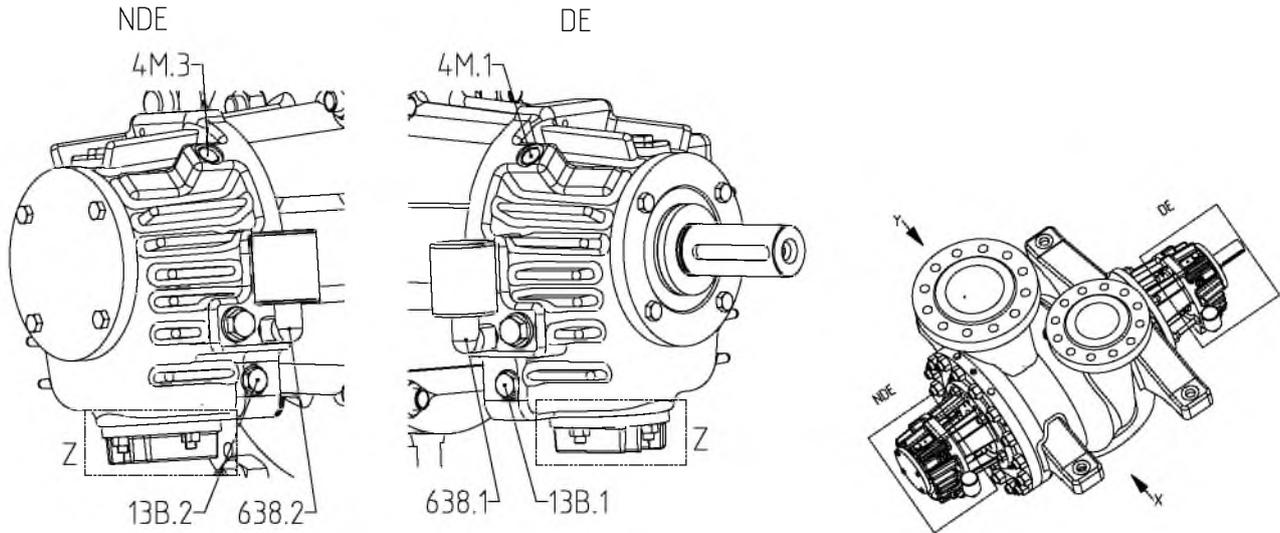


Fig. 5: Bearing bracket connections - version with oil ring lubrication, view X

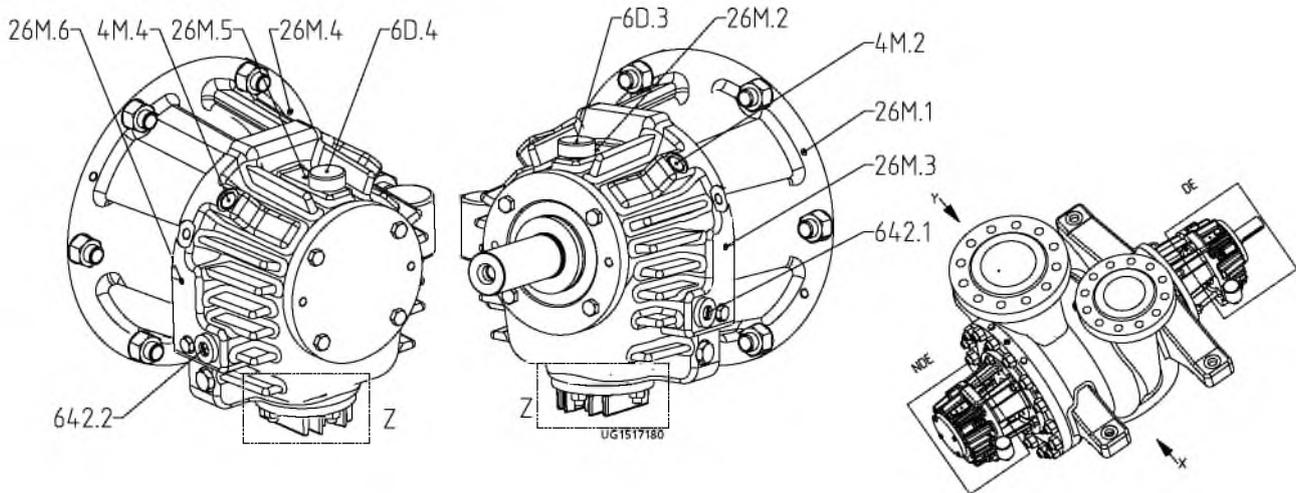
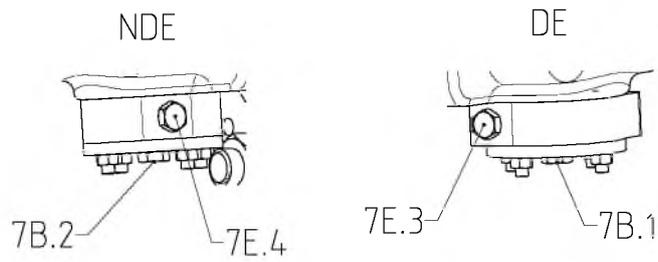


Fig. 6: Bearing bracket connections - version with oil ring lubrication, view Y

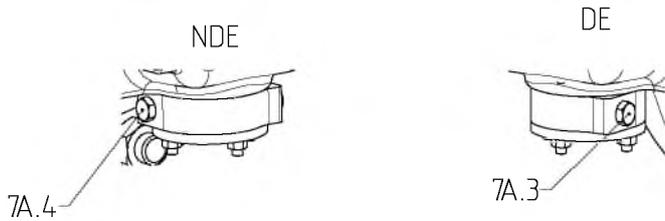
Bearing bracket connections - version with oil ring lubrication

Connection	Thread	Designation
6D.3/ 6D.4	NPT 1/2 "	Vent
4M.1/ 4M.2/ 4M.3/ 4M.4	NPT 1/2 " / G 1/2 "	Bearing temperature (optional)
13B.1/ 13B.2	NPT 1/2 "	Bearing bracket drain
26M.1/ 26M.2/ 26M.3/ 26M.4/ 26M.5/ 26M.6	M8	Vibration measurement (optional)
638.1/ 638.2	NPT 1/4 "	Constant level oiler
642.1/ 642.2	G 3/4 "	Oil sight glass

**Bearing bracket connections - version with water cooling of oil ring lubrication**



**Fig. 7:** Bearing bracket connections - version with water cooling of oil ring lubrication, view X

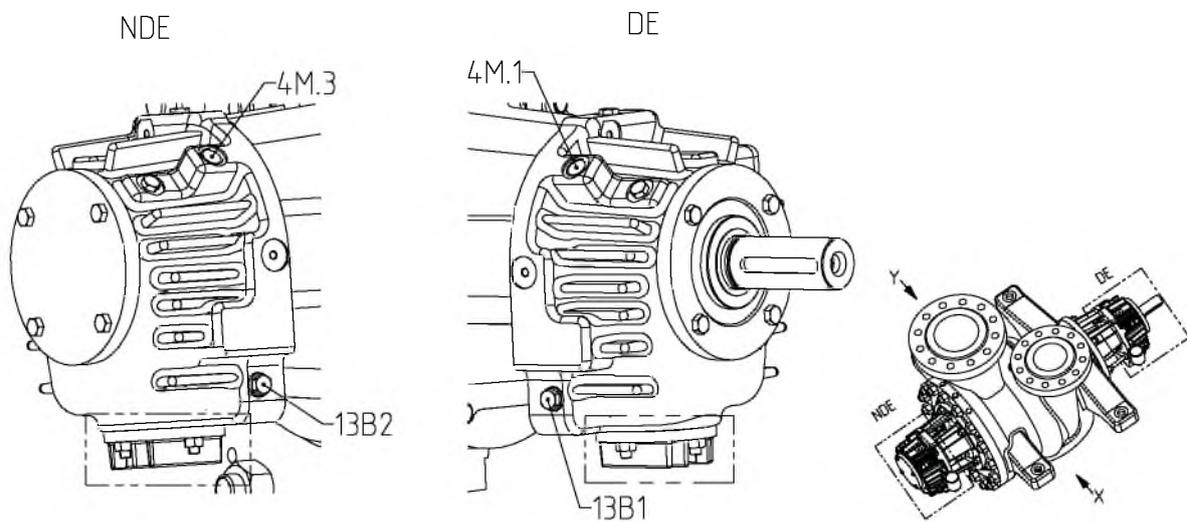


**Fig. 8:** Bearing bracket connections - version with water cooling of oil ring lubrication, view Y

Bearing bracket connections - version with water cooling of oil ring lubrication (optional)

Connection	Thread	Designation
7B.1/ 7B.2	NPT 1/2"	Cooling cover insert drain
7E.3/ 7E.4	NPT 1/2"	Cooling liquid IN
7A.3/ 7A.4	NPT 1/2"	Cooling liquid OUT

**Bearing bracket connections - version with oil mist lubrication (optional)**



**Fig. 9:** Bearing bracket connections - version with oil mist lubrication, view X

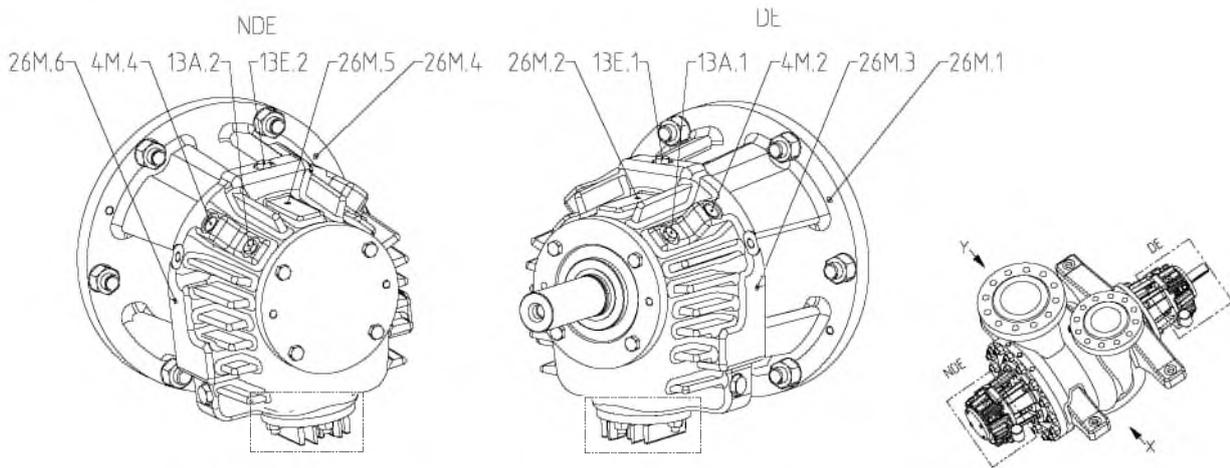


Fig. 10: Bearing bracket connections - version with oil mist lubrication, view Y

Bearing bracket connections - version with oil mist lubrication

Connection	Thread	Designation
13E.1/ 13E.2	NPT 1/4"	Oil mist IN
13A.1/ 13A.2	NPT 1/4"	Oil mist OUT
13B.1/ 13B.2	NPT 1/2"	Bearing bracket drain
26M.1/ 26M.2/ 26M.3/ 26M.4/ 26M.5/ 26M.6	M8	Vibration measurement (optional)
4M.1/ 4M.2/ 4M.3/ 4M.4	NPT 1/2" / G 1/2"	Bearing temperature (optional)

General assembly drawings

General assembly drawing of pump with integrated shaft seal housings

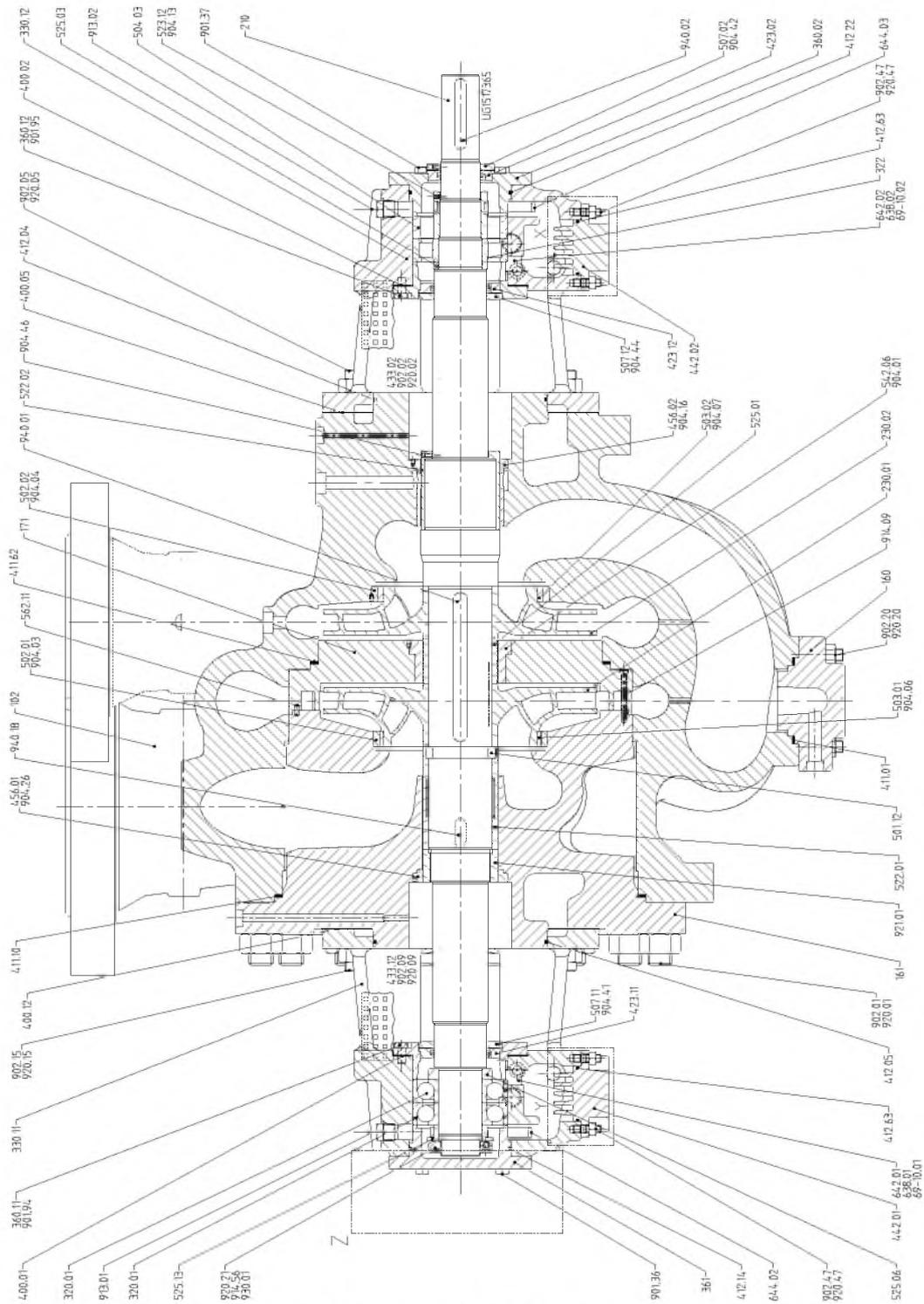
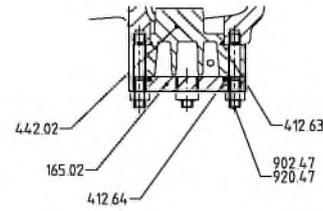
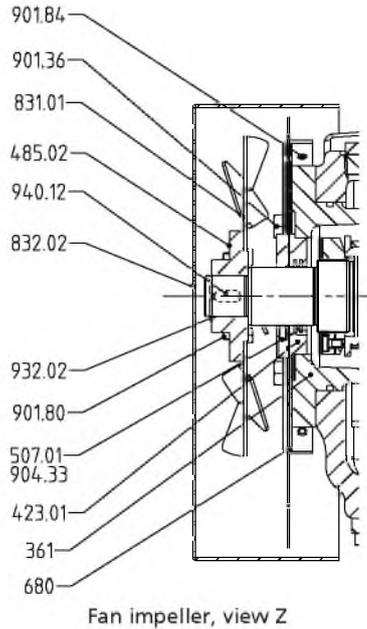
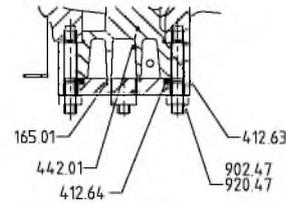


Fig. 11: General assembly drawing of pump with integrated shaft seal housings

### Detailed views



Water cooling of oil ring lubrication, view X



Water cooling of oil ring lubrication, view Y

### List of components

List of components

Part No.	Description	Part No.	Description
102	Volute casing	504.03	Spacer ring
160	Cover	507.01/.02/.12	Thrower
161	Casing cover	522.01/.02	Throttling sleeve
165.01/.02	Cooling chamber cover	523.12	Shaft sleeve
171	Diffuser	525.01/.03/.06/.13	Spacer sleeve
173.01 <sup>2)</sup> /.02 <sup>2)</sup>	Diffuser plate	542.06	Throttling bush
210	Shaft	550.74	Disc
230.01/.02	Impeller	562.01/.02/.11	Parallel pin
320.01	Rolling element bearing	638.01	Constant level oiler
322	Radial roller bearing	642.01	Oil level sight glass
330.11/.12	Bearing bracket	644.02/.03	Lubricating ring
360.02/.11/.12	Bearing cover	680/.11	Guard
361	Non-drive end bearing cover	69-10.01	Protective housing
400.01/.02/.05/.12	Gasket	831.01	Fan impeller
411.01/.10/.57 <sup>3)</sup> /.58 <sup>3)</sup> /.62/.63 <sup>2)</sup>	Joint ring	832.02	Fan hood
412.04/.05/.14/.22/.63/.64	O-ring	901.14/.36/.37/.80/.84/.94/.95	Hexagon head bolt
423.01/.02/.11/.12	Labyrinth ring	902.01/.02/.05/.09/.15/.20/.22 <sup>2)</sup> /.47	Stud
433.02/.12	Mechanical seal	904.01/.03/.04/.06/.07/.13/.16/.26/.33/.41/.42/.43/.44/.46	Grub screw
441.01 <sup>3)</sup> /.02 <sup>3)</sup>	Shaft seal housing	913.01	Vent plug
442.01/.02	Cooling insert	914.09/.10 <sup>2)</sup> /.56	Hexagon socket head cap screw
456.01/.02	Neck bush	920.01/.02/.05/.09/.15/.22 <sup>2)</sup> /.47	Nut
485.02	Torque-transmitting element	921.01	Shaft nut
501.12	Segmental ring	930.01	Safety device
502.01/.02	Casing wear ring	932.02	Circlip
503.01/.02	Impeller wear ring	940.01/.02/.12/.18	Key

2) For sizes 80-360/2, 80-351/2, 80-330/2, 100-290/2, 100-350/2 only.

3) For sizes 80-360/2, 80-351/2, 80-330/2 only.

Axially Split Volute Casing Pump

**RDLO / RDLO V**

**Type Series Booklet**



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## Water Supply

### Axially Split Volute Casing Pump

## RDLO / RDLO V



#### Main applications

- Waterworks
- Desalination plants
- Pressure boosting
- Water transport
- Service water and cooling water for power stations and industry
- Irrigation pump stations and drainage pump stations
- Fire-fighting systems
- Shipbuilding
- District heating systems and district cooling systems

#### Fluids handled

RDLO / RDLO V pumps are designed for pumping water and other fluids with a low solids content. The pumps are very versatile and can be used for the following fluids, for example:

- Brackish water
- River water, lake and groundwater
- Stormwater
- Service water
- Fire-fighting water
- Cooling water
- Condensate
- Heating water
- Drinking water

#### Operating data

##### Operating properties

Characteristic	Value	
Sizes	DN [mm]	350-700
	DN ["]	14-28
Flow rate <sup>1)</sup>	Q [m <sup>3</sup> /h]	≤ 10000
	Q [US.gpm]	≤ 44030
Head <sup>1)2)</sup>	H [m]	≤ 290
	H [ft]	≤ 951
Operating pressure <sup>2)</sup>	p [bar]	≤ 30
	p [psi]	≤ 435
Fluid temperature <sup>3)</sup>	T [°C]	0 to 140
	T [°F]	32 to 284

#### Designation

##### Example: RDLO V 350-690 A GB P M

##### Designation key

Code	Description
RDLO	Type series
V	Design
	4) Horizontal installation
	V Vertical installation
350	Nominal discharge nozzle diameter [mm]
690	Nominal impeller diameter [mm]
A	Impeller type
	A, B
GB	Material variant (⇒ Page 6)
	GB Grey cast iron / bronze
	GC Grey cast iron / chrome steel
	SB Nodular cast iron / bronze
	SC Nodular cast iron / chrome steel
	DD <sub>35</sub> Duplex stainless steel / duplex stainless steel
P	Shaft seal
	P Gland packing
	G Mechanical seal
M	Bearing lubrication
	F Grease
	M Fluid handled
	O Oil lubrication

1) Larger flow rates and higher heads are available on request.

2) Depending on the material and size

3) Standard design up to 80 °C [176 °F] max.

4) Blank

## Design details

### Design

- Volute casing pump
- Horizontal/vertical installation
- Single-stage
- Nominal discharge nozzle diameters: 350 mm – 700 mm [14" – 28"]

### Pump casing

- Axially split volute casing
- Volute casing with integrally cast pump feet
- Replaceable casing wear rings
- Mating dimensions to EN or ASME

### Impeller type

- Double-entry radial impeller<sup>5)</sup>

### Pump shaft

Variants with rolling element bearing:

- Completely dry shaft
- Shaft protecting sleeves in the seal area

### Shaft seal

- Gland packing
- Balanced mechanical seal

### Bearings

For horizontal installation:

- Grease-packed rolling element bearings
- Oil-lubricated rolling element bearings

For vertical installation:

- Grease-packed rolling element bearings
- Bottom: product-lubricated rubber plain bearing / Top: grease-packed rolling element bearing

---

5) Optionally with impeller wear rings

## Materials

Overview of material variants

Part No.	Description	Material variant				
		GB	GC	SB	SC	DD <sub>35</sub> <sup>6)</sup>
<b>All pump sets</b>						
102	Volute casing	Grey cast iron	Grey cast iron	Nodular cast iron	Nodular cast iron	Duplex stainless steel
211	Pump shaft	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
234	Impeller	Bronze	Stainless steel	Bronze	Stainless steel	Duplex stainless steel
350.01	Bearing housing	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron
360.01	Bearing cover	Steel	Steel	Steel	Steel	Steel
441	Shaft seal housing	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Duplex stainless steel
502	Casing wear ring	Bronze	Stainless steel	Bronze	Stainless steel	Duplex stainless steel
503	Impeller wear ring (optional)	Bronze	Stainless steel	Bronze	Stainless steel	Duplex stainless steel
525.01	Spacer sleeve	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel
<b>For pump sets with ball bearings on both sides only</b>						
350.02	Bearing housing	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron
360.02	Bearing cover	Unalloyed steel <sup>7)</sup>	Unalloyed steel <sup>7)</sup>	Unalloyed steel <sup>7)</sup>	Unalloyed steel <sup>7)</sup>	Unalloyed steel <sup>7)</sup>
525.03	Spacer sleeve	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel
<b>For pump sets with product-lubricated plain bearing only</b>						
524.03	Shaft protecting sleeve	Stainless steel	Stainless steel	Stainless steel	Stainless steel	-
525.02	Spacer sleeve	Bronze	Bronze	Bronze	Bronze	-
525.04	Spacer sleeve	Bronze	Bronze	Bronze	Bronze	-
545	Bearing bush	Bronze/rubber	Bronze/rubber	Bronze/rubber	Bronze/rubber	-
550.03	Disc	Stainless steel	Stainless steel	Stainless steel	Stainless steel	-
<b>For pump sets with gland packing only</b>						
452	Gland follower	Nodular cast iron	Nodular cast iron	Nodular cast iron	Nodular cast iron	-
457.01	Neck ring (p < 7 bar [99.5 psi])	Bronze	Bronze	Bronze	Bronze	-
457.03	Neck ring (p ≥ 7 bar [99.5 psi])	Bronze	Bronze	Bronze	Bronze	-
458	Lantern ring	Bronze	Bronze	Bronze	Bronze	-
461	Packing ring	Ramie fibre PTFE-impregnated	Ramie fibre PTFE-impregnated	Ramie fibre PTFE-impregnated	Ramie fibre PTFE-impregnated	-
524.01	Shaft protecting sleeve	Stainless steel	Stainless steel	Stainless steel	Stainless steel	-
<b>For pump sets with mechanical seal only</b>						
433	Balanced mechanical seal	Carbon/silicon carbide	Carbon/silicon carbide	Carbon/silicon carbide	Carbon/silicon carbide	Carbon/silicon carbide
457.02	Neck ring	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel
471	Seal cover	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
524.02	Shaft protecting sleeve	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel

6) PREN ≤ 35 only applies to the main cast components (volute casing, impeller, shaft seal housing). Duplex stainless steels with special PREN values available on request.

7) For RDLO V only

**Coating and preservation**

Coating for indoor installation

Coating type	Material variant					Casing			Base frame
	GB	GC	SB	SC	DD <sub>35</sub>	Exterior	Interior	Bearing housing	
A1 <sup>8)</sup>	X	X	X	X	–	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	Epoxy resin base primer, colour at our discretion	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>
A1-E <sup>8)10)</sup>	X	X	X	X	–	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	Epoxy resin base paint, colour RAL 5015 (sky blue) <sup>11)</sup>	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>
B1-E <sup>8)</sup>	–	–	–	–	X	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	None; sand-blasted SA 2 ½	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) <sup>9)</sup>

Coating for outdoor installation

Coating type	Material variant					Casing			Base frame
	GB	GC	SB	SC	DD <sub>35</sub>	Exterior	Interior	Bearing housing	
A2	X	X	X	X	–	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	Epoxy resin base primer, colour at our discretion	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>
A2-E <sup>8)10)</sup>	X	X	X	X	–	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	Epoxy resin base paint, colour RAL 5015 (sky blue) <sup>11)</sup>	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>
B2-E <sup>8)</sup>	–	–	–	–	X	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	None; sand-blasted SA 2 ½	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>	Polyurethane base paint, colour RAL 5002 (ultramarine blue) <sup>12)</sup>

8) Only permissible for fluid temperatures ≤ 80 °C [176 °F]

9) For indoor use in industry and in a marine atmosphere; other colours only in coating variants A2, B2 and on request.

10) Extra charge

11) Approved for drinking water (KTW, DVGW, ACS). The impeller and rotor components are not coated. No other colours available. Max. permissible temperature for drinking water approved coating 60 °C [140 °F]. Only approved for drinking water up to 25 °C [77 °F] max.

12) For indoor use and outdoor use in industry and in a marine atmosphere; other colours are available on request.

### Product benefits

- Low maintenance costs:
  - Fast and easy to install thanks to self-centring components (upper casing part, rotor, casing cover)
  - Materials resistant to corrosion and abrasion
  - Smooth operation with low vibration levels
  - Replacement and spare parts fit several pump sizes
- Long service life:
  - Sealed and dry shaft
  - Short bearing distances and a short shaft
  - Protected rolling element bearings greased for life
  - Optional impeller wear rings
  - Replaceable shaft protecting sleeve
- High operating reliability:
  - Rigid shaft without threads between the bearings
  - Generously sized bearings ( $L_{h_{10}} = 100,000$  hours)
  - Reliable sealing thanks to solid casing split flange
  - Double-entry impeller for axial thrust balancing
  - Double volute design
- High flexibility:
  - Drive can be positioned to the left or right of the pump
  - Shaft sealed by gland packing or mechanical seals
  - Various horizontal and vertical installation options
  - Flanges to DIN or ASME
- Excellent efficiencies and NPSH values:
  - Computer-optimised impellers
  - Large impeller inlet diameters for optimum suction behaviour
  - Cost-effective replacing of casing and impeller wear rings
  - Vortex-free intake elbow with low energy losses
  - Impeller trimmed to match the specified duty point
  - Several hydraulic systems per pump size

### Acceptance inspections/tests

- Functional and acceptance tests
  - For information on acceptance tests and inspections refer to the QCPs (see KSB Standard ZN56555-2A ZN56555-2B ZN56555-2C)
- Quality assurance system
  - DIN ISO 9001 / EN 29001

## Selection information

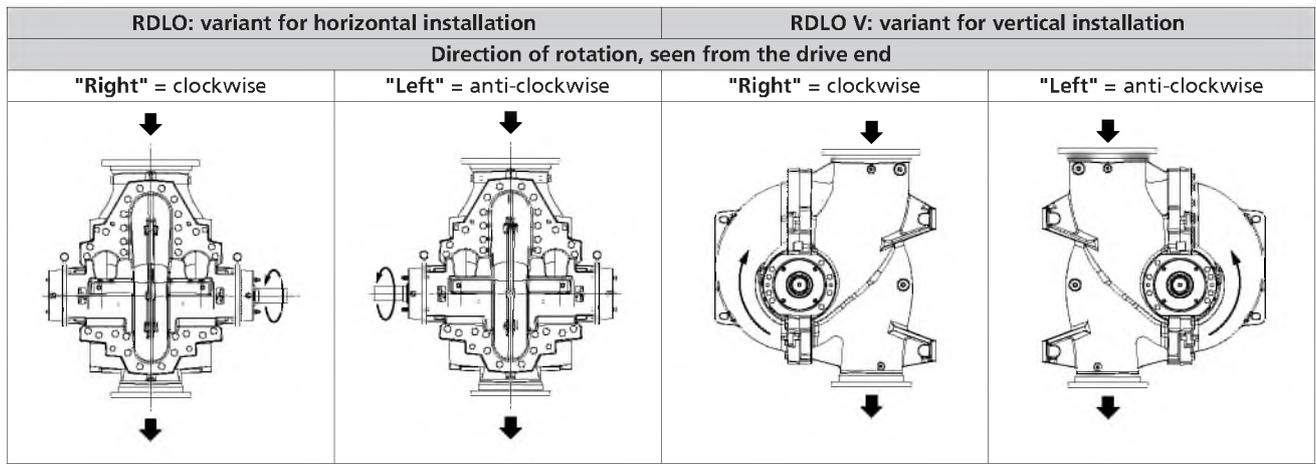
### Solids content

Solids content by shaft seal and material variant in [ppm] or [mg/l]

Shaft seal	Material variant					
	Max. permissible solids content for variants with barrier and flushing water line without cyclone separator			Max. permissible solids content for variants with barrier and flushing water line with cyclone separator <sup>13)</sup>		
	GB/GC	SB/SC	DD <sub>35</sub>	GB/GC	SB/SC	DD <sub>35</sub>
Gland packing	50	50	50	100	100	100
Balanced mechanical seal	50	50	50	100	100	100

### Directions of rotation and flow

Directions of rotation and flow



13) Higher solids contents on request

## Overview of product features

### Symbols key

Symbol	Description
●	Standard design
■	Standard variant <sup>14)</sup>
○	Special design <sup>14)</sup>
□	On request <sup>14)</sup>
-	Selection unavailable

### General overview (valid for standard design)<sup>15)</sup>

Features		Material variant					Installation type					
		GB	GC	SB	SC	DD <sub>35</sub>	RDLO			RDLO V		
							Fig. 0	2E	3E	4E	DP	DJ
Acceptance inspections/tests <sup>16)</sup>												
Hydraulic acceptance test to KSB standard DIN ISO 9906 - 2B (equivalent to ANSI HI 14.6-2011/2B)	Non-witnessed	■	■	■	■	■	■	■	■	■	■	■
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Hydraulic acceptance test to DIN ISO 9906 - 1B (equivalent to ANSI HI 14.6-2011/1B)	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Hydraulic acceptance test to DIN ISO 9906 - 1U (equivalent to ANSI HI 14.6-2011/1U and Hydraulic Institute A)	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
NPSH test (to DIN ISO 9906 or Hydraulic Institute)	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Sound measurement	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Vibration test	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Bearing temperature measurement	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Visual inspection after test run (strip test)	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Hydrostatic test	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Impeller balancing test	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Coating inspection	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Dimensional inspection	Non-witnessed	○	○	○	○	○	○	○	○	○	○	○
	Witnessed	○	○	○	○	○	○	○	○	○	○	○
Coating												
Coating for indoor installation (KSB blue / RAL 5002)		●	●	●	●	●	●	●	●	●	●	●
Coating for outdoor installation (KSB blue / RAL 5002)		○	○	○	○	○	○	○	○	○	○	○
Coating approved for drinking water <sup>17)</sup>		○	○	○	○	○	○	○	○	○	○	○
Coating for outdoor installation (special paint)		○	○	○	○	○	○	○	○	○	○	○
Special coating (coating system / coating composition to customer specifications)		□	□	□	□	□	□	□	□	□	□	□
Installation parts												
Without installation parts		●	●	●	●	●	-	-	-	-	-	-
Base frame for pump and motor, including foundation bolts		○	○	○	○	○	-	○	○	○	-	-

14) The selection of standard variants or special designs will determine whether surcharges or longer delivery times apply.

15) Maximum fluid temperature 80 °C [176 °F]

16) Further information see ZN 56555/2A, ZN 56555/2B, ZN 56555/2C.

17) Available for selection for fluid temperatures ≤ 60 °C

Features	Material variant					Installation type					
						RDLO				RDLO V	
	GB	GC	SB	SC	DD <sub>35</sub>	Fig. 0	2E	3E	4E	DP	DJ
Special base frame for pump and motor, including foundation bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-
Pump foundation (foot), including foundation blocks and drive lantern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	-	<input type="checkbox"/>	-
Special design of pump foundation (foot) including foundation blocks and motor pedestal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	-	<input type="checkbox"/>	-
Pump foundation (foot), including foundation blocks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	-	-	<input type="checkbox"/>
Pump foundation (foot), including foundation blocks and motor support frame with foundation rails and foundation bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	-	-	<input type="checkbox"/>
Direction of rotation											
"Right": clockwise	●	●	●	●	●	●	●	●	●	●	●
"Left": anti-clockwise	●	●	●	●	●	●	●	●	●	●	●
Replacement parts and spare parts											
Replacement parts and spare parts for 2 years of operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange											
Drilled to DIN EN 1092 – flat face (type A)	●	●	●	●	●	●	●	●	●	●	●
Drilled to DIN EN 1092 – raised face (type B)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drilled to ASME B16 – flat face (type FF)	●	●	●	●	●	●	●	●	●	●	●
Drilled to ASME B16 – raised face (type RF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special flange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coupling											
Without coupling and coupling guard	●	●	●	●	●	●	●	●	●	-	●
Torsionally flexible 3-piece jaw coupling (coupling guard not tread-proof)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-
Torsionally flexible 3-piece jaw coupling (coupling guard tread-proof)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-
Torsion-resistant flexible disc coupling with spacer (coupling guard not tread-proof)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Torsion-resistant flexible disc coupling with spacer (coupling guard tread-proof)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-
Cardan shaft / coupling with spacer (with/without intermediate bearing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	-	-	<input type="checkbox"/>
Bearings											
Grease-lubricated rolling element bearings at the drive end and non-drive end	●	●	●	●	●	●	●	●	●	●	●
Grease-lubricated rolling element bearing at the drive end, and product-lubricated plain bearing at the non-drive end	●	●	●	●	-	-	-	-	-	●	●
Oil-lubricated rolling element bearings at the drive end and non-drive end	●	●	●	●	●	●	●	●	●	-	-
Motor											
Without motor	●	●	●	●	●	●	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-voltage motor to KSB standard <sup>18)19)</sup>	●	●	●	●	●	-	●	●	●	<input type="checkbox"/>	●
Low-voltage motor different from KSB standard <sup>18)19)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special motor (high-voltage/NEMA/with frequency inverter/etc.) <sup>18)19)</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wear rings											
Casing with wear rings / impeller without wear rings	●	●	●	●	●	●	●	●	●	●	●
Casing with wear rings / impeller with wear rings	■	■	■	■	■	■	■	■	■	■	■
Piping											
Barrier fluid line / flushing water line made of flexible PTFE (malleable cast iron)	●	●	●	●	●	●	●	●	●	●	●
Barrier fluid line / flushing water line made of flexible PTFE (stainless steel)	■	■	■	■	-	■	■	■	■	■	■
Barrier fluid line / flushing water line made of flexible PTFE (duplex stainless steel)	-	-	-	-	■	■	■	■	■	■	■
Barrier fluid line / flushing water line, rigid pipe (stainless steel)	■	■	■	■	-	■	■	■	■	■	■
Barrier fluid line / flushing water line, rigid pipe (duplex/Monel)	-	-	-	-	■	■	■	■	■	■	■
Special piping (to customer requirements)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shaft seal											
Gland packing	●	●	●	●	-	●	●	●	●	●	●
Single mechanical seal (unbalanced)	-	-	-	-	-	-	-	-	-	-	-
Single mechanical seal (balanced)	■	■	■	■	■	■	■	■	■	■	■

18) The motor can be supplied and mounted by the customer. Motors supplied by KSB can also be mounted by the customer.  
 19) On request, customer-supplied motors can be mounted by KSB Service.

Features		Material variant					Installation type					
							RDLO				RDLO V	
		GB	GC	SB	SC	DD <sub>35</sub>	Fig. 0	2E	3E	4E	DP	DJ
Special shaft seal (make/design different from KSB specifications)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Material certificates to EN 10204												
Volute casing (102)	Certificate type 2.2	■	■	■	■	■	■	■	■	■	■	
	Certificate type 3.1	○	○	○	○	○	○	○	○	○	○	
Pump shafts (211)	Certificate type 2.2	■	■	■	■	■	■	■	■	■	■	
	Certificate type 3.1	○	○	○	○	○	○	○	○	○	○	
Impeller (234)	Certificate type 2.2	■	■	■	■	■	■	■	■	■	■	
	Certificate type 3.1	○	○	○	○	○	○	○	○	○	○	
Casing wear ring (502)	Certificate type 2.2	■	■	■	■	■	■	■	■	■	■	
	Certificate type 3.1	○	○	○	○	○	○	○	○	○	○	
Impeller wear ring (503)	Certificate type 2.2	■	■	■	■	■	■	■	■	■	■	
	Certificate type 3.1	○	○	○	○	○	○	○	○	○	○	
Accessories												
Cyclone separator		■	■	■	■	-	■	■	■	■	■	
Manually actuated vent valve (without additional piping) <sup>20)</sup>		■	■	■	■	■	■	■	■	■	■	
Automatically actuated vent valve (without additional piping) <sup>20)</sup>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Manually actuated drain valves (without additional piping) <sup>20)</sup>		■	■	■	■	■	■	■	■	■	■	
PumpMeter		■	■	■	■	■	■	■	■	■	■	
Temperature sensor Pt100 resistance thermometer <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Limit switch for Pt100 resistance thermometer <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Transmitter for Pt100 resistance thermometer <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Measuring nipple (SPM) for manual vibration measurement <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Vibration sensor including vibration monitoring device <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Pressure gauge nominal diameter 100, including valves (without attenuation) <sup>20)21)</sup>		■	■	■	■	-	■	■	■	■	■	
Pressure gauge nominal diameter 100, including valves (with attenuation) <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	
Pressure gauge nominal diameter 160, including valves (with attenuation) <sup>20)21)</sup>		■	■	■	■	■	■	■	■	■	■	

**Specifications required for enquiries/orders**
**Pump:**

- Designation of the pump
- Maximum and minimum inlet pressure
- Flow rate Q, head H<sub>total</sub>
- Flange design
- Shaft seal
- Type of fluid handled and fluid temperature
- Solids content
- Direction of rotation / motor position
- Accessories required
- Special inspections and acceptance tests
- Quantity and language of operating manuals

**Drive (selected by KSB):**

- Type of construction
- Enclosure
- Voltage, frequency, starting method
- Ambient temperature
- Thermal class
- Accessories required

**Drive (selected by customer):**

- Binding data sheet with motor dimensions and effective speed

20) If no valve or measuring equipment is selected as accessory the corresponding connection is closed with a plug.

21) The measuring equipment is supplied with the pump but not fitted. It has to be connected at the time of commissioning of the pump. This connection is closed with a plug when the pump is supplied.

Selection charts

RDLO / RDLO V, n = 1480 rpm

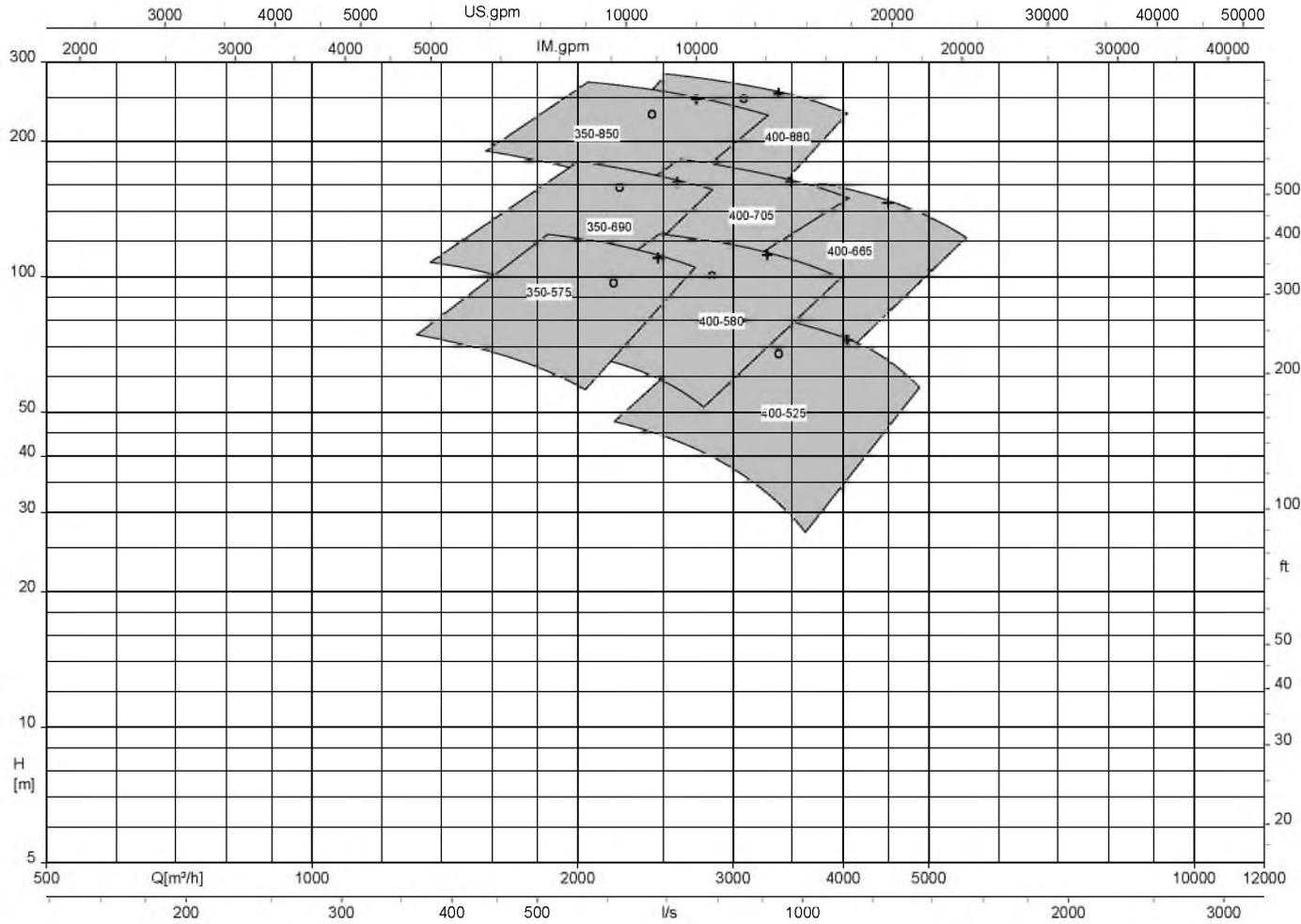


Fig. 1: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 985 rpm

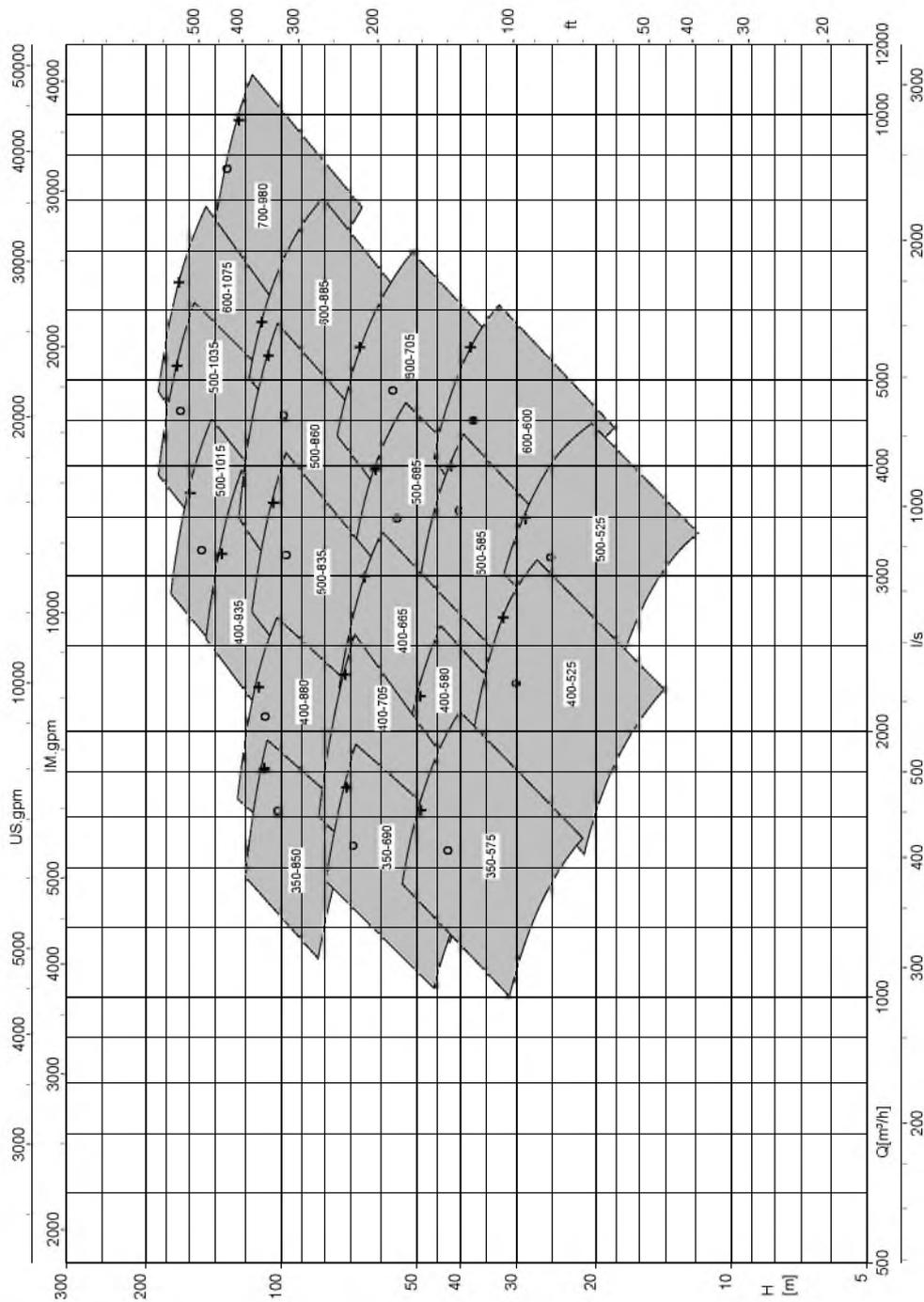


Fig. 2: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 740 rpm

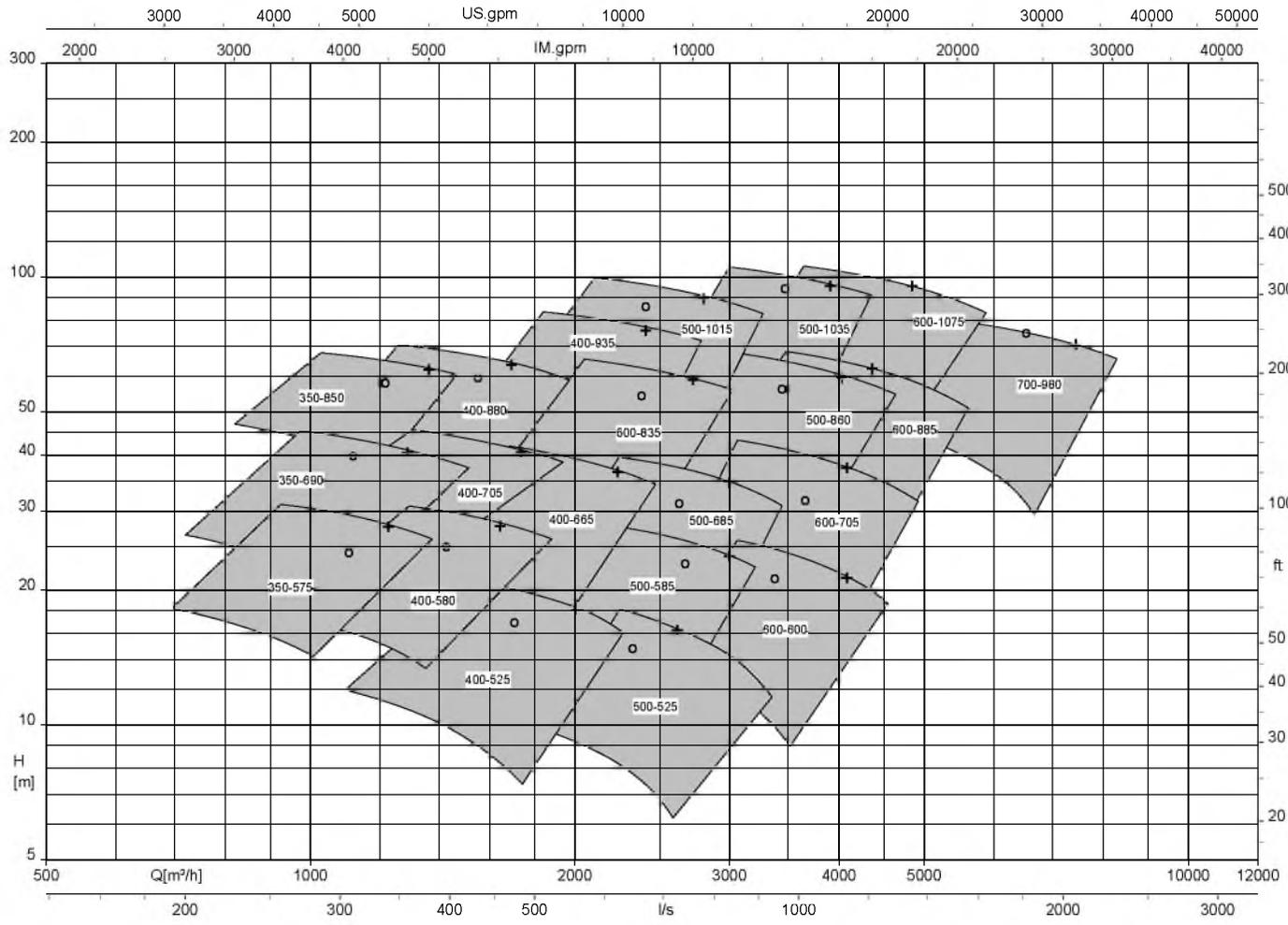


Fig. 3: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 1780 rpm

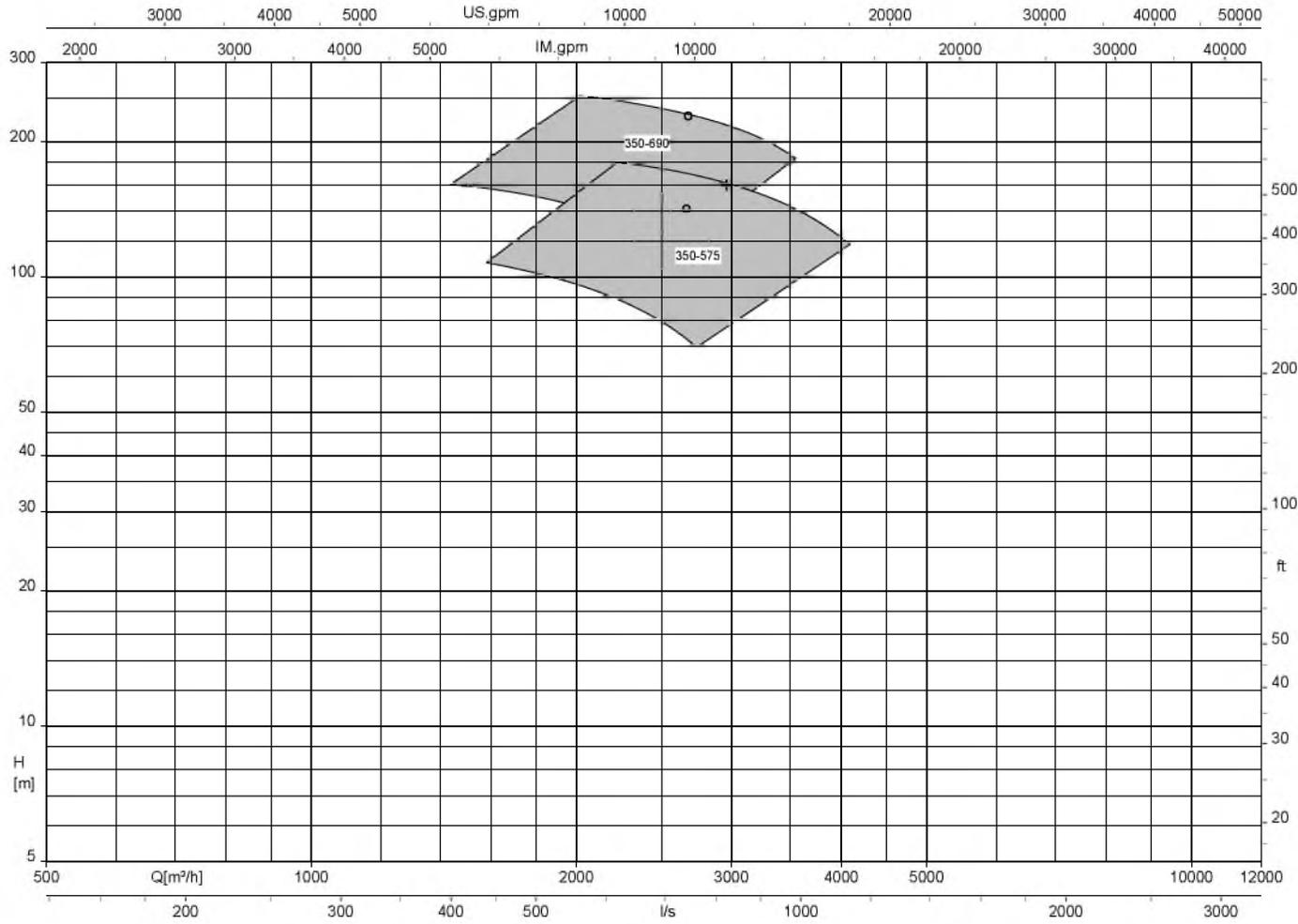


Fig. 4: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 1180 rpm

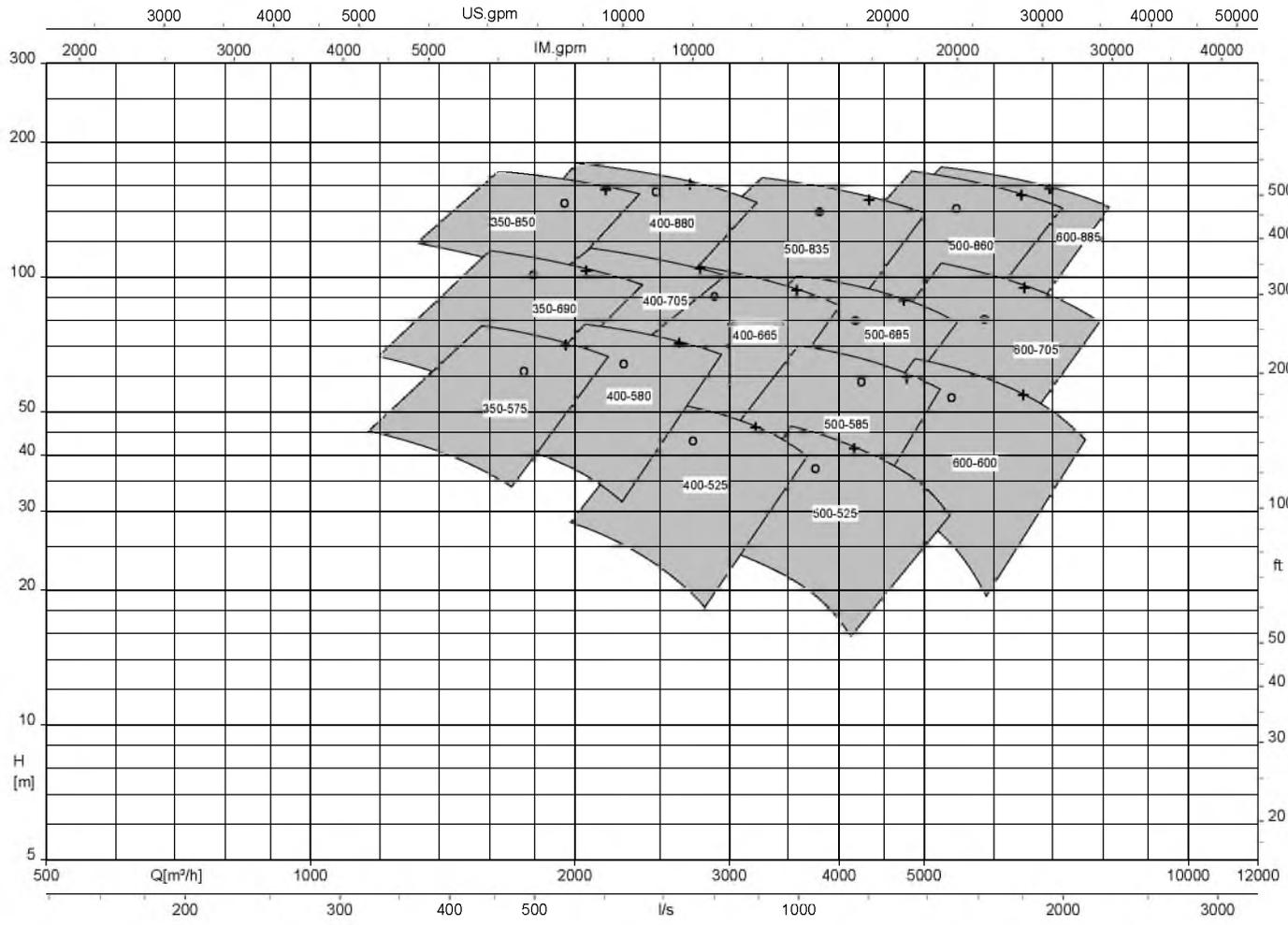


Fig. 5: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 890 rpm

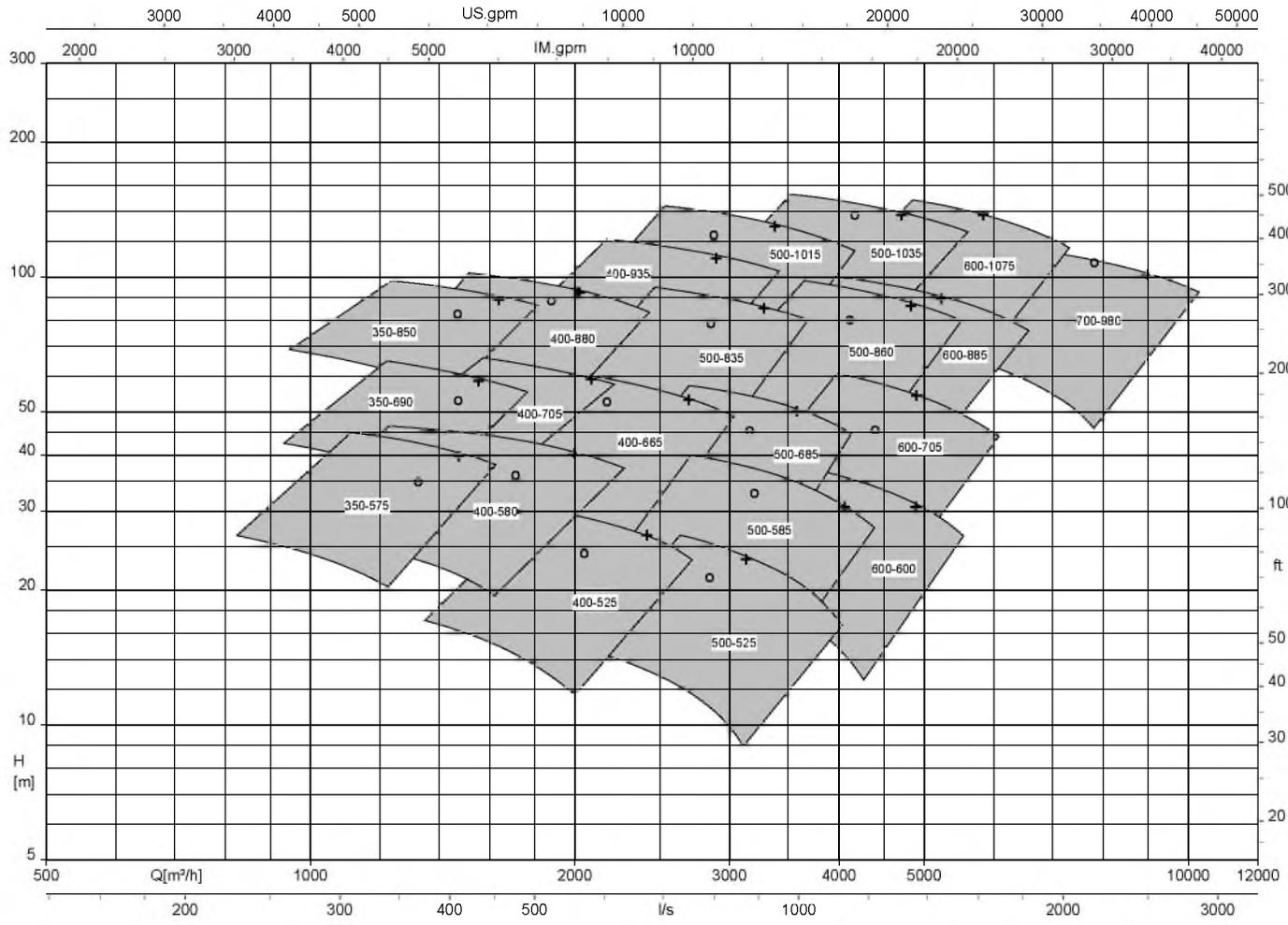


Fig. 6: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

RDLO / RDLO V, n = 715 rpm

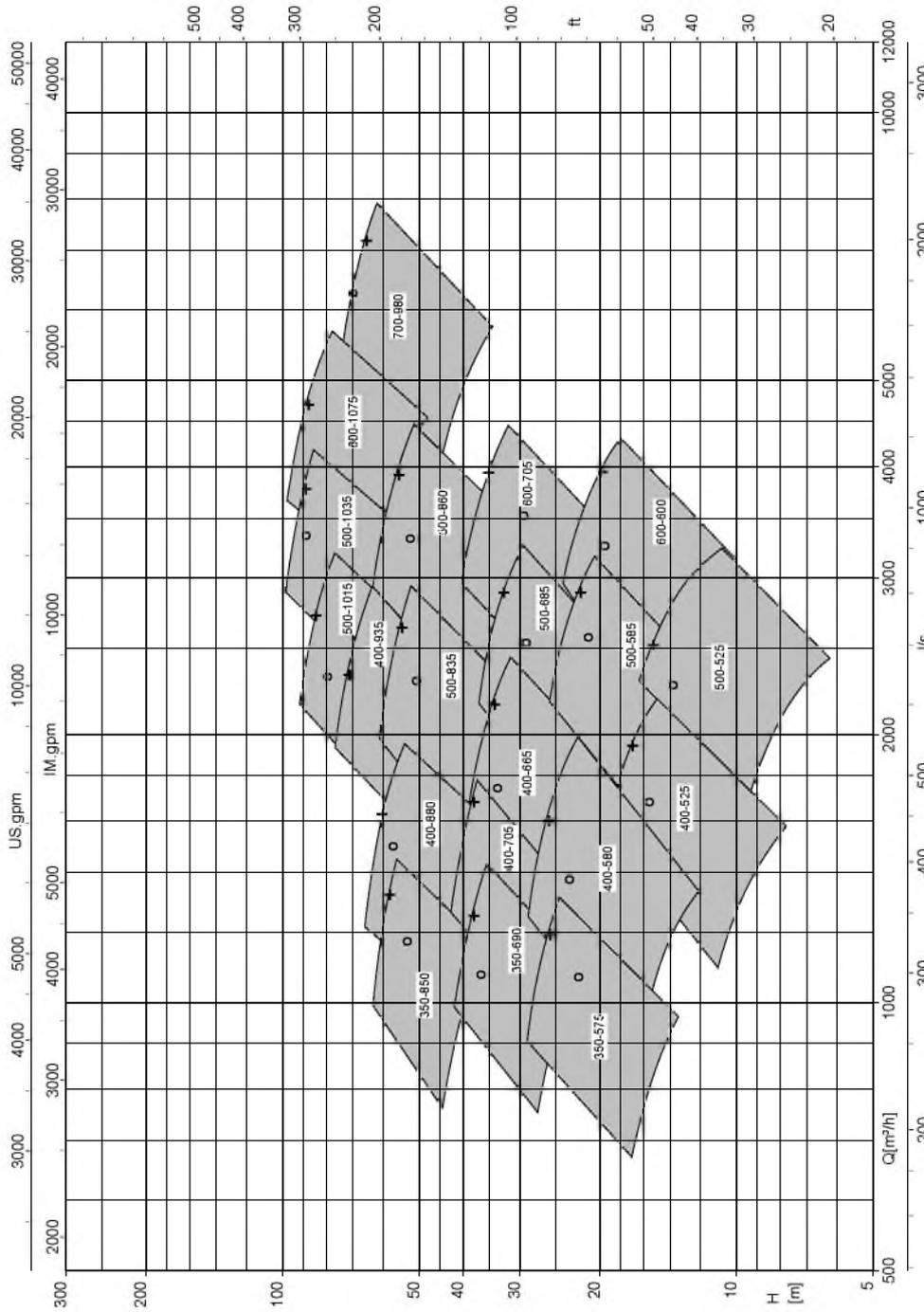


Fig. 7: + =  $\eta_{opt}$  A impeller / o =  $\eta_{opt}$  B impeller

## Installation types

Fig.0

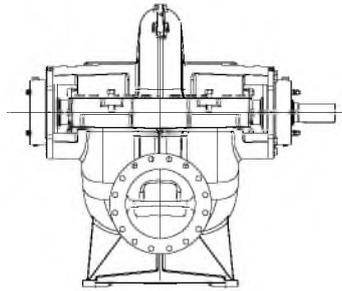


Fig. 8: Fig.0: Bare shaft pump

### Options of installation parts:

- No optional equipment

### Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling

### Coupling guard options:

- Light-duty design, not tread-proof

### Delivery/transport:

- Pump

## 2E

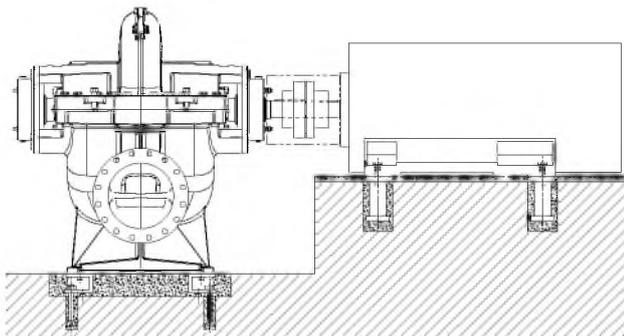


Fig. 9: 2E: Pump and motor on foundation rails

### Options of installation parts:

- Foundation rails for the pump, including foundation bolts, and foundation blocks for the motor
- Foundation rails for the pump, including foundation bolts

### Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer

### Coupling guard options:

- Light-duty design, not tread-proof

### Delivery/transport:

- Pump and motor are supplied as separate units.

## 3E

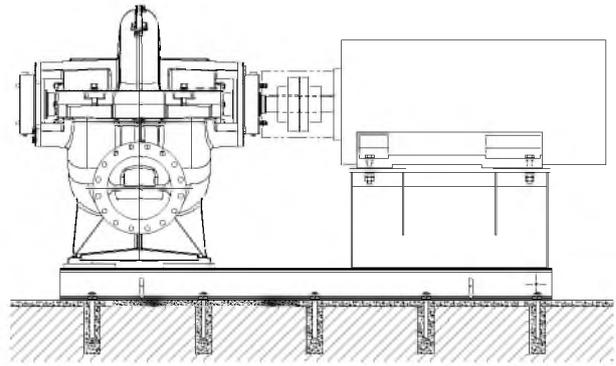


Fig. 10: 3E: Pump and motor on a common base frame

### Options of installation parts:

- Base frame for pump and motor, including foundation bolts
- Special base frame for pump and motor, including foundation bolts

### Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer<sup>22)</sup>

### Coupling guard options:

- Light-duty design, not tread-proof
- Heavy-duty design, tread-proof

### Delivery/transport:

- Pump, motor and base frame are supplied as separate units.

22) On request only

4E

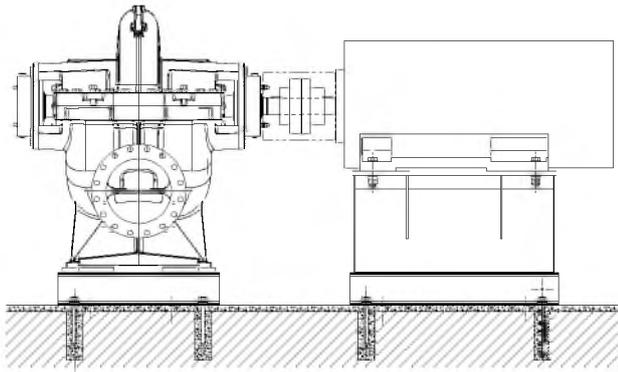


Fig. 11: 4E: Pump and motor on separate base frames

**Options of installation parts:**

- Base frame for the pump and base frame for the motor, including foundation bolts (without drip tray)
- Base frame for the pump, including foundation bolts (without drip tray)

**Coupling options:**

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer

**Coupling guard options:**

- Light-duty design, not tread-proof

**Delivery/transport:**

- Pump, motor and base frame are supplied as separate units.

DJ

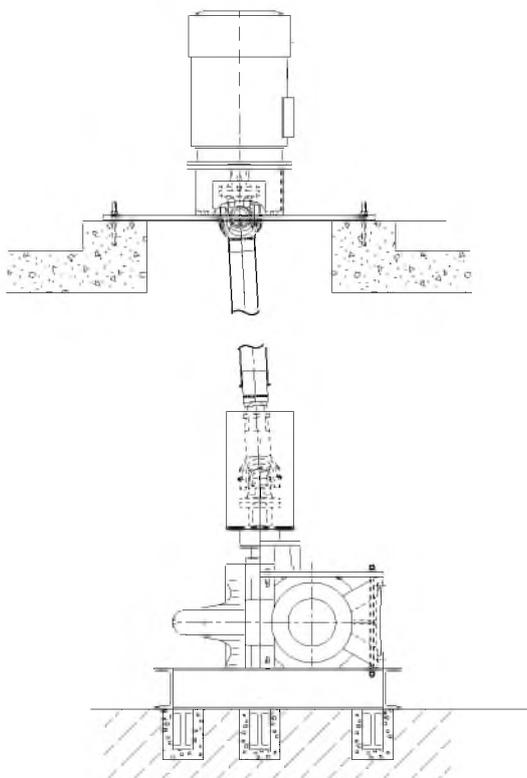


Fig. 12: DJ: Pump and motor on separate levels

**Options of installation parts:**

- Pump base frame (pump foot) including foundation bolts
- Pump base frame (pump foot) including foundation bolts, motor support frame, foundation rails and foundation bolts<sup>23)</sup>

**Coupling options:**

- Cardan shaft<sup>23)</sup>
- Coupling with spacer<sup>23)</sup>

**Coupling guard options:**

- Light-duty design, not tread-proof

**Delivery / transport:**

- Pump on corresponding pump base frame (pump foot), motor and motor support frame are supplied as separate units.

DP

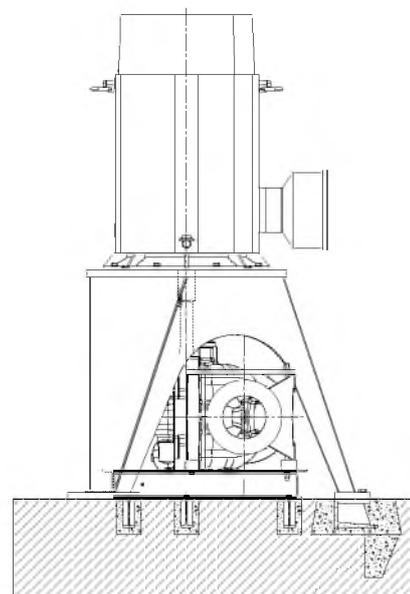


Fig. 13: DP: Motor on separate drive lantern

**Options of installation parts:**

- Pump base frame (pump foot) including foundation bolts, and drive lantern (including foundation rails and foundation bolts)

**Coupling options:**

- Torsion-resistant flexible disc coupling with spacer

**Coupling guard options:**

- Light-duty design, not tread-proof

**Delivery/transport:**

- Pump with pump base frame (pump foot), motor and drive lantern supplied as individual units

23) On request only

### **Scope of supply**

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

- Pump
- Drive
- Baseplate
- Coupling and coupling guard
- Universal-joint shaft
- Fasteners for pump and base frame

Optional accessories:

- Vibration monitoring
- Pt100 temperature sensor
- Constant level oiler
- Pressure gauge
- Measuring nipple for shock pulse measurement
- Cyclone

General assembly drawings with list of components

Horizontal installation (example)

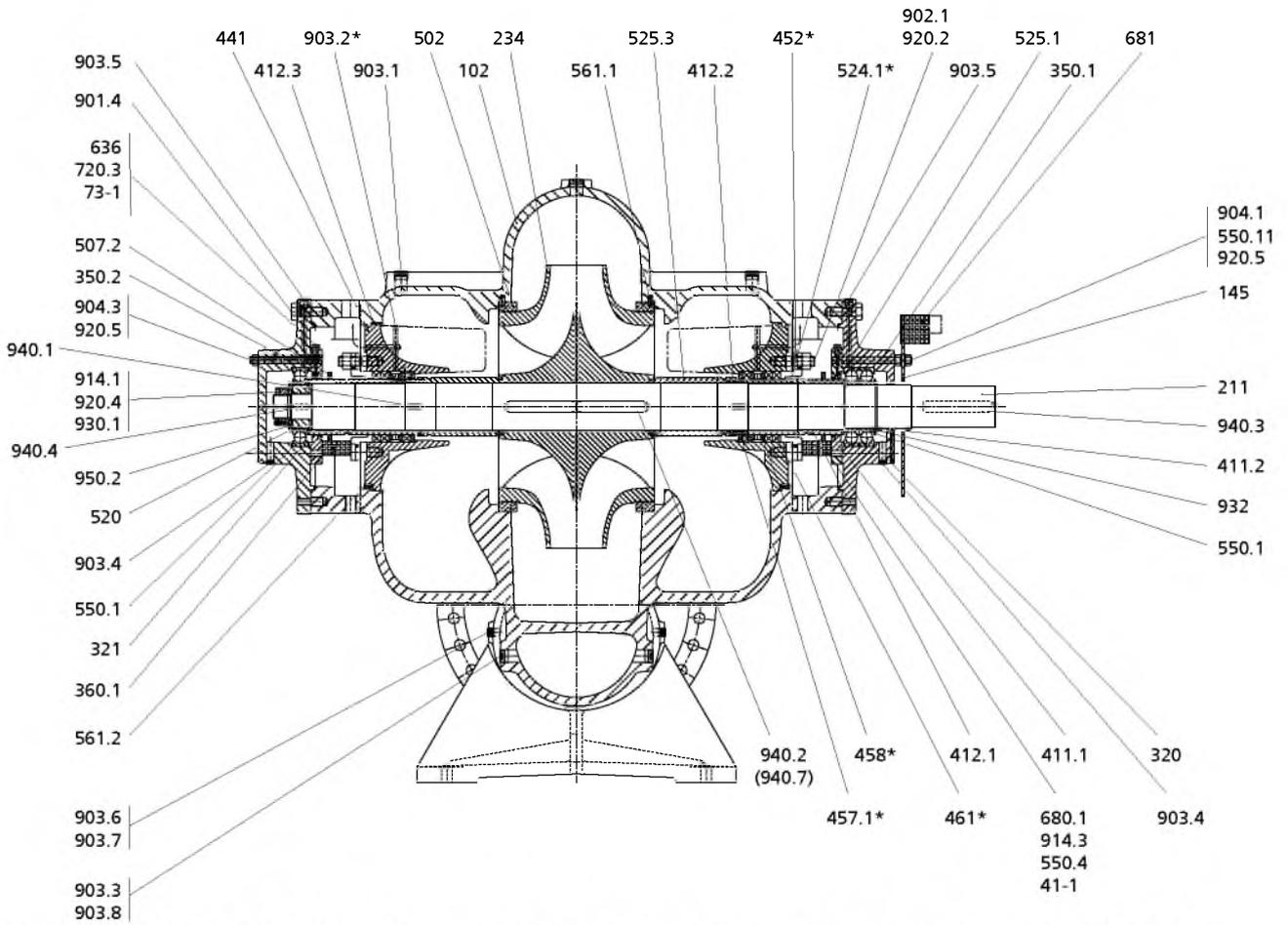
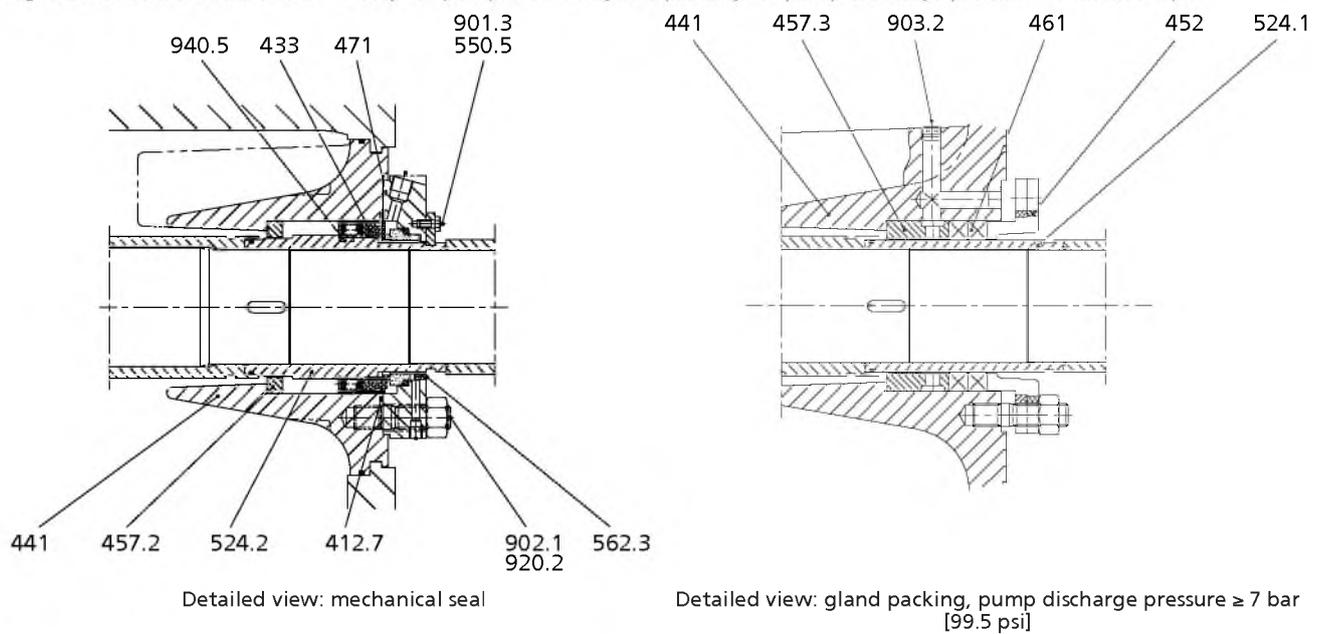
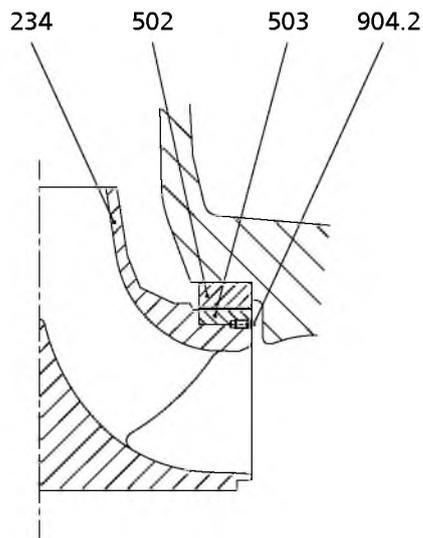
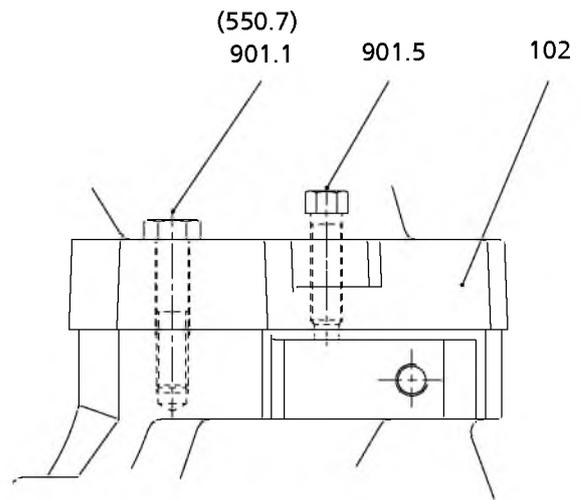


Fig. 14: Horizontal installation: \* = only for pump sets with gland packing for pump discharge pressure < 7 bar [99.5 psi]





Detailed view: impeller with impeller wear ring



Detailed view: screwed connection of the casing split flange

List of components

Part No.	Description	Part No.	Description
102	Volute casing	520	Sleeve
145	Adapter	524.1/2	Shaft protecting sleeve
211	Pump shaft	525.1/3	Spacer sleeve
234	Impeller	550.1/4/5/7/11	Disc
320	Rolling element bearing	561.1/2	Grooved pin
321	Radial ball bearing	562.3	Parallel pin
350.1/2	Bearing housing	636	Lubricating nipple
360.1	Bearing cover	680.1	Guard
41-1	Sealing washer	681	Coupling guard
411.1/2	Joint ring	73-1	Socket
412.1/2/3/7	O-ring	720.3	Spacer
433	Mechanical seal	901.1/3/4/5	Hexagon head bolt
441	Shaft seal housing	902.1	Stud
452	Gland follower	903.1/2/3/4/5/6/7/8	Screw plug
457.1/2/3	Neck ring	904.1/2/3	Grub screw
458	Lantern ring	914.1/3	Hexagon socket head cap screw
461	Gland packing	920.2/4/5	Nut
471	Seal cover	930.1	Safety device
502	Casing wear ring	932	Circlip
503	Impeller wear ring	940.1/2/3/4/5/7	Key
507.2	Thrower	950.2	Spring

Vertical installation (example)

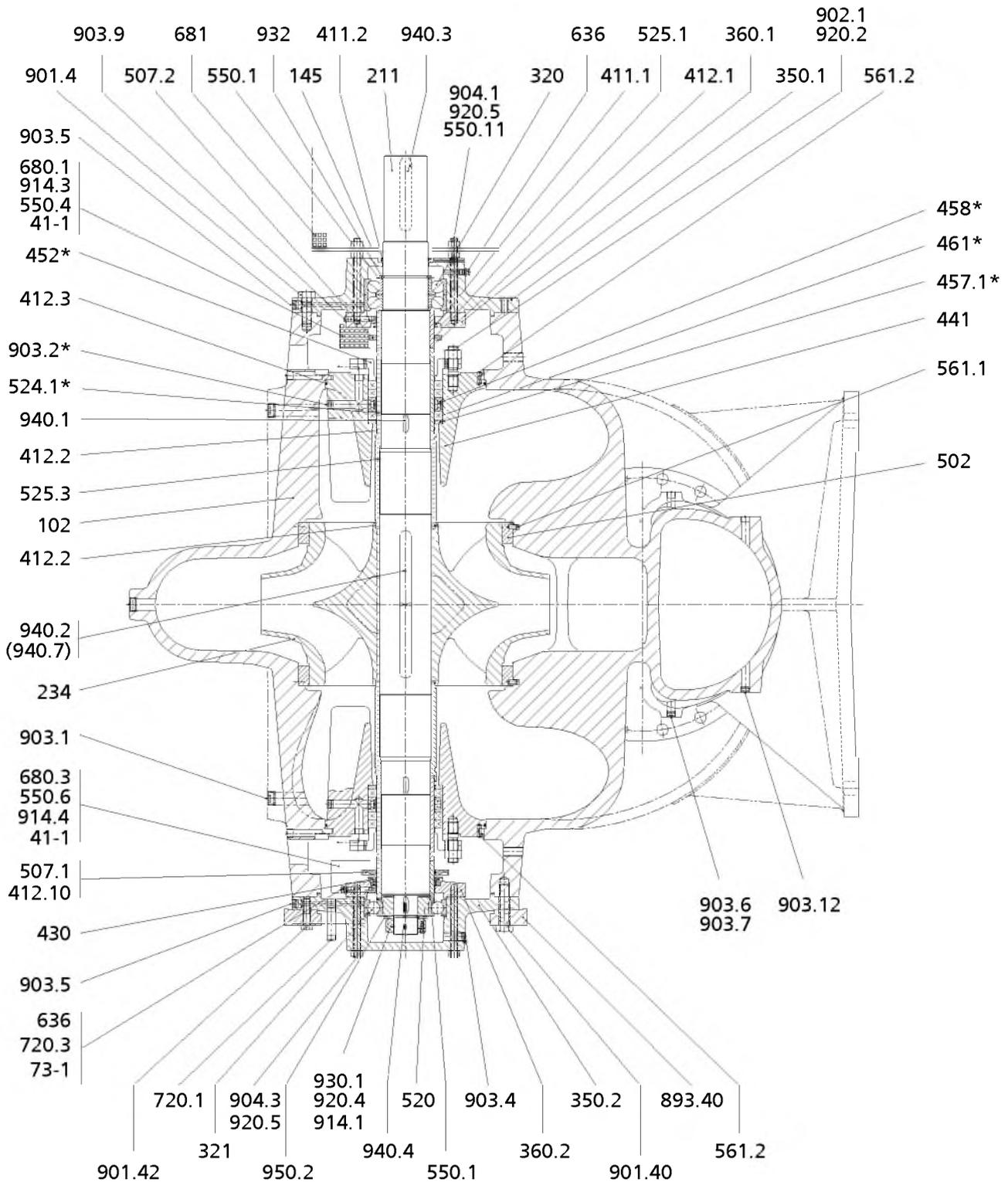
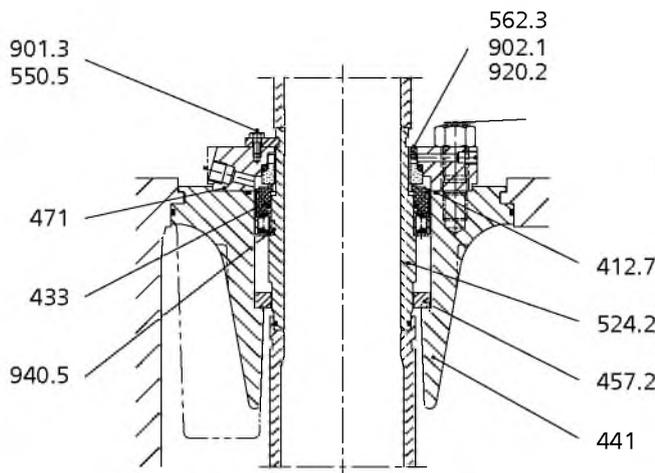
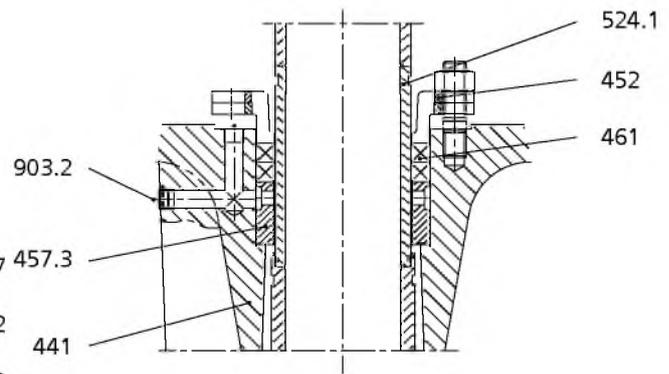


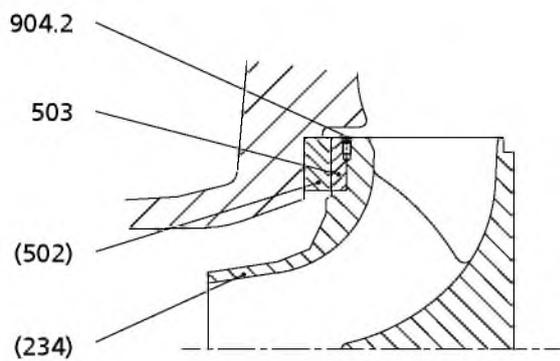
Fig. 15: Vertical installation: \* = only for pump sets with gland packing for pump discharge pressure < 7 bar [99.5 psi]



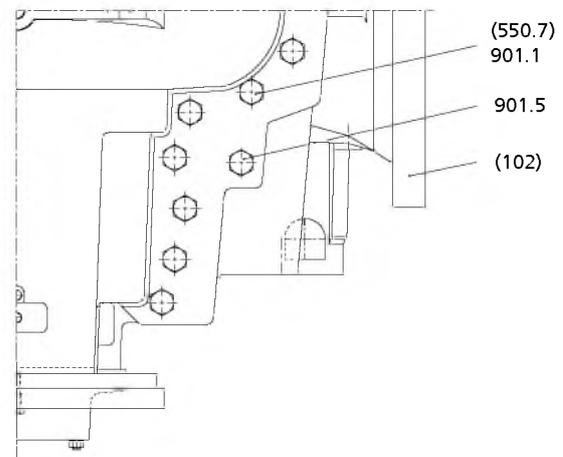
Detailed view: mechanical seal



Detailed view: gland packing, pump discharge pressure  $\geq 7$  bar [99.5 psi]



Detailed view: impeller with impeller wear ring



Detailed view: connecting elements of the volute casing

List of components

Part No.	Description	Part No.	Description
102	Volute casing	520	Sleeve
145	Adapter	524.1/2	Shaft protecting sleeve
211	Pump shaft	525.1/3	Spacer sleeve
234	Impeller	550.1/4/5/6/7/11	Disc
320	Rolling element bearing	561.1/2	Grooved pin
321	Radial ball bearing	562.3	Parallel pin
350.1/2	Bearing housing	636	Lubricating nipple
360.1/2	Bearing cover	680.1/3	Guard
41-1	Sealing washer	681	Coupling guard
411.1/2	Joint ring	73-1	Socket
412.1/2/3/7/10	O-ring	720.1/3	Spacer
430	Shaft seal	893.40	Soleplate
433	Mechanical seal	901.1/3/4/5/40/42	Hexagon head bolt
441	Shaft seal housing	902.1	Stud
452	Gland follower	903.1/2/4/5/6/7/9/12	Screw plug
457.1/2/3	Neck ring	904.1/2/3	Grub screw
458	Lantern ring	914.1/3/4	Hexagon socket head cap screw
461	Gland packing	920.2/4/5	Nut
471	Seal cover	930.1	Safety device
502	Casing wear ring	932	Circlip
503	Impeller wear ring	940.1/2/3/4/5/7	Key
507.1/2	Thrower	950.2	Spring

Self-priming Pump

# Vitaprime

## Type Series Booklet



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## Self-priming Pump

### Hygienic Pump

## Vitaprime



#### Main applications

- Beverage industry and food industry
- Chemical industry/Fine chemicals
- Pharmaceutical industry
- Further industrial applications

#### Fluids handled

- Pure liquids not mechanically or chemically aggressive to the pump
- Liquids containing gas or vapour

#### Further information on fluids handled

(⇒ Page 6)

#### Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m <sup>3</sup> /h]	≤ 58	≤ 60
Head	H [m]	≤ 45	≤ 65
Operating pressure	p [bar]	10	
Inlet pressure	p [bar]	≤ 3	
Operating temperature	T [°C]	≤ 100	
Sterilisation temperature	T [°C]	≤ 140	
Connection sizes	DN	40 - 80	

#### Designation

**Example: VP 80-240-110404KBQT82MECCO**

Designation key

Code	Description
VP	Type series VP Vitaprime
80	Nominal nozzle diameter [mm]
240	Nominal impeller diameter [mm]
11	Load range
040	Motor rating 040 4 kW (power in kW × 10)
4	Number of poles 4 4 poles
K	Mounting arrangement K 3-point or 4-point ball feet
BQ	Mechanical seal design BQ External flushing (quench)
T82	Shaft seal code T82 BQ1EGG
M	Piping connection M Threaded connection to DIN 11851
E	O-ring material variant E EPDM 70 (FDA, USP Class VI, 3A)
C	Casing material variant C 1.4409
C	Impeller material variant C 1.4409
O	Motor shroud O Without shroud

#### Further information on the designation

(⇒ Page 22)

#### Design details

##### Design

- Standard design with materials to Regulation (EC) No 1935/2004
- Design to ATEX

##### Design

- Side channel pump
- Horizontal installation
- One or two stages
- Self-priming

##### Pump casing

- Casing with transfer passages

##### Impeller type

- Open star impeller

##### Bearings

- Grease-packed deep groove ball bearing

### Shaft seal

- Single mechanical seal to EN 12756
  - Seal type T<sup>1)</sup>: pump-end seal with non-encapsulated spring surrounded by fluid handled, uni-directional
- Double mechanical seal to EN 12756
  - Seal type Q: back-to-back arrangement (pressurised barrier fluid)

### Drive

- Efficiency class IE3 to IEC 60034-30

#### Standard design:

- KSB surface-cooled IEC frame three-phase current squirrel-cage motor
- 50 Hz winding, 220-240 V/380-420 V ≤ 2.20 kW
- 50 Hz winding, 380-420 V/660-725 V ≥ 3.00 kW
- 60 Hz winding, 440-480 V ≤ 2.60 kW
- 60 Hz winding, 440-480 V ≥ 3.60 kW
- Type of construction IM V1 ≤ 4.00 kW
- Type of construction IM V1 ≥ 5.50 kW
- IP55 enclosure
- Duty cycle: continuous duty S1
- Thermal class F with temperature sensor, 3 PTC thermistors

#### Explosion-proof version:

- KSB surface-cooled IEC frame three-phase current squirrel-cage motor
- 50 Hz winding, 220-240 V/380-420 V ≤ 1.85 kW
- 50 Hz winding, 380-420 V/660-725 V ≥ 2.50 kW
- Type of construction IM V1 ≤ 3.30 kW
- Type of construction IM V15 ≥ 4.60 kW
- Enclosure IP55 or IP54
- Duty cycle: continuous duty S1
- Type of protection EExe II
- Temperature class T3

### Automation

#### Automation options:

- PumpDrive

### Connections

- Axial suction nozzle, tangential discharge nozzle.

#### Types of connection:

- Threaded connection to DIN 11851
- Threaded connection to DIN 11853
- Threaded connection to DIN 11864-1-GS-A
- Threaded connection to SMS standard
- Threaded connection to IDF standard
- Threaded connection to RJT standard
- Tri-Clamp/Tri-Clover fitting
- Clamped connection to DIN 11864-3-NKS-A
- Clamped connection to DIN 32676-A
- Clamped connection to ISO 2852

- Flange to EN 1092-1
- Flange to DIN 11864-2-NF-A
- Flange to ASA ASME 150
- APV flange
- Varivent flange
- Other connection types on request

### Materials

Pump section	Material
Pump casing <sup>2)</sup>	1.4409 (AISI CF3M)
Impeller <sup>2)</sup>	1.4409 (AISI CF3M)
Impeller nut <sup>2)</sup>	1.4404 (AISI 316L)
Shaft <sup>2)</sup>	1.4404 (AISI 316L)
Drive lantern	1.4308 (AISI 304)
Bearing assembly	Cast iron, nickel-plated or painted
Motor housing	Motor size ≤ 160 aluminium Motor size ≥ 180 grey cast iron
Motor shroud	1.4301 (AISI 304)
Ball feet	1.4308 (AISI 304)
Elastomers <sup>2)</sup>	EPDM, FPM, FFP, FFKM

All materials that will be in contact with the fluid handled conform with Regulation (EC) No. 1935/2004.

### Coating and preservation

- Coating and preservation to KSB standard

### Product benefits

- Side channel pump for good and fast self-priming and for transporting fluids containing gas.
- Easy to clean due to little dead volume and excellent flushability
- Service-friendly design, easy and fast to dismantle
- Stub shaft allows combination with all commercial standardised motors
- Corrosion-resistant by using high-quality stainless steel
- A large variety of materials, sealing elements and connections are available to optimally match the pump to its application.
- Highly suitable for CIP/SIP cleaning processes

### Certifications

#### Overview

Label	Effective in:	Note
	All countries	Certified quality management to ISO 9001
	All countries	Elastomers FDA, 3A, USP class VI certified

1) Hygienic design  
2) Wetted component

**Acceptance tests and warranty**

- Materials testing
  - Material test report 2.2 on request
  - Material test report 3.1 on request
- Final inspection
  - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test against surcharge
  - To ISO 9906/2B or ISO 9906/3B
  - NPSH test
- Other tests  
Other tests (e.g. vibrations, strength, noise characteristics) on request.
- Warranties  
Warranties are given within the scope of the valid terms and conditions of sale and delivery.

**Overview of fluids handled**

Table of fluids handled and associated material combinations  
**X** = standard

Fluid handled	Temperature		Seal code											Operating mode	Comment
	Min.	Max.	T19	T64	T66	T80	T81	T82	T83	T84	Q71	Q72	Q79		
	[°C]														
<b>Alcohol, butanol</b>															
Butanol	0	60	-	-	-	-	-	X	-	-	-	-	-	I	-
Isobutanol	0	60	-	-	-	-	-	X	-	-	-	-	-	I	-
<b>Alcohol, ethanol</b>															
- <sup>3)</sup>	0	60	-	-	-	-	-	X	-	-	-	-	-	I	-
<b>Alcohol, methanol</b>															
-	0	60	-	-	-	-	-	X	-	-	X	-	-	I, BQ, DB	Provide water quench for indoor application (toxicity).
<b>Alcohol, propanol</b>															
1-propanol	0	60	-	-	-	-	-	X	-	-	-	-	-	I	-
2-propanol	0	60	-	-	-	-	-	X	-	-	-	-	-	I	-
<b>Beer</b>															
Beer mash	0	100	-	X	-	-	-	-	-	-	-	-	X	-	BQ, DB Use suitable water as liquid quench.
Beer wort	0	100	-	X	-	-	-	-	-	-	-	-	X	-	BQ, DB Use suitable water as liquid quench.
Brewer's yeast	0	30	-	X	-	-	-	-	-	-	-	-	-	B, I	
Hops	0	100	-	X	-	-	-	-	-	-	-	-	X	-	BQ, DB Use suitable water as liquid quench.
Trub (brewery)	0	90	-	X	-	-	-	-	-	-	-	-	-	B, I	
Cleaning-in-place (CIP)	0	85	-	-	-	-	-	X	-	-	-	-	-	B, I	After cleaning, flush with hot water of 90 °C max.
<b>Beverages, alcoholic</b>															
Spirits (40 % ethanol)	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	Brandy 40 %
Beer	0	70	-	-	-	-	-	X	-	-	-	-	-	B, I	Beer after primary fermentation
Fruit liqueur	0	60	-	X	-	-	-	-	-	-	-	-	X	BQ, DB	Use suitable water as liquid quench.
Must	0	60	-	X	-	-	-	-	-	-	-	-	-	B, I	
Pernod	0	40	-	-	-	-	-	X	-	-	-	-	-	B, I	
Grappa	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	
Whiskey	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	
Wine (cider)	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	
Liqueur with egg yolks	0	50	-	-	-	-	-	X	-	-	-	-	-	B, I	
Herbal liqueur, alcohol content ≤ 50 %	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	
Sparkling wine	0	50	-	-	-	-	-	X	-	-	-	-	-	B, I	
Sap (juice) with 24 % ethanol	0	50	-	-	-	-	-	X	-	-	-	-	-	B, I	
<b>Beverages, non-alcoholic</b>															
Coke	0	20	-	-	-	-	-	X	-	-	-	-	-	B, I	≤ 12°Bx
Coke concentrate	0	20	-	X	-	-	-	-	-	-	-	-	-	B, I	≤ 65°Bx
Coffee	0	60	-	-	-	-	X	-	-	-	-	-	-	B, I	Coffee extract
Lemonade	0	90	-	X	-	-	-	-	-	-	-	-	-	B, I	≤ 65°Bx
Caffeine crystals (liquid)	20	100	-	X	-	-	-	-	-	-	-	-	-	B, I	max. 5 % caffeine
<b>Glucose</b>															
Unsaturated aqueous solution	0	50	-	X	-	-	-	-	-	-	-	-	X	B, BQ, DB	Observe the melting point or crystallisation point. If required, heat up the casing cover prior to commissioning/start-up. Use suitable hot water as quench liquid. Concentration < 65°Bx single mechanical seal w/o flushing is ok.

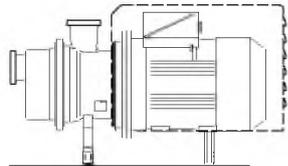
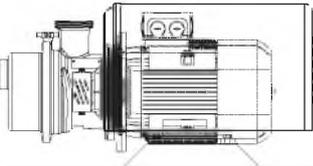
3) No details specified

Fluid handled	Temperature		Seal code											Operating mode	Comment	
	Min. [°C]	Max.	T19	T64	T66	T80	T81	T82	T83	T84	Q71	Q72	Q79			
<b>Glycerine</b>																
Concentration ≤ 40 %	0	100	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
<b>Glycol (pure)</b>																
Diethylene glycol	0	60	-	-	-	-	-	X	-	-	-	X	-	B, I, DB	Provide water quench for indoor application (toxicity).	
Ethylene glycol	0	60	-	-	-	-	-	X	-	-	-	X	-	B, I, BQ	Glycol Provide water quench for indoor application (toxicity).	
<b>Urea (carbamide)</b>																
Concentration ≤ 35%	0	80	-	-	X	-	-	-	-	-	-	-	-	X	BQ, DB	Use suitable water as cooling liquid.
<b>Foodstuff (liquid)</b>																
Egg (liquid)	0	20	-	-	-	-	-	-	-	-	-	X	-	BQ, DB	If containing sugar, use Q72 (U2U2EGG).	
<b>Foodstuff (aqueous)</b>																
Malt	0	100	-	X	-	-	-	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.	
<b>Dairy products</b>																
Chocolate milk	0	90	-	-	-	X	-	-	-	-	-	-	-	B, I		
Sweetened condensed milk	0	90	-	-	-	-	X	-	-	-	-	-	-	B, I		
Skimmed milk (fresh, sour)	0	90	-	-	-	X	-	-	-	-	-	-	-	B, I		
Milk	0	90	-	-	-	X	-	-	-	-	-	-	-	B, I		
Cream (sweet, sour)	0	90	-	-	-	X	-	-	-	-	-	-	-	B, I		
Sweet permeate (milk)	0	90	-	-	-	X	-	-	-	-	-	-	-	B, I		
<b>Sodium hydroxide</b>																
Concentration 0 to 50 %	0	80	-	-	-	-	-	X	-	-	-	-	-	B, I	Observe the melting point or crystallisation point. If required, heat up the casing cover prior to commissioning/start-up.  Use suitable hot water as continuous quench liquid.	
<b>Fruit pulp</b>																
Apricot purée with 40 % water	0	20	-	-	-	-	-	-	-	-	-	X	-	BQ, DB	Use suitable water as liquid quench.	
<b>Oil, vegetable oil</b>																
Anise oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Cotton seed oil	5	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Peanut oil	5	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Lavender oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Linseed oil	0	60	-	-	-	X	-	-	-	-	-	-	-	B, I		
Linseed oil with ≤ 3% H <sub>2</sub> SO <sub>4</sub>	0	20	-	-	-	X	-	-	-	-	-	-	-	B, I		
Corn oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Olive oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Palm oil	45	100	-	-	-	X	-	-	-	-	-	-	-	B, I	Melting point = +27 °C to +42 °C T85 (Q1U2VGG) recommended for temperatures above 70 °C.	
Rapeseed oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Castor oil	26	100	-	-	-	X	-	-	-	-	-	-	-	B, I	Info: viscosity = 700 mm <sup>2</sup> /s at 25 °C	
Soybean oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Sunflower oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
Edible oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I	Non-heatable pumps can be used if the melting point < ambient temperature. Check the melting point and viscosity with the customer.	
Walnut oil	0	100	-	-	-	X	-	-	-	-	-	-	-	B, I		
<b>Juice (fruit and sugar solutions)</b>																
Fruit juice	0	60	-	X	-	-	-	-	-	-	-	-	-	B, I	Apple juice	
Vegetable juice	0	100	-	X	-	-	-	-	-	-	-	-	-	B, I		
Orange juice	0	60	-	X	-	-	-	-	-	-	-	-	-	B, I		
Pressed sap	0	50	-	X	-	-	-	-	-	-	-	-	-	B, I		
Sugar solutions	0	100	-	X	-	-	-	-	-	-	-	-	-	B, I	Sugar solution > 65 Bx (for single seal)	
	0	95	-	X	-	-	-	-	-	-	-	X	-	DB, BQ	Use suitable water as barrier fluid, concentration > 65°Bx.	
<b>Acid, malic acid</b>																
Unsaturated aqueous solution	0	60	-	-	-	-	-	X	-	-	-	-	-	B, I	Solubility = 65 % at 40 °C and 72.8 % at 60 °C	
<b>Acid, citric acid</b>																

Fluid handled	Temperature		Seal code											Operating mode	Comment	
	Min. [°C]	Max.	T19	T64	T66	T80	T81	T82	T83	T84	Q71	Q72	Q79			
Concentration 1 to 50 %	0	80	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
<b>Acid, acetic acid</b>																
Concentration 1 to 25 %	0	60	-	-	-	-	-	X	-	-	-	-	-	-	B, I	Vinegar
Concentration ≤ 30%	0	20	-	-	-	-	-	X	-	-	X	-	-	-	BQ, DB	Use suitable water as liquid quench.
Concentration ≤ 50%	0	20	-	-	-	-	-	X	-	-	X	-	-	-	BQ, DB	Use suitable water as liquid quench.
<b>Acid</b>																
Unsaturated aqueous solution	0	100	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
<b>Acid, tannic acid</b>																
Concentration 1 to 50%	0	100	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
<b>Acid, lactic acid</b>																
Concentration 1 to 50%	0	60	-	-	-	X	-	-	-	-	-	-	-	-	B, I	
<b>Acid, oxalic acid</b>																
Concentration ≤ 5%	0	20	-	-	-	-	-	X	-	-	X	-	-	-	BQ, DB	Use suitable water as liquid quench.
<b>Acid, tartaric acid</b>																
Concentration ≤ 8%	0	60	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Concentration ≤ 50%	0	60	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
<b>Sorbitol (solution)</b>																
Unsaturated aqueous solution	0	80	X	-	-	-	-	-	-	-	-	-	X	-	DB, BQ	Mechanical seal for solutions up to 40 % max. Use suitable water as liquid quench.
<b>Water, desalinated</b>																
De-ionised water	0	110	-	-	-	-	-	X	-	-	-	-	-	-	B, I	Water quality: conductivity > 10 µS/cm < 250 µS/cm, SiO <sub>2</sub> content < 10 mg/l, solids content 5 mg/l max.
<b>Drinking water</b>																
Mash, schnapps	0	110	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Ice water (brewery)	0	110	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Tap water	0	110	-	-	-	-	-	X	-	-	-	-	-	-	B, I	
Hot water (brewery)	0	110	-	-	-	-	-	X	-	-	-	-	-	-	I	
<b>Water</b>																
Pure water	0	110	-	-	-	-	-	X	-	-	-	-	-	-	B, I	

## Mounting arrangements

### Mounting arrangement

Mounting arrangement	Illustration	Description
K		Horizontal installation, close-coupled pump set <ul style="list-style-type: none"> <li>▪ Axial suction nozzle, tangential discharge nozzle</li> <li>▪ Mounted on 3-point ball feet up to a drive rating of 4 kW.</li> <li>▪ Mounted on 4-point ball feet for drive ratings from 5.5 to 22 kW.</li> <li>▪ Alternatively mounted on round base feet</li> </ul>
M		Horizontal installation, close-coupled pump set <ul style="list-style-type: none"> <li>▪ Axial suction nozzle, tangential discharge nozzle</li> <li>▪ Mounted on a motor foot for drive ratings from 0.33 to 22 kW.</li> </ul>

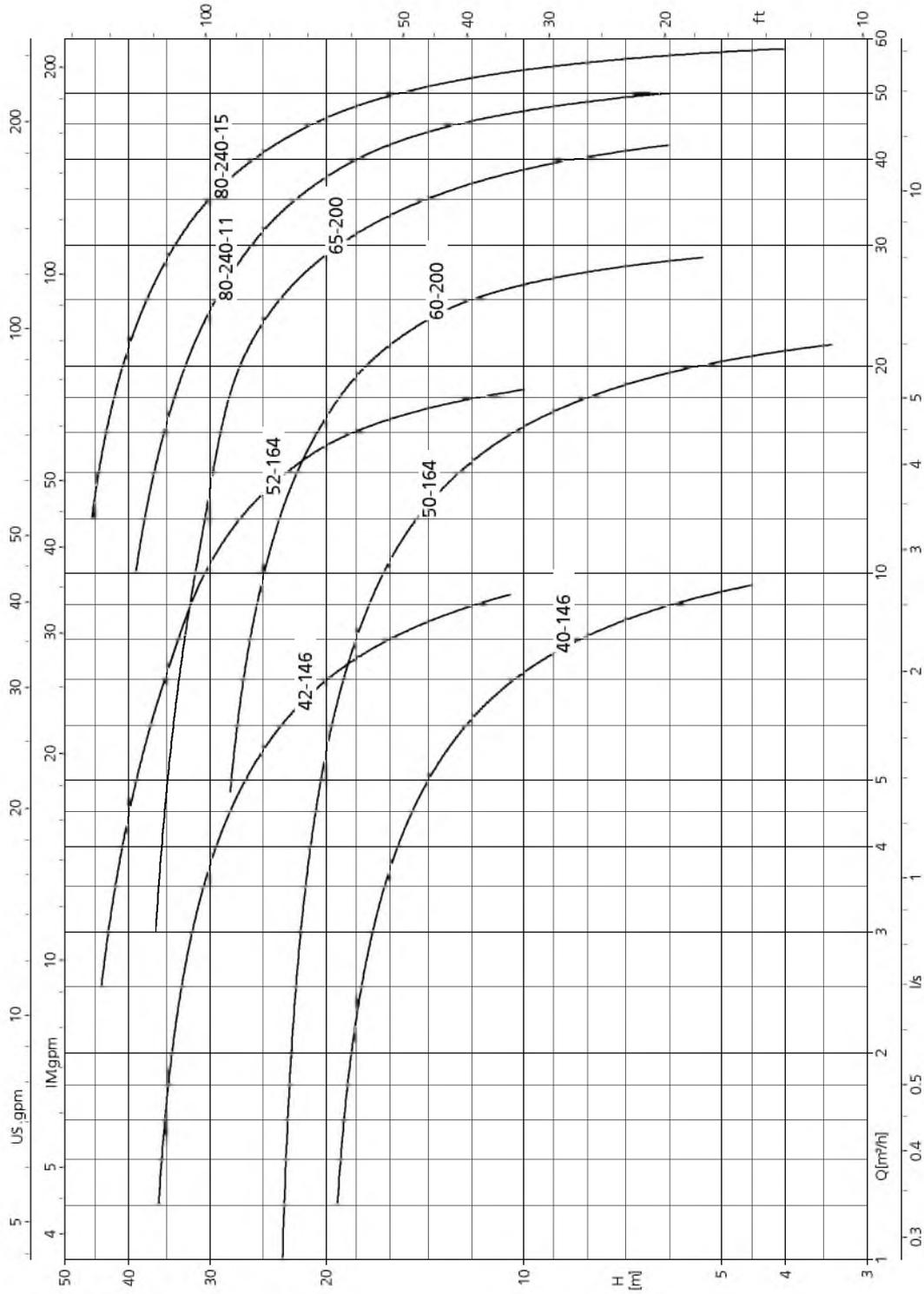
 Vertical installation requires a mechanical seal with flushing system.

Mounting arrangements per pump size

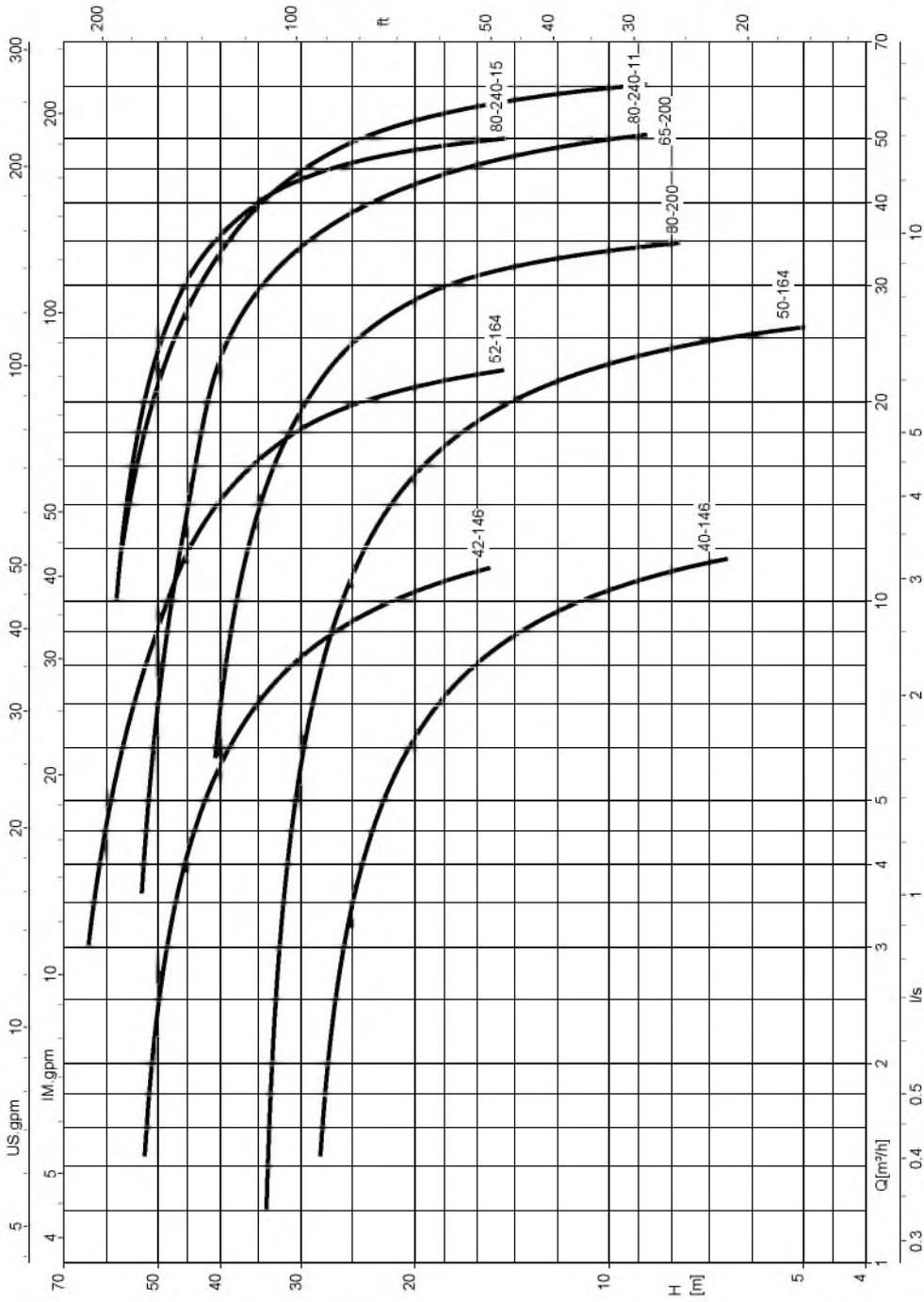
Size	Ball feet	Round base feet	Motor feet
40 - 146	X	X	X
42 - 146	X	X	X
50 - 164	X	X	X
52 - 164	X	X	X
60 - 200	X	X	X
65 - 200	X	X	X
80 - 240 - 11	X	X	X
80 - 240 - 15	X	X	X

Selection charts

Vitaprime, n = 1450 rpm



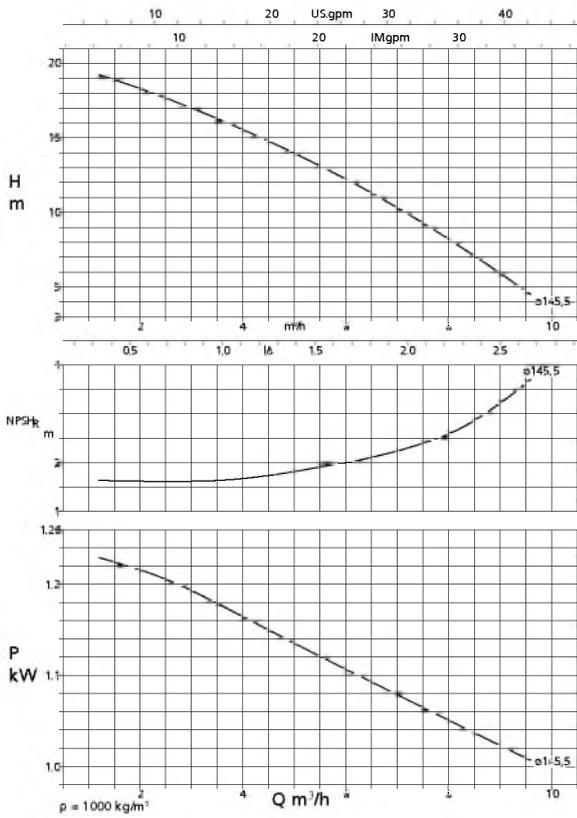
Vitaprime, n = 1750 rpm



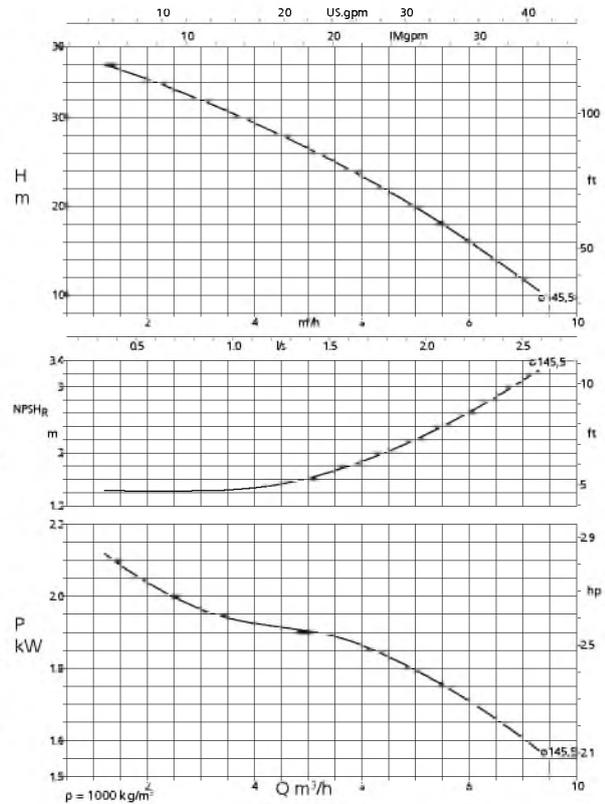
Characteristic curves

Vitaprime, n = 1450 rpm

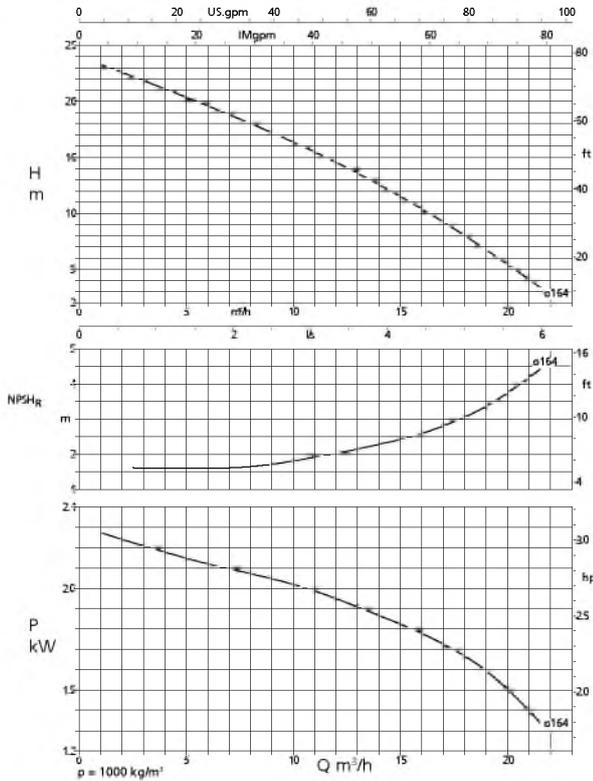
Vitaprime 40-146



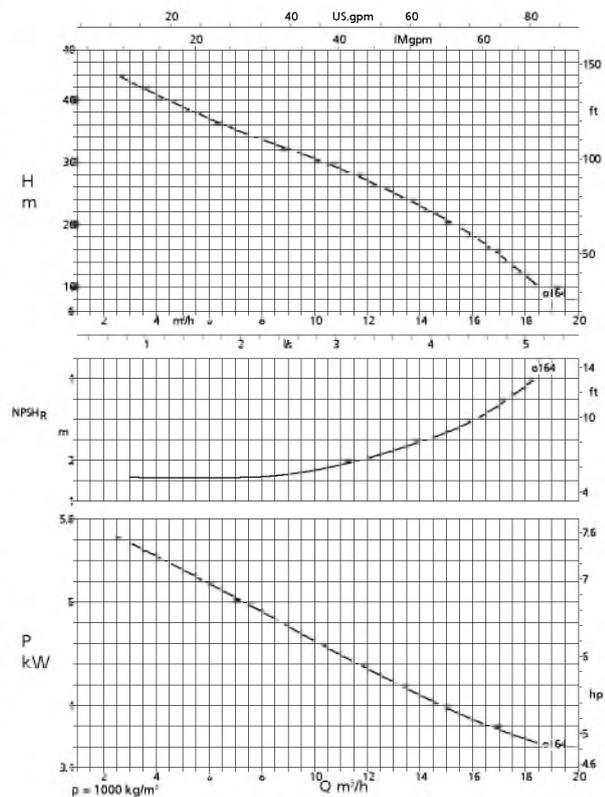
Vitaprime 42-146



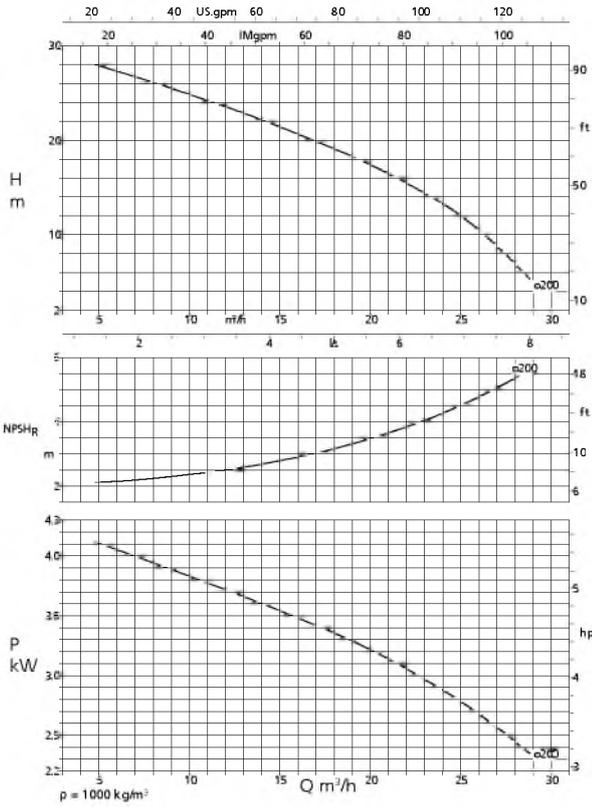
Vitaprime 50-164



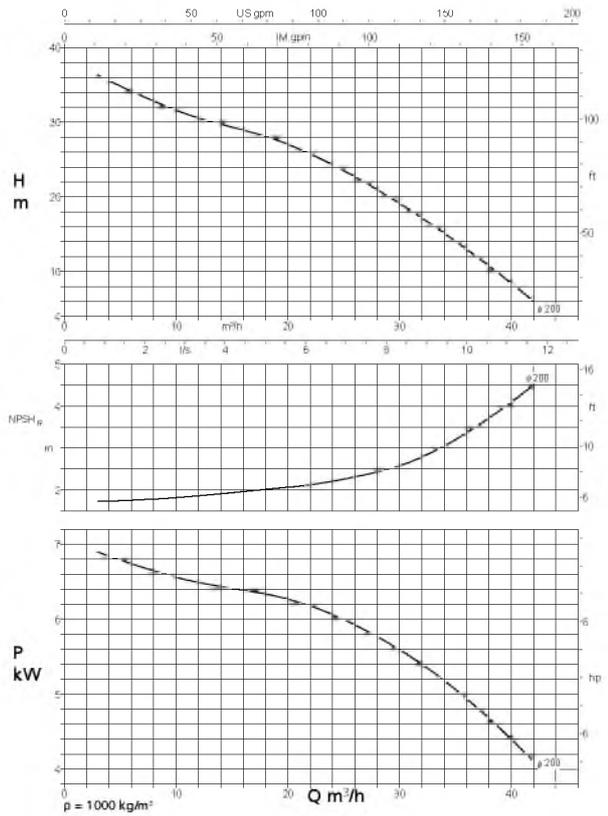
Vitaprime 52-164



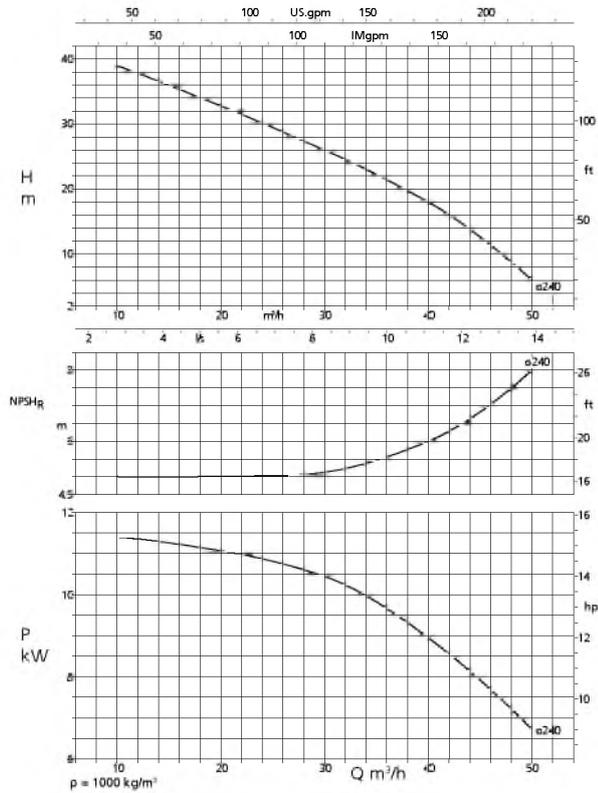
Vitaprime 60-200



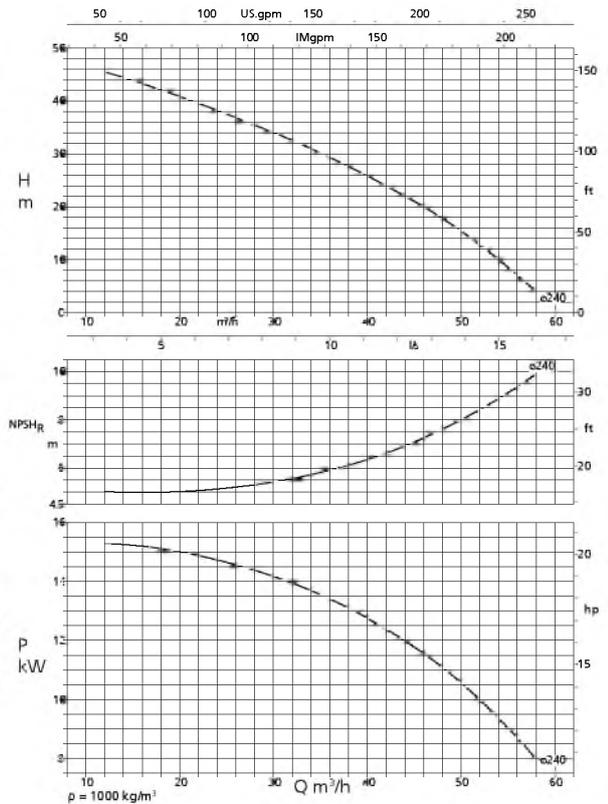
Vitaprime 65-200



Vitaprime 80-240-11

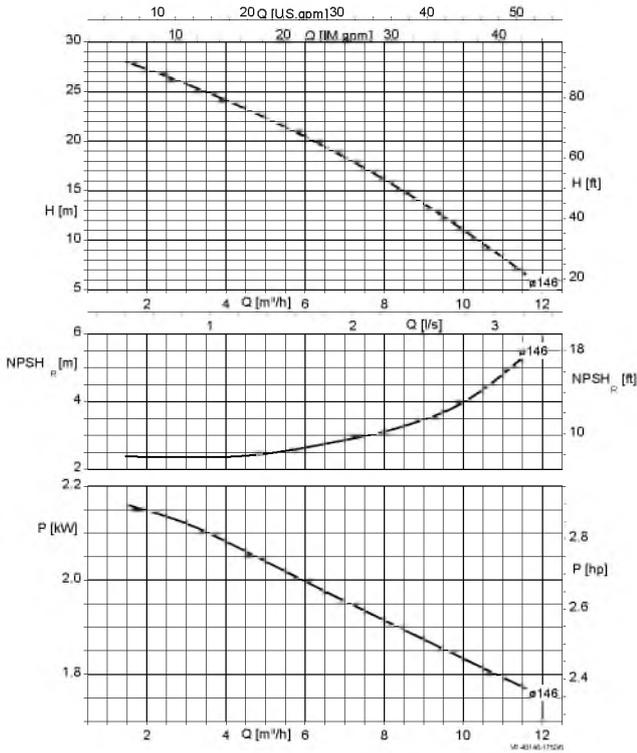


Vitaprime 80-240-15

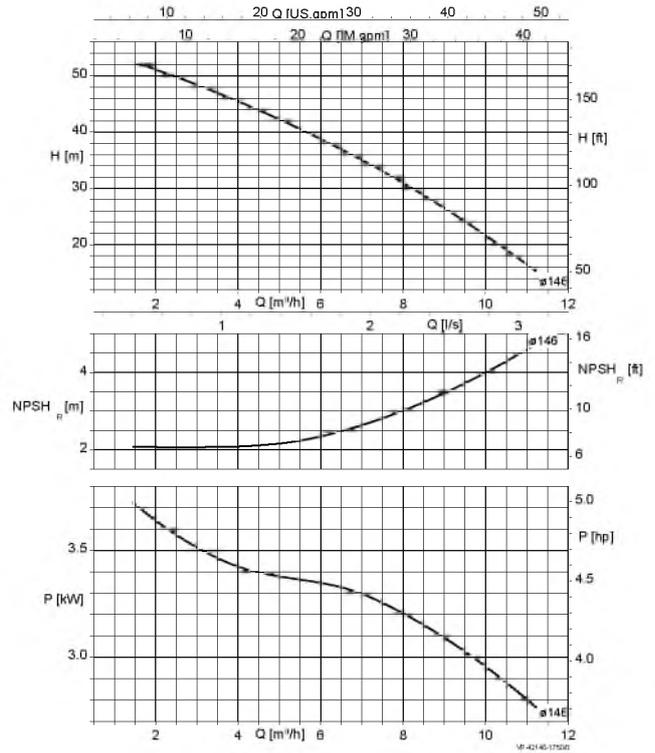


Vitaprime, n = 1750 rpm

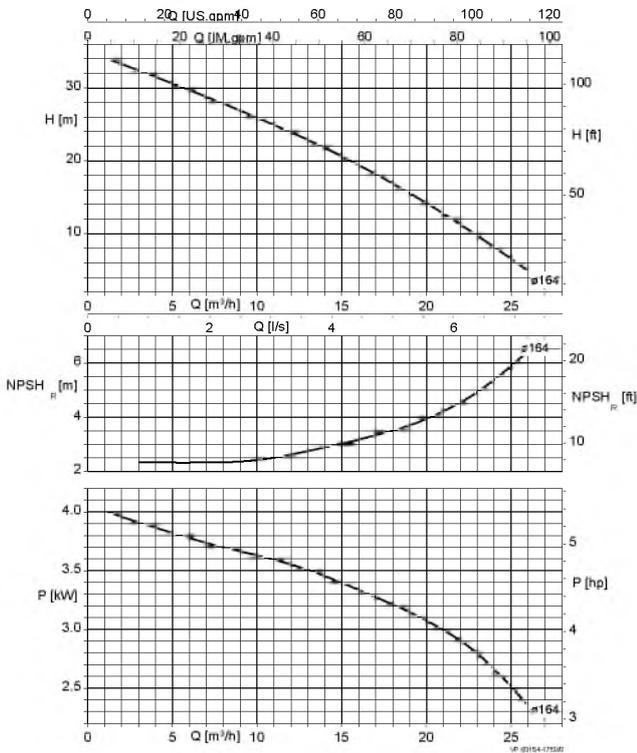
Vitaprime 40-146



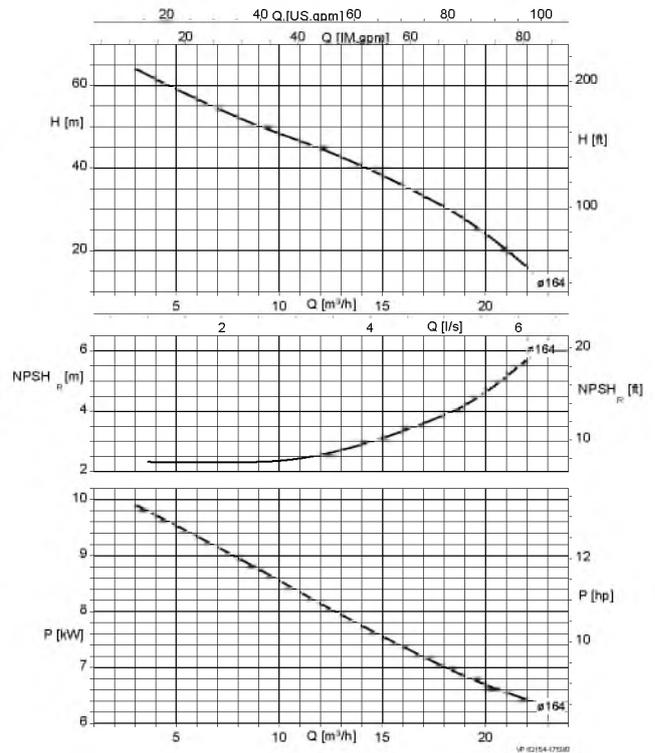
Vitaprime 42-146



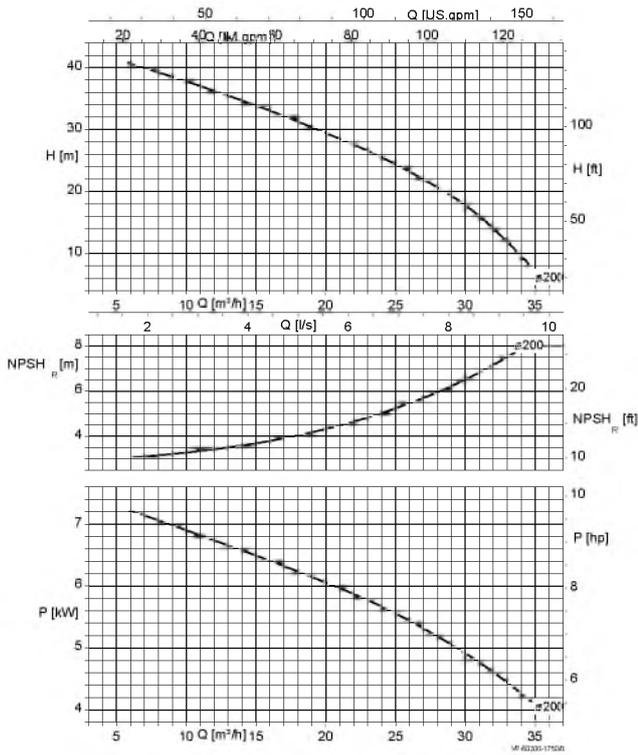
Vitaprime 50-164



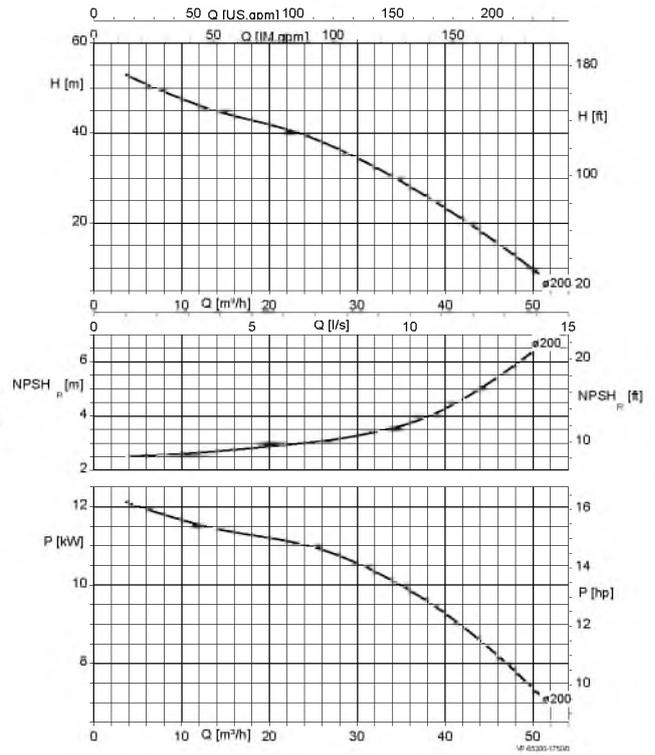
Vitaprime 52-164



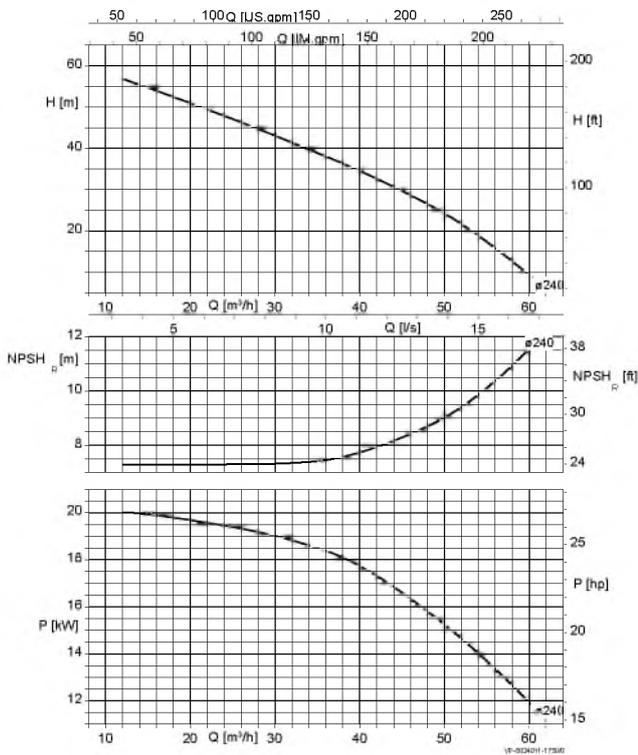
Vitaprime 60-200



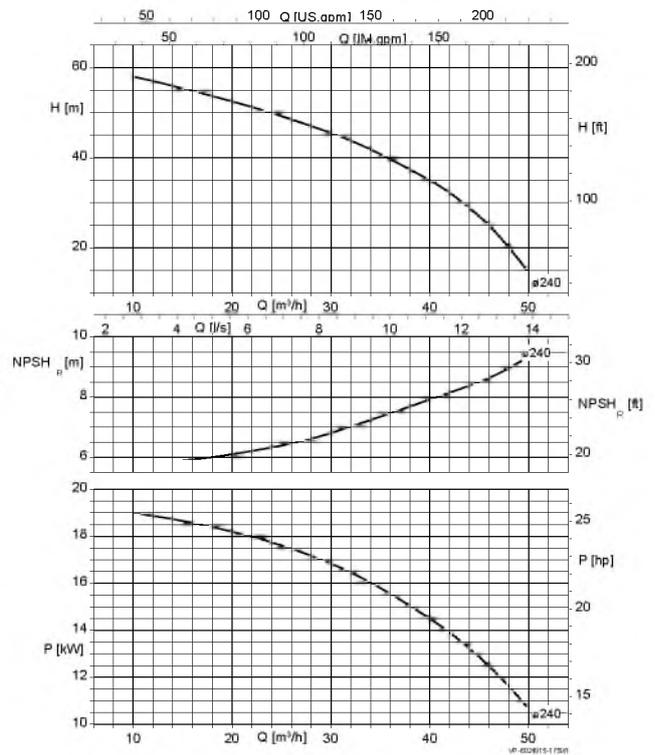
Vitaprime 65-200



Vitaprime 80-240-11



Vitaprime 80-240-15



Dimensions

Single-stage pumps

Pump set with motor shroud, with 3-point ball feet

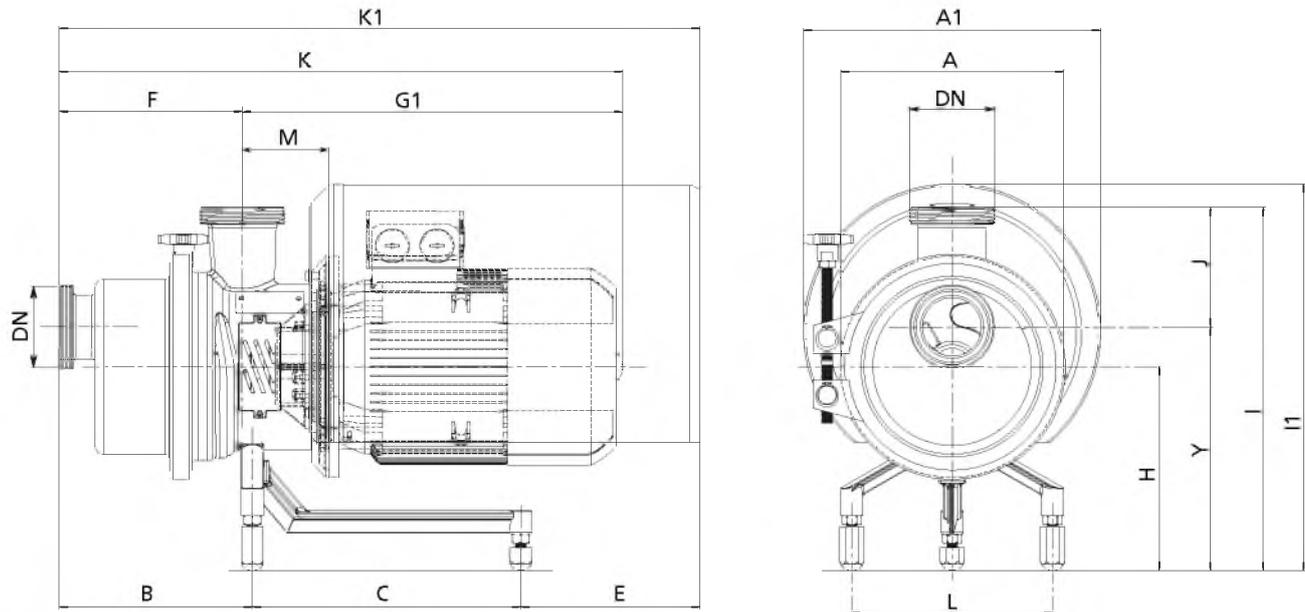


Fig. 1: Pump set with motor shroud, with 3-point ball feet

Dimensions

Size	Motor	[kW]	DN	[mm]															
				A	A1	B	C	E	F	G1	K1	K	H	J	I	I1	Y	L	M
40-146	90S	1,1	40	200	302	176	190	224	150	394,5	590	544,5	162	110	307	346	197	178	97,5
40-146	90L	1,5	40	200	302	176	190	224	150	434,5	590	584,5	162	110	307	346	197	178	97,5
40-146	100L	2,2	40	250	330	176	301	183	150	474,0	670	624	190	110	335	335	225	225	103,5
40-146	100L	3,0	40	250	330	176	301	183	150	474,0	670	624	190	110	335	335	225	225	103,5
42-146	100L	2,2	40	250	330	234	301	183	208	474,0	728	682	190	110	335	335	225	225	103,5
42-146	100L	3,0	40	250	330	234	301	183	208	474,0	728	682	190	110	335	335	225	225	103,5
42-146	112M	4,0	40	250	330	234	301	183	208	457,5	728	665,5	190	110	335	335	225	225	103,5
50-164	100L	2,2	50	250	330	196	301	202	175	477,0	698	652	228	114	378	433	264	225	106,5
50-164	100L	3,0	50	250	330	196	301	202	175	477,0	698	652	228	114	378	433	264	225	106,5
50-164	112M	4,0	50	250	330	196	301	202	175	460,5	698	635,5	228	114	378	433	264	225	106,5
60-200	112M	4,0	65	250	330	215	301	202	211	451,0	718	662	228	135	408	433	273	225	97

Pump set with motor shroud, with 4-point ball feet

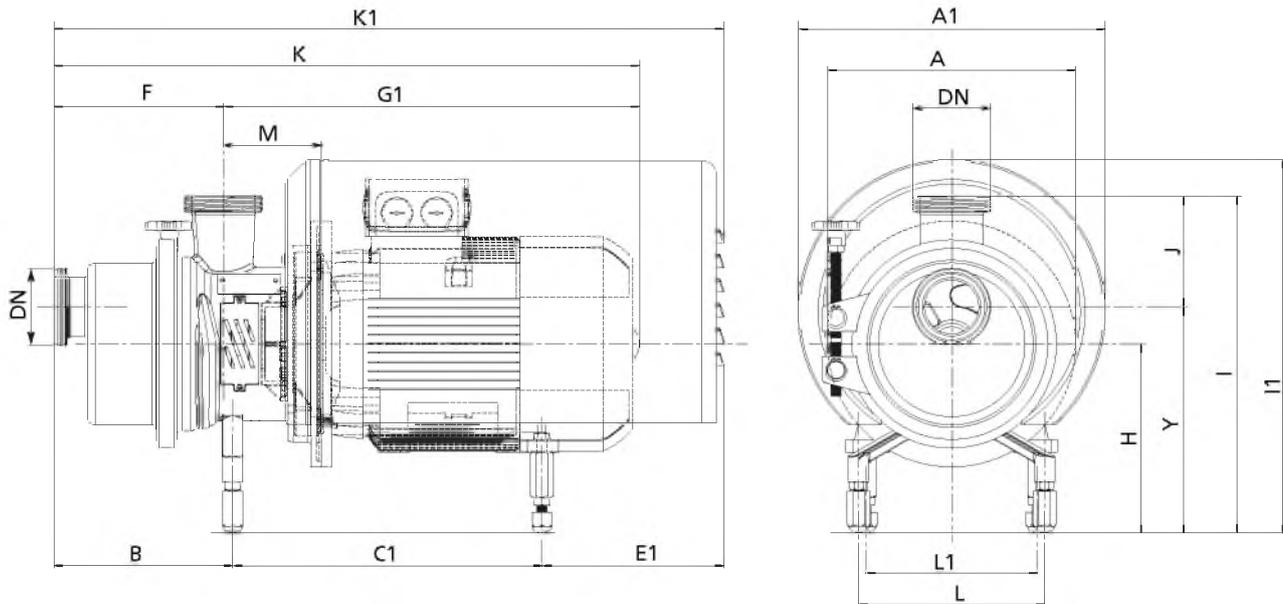


Fig. 2: Pump set with motor shroud, with 4-point ball feet

Dimensions

Size	Motor	[kW]	DN	[mm]																
				A	A1	B	C1	E1	F	G1	K1	K	H	J	I	I1	Y	L	L1	M
50-164	132S	5,5	50	300	370	196	336	227	175	513	797	688	228	114	378	450	264	225	216	128
50-164	132M	7,5	50	300	370	196	374	265	175	563	797	738	228	114	378	450	264	225	216	128
52-164	132S	5,5	50	300	370	258	336	227	237	513	859	750	228	114	378	450	264	225	216	128
52-164	132M	7,5	50	300	370	258	374	265	237	553,5	859	800	228	114	378	450	264	225	216	128
60-200	132S	5,5	65	300	370	215	337	226	211	503,5	816	714,5	228	135	408	450	273	225	216	118,5
60-200	132M	7,5	65	300	370	215	375	264	211	657	816	764,5	228	135	408	450	273	225	216	118,5
60-200	160M	11	65	350	480	215	470	337	211	717	1022	868	228	135	408	523	273	225	254	163
60-200	160L	15	65	350	480	215	514	293	211	553,5	1022	928	228	135	408	523	273	225	254	163
65-200	132S	5,5	65	300	370	215	337	226	211	503,5	816	714,5	228	135	408	450	273	225	216	118,5
65-200	132M	7,5	65	300	370	215	375	264	211	657	816	764,5	228	135	408	450	273	225	216	118,5
65-200	160M	11	65	350	480	215	470	337	211	717	1022	868	228	135	408	523	273	225	254	163
65-200	160L	15	65	350	480	215	514	293	211	692,5	1022	928	228	135	408	523	273	225	254	163
80-240-11	160M	11	80	350	480	267	498	334	245	752,5	1099	937,5	228	160	446	523	286	225	254	198,5
80-240-11	160L	15	80	350	480	267	542	290	245	752,5	1099	997,5	228	160	446	523	286	225	254	198,5
80-240-15	160L	15	80	350	480	267	542	290	245	782,5	1099	997,5	228	160	446	523	286	225	254	198,5
80-240-15	180M	18,5	80	350	400	267	576	254	245	752,5	1097	1027,5	230	160	448	588	288	225	279	194,5
80-240-15	180L	22	80	350	400	267	576	254	245	752,5	1097	997,5	230	160	448	588	288	225	279	194,5

Pump set with motor shroud, on motor feet

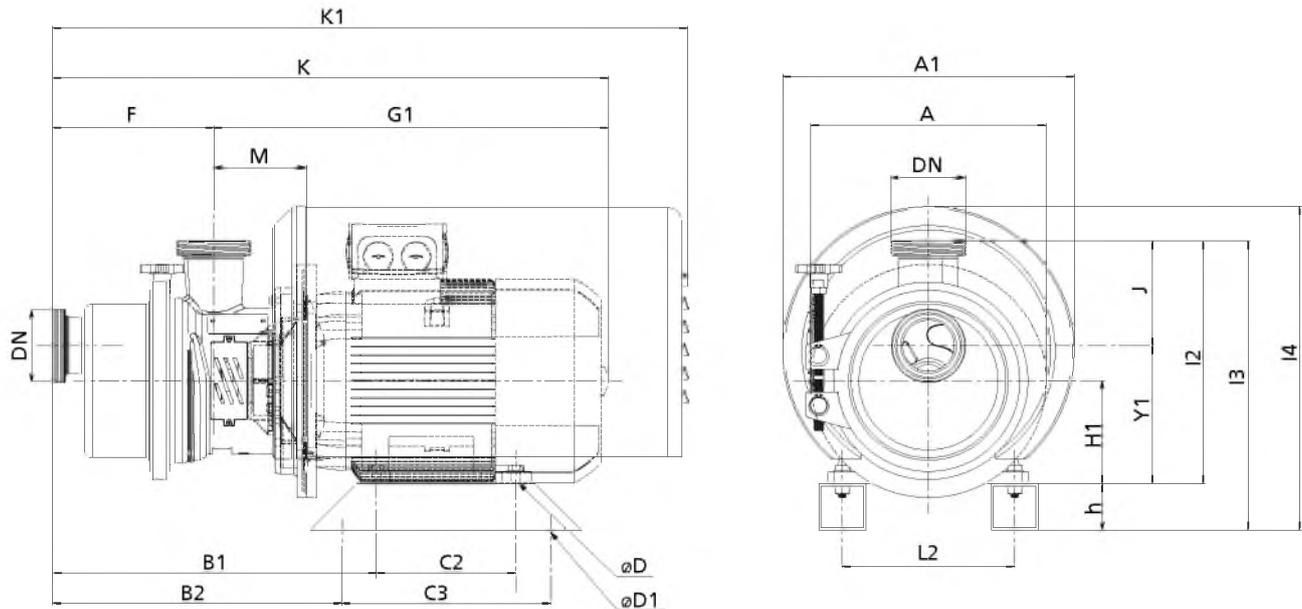


Fig. 3: Pump set with motor shroud, on motor feet

Dimensions

Size	Motor	[kW]	DN	[mm]																				
				A	A1	B1	B2	C2	C3	D	D1	F	G1	K1	K	h	H1	J	I2	I3	I4	Y1	L2	M
40-146	90S	1,1	40	200	302	306	269	100	200	10	10	150	394,5	590	544,5	40	90	110	235	275	314	125	140	97,5
40-146	90L	1,5	40	200	302	306	269	125	200	10	10	150	434,5	590	584,5	40	90	110	235	275	314	125	140	97,5
40-146	100L	2,2	40	250	330	313	268	140	230	12	12	150	474	670	624	50	100	110	245	295	355	135	160	103,5
40-146	100L	3	40	250	330	313	268	140	230	12	12	150	474	670	624	50	100	110	245	295	355	135	160	103,5
42-146	100L	2,2	40	250	330	371	326	140	230	12	12	208	474	728	682	50	100	110	245	295	355	135	160	103,5
42-146	100L	3	40	250	330	371	326	140	230	12	12	208	474	728	682	50	100	110	245	295	355	135	160	103,5
42-146	112M	4	40	250	330	378	333	140	230	12	12	208	457,5	728	665,5	50	112	110	257	307	367	147	160	103,5
50-164	100L	2,2	50	250	330	344	299	140	230	12	12	175	477	698	652	50	100	114	250	300	355	136	160	106,5
50-164	100L	3	50	250	330	344	299	140	230	12	12	175	477	698	652	50	100	114	250	300	355	136	160	106,5
50-164	112M	4	50	250	330	351	306	140	230	12	12	175	460,5	698	635,5	50	112	114	262	312	367	148	190	106,5
50-164	132S	5,5	50	300	370	392	346	140	266	12	12	175	513	797	688	60	132	114	282	342	414	168	216	128
50-164	132M	7,5	50	300	370	392	346	178	266	12	12	175	563	797	738	60	132	114	282	342	414	168	216	128
52-164	132S	5,5	50	300	370	454	408	140	266	12	12	237	513	859	750	60	132	114	282	342	414	168	216	128
52-164	132M	7,5	50	300	370	454	408	178	266	12	12	237	563	859	800	60	132	114	282	342	414	168	216	128
60-200	112M	4	65	250	330	371	326	140	230	12	12	211	451	718	662	50	112	135	292	342	367	157	190	97
60-200	132S	5,5	65	300	370	412	368	140	266	12	12	211	503,5	816	714,5	60	132	135	312	372	414	177	216	118,5
60-200	132M	7,5	65	300	370	412	368	178	266	12	12	211	553,5	816	764,5	60	132	135	312	372	414	177	216	118,5
60-200	160M	11	65	350	480	475	430	210	330	15	14	211	657	1022	868	60	160	135	340	400	483	205	254	163
60-200	160L	15	65	350	480	475	430	254	330	15	14	211	717	1022	928	60	160	135	340	400	483	205	254	163
65-200	132S	5,5	65	300	370	412	368	140	266	12	12	211	503,5	816	714,5	60	132	135	312	372	414	177	216	118,5
65-200	132M	7,5	65	300	370	412	368	178	266	12	12	211	553,5	816	764,5	60	132	135	312	372	414	177	216	118,5
65-200	160M	11	65	350	480	475	430	210	330	15	14	211	657	1022	868	60	160	135	340	400	483	205	254	163
65-200	160L	15	65	350	480	475	430	254	330	15	14	211	717	1022	928	60	160	135	340	400	483	205	254	163
80-240-11	160M	11	80	350	480	552	507	210	330	15	14	245	692,5	1099	937,5	60	160	160	378	438	483	218	254	198,5
80-240-11	160L	15	80	350	480	552	507	254	330	15	14	245	752,5	1099	997,5	60	160	160	378	438	483	218	254	198,5
80-240-15	160L	15	80	350	480	552	507	254	330	15	14	245	752,5	1099	997,5	60	160	160	378	438	483	218	254	198,5
80-240-15	180M	18,5	80	350	400	561	506	241	387	15	15	245	782,5	1097	1027,5	60	180	160	398	458	585	218	279	194,5
80-240-15	180L	22	80	350	400	561	506	241	387	15	15	245	752,5	1097	997,5	60	180	160	398	458	585	218	279	194,5

Two-stage pumps

Pump set with motor shroud, on 3-point ball feet

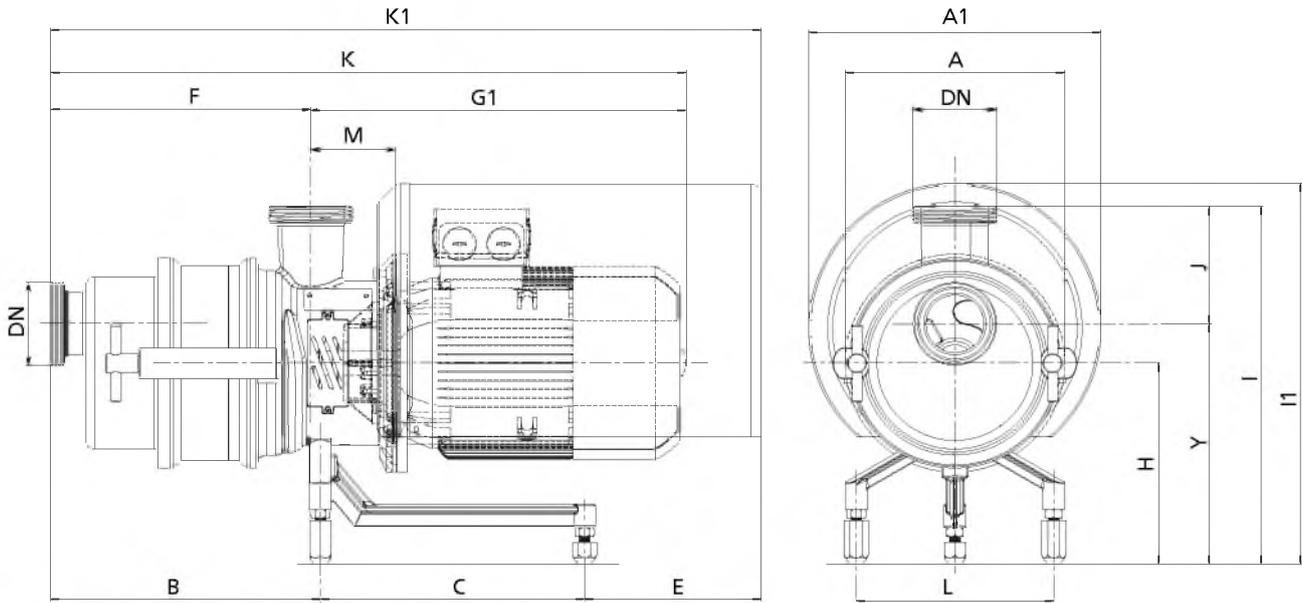


Fig. 4: Pump set with motor shroud, on 3-point ball feet

Dimensions

Size	Motor	[kW]	DN	[mm]															
				A	A1	B	C	E	F	G1	K1	K	H	J	I	I1	Y	L	M
42-146	100L	2,2	40	250	330	234	301	183	208	474	728	682	190	110	335	335	225	225	103,5
42-146	100L	3,0	40	250	330	234	301	183	208	474	728	682	190	110	335	335	225	225	103,5
42-146	112M	4,0	40	250	330	234	301	183	208	457,5	728	665,5	190	110	335	335	225	225	103,5

Pump set with motor shroud, on 4-point ball feet

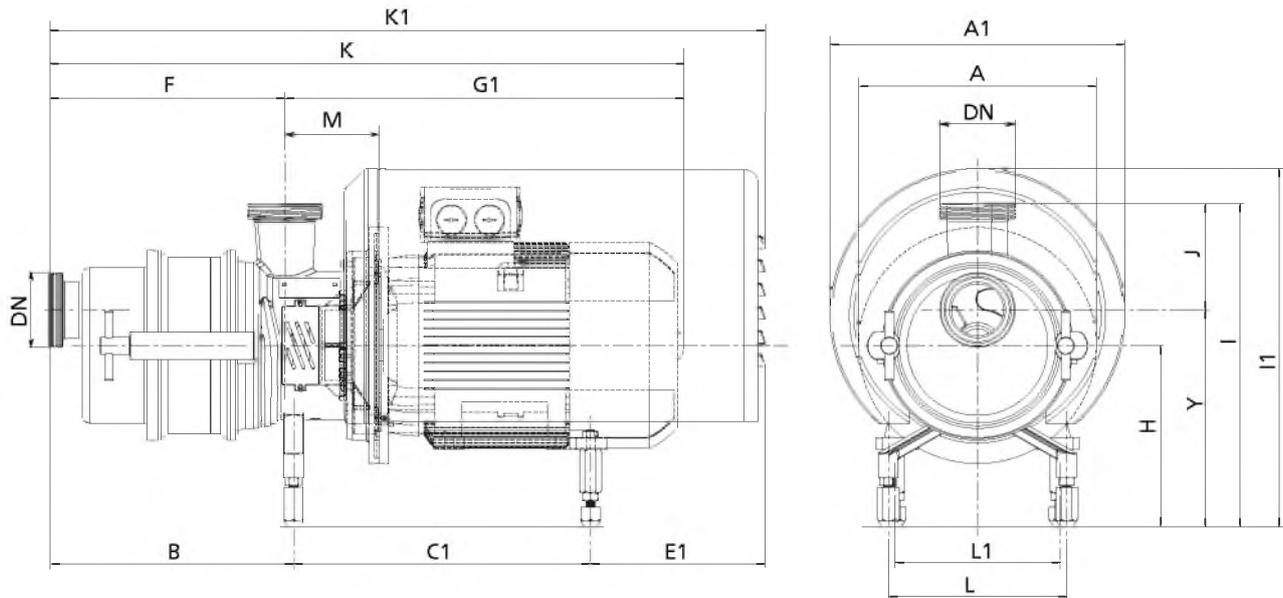


Fig. 5: Pump set with motor shroud, on 4-point ball feet

Dimensions

Size	Motor	[kW]	DN	A	A1	B	C1	E1	F	G1	K1	[mm]									
														K	H	J	I	I1	Y	L	L1
52-164	132S	5,5	50	300	370	258	336	227	237	513	859	750	228	114	378	450	264	225	216	128	
52-164	132M	7,5	50	300	370	258	374	265	237	563	859	800	228	114	378	450	264	225	216	128	

Pump set with motor shroud, on motor feet

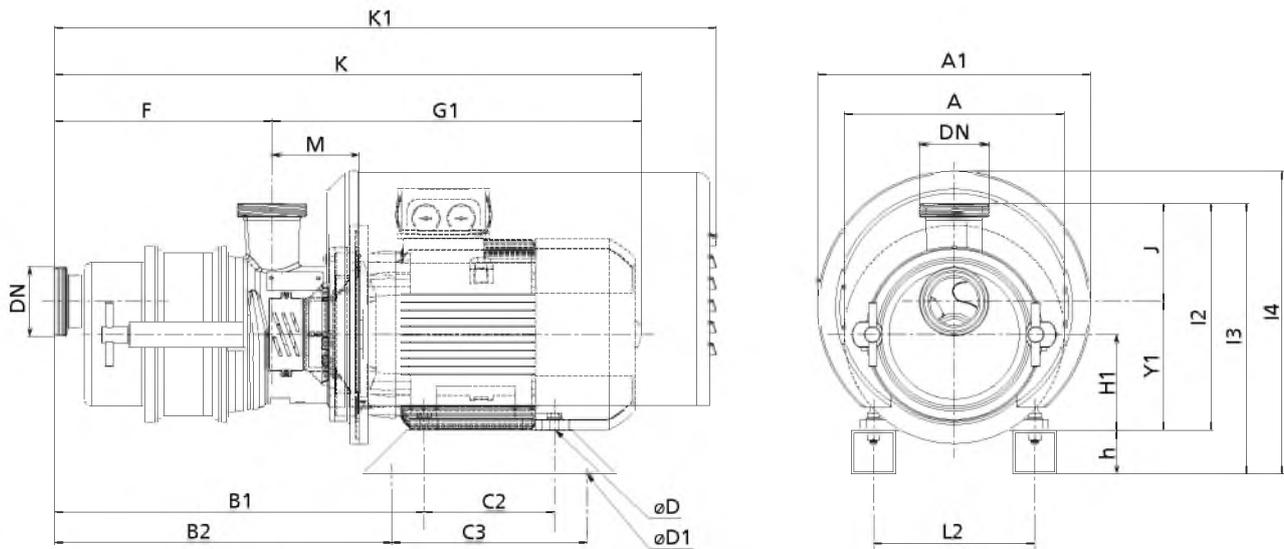


Fig. 6: Pump set with motor shroud, on motor feet

Dimensions

Size	Motor	[kW]	DN	[mm]																				
				A	A1	B1	B2	C2	C3	D	D1	F	G1	K1	K	h	H1	J	I2	I3	I4	Y1	L2	M
42-146	100L	2,2	40	250	330	371	326	140	230	12	12	208	474	728	682	50	100	110	245	295	355	135	160	103,5
42-146	100L	3,0	40	250	330	371	326	140	230	12	12	208	474	728	682	50	100	110	245	295	355	135	160	103,5
42-146	112M	4,0	40	250	330	378	333	140	230	12	12	208	457,5	728	665,5	50	112	110	257	307	367	147	160	103,5
52-164	132S	5,5	50	300	370	454	408	140	266	12	12	237	513	859	750	60	132	114	282	342	414	168	216	128
52-164	132M	7,5	50	300	370	454	408	178	266	12	12	237	563	859	800	60	132	114	282	342	414	168	216	128

Pump accessories

- Motor shroud made of stainless steel
- Vertically adjustable ball feet or machine mounts
- Residual drainage of pump casing
- Noise reduction valve
- Mounted on a trolley, with switch and power cable
- System for supplying the mechanical seal

**Detailed 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
V	P			8	0	-	2	4	0	-	1	1	0	4	0	4	K	B	Q	T	8	2	M	E	C	C	O		O	A
See name plate and data sheet																												See data sheet		

Designation key

Position	Code	Description
1-4	Pump type	
	V P	Vitaprime
5-13	Size	
	80	Nominal nozzle diameter [mm]
	240	Nominal impeller diameter [mm]
	11	Load range
14-16	Motor rating	
	0 0 7	0.7 kW
	0 4 0	4 kW
	1 8 5	18.5 kW
17	Number of poles	
	4	4 poles
18	Mounting arrangement	
	K	Ball feet
	T	Round base feet
	M	Motor foot
	V	Trolley
	B	Motor plate
19-20	Seal code	
	B Q	External flushing (quench)
	B	Dead end, without flushing system
	D B	Double mechanical seal
21-23	Seal code	
	T 1 8	U2U2VGG
	T 1 9	U2U2EGG
	T 6 4	U2Q1EGG
	T 6 9	BQ1M3GG
	T 6 6	Q1Q1M3GG
	T 6 8	U2Q1VGG
	T 8 0	BQ1VGG
	T 8 1	Q1Q1VGG
	T 8 2	BQ1EGG
	T 8 3	Q1Q1EGG
	T 8 4	Q1U2EGG
	T 8 5	Q1U2VGG
	H 0	BGEGG
	H 0 D	BGVGG
	H 1	BQ1EGG
	H 1 D	BQ1VGG
	H 2	Q1U2EGG
	H 2 D	Q1U2VGG
	H 3	Q1Q1EGG
	H 3 D	Q1Q1VGG
	H 4	U2U2EGG
	H 5	QQEGG**
	H A	U2U2EGG
	H 7	U2U2VGG*
	H 8	U2U2VGG
	H 9	BQ1VGG*
Q 7 0	BGEGG	
Q 7 1	BU2EGG	

Position	Code	Description
21-23	Q 7 2	U2U2EGG
	Q 7 4	U2U2VGG
	Q 7 8	U2U2VGG
	Q 7 9	U2U2M3GG
24	Piping connection	
	M	Threaded connection to DIN 11851
	E	Threaded connection to DIN 11853
	B	Threaded connection to DIN 11864-1-GS-A
	S	Threaded connection to SMS standard
	I	Threaded connection to IDF standard
	F	Threaded connection to RJT standard
	U	Tri-Clamp fitting
	D	Clamped connection to DIN 11864-3A
	T	Clamped connection to DIN 32676-A
	V	Clamped connection to ISO 2852
	L	Flange to EN 1092-1
	C	Flange to DIN 11864-2A
	Z	Flange to ASA ASME 150
A	APV flange	
G	Varivent flange	
25	O-ring material (casing/impeller)	
	E	EPDM 70 (FDA, USP Class VI, 3A)
	V	FPM 75 (FDA, USP Class VI, 3A)
	P	PTFE (FDA)
	M	FEP (encapsulated) (FDA)
	K	Kalrez (FFKM) (FDA)
26	Casing material	
	C	1.4409
27	Impeller material	
	C	1.4409
28	Motor shroud	
	S	With shroud
	O	Without shroud
29	Special design	
	<sup>4)</sup>	Standard
	X	Special design, incl. ATEX
30	Drain	
	O	No drain
	P	Casing drain via pipeline
	V	Casing drain via valve
	D	Casing drain with plug
31	Generation	
	A	Generation A, current

---

4) Blank

Dry-installed Volute Casing Pump

**KWP**

**Type Series Booklet**



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## Centrifugal Pumps with Shaft Seal

### Dry-installed Volute Casing Pump

## KWP



### Main applications

Pump for handling pre-treated sewage, waste water, all types of slurries without stringy material and pulps up to 5 % bone dry with a maximum density of 2000 kg/m<sup>3</sup>.

- Paper and cellulose industry
- Sugar industry
- Food and beverages industry
- Fossil-fuelled power stations
- Chemical industry
- Petrochemical industry
- Flue gas desulphurisation
- Coal upgrading plants
- Industrial effluent treatment systems
- Seawater desalination/reverse osmosis

### Operating data

Operating properties

Characteristic		Value
Nominal discharge nozzle diameter	DN [mm]	40 - 900
Flow rate	Q [m <sup>3</sup> /h]	≤ 15,000 <sup>1)</sup>
Head	H [m]	≤ 100 <sup>1)</sup>
Operating temperature	T [°C]	-40 to +140 <sup>1)</sup>
Operating pressure	p [bar]	≤ 10 <sup>1)</sup>

<sup>1)</sup> Higher values on request

### Designation

Example: KWPK125-100-0250 GDNG10

Key to the designation

Code	Description	
KWP	Type series	
K	Impeller type	
	K	Channel impeller
	O	Open multi-channel impeller
F	Free-flow impeller	
125	Nominal suction nozzle diameter [mm]	
100	Nominal discharge nozzle diameter [mm]	
250	Nominal impeller diameter [mm]	
GDNG	Material code (⇒Page 7)	
10	Design variant	

### Further information on the designation

(⇒Page 38)

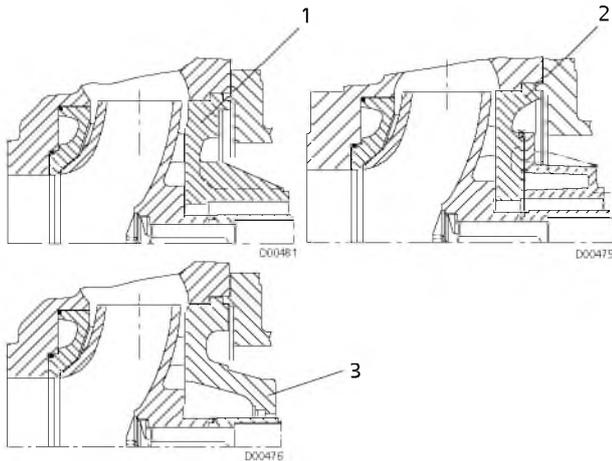
### Design details

#### Design

- Volute casing pump
- Back pull-out design
- Horizontal installation
- Single-stage
- Single-entry

#### Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet
- Pump casing fitted with a wear plate
- Discharge cover available in the following versions:



**Impeller type**

- Back vanes reduce axial thrust.
- Various, application-based impeller types

**Discharge cover versions**

1	Discharge cover with integrally cast stuffing box housing (cylindrical cover); material variants: GNNG, GDNG, DDDD	2	Discharge cover with bolted stuffing box housing (cylindrical cover, split); material variants: GHHH, HHHH and all sizes on bearing brackets P08sx, P10ax, P12sx for all available materials.
3	For mechanical seal: discharge cover with conical seal chamber (A-type cover); material variants: GNNG, GDNG, DDDD, DKKM, GHHH, HHHH		

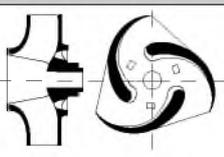
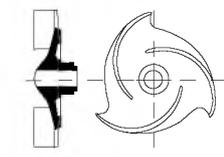
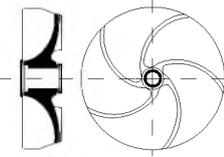
**Flanges**

- Suction flange
  - Up to DN 350 plus 400-400-500, 600-600-824/-825 and 700-700-923/-929: tapped blind hole 1.25 x d, mating dimensions to DIN 2501, PN10 /16 (DN 40 - DN 150), PN10 (DN 200 - DN 350)
  - From DN 400 plus 350-350-500: through-holes to EN 1092-2, PN10
- Discharge flange
  - DN 40 to DN 150: through-holes to EN 1092-2, PN10/16
  - DN 200 and above: through-holes to EN 1092-2, PN10
  - Tapped through-holes DIN 2501, PN10 for 600-600-824/-825, 700-700-923/-929, 700-700-953/-959, 800-800-934/-935/-939, 800-900-883, 900-900-1133/-1134/-1138/-1139

**Suction side versions**

- Wear plate
  - 065-040-250 to 600-600-669
- Casing wear ring
  - 250-250-315
  - 300-300-400
  - 350-350-400
  - 400-400-500
- Suction cover from 400-400-533

Applications of impeller types

Impeller type	Suitable for the following fluids
 <p>Closed channel impeller (K impeller)</p>	Contaminated, solids-laden fluids not containing stringy material and containing no or very little entrapped gas
 <p>Open multi-vane impeller (O impeller)</p>	For uncontaminated or slightly contaminated fluids as well as fluids liable to form deposits and bunch, with little entrapped gas.
 <p>Open free-flow impeller (F impeller)</p>	Fluids containing larger solids and stringy material as well as fluids with entrapped air or gas

Bearings

- Oil-lubricated rolling element bearings
- Back pull-out design with axially adjustable bearing bracket to adjust the clearance between impeller and wear plate

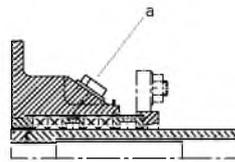
Bearings used

Standard bearings

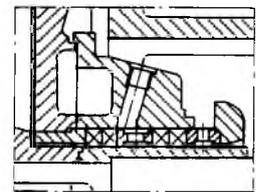
Bearing bracket	Rolling element bearing	
	Pump end <sup>2)</sup>	Drive end <sup>3)</sup>
P03ax	NU 409	2 x 7309 B-UA
P04ax	NU 411	2 x 7311 B-UA
P05ax	NU 413	2 x 7313 B-UA
P06x	NU 413	2 x 7313 B-UA
P08sx	NU 416	2 x 7319 B-UA
P10ax	NU 324	2 x 7224 B-UA
P12sx	NU 324	2 x 7224 B-UA
P16ax	NU 232 EC3	NU 232 EC3 <sup>2)</sup> QJ 328-N2
P20sx	NU 240 E	NJ 238 E <sup>2)</sup> 29340-E1 <sup>4)</sup>

Shaft seal

- Shaft fitted with a replaceable shaft protecting sleeve in the shaft seal area
- Gland packing

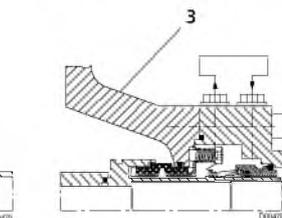
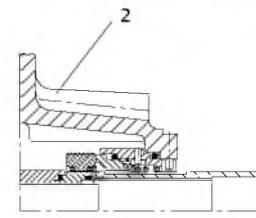
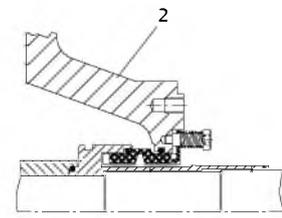
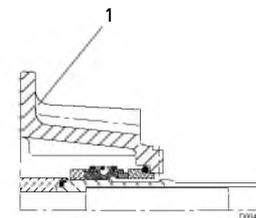


Uncooled gland packing with a) connection for barrier fluid or flushing liquid (connections 10 A.1 and 10 E.1)



Cooled gland packing

- Commercial single and double mechanical seals



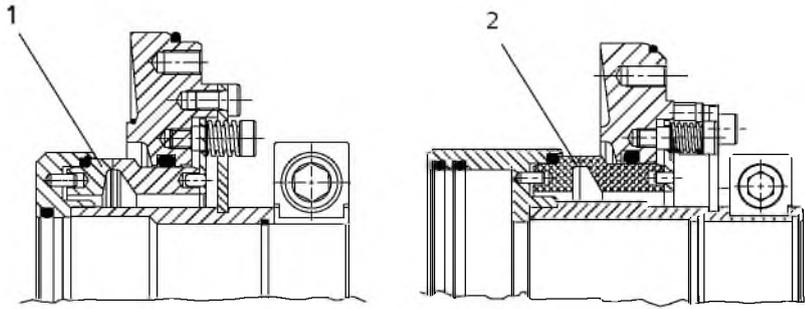
Mechanical seals in conical seal chamber (A-type)

1	Single mechanical seal, unbalanced	2	Single mechanical seal with spring-loaded stationary assembly
3	Mechanical seal in tandem arrangement, with quench		

2) To DIN 5412

3) To DIN 628

4) To DIN 728



Mechanical seals in conical seal chamber (A-type)

1	Single mechanical seal, balanced, with spring-loaded stationary assembly, bi-directional, for P16ax/P20sx V10	2	Single mechanical seal, with spring-loaded stationary assembly, balanced, bi-directional, for P20sx V11
---	---	---	---

**Drive**

- Electric motor connected to the pump via a coupling or belt drive.

**Sizes**

Size combinations

Discharge nozzle	Nominal impeller diameter																					
	201	200	251	250 253	311	313 315 320	400 403	500 501 503 504 505	533 583	544	630 633 634 635 637	710 713	663 669 710 753	803 813 814	824 825 873 923	923 929 953 959	934 935 939	883 1133 1134 1138 1139				
	Impeller type																					
	F	K	O	F	K	O	F	K	O	K	O	K	O	K	K	K	K	K	K	K	K	K
040	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
050	X	X	X	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
065	X	X	X	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
080	-	-	-	X	X	X	X	X	-	X	X	X	-	-	-	-	-	-	-	-	-	-
100	-	-	-	X	X	X	-	X	-	X	X	-	-	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-	X	-	X	X	X	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	X	-	X	-	X	X	-	-	X	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-	X	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-	-	X	-	-	-	-	-
500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-
600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	-	-
700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-
800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X

**Automation**

Automation options:

- Hyamaster
- hyatronic
- PumpDrive

**Material code**

Example of material code: DMKM

Key to material code

Code	Description	
D	Casing material	
	G	GJL-250
	D	NORIDUR 1.4593
	H	NORIHARD NH 15 3
	K	GJS-400-18-LT/ CeramikoPolySiC <sup>5)</sup>
M	Impeller material	

5) ≥ 600-600-0824

Code	Description	
	N	ERN
	D	NORIDUR 1.4593
	U	NORIDUR 1.4593 DAS
	H	NORIHARD NH 15 3
	K	CeramikPolySiC®
	M	NORICROM 1.4475
K	Wear plate material	
	N	ERN
	D	NORIDUR 1.4593
	U	NORIDUR 1.4593 DAS
	H	NORIHARD NH 15 3
	K <sup>6)</sup>	CeramikPolySiC®
M	Discharge cover material	
	G	GJL-250
	D	NORIDUR 1.4593
	H	NORIHARD NH 15 3
	K	CeramikPolySiC®
	M	NORICROM 1.4475

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<sup>6)</sup> K defines a suction cover in JS-400-18-LT/ CeramikPolySiC for pumps without a separate wear plate

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**Material variants**

## Materials

Part No.	Description	Material variant									
		GNNG	GDNG	DDDD	GHHH	HHHH	DUUD	DMKM	DKKM	KUKK	KKKK
101	Pump casing	GJL-250		NORIDUR 1.4593	GJL-250	NORIHARD <sup>7)</sup>	NORIDUR 1.4593 <sup>7)</sup>			GJS-400-18-LT/ CeramikPolySiC <sup>7)</sup>	
135.01	Wear plate, suction side	ERN		NORIDUR 1.4593	NORIHARD		NORIDUR 1.4593/ DAS	CeramikPolySiC			
162	Suction cover	GJL-250		NORIDUR 1.4593	GJL-250	NORIHARD	NORIDUR 1.4593			GJS-400-18-LT/ CeramikPolySiC	
163	Discharge cover	GJL-250		NORIDUR 1.4593	NORIHARD		NORIDUR 1.4593	NORICROM		GJS-400-18-LT/ CeramikPolySiC <sup>7)</sup>	
210	Shaft	C45+N									
230	Impeller	ERN	NORIDUR 1.4593		NORIHARD		NORIDUR 1.4593/ DAS	NORICROM	CeramikPolySiC	1.4593/DAS	CeramikPolySiC
330	Bearing bracket	GJL-250									
344	Bearing bracket lantern	GJL-250									
451.01	Stuffing box housing	GJL-250		NORIDUR 1.4593	GJL-250		NORIDUR 1.4593				
524.01	Shaft protecting sleeve (gland packing)	1.4122 HV500+80		1.4539	1.4122 HV500+80		1.4539				
524.01	Shaft protecting sleeve (mechanical seal)	1.4539									
906	Impeller screw <sup>8)</sup>	C35E+N		NORIDUR 1.4593	C35E+N		NORIDUR 1.4593				

7) Without auxiliary connection bores (drain hole and pressure gauge connection)

8) Bearing bracket P08sx and above: impeller hub cap 260

Technical data

Technical data of hydraulic system

Sizes	Bearing bracket	Impeller type K			Impeller type O			Impeller type F		
		Free passage	Impeller diameter		Free passage	Impeller diameter		Free passage	Impeller diameter	
			max.	min.		max.	min.		max.	min.
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
065-040-0250	P03ax	15	260	170	-	-	-	-	-	-
065-050-0200	P03ax	34	209	120	30	209	160	-	-	-
065-050-0201	P03ax	-	-	-	-	-	-	45	209	130
080-065-0200	P03ax	46	209	145	30	209	160	-	-	-
080-065-0201	P03ax	-	-	-	-	-	-	55	209	145
080-040-0315	P04ax	15	320	230	-	-	-	-	-	-
080-050-0400	P04ax	15	408	330	-	-	-	-	-	-
080-065-0315	P04ax	42	320	230	25	320	230	-	-	-
080-065-0313	P04ax	15	320	230	-	-	-	-	-	-
080-065-0400	P04ax	34	408	330	-	-	-	-	-	-
100-080-0250	P03ax	50	260	170	36	260	170	-	-	-
100-080-0251	P03ax	-	-	-	-	-	-	60	260	170
100-080-0311	P04ax	-	-	-	-	-	-	50	320	260
100-080-0315	P04ax	44	320	260	-	-	-	-	-	-
100-080-0400	P05ax	46	404	280	28	404	280	-	-	-
100-080-0403	P05ax	16	404	280	-	-	-	-	-	-
125-080-0500	P06x	20	504	380	-	-	-	-	-	-
125-100-0250	P04ax	60	260	180	50	260	180	-	-	-
125-100-0251	P04ax	-	-	-	-	-	-	50	260	180
125-100-0253	P04ax	28	260	180	-	-	-	-	-	-
125-100-0315	P04ax	54	320	230	-	-	-	-	-	-
125-100-0400	P05ax	50	404	280	35	404	280	-	-	-
125-100-0403	P05ax	20	404	280	-	-	-	-	-	-
150-125-0500	P06x	50	504	350	-	-	-	-	-	-
150-125-0503	P06x	21	509	350	-	-	-	-	-	-
150-150-0311	P05ax	-	-	-	-	-	-	90	320	260
150-150-0315	P05ax	88	320	260	65	320	260	-	-	-
150-150-0400	P05ax	64	404	320	-	-	-	-	-	-
150-150-0403	P05ax	41	404	320	-	-	-	-	-	-
200-200-0320	P05ax	75	320	257	-	-	-	-	-	-
200-200-0400	P06x	80	403	320	78	404	320	-	-	-
200-200-0403	P06x	40	404	320	-	-	-	-	-	-
200-200-0500	P08xs, P10ax, P12sx	75	504	400	-	-	-	-	-	-
200-200-0501	P08xs, P10ax, P12sx	75	504	400	-	-	-	-	-	-
200-200-0503	P08xs, P10ax, P12sx	40	504	400	-	-	-	-	-	-
250-250-0315	P06x	70	324	285	-	-	-	-	-	-
250-250-0400	P08xs, P10ax	80	409	338	-	-	-	-	-	-
250-250-0403	P08xs, P10ax	44	409	340	-	-	-	-	-	-
250-250-0500	P08xs, P10ax, P12sx	85	504	400	70	504	400	-	-	-
250-250-0503	P08xs, P10ax, P12sx	48	504	400	-	-	-	-	-	-
250-250-0505	P08xs, P10ax, P12sx	70	504	436	-	-	-	-	-	-
250-250-0630	P08xs, P10ax, P12sx	86	630	500	-	-	-	-	-	-
250-250-0634	P08xs, P10ax, P12sx	41	630	480	-	-	-	-	-	-
300-300-0400	P08xs, P10ax	85	409	320	-	-	-	-	-	-
300-300-0500	P08xs, P10ax, P12sx	89	504	400	-	-	-	-	-	-
300-300-0503	P08xs, P10ax, P12sx	50	504	420	-	-	-	-	-	-
350-350-0400	P08xs, P10ax	110	408	330	-	-	-	-	-	-
350-350-0500	P08xs, P10ax, P12sx	110	508	390	-	-	-	-	-	-
350-350-0503	P08xs, P10ax, P12sx	65	508	472	-	-	-	-	-	-
350-350-0504	P08xs, P10ax, P12sx	55	507	460	-	-	-	-	-	-
350-350-0630	P08xs, P10ax, P12sx	135	630	500	-	-	-	-	-	-
350-350-0633	P08xs, P10ax, P12sx	75	630	500	-	-	-	-	-	-
400-400-0500	P08xs, P10ax, P12sx	123	508	430	-	-	-	-	-	-
400-400-0503	P08xs, P10ax, P12sx	90	508	445	-	-	-	-	-	-
400-400-0533	P10ax, P12sx	90	538	496	-	-	-	-	-	-

Sizes	Bearing bracket	Impeller type K			Impeller type O			Impeller type F		
		Free passage	Impeller diameter		Free passage	Impeller diameter		Free passage	Impeller diameter	
			max.	min.		max.	min.		max.	min.
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
400-400-0583	P10ax, P12sx	90	600	550	-	-	-	-	-	-
500-400-0710	P10ax, P12sx, P16ax	160	730	630	-	-	-	-	-	-
500-400-0713	P10ax, P12sx, P16ax	65	730	630	-	-	-	-	-	-
500-500-0544	P10ax, P12sx	75	572	495	-	-	-	-	-	-
500-500-0630	P10ax, P12sx, P16ax	142	636	528	-	-	-	-	-	-
500-500-0633	P10ax, P12sx, P16ax	90	636	534	-	-	-	-	-	-
500-500-0634	P10ax, P12sx, P16ax	85	636	554	-	-	-	-	-	-
500-500-0635	P10ax, P12sx, P16ax	75	636	565	-	-	-	-	-	-
500-500-0637	P10ax, P12sx, P16ax	85	636	540	-	-	-	-	-	-
600-600-0663	P12sx	80	700	620	-	-	-	-	-	-
600-600-0669	P12sx	80	700	630	-	-	-	-	-	-
600-600-0710	P12sx, P16ax	165	716	650	-	-	-	-	-	-
600-600-0753	P16ax	112	750	675	-	-	-	-	-	-
600-600-0803	P16ax	100	780	718	-	-	-	-	-	-
600-600-0813	P16ax	95	830	710	-	-	-	-	-	-
600-600-0824	P16ax	95	794	720	-	-	-	-	-	-
600-600-0825	P16ax	95	800	709	-	-	-	-	-	-
600-600-0873	P16ax	97	880	800	-	-	-	-	-	-
600-600-0923	P20sx	113	930	840	-	-	-	-	-	-
700-700-0923	P20sx	115	870	765	-	-	-	-	-	-
700-700-0929	P20sx	100	870	780	-	-	-	-	-	-
800-700-0953	P20sx	110	940	834	-	-	-	-	-	-
800-700-0959	P20sx	105	940	820	-	-	-	-	-	-
800-800-0934	P20sx	115	950	845	-	-	-	-	-	-
800-800-0935	P20sx	155	940	850	-	-	-	-	-	-
800-800-0939	P20sx	86	950	854	-	-	-	-	-	-
800-900-0883	P20sx	155	855	750	-	-	-	-	-	-
900-900-1133	P20sx	140	1120	1018	-	-	-	-	-	-
900-900-1134	P20sx	150	1120	1008	-	-	-	-	-	-
900-900-1138	P20sx	120	1122	1006	-	-	-	-	-	-
900-900-1139	P20sx	110	1120	980	-	-	-	-	-	-

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9) Values on request

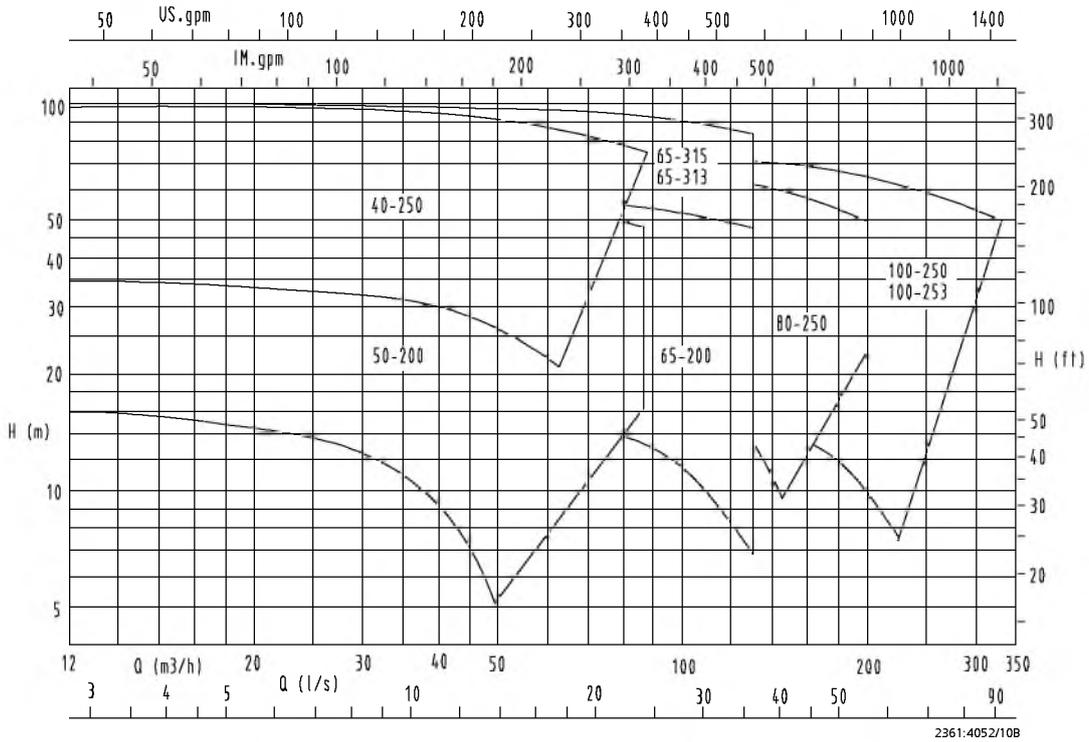
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12 KWP

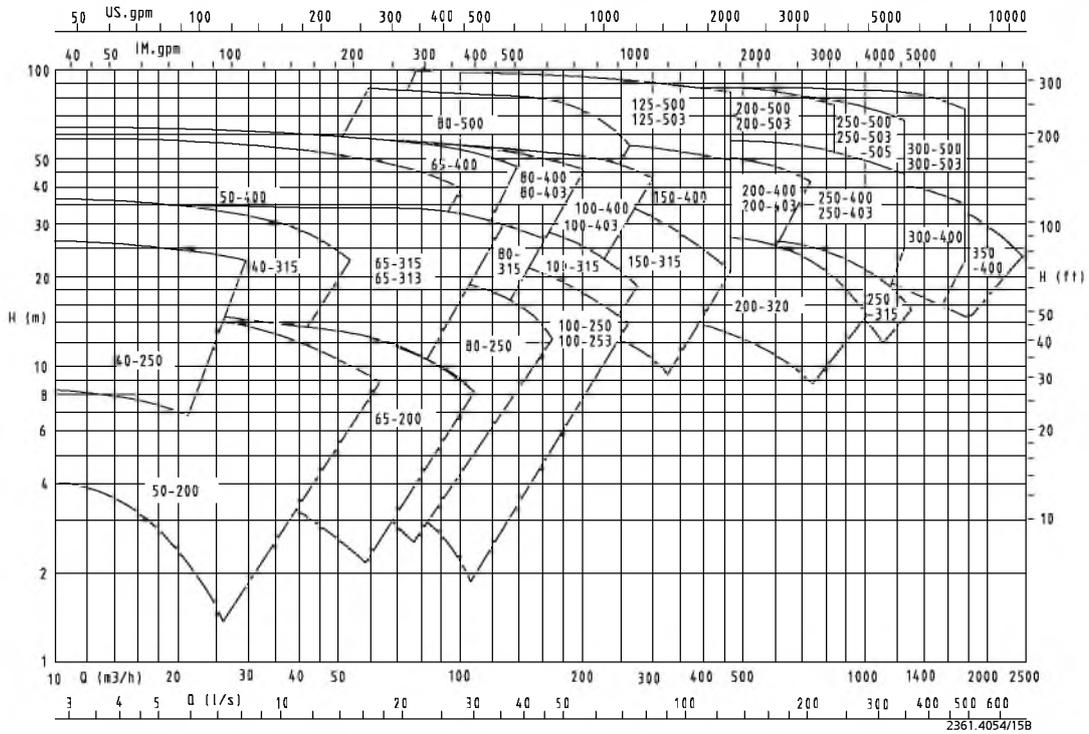


Selection charts

KWP, K impeller, n=2900 rpm

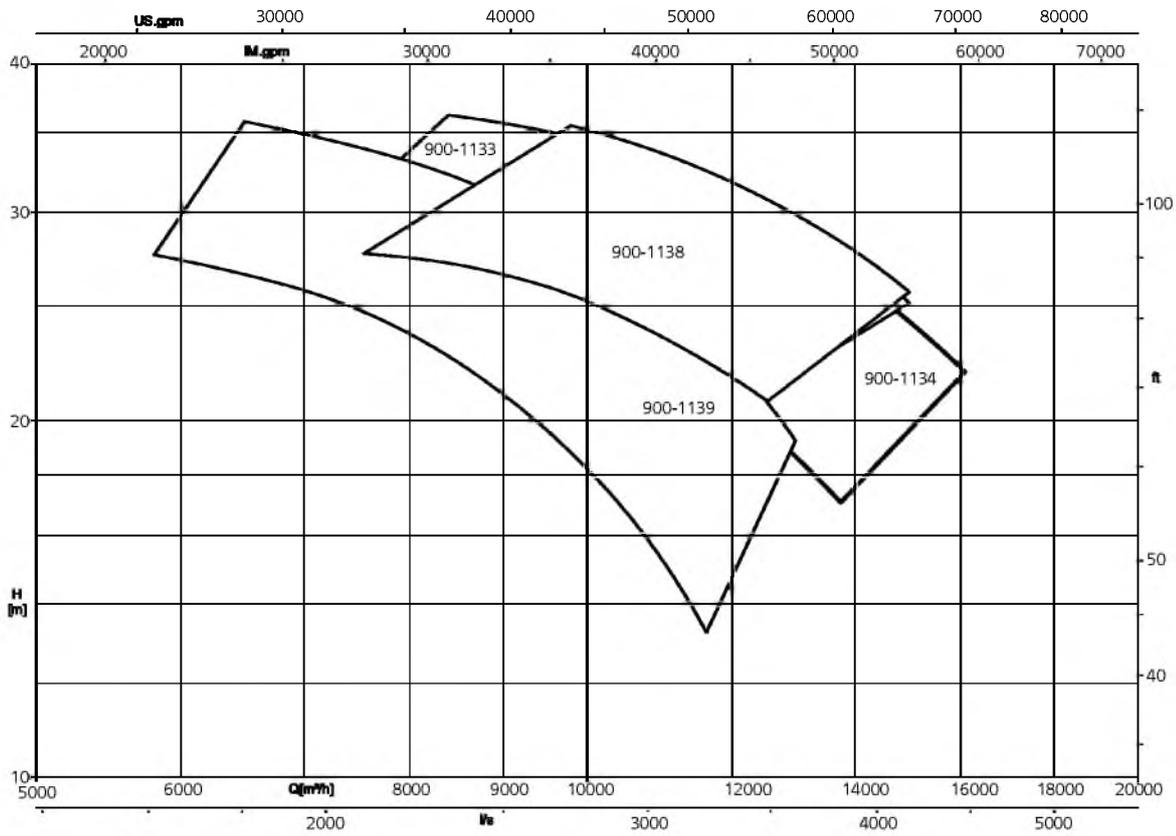


KWP, K impeller, n=1450 rpm



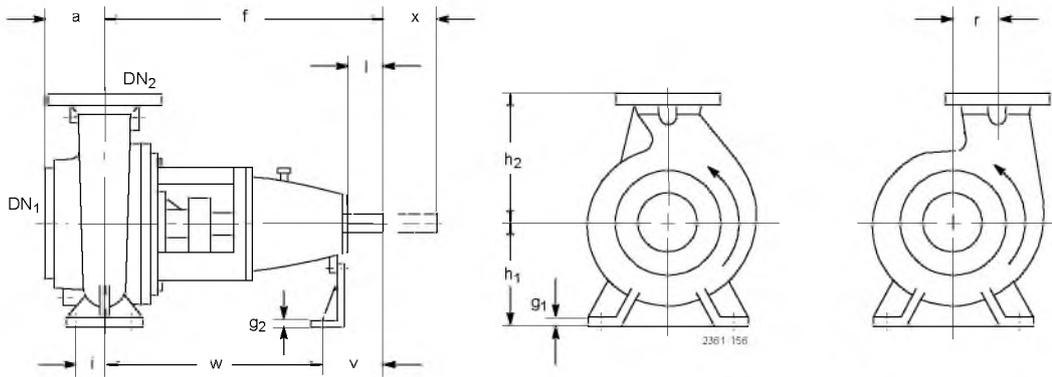


KWP, K impeller, n=480 rpm

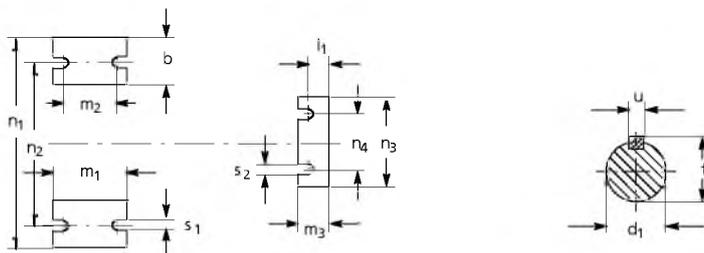


Dimensions and connections

Bearing brackets P03ax to P06x



Pump dimensions (P03ax to P06x)



Dimensions of pump feet and shaft end (P03ax to P06x)

Pump dimensions (P03ax to P06x)

Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	f	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>10)</sup>
065-040-0250	P03ax	65	40	100	65	500	16	4	180	225	-	125	48	320	160	100
065-050-0200	P03ax	65	50	112	50	500	14	4	160	200	-	100	48	265	160	100
065-050-0201	P03ax	65	50	112	50	500	14	4	160	200	-	100	48	265	160	100
080-040-0315	P04ax	80	40	125	80	530	18	6	225	250	-	160	48	400	160	140
080-050-0400	P04ax	80	50	120	80	530	18	6	280	325	-	160	48	435	160	140
080-065-0200	P03ax	80	65	125	65	500	16	4	180	225	-	125	48	320	160	100
080-065-0201	P03ax	80	65	125	65	500	16	4	180	225	-	125	48	320	160	100
080-065-0311	P04ax	80	65	140	80	530	18	6	225	280	-	160	48	400	160	120
080-065-0313	P04ax	80	65	140	80	530	18	6	225	280	-	160	48	400	160	120
080-065-0315	P04ax	80	65	140	80	530	18	6	225	280	-	160	48	400	160	120
080-065-0400	P04ax	80	65	140	80	530	18	6	280	355	-	160	48	435	160	120
100-080-0250	P03ax	100	80	125	80	500	18	6	225	280	-	160	48	400	160	120
100-080-0251	P03ax	100	80	125	80	500	18	6	225	280	-	160	48	400	160	120
100-080-0311	P04ax	100	80	140	80	530	18	6	225	280	-	160	48	400	160	120
100-080-0315	P04ax	100	80	140	80	530	18	6	225	280	-	160	48	400	160	120
100-080-0400	P05ax	100	80	140	80	670	18	12	280	355	-	160	60	435	200	120
100-080-0403	P05ax	100	80	140	80	670	18	12	280	355	-	160	60	435	200	120
125-080-0500	P06x	125	80	140	100	720	24	12	355	450	-	200	60	550	200	160
125-100-0250	P04ax	125	100	140	80	530	18	6	225	280	-	160	48	400	160	140
125-100-0251	P04ax	125	100	140	80	530	18	6	225	280	-	160	48	400	160	140
125-100-0253	P04ax	125	100	140	80	530	18	6	225	280	-	160	48	400	160	140
125-100-0315	P04ax	125	100	140	80	530	18	6	250	315	-	180	48	400	160	140
125-100-0400	P05ax	125	100	140	100	670	20	12	280	355	-	200	60	500	200	160

<sup>10)</sup> x = back pull-out clearance (without removing the motor)

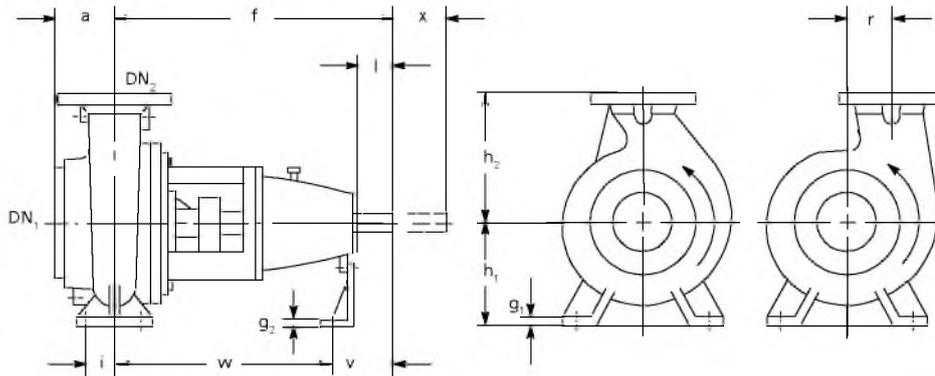
	Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	f	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>10)</sup>
125-100-0403	P05ax	125	100	140	100	670	20	12	280	355	-	200	60	500	200	160	
150-125-0500	P06x	150	125	160	100	720	24	12	355	450	-	200	60	550	200	160	
150-125-0503	P06x	150	125	160	100	720	24	12	355	450	-	200	60	550	200	160	
150-150-0311	P05ax	150	150	180	100	670	22	12	315	400	-	200	60	550	200	160	
150-150-0315	P05ax	150	150	180	100	670	22	12	315	400	-	200	60	550	200	160	
150-150-0400	P05ax	150	150	160	100	670	22	12	315	450	-	200	60	550	200	160	
150-150-0403	P05ax	150	150	160	100	670	22	12	315	450	-	200	60	550	200	160	
200-200-0320	P05ax	200	200	200	100	697	22	12	355	450	-	200	60	550	200	160	
200-200-0400	P06x	200	200	180	100	720	24	12	355	500	-	200	60	550	200	160	
200-200-0403	P06x	200	200	180	100	720	24	12	355	500	-	200	60	550	200	160	
250-250-0315	P06x	250	250	215	130	720	26	12	500	400	315	260	60	800	200	160	

Dimensions of shaft end and pump feet (P03ax to P06x)

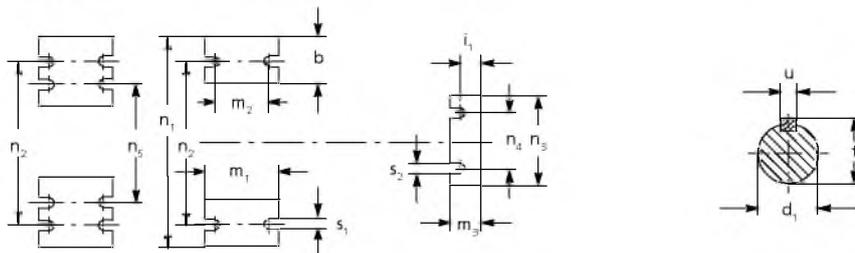
Bearing bracket	Size	Shaft end				Pump feet									
		d <sub>1</sub>	l	t	u	i	i <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	n <sub>4</sub>	s <sub>1</sub>	s <sub>2</sub>	v	w	
P03ax	065-040-0250	32	80	35,3	10	47,5	30	95	250	110	16	14	130	370	
P03ax	065-050-0200	32	80	35,3	10	35	30	70	212	110	14	14	130	370	
P03ax	065-050-0201	32	80	35,3	10	35	30	70	212	110	14	14	130	370	
P03ax	080-065-0200	32	80	35,3	10	47,5	30	95	250	110	14	14	130	370	
P03ax	080-065-0201	32	80	35,3	10	47,5	30	95	250	110	14	14	130	370	
P03ax	100-080-0250	32	80	35,3	10	60	30	120	315	110	18	14	130	370	
P03ax	100-080-0251	32	80	35,3	10	60	30	120	315	110	18	14	130	370	
P04ax	080-040-0315	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	080-050-0400	42	110	45,1	12	60	33	120	355	110	19	14	160	370	
P04ax	080-065-0311	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	080-065-0313	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	080-065-0315	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	080-065-0400	42	110	45,1	12	60	33	120	355	110	19	14	160	370	
P04ax	100-080-0311	42	110	45,1	12	60	33	120	315	110	19	14	160	370	
P04ax	100-080-0315	42	110	45,1	12	60	33	120	315	110	19	14	160	370	
P04ax	125-100-0250	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	125-100-0251	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	125-100-0253	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P04ax	125-100-0315	42	110	45,1	12	60	33	120	315	110	18	14	160	370	
P05ax	100-080-0400	48	110	51,5	14	60	39	120	355	140	18	18	170	500	
P05ax	100-080-0403	48	110	51,5	14	60	39	120	355	140	18	18	170	500	
P05ax	125-100-0400	48	110	51,5	14	75	39	150	400	140	23	18	170	500	
P05ax	125-100-0403	48	110	51,5	14	75	39	150	400	140	23	18	170	500	
P05ax	150-150-0311	48	110	51,5	14	75	39	150	450	140	23	18	170	500	
P05ax	150-150-0315	48	110	51,5	14	75	39	150	450	140	23	18	170	500	
P05ax	150-150-0400	48	110	51,5	14	75	39	150	450	140	23	18	170	500	
P05ax	150-150-0403	48	110	51,5	14	75	39	150	450	140	23	18	170	500	
P05ax	200-200-0320	48	110	51,5	14	75	39	150	450	140	22	18	170	527	
P06x	125-080-0500	60	140	64,2	18	75	39	150	450	140	23	18	205	515	
P06x	150-125-0500	60	140	64,2	18	75	39	150	450	140	23	18	205	515	
P06x	150-125-0503	60	140	64,2	18	75	39	150	450	140	23	18	205	515	
P06x	200-200-0400	60	140	64,2	18	75	39	150	450	140	23	18	205	515	
P06x	200-200-0403	60	140	64,2	18	75	39	150	450	140	23	18	205	515	
P06x	250-250-0315	60	140	64,2	18	95	39	190	670	140	26	18	205	515	

<sup>10)</sup> x = back pull-out clearance (without removing the motor)

Bearing brackets P08sx to P12sx



Pump dimensions (P08sx to P12sx)



Dimensions of pump feet and shaft end (P08sx to P12sx)

Pump dimensions (P08sx to P12sx)

Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>11)</sup>
200-200-0500	P08sx/P10ax/P12sx	200	200	200	120	24	12	375	560	-	200	60	700	200	250
200-200-0501	P08sx/P10ax/P12sx	200	200	200	120	24	12	375	560	-	200	60	700	200	250
200-200-0503	P08sx/P10ax/P12sx	200	200	200	120	24	12	375	560	-	200	60	700	200	250
250-250-0400	P08sx/P10ax	250	250	180	130	26	12	425	375	300	260	60	800	200	315
250-250-0403	P08sx/P10ax	250	250	180	130	26	12	425	375	300	260	60	800	200	315
250-250-0500	P08sx/P10ax/P12sx	250	250	200	130	26	12	425	400	315	260	60	800	200	315
250-250-0503	P08sx/P10ax/P12sx	250	250	200	130	26	12	425	400	315	260	60	800	200	315
250-250-0505	P08sx/P10ax/P12sx	250	250	200	130	26	12	425	400	315	260	60	800	200	315
250-250-0630	P08sx/P10ax/P12sx	250	250	200	150	32	12	500	450	400	260	60	900	200	315
250-250-0634	P08sx/P10ax/P12sx	250	250	200	150	32	12	500	450	400	260	60	900	200	315
300-300-0400	P08sx/P10ax	300	300	180	180	32	12	500	400	390	360	60	900	200	315
300-300-0500	P08sx/P10ax/P12sx	300	300	200	130	26	12	450	450	315	260	60	800	200	315
300-300-0503	P08sx/P10ax/P12sx	300	300	200	130	26	12	450	450	315	260	60	800	200	315
350-350-0400	P08sx/P10ax	350	350	200	225	32	12	560	450	395	400	60	1080	200	315
350-350-0500 <sup>12)</sup>	P08sx/P10ax/P12sx	350	350	290	225	32	12	560	500	415	400	60	1080	200	315
350-350-0503 <sup>12)</sup>	P08sx/P10ax/P12sx	350	350	290	225	32	12	560	500	415	400	60	1080	200	315
350-350-0504 <sup>12)</sup>	P08sx/P10ax/P12sx	350	350	290	225	32	12	560	500	415	400	60	1080	200	315
350-350-0630	P08sx/P10ax/P12sx	350	350	250	150	32	12	560	560	400	360	60	900	200	350
350-350-0633	P08sx/P10ax/P12sx	350	350	250	150	32	12	560	560	400	360	60	900	200	350
400-400-0500	P08sx/P10ax/P12sx	400	400	260	250	40	16	670	500	490	400	85	1150	216	400
400-400-0503	P08sx/P10ax/P12sx	400	400	260	250	40	16	670	500	490	400	85	1150	216	400
400-400-0533 <sup>12)</sup>	P10ax/P12sx	400	400	350	250	40	16	630	525	475	360	70	1150	200	400
400-400-0583 <sup>12)</sup>	P10ax/P12sx	400	400	390	250	40	16	700	540	510	400	110	1150	216	400
500-400-0710 <sup>12)</sup>	P10ax/P12sx	500	400	350	250	40	16	670	600	480	400	65	1150	216	350

11) x = back pull-out clearance (without removing the motor)

12) No block flange but standard flange with through-holes

	Size	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>11)</sup>
500-400-0713 <sup>12)</sup>	P10ax/P12sx		500	400	350	250	40	16	670	600	480	400	65	1150	216	350
500-500-0544 <sup>12)</sup>	P10ax/P12sx		500	500	425	250	40	30	800	630	585	400	90	1400	600	450
500-500-0630 <sup>12)</sup>	P10ax/P12sx		500	500	375	250	40	16	750	630	575	400	100	1400	216	400
500-500-0633 <sup>12)</sup>	P10ax/P12sx		500	500	375	250	40	16	750	630	575	400	100	1400	216	400
500-500-0634 <sup>12)</sup>	P10ax/P12sx		500	500	375	250	40	16	750	630	575	400	100	1400	216	400
500-500-0635 <sup>12)</sup>	P10ax/P12sx		500	500	375	250	40	16	750	630	575	400	100	1400	216	400
500-500-0637 <sup>12)</sup>	P10ax/P12sx		500	500	375	250	40	16	750	630	575	400	100	1400	216	400
600-600-0663 <sup>12)</sup>	P12sx		600	600	400	250	40	16	800	630	615	400	125	1400	200	500
600-600-0669 <sup>12)</sup>	P12sx		600	600	400	250	40	16	800	630	615	400	125	1400	200	500
600-600-0710 <sup>12)</sup>	P12sx		600	600	500	250	40	18	900	750	680	400	70	1600	200	500

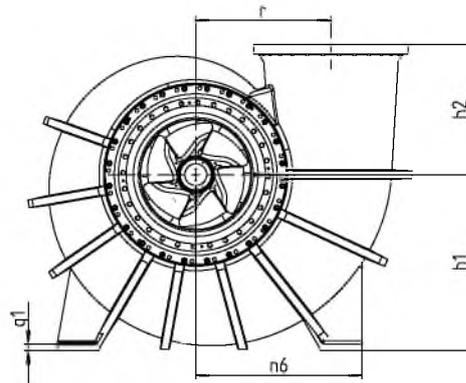
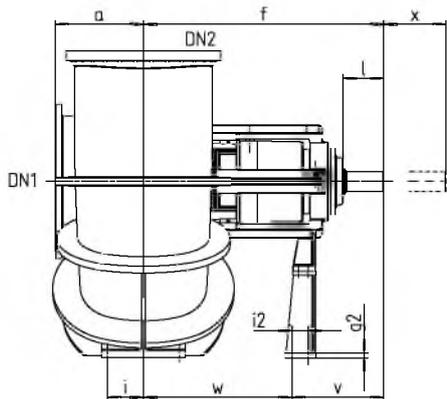
Dimensions of shaft end and pump feet (P08sx to P12sx)

Bearing bracket	Size	Shaft end [mm]				Pump feet [mm]										
		d <sub>1</sub>	l	t	u	i	i <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	n <sub>4</sub>	n <sub>5</sub>	s <sub>1</sub>	s <sub>2</sub>	f	v	w
P08sx	200-200-0500	75	150	97,7	20	75	39	150	560	140	-	23	18	970	220	750
P08sx	200-200-0501	75	150	97,7	20	75	39	150	560	140	-	23	18	970	220	750
P08sx	200-200-0503	75	150	97,7	20	75	39	150	560	140	-	23	18	970	220	750
P08sx	250-250-0400	75	150	97,7	20	95	39	190	670	140	-	26	18	1000	220	780
P08sx	250-250-0403	75	150	97,7	20	95	39	190	670	140	-	26	18	1000	220	780
P08sx	250-250-0500	75	150	97,7	20	95	39	190	670	140	-	28	18	1000	220	780
P08sx	250-250-0503	75	150	97,7	20	95	39	190	670	140	-	28	18	1000	220	780
P08sx	250-250-0505	75	150	97,7	20	95	39	190	670	140	-	28	18	1000	220	780
P08sx	250-250-0630	75	150	97,7	20	95	39	190	750	140	-	26	18	1000	220	780
P08sx	250-250-0634	75	150	97,7	20	95	39	190	750	140	-	26	18	1000	220	780
P08sx	300-300-0400	75	150	97,7	20	125	39	250	750	140	-	28	18	1000	220	780
P08sx	300-300-0500	75	150	97,7	20	95	39	190	670	140	-	28	18	1000	220	780
P08sx	300-300-0503	75	150	97,7	20	95	39	190	670	140	-	28	18	1000	220	780
P08sx	350-350-0400	75	150	97,7	20	150	39	300	1000	140	750	28	18	1000	220	780
P08sx	350-350-0500	75	150	97,7	20	150	39	300	1000	140	750	28	18	1000	220	780
P08sx	350-350-0503	75	150	97,7	20	150	39	300	1000	140	750	28	18	1000	220	780
P08sx	350-350-0504	75	150	97,7	20	150	39	300	1000	140	750	28	18	1000	220	780
P08sx	350-350-0630	75	150	97,7	20	125	39	250	750	140	-	28	18	1000	220	780
P08sx	350-350-0633	75	150	97,7	20	125	39	250	750	140	-	28	18	1000	220	780
P08sx	400-400-0500	75	150	97,7	20	150	59	300	1040	140	800	39	18	1000	220	780
P08sx	400-400-0503	75	150	97,7	20	150	59	300	1040	140	800	39	18	1000	220	780
P10ax	200-200-0500	95	220	100,2	25	75	39	150	560	140	-	23	18	1160	410	750
P10ax	200-200-0501	95	220	100,2	25	75	39	150	560	140	-	23	18	1160	410	750
P10ax	200-200-0503	95	220	100,2	25	75	39	150	560	140	-	23	18	1160	410	750
P10ax	250-250-0400	95	220	100,2	25	95	39	190	670	140	-	26	18	1190	410	780
P10ax	250-250-0403	95	220	100,2	25	95	39	190	670	140	-	26	18	1190	410	780
P10ax	250-250-0500	95	220	100,2	25	95	39	190	670	140	-	28	18	1190	410	780
P10ax	250-250-0503	95	220	100,2	25	95	39	190	670	140	-	28	18	1190	410	780
P10ax	250-250-0505	95	220	100,2	25	95	39	190	670	140	-	28	18	1190	410	780
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P10ax	250-250-0634	95	220	100,2	25	95	39	190	750	140	-	26	18	1190	410	780
P10ax	300-300-0400	95	220	100,2	25	125	39	250	750	140	-	28	18	1190	410	780
P10ax	300-300-0500	95	220	100,2	25	95	39	190	670	140	-	28	18	1190	410	780
P10ax	300-300-0503	95	220	100,2	25	95	39	190	670	140	-	28	18	1190	410	780
P10ax	350-350-0400	95	220	100,2	25	150	39	300	1000	140	750	28	18	1190	410	780
P10ax	350-350-0500	95	220	100,2	25	150	39	300	1000	140	750	28	18	1190	410	780
P10ax	350-350-0503	95	220	100,2	25	150	39	300	1000	140	750	28	18	1190	410	780

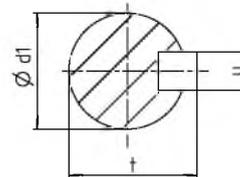
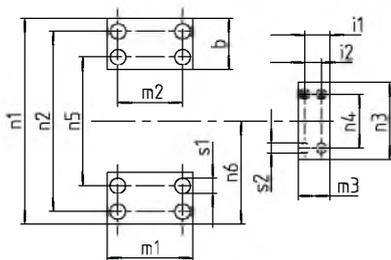
11) x = back pull-out clearance (without removing the motor)

Bearing bracket	Size	Shaft end [mm]				Pump feet [mm]											
		d <sub>1</sub>	l	t	u	i	i <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	n <sub>4</sub>	n <sub>5</sub>	s <sub>1</sub>	s <sub>2</sub>	f	v	w	
P10ax	350-350-0504	95	220	100,2	25	150	39	300	1000	140	750	28	18	1190	410	780	
P10ax	350-350-0630	95	220	100,2	25	125	39	250	750	140	-	28	18	1190	410	780	
P10ax	350-350-0633	95	220	100,2	25	125	39	250	750	140	-	28	18	1190	410	780	
P10ax	400-400-0500	95	220	100,2	25	150	59	300	1040	140	800	39	18	1190	410	790	
P10ax	400-400-0503	95	220	100,2	25	150	59	300	1040	140	800	39	18	1190	410	790	
P10ax	400-400-0533	95	220	100,2	25	125	50	250	1040	140	800	40	18	1175	450	725	
P10ax	400-400-0583	95	220	100,2	25	150	50	300	1040	140	800	40	18	1180	450	730	
P10ax	500-400-0710	95	220	100,2	25	150	59	300	1040	140	800	38	18	1205	425	780	
P10ax	500-400-0713	95	220	100,2	25	150	59	300	1040	140	800	38	18	1205	425	780	
P10ax	500-500-0544	95	220	100,2	25	150	60	300	1290	520	1050	38	18	1190	435	755	
P10ax	500-500-0630	95	220	100,2	25	150	50	300	1290	140	1050	38	18	1190	410	780	
P10ax	500-500-0633	95	220	100,2	25	150	50	300	1290	140	1050	38	18	1190	410	780	
P10ax	500-500-0634	95	220	100,2	25	150	50	300	1290	140	1050	38	18	1190	410	780	
P10ax	500-500-0635	95	220	100,2	25	150	50	300	1290	140	1050	38	18	1190	410	780	
P10ax	500-500-0637	95	220	100,2	25	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	200-200-0500	110	220	116,2	28	75	39	150	560	140	-	23	18	1160	410	750	
P12sx	200-200-0501	110	220	116,2	28	75	39	150	560	140	-	23	18	1160	410	750	
P12sx	200-200-0503	110	220	116,2	28	75	39	150	560	140	-	23	18	1160	410	750	
P12sx	250-250-0500	110	220	116,2	28	95	39	190	670	140	-	28	18	1190	410	780	
P12sx	250-250-0503	110	220	116,2	28	95	39	190	670	140	-	28	18	1190	410	780	
P12sx	250-250-0505	110	220	116,2	28	95	39	190	670	140	-	28	18	1190	410	780	
P12sx	250-250-0630	110	220	116,2	28	95	39	190	750	140	-	26	18	1190	410	780	
P12sx	250-250-0634	110	220	116,2	28	95	39	190	750	140	-	26	18	1190	410	780	
P12sx	300-300-0500	110	220	116,2	28	95	39	190	670	140	-	28	18	1190	410	780	
P12sx	300-300-0503	110	220	116,2	28	95	39	190	670	140	-	28	18	1190	410	780	
P12sx	350-350-0500	110	220	116,2	28	150	39	300	1000	140	750	28	18	1190	410	780	
P12sx	350-350-0503	110	220	116,2	28	150	39	300	1000	140	140	28	18	1190	410	780	
P12sx	350-350-0504	110	220	116,2	28	150	39	300	1000	140	140	28	18	1190	410	780	
P12sx	350-350-0630	110	220	116,2	28	125	39	250	750	140	-	28	18	1190	410	780	
P12sx	350-350-0633	110	220	116,2	28	125	39	250	750	140	-	28	18	1190	410	780	
P12sx	400-400-0500	110	220	116,2	28	150	59	300	1040	140	800	39	18	1190	410	790	
P12sx	400-400-0503	110	220	116,2	28	150	59	300	1040	140	800	39	18	1190	410	790	
P12sx	400-400-0533	110	220	116,2	28	125	50	250	1040	140	800	40	18	1175	450	725	
P12sx	400-400-0583	110	220	116,2	28	150	50	300	1040	140	800	40	18	1180	450	730	
P12sx	500-400-0710	110	220	116,2	28	150	59	300	1040	140	800	38	18	1205	425	780	
P12sx	500-400-0713	110	220	116,2	28	150	59	300	1040	140	800	38	18	1205	425	780	
P12sx	500-500-0544	110	220	116,2	28	150	60	300	1290	520	1050	38	18	1190	435	755	
P12sx	500-500-0630	110	220	116,2	28	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	500-500-0633	110	220	116,2	28	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	500-500-0634	110	220	116,2	28	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	500-500-0635	110	220	116,2	28	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	500-500-0637	110	220	116,2	28	150	50	300	1290	140	1050	38	18	1190	410	780	
P12sx	600-600-0663	110	220	116,2	28	150	60	300	1310	140	1150	39	18	1238	457	781	
P12sx	600-600-0669	110	220	116,2	28	150	60	300	1310	140	1150	39	18	1238	457	781	
P12sx	600-600-0710	110	220	116,2	28	150	55	300	1490	140	1250	38	18	1240	450	790	

Bearing brackets P16ax and P20sx



Pump dimensions (P16ax and P20sx)



Dimensions of pump feet and shaft end (P16ax and P20sx)

Pump dimensions (P16ax and P20sx)

Size	Version	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	f	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>13)</sup>
500-400-0710	10	P16ax	500	400	350	250	1306	40	16	670	600	480	400	180	1150	216	350
500-400-0713	10	P16ax	500	400	350	250	1306	40	16	670	600	480	400	180	1150	216	350
500-500-0630	10	P16ax	500	500	375	250	1190	40	<sup>14)</sup>	750	630	575	400	<sup>14)</sup>	1400	<sup>14)</sup>	400
500-500-0633	10	P16ax	500	500	375	250	1190	40	<sup>14)</sup>	750	630	575	400	<sup>14)</sup>	1400	<sup>14)</sup>	400
500-500-0634	10	P16ax	500	500	375	250	1190	40	<sup>14)</sup>	750	630	575	400	<sup>14)</sup>	1400	<sup>14)</sup>	400
500-500-0635	10	P16ax	500	500	375	250	1190	40	<sup>14)</sup>	750	630	575	400	<sup>14)</sup>	1400	<sup>14)</sup>	400
500-500-0637	10	P16ax	500	500	375	250	1190	40	<sup>14)</sup>	750	630	575	400	<sup>14)</sup>	1400	<sup>14)</sup>	400
600-600-0710	10	P16ax	600	600	500	250	<sup>14)</sup>	40	<sup>14)</sup>	900	750	680	400	<sup>14)</sup>	1600	<sup>14)</sup>	500
600-600-0753	10	P16ax	600	600	450	240	1296	40	25	900	680	690	400	180	1600	350	450
600-600-0803	10	P16sx	600	600	450	250	1318	40	25	880	800	675	400	180	1600	350	460
600-600-0813	10	P16sx	600	600	500	250	1296	40	25	900	900	730	400	180	1560	350	450
600-600-0824	10	P16ax	600	600	445	250	1363	40	25	950	750	715	400	180	1560	350	500
600-600-0825	10	P16ax	600	600	445	250	1363	40	25	950	750	715	400	180	1560	350	500
600-600-0873	10	P16ax	600	600	470	240	1300	40	25	970	770	700	400	180	1650	350	470
600-600-0923	10	P20sx	600	600	500	250	1642	40	25	900	840	730	400	210	1560	450	450
700-700-0923	11	P20sx	700	700	490	250	1724	40	25	1050	690	770	500	210	1670	450	560
700-700-0929	11	P20sx	700	700	490	250	1724	40	25	1050	690	770	500	210	1670	450	560
800-700-0953	11	P20sx	800	700	550	210	1691,5	50	25	1100	720	770	500	210	1740	450	590
800-700-0959	11	P20sx	800	700	550	210	1691,5	50	25	1100	720	770	500	210	1740	450	590

<sup>13)</sup> x = back pull-out clearance (without removing the motor)

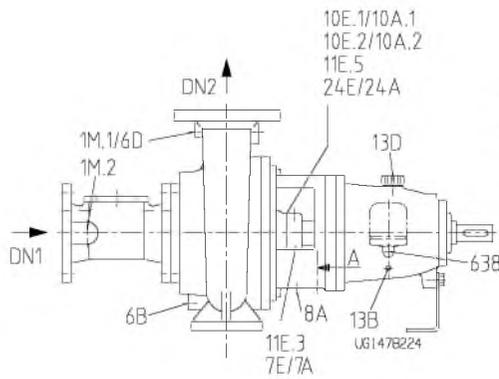
<sup>14)</sup> Dimensions on request

	Size	Version	Bearing bracket	DN <sub>1</sub>	DN <sub>2</sub>	a	b	f	g <sub>1</sub>	g <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r	m <sub>1</sub>	m <sub>3</sub>	n <sub>1</sub>	n <sub>3</sub>	x <sup>13)</sup>
800-900-0883	10	P20sx		800	900	622	300	1784	50	25	1250	950	925	600	210	2250	450	660
800-800-0934	11	P20sx		800	800	500	240	1711,5	50	25	1080	760	832	500	210	1840	450	610
800-800-0939	11	P20sx		800	800	500	240	1711,5	50	25	1080	760	832	500	210	1840	450	610
900-900-1133	11	P20sx		900	900	492	300	1732,5	50	25	1280	950	975	600	210	2200	450	695
900-900-1134	11	P20sx		900	900	492	300	1732,5	50	25	1280	950	975	600	210	2200	450	695
900-900-1138	11	P20sx		900	900	492	300	1732,5	50	25	1280	950	975	600	210	2200	450	695
900-900-1139	11	P20sx		900	900	492	300	1732,5	50	25	1280	950	975	600	210	2200	450	695

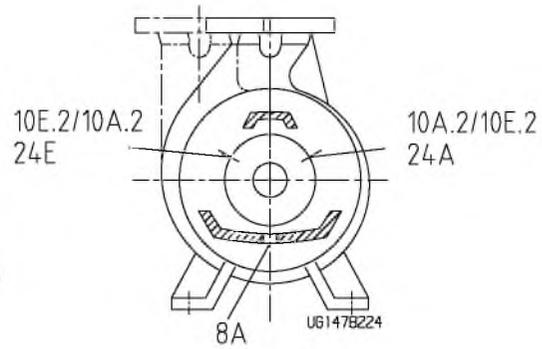
Dimensions of shaft end and pump feet (P16ax to P20sx)

Bearing bracket	Size	Version	Shaft end [mm]				Pump feet [mm]											
			d <sub>1</sub>	l	t	u	i	i <sub>1</sub>	i <sub>2</sub>	m <sub>2</sub>	n <sub>2</sub>	n <sub>4</sub>	n <sub>5</sub>	n <sub>6</sub>	s <sub>1</sub>	s <sub>2</sub>	v	w
P16ax	500-400-0710	10	120	210	127,2	32	150	130	85	300	1040	250	800	575	38	18	476	830
P16ax	500-400-0713	10	120	210	127,2	32	150	130	85	300	1040	250	800	575	38	18	476	830
P16ax	500-500-0630	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1290	<sup>14)</sup>	1050	700	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	500-500-0633	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1290	<sup>14)</sup>	1050	700	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	500-500-0634	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1290	<sup>14)</sup>	1050	700	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	500-500-0635	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1290	<sup>14)</sup>	1050	700	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	500-500-0637	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1290	<sup>14)</sup>	1050	700	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	600-600-0710	10	120	210	127,2	32	150	<sup>14)</sup>	<sup>14)</sup>	300	1490	<sup>14)</sup>	1250	800	38	<sup>14)</sup>	<sup>14)</sup>	<sup>14)</sup>
P16ax	600-600-0753	10	120	210	127,2	32	150	130	85	300	1490	250	1250	800	39	17,5	476	820
P16ax	600-600-0803	10	120	210	127,2	32	150	130	85	300	1490	250	1250	800	40	18	476	842
P16ax	600-600-0813	10	120	210	127,2	32	150	130	85	300	1450	250	1250	780	39	17,5	476	820
P16ax	600-600-0824	10	120	210	127,2	32	150	130	85	300	1450	250	1250	800	39	18	476	887
P16ax	600-600-0825	10	120	210	127,2	32	150	130	85	300	1450	250	1250	800	39	18	476	887
P16ax	600-600-0873	10	120	210	127,2	32	150	130	85	300	1540	250	1300	825	39	18	476	824
P20sx	600-600-0923	10	145	270	153	36	150	165	110	300	1450	350	1250	800	39	17,5	658,5	983,5
P20sx	700-700-0923	11	145	270	153	36	200	165	110	400	1550	350	1330	850	39	17,5	658,5	1065,5
P20sx	700-700-0929	11	145	270	153	36	200	165	110	400	1550	350	1330	850	39	17,5	658,5	1065,5
P20sx	800-700-0953	11	145	270	153	36	200	165	110	400	1640	350	1460	870	39	17,5	658,5	1033,5
P20sx	800-700-0959	11	145	270	153	36	200	165	110	400	1640	350	1460	870	39	17,5	658,5	1033,5
P20sx	800-800-0934	11	145	270	153	36	200	165	110	400	1740	350	1500	920	39	17,5	658,5	1053
P20sx	800-800-0939	11	145	270	153	36	200	165	110	400	1740	350	1500	920	39	17,5	658,5	1053
P20sx	800-900-0883	10	145	270	153	36	200	165	110	400	2140	350	1860	1270	39	17,5	658,5	1125
P20sx	900-900-1133	11	145	270	153	36	250	165	110	500	2040	350	1800	1200	39	17,5	658,5	1075
P20sx	900-900-1134	11	145	270	153	36	250	165	110	500	2040	350	1800	1200	39	17,5	658,5	1075
P20sx	900-900-1138	11	145	270	153	36	250	165	110	500	2040	350	1800	1200	39	17,5	658,5	1075
P20sx	900-900-1139	11	145	270	153	36	250	165	110	500	2040	350	1800	1200	39	17,5	658,5	1075

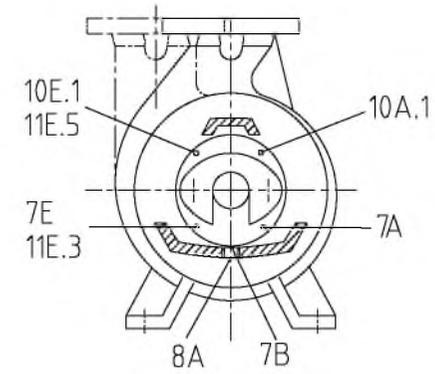
<sup>13)</sup> x = back pull-out clearance (without removing the motor)

**Connections**


Pump connections



Mechanical seal connections



Gland packing connections

Designation	Use	Designation	Use
1M.1/2	Pressure gauge	10E.1/A.1	Barrier fluid inlet/outlet (gland packing)
6B	Casing drain	10E.2	Barrier fluid inlet (mechanical seal), discharge cover
6D	Venting	10A.2	Barrier fluid outlet (mechanical seal), seal cover
7E/A	Cooling liquid IN/OUT	10E.2/A.2	Barrier fluid inlet/outlet (mechanical seal), seal cover
7B	Cooling chamber drain	10E.2/A.2	Barrier fluid inlet/outlet (mechanical seal) <sup>15)</sup>
8A	Leakage drain	13B	Oil drain
11E.3	Gap flush, outboard (stuffing box housing)	13D	Vent plug
11E.5	Flushing liquid inlet (gland packing)	24E/A	Quench liquid IN/OUT, seal cover <sup>16)</sup>
638	Constant level oiler	24E/A	Quench liquid IN/OUT, seal cover (mechanical seal 4K)

<sup>15)</sup> Mechanical seal type Cartex DN P03ax to P10ax

<sup>16)</sup> Mechanical seal type TA (MG1-G6/M3 - HRZ/M3 - 587SP-D/M3)

Connections

Size	1M.1	1M.2	6B	6D	7E/A	7B	8A		10E.1/A.1	10E.2 (mechanical seal), discharge cover	10A.2 (mechanical seal), seal cover	10E.2/A.2 (mechanical seal), seal cover	10E.2/A.2 (mechanical seal) <sup>17)</sup>	11E.3	11E.5	13B	13D	24E/A, seal cover <sup>18)</sup> 24E/A	Mechanical seal (type 4K), seal cover	638
065-040-250	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
065-050-200	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
065-050-201	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-065-200	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-065-201	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-065-313	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-040-315	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-050-400	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-065-315	G 1/2	G 1/2	G 3/4	G 1/2	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
080-065-400	G 1	G 1/2	G 1	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-250	G 1	G 1/2	G 3/4	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-251	G 1	G 1/2	G 3/4	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-311	G 1	G 1/2	G 3/4	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-315	G 1	G 1/2	G 3/4	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-400	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
100-080-403	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-080-500	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-250	G 1	G 1/2	G 1	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-251	G 1	G 1/2	G 1	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-253	G 1	G 1/2	G 1	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-315	G 1	G 1/2	G 1	G 1	G 1/4	G 1/8	R 1/2	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	NPT 3/8	G 1/4	G 1/4	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-400	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
125-100-403	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-150-311	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-150-315	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-150-400	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-150-403	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-125-500	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
150-125-503	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
200-200-320	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
200-200-400	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
200-200-403	G 1	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
200-200-500	G 1	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
200-200-501	G 1	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
200-200-503	G 1	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-315	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/8	R 1/2	G 3/8	G 3/8	G 1/4	G 1/4	G 1/4	NPT 3/8	G 3/8	G 3/8	G 1/4	Ø 20	G 1/4	G 1/4	R 1/4
250-250-400	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-403	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-500	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	G 1/2 <sup>19)</sup>	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4

17) Mechanical seal type Cartex DN P03ax to P10ax  
 18) Mechanical seal type TA (MG1-G6/M3 - HRZ/M3 - 587SP-D/M3)  
 19) Bearing bracket P08sx/P10ax = G 1/4

Size	1M.1	1M.2	6B	6D	7E/A	7B	8A		10E.1/A.1	10E.2 (mechanical seal), discharge cover	10A.2 (mechanical seal), seal cover	10E.2/A.2 (mechanical seal), seal cover	10E.2/A.2 (mechanical seal) <sup>17)</sup>	11E.3	11E.5	13B	13D	24E/A, seal cover <sup>18)</sup>	24E/A (mechanical seal type 4K), seal cover	638
250-250-503	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-505	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-630	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
250-250-634	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
300-300-400	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
300-300-500	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
300-300-503	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-400	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-500	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-503	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-504	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-630	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
350-350-633	G 1/2	G 1/2	G 1	G 1	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
400-400-500	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4 <sup>20)</sup>	R 1/4
400-400-503	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4 <sup>20)</sup>	R 1/4
400-400-533	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4 <sup>20)</sup>	R 1/4
400-400-583	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-400-710	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-400-713	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-500-544	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
500-500-630	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-500-633	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-500-634	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-500-635	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
500-500-637	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8 <sup>20)</sup>	-	-	-	G 1/2 <sup>19)20)</sup>	NPT 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 3/8 <sup>20)</sup>	G 1/2	Ø 20	G 1/2 <sup>19)20)</sup>	G 1/4 <sup>20)</sup>	R 1/4
600-600-663	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
600-600-669	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
600-600-710	G 1/2	G 1/2	G 1 1/2	G 2	G 3/8	G 1/4	R 1/2	G 3/8	-	-	-	G 1/2 <sup>19)</sup>	NPT 3/8	G 3/8	G 3/8	G 1/2	Ø 20	G 1/2 <sup>19)</sup>	G 1/4	R 1/4
600-600-753	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-803	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-813	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-824	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-825	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-873	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
600-600-923	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
700-700-923	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4

17) Mechanical seal type Cartex DN P03ax to P10ax  
 18) Mechanical seal type TA (MG1-G6/M3 - HRZ/M3 - 587SP-D/M3)  
 20) Not provided on this size with bearing bracket P16ax

	Size	1M.1	1M.2	6B	6D	7E/A	7B	8A		10E.1/A.1	10E.2 (mechanical seal), discharge cover	10A.2 (mechanical seal), seal cover		10E.2/A.2 (mechanical seal), seal cover	10E.2/A.2 (mechanical seal) <sup>17)</sup>	11E.3	11E.5	13B	13D	24E/A, seal cover <sup>18)</sup>	24E/A (mechanical seal type 4K), seal cover	638
700-700-929	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
700-700-953	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
700-700-959	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
800-800-934	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
800-800-935	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
800-800-939	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
800-900-883	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
900-900-1133	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
900-900-1134	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
900-900-1138	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4
900-900-1139	-	-	-	-	-	-	-	R 1 1/2	-	-	-	-	-	-	-	-	-	G 1/2	Ø 20	-	-	R 1/4

17) Mechanical seal type Cartex DN P03ax to P10ax  
 18) Mechanical seal type TA (MG1-G6/M3 - HRZ/M3 - 587SP-D/M3)

### Coating and preservation

- Coating and preservation to KSB standard

### Product benefits

- Easy to service thanks to back pull-out design
- Safe design: all pressure-retaining components cast with extra corrosion/wear allowance.
- Standard pump with suction-side wear plate in wear-resistant diagonal gap design
- High levels of efficiency with channel-type impeller; impeller with front vanes and diagonal gap; back vanes reduce axial thrust
- Dry shaft: no special materials required
- Bearing assembly in reinforced, adjustable design
- Mechanical seal fitted in conical shaft seal chamber for optimum circulation around the mechanical seal, venting and drainage of the shaft seal chamber

### Acceptance tests / Warranties

- 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.

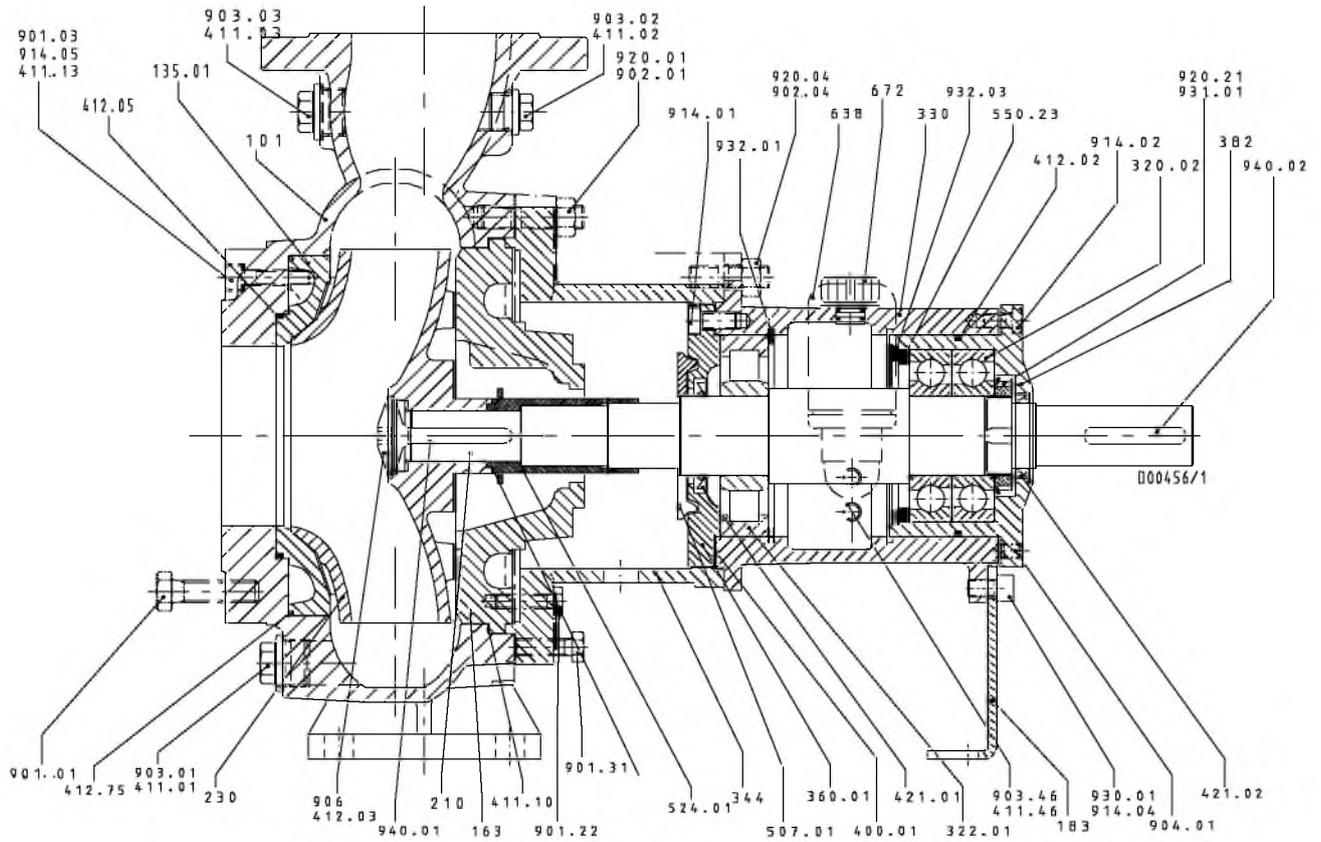
The following acceptance tests can be performed and certified at extra charge:

- Performance test to ISO 9906
- NPSH test
- Other tests (e.g. vibrations, strength) on request.
- Warranties

Warranties are given within the scope of the valid delivery conditions.

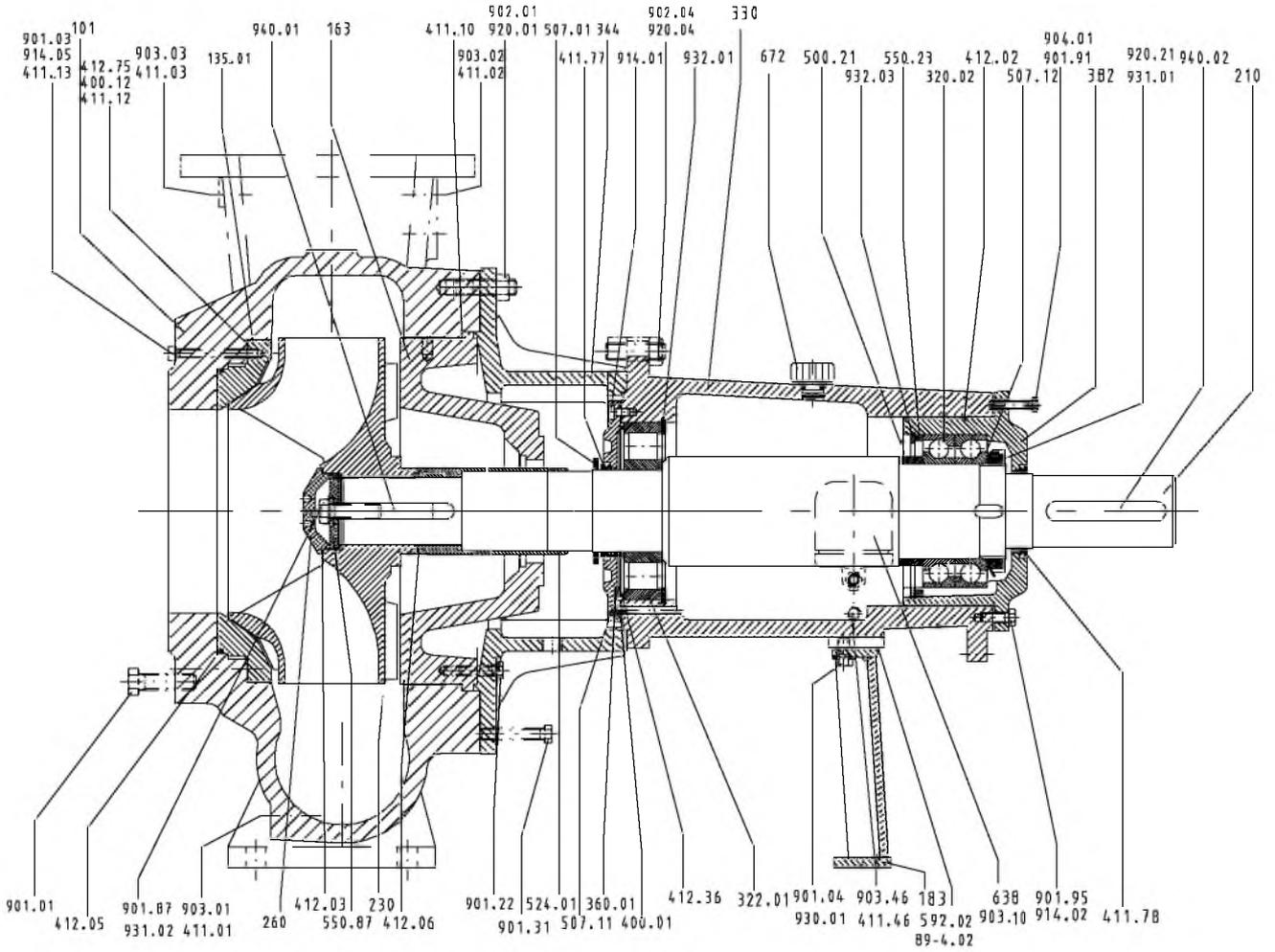
General assembly drawings with list of components

Bearing brackets P03ax to P06x

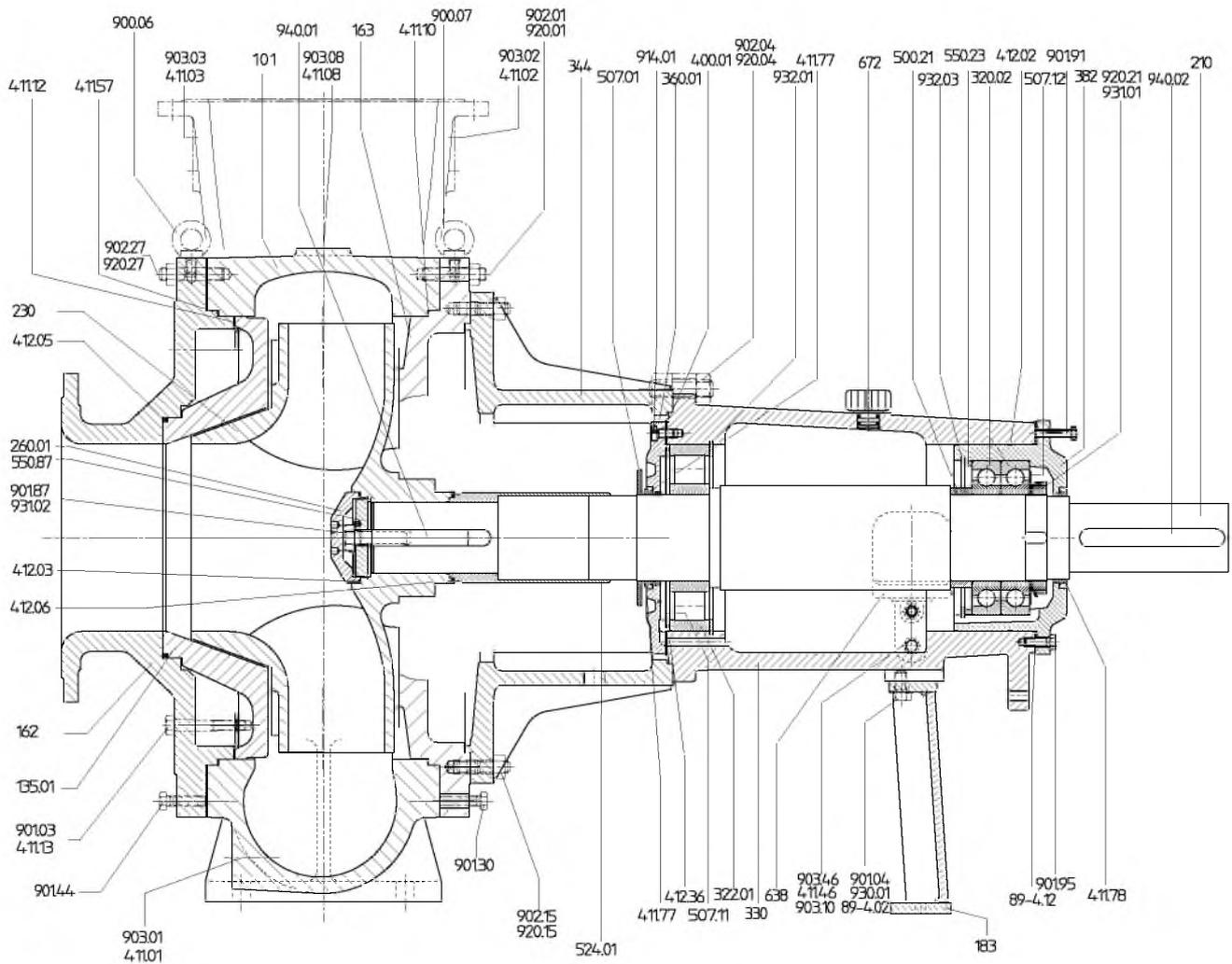


Bearing brackets P03ax to P06x

Bearing brackets P08sx to P12sx



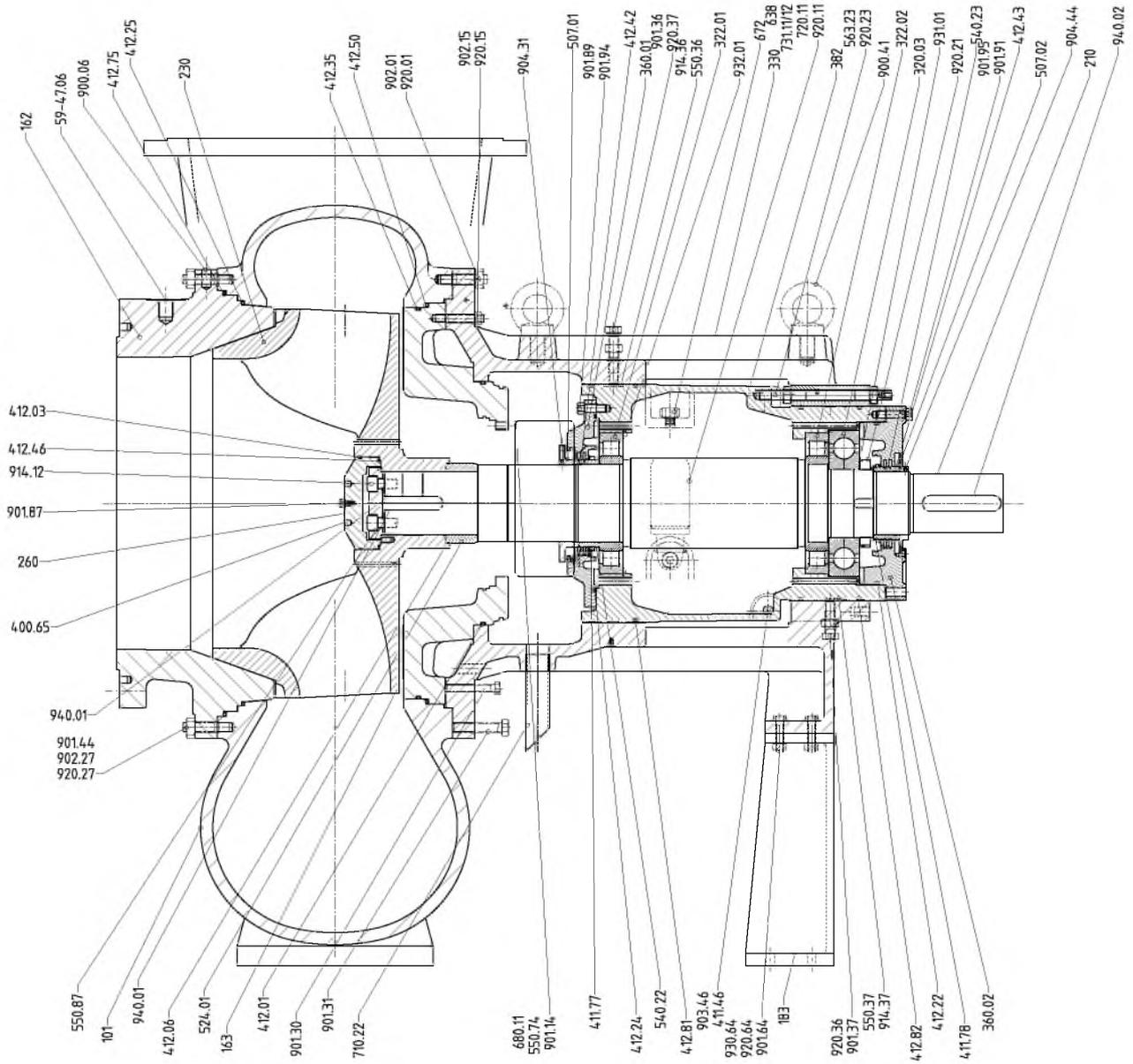
Bearing brackets P08sx to P12sx



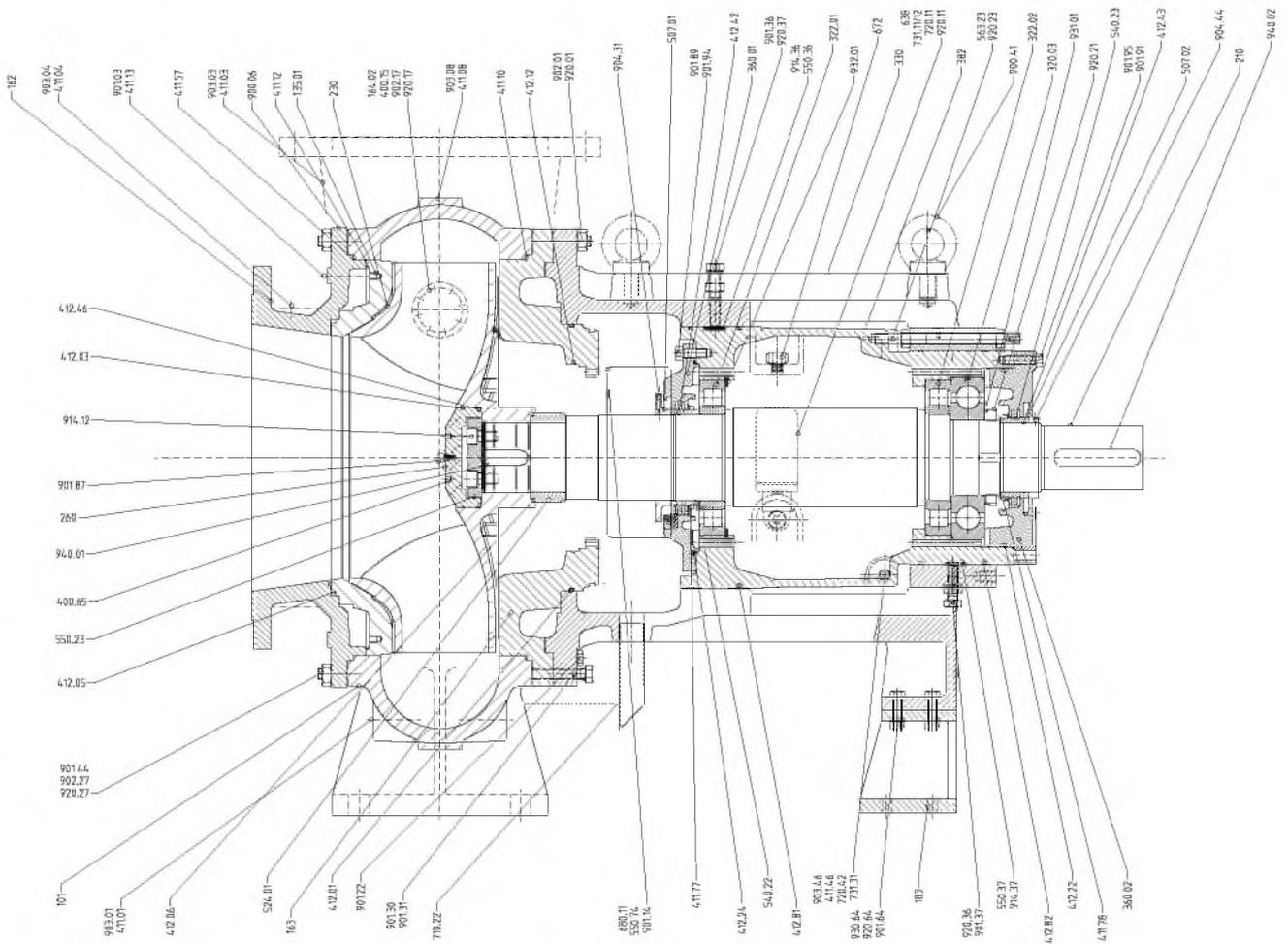
Bearing brackets P10ax to P12sx: sizes 500-400-710 and 500-400-713



Bearing bracket P16ax V10

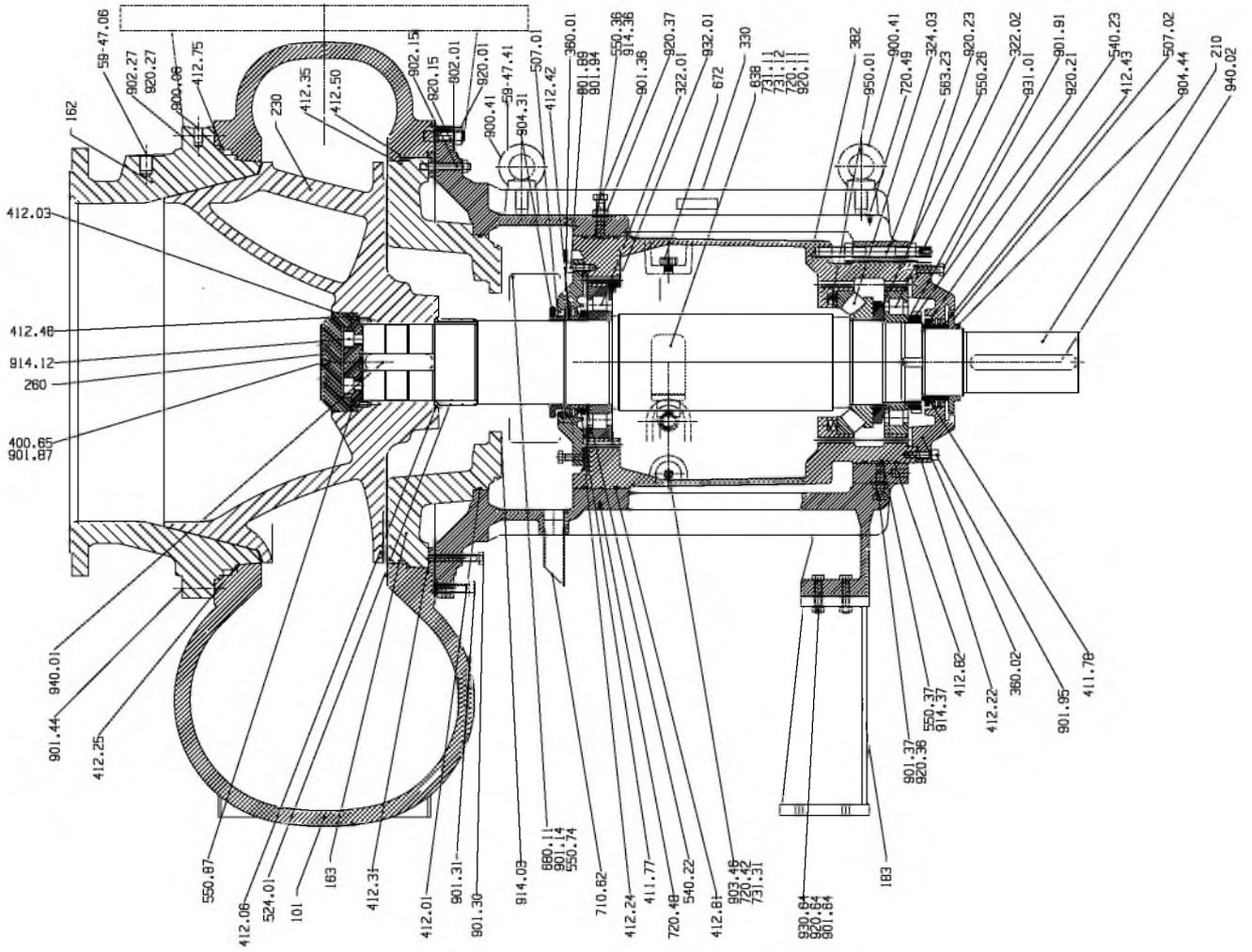


General assembly drawing of pump set with bearing bracket P16ax V10



General assembly drawing of pump set with bearing bracket P16ax V10 (500-400-710, 500-400-713, 500-500-633, 500-500-637)

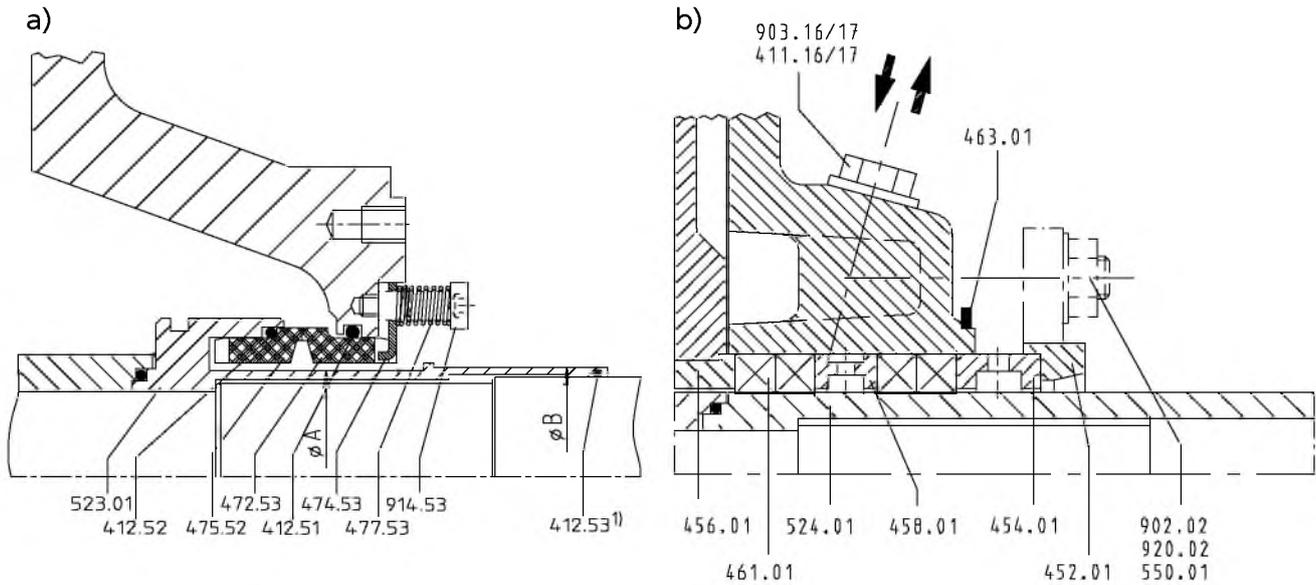
Bearing bracket P20sx



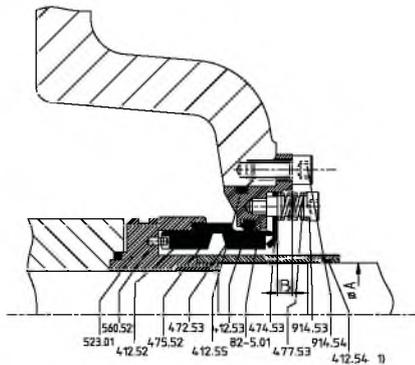
General assembly drawing of pump set with bearing bracket P20sx V10



Shaft seals



Shaft seals P03ax to P12sx: a) 4K mechanical seal; b) coolable gland packing



4K-120M mechanical seal<sup>21)</sup>

List of components

List of components<sup>22)</sup>

Part No.	Comprising	Description
101	101	Pump casing
	411.01/.02/.03/.10 <sup>23)</sup>	Joint ring
	901.01	Hexagon head bolt
	902.01/.27	Stud
	903.01/.02/.03 <sup>23)</sup>	Screw plugs
	920.01/.27	Hexagon nut
135.01 <sup>24)</sup>	135.01	Wear plate
	411.12/.13/.57	Joint ring
	412.05/.75	O-ring
	901.03	Hexagon head bolt
	902.08/.90	Stud
	920.08/.90	Hexagon nut
162	914.05	Hexagon socket head cap screw
	162	Suction cover
	900.06	Eyebolt

<sup>21)</sup> Only for sizes 600-600-663 or 600-600-669

<sup>22)</sup> Depending on the design

<sup>23)</sup> If fitted

<sup>24)</sup> Sizes 250-250-0315, 300-300-0400, 350-350-0400 and 400-400-0500: casing wear ring 502.01 instead of wear plate

Part No.	Comprising	Description
	901.44	Forcing screw
	904.97	Grub screw
163	163	Discharge cover (A-type cover)
	412.35/.50	O-ring
	900.07	Eyebolt
	901.22/.30/.31	Forcing screw
	902.15	Stud
	920.15	Hexagon nut
163	163	Discharge cover with integrally cast stuffing box housing
	411.16/.17	Joint ring
	463.01	Drip plate
	550.01	Disc
	901.22	Hexagon head bolt
	902.02	Stud
	903.16/.17	Screw plug
	920.02	Nut
163	163	Discharge cover (with bolted stuffing box housing)
	400.05	Gasket
	411.26	Joint ring
	901.22	Hexagon head bolt
183	183	Support foot
	592.02	Base
	901.04	Hexagon head bolt
	914.04	Hexagon socket head cap screw
	930.01	Spring washer
	89-4.02	Shims
210	210	Shaft
	500.21	Ring
	920.21	Slotted round nut
	931.01	Lock washer
	940.01/.02	Key
230	230	Impeller
260	260	Impeller hub cap
	412.03	O-ring
	550.87	Disc
	901.87	Hexagon head bolt
	931.02	Lock washer
320.02	320.02	Angular contact ball bearing
322.01	322.01	Cylindrical roller bearing
330	330	Bearing bracket
330	330	Bearing bracket, complete
	360.01	Bearing cover
	382	Bearing carrier
	400.01	Gasket
	411.46	Joint ring
	411.77/.78	V-ring
	412.02/.36	O-ring
	421.01/.02	Lip seal
	507.01/.12	Thrower
	550.23	Support disc
	638	Constant level oiler
	672	Vent plug
	901.91/.95	Hexagon head bolt
	903.10/.46	Screw plug
	914.01/.02	Hexagon socket head cap screw
	932.01/.02/.03	Circlip
344	344	Bearing bracket lantern
	901.31	Forcing screw
	902.04	Stud
	920.04	Hexagon nut
	901.22	Hexagon head bolt
360.01	360.01	Bearing cover
	400.01	Gasket
	914.01	Hexagon socket head cap screw
	507.11	Thrower

Part No.	Comprising	Description
	412.36	O-ring
382	382	Bearing carrier
	412.02	O-ring
	89-4.12	Shims
411.77/78	411.77/78	V-ring
433.02	82-5.01	Adapter
	412.51/52/53	O-ring
	433.02	Mechanical seal, type 4K
	471	Seal cover
	472.51	Primary ring
	474.53	Thrust ring
	475.52	Mating ring
	477.53	Spring
	523.01	Shaft sleeve
	560.52	Pin
	914.53/54	Hexagon socket head cap screw
451.01	451.01	Stuffing box housing
	400.05	Gasket
	411.16/17/18/19/26	Joint ring
	463.01	Drip plate
	550.01	Disc
	902.02	Stud
	903.16/17/18/19	Screw plug
	920.01	Hexagon nut
452.01	452.01	Gland follower
454.01	454.01	Stuffing box ring, split
456.01	456.01	Neck bush
458.01	458.01	Lantern ring, split
461.01	461.01	Gland packing
59-47.06/08/41	59-47.06/08/41	Lifting lug
502.01	502.01	Casing wear ring
507.01/11/12	507.01/11/12	Thrower
524.01	524.01	Shaft protecting sleeve
	412.06	O-ring
900.06/07/41	900.06/07/41	Eyebolt
906	906	Impeller screw
	412.03	O-ring
99-9	99-9	Set of sealing elements
	400.01	Gasket
	411.01/02/03/10/12/13/46/57	Joint ring
	412.02/03/05/06/35/50/75	O-ring

### Detailed designation

Product code example

Position																																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
K	W	P	F	1	2	5	-	1	0	0	-	0	2	5	0		G	N	N	G	1	0	P	4	X	3	N	H		5	5	4
See name plate and data sheet																							See data sheet									

### Key to the designation

Position	Code	Description
1-3		Pump type
	KWP	Type series
4		Impeller
	K	Channel impeller
	O	Open impeller
	F	Free-flow impeller
	R	Worm-type impeller
5-17		Size
	125	Nominal suction nozzle diameter [mm]
	100	Nominal discharge nozzle diameter [mm]

Position	Code	Description
	250	Nominal impeller diameter [mm]
18	Casing material	
	G	GJL-250
	D	NORIDUR 1.4593
	H	NORIHARD NH 15 3
	K	GJS-400-18-LT/ CeramikPolySiC
19	Impeller material	
	N	ERN
	D	NORIDUR 1.4593
	U	NORIDUR 1.4593 DAS
	H	NORIHARD NH 15 3
	K	CeramikPolySiC
	M	NORICROM 1.4475
20	Wear plate material	
	N	ERN
	D	NORIDUR 1.4593
	U	NORIDUR 1.4593 DAS
	H	NORIHARD NH 15 3
	K <sup>25)</sup>	CeramikPolySiC
	M	NORICROM 1.4475
21	Discharge cover material	
	G	GJL-250
	D	NORIDUR 1.4593
	H	NORIHARD NH 15 3
	M	NORICROM 1.4475
	K	CeramikPolySiC
22-23	Design variant	
	10	
	11	
24-25	Shaft seal operating mode	
	P3	Gland packing (arrangement I = 2/1/2) for barrier fluid
	P6	Gland packing (arrangement II = 1/1/3) for barrier fluid
	P4	Gland packing (arrangement IIa = -/1/3) for flushing liquid
	A	Single mechanical seal in A-type cover
	TA	Double mechanical seal in A-type cover, unpressurised
	TS	Double mechanical seal in A-type cover, with barrier fluid
	DR	Double mechanical seal in cylindrical cover, with barrier fluid
	CA	Single cartridge seal
	CBA	Double cartridge seal with barrier fluid
26	Special design	
	X	Special design
	-	Standard
27-29	Installation type	
	0	Figure 0
	3N	Fig. 3E, baseplate, non-spacer-type coupling
	3NH	Fig. 3E, baseplate, spacer-type coupling
	BH	Close-coupled, horizontal
	BV	Close-coupled, vertical
30-32	Motor rating	
	1 3 2	132 kW
	5 5	55 kW
33	Number of poles	
	2	2-pole
	4	4-pole
	6	6-pole

<sup>25)</sup> K defines a suction cover in GJS-400-18-LT/ CeramikPolySiC for pumps without a separate wear plate

Self-priming Pump

**Etaprime B**

**Type Series Booklet**



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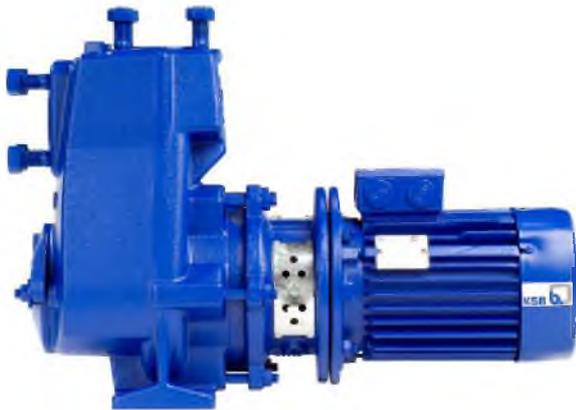
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## Self-priming Pump in Close-coupled Design

### Volute Casing Pumps

## Etaprime B



### Main applications

- Spray irrigation systems
- Service water supply systems
- Drainage
- Drainage systems
- Fire-fighting systems
- Lowering groundwater levels
- Domestic water supply
- Air-conditioning systems
- Cooling circuits
- Swimming pools
- Water supply systems

### Fluids handled

- Drinking water
- Swimming pool water (0.4 to 1.4 mg/l free chlorine, max. 0.6 mg/l combined chlorine, pH value 6.9 to 7.7, water hardness 10 to 30 °dH, max. salt content 7 g/l)
- Fire-fighting water
- Seawater
- River, lake and groundwater
- Brackish water
- Condensate
- Brine
- Oil

- Service water
- Cleaning agents
- Cooling water

### Operating data

Operating properties

Characteristic	Value	Value	
		50 Hz	60 Hz
Flow rate	Q [m³/h]	≤ 130	≤ 150
	Q [l/s]	≤ 36	≤ 42
Head	H [m]	≤ 70	≤ 100
Fluid temperature	T [°C]	-30 to +90	
Operating pressure	p [bar]	≤ 10	
Static head	H <sub>Geo</sub> [m]	≤ 9	

### Designation

Example: ETPB080-080-200 GCXI10D3

Designation key

Code	Description
ETPB	Type series
	ETPB   Etaprime B
080	Nominal suction nozzle diameter [mm]
080	Nominal discharge nozzle diameter [mm]
200	Nominal impeller diameter [mm]
G	Casing material
	C   Stainless steel
	G   Grey cast iron
C	Impeller material if different from casing material
	C   Stainless steel
	G   Grey cast iron
X	Design
	-   Standard
	X   Special design
I	Sealing system
	I   Single mechanical seal
	D   Double mechanical seal in back-to-back arrangement
	T   Double mechanical seal in tandem arrangement
10	Seal code
	01   Q1Q1VGG
	08   AQ1VGG <sup>1)</sup>
	09   U3U3VGG
	10   Q1Q1X4GG
	11   BQ1EGG
D	Scope of supply
	D   Pump with motor
3	Shaft unit
	1   SU 17
	2   SU 25
	3   SU 35

### Further information on the designation

(⇒ Page 23)

1) BQVGG for shaft unit 17

### Design details

#### Design

- Volute casing pump
- Back pull-out design (from size 40-40-140)
- Horizontal installation
- Self-priming
- Single-stage
- Single-entry
- Pump and motor with stub shaft

#### Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet (from pump size 40-40-140)

#### Impeller type

- Open multi-channel impeller

#### Shaft seal

- The shaft is fitted with a replaceable shaft sleeve in the shaft seal area (from pump size 40-40-140).
- Single and double mechanical seals to EN 12756

#### Drive

- KSB IEC frame standardised IE3 motor (from 0.75 kW)
- Type of construction B34  $\leq$  1.1 kW
- Type of construction V1 1.1 to 4 kW
- Type of construction V15 > 4 kW

- 230/400 V up to 2.2 kW and 400/690 V from 3 kW
- IP55 enclosure
- Thermal class F
- 3 PTC thermistors

#### Product benefits

- Maintenance-free mechanical seal ensures operating reliability
- Easy to dismantle due to back pull-out design; no need to remove the pump casing from the piping
- Good suction performance, self-priming up to 9 m suction lift, also suitable for applications with relatively poor inlet conditions (i.e. low or negative inlet pressure) and for handling fluids with entrained gas.
- Optimised hydraulic components for high efficiency help reduce energy consumption

#### Certifications

##### Overview

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

### Overview of fluids handled

Table of fluids handled and associated material combinations  
**X** = standard

Fluid handled	Temperature [°C]	Materials			Shaft seal						Mechanical seal design code	Comments	
		Casing / impeller			Mechanical seal								
		Grey cast iron/grey cast iron	Grey cast iron/ Cr-Ni-Mo cast steel	CrNiMo cast steel/ CrNiMo cast steel	Q1Q1VGG	AQ1VGG <sup>2)</sup> BQVGG <sup>3)</sup>	U3U3VGG	Q1Q1X4GG	BQ1EGG <sup>2)</sup>	Q12Q1M1GG			
													Design code
G	GC	C	01	8	9	10	11	70 <sup>4)</sup>					
Water													
Industrial waste water													Analysis of the fluid handled required
Ammonia water (ammonia solution)	$\leq$ 40; conc. $\leq$ 10 %	X							X				Tandem seal Q1Q1EGG required. Quench liquid: use suitable water.
Brackish water	$\leq$ 25			X				X			10		
Fire-fighting water <sup>5)</sup>	$\leq$ 60		X					X			10		
Condensate <sup>2)</sup>	$\leq$ 90	X							X		11		
Condensate, not conditioned	$\leq$ 90			X					X		11		

2) Treatment to VdTÜV 1466; additional requirement: O<sub>2</sub>  $\leq$  0.02 mg/l

3) Only applies to shaft unit 17.

4) Special mechanical seal design

5) General criteria for results of water analysis: pH value  $\geq$  7; chloride content (Cl)  $\leq$  250 mg/kg. Chlorine (Cl<sub>2</sub>)  $\leq$  0.6 mg/kg.

Fluid handled	Temperature	Materials			Shaft seal						Mechanical seal design code	Comments
		Casing / impeller			Mechanical seal							
		Grey cast iron/grey cast iron	Grey cast iron/ Cr-Ni-Mo cast steel	CrNiMo cast steel/ CrNiMo cast steel	Q1Q1VGG	AQ1VGG <sup>2)</sup> BQVGG <sup>3)</sup>	U3U3VGG	Q1Q1X4GG	BQ1EGG <sup>2)</sup>	Q12Q1M1GG		
[°C]	G	GC	C	01	8	9	10	11	70 <sup>4)</sup>			
Cooling water (without antifreeze) <sup>5)</sup>	≤ 60	X					X				10	Open circuit: CL 10 required
Cooling water pH ≥ 7.5 (with antifreeze) <sup>5)6)</sup>	≥ -30 p ≤ 10 bar ≤ 90	X							X		11	Open circuit: CL 11 required
Slightly contaminated water <sup>5)</sup>	≤ 60	X					X				10	
Seawater	≤ 25			X			X				10	
Surface water <sup>5)</sup>	≤ 40	X				X					8	Analysis of the fluids handled required
Pure water <sup>7)</sup>	≤ 60	X							X		11	
Untreated water <sup>5)</sup>	≤ 60	X					X				10	
Swimming pool water (fresh water) <sup>5)</sup>	≤ 60	X					X				10	Also applies to requirements as per DIN 19643
Dam water <sup>5)</sup>	≤ 60	X					X				10	If solids are contained, contact KSB.
Drinking water	≤ 60			X							11	
Partly desalinated water <sup>2)</sup>	≤ 90	X							X		11	
Fully desalinated water	≤ 90			X					X		11	Requirements for ultra-pure water cannot be met.
Fully desalinated water as boiler feed water <sup>2)</sup>	≤ 90	X							X		11	
<b>Refrigerants, cooling brines</b>												
Cooling brine; inorganic, pH value > 7.5, inhibited	≥ -30 ≤ 25	X							X		11	
Water with antifreeze, pH value > 7.5 <sup>5)6)</sup>	≥ -30 ≤ 90	X							X		11	
<b>Oils/emulsions</b>												
Drilling/grinding emulsion	≤ 60	X					X				9	
Oil-water emulsion	≤ 60	X					X				9	
<b>Cleaning agents</b>												
Lyes for bottle rinsers <sup>8)</sup>	≤ 90	X								X	10	EPDM only if oil-free
<b>Acids</b>												
Acetic acid	≤ 60; conc. ≤ 5 % ≤ 60; conc. ≤ 10 %			X					X		11	
Alum, potassium aluminium sulphate up to 3 %	≤ 80			X	X						01	

### Overview of type series

Available sizes and designs

Size	Shaft unit	Etaprime L		Etaprime B	
		G	GC, C	G	GC, C
032-032-100	17	S / T	-	S / T	-
032-032-120	17	S / T	S / T	S / T	S / T

2) Treatment to VdTÜV 1466; additional requirement: O<sub>2</sub> ≤ 0.02 mg/l

3) Only applies to shaft unit 17.

4) Special mechanical seal design

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

7) No ultra-pure water! Conductivity at 25 °C: ≤ 800-µS/cm

8) With 2 % sodium hydroxide

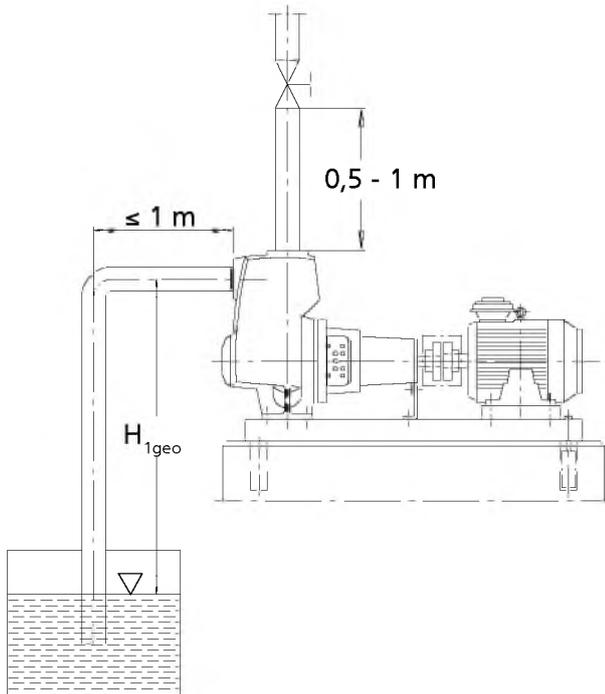
Size	Shaft unit	Etaprime L		Etaprime B	
		G	GC, C	G	GC, C
040-040-110	17	S/T	S/T	S/T	S/T
040-040-140	25	S/T/B	S/T/B	S/T/B	S/T/B
050-050-130	25	S/T/B	S/T/B	S/T/B	S/T/B
050-050-160	25	S/T/B	S/T/B	S/T/B	S/T/B
065-065-150	25	S/T/B	S/T/B	S/T/B	S/T/B
065-065-180	35	S/T/B	S/T/B	S/T/B	S/T/B
080-080-170	35	S/T/B	S/T/B	S/T/B	S/T/B
080-080-190	35	S/T/B	-	S/T/B	-
080-080-200	35	S/T/B	S/T/B	S/T/B	S/T/B
100-100-240.1	35	S/T/B	-	S/T/B	-
100-100-240	35	S/T/B	-	-	-
125-125-260	35	S/T/B	-	-	-

- E = Single mechanical seal (standard design)
- T = Available with double mechanical seal in tandem arrangement
- B = Available with double mechanical seal in back-to-back arrangement
- = Size not available

### Priming time

For a 1-metre horizontal length of the suction line and DN suction line = DN pump, the priming times are as follows.

When handling gaseous fluids, fluids which tend to froth or water with a temperature  $T > 60\text{ °C}$ , the pump will not be self-priming. In such cases, a check valve must be installed in the suction line.



Distances of suction line and discharge line

Size <sup>9)</sup>	Shaft unit	Priming time [sec]					
		at a speed $n = 2900\text{ rpm}$					
		at a static suction lift $H_{1\text{geo}}$ of ... m					
		2 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	40	145	415	-	-	-
032-032-120		30	90	135	190	255	360
040-040-110		60	100	215	420	-	-
040-040-140	25	30	70	125	220	355	600
050-050-130		50	120	195	260	345	440
050-050-160		30	70	105	170	265	430
065-065-150	35	60	120	165	260	375	570
065-065-180		30	50	75	100	145	200
080-080-170		50	100	135	180	225	310
080-080-190		40	70	105	160	185	240
080-080-200		30	50	75	105	155	200
100-100-240.1		30	70	95	120	150	190
100-100-240		35	70	85	110	160	-
125-125-260	35	80	105	130	160	190	

Size <sup>9)</sup>	Shaft unit	Priming time [sec]					
		at a speed $n = 3500\text{ rpm}$					
		at a static suction lift $H_{1\text{geo}}$ of ... m					
		2 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	30	85	135	-	-	-
032-032-120		20	60	105	140	175	250
040-040-110		30	85	125	200	265	470
040-040-140	25	25	50	85	120	145	230
050-050-130		30	90	140	190	245	300
050-050-160		25	55	75	150	215	280
065-065-150	35	40	80	125	170	225	370
065-065-180		20	40	65	90	105	150
080-080-170		30	80	105	130	165	220
080-080-190		30	55	75	100	125	160
080-080-200		25	40	55	80	125	160
100-100-240.1		25	60	85	115	145	180
100-100-240		25	70	85	100	155	360

<sup>9)</sup> Stainless steel variant not available for all pump sizes.

Size 9)	Shaft unit	Priming time [sec] at a speed n = 1450 rpm at a static suction lift H <sub>1geo</sub> of ... m							
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
		025-025-100	17	130	-	-	-	-	-
032-032-120		100	210	-	-	-	-	-	-
040-040-110		120	-	-	-	-	-	-	-
040-040-140	25	130	-	-	-	-	-	-	-
050-050-130		210	410	-	-	-	-	-	-
050-050-160		210	430	-	-	-	-	-	-
065-065-150		190	350	540	-	-	-	-	-
065-065-180	35	90	140	220	370	-	-	-	-
080-080-170		110	180	280	480	-	-	-	-
080-080-190		100	110	200	310	-	-	-	-
080-080-200		70	110	190	270	320	420	-	-
100-100-240.1		130	150	220	300	440	-	-	-
100-100-240		110	160	270	480	-	-	-	-
125-125-260		60	70	110	160	200	330	430	610

Size 9)	Shaft unit	Priming time [sec] at a speed n = 1750 rpm at a static suction lift H <sub>1geo</sub> of ... m							
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
		025-025-100	17	70	170	-	-	-	-
032-032-120		80	150	260	-	-	-	-	-
040-040-110		90	180	-	-	-	-	-	-
040-040-140	25	80	150	200	-	-	-	-	-
050-050-130		130	240	380	-	-	-	-	-
050-050-160		130	260	480	-	-	-	-	-
065-065-150		140	260	350	430	-	-	-	-
065-065-180	35	80	110	170	220	330	-	-	-
080-080-170		90	130	200	320	480	-	-	-
080-080-190		80	100	130	160	210	390	-	-
080-080-200		60	100	160	230	280	350	-	-
100-100-240.1		90	110	140	210	260	400	-	-
100-100-240		80	100	140	200	300	-	-	-
125-125-260		50	60	80	115	170	220	300	400

### Rated power requirement

Size	Motor code	IEC frame size	50 Hz [kW]	60 Hz [kW]	50 Hz / 60 Hz ~ 400 V [A] <sup>10)</sup>
All	.../054	80	0,6	0,6	1,4
	.../154	90L	1,5	1,7	3,4
	.../224	100L	2,2	2,5	4,9
	.../304	100L	3,0	3,4	6,3
	.../404	112M	4,0	4,6	8,3
	.../112	80	1,1	1,3	2,6
	.../222	90L	2,2	2,5	4,6
	.../302	100L	3,0	3,4	6,3
	.../402	112M	4,0	4,6	8,3
	.../552	132S	5,5	6,3	11,0
	.../752	132S	7,5	8,6	14,6
	.../1102	160M	11,0	12,6	20,7
	.../1502	160M	15,0	17,3	28,0
	.../1852	160L	18,5	21,3	33,0
	.../2202	180M	22,0	24,5	40,0
.../3002	200L	30,0	34,5	54,0	

### Pressure limits

Size	Discharge pressure p <sub>2</sub> <sup>11)</sup> [bar]	Test pressure <sup>12)</sup> [bar]
All sizes	10,0	15,0

### Materials

A1 = default material variant  
A2 = optional material variant

Part No.	Description	Material variants			
		G	GC	C	
102	Volute casing	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1
161	Casing cover	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1
210	Shaft seal for shaft units 25 and 35	Tempered steel C45+N	A1	A1	-
	Shaft for shaft unit 17	Stainless steel 1.4571	A2	A2	A1
230	Impeller	Grey cast iron EN-GJL-250	A1	-	-
		Stainless steel 1.4408	-	A1	A1
341	Drive lantern for shaft units 25 and 35	Grey cast iron EN-GJL-250	A1	A1	A1
	Drive lantern for shaft unit 17	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1

<sup>10)</sup> The currents indicated are for orientation only. For the exact currents refer to the motor name plate.

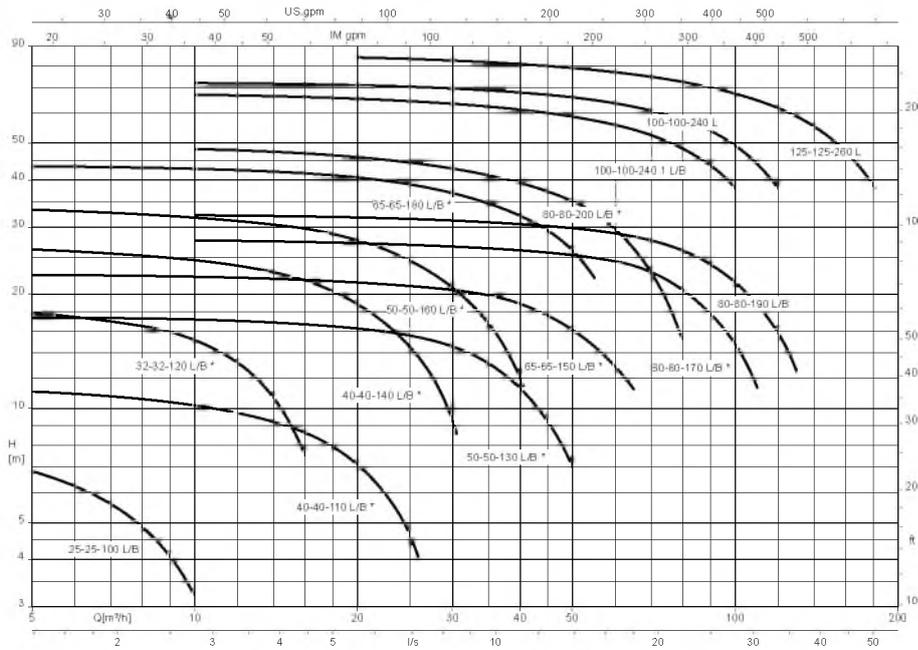
<sup>11)</sup> The sum of inlet pressure and shut-off head must not exceed the values indicated.

<sup>12)</sup> The casing components are checked for leakage by means of internal pressure tests to ZN 1650 with water.

Part No.	Description	Material variants		
		G	GC	C
412	O-ring	EPDM 80 peroxide <sup>13)</sup>	A1	A1
523	Shaft sleeve (not for shaft unit 17)	Stainless steel 1.4571	A1	A1

Selection charts

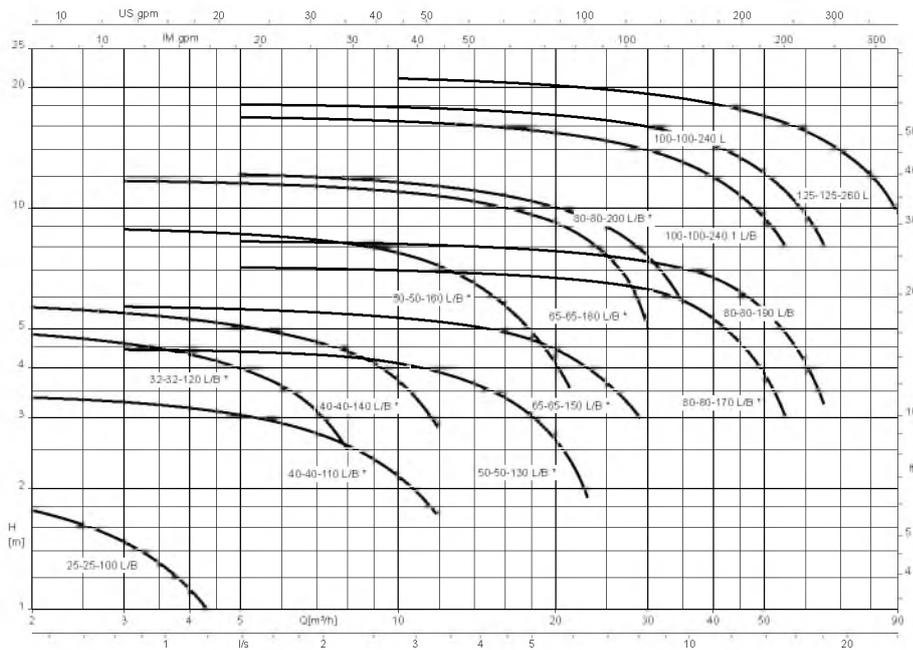
Etaprime L/B, n = 2900 rpm



\* Also available in stainless steel material variant

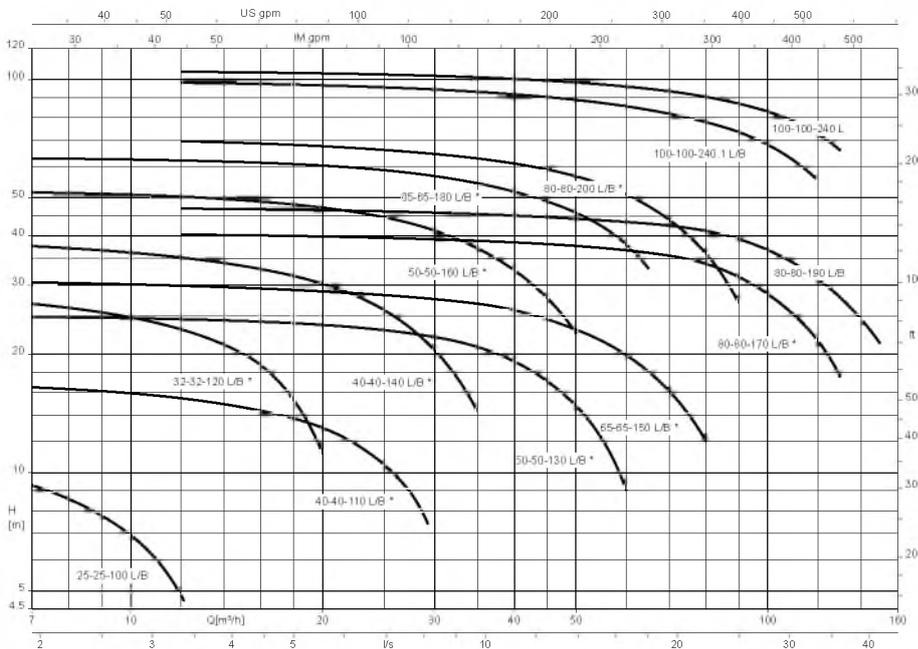
<sup>13)</sup> FKM 80 on request

Etaprime L/B, n = 1450 rpm



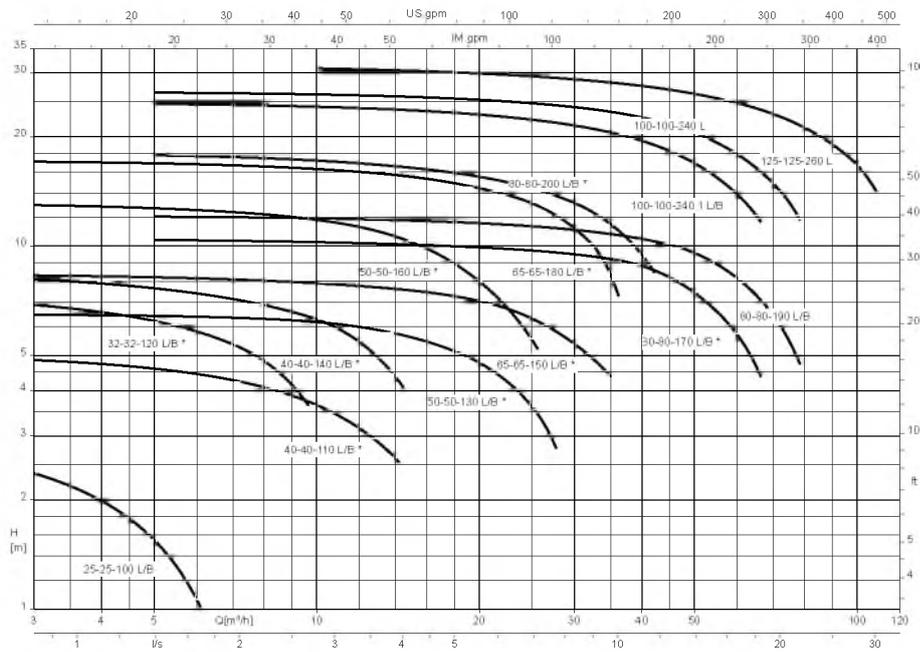
\* Also available in stainless steel material variant

Etaprime L/B, n = 3500 rpm



\* Also available in stainless steel material variant

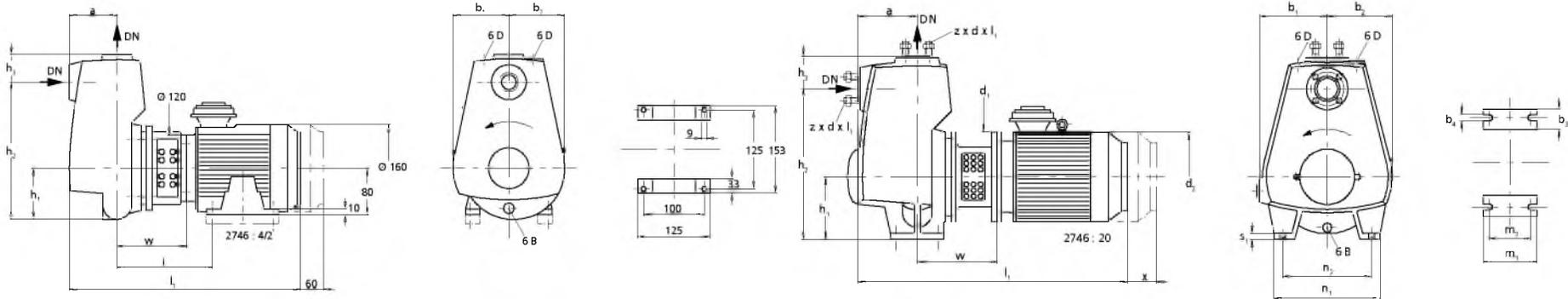
Etaprime L/B, n = 1750 rpm



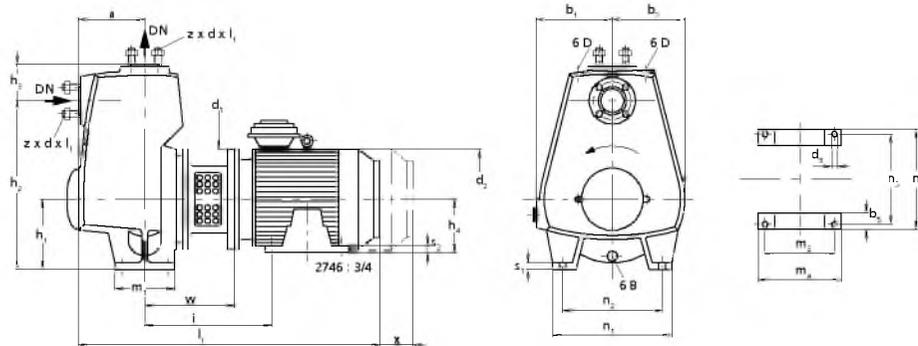
\* Also available in stainless steel material variant

Dimensions and connections

Sizes 025-025-100 to 100-100-240.1



Dimensions of sizes 025-100 to 040-110, with motor foot



Dimensions of sizes 040-140 to 100-240.1, with pump foot (up to 4 kW)

Dimensions of sizes 040-140 to 100-240.1, with motor foot (for 5.5 kW and above)

6B	Fluid drain		6D	Fluid priming and venting	
Connections					
Size	6B <sup>14)</sup>	6D <sup>14)</sup>	Size	6B	6D <sup>14)</sup>
025-025-100	G 1/8	G 3/8	050-050-160	G 3/8	G 3/8
032-032-120	G 1/8	G 3/8	065-065-150	G 3/8	G 3/8
040-040-110	G 1/8	G 3/8	065-065-180	G 3/8	G 3/8
040-040-140	G 3/8	G 3/8	080-080-170	G 1/2	G 1/2
050-050-130	G 3/8	G 3/8	080-080-190	G 1/2	G 1/2

14) G = ISO 228/1

Size	6B <sup>14)</sup>	6D <sup>14)</sup>
080-080-200	G 1/2	G 1/2

Size	6B	6D <sup>14)</sup>
100-100-240.1	G 1/2	G 1/2

Flange dimensions (025-100 to 040-110)

Size	Connection	
	Standard	Optional
	DN <sup>15)</sup>	DN <sup>16)</sup>
025-025-100	Rp 1	NPT 1
032-032-120	Rp 1 1/4	NPT 1 1/4
040-040-110	Rp 1 1/2	NPT 1 1/2

Flange dimensions (040-140 to 100-240.1) [mm]

Flanged connection	DN	Bolt circle diameter	z	d	l <sub>1</sub>
Standard: <ul style="list-style-type: none"> <li>Drilled to EN 1092-1 (material variant C)</li> <li>Drilled to EN 1092-2 (material variant G / GC)</li> </ul>	40	110	4	M16	40
	50	125	4	M16	40
	65	145	4	M16	40
	80	160	8	M16	45
	100	180	8	M16	45
Optional: <ul style="list-style-type: none"> <li>Drilled to ASME B16.1 (material variant G / GC)</li> <li>Drilled to ASME B16.5 (material variant C)</li> </ul>	NPS 1 1/2	98,6	4	UNC 1/2-13	40
	NPS 2	120,7	4	UNC 5/8-11	40
	NPS 2 1/2	139,7	4	UNC 5/8-11	40
	NPS 3	152,4	4	UNC 5/8-11	40
	NPS 4	190,5	8	UNC 5/8-11	45

Dimensions [mm]

Size	n				P <sub>N</sub> [kW]	DN	Pump																												
	1450	1750	2900	3500			a	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	i <sup>17)</sup>	l <sub>1</sub> <sup>17)</sup>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	s <sub>1</sub>	s <sub>2</sub>	w <sup>17)</sup>	x		
	[rpm]						(approx.)	(approx.)															(approx.)	(approx.)					(approx.)	(approx.)					
025-025-100 <sup>18)</sup>	X	X	-	-	0,55	25	70	104	95	-	-	-	-	-	87	227	38	-	152	441	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-
025-025-100 <sup>18)</sup>	-	-	X	X	1,10	25	70	104	95	-	-	-	-	-	87	227	38	-	152	473	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-

- 14) G = ISO 228/1  
 15) Standard connection to ISO 7/1  
 16) Optional connection to ASME B1.20.1  
 17) Dimensions for versions with a single mechanical seal  
 18) On this size, the motor feet must be shimmed (30 mm).

Size	n				P <sub>N</sub> [kW]	DN	Pump																											
	1450	1750	2900	3500			a	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	i <sub>17)</sub>	l <sub>17)</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	s <sub>1</sub>	s <sub>2</sub>	w <sub>17)</sub>	x	
	[rpm]						(appr ox.)																											
032-032-120 <sup>18)</sup>	X	X	-	-	0,55	32	95	118	95	-	-	-	-	-	-	90	239	46	-	149	463	-	-	-	-	-	-	-	-	-	-	-	99	-
032-032-120 <sup>18)</sup>	-	-	X	-	1,10	32	95	118	95	-	-	-	-	-	90	239	46	-	149	495	-	-	-	-	-	-	-	-	-	-	-	-	99	-
040-040-110 <sup>18)</sup>	X	X	-	-	0,55	40	105	118	110	-	-	-	-	-	101	256	55	-	154	478	-	-	-	-	-	-	-	-	-	-	-	-	104	-
040-040-110 <sup>18)</sup>	-	-	X	X	1,10	40	105	118	110	-	-	-	-	-	101	256	55	-	154	510	-	-	-	-	-	-	-	-	-	-	-	-	104	-
040-040-140	X	-	-	-	0,55	40	115	128	115	57	16	-	200	162	-	112	284	73	-	-	550	100	70	-	-	220	160	-	-	13	-	166	100	
040-040-140	-	X	-	-	1,50	40	115	128	115	57	16	-	200	190	-	112	284	73	-	-	635	100	70	-	-	220	160	-	-	13	-	166	100	
040-040-140	-	-	X	-	2,20	40	115	128	115	57	16	-	200	190	-	112	284	73	-	-	635	100	70	-	-	220	160	-	-	13	-	166	100	
040-040-140	-	-	X	-	3,00	40	115	128	115	57	16	-	250	213	-	112	284	73	-	-	685	100	70	-	-	220	160	-	-	13	-	180	100	
040-040-140	-	-	-	X	4,00	40	115	128	115	57	16	-	250	235	-	112	284	73	-	-	667	100	70	-	-	220	160	-	-	13	-	180	100	
040-040-140 <sup>19)</sup>	-	-	-	X	5,50	40	115	128	115	57	16	55	300	274	12	112	284	73	132	292	731	100	70	140	220	220	160	216	270	13	12	203	100	
050-050-130	X	-	-	-	0,55	50	130	138	128	55	16	-	200	162	-	132	317	78	-	-	565	100	70	-	-	250	190	-	-	17	-	166	100	
050-050-130	-	X	-	-	1,50	50	130	138	128	55	16	-	200	190	-	132	317	78	-	-	650	100	70	-	-	250	190	-	-	17	-	166	100	
050-050-130	-	-	X	-	2,20	50	130	138	128	55	16	-	200	190	-	132	317	78	-	-	650	100	70	-	-	250	190	-	-	17	-	166	100	
050-050-130	-	-	X	-	3,00	50	130	138	128	55	16	-	250	213	-	132	317	78	-	-	700	100	70	-	-	250	190	-	-	17	-	180	100	
050-050-130	-	-	-	X	4,00	50	130	138	128	55	16	-	250	235	-	132	317	78	-	-	682	100	70	-	-	250	190	-	-	17	-	180	100	
050-050-130 <sup>20)</sup>	-	-	-	X	5,50	50	130	138	128	55	16	55	300	274	12	132	317	78	132	292	746	100	70	140	220	250	190	216	270	17	12	203	100	
050-050-160	X	-	-	-	0,55	50	130	145	126	55	16	-	200	162	-	132	327	75	-	-	565	100	70	-	-	250	190	-	-	17	-	166	100	
050-050-160	-	X	-	-	1,50	50	130	145	126	55	16	-	200	190	-	132	327	75	-	-	650	100	70	-	-	250	190	-	-	17	-	166	100	
050-050-160	-	-	X	-	4,00	50	130	145	126	55	16	-	250	235	-	132	327	75	-	-	682	100	70	-	-	250	190	-	-	17	-	180	100	
050-050-160 <sup>20)</sup>	-	-	X	X	5,50	50	130	145	126	55	16	55	300	274	12	132	327	75	132	292	746	100	70	140	220	250	190	216	270	17	12	203	100	
050-050-160 <sup>20)</sup>	-	-	-	X	7,50	50	130	145	126	55	16	55	300	274	12	132	327	75	132	292	790	100	70	140	220	250	190	216	270	17	12	203	100	
065-065-150	X	-	-	-	0,55	65	140	155	149	55	16	-	200	162	-	160	370	85	-	-	575	125	95	-	-	270	212	-	-	20	-	166	100	
065-065-150	-	X	-	-	1,50	65	140	155	149	55	16	-	200	190	-	160	370	85	-	-	660	125	95	-	-	270	212	-	-	20	-	166	100	
065-065-150	-	-	X	-	4,00	65	140	155	149	55	16	-	250	235	-	160	370	85	-	-	692	125	95	-	-	270	212	-	-	20	-	180	100	
065-065-150 <sup>19)20)</sup>	-	-	X	X	5,50	65	140	155	149	55	16	55	300	274	12	160	370	85	132	292	756	125	95	140	220	270	212	216	270	20	12	203	100	
065-065-150 <sup>19)20)</sup>	-	-	-	X	7,50	65	140	155	149	55	16	55	300	274	12	160	370	85	132	292	800	125	95	140	220	270	212	216	270	20	12	203	100	
065-065-180	X	X	-	-	2,20	65	140	158	138	55	16	-	250	213	-	160	376	89	-	-	740	125	95	-	-	270	212	-	-	18	-	210	140	

17) Dimensions for versions with a single mechanical seal  
 19) On this size, the motor feet (h<sub>1</sub>>h<sub>4</sub>) or pump feet (h<sub>1</sub><h<sub>4</sub>) must be shimmed.  
 20) h<sub>1</sub> ≥ h<sub>4</sub>

Size	n				P <sub>N</sub> [kW]	DN	Pump																										
	1450	1750	2900	3500			a	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	i <sub>17)</sub>	l <sub>17)</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>	n <sub>4</sub>	s <sub>1</sub>	s <sub>2</sub>	w <sub>17)</sub>	x
	[rpm]						(appr ox.)																										
065-065-180 <sup>19)20)</sup>	-	-	✗	-	5,50	65	140	158	138	55	16	55	300	274	12	160	376	89	132	322	786	125	95	140	220	270	212	216	270	18	12	233	140
065-065-180 <sup>19)20)</sup>	-	-	✗	-	7,50	65	140	158	138	55	16	55	300	274	12	160	376	89	132	322	830	125	95	140	220	270	212	216	270	18	12	233	140
065-065-180 <sup>20)</sup>	-	-	-	✗	11,00	65	140	158	138	55	16	70	350	325	15	160	376	89	160	374	952	125	95	210	310	270	212	254	323	18	15	266	140
080-080-170	✗	✗	-	-	2,20	80	156	173	168	65	18	-	250	213	-	160	380	104	-	-	756	140	106	-	-	310	240	-	-	18	-	210	140
080-080-170 <sup>19)20)</sup>	-	-	✗	-	7,50	80	156	173	168	65	18	55	300	274	12	160	380	104	132	322	846	140	106	140	220	310	240	216	270	18	12	233	140
080-080-170 <sup>20)</sup>	-	-	-	✗	15,00	80	156	173	168	65	18	70	350	325	15	160	380	104	160	374	968	140	106	210	310	310	240	254	323	18	15	266	140
080-080-190	✗	✗	-	-	2,20	80	170	188	181	65	20	-	250	213	-	180	420	107	-	-	770	160	120	-	-	345	280	-	-	22	-	210	140
080-080-190 <sup>19)20)</sup>	-	-	-	✗	11,00	80	170	188	181	65	20	70	350	325	15	180	420	107	160	374	982	160	120	210	310	345	280	254	323	22	15	266	140
080-080-190 <sup>19)20)</sup>	-	-	-	✗	18,50	80	170	188	181	65	20	70	350	325	15	180	420	107	160	374	1018	160	120	254	314	345	280	254	323	22	15	266	140
080-080-200	✗	✗	-	-	2,20	80	154	172	152	65	20	-	250	213	-	160	378	107	-	-	754	140	100	-	-	285	220	-	-	22	-	210	140
080-080-200 <sup>20)</sup>	-	-	✗	-	11,00	80	154	172	152	65	20	70	350	325	15	160	378	107	160	374	966	140	100	210	310	285	220	254	323	22	15	266	140
080-080-200 <sup>20)</sup>	-	-	-	✗	15,00	80	154	172	152	65	20	70	350	325	15	160	378	107	160	374	966	140	100	210	310	285	220	254	323	22	15	266	140
100-100-240.1	✗	-	-	-	2,20	100	182	203	178	68	20	-	250	213	-	200	457	127	-	-	771	140	100	-	-	330	260	-	-	18	-	199	140
100-100-240.1	✗	✗	-	-	3,00	100	182	203	178	68	20	-	250	213	-	200	457	127	-	-	771	140	100	-	-	330	260	-	-	18	-	199	140
100-100-240.1	-	✗	-	-	4,00	100	182	203	178	68	20	-	250	235	-	200	457	127	-	-	753	140	100	-	-	330	260	-	-	18	-	199	140
100-100-240.1 <sup>19)20)</sup>	-	-	✗	-	18,50	100	182	203	178	68	20	70	350	325	15	200	457	127	160	363	1019	140	100	254	314	330	260	254	323	18	15	255	140
100-100-240.1 <sup>20)</sup>	-	-	-	✗	30,00	100	182	203	178	68	20	85	400	422	19	200	457	127	200	388	1106	140	100	305	388	330	260	318	404	18	19	255	140

17) Dimensions for versions with a single mechanical seal

### Flange connections

Threaded connections, shaft unit 17

Size	Shaft unit	Material variant			
		G/G/C			
		Connection pipe thread to			
		ISO 7-1 PN10		ASME B1.20.1 PN10	
025-025-100	17	Rp 1	X	NPT 1	o
032-032-120		Rp 1 1/4	X	NPT 1 1/4	o
040-040-110		Rp 1 1/2	X	NPT 1 1/2	o

Flange connections<sup>21)</sup> shaft unit 25, 35

Size	Shaft unit	Nominal diameter to		Material variant			
				G/GC		C	
				Flange dimensions to			
		EN 1092-2		EN 1092-1			
		Drilled to				EN 1092-2 PN16	ASME B16.1 CL125
040-040-110	25	DN 40	NPS 1 1/2	X	o	X	o
050-050-130		DN 50	NPS 2	X	o	X	o
050-050-160		DN 50	NPS 2	X	o	X	o
065-065-150		DN 65	NPS 2 1/2	X	o	X	o
065-065-180	35	DN 65	NPS 2 1/2	X	o	X	o
080-080-170		DN 80	NPS 3	X	o	X	o
080-080-190		DN 80	NPS 3	X	o	-	-
080-080-200		DN 80	NPS 3	X	o	X	o
100-100-240.1		DN 100	NPS 4	X	o	-	-

Symbols key

Symbol	Description
X	Standard
o	Option

<sup>21)</sup> Type RF (Raised Face)

### Interchangeability of Etaprime B and Etaprime L pump components

Components featuring the same number in a column are interchangeable.

Interchangeability of Etaprime B and Etaprime L pump components and interchangeability of components among each other

Size	Shaft unit	Description					
		Volute casing	Casing cover	Shaft	Impeller	Mechanical seal	Shaft sleeve
		Part No.					
		102	161	210	230	433	523
025-025-100	17	○*	✗	1	○*	1*	✗
032-032-120		○*	✗	1	○*	1*	✗
040-040-110		○*	✗	1	○*	1*	✗
040-040-140	25	○*	○*	2	○*	2*	1*
050-050-130		○*	○*	2	○*	2*	1*
050-050-160		○*	1*	2	○*	2*	1*
065-065-150		○*	1*	2	○*	2*	1*
065-065-180	35	○*	○*	3	○*	3*	2*
080-080-170		○*	○*	3	○*	3*	2*
080-080-190		○*	○*	3	○*	3*	2*
080-080-200		○*	○*	3	○*	3*	2*
100-100-240.1		○*	○*	3	○*	3*	2*

#### Symbols key

Symbol	Description
*	Component interchangeable with Etaprime L
○	Components differ
✗	Component not fitted

- Pump

#### Drive

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

#### Contact guard

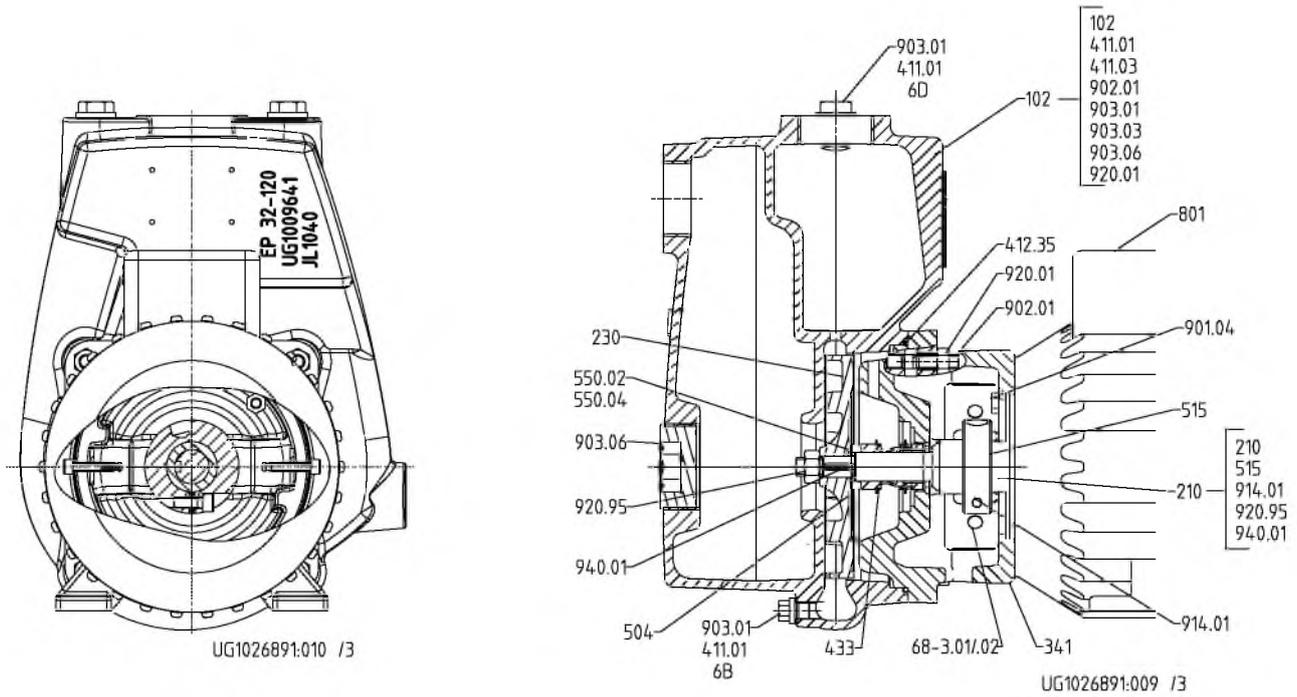
- Cover plates on drive lantern to EN 294

#### Scope of supply

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

Sectional drawing and list of components

Etaprime B and C with threaded connection (SU 17)

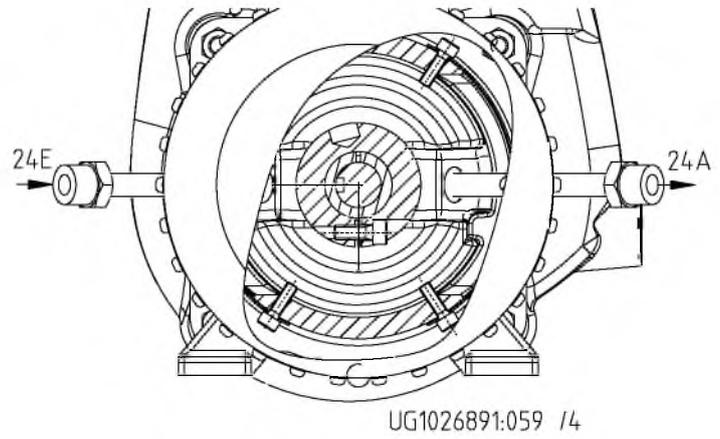
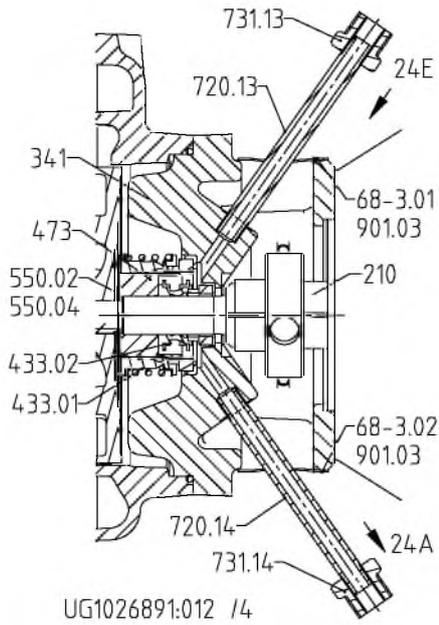


Model with single mechanical seal

[ Supplied in packaging units only

List of components

Part No.	Description	Part No.	Description
102	Volute casing	801	Flanged motor
210	Shaft	901.04	Hexagon head bolt
230	Impeller	902.01	Stud
341	Drive lantern	903.01/03/06	Screw plug
411.01/03	Joint ring	914.01	Hexagon socket head cap screw
412.35	O-ring	920.01/95	Nut
433	Mechanical seal	940.01	Key
504	Spacer ring		
515	Locking ring	Auxiliary connections	
550.02/04	Disc	6 B	Fluid drain
68-3.01/02	Cover plate	6 D	Fluid priming and venting

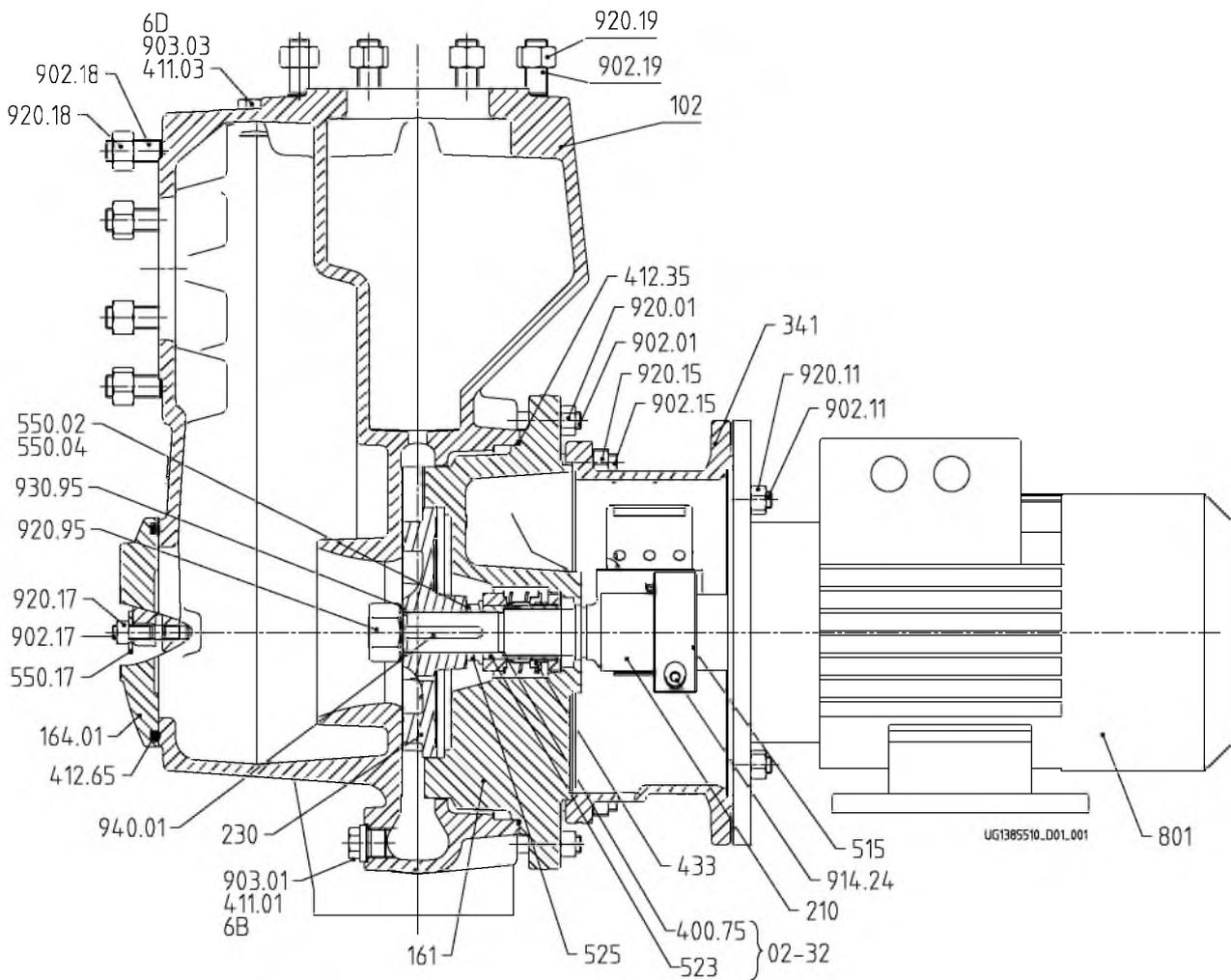


Variant with double mechanical seal in tandem arrangement

List of components

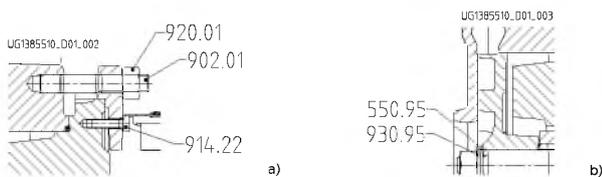
Part No.	Description	Part No.	Description
210	Shaft	720.13/.14	Fitting
341	Drive lantern	731.13/.14	Reducing nipple
433.01	Mechanical seal (inboard)	901.03	Hexagon head bolt
433.02	Mechanical seal (outboard)		
473	Primary ring carrier	Auxiliary connections	
550.02/.04	Disc	24 A	Quench liquid outlet
68-3.01/.02	Cover plate	24 E	Quench liquid inlet

Etaprime G and C with flanged connection (SU 25 and SU 35)



Model with single mechanical seal

[ Supplied in packaging units only



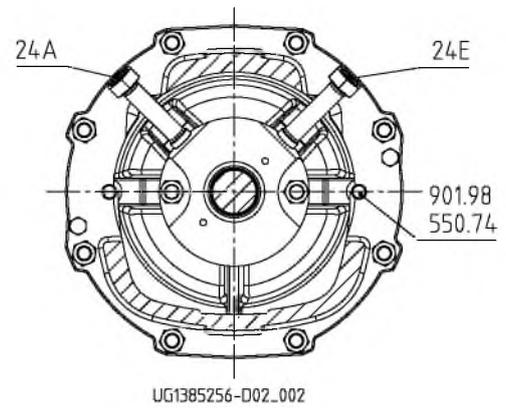
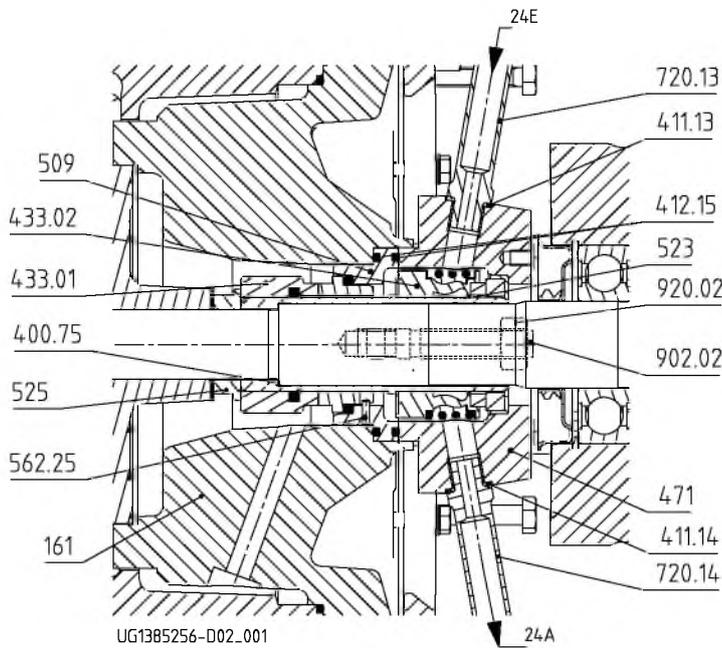
a) Clamped casing cover, b) impeller fastening elements for shaft unit 25

List of components

Part No.	Description	Part No.	Description
102	Volute casing	550.95 <sup>22)</sup>	Disc
161	Casing cover	68-3.01/02	Cover plate
164.01	Inspection cover	801	Flanged motor
210	Shaft	902.01/.11/.15/.17/.18/.19	Stud
230	Impeller	903.01/.03	Screw plug
341	Drive lantern	914.22/.24	Hexagon socket head cap screw
400.75	Gasket	920.01/.05/.11/.15/.17/.18/.19/.95	Nut
411.01/.03	Joint ring	930.95	Safety device

22) For shaft unit 25 only; shaft unit see data sheet.

Part No.	Description	Part No.	Description
412.35/.65	O-ring	940.01	Key
433	Mechanical seal		
515	Locking ring	Auxiliary connections	
523	Shaft sleeve	6 B	Fluid drain
525 <sup>23)</sup>	Spacer sleeve	6 D	Fluid priming and venting
550.02/.04/.17	Disc		

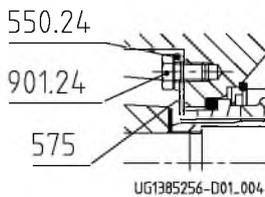
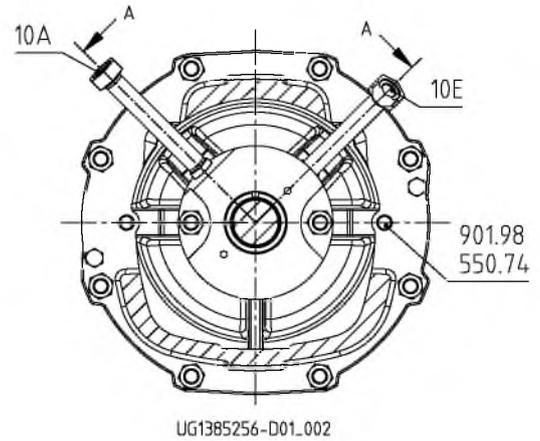
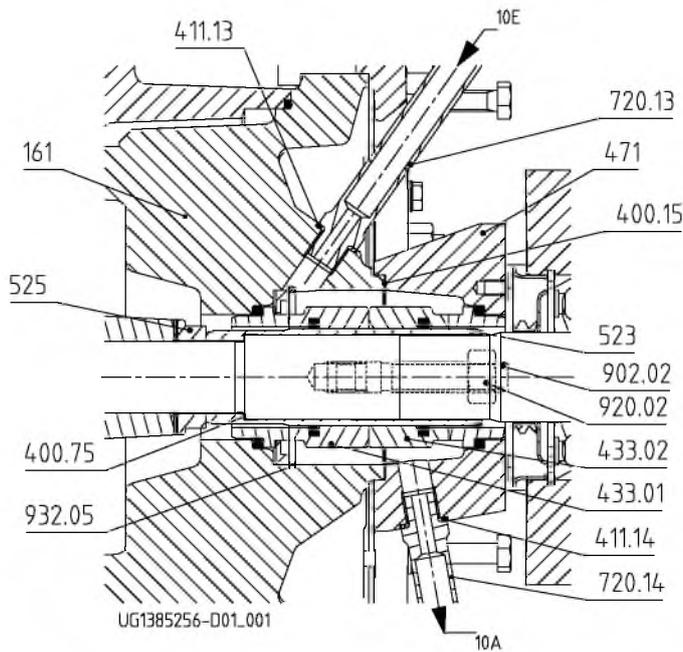


Variant with double mechanical seal in tandem arrangement

Part No.	Description	Part No.	Description
161	Casing cover	525 <sup>24)</sup>	Spacer sleeve
400.75	Gasket	562.25	Parallel pin
411.13/.14	Joint ring	720.13/.14	Fitting
412.15	O-ring	902.02	Stud
433.01	Mechanical seal (inboard)	920.02	Nut
433.02	Mechanical seal (outboard)		
471	Seal cover	Auxiliary connections	
509	Intermediate ring	24 A	Quench liquid outlet
523	Shaft sleeve	24 E	Quench liquid inlet

<sup>23)</sup> For shaft unit 35 only; shaft unit see data sheet.

<sup>24)</sup> For shaft unit 35 only; shaft unit see data sheet.



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

Part No.	Description	Part No.	Description
161	Casing cover	720.13/.14	Fitting
400.15 <sup>25)</sup> /.75	Gasket	901.24	Hexagon head bolt
411.13/.14	Joint ring	902.02	Stud
433.01	Mechanical seal (inboard)	920.02	Nut
433.02	Mechanical seal (outboard)	932.05	Circlip
471	Seal cover		
523	Shaft sleeve	Auxiliary connections	
525 <sup>26)</sup>	Spacer sleeve	10 A	Barrier fluid outlet
550.24	Disc	10 E	Barrier fluid inlet
575	Lug		

<sup>25)</sup> Only for shaft unit 25 joint ring 411.15

<sup>26)</sup> For shaft unit 35 only; shaft unit see data sheet.

### Detailed 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
E	T	P	B	0	8	0	-	0	8	0	-	2	0	0		G	C	X	I	1	0	D	3	0	1	8	5	2			B
See name plate and data sheet																						See data sheet									

Designation key

Position	Code	Description
1-4	Pump type	
	ETPB	Etaprime bloc
5-16	Size	
	080	Nominal suction nozzle diameter [mm]
	080	Nominal discharge nozzle diameter [mm]
	200	Nominal impeller diameter [mm]
17	Pump casing material	
	G	Cast iron
	C	Stainless steel
18	Impeller material if different from casing material	
	G	Cast iron
	C	Stainless steel
19	Special design	
	<sub>27)</sub>	Standard
	X	Special design
20	Seal options	
	I	Single mechanical seal
	D	Double mechanical seal in back-to-back arrangement
	T	Double mechanical seal in tandem arrangement
21-22	Seal code	
	01	Q1Q1VGG
	08	AQ1VGG <sup>28)</sup>
	09	U3U3VGG
	10	Q1Q1X4GG
	11	BQ1EGG
23	Scope of supply	
	D	Pump with motor
24	Shaft unit	
	1	Shaft unit 17
	2	Shaft unit 25
	3	Shaft unit 35
25-28	Motor rating	
	0011	1.1 kW
	0075	7.5 kW
	0185	18.5 kW
29	Number of poles	
	2	2 poles
	4	4 poles
30-31	Explosion protection	
	<sub>27)</sub>	Without explosion-proof motor
	ex	Explosion-proof motor
32	Product generation	
	B	Product generation Global Etaprime

<sup>27)</sup> Blank

<sup>28)</sup> BQVGG for shaft unit 17

Self-priming Pump

**Etaprime L**

**Type Series Booklet**



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## Self-priming Pump

### Volute Casing Pumps

## Etaprime L



### Main applications

- Spray irrigation systems
- Service water supply systems
- Drainage
- Drainage systems
- Fire-fighting systems
- Lowering groundwater levels
- Domestic water supply
- Air-conditioning systems
- Cooling circuits
- Swimming pools
- Water supply systems

### Fluids handled

- Drinking water
- Swimming pool water (0.4 to 1.4 mg/l free chlorine, max. 0.6 mg/l combined chlorine, pH value 6.9 to 7.7, water hardness 10 to 30 °dH, max. salt content 7 g/l)
- Fire-fighting water
- Seawater
- River, lake and groundwater
- Brackish water
- Condensate
- Brine
- Oil
- Service water

- Cleaning agents
- Cooling water

### Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m³/h]	≤ 180	≤ 150
	Q [l/s]	≤ 50	≤ 41
Head	H [m]	≤ 85	≤ 105
Fluid temperature	T [°C]	-30 to +90	
Operating pressure	p [bar]	≤ 10	
Static suction lift	H <sub>Geo</sub> [m]	≤ 9	

### Designation

Example: ETPL080-080-200 GCXI10D3

Designation key

Code	Description
ETPL	Type series
	ETPL   Etaprime L
080	Nominal suction nozzle diameter [mm]
080	Nominal discharge nozzle diameter [mm]
200	Nominal impeller diameter [mm]
G	Casing material
	C   Stainless steel
	G   Grey cast iron
C	Impeller material if different from casing material
	C   Stainless steel
	G   Grey cast iron
X	Design
	-   Standard
	X   Special design
I	Sealing system
	I   Single mechanical seal
	D   Double mechanical seal in back-to-back arrangement
	T   Double mechanical seal in tandem arrangement
10	Seal code
	01   Q1Q1VGG
	08   AQ1VGG <sup>1)</sup>
	09   U3U3VGG
	10   Q1Q1X4GG
	11   BQ1EGG
D	Scope of supply
	A   Pump (without motor)
	B   Pump with baseplate
	C   Pump with baseplate, coupling and coupling guard
	D   Pump with baseplate, coupling, coupling guard and motor
3	Shaft unit
	1   SU 17
	2   SU 25
	3   SU 35

1) BQVGG for shaft unit 17

## Further information on the designation

(←Page 28)

### Design details

#### Design

- Volute casing pump
- Back pull-out design (from size 40-40-140)
- Horizontal installation
- Self-priming
- Single-stage
- Single-entry

#### Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet (from pump size 40-40-140)

#### Impeller type

- Open multi-channel impeller

#### Bearings

- Floating bearings: deep groove ball bearings

#### Shaft seal

- The shaft is fitted with a replaceable shaft sleeve in the shaft seal area (from pump size 40-40-140).
- Single and double mechanical seals to EN 12756

### Bearings used

#### Standard bearings

Version	Bearing bracket	Rolling element bearing	
		Pump end	Drive end
Standard bearings (grease lubrication)	SU 17	3203 C3	6203 2RS
	SU 25	6305 2Z C3	6305 2Z C3
	SU 35	6307 2Z C3	6307 2Z C3
Standard bearings (oil lubrication)	SU 17	-	-
	SU 25	6305 C3	6305 C3
	SU 35	6307 C3	6307 C3

#### Lubrication:

- Grease lubrication
- Oil lubrication

#### Drive

- KSB IEC frame standardised IE3 motor (from 0.75 kW)
- 230/400 V up to 2.2 kW and 400/690 V from 3 kW
- 60 Hz winding, 440 - 480 V
- Type of construction B3
- IP55 enclosure
- Thermal class F with temperature sensor, 3 PTC thermistors
- Mode of operation: continuous operation S1

### Product benefits

- Maintenance-free mechanical seal ensures operating reliability
- Easy to dismantle due to back pull-out design; no need to remove the pump casing from the piping
- Good suction performance, self-priming up to 9 m suction lift, also suitable for applications with relatively poor inlet conditions (i.e. low or negative inlet pressure) and for handling fluids with entrained gas.
- Optimised hydraulic components for high efficiency help reduce energy consumption

### Certifications

#### Overview

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

Overview of fluids handled

Table of fluids handled and associated material combinations

X = standard

Fluid handled	Temperature	Materials				Shaft seal						Mechanical seal design code	Comments	
		Casing / impeller				Mechanical seal								
		Grey cast iron/grey cast iron	Grey cast iron/ Cr-Ni-Mo cast steel	CrNiMo cast steel/ CrNiMo cast steel	C	Q1Q1VGG	AQ1VGG <sup>2)</sup>	BQVGG <sup>3)</sup>	U3U3VGG	Q1Q1X4GG	BQ1EGG <sup>2)</sup>			Q12Q1M1GG
[°C]	G	GC	C	01	8	9	10	11	70 <sup>4)</sup>					
<b>Water</b>														
Industrial waste water													Analysis of the fluid handled required	
Ammonia water (ammonia solution)	≤ 40; conc. ≤ 10 %	X								X			Tandem seal Q1Q1EGG required. Quench liquid: used suitable water.	
Brackish water	≤ 25			X					X			10		
Fire-fighting water <sup>5)</sup>	≤ 60		X						X			10		
Condensate <sup>2)</sup>	≤ 90	X								X		11		
Condensate, not conditioned	≤ 90			X						X		11		
Cooling water (without antifreeze) <sup>5)</sup>	≤ 60	X							X			10	Open circuit: CL 10 required	
Cooling water pH ≥ 7.5 (with antifreeze) <sup>5)6)</sup>	≥ -30 p ≤ 10 bar ≤ 90	X								X		11	Open circuit: CL 11 required	
Slightly contaminated water <sup>5)</sup>	≤ 60	X							X			10		
Seawater	≤ 25			X					X			10		
Surface water <sup>5)</sup>	≤ 40	X				X						8	Analysis of the fluids handled required	
Pure water <sup>7)</sup>	≤ 60	X								X		11		
Untreated water <sup>5)</sup>	≤ 60	X							X			10		
Swimming pool water (fresh water) <sup>5)</sup>	≤ 60	X							X			10	Also applies to requirements as per DIN 19643	
Dam water <sup>5)</sup>	≤ 60	X							X			10	If solids are contained, contact KSB.	
Drinking water	≤ 60			X								11		
Partly desalinated water <sup>2)</sup>	≤ 90	X								X		11		
Fully desalinated water	≤ 90			X						X		11	Requirements for ultra-pure water cannot be met.	
Fully desalinated water as boiler feed water <sup>2)</sup>	≤ 90	X								X		11		
<b>Refrigerants, cooling brines</b>														
Cooling brine; inorganic, pH value > 7.5, inhibited	≥ -30 ≤ 25	X								X		11		
Water with antifreeze, pH value > 7.5 <sup>5)6)</sup>	≥ -30 ≤ 90	X								X		11		
<b>Oils/emulsions</b>														
Drilling/grinding emulsion	≤ 60	X						X				9		
Oil-water emulsion	≤ 60	X						X				9		
<b>Cleaning agents</b>														
Lyes for bottle rinsers <sup>8)</sup>	≤ 90	X									X	10	EPDM only if oil-free	

2) Treatment to VdTÜV 1466; additional requirement: O<sub>2</sub> ≤ 0.02 mg/l

3) Only applies to shaft unit 17.

4) Special mechanical seal design

5) General criteria for results of water analysis: pH value ≥ 7; chloride content (Cl) ≤ 250 mg/kg. Chlorine (Cl<sub>2</sub>) ≤ 0.6 mg/kg.

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

7) No ultra-pure water! Conductivity at 25 °C: ≤ 800-µS/cm

Fluid handled	Temperature	Materials			Shaft seal						Mechanical seal design code	Comments
		Casing / impeller			Mechanical seal							
		Grey cast iron/grey cast iron	Grey cast iron/ Cr-Ni-Mo cast steel	CrNiMo cast steel/ CrNiMo cast steel	Q1Q1VGG	AQ1VGG <sup>2)</sup> BQVGG <sup>3)</sup>	U3U3VGG	Q1Q1X4GG	BQ1EGG <sup>2)</sup>	Q12Q1M1GG		
[°C]	G	GC	C	01	8	9	10	11	70 <sup>4)</sup>			
<b>Acids</b>												
Acetic acid	≤ 60; conc. ≤ 5 % ≤ 60; conc. ≤ 10 %			X					X		11	
Alum, potassium aluminium sulphate up to 3 %	≤ 80			X	X						01	

### Overview of type series

Available sizes and designs

Size	Shaft unit	Etaprime L		Etaprime B	
		G	GC, C	G	GC, C
032-032-100	17	S / T	-	S / T	-
032-032-120	17	S / T	S / T	S / T	S / T
040-040-110	17	S / T	S / T	S / T	S / T
040-040-140	25	S / T / B	S / T / B	S / T / B	S / T / B
050-050-130	25	S / T / B	S / T / B	S / T / B	S / T / B
050-050-160	25	S / T / B	S / T / B	S / T / B	S / T / B
065-065-150	25	S / T / B	S / T / B	S / T / B	S / T / B
065-065-180	35	S / T / B	S / T / B	S / T / B	S / T / B
080-080-170	35	S / T / B	S / T / B	S / T / B	S / T / B
080-080-190	35	S / T / B	-	S / T / B	-
080-080-200	35	S / T / B	S / T / B	S / T / B	S / T / B
100-100-240.1	35	S / T / B	-	S / T / B	-
100-100-240	35	S / T / B	-	-	-
125-125-260	35	S / T / B	-	-	-

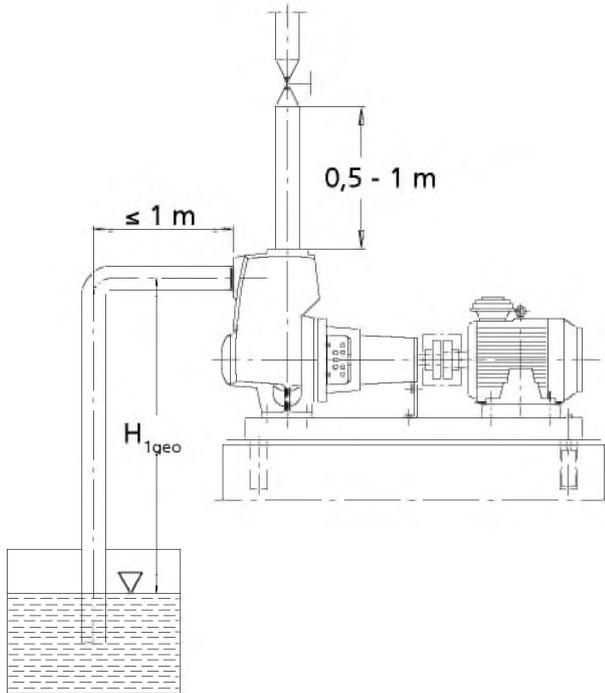
- E = Single mechanical seal (standard design)
- T = Available with double mechanical seal in tandem arrangement
- B = Available with double mechanical seal in back-to-back arrangement
- = Size not available

### Priming time

For a 1-metre horizontal length of the suction line and DN suction line = DN pump, the priming times are as follows.

When handling gaseous fluids, fluids which tend to froth or water with a temperature  $T > 60$  °C, the pump will not be self-priming. In such cases, a check valve must be installed in the suction line.

- 
- 2) Treatment to VdTÜV 1466; additional requirement:  $O_2 \leq 0.02$  mg/l
  - 3) Only applies to shaft unit 17.
  - 4) Special mechanical seal design
  - 8) With 2 % sodium hydroxide



Distances of suction line and discharge line

Size <sup>9)</sup>	Shaft unit	Priming time [sec] at a speed $n = 2900$ rpm at a static suction lift $H_{1geo}$ of ... m					
		2 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	40	145	415	-	-	-
032-032-120		30	90	135	190	255	360
040-040-110		60	100	215	420	-	-
040-040-140	25	30	70	125	220	355	600
050-050-130		50	120	195	260	345	440
050-050-160		30	70	105	170	265	430
065-065-150	35	60	120	165	260	375	570
065-065-180		30	50	75	100	145	200
080-080-170		50	100	135	180	225	310
080-080-190		40	70	105	160	185	240
080-080-200		30	50	75	105	155	200
100-100-240.1		30	70	95	120	150	190
100-100-240		35	70	85	110	160	-
125-125-260		35	80	105	130	160	190

Size <sup>9)</sup>	Shaft unit	Priming time [sec] at a speed $n = 3500$ rpm at a static suction lift $H_{1geo}$ of ... m					
		2 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	30	85	135	-	-	-
032-032-120		20	60	105	140	175	250
040-040-110		30	85	125	200	265	470
040-040-140	25	25	50	85	120	145	230
050-050-130		30	90	140	190	245	300
050-050-160		25	55	75	150	215	280
065-065-150	40	80	125	170	225	370	

Size <sup>9)</sup>	Shaft unit	Priming time [sec] at a speed $n = 3500$ rpm at a static suction lift $H_{1geo}$ of ... m					
		2 m	4 m	5 m	6 m	7 m	8 m
065-065-180	35	20	40	65	90	105	150
080-080-170		30	80	105	130	165	220
080-080-190		30	55	75	100	125	160
080-080-200		25	40	55	80	125	160
100-100-240.1		25	60	85	115	145	180
100-100-240		25	70	85	100	155	360

Size <sup>9)</sup>	Shaft unit	Priming time [sec] at a speed $n = 1450$ rpm at a static suction lift $H_{1geo}$ of ... m							
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	130	-	-	-	-	-	-	-
032-032-120		100	210	-	-	-	-	-	-
040-040-110		120	-	-	-	-	-	-	-
040-040-140	25	130	-	-	-	-	-	-	-
050-050-130		210	410	-	-	-	-	-	-
050-050-160		210	430	-	-	-	-	-	-
065-065-150	35	190	350	540	-	-	-	-	-
065-065-180		90	140	220	370	-	-	-	-
080-080-170		110	180	280	480	-	-	-	-
080-080-190		100	110	200	310	-	-	-	-
080-080-200		70	110	190	270	320	420	-	-
100-100-240.1		130	150	220	300	440	-	-	-
100-100-240		110	160	270	480	-	-	-	-
125-125-260		60	70	110	160	200	330	430	610

Size <sup>9)</sup>	Shaft unit	Priming time [sec] at a speed $n = 1750$ rpm at a static suction lift $H_{1geo}$ of ... m							
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
025-025-100	17	70	170	-	-	-	-	-	-
032-032-120		80	150	260	-	-	-	-	-
040-040-110		90	180	-	-	-	-	-	-
040-040-140	25	80	150	200	-	-	-	-	-
050-050-130		130	240	380	-	-	-	-	-
050-050-160		130	260	480	-	-	-	-	-
065-065-150	35	140	260	350	430	-	-	-	-
065-065-180		80	110	170	220	330	-	-	-
080-080-170		90	130	200	320	480	-	-	-
080-080-190		80	100	130	160	210	390	-	-
080-080-200		60	100	160	230	280	350	-	-
100-100-240.1		90	110	140	210	260	400	-	-
100-100-240		80	100	140	200	300	-	-	-
125-125-260		50	60	80	115	170	220	300	400

Pressure limits

Size	Discharge pressure $p_2$ <sup>10)</sup> [bar]	Test pressure <sup>11)</sup> [bar]
All sizes	10,0	15,0

<sup>9)</sup> Stainless steel variant not available for all pump sizes.

<sup>10)</sup> The sum of inlet pressure and shut-off head must not exceed the values indicated.

<sup>11)</sup> The casing components are checked for leakage by means of internal pressure tests to ZN 1650 with water.

### Materials

A1 = default material variant

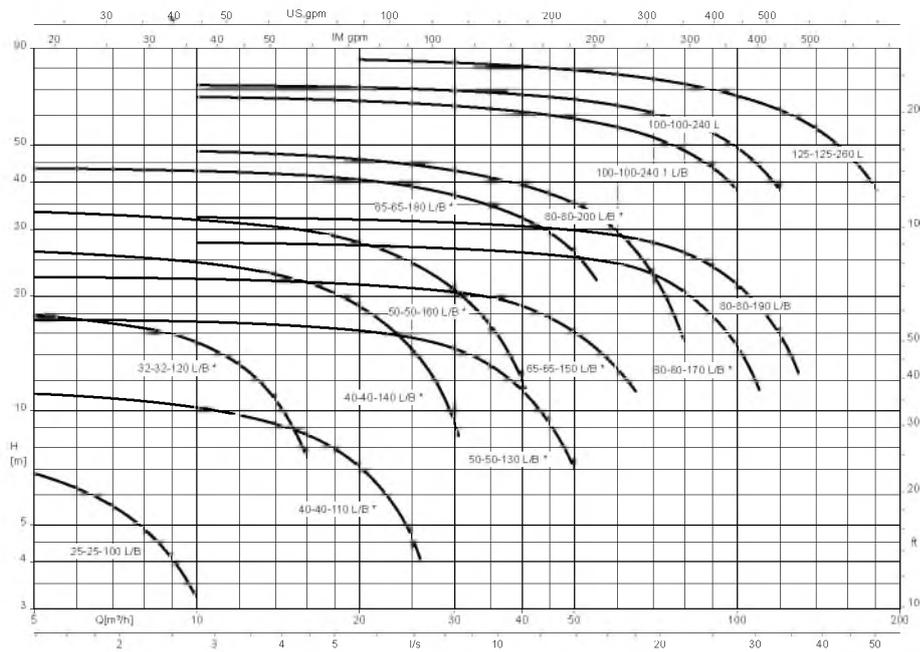
A2 = optional material variant

Part No.	Description		Material variants		
			G	GC	C
102	Volute casing	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1
161	Casing cover	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1
210	Shaft for shaft units 25 and 35	Tempered steel C45+N	A1	A1	-
		Duplex stainless steel 1.4462	A2	A2	A1
	Shaft for shaft unit 17	Stainless steel 1.4571	A1	A1	A1
230	Impeller	Grey cast iron EN-GJL-250	A1	-	-
		Stainless steel 1.4408	-	A1	A1
330	Bearing bracket for shaft units 25 and 35	Grey cast iron EN-GJL-250	A1	A1	A1
350	Bearing housing for shaft unit 17	Grey cast iron EN-GJL-250	A1	A1	-
		Stainless steel 1.4408	-	-	A1
412	O-ring	EPDM 80 peroxide <sup>12)</sup>	A1	A1	A1
523	Shaft sleeve (not for shaft unit 17)	Stainless steel 1.4571	A1	A1	A1

<sup>12)</sup> FKM 80 on request

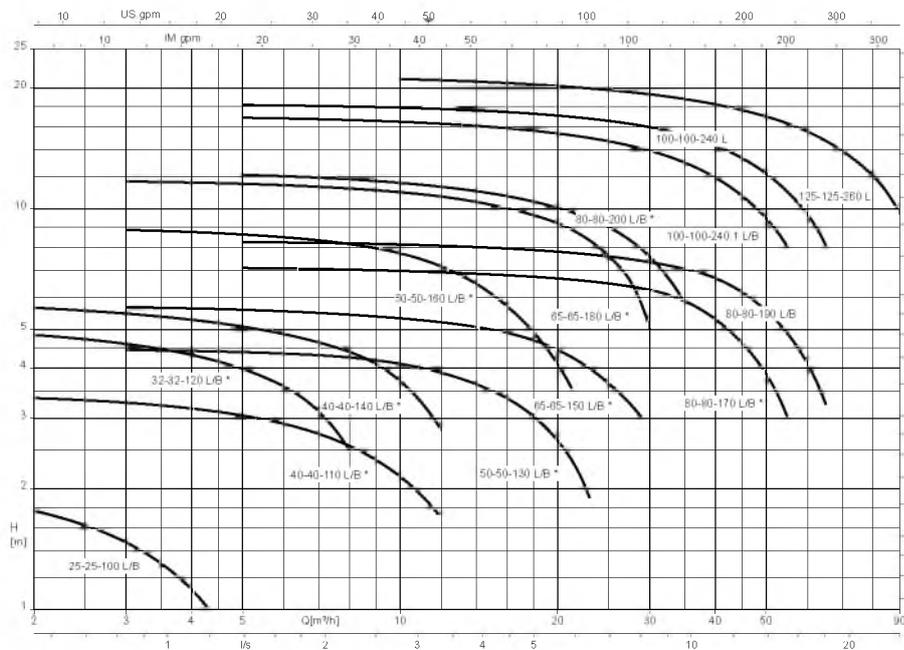
Selection charts

Etaprime L/B, n = 2900 rpm



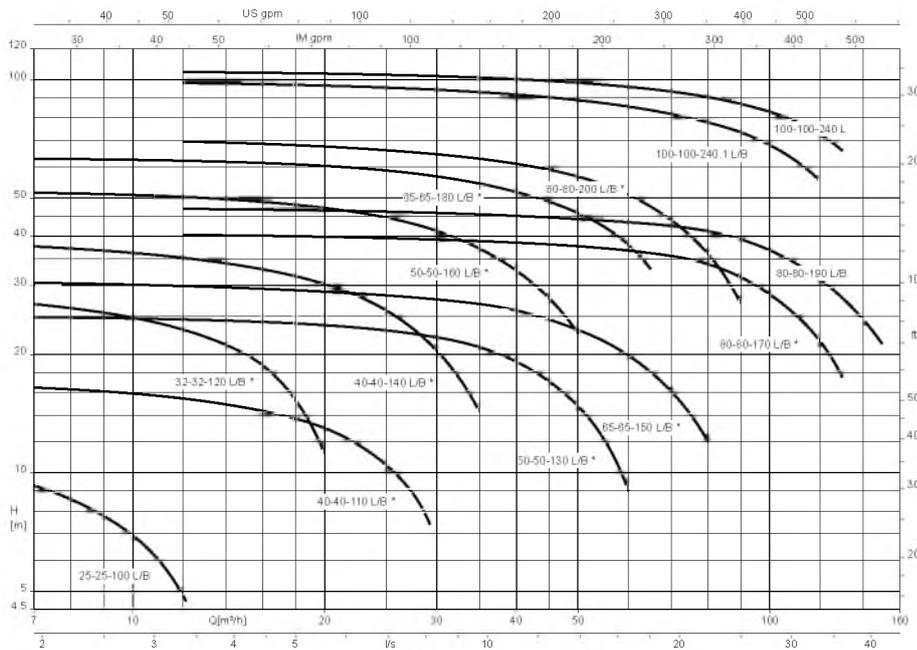
\* Also available in stainless steel material variant

Etaprime L/B, n = 1450 rpm



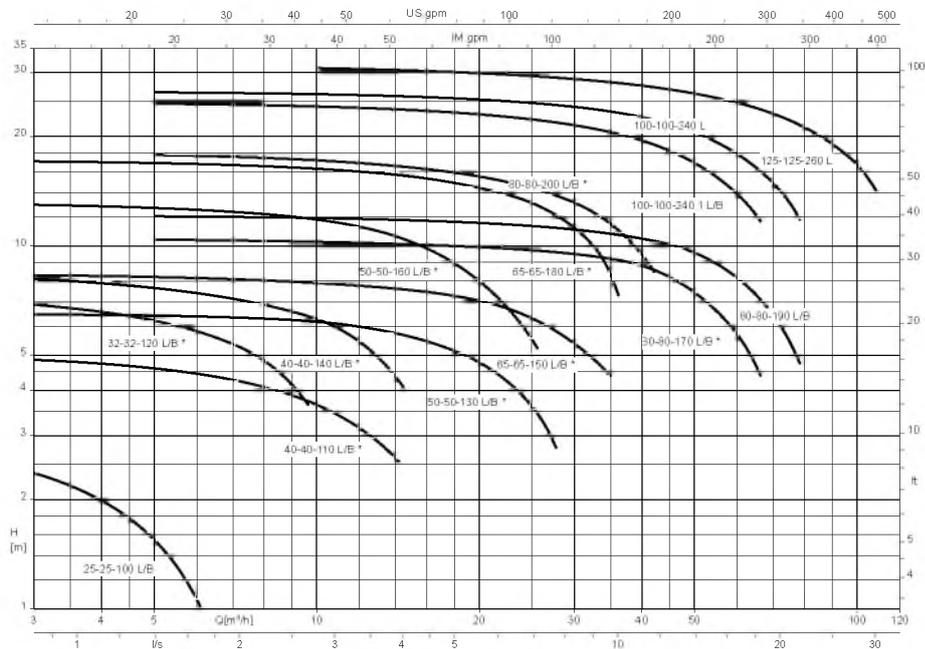
\* Also available in stainless steel material variant

Etaprime L/B, n = 3500 rpm



\* Also available in stainless steel material variant

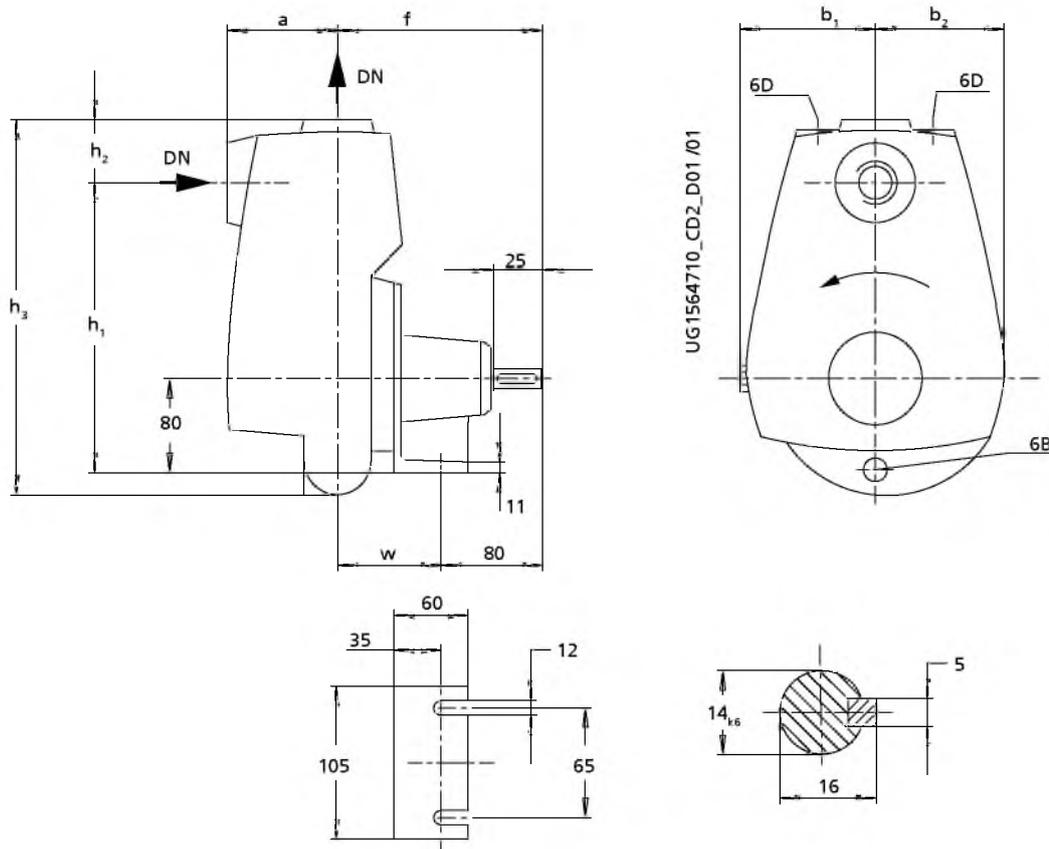
Etaprime L/B, n = 1750 rpm



\* Also available in stainless steel material variant

Dimensions and connections

Sizes 025-025-100 to 040-040-110 (shaft unit 17) – pump



Dimensions of sizes 025-025-100 to 040-040-110 (shaft unit 17) – pump

6B	Fluid drain	6D	Fluid priming and venting
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Connections

Size	6 B <sup>13)</sup>	6D <sup>13)</sup>
025-025-100	G 1/8	G 3/8
032-032-120	G 1/8	G 3/8
040-040-110	G 1/8	G 3/8

Pump dimensions [mm]

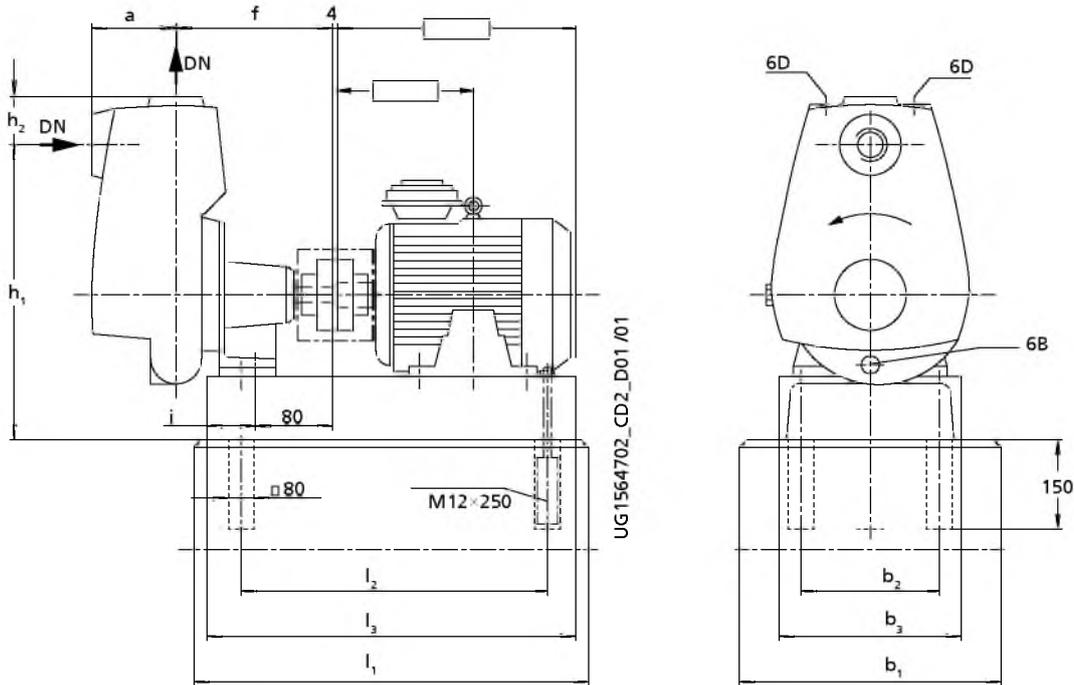
Size	Connection		Pump							
	Standard	Optional	a	b <sub>1</sub>	b <sub>2</sub>	f	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	w
	DN <sup>14)</sup>	DN <sup>15)</sup>								
020-025-100	Rp 1	NPT 1	70	104	95	169	220	38	265	89
032-032-120	Rp 1 1/4	NPT 1 1/4	95	118	95	165	229	46	286	85
040-040-110	Rp 1 1/2	NPT 1 1/2	105	118	110	171	235	55	312	91

<sup>13)</sup> G = ISO 228/1

<sup>14)</sup> Standard connection to ISO 7/1

<sup>15)</sup> Optional connection to ASME B1.20.1

Sizes 025-025-100 to 040-040-110 (shaft unit 17) – pump set



Dimensions of sizes 025-025-100 to 040-040-110 (shaft unit 17) – pump set

6B	Fluid drain	6D	Fluid priming and venting
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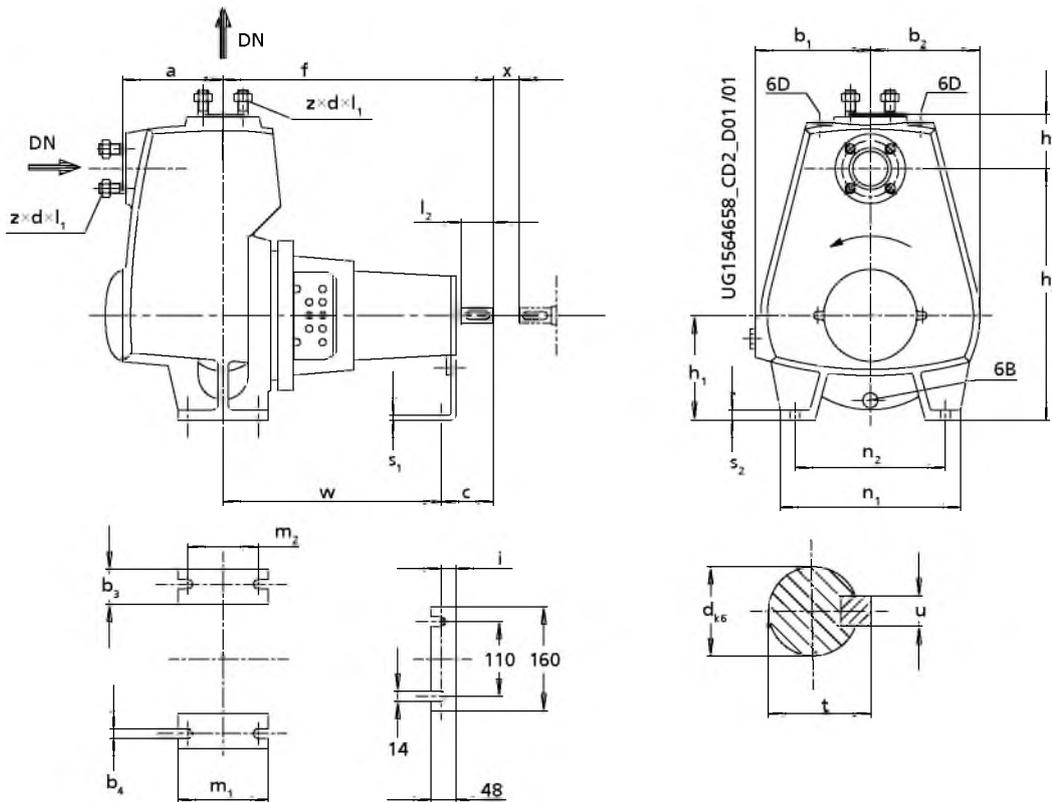
Pump set dimensions [mm]

Size	n				P <sub>N</sub>	IEC motor	Connection		Pump set										
	1450	1750	2900	3500			Standard	Optional	a	f	h <sub>1</sub>	h <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	i	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
	[rpm]																		
025-025-100	X	X	-	-	0,37	71	Rp 1	NPT 1	70	169	295	38	350	160	200	41,5	570	360	420
025-025-100	X	X	-	-	0,55	80M	Rp 1	NPT 1	70	169	295	38	350	160	200	41,5	570	360	420
025-025-100	-	-	X	-	0,55	71	Rp 1	NPT 1	70	169	295	38	350	160	200	41,5	570	360	420
025-025-100	-	-	-	X	0,75	80M	Rp 1	NPT 1	70	169	295	38	350	160	200	41,5	570	360	420
025-025-100	-	-	-	X	1,10	80M	Rp 1	NPT 1	70	169	295	38	350	160	200	41,5	570	360	420
032-032-120	X	X	-	-	0,37	71	R 1 1/4	NPT 1 1/4	95	165	304	46	350	160	200	41,5	570	360	420
032-032-120	X	X	-	-	0,55	80M	R 1 1/4	NPT 1 1/4	95	165	304	46	350	160	200	41,5	570	360	420
032-032-120	-	-	X	-	1,10	80M	R 1 1/4	NPT 1 1/4	95	165	304	46	350	160	200	41,5	570	360	420
032-032-120	-	-	-	X	2,20	90L	R 1 1/4	NPT 1 1/4	95	165	314	46	350	160	200	41,5	570	360	420
040-040-110	X	X	-	-	0,37	71	Rp 1 1/2	NPT 1 1/2	105	171	310	55	350	160	200	41,5	570	360	420
040-040-110	X	X	-	-	0,55	80M	Rp 1 1/2	NPT 1 1/2	105	171	310	55	350	160	200	41,5	570	360	420
040-040-110	-	-	X	-	1,10	80M	Rp 1 1/2	NPT 1 1/2	105	171	310	55	350	160	200	41,5	570	360	420
040-040-110	-	-	-	X	1,50	90S	Rp 1 1/2	NPT 1 1/2	105	171	320	55	350	160	200	41,5	570	360	420

<sup>16)</sup> Standard connection to ISO 7/1

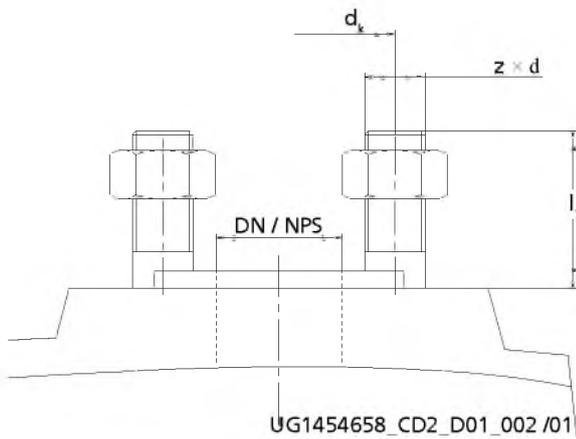
<sup>17)</sup> Optional connection to ASME B1.20.1

Sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump



Dimensions of sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump

6B	Fluid drain	6D	Fluid priming and venting
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Flange dimensions

Flange dimensions [mm]

Flanged connection	DN	$d_k$	z	d	$l_1$
Standard:	40	110	4	M16	40
• Drilled to EN 1092-1 (material variant C)	50	125	4	M16	40
• Drilled to EN 1092-2 (material variant G / GC)	65	145	4	M16	40
	80	160	8	M16	45
	100	180	8	M16	45

Connections

Size	6B <sup>18)</sup>	6D <sup>18)</sup>
040-040-140	G 3/8	G 3/8
050-050-130	G 3/8	G 3/8
050-050-160	G 3/8	G 3/8
065-065-150	G 3/8	G 3/8
065-065-180	G 3/8	G 3/8
080-080-170	G 1/2	G 1/2
080-080-190	G 1/2	G 1/2
080-080-200	G 1/2	G 1/2
100-100-240.1	G 1/2	G 1/2
100-100-240	G 1/2	G 1/2
125-125-260	G 1/2	G 1/2

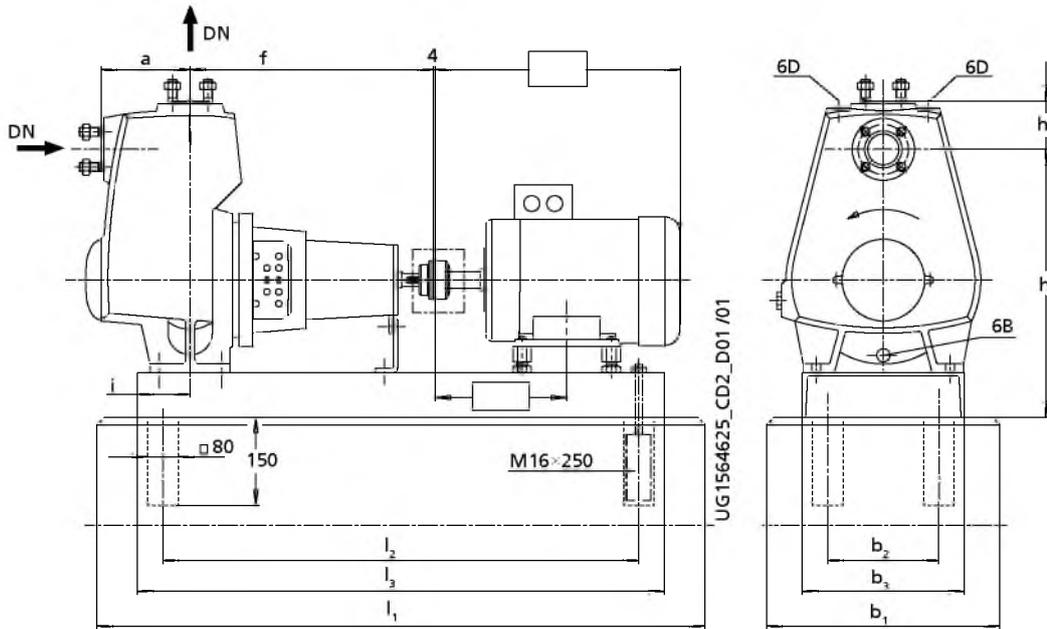
<sup>18)</sup> G = ISO 228/1

Flanged connection	DN	d <sub>k</sub>	z	d	l <sub>1</sub>
	125	210	8	M16	45
Optional:	NPS 1 1/2	98,6	4	UNC 1/2-13	40
▪ Drilled to ASME B16.1 (material variant G / GC)	NPS 2	120,7	4	UNC 5/8-11	40
▪ Drilled to ASME B16.5 (material variant C)	NPS 2 1/2	139,7	4	UNC 5/8-11	40
	NPS 3	152,4	4	UNC 5/8-11	40
	NPS 4	190,5	8	UNC 5/8-11	45
	NPS 5	215,9	8	UNC 3/4-10	45

Pump dimensions [mm]

Size	Pump																						
	DN	a	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	c	d <sub>K6</sub>	f	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	i	l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	n <sub>1</sub>	n <sub>2</sub>	s <sub>1</sub>	s <sub>2</sub>	t	u	w
040-040-140	40	115	115	128	57	16	100	24	370	112	284	73	23	50	100	70	220	160	4	13	27	8	270
050-050-130	50	130	138	128	55	16	100	24	370	132	317	78	23	50	100	70	250	190	4	17	27	8	270
050-050-160	50	130	145	126	55	16	100	24	370	132	327	75	23	50	100	70	250	190	4	17	27	8	270
065-065-150	65	140	155	149	55	16	100	24	370	160	370	85	25	50	125	95	270	212	6	20	27	8	270
065-065-180	65	140	158	138	55	16	130	32	490	160	376	89	23	80	125	95	270	212	4	18	35	10	360
080-080-170	80	156	173	168	65	18	130	32	490	160	380	104	23	80	140	106	310	240	4	18	35	10	360
080-080-190	80	170	188	181	65	20	130	32	490	180	420	107	24	80	160	120	345	280	6	22	35	10	360
080-080-200	80	154	172	152	65	20	130	32	490	160	378	107	24	80	140	100	285	220	4	22	35	10	360
100-100-240.1	100	182	203	178	68	20	130	32	478	200	457	127	24	80	140	100	330	260	6	18	35	10	348
100-100-240	100	182	203	178	68	20	130	32	478	200	457	127	24	80	140	100	330	260	6	18	35	10	348
125-125-260	125	204	227	197	70	20	130	32	478	200	486	142	24	80	140	100	340	270	6	18	35	10	348

Sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump set with coupling



Dimensions of sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump set with coupling

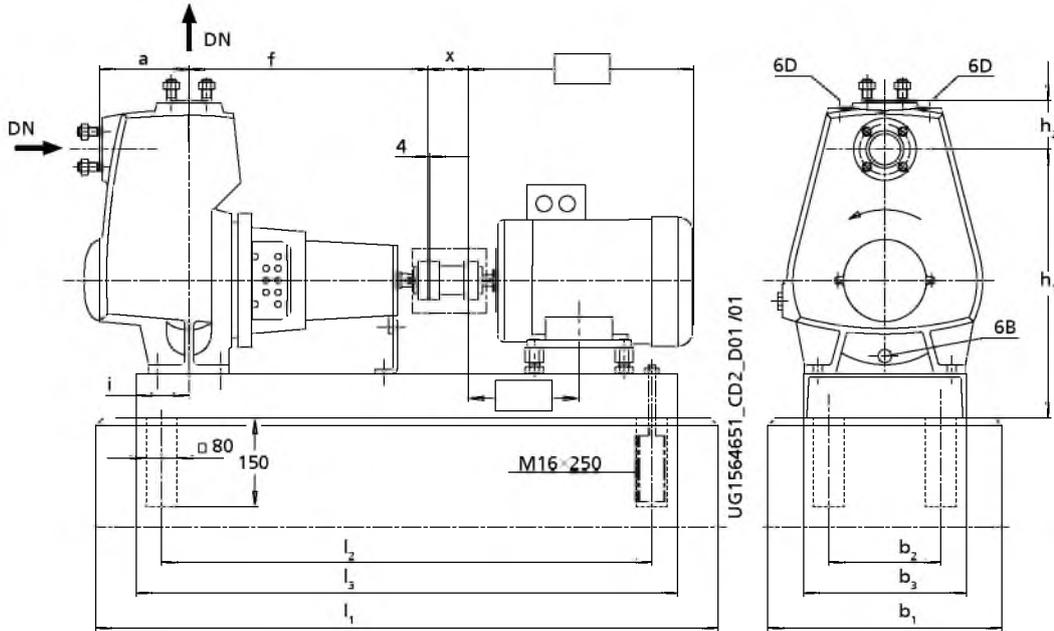
6B	Fluid drain	6D	Fluid priming and venting
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Pump set dimensions [mm]

Size	n				P <sub>N</sub>	Motor	Pump set											
	1450	1750	2900	3500			DN	a	f	h <sub>1</sub>	h <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	i	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
	[rpm]				[kW]													
040-040-140	X	X	-	-	1,50	90L	40	115	370	384	73	450	240	300	100	950	740	800
040-040-140	-	-	X	-	2,20	90L	40	115	370	384	73	450	240	300	100	950	740	800
040-040-140	-	-	X	-	3,00	100L	40	115	370	384	73	450	240	300	100	950	740	800
040-040-140	-	-	-	X	4,00	112M	40	115	370	384	73	450	240	300	100	1050	840	900
040-040-140	-	-	-	X	5,50	132S	40	115	370	404	73	450	240	300	100	1050	840	900
050-050-130	X	X	-	-	1,50	90L	50	130	370	417	78	450	240	300	100	950	740	800
050-050-130	-	-	X	-	2,20	90L	50	130	370	417	78	450	240	300	100	950	740	800
050-050-130	-	-	X	-	3,00	100L	50	130	370	417	78	450	240	300	100	950	740	800
050-050-130	-	-	-	X	4,00	112M	50	130	370	417	78	450	240	300	100	1050	840	900
050-050-160	X	X	-	-	1,50	90L	50	130	370	427	75	450	240	300	112	950	740	800
050-050-160	-	-	X	-	4,00	112M	50	130	370	427	75	450	240	300	112	1050	840	900
050-050-160	-	-	X	X	5,50	132S	50	130	370	427	75	450	240	300	112	1150	940	1000
050-050-160	-	-	-	X	7,50	132S	50	130	370	427	75	450	240	300	112	1150	940	1000
065-065-150	X	X	-	-	1,50	90L	65	140	370	470	85	450	240	300	112	950	740	800
065-065-150	-	-	X	-	4,00	112M	65	140	370	470	85	450	240	300	112	1050	840	900
065-065-150	-	-	X	X	5,50	132S	65	140	370	470	85	450	240	300	112	1150	940	1000
065-065-150	-	-	-	X	7,50	132S	65	140	370	470	85	450	240	300	112	1150	940	1000
065-065-180	X	X	-	-	2,20	100L	65	140	490	476	89	500	280	350	112	1270	1060	1120
065-065-180	-	-	X	-	5,50	132S	65	140	490	476	89	500	280	350	112	1270	1060	1120
065-065-180	-	-	X	-	7,50	132S	65	140	490	476	89	500	280	350	112	1270	1060	1120
065-065-180	-	-	-	X	11,00	160M	65	140	490	476	89	500	280	350	112	1270	1060	1120
080-080-170	X	X	-	-	2,20	100L	80	156	490	480	104	500	280	350	120	1270	1060	1120
080-080-170	-	-	X	-	7,50	132S	80	156	490	480	104	500	280	350	120	1270	1060	1120

Size	n				P <sub>N</sub> [kW]	Motor	Pump set											
	1450	1750	2900	3500			DN	a	f	h <sub>1</sub>	h <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	i	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
	[rpm]																	
080-080-170	-	-	-	X	11,00	160M	80	156	490	480	104	500	280	350	120	1270	1060	1120
080-080-170	-	-	-	X	15,00	160M	80	156	490	480	104	500	280	350	120	1270	1060	1120
080-080-190	X	X	-	-	2,20	100L	80	170	490	520	107	500	280	350	130	1270	1060	1120
080-080-190	X	X	-	-	3,00	100L	80	170	490	520	107	500	280	350	130	1270	1060	1120
080-080-190	-	-	X	-	11,00	160M	80	170	490	520	107	500	280	350	130	1400	1190	1250
080-080-190	-	-	-	X	15,00	160M	80	170	490	520	107	500	280	350	130	1400	1190	1250
080-080-190	-	-	-	X	18,50	160L	80	170	490	520	107	500	280	350	130	1400	1190	1250
080-080-200	X	X	-	-	2,20	100L	80	154	490	478	107	500	280	350	120	1270	1060	1120
080-080-200	-	-	X	-	11,00	160M	80	154	490	478	107	500	280	350	120	1400	1190	1250
080-080-200	-	-	-	X	15,00	160M	80	154	490	478	107	500	280	350	120	1400	1190	1250
080-080-200	-	-	-	X	18,50	160L	80	154	490	478	107	500	280	350	120	1400	1190	1250
100-100-240.1	X	X	-	-	2,20	100L	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240.1	X	X	-	-	3,00	100L	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240.1	X	X	-	-	4,00	112M	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240.1	-	-	X	-	15,00	160M	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240.1	-	-	-	X	18,50	160L	100	182	478	557	127	500	280	350	120	1400	1190	1250
100-100-240.1	-	-	-	X	22,00	180M	100	182	478	567	127	550	320	400	120	1400	1190	1250
100-100-240.1	-	-	-	X	30,00	200L	100	182	478	567	127	550	320	400	120	1400	1190	1250
100-100-240	X	X	-	-	3,00	100L	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240	X	X	-	-	4,00	112M	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240	X	X	-	-	5,50	132S	100	182	478	557	127	500	280	350	120	1270	1060	1120
100-100-240	-	-	X	-	22,00	180M	100	182	478	567	127	550	320	400	120	1400	1190	1250
100-100-240	-	-	-	X	30,00	200L	100	182	478	567	127	550	320	400	120	1400	1190	1250
100-100-240	-	-	-	X	37,00	200L	100	182	478	567	127	550	320	400	120	1400	1190	1250
125-125-260	X	X	-	-	5,50	132S	125	204	478	586	142	500	280	350	120	1270	1060	1120
125-125-260	X	X	-	-	7,50	132M	125	204	478	586	142	500	280	350	120	1270	1060	1120
125-125-260	X	X	-	-	11,00	160M	125	204	478	596	142	550	320	400	120	1400	1190	1250
125-125-260	-	-	X	-	30,00	200L	125	204	478	596	142	550	320	400	120	1400	1190	1250
125-125-260	-	-	-	X	37,00	200L	125	204	478	596	142	550	320	400	120	1400	1190	1250

Sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump set with spacer-type coupling



Dimensions of sizes 040-040-140 to 125-125-260 (shaft unit 25 / 35) – pump set with spacer-type coupling

6B	Fluid drain	6D	Fluid priming and venting
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Pump set dimensions [mm]

Size	n				P <sub>N</sub>	Motor	Pump set												
	1450	1750	2900	3500			DN	a	f	h <sub>1</sub>	h <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	i	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	x
	[rpm]				[kW]														
040-040-140	X	X	-	-	1,50	90L	40	115	370	384	73	450	240	300	100	1050	840	900	100
040-040-140	-	-	X	-	2,20	90L	40	115	370	384	73	450	240	300	100	1050	840	900	100
040-040-140	-	-	X	-	3,00	100L	40	115	370	384	73	450	240	300	100	1050	840	900	100
040-040-140	-	-	-	X	4,00	112M	40	115	370	384	73	450	240	300	100	1150	940	1000	100
040-040-140	-	-	-	X	5,50	132S	40	115	370	404	73	450	240	300	100	1150	940	1000	100
050-050-130	X	X	-	-	1,50	90L	50	130	370	417	78	450	240	300	100	1050	840	900	100
050-050-130	-	-	X	-	2,20	90L	50	130	370	417	78	450	240	300	100	1050	840	900	100
050-050-130	-	-	X	-	3,00	100L	50	130	370	417	78	450	240	300	100	1050	840	900	100
050-050-130	-	-	-	X	4,00	112M	50	130	370	417	78	450	240	300	100	1150	940	1000	100
050-050-160	X	X	-	-	1,50	90L	50	130	370	427	75	450	240	300	112	1050	840	900	100
050-050-160	-	-	X	-	4,00	112M	50	130	370	427	75	450	240	300	112	1150	940	1000	100
050-050-160	-	-	X	X	5,50	132S	50	130	370	427	75	500	280	350	112	1270	1060	1120	100
050-050-160	-	-	-	X	7,50	132S	50	130	370	427	75	500	280	350	112	1270	1060	1120	100
065-065-150	X	X	-	-	1,50	90L	65	140	370	470	85	450	240	300	112	1050	840	900	100
065-065-150	-	-	X	-	4,00	112M	65	140	370	470	85	450	240	300	112	1150	940	1000	100
065-065-150	-	-	X	X	5,50	132S	65	140	370	470	85	500	280	350	112	1270	1060	1120	100
065-065-150	-	-	-	X	7,50	132S	65	140	370	470	85	500	280	350	112	1270	1060	1120	100
065-065-180	X	X	-	-	2,20	100L	65	140	490	476	89	500	280	350	112	1400	1190	1250	140
065-065-180	-	-	X	-	5,50	132S	65	140	490	476	89	500	280	350	112	1400	1190	1250	140
065-065-180	-	-	X	-	7,50	132S	65	140	490	476	89	500	280	350	112	1400	1190	1250	140
065-065-180	-	-	-	X	11,00	160M	65	140	490	476	89	500	280	350	112	1400	1190	1250	140
080-080-170	X	X	-	-	2,20	100L	80	156	490	480	104	500	280	350	120	1400	1190	1250	140
080-080-170	-	-	X	-	7,50	132S	80	156	490	480	104	500	280	350	120	1400	1190	1250	140

Size	n				P <sub>N</sub> [kW]	Motor	Pump set												
	1450	1750	2900	3500			DN	a	f	h <sub>1</sub>	h <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	i	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	x
	[rpm]																		
080-080-170	-	-	-	X	11,00	160M	80	156	490	480	104	500	280	350	120	1400	1190	1250	140
080-080-170	-	-	-	X	15,00	160M	80	156	490	480	104	500	280	350	120	1400	1190	1250	140
080-080-190	X	X	-	-	2,20	100L	80	170	490	520	107	550	280	350	120	1400	1190	1250	140
080-080-190	X	X	-	-	3,00	100L	80	170	490	520	107	550	280	350	120	1400	1190	1250	140
080-080-190	-	-	X	-	11,00	160M	80	170	490	530	107	550	320	400	130	1570	1360	1420	140
080-080-190	-	-	-	X	15,00	160M	80	170	490	530	107	550	320	400	130	1570	1360	1420	140
080-080-190	-	-	-	X	18,50	160L	80	170	490	530	107	550	320	400	130	1570	1360	1420	140
080-080-200	X	X	-	-	2,20	100L	80	154	490	478	107	500	280	350	120	1400	1190	1250	140
080-080-200	-	-	X	-	11,00	160M	80	154	490	488	107	550	320	400	120	1570	1360	1420	140
080-080-200	-	-	-	X	15,00	160M	80	154	490	488	107	550	320	400	120	1570	1360	1420	140
080-080-200	-	-	-	X	18,50	160L	80	154	490	488	107	550	320	400	120	1570	1360	1420	140
100-100-240.1	X	X	-	-	2,20	100L	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240.1	X	X	-	-	3,00	100L	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240.1	X	X	-	-	4,00	112M	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240.1	-	-	X	-	15,00	160M	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240.1	-	-	X	-	18,50	160L	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
100-100-240.1	-	-	-	X	22,00	180M	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
100-100-240.1	-	-	-	X	30,00	200L	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
100-100-240	X	X	-	-	3,00	100L	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240	X	X	-	-	4,00	112M	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240	X	X	-	-	5,50	132S	100	182	478	557	127	500	280	350	120	1400	1190	1250	140
100-100-240	-	-	X	-	22,00	180M	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
100-100-240	-	-	X	-	30,00	200L	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
100-100-240	-	-	-	X	37,00	200L	100	182	478	567	127	550	320	400	120	1570	1360	1420	140
125-125-260	X	X	-	-	5,50	132S	125	204	478	596	142	550	320	400	120	1570	1360	1420	140
125-125-260	X	X	-	-	7,50	132M	125	204	478	596	142	550	320	400	120	1570	1360	1420	140
125-125-260	X	X	-	-	11,00	160M	125	204	478	596	142	550	320	400	120	1570	1360	1420	140
125-125-260	-	-	X	-	30,00	200L	125	204	478	596	142	550	320	400	120	1570	1360	1420	140
125-125-260	-	-	X	-	37,00	200L	125	204	478	596	142	550	320	400	120	1570	1360	1420	140

### Flange connections

Threaded connections, shaft unit 17

Size	Shaft unit	Material variant			
		G/G/C			
		Connection pipe thread to			
		ISO 7-1 PN10		ASME B1.20.1 PN10	
025-025-100	17	Rp 1	X	NPT 1	o
032-032-120		Rp 1 1/4	X	NPT 1 1/4	o
040-040-110		Rp 1 1/2	X	NPT 1 1/2	o

Flanged connections<sup>19)</sup> shaft units 25, 35

Size	Shaft unit	Nominal size to		Material variant			
				G/GC		C	
				Flange dimensions to			
		EN 1092-2		EN 1092-1			
		Drilled to				EN 1092-2 PN16	ASME B16.1 CL125
040-040-110	25	DN 40	NPS 1 1/2	X	o	X	o
050-050-130		DN 50	NPS 2	X	o	X	o
050-050-160		DN 50	NPS 2	X	o	X	o
065-065-150		DN 65	NPS 2 1/2	X	o	X	o
065-065-180	35	DN 65	NPS 2 1/2	X	o	X	o
080-080-170		DN 80	NPS 3	X	o	X	o
080-080-190		DN 80	NPS 3	X	o	-	-
080-080-200		DN 80	NPS 3	X	o	X	o
100-100-240.1		DN 100	NPS 4	X	o	-	-
100-100-240		DN 100	NPS 4	X	o	-	-
125-125-260		DN 125	NPS 5	X	o	-	-

### Symbols key

Symbol	Description
X	Standard
o	Option

<sup>19)</sup> Type RF (Raised Face)

Interchangeability of Etaprime L and Etaprime B pump components

Components featuring the same number in a column are interchangeable.

Interchangeability of Etaprime L and Etaprime B pump components and interchangeability of components among each other

Size	Shaft unit	Description								
		Volute casing	Casing cover	Shaft	Impeller	Radial ball bearing	Radial ball bearing	Bearing housing	Mechanical seal	Shaft sleeve
		Part No.								
		102	161	210	230	321.01	321.02	350	433.01	523
025-025-100	17	○*	✗	1	○*	1	2	1	1*	✗
032-032-120		○*	✗	1	○*	1	2	1	1*	✗
040-040-110		○*	✗	1	○*	1	2	1	1*	✗
040-040-140	25	○*	○*	2	○*	✗	3	✗	2*	1*
050-050-130		○*	○*	2	○*	✗	3	✗	2*	1*
050-050-160		○*	1*	2	○*	✗	3	✗	2*	1*
065-065-150	35	○*	1*	2	○*	✗	3	✗	2*	1*
065-065-180		○*	○*	3	○*	✗	4	✗	3*	2*
080-080-170		○*	○*	3	○*	✗	4	✗	3*	2*
080-080-190		○*	○*	3	○*	✗	4	✗	3*	2*
080-080-200		○*	○*	3	○*	✗	4	✗	3*	2*
100-100-240.1		1*	○*	3	○*	✗	4	✗	3*	2*
100-100-240 <sup>20)</sup>		1	○	3	○	✗	4	✗	3	2
125-125-260 <sup>20)</sup>		○	○	3	○	✗	4	✗	3	2

Symbols key

Symbol	Description
*	Component interchangeable with Etaprime B
○	Components differ
✗	Component not fitted

Scope of supply

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

- Pump

Drive

- Electric motor

Coupling

- Flexible coupling with or without spacer

Contact guard

- Coupling guard

Baseplate

- Channel section steel or folded steel plate

Optional:

- Cast baseplate (to ISO 3661)

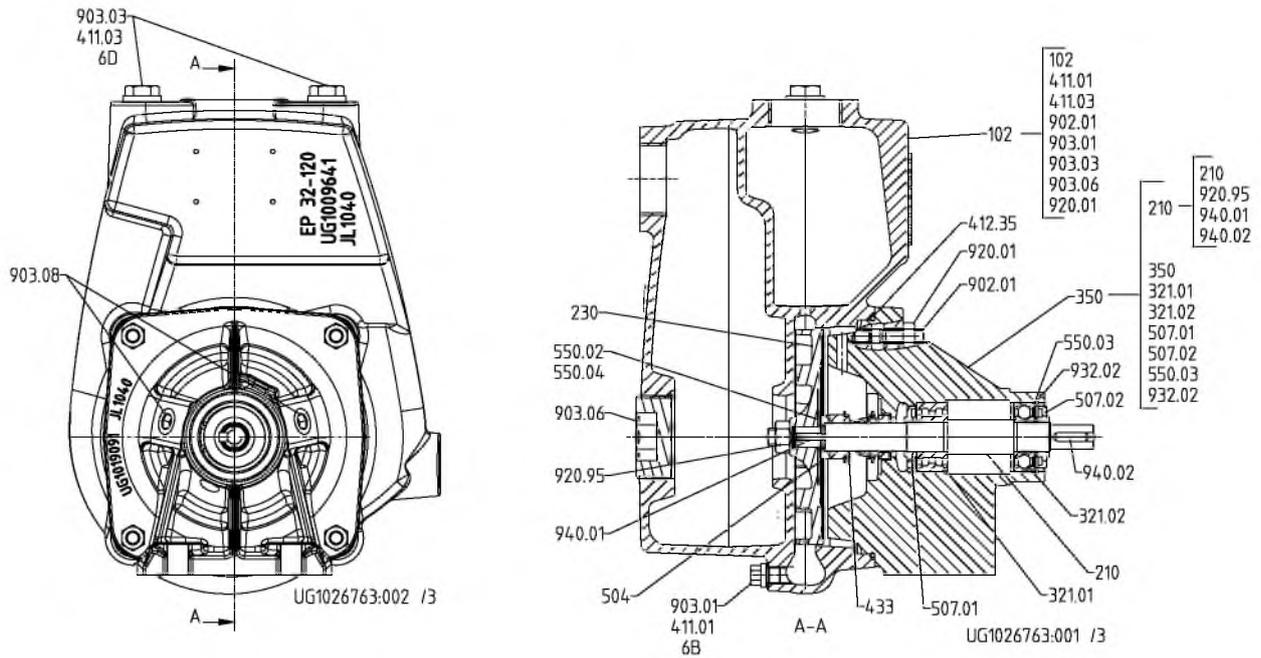
Special accessories

- As required

<sup>20)</sup> Not available as Etaprime B

Sectional drawing and list of components

Etaprime G and C, threaded connection, with bearing housing (SU 17)

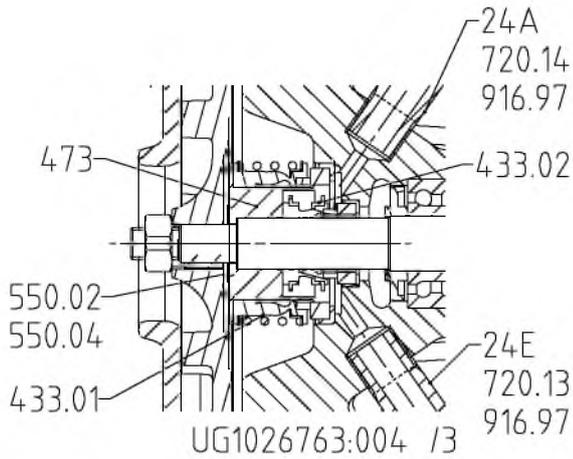


Model with single mechanical seal

[Supplied in packaging units only]

List of components

Part No.	Description
102	Volute casing
210	Shaft
230	Impeller
321.01/02	Radial ball bearing
350	Bearing housing
411.01/03	Joint ring
412.35	O-ring
433	Mechanical seal
504	Spacer ring
507.01/02	Thrower
550.02/03/04	Disc
902.01	Stud
903.01/03/06/08	Screw plug
920.01/95	Nut
932.02	Circlip
940.01/02	Key
<b>Auxiliary connections:</b>	
6 B	Fluid drain
6 D	Fluid priming and venting



Model with double mechanical seal in tandem arrangement  
(SU 17)

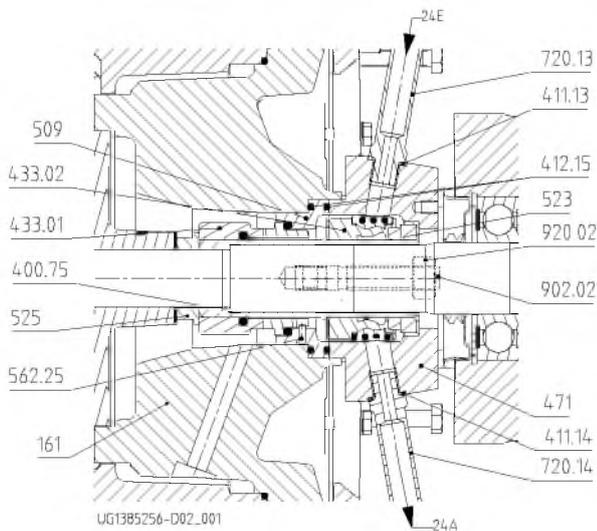
List of components

Part number	Description
433.01/02	Mechanical seal
473	Primary ring carrier
550.02/04	Disc
720.13/14	Barrel nipple
916.97	Plug
<b>Auxiliary connections:</b>	
24A	Quench liquid outlet
24E	Quench liquid inlet



List of components

Part number	Description	Part number	Description
102	Volute casing	550.95 <sup>21)</sup>	Disc
161	Casing cover	554.98	Lock washer
164.01	Inspection cover	81-92.01/02	Cover plate
183	Support foot	901.04/30/31/98	Hexagon head bolt
210	Shaft	902.01/15/17/18/19	Stud
230	Impeller	903.01/03	Screw plug
321.01/02	Radial ball bearing	914.02	Pan head screw
330	Bearing bracket	920.01/05/15/17/18/19/95	Nut
360.01/02	Bearing cover	930.95	Safety device
400.75	Gasket	932.01/02	Circlip
411.01/03/77/78	Joint ring	940.01/02	Key
412.35/65	O-ring		
433	Mechanical seal		
523	Shaft sleeve	Auxiliary connections:	
525 <sup>22)</sup>	Spacer sleeve	6B	Fluid drain
550.02/04/17/74	Disc	6D	Fluid priming and venting



Model with double mechanical seal in tandem arrangement (SU 25/35)

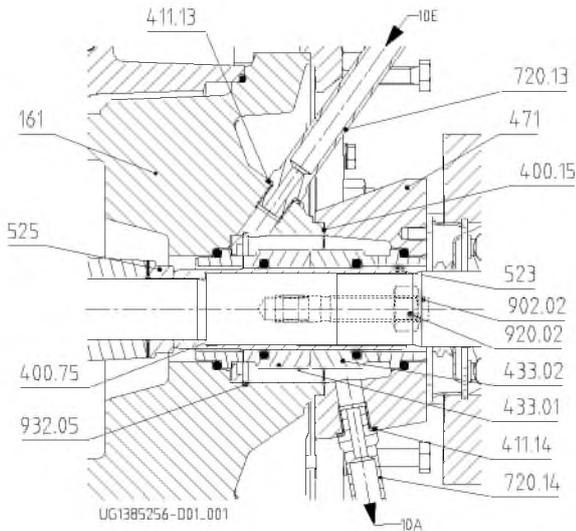
List of components

Part number	Description
161	Casing cover
400.75	Gasket
412.15	O-ring
411.13/14	Joint ring
433.01/02	Mechanical seal
471	Seal cover
509	Intermediate ring
523	Shaft sleeve
525 <sup>24)</sup>	Spacer sleeve
562.25	Parallel pin
720.13/14	Fitting
902.02	Stud
920.02	Hexagon nut
<b>Auxiliary connections:</b>	

21) For SU 25 only; shaft unit see data sheet.

22) For SU 35 only; shaft unit see data sheet.

Part number	Description
24A	Quench liquid outlet
24E	Quench liquid inlet



Model with double mechanical seal in back-to-back arrangement (SU 25/35)

List of components

Part No.	Description
161	Casing cover
400.15 <sup>23)</sup> /.75	Gasket
411.13/.14	Joint ring
433.01/.02	Mechanical seal
471	Seal cover
523	Shaft sleeve
525 <sup>24)</sup>	Spacer sleeve
720.13/.14	Fitting
902.02	Stud
920.02	Hexagon nut
932.05	Circlip
<b>Auxiliary connections:</b>	
10A	Barrier fluid outlet
10E	Barrier fluid inlet

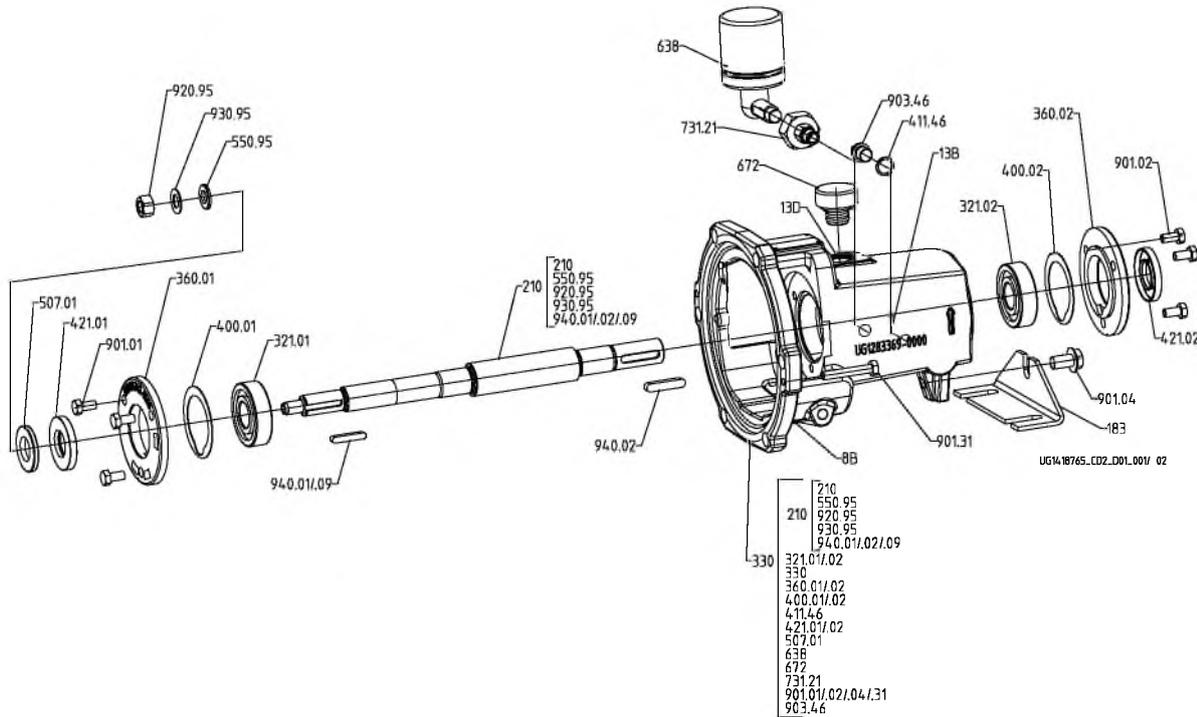
<sup>23)</sup> For shaft unit 25: joint ring 411.15 (shaft unit see data sheet)

<sup>24)</sup> For SU 35 only; shaft unit see data sheet.

**Etaprime G and C, flanged connection, with bearing bracket/oil lubrication (SU 25 and SU 35)**

Design of pump and mechanical seal as described in (→Page 24).

Difference: oil-lubricated bearing bracket instead of grease-lubricated bearing bracket.



Model with oil lubrication and constant level oiler

[Supplied in packaging units only]

List of components<sup>25)</sup>

Part No.	Description	Part No.	Description
183	Support foot	672	Vent
210	Shaft	731.21	Pipe union
330	Bearing bracket	901.01/02/04/31	Hexagon head bolt
321.01/02	Deep groove ball bearing	903.46	Screw plug
360.01/02	Bearing cover	920.95	Hexagon nut
400.01/02	Gasket	930.95	Spring washer
411.46	Joint ring	940.01/02/09	Key
421.01/02	Lip seal	Connections:	
507.01	Thrower	8B	Leakage drain
550.95 <sup>27)</sup>	Disc	13B	Oil drain
638	Constant level oiler	13D	Oil filling and venting

<sup>25)</sup> Some individual components might not be applicable, depending on the size and shaft material.

<sup>26)</sup> For shaft units 55 and 60 only

<sup>27)</sup> For shaft unit 25 only

## Detailed 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
E	T	P	L	0	8	0	-	0	8	0	-	2	0	0		G	C	X	I	1	0	D	3	0	1	8	5	2			B
See name plate and data sheet																						See data sheet									

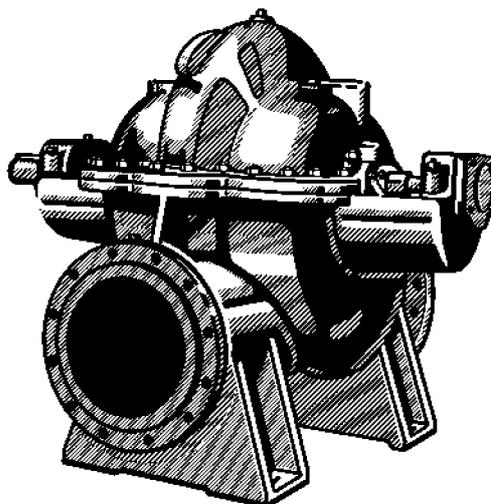
Designation key

Position	Code	Description
1-4	Pump type	
	ETPL	Etaprime with bearing bracket
5-16	Size	
	080	Nominal suction nozzle diameter [mm]
	080	Nominal discharge nozzle diameter [mm]
	200	Nominal impeller diameter [mm]
17	Pump casing material	
	G	Cast iron
	C	Stainless steel
18	Impeller material if different from casing material	
	G	Cast iron
	C	Stainless steel
19	Special design	
	.28)	Standard
	X	Special design
20	Seal options	
	I	Single mechanical seal
	D	Double mechanical seal in back-to-back arrangement
	T	Double mechanical seal in tandem arrangement
21-22	Seal code	
	01	Q1Q1VGG
	08	AQ1VGG <sup>29)</sup>
	09	U3U3VGG
	10	Q1Q1X4GG
	11	BQ1EGG
23	Scope of supply	
	A	Pump only (Fig. 0)
	B	Pump, baseplate
	C	Pump, baseplate, coupling, coupling guard
	D	Pump, baseplate, coupling, coupling guard, motor
24	Shaft unit	
	1	Shaft unit 17
	2	Shaft unit 25
	3	Shaft unit 35
25-28	Motor rating	
	0011	1,1 kW
	0075	7,5 kW
	0185	18,5 kW
29	Number of poles	
	2	2 poles
	4	4 poles
30-31	Explosion protection	
	.28)	Without explosion-proof motor
	ex	Explosion-proof motor
32	Product generation	
	B	Product generation Global Etaprime

<sup>28)</sup> Blank

<sup>29)</sup> BQVGG for shaft unit 17

**Axially split volute casing pumps**



**Applications**

Waterworks, irrigation and drainage pumping stations, power stations, industrial water supply systems, fire fighting systems, marine applications as well as general applications in refineries.

**Operating data**

Pump sizes	DN 500	up to	800
Capacities	Q	up to	3000 l/s
Total head	H	up to	150 m
Operating pressure	p	up to	25 bar
Operating temperature	t	up to	+ 105 °C

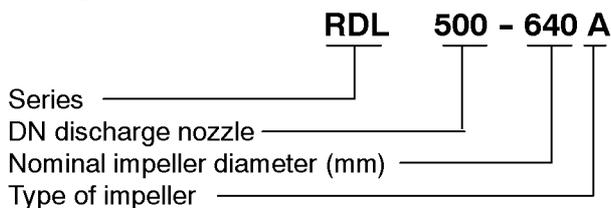
**Design**

Horizontal single stage axially split volute casing pump with double entry radial impeller

Drive shaft end of the pump can be fitted either on the left hand or right hand side

Flanges acc. to ISO, DIN, BS or ANSI

**Designation**



**Bearings**

Grease lubricated or optional oil lubricated, anti-friction bearings which can be re-lubricated

**Shaft seal**

Stuffing box packing or mechanical seal

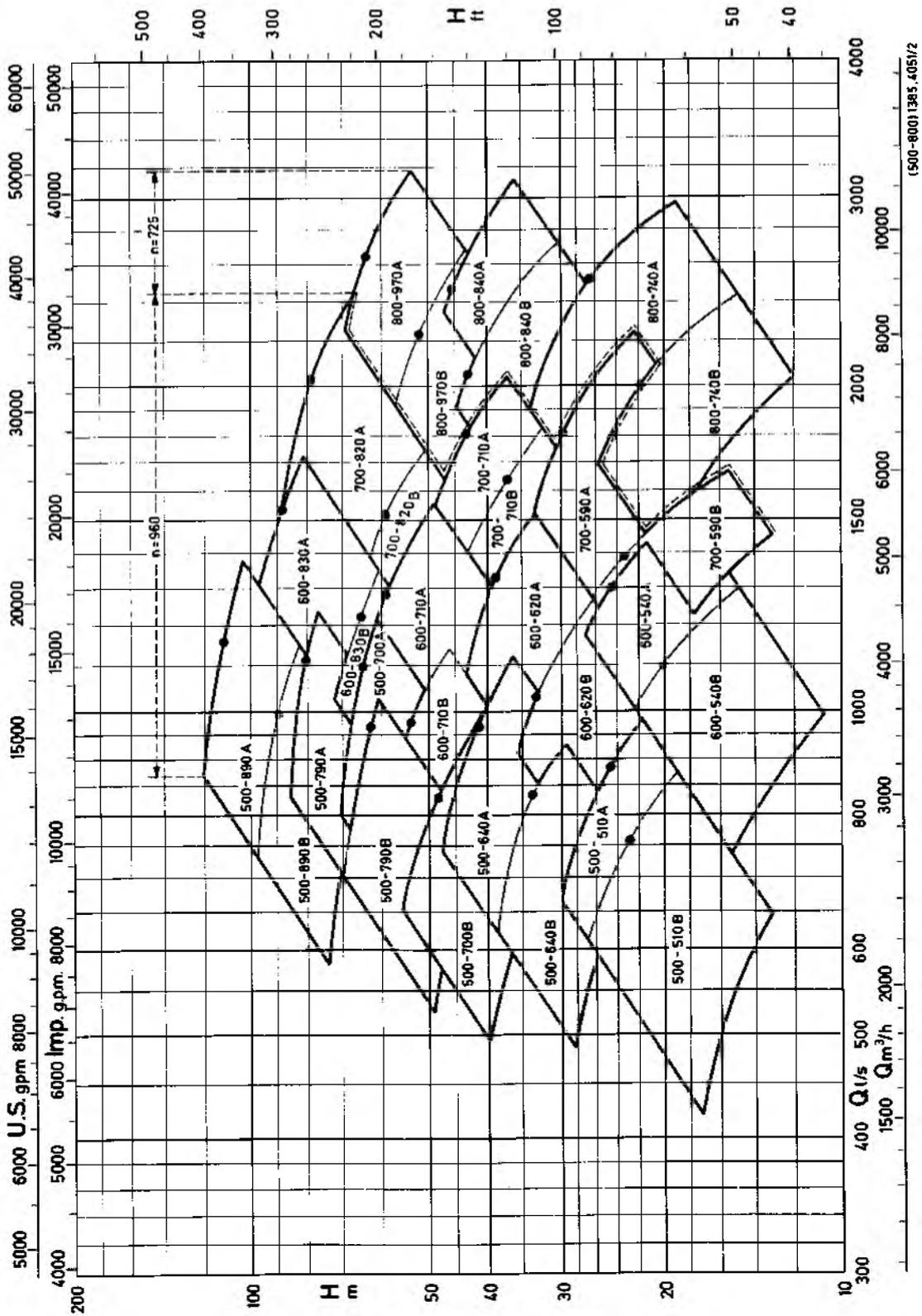
**Materials**

	ASTM	similar to DIN
Volute casing upper part	A48 class 35	GG-25
	A536 class 604018	GGG-40
Volute casing lower part	A48 class 30	GG-20
	A536 class 604018	GGG-40
Shaft	SAE 1045	C45N
	AISI 420	1.4021
Impeller	B 584-90500	G-CuSn10
	A743 CA6NM	1.4313.95
	A743CF8M	1.4408
Shaft protecting sleeve	AISI 420	1.4021
Casing wear ring	B584-90500	G-CuSn10
	A743CA6NM	1.4313.95
Impeller wear ring	B584-90500	G-CuSn10
	A743CA6NM	1.4313.95

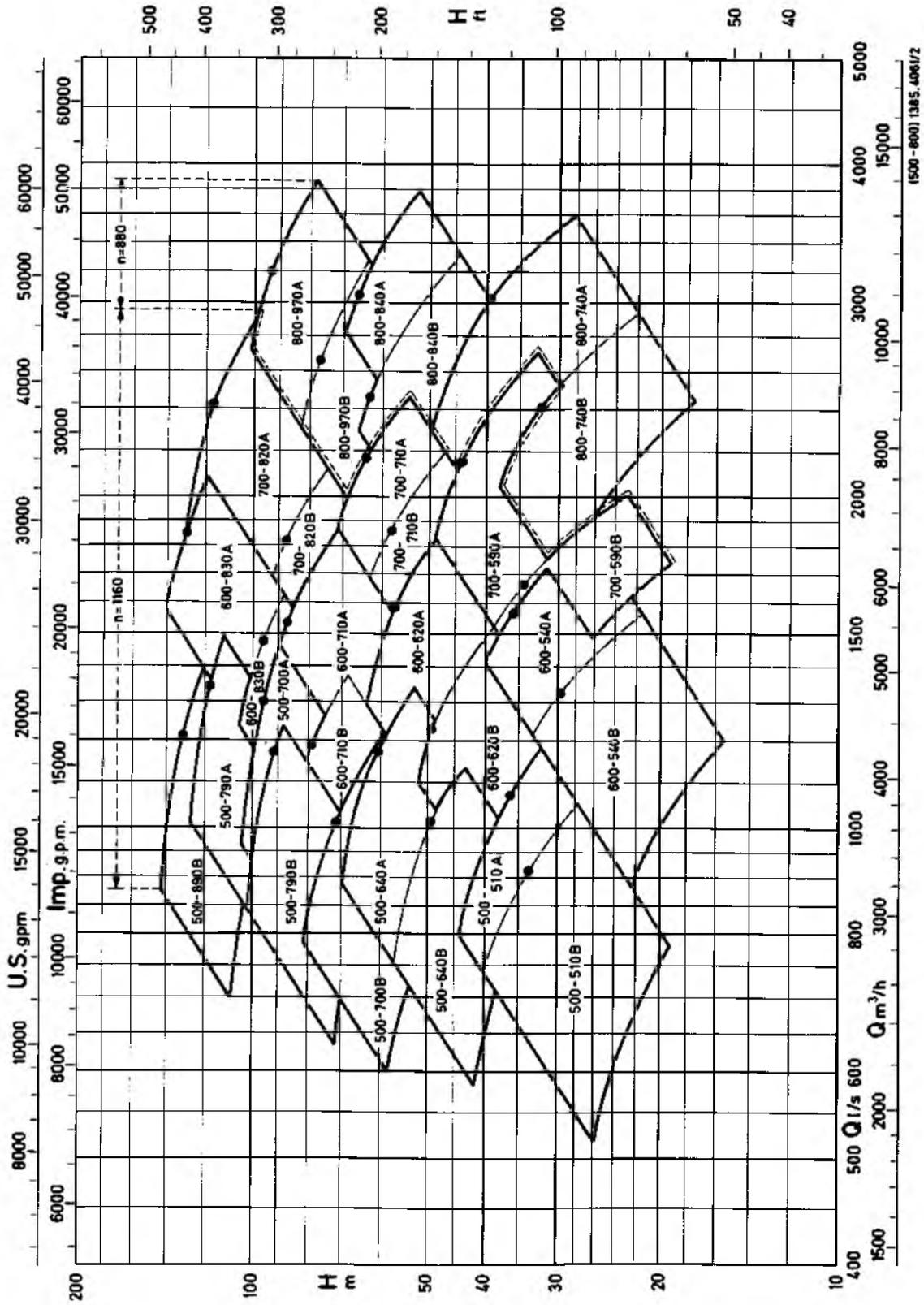
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Selection chart 50 Hz



Selection chart 60 Hz



## **Scope of supply**

Pump with bare shaft end, horizontal design, with primer coating, soft packed stuffing box or mechanical seal.

Extra charges for:

- oil lubricated antifriction bearings,
- potable water quality coating / top coat
- horizontal base frame for pump and motor,
- motor mounting,
- material tests

Available accessories:  
(see page 21 for details)

- coupling and coupling guard,
- vibration sensor SPM-Nippel,
- set pressure gauges,
- cyclone separator with piping,
- venting valve,
- temperature sensor for antifriction bearing (PT 100)
- signal transmitter for PT 100
- assembly device / lifting device

## **Guarantee, testing and quality control**

Every pump undergoes a functional test and the operating data is guaranteed **without** acceptance test.

Acceptance tests can be performed in accordance with ISO 2548 C, DIN 1944/III or other comparable international testing standards.

The quality of the RDL products is ensured by a tested and certified quality assurance system according to DIN ISO 9001 / EN 29001.

## **Order data**

### **- pump :**

- description of the pump according to "Designation"- capacity Q
- total head H (  $H_{geo}$  and plant losses )
- material combination
- flange design
- shaft seal as soft packed stuffing box or mechanical seal
- grease or oil lubricated bearings
- liquid handled and liquid temperature
- direction of rotation / arrangement of the motor
- accessories required
- number and language of operating manual

### **- motor :**

(choice by KSB)

- type of construction
- protection
- voltage, frequency, method of starting
- ambient temperature
- insulation class
- accessories required

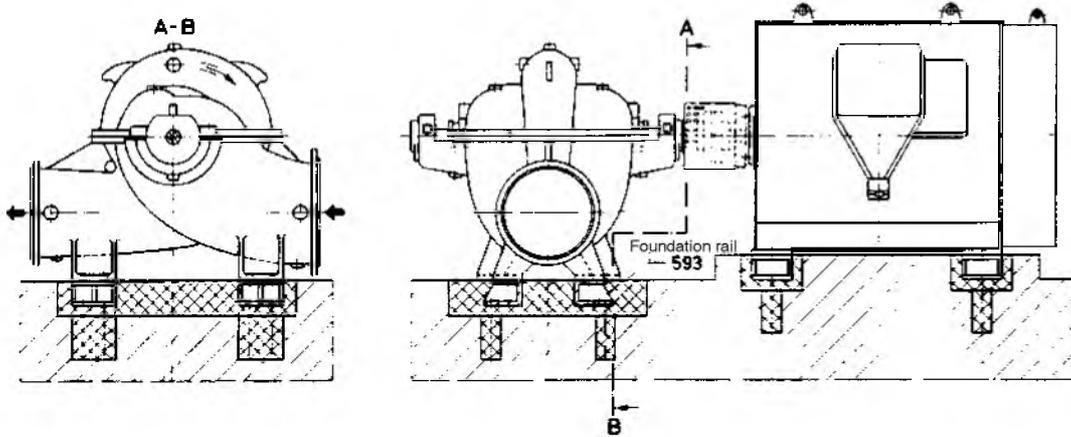
### **- motor :**

(motor provided by the client)

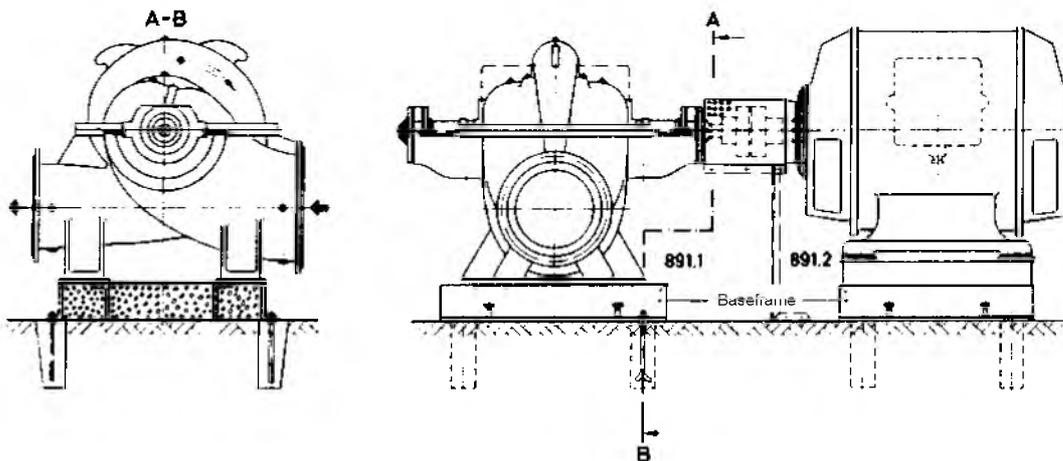
binding motor dimension table and data sheet with specification of the effective speed to be given with the order

**Types of installation**

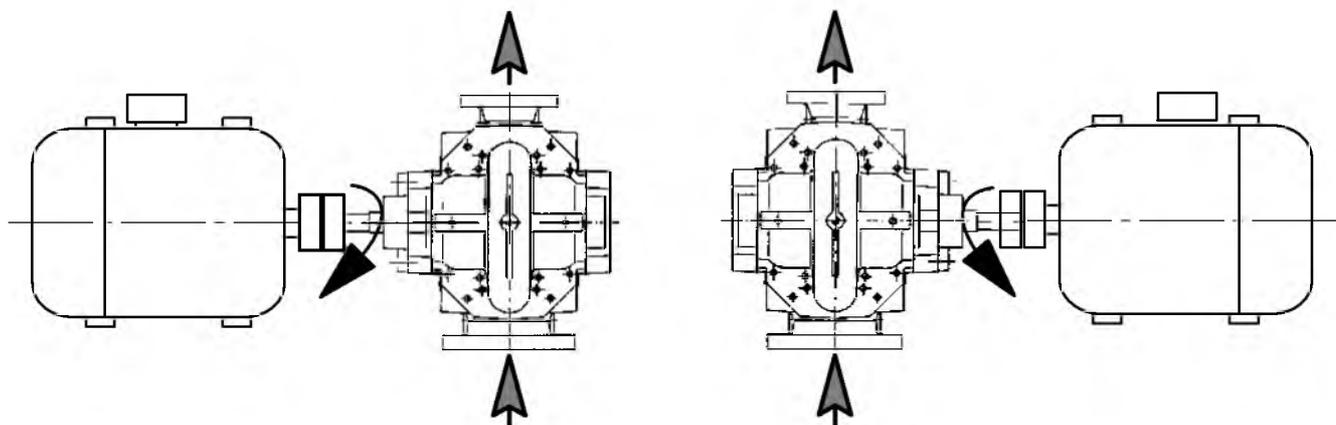
**2E Pump and driver separate on foundation rails**



**4E Pump and driver on separate baseframe**



**Direction of rotation and flow direction**



**Direction of rotation, clockwise, viewed from the drive end**

**Direction of rotation, anticlockwise, viewed from the drive end**

## Material combinations

Part no.	Designation	ASTM - Materials / Similar to DIN					
		01	11	02	21	03	31
105.2	Volute casing, upper part	<b>A 48 class 35</b> GG-25	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 35</b> GG-25	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 35</b> GG-25	<b>A 536 class 604018</b> GGG-40
105.1	Volute casing, lower part	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40
211	Shaft	<b>SAE 1045 or AISI 420</b> C 45 N or 1.4021					
234	Impeller	<b>B 584-90500</b> G-CuSn10		<b>A 743 CA 6 NM</b> 1.4313.95		<b>A 743 CF 8 M</b> 1.4408	
330	Bearing bracket	<b>A 48 class 30</b> GG-20					
350	Bearing housing						
360	Bearing cover						
361	Bearing end plate						
452	Gland	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40	<b>A 48 class 30</b> GG-20	<b>A 536 class 604018</b> GGG-40
457	Neck ring	<b>B 584-90500</b> G-CuSn10				<b>A 743 CA 6 NM</b> 1.4313.95	
458	Lantern ring						
471	Seal cover (mech. seal)	<b>A 48 class 30</b> GG-20					
502	Casing wear ring	<b>B 584-90500</b> G-CuSn10				<b>A 743 CA 6 NM</b> 1.4313.95	
503	Impeller wear ring						
524	Shaft protecting sleeve	<b>AISI 420</b> 1.4021					
525	Spacer sleeve						
921	Shaft nut	<b>SAE 1020</b> 8.8				<b>AISI 316</b> A4	

### Casing test pressures, flange ratings, shaft details

Pump sizes	Casing materials				Shaft material		Moments of inertia J kgm <sup>2</sup> (without coupling)		Casing with double volute
	A48 class 30 (GG-20)	A536 class 604018 (GGG-40)	A48 class 30 (GG-20)	A536 class 604018 (GGG-40)	SAE 1045 (C45N)	AISI 420 (1.4021)	without-water	with water	
	Max. test pressure (bar)		Max. flange rating to DIN (bar)		permissible shaft loading P / n kW / 1/min				
500-510	11	18	10	16	0,582	0,945	3,45	4,875	-
500-640	15	25	10	25	1,19	1,93	7,5	10,35	-
500-700	18	28	16	25	1,61	2,61	10,075	13,95	x
500-790	25	35	25	25	2,11	3,43	13,375	20,825	x
500-890	28	36	25	25	3,45	5,6	23,15	31,25	x
600-540	11	20	10	16	0,582	0,945	5,15	7,275	-
600-620	13,5	22	10	16	0,836	1,36	8,5	11,6	-
600-710	18	27	16	25	1,61	2,61	13,7	18,2	-
600-830	18	27	16	25	2,11	3,43	22,325	30,25	x
700-590	10	18	10	16	1,19	1,93	10,05	12,875	-
700-710	12	20	10	16	1,61	2,61	17,5	23,5	-
700-820	18	24	16	16	1,76	4,48	31,5	35,25	x
800-740	10	16	10	16	1,61	2,61	25,5	31,75	-
800-840	11	17	10	16	2,11	3,43	37,25	46,25	-
800-970	13	20	10	16	3,45	5,6	61,75	72,25	-

Fig. 5

### Flanges

- When selecting casing flanges to DIN take the following into consideration:  
Nominal pressure of flanges  $\geq$  max. operating pressure. Minimum possible nominal pressure is 10 bar (PN 10), for max. nominal pressure see Fig. 5.
- If the suction and discharge flanges have different ratings then the difference must not exceed 1 rating stage (e.G. suction nozzle PN 16 and discharge nozzle PN 25).

### Standard test pressure

- $1,2 \cdot (\text{Shut off head} + \text{suction pressure})$  or  
 $1,5 \cdot (\text{Head at duty point} + \text{suction pressure})$   
 The higher value to be used

## Technical data

### Impeller dimensions, Shaft diameter, stuffing box packing

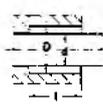
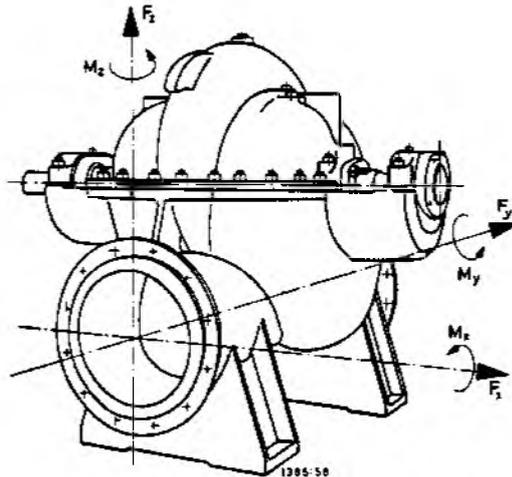
Impeller outlet width  Pump sizes	Impeller dimensions [mm]				Shaft diameter $d_w$ [mm]			Stuffing box [mm]	
	A	B	A	B	in stuffing box housing	in mechanical seal (without shaft sleeve)	at coupling	Box dimensions D/d/l 	Packing ring section 5 rings
	Impeller rating $b_2$		Max. impeller-						
500-510	136	105	500/530	515/505	110	90	75	150/110/150	20x20
500-640	100	108	640	580	130	110	95	170/130/150	20x20
500-170	116	100	708	660	140	130	105	180/140/150	20x20
500-790	100	104	790	710	150	140	115	200/150/180	25x25
500-890	90	88	920	840	180	160	135	230/180/180	25x25
600-540	153	143	570	531/516	110	90	75	150/110/150	20x20
600-620	146	138	620	578/564	120	100	85	160/120/150	20x20
600-710	130	120	715	690	140	130	105	180/140/150	20x20
600-830	115	103	870	770	150	140	115	200/150/180	25x25
700-590	131	148	565	586/555	130	110	95	170/130/150	20x20
700-710	165	157	706/694	648/632	150	140	105	200/150/180	25x25
700-820	134	128	835	735	160	140	125	210/160/180	25x25
800-740	210	190	790/770	720/700	160	150	105	210/160/180	25x25
800-840	206	193	885	840	160	150	115	210/160/180	25x25
800-970	174	160	980	910	180	170	135	230/180/180	25x25

Fig. 4

## Forces and moments

The forces and moments specified are mean values for simultaneous loading in 3 planes. Please contact the manufacturer if the forces and moments in one particular direction exceed the stipulated values. The figures in the table do not apply to reaction forces of unbraced expansion joints.

Material: A48 class 30  
GG-20



Pump sizes	Nozzle in N			Moments in Nm		
	Fx	Fy	Fz	Mx	My	Mz
500-510	6000	6000	6000	4000	4000	4000
500-640						
500-700						
500-790						
500-890						
600-540	8000	8000	8000	5000	5000	5000
600-620						
600-710	10000	10000	10000	8000	8000	8000
600-830						
700-590						
700-710						
700-820	11000	11000	11000	9000	9000	9000
800-740						
800-840	12000	12000	12000	9000	9000	9000
800-970						

## Speeds

For higher speeds consult KSB also stipulating the pump operating range as per selection chart.

## Vibrations

Vibration values of the pump according to VDI-Rules 2056, Group G, "good" up to "acceptable", ( $V_{eff} < 4,5$  mm/s), in the operating range from 0,8 up to  $1,2 \times Q_{Opt}$ .

## Coating

### A) Standard coating for material combination 01 up to 031: non-potable water coating (potable water approval not available!)

without extra charge		Inside	Outside
	Pretreatment	Derusting St 2 DIN 55928 T4	
	Primer	1-Component antirust primer red	
	Top coat	-without-	1-component-coat, thickness 0,06 mm RAL 5002 ultramarinblau (blue)

### B) Special coating for material combination 01 up to 031: approved for potable water

against extra charge see on list top coat inside+outside		Inside	Outside
	Pretreatment	Derusting St 2 DIN 55928 T4	
	Primer	1-Component antirust primer red	
	Top coat	2-component-epoxy resin based coat, thickness 0,125 mm, black RAL 9005, approved for potable water	1-component-coat, thickness 0,06 mm RAL 5002 ultramarinblau (blue)

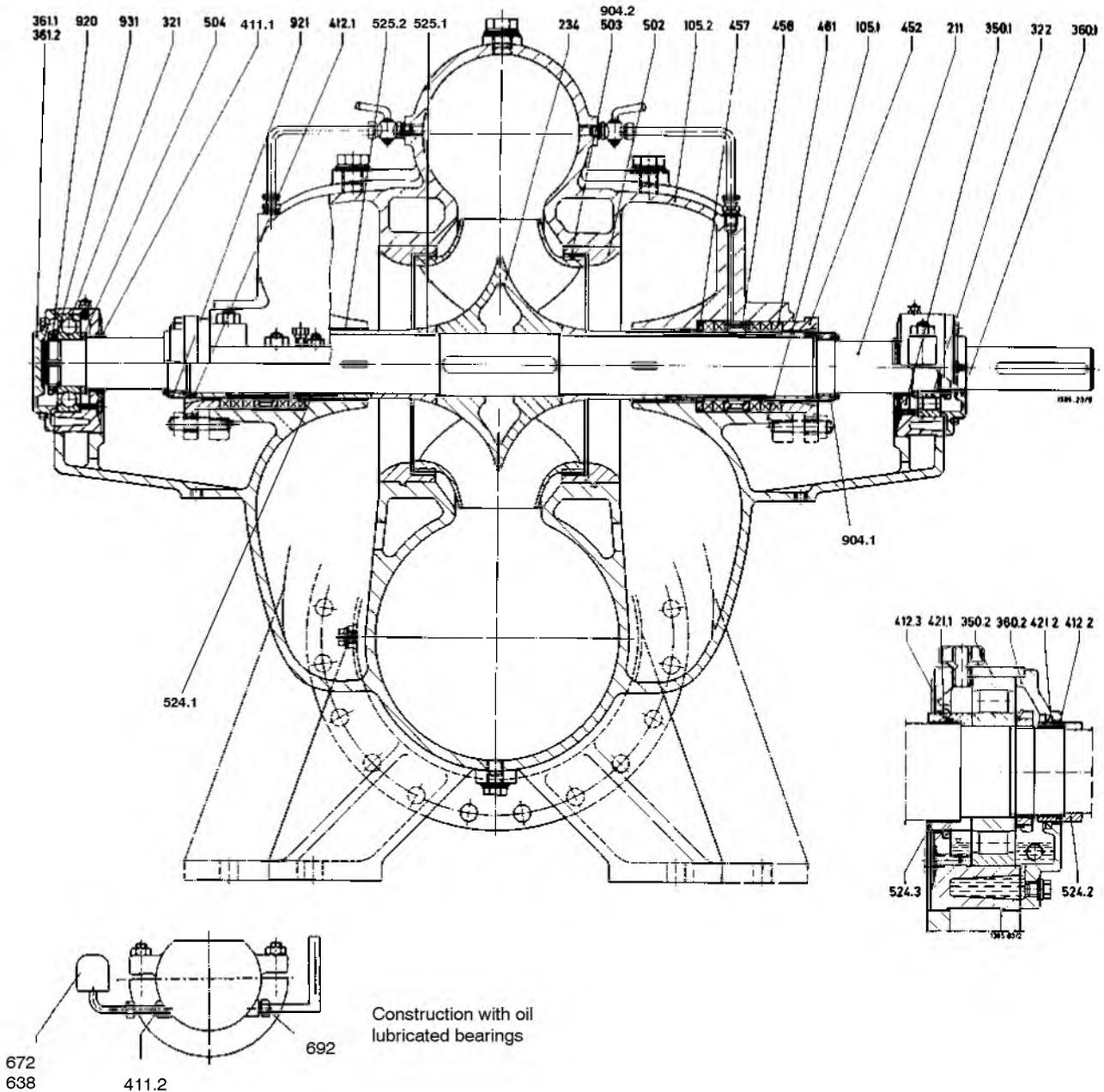
### C) Special coating for material combination 01 up to 031: approved for potable water

against extra charge dependent on individual project		Inside	Outside
	Pretreatment	Blasting SA 2 1/2, DIN 55928 T4	
	Primer	2-Component epoxy resin based zinc dust paint, grey, thickness 0,04 mm <sup>1)</sup>	
	Top coat	2-component-epoxy resin based coat, thickness 0,125 mm, black RAL 9005, approved for potable water	coating according to customer's specification or by customer itself

<sup>1)</sup> Primer suitable for various top coats

## Sectional drawing

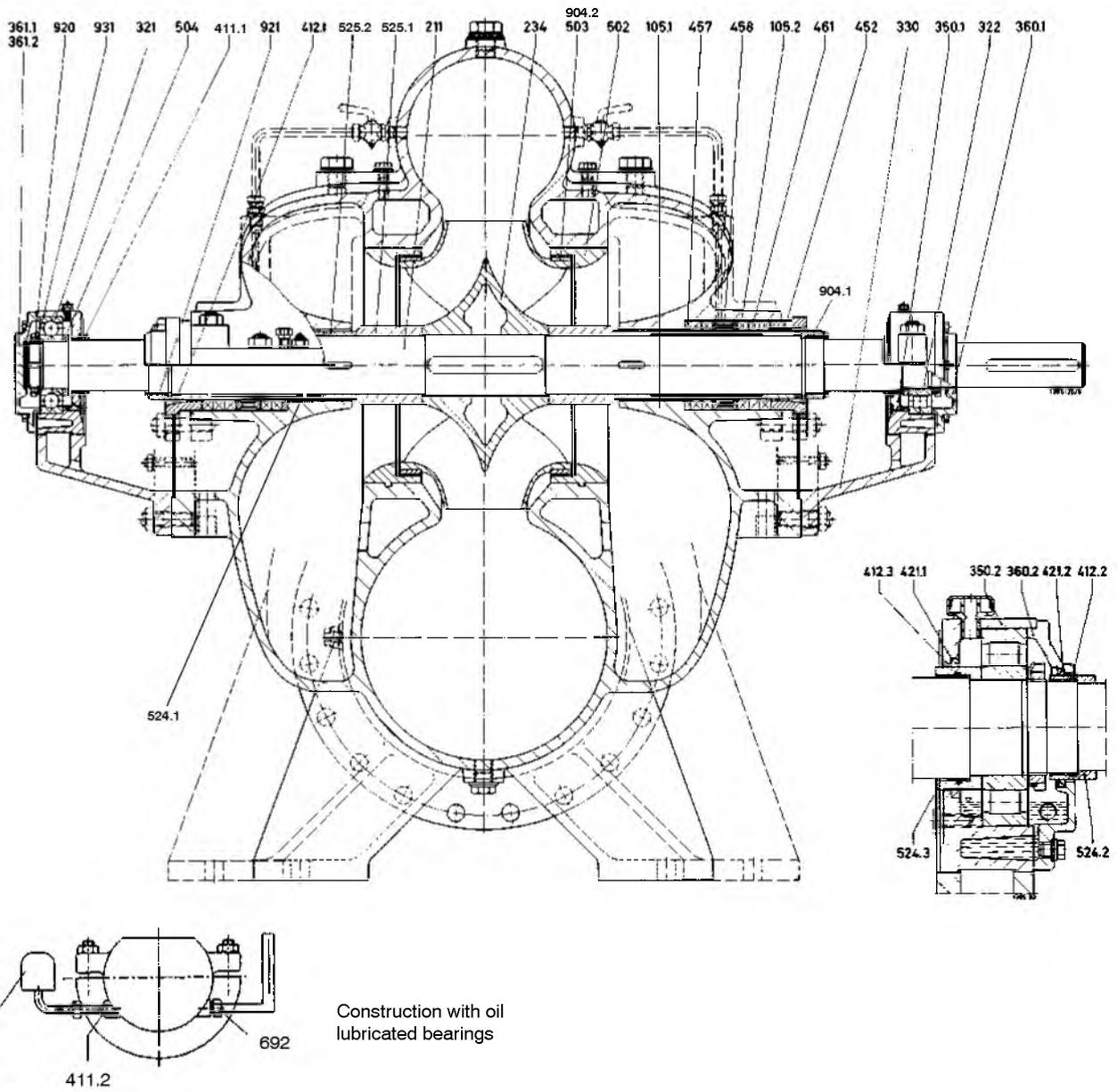
Pump sizes 500-510 up to 500-890



Part no.	Part designation	Part no.	Part designation
105.1-.2	Casing half	458	Lantern ring
211	Pump shaft	461	Gland packing
234	Double entry impeller	502	Casing wear ring
321	Radial ball bearing	503	Impeller wear ring
322	Radial roller bearing	504	Spacer ring
350.1-.2	Bearing housing	524.1-.3	Shaft protecting sleeve
360.1-.2	Bearing cover	525.1-.2	Spacer sleeve
361.1-.2	Bearing end cover	638	Constant level oiler
411.1	Joint ring	672	Venting device
411.2	Joint ring	692	Temperature measuring instrument
412.1-.3	O-ring	904.1-.2	Grub screw
421.1-.2	Radial shaft seal ring	920	Nut
452	Gland	921	Shaft nut
457	Neck ring	931	Lock washer

## Sectional drawing

Pump sizes 600-540 up to 800-970



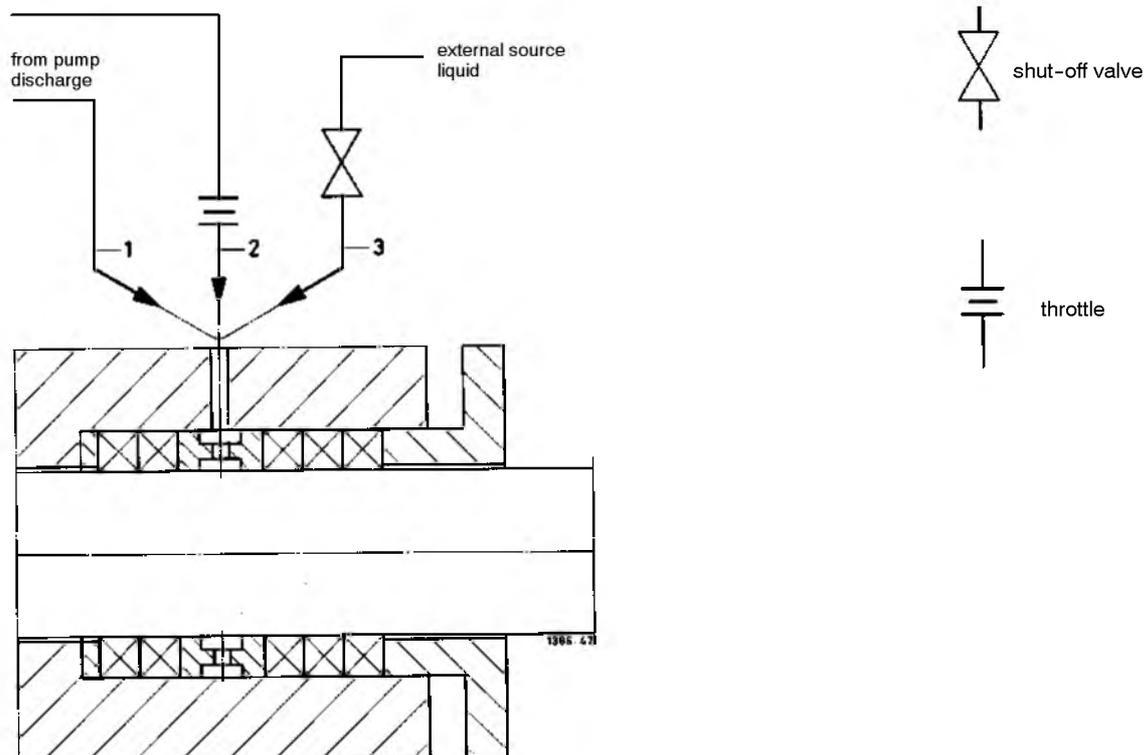
Part no.	Part designation	Part no.	Part designation
105.1-.2	Casing half	457	Neck ring
211	Pump shaft	458	Lantern ring
234	Double entry impeller	461	Gland packing
321	Radial ball bearing	502	Casing wear ring
322	Radial roller bearing	503	Impeller wear ring
330	Bearing bracket	504	Spacer ring
350.1-.2	Bearing housing	524.1-.3	Shaft protecting sleeve
360.1-.2	Bearing cover	525.1-.2	Spacer sleeve
361.1-.2	Bearing end cover	638	Constant level oiler
411.1	Joint ring	672	Venting device
411.2	Joint ring	692	Temperature measuring instrument
412.1-.3	O-ring	904.1-.2	Grub screw
421.1-.2	Radial shaft seal ring	920	Nut
452	Gland	921	Shaft nut
		931	Lock washer

## Shaft seal

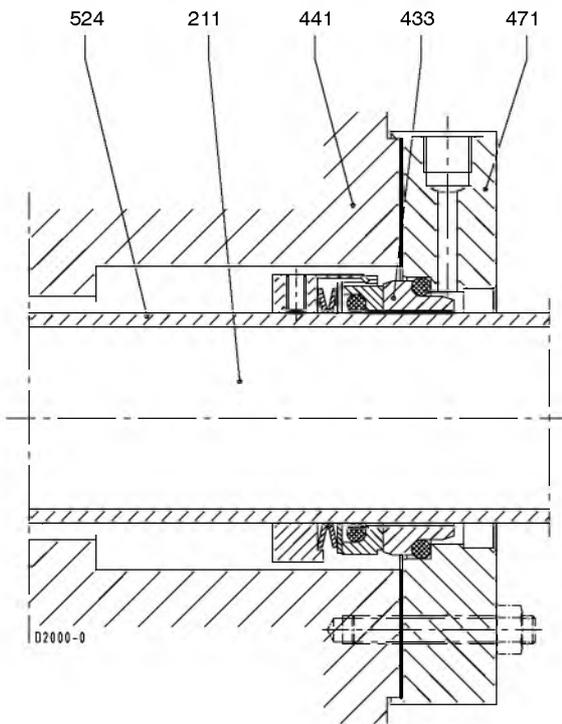
Uncooled soft-packed stuffing box or uncooled single acting, unbalanced mechanical seal, acc. to DIN 24960, independent of direction of rotation.

For operating pressure > 16 bar: balanced mechanical seal.

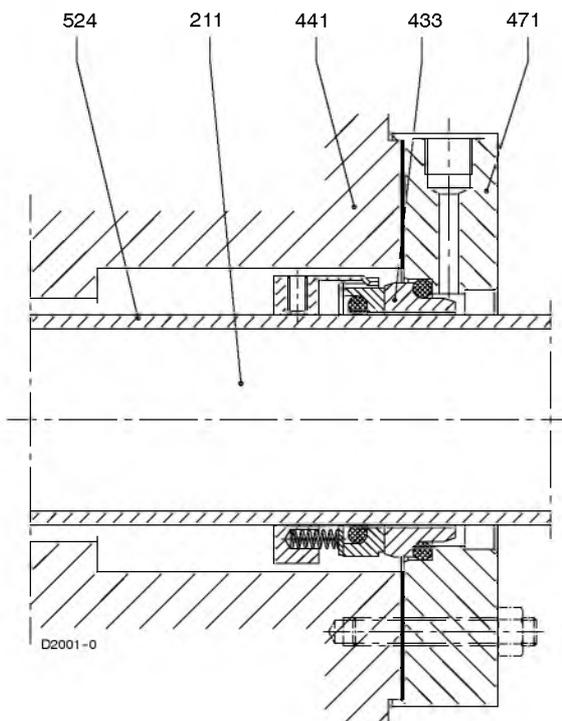
### Stuffing box packing



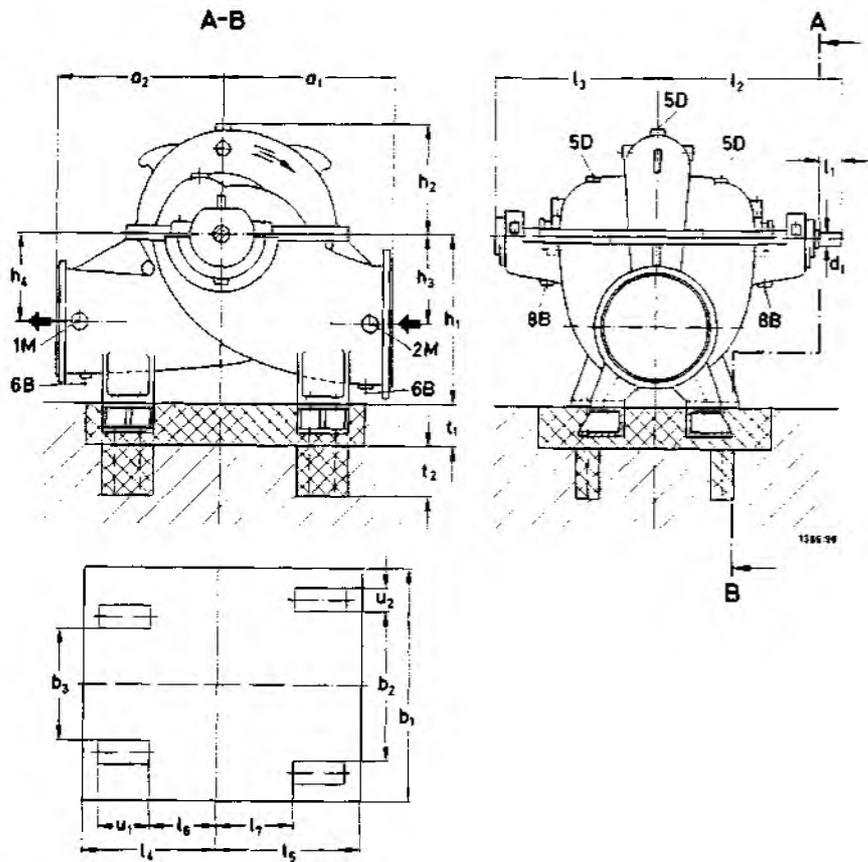
**Standard mechanical seal acc. to DIN 24960  
for shaft seal diameter up to 100 mm  
(Pump sizes 500-510 and 600-540)**



**Mechanical seal  
Shaft seal for shaft seal diameter from 110 mm**



Part no.	Part designation
211	Shaft
433	Mechanical seal
441	Shaft seal housing
471	Seal cover
524	Shaft protecting sleeve

**Dimension table for type of installation 2 E**

**Permissible deviations of dimensions for:**

Height of centre	DIN 747
Dimensions without indication of tolerances average to	DIN 7168
Cast iron parts	DIN 1686 GTB 18
Spheroidal graphite cast iron parts	DIN 1685 GTB 18
Cast steel parts	DIN 1683 GTB 18

R = B.S.P.

Key and keyway to DIN 6885

 Shaft diameter: fit  $h_6$  to DIN 7155

**Connections**

		from RDL 500-510	from RDL 700-590
1 M	Pressure gauge	R 1/2	R 1/2
2 M	Vacuum gauge	R 1/2	R 1/2
5 D	Vent	R 1	R 1 1/2
6 B	Drain	R 1	R 1 1/2
8 B	Dripping water	R 1	R 1

Pump sizes	Flanges		Pump dimensions									Shaft end		Weight of pump [kg]
	suction DN <sub>1</sub>	discharge DN <sub>2</sub>	a <sub>1</sub>	a <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>1</sub>	l <sub>1</sub> *)		
500-510	600	500	850	550	900	560	475	475	1025	820	75	190	1528	
500-640	600	500	850	800	920	600	495	495	1115	900	95	210	2301	
500-700	600	500	1050	850	1000	620	550	620	1085	855	105	230	2967	
500-790	600	500	1000	900	1050	660	600	600	1175	900	115	250	3483	
500-890	600	500	1050	950	1100	710	650	650	1210	920	135	290	4659	
600-540	700	600	1100	900	1100	750	610	610	1080	885	75	190	2725	
600-620	700	600	1000	1000	1050	650	545	545	1060	840	85	225	2961	
600-710	700	600	1000	1100	1050	650	545	545	1160	930	105	230	3427	
600-830	700	600	1100	1200	1100	760	580	580	1275	1000	115	250	4700	
700-590	800	700	1300	800	1150	720	600	600	1300	1090	95	210	4043	
700-710	800	700	1200	1150	1170	750	620	620	1360	1130	105	230	5329	
700-820	800	700	1250	1250	1200	850	650	650	1440	1160	125	305	6075	
800-740	900	800	1400	950	1380	920	770	770	1410	1180	105	230	6557	
800-840	900	800	1400	1125	1360	900	770	770	1500	1180	115	310	6624	
800-970	900	800	1400	1300	1370	850	760	760	1580	1270	135	310	7809	

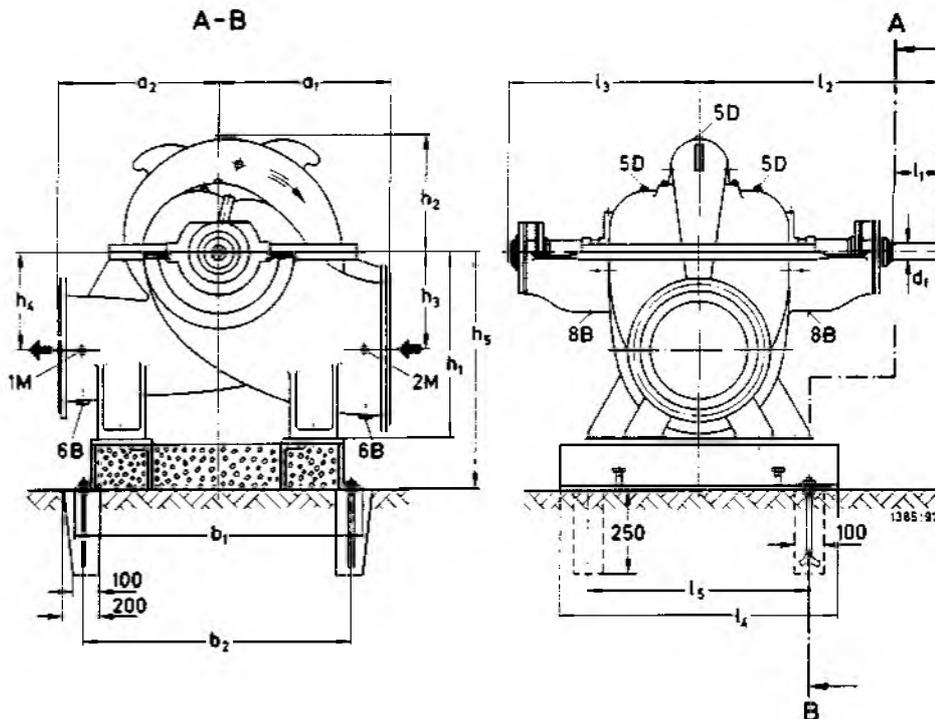
Pump sizes	Foundation dimensions											Max. flange rating to DIN [bar]	
	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	t <sub>1</sub>	t <sub>2</sub>	u <sub>1</sub>	u <sub>2</sub>	Casing material	
												GG-20 A48 class 30	GGG-40 A536 class 604018
500-510	1440	1000	700	460	610	140	290	220	300	220	120	10	16
500-640	1440	1000	700	660	660	340	340	220	300	220	120	10	25
500-700	1540	1100	700	710	810	390	490	220	300	220	120	16	25
500-790	1540	1100	725	760	860	440	540	220	300	220	120	25	25
500-890	1440	1000	750	810	910	490	590	220	300	220	120	25	25
600-540	1450	950	650	800	900	400	500	220	300	300	150	10	16
600-620	1450	950	650	900	900	500	500	220	300	300	150	10	16
600-710	1550	1050	750	900	900	500	500	220	300	300	150	16	25
600-830	1550	1050	750	1000	900	600	500	220	300	300	150	16	25
700-590	1440	940	640	700	1000	250	550	250	300	350	150	10	16
700-710	1440	940	640	1000	1000	550	55	250	300	350	150	10	16
700-820	1440	940	640	1050	1050	600	600	250	300	350	150	16	16
800-740	1540	1040	740	850	1000	350	500	250	300	400	150	10	16
800-840	1540	1040	740	1000	1050	500	550	250	300	400	150	10	16
800-970	1540	1040	740	1000	1100	600	600	250	300	400	150	10	16

Dimensions in mm, non-certified

 \*) Dimensions are for pumps with grease-lubricated bearings, with oil lubricated bearings shorten l<sub>1</sub> by 20 mm

We reserve the right to make technical changes

				Pos.-no.	Enclosure	
				<b>Dimension Table RDL -</b>		
				Project-no. / Works-no.	No.	
Date	Name	Change				

**Dimension table for type of installation 4 E**


The base frame must be grouted in after alignment with self-hardening mortar.

**Permissible deviations of dimensions for:**

Height of centre	DIN 747
Dimensions without indication of tolerances average to	
Cast iron parts	DIN 1686 GTB 18
Spheroidal graphite cast iron parts	DIN 1685 GTB 18
Cast steel parts	DIN 1683 GTB 18

R = B.S.P.

Key and keyway to DIN 6885  
 Shaft diameter: fit  $h_6$  to DIN 7155  
 DIN 7168

**Connections**

		from RDL 500-510	from RDL 700-590
1 M	Pressure gauge	R 1/2	R 1/2
2 M	Vacuum gauge	R 1/2	R 1/2
5 D	Vent	R 1	R 1 1/2
6 B	Drain	R 1	R 1 1/2
8 B	Dripping water	R 1	R 1

Pump size	Flanges		Pump dimensions								Shaft end		Weight of pump [kg]
	suction DN <sub>1</sub>	discharge DN <sub>2</sub>	a <sub>1</sub>	a <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>1</sub>	l <sub>1</sub> *)	
500-510	600	500	850	550	900	560	475	475	1025	820	75	190	1528
500-640	600	500	850	800	920	600	495	495	1115	900	95	210	2301
500-700	600	500	1050	850	1000	620	550	620	1085	855	105	230	2967
500-790	600	500	1000	900	1050	660	600	600	1175	900	115	250	3483
500-890	600	500	1050	950	1100	710	650	650	1210	920	135	290	4659
600-540	700	600	1100	900	1100	750	610	610	1080	885	75	190	2725
600-620	700	600	1000	1000	1050	650	545	545	1060	840	85	225	2961
600-710	700	600	1000	1100	1050	650	545	545	1160	930	105	230	3427
600-830	700	600	1100	1200	1100	760	580	580	1275	1000	115	250	4700
700-590	800	700	1300	800	1150	720	600	600	1300	1090	95	210	4043
700-710	800	700	1200	1150	1170	750	620	620	1360	1130	105	230	5329
700-820	800	700	1250	1250	1200	850	650	650	1440	1160	125	305	6075
800-740	900	800	1400	950	1380	920	770	770	1410	1180	105	230	6557
800-840	900	800	1400	1125	1360	900	770	770	1500	1180	115	310	6624
800-970	900	800	1400	1300	1370	850	760	760	1580	1270	135	310	7809

Pump size	Baseframe dimensions					Max. flange rating to DIN [bar]	
						Casing material	
	b <sub>1</sub>	b <sub>2</sub>	h <sub>5</sub>	l <sub>4</sub>	l <sub>5</sub>	GG-20 A48 class 30	GGG-40 A536 class 604018
500-510	1300	1220	1100	1150	850	10	16
500-640	1400	1320	1130	1150	850	10	25
500-700	1700	1620	1210	1250	950	16	25
500-790	1800	1720	1260	1250	950	25	25
500-890	1900	1820	1310	1150	850	25	25
600-540	1800	1720	1310	1150	850	10	16
600-620	1800	1720	1260	1150	850	10	16
600-710	1800	1720	1260	1250	950	16	25
600-830	2000	1920	1310	1250	950	16	25
700-590	2000	1920	1360	1250	950	10	16
700-710	2000	1920	1380	1250	950	10	16
700-820	2100	2020	1410	1250	950	16	16
800-740	2000	1920	1590	1350	1050	10	16
800-840	2100	2020	1570	1350	1050	10	16
800-970	2200	2120	1580	1350	1050	10	16

Dimensions in mm, non-certified

 \*) Dimensions are for pumps with grease-lubricated bearings, with oil lubricated bearings shorten l<sub>1</sub> by 20 mm

We reserve the right to make technical changes

				Pos.-no.	Enclosure
				<b>Dimension Table RDL -</b>	
				Project-no. / Works-no.	No.
Date	Name	Change			

## Spare parts

### Proposals for Spare Parts for 2 - Years Operation (8000 hours per year)

#### Pump with soft packed Stuffing Box

Part No.	Part Designation	No. of Pumps including Stand-By Pumps							
		1	2	3	4	5	6	8	10 and more
		No. of Spare Parts							
211 920 921 940	Shaft, with Nut Shaft nut Key	-	-	-	1	1	1	2	3
234	Impeller	-	-	-	1	1	1	2	3
321 / 322	Set Bearings	1	1	1	2	2	3	4	5
452	Set Gland	-	-	-	1	1	1	2	3
411.1 412.1 - 3 421.1/2	Set Joint-Ring O-Ring Radial shaft seal ring	1	2	3	4	5	6	8	10
461	Set Gland packing	4	8	12	16	20	24	32	40
457	Set neck rings	-	-	-	1	1	1	2	3
458	Set lantern rings	-	-	-	1	1	1	2	3
502	Set casing wear rings	1	1	1	2	2	3	4	5
503 904.2	Set impeller wear rings Grub screw	1	1	1	2	2	3	4	5
524.1 - 3	Set shaft protec. sleeves	1	1	1	2	2	3	4	5
525.1-2	Distance sleeve	1	1	1	2	2	3	4	5

#### Pump with Mechanical Seal

Part No.	Part Designation	No. of Pumps including Stand-By Pumps							
		1	2	3	4	5	6	8	10 and more
		No. of Spare Parts							
211 920 921 940	Shaft, with Nut Shaft nut Key	-	-	-	1	1	1	2	3
234	Impeller	-	-	-	1	1	1	2	3
321 / 322	Set Bearings	1	1	1	2	2	3	4	5
411.1 412.1 - 3 421.1/2	Set Joint-Ring O-Ring Radial shaft seal ring	1	2	3	4	5	6	8	10
433	Set mechanical seals	1	1	1	2	2	3	4	5
502	Set casing wear rings	1	1	1	2	2	3	4	5
503 904.2	Set impeller wear rings Grub screw	1	1	1	2	2	3	4	5
524.1 - 3	Set shaft protec. sleeves	1	1	1	2	2	3	4	5
525.1-2	Distance sleeve	1	1	1	2	2	3	4	5

**Proposals for Spare Parts for 5 - Years Operation (8000 hours per year)**
**Pump with soft packed Stuffing Box**

Part No.	Part Designation	No. of Pumps including Stand-By Pumps							
		1	2	3	4	5	6	8	10 and more
		No. of Spare Parts							
211 920 921 940	Shaft, with Nut Shaft nut Key	1	1	1	2	2	2	4	6
234	Impeller	1	1	1	2	2	2	4	6
321 / 322	Set Bearings	2	2	2	4	4	6	8	10
452	Set Gland	1	1	1	2	2	2	4	6
411.1 412.1 - 3 421.1/2	Set Joint-Ring O-Ring Radial shaft seal ring	2	2	6	8	8	12	16	20
461	Set Gland packing	10	20	30	40	50	60	80	100
457	Set neck rings	1	1	1	2	2	2	4	6
458	Set lantern rings	1	1	1	2	2	2	4	6
502	Set casing wear rings	2	2	2	4	4	6	8	10
503 904.2	Set impeller wear rings Grub screw	2	2	2	4	4	6	8	10
524.1 - 3	Set shaft protec. sleeves	2	2	2	4	4	6	8	10
525.1-2	Distance sleeve	2	2	2	4	4	6	8	10

**Pump with Mechanical Seal**

Part No.	Part Designation	No. of Pumps including Stand-By Pumps							
		1	2	3	4	5	6	8	10 and more
		No. of Spare Parts							
211 920 921 940	Shaft, with Nut Shaft nut Key	1	1	1	2	2	2	4	6
234	Impeller	1	1	1	2	2	2	4	6
321 / 322	Set Bearings	2	2	2	4	4	6	8	10
411.1 412.1 - 3 421.1/2	Set Joint-Ring O-Ring Radial shaft seal ring	2	2	6	8	8	12	16	20
433	Set mechanical seals	2	2	2	4	4	6	8	10
502	Set casing wear rings	2	2	2	4	4	6	8	10
503 904.2	Set impeller wear rings Grub screw	2	2	2	4	4	6	8	10
524.1 - 3	Set shaft protec. sleeves	2	2	2	4	4	6	8	10
525.1-2	Distance sleeve	2	2	2	4	4	6	8	10

## Accessories

- 1 shock pulse monitoring stud
- 1 set seal pipe with 1 cyclone separator (for handling contaminated fluids)  
including:
  - cyclone separator plastic
  - flow indicator of stainless steel
  - shut-off valve of stainless steel
  - connectors + piping of stainless steel
- 1 vent valve, manually operated of stainless steel  
including:
  - connectors
- 1 temperature monitoring devise for antifriction bearings  
for each bearing consisting of:
  - 1 resistance thermometer PT 100,  
2-wire system, with 2m connection cable
  - 1 adaptor of stainless steel
- 1 signal transmitter for PT 100 control room mounting
  - output signal 0-20 mA, voltage optional AC 110 V or 220 V
- 1 set pressure gauges acc. to DIN 16064  
consisting of:
  - 1 pressure gauge BSP 1/2, 100 mm, grade of quality 1,0
  - 1 pressure-vacuum gauge BSP 1/2, 100 mm, grade of quality 1,0
  - 2 pressure gauge cocks BSP 1/2 incl. brackets



**Hochdruck-  
Kreiselpumpe**  
**High-pressure  
centrifugal pump**

Baugrößen 1 - 6  
Pump sizes 1 - 6

## Einsatzgebiete

- Speisewasser- und Kondensatförderung in Kraftwerken und Industrieanlagen
- Druckwassererzeugung, z.B. für Press-, Entrindungs-, Entzunderungsanlagen und Schneekanonen

## Fields of Application

- Handling feed water and condensate in power stations and industrial plants
- Generation of pressurized water, e.g. for presses, decorticator, descaling plants and snow generators

## Betriebsdaten

Förderstrom bei max. Drehzahl	Q bis	400 l/s
Förderhöhen	H bis	4200 m
Förderguttemperatur	T bis	200 °C
Pumpenzulaufdruck	$p_s$ bis	30 bar
Pumpenenddruck	$p_d$ bis	420 bar
Drehzahlen	n bis	7000 min <sup>-1</sup>

## Operating Data

Capacity at max. speed	Q up to	400 l/s
Heads	H up to	4200 m
Temperature of medium handled	T up to	200 °C
Pump suction pressure	$p_s$ up to	30 bar
Pump discharge pressure	$p_d$ up to	420 bar
Speeds	n up to	7000 min <sup>-1</sup>

## Bauart

Horizontale, quergeteilte Gliederpumpe mit Radialrädern, ein- oder zweiströmig, mehrstufig. Die Gehäuse sind untereinander mit O-Ringen oder metallisch an den Stirnflächen abgedichtet und durch Verbindungsschrauben verspannt.

## Design

Horizontal, radially split, ring-section pump with radial impellers, single or double-flow entry, multistage. The stages are sealed against each other by O-rings or by metallic sealing faces and fastened by tie bolts.

## Pumpenfüße

	Ort / Stellung
HG 1	1. Stufengehäuse und Druckgehäuse / unten
HG 2	1. Stufengehäuse und Druckgehäuse / unten
HG 2	1. Stufengehäuse und Druckgehäuse / Achsmitte
HG 3	1. Stufengehäuse und Druckgehäuse / Achsmitte
HG 3	Sauggehäuse und Druckgehäuse / Achsmitte
HG 3-6	Sauggehäuse und Druckgehäuse / Achsmitte

## Radiallager, Schmierung

Wälzlager ungekühlt, Ringschmierung  
 Wälzlager gekühlt, Ringschmierung  
 Gleitlager ungekühlt, Ringschmierung  
 Gleitlager gekühlt, Ringschmierung  
 Gleitlager, Druckölschmierung

## Axiallager, Schmierung

Wälzlager gekühlt, Ringschmierung (HG 1-3)  
 Gleitlager, Druckölschmierung (HG 1-6)

## Entlastungseinrichtung

Axialschubausgleich durch die hydraulische Entlastungseinrichtung an der Druckseite. Entlastung durch Scheibe oder Doppelkolben.

## Wellendichtung

Packungsstopfbuchse ungekühlt oder gekühlt.  
 Gleitringdichtung ungekühlt, mit Mantelkühlung, Gegenringkühlung, Injektion oder Zirkulation.  
 Die Welle ist im Bereich der Dichtung mit auswechselbarer Wellenhülse versehen.

## Stutzenstellung

Saugstutzen: Radial, senkrecht nach oben oder unten  
 Druckstutzen: Radial, senkrecht nach oben  
 Anzapfung: Radial, in allen Stufengehäusen, in verschiedenen Richtungen, auf Anfrage.

## Flansche

Anschlussmaße nach EN oder ASME.

## Antrieb

Direkt durch E-Motor, Turbine oder Verbrennungsmotor oder indirekt über Getriebe, hydraulische Regelkupplung oder Getrieberegelnkupplung.

## Pump Feet

HG 1	1st stage casing and discharge casing / bottom
HG 2	1st stage casing and discharge casing / bottom
HG 2	1st stage casing and discharge casing / centerline
HG 3	1st stage casing and discharge casing / centerline
HG 3	Suction casing and discharge casing / centerline
HG 3-6	Suction casing and discharge casing / centerline

## Radial Bearing, Lubrication

Rolling element bearing uncooled, oil ring lubrication  
 Rolling element bearing cooled, oil ring lubrication  
 Plain bearing uncooled, oil ring lubrication  
 Plain bearing cooled, oil ring lubrication  
 Plain bearing, forced oil lubrication

## Thrust Bearing, Lubrication

Rolling element bearing cooled, oil ring lubrication (HG 1-3)  
 Plain bearing, forced oil lubrication (HG 1-6)

## Balancing Device

Thrust compensation by the hydraulic balancing device located at the discharge side. Balancing by disc or double piston.

## Shaft Seal

Packed stuffing box uncooled or cooled.  
 Mechanical seal uncooled, with jacket cooling, seat ring cooling, injection or circulation.  
 The shaft is provided with exchangeable shaft sleeve in the shaft seal area.

## Nozzle Orientation

Suction nozzle: radially, vertically upwards or vertically downwards  
 Discharge nozzle: radially, vertically upwards  
 Tapping nozzle: radially, in all stage casings, in various directions, upon request.

## Flanges

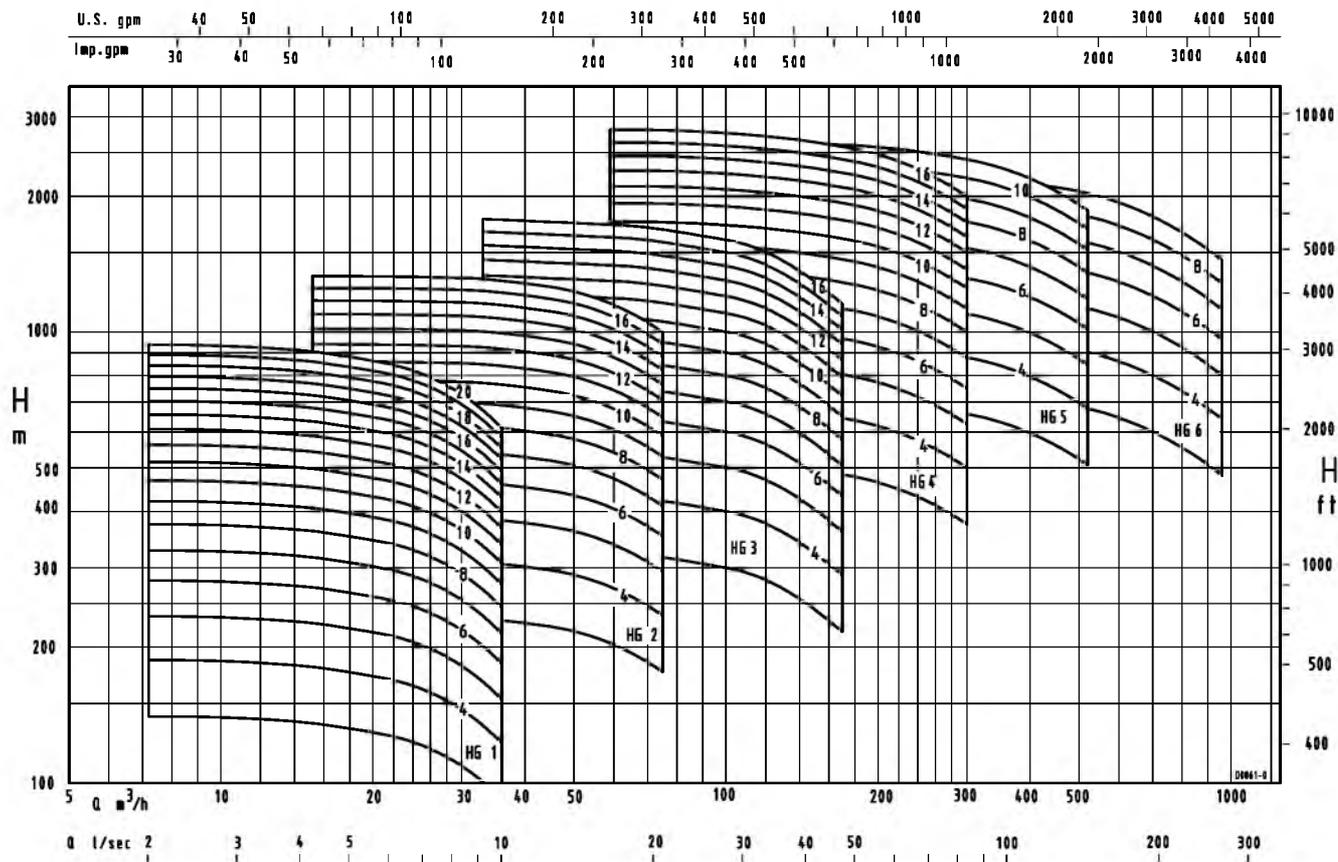
Connection dimensions according to EN or ASME.

## Drive

Direct by electric motor, turbine or combustion engine, or indirect through a gearbox, hydraulic coupling or variable speed coupling.

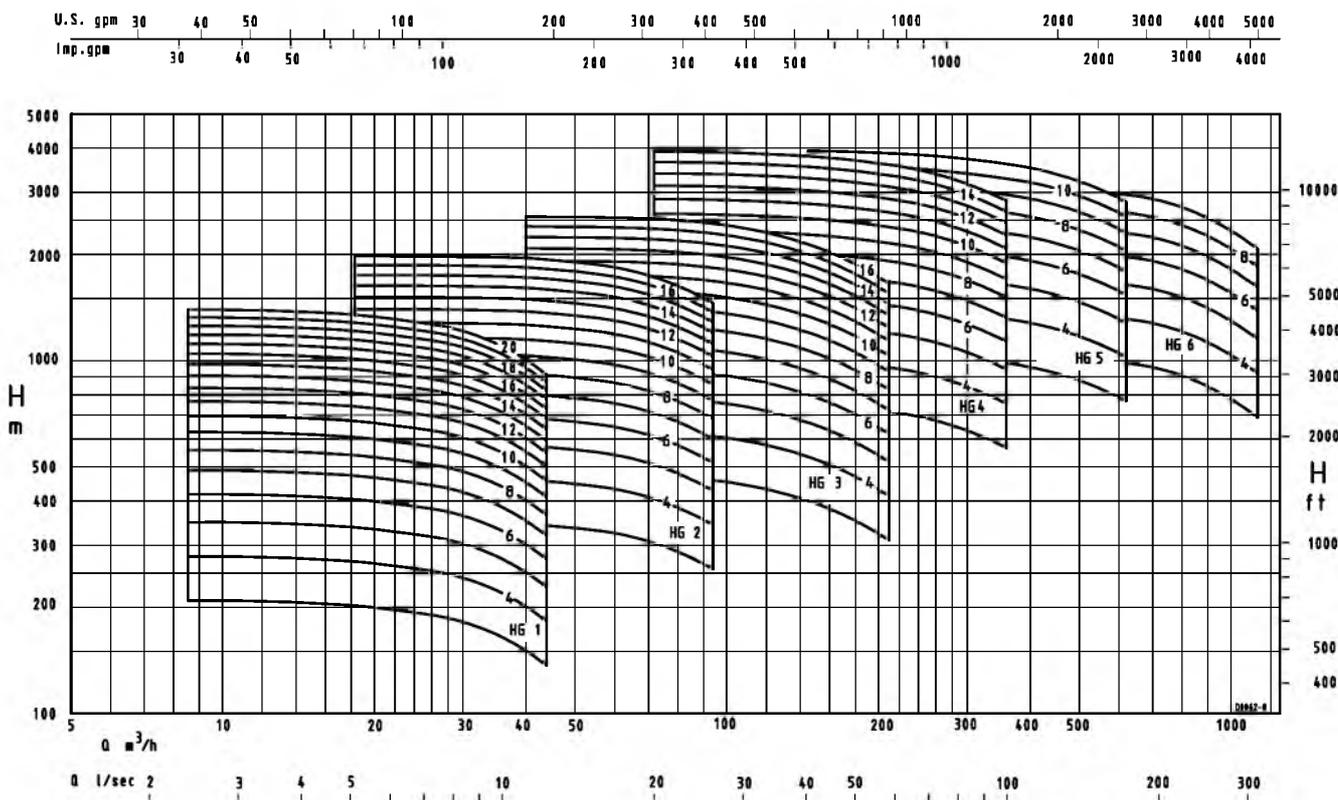
Sammelkennfeld 50 Hz  $n = 2950 \text{ min}^{-1}$

Selection Chart 50 Hz

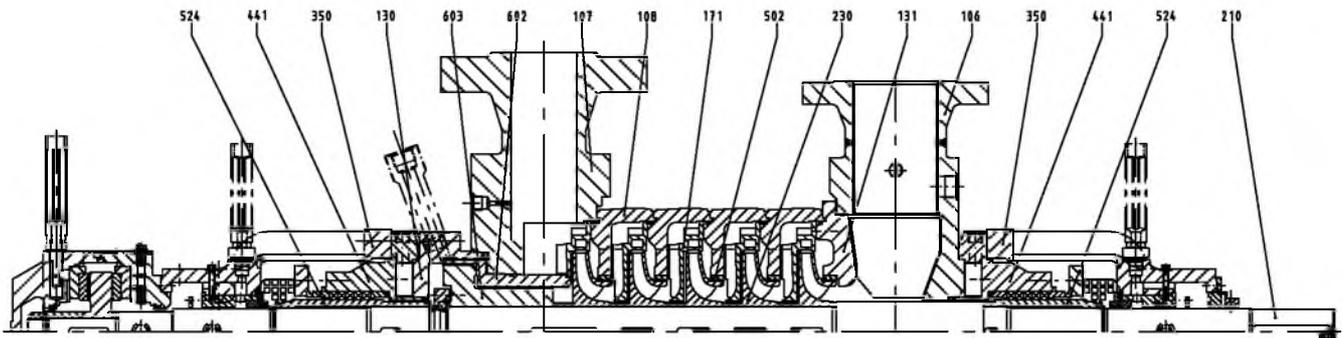


Sammelkennfeld 60 Hz  $n = 3550 \text{ min}^{-1}$

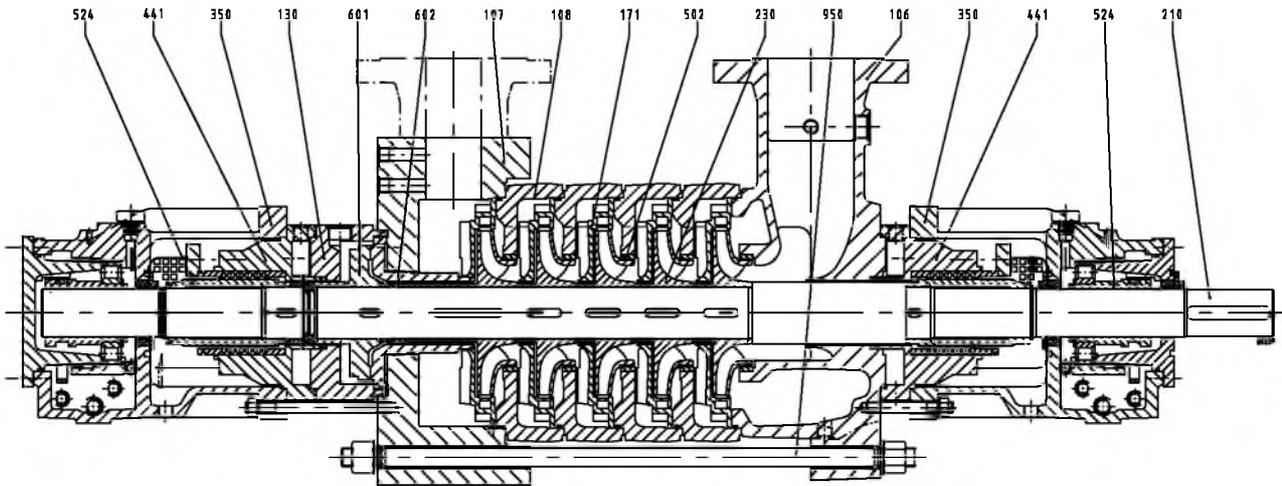
Selection Chart 60 Hz



**Teilverzeichnis / List of Components**



Beispiel: Gleitlager, Entlastungskolben, Packung gekühlt, Sauggehäuse Stahl, Druckgehäuse mit Vorschweißflansch,  
 Example: Plain bearing, Balance drum, Packed stuffing box cooled, Suction casing forged, Discharge casing with welding neck flange,



Beispiel: Wälzlager, Entlastungsscheibe, Packung gekühlt, Sauggehäuse Guß, Druckgehäuse mit Blockflansch,  
 Example: Rolling element bearing, Balance disc, Packed stuffing box cooled, Suction casing cast, Discharge casing with integral flange

**Werkstoffe / Materials**

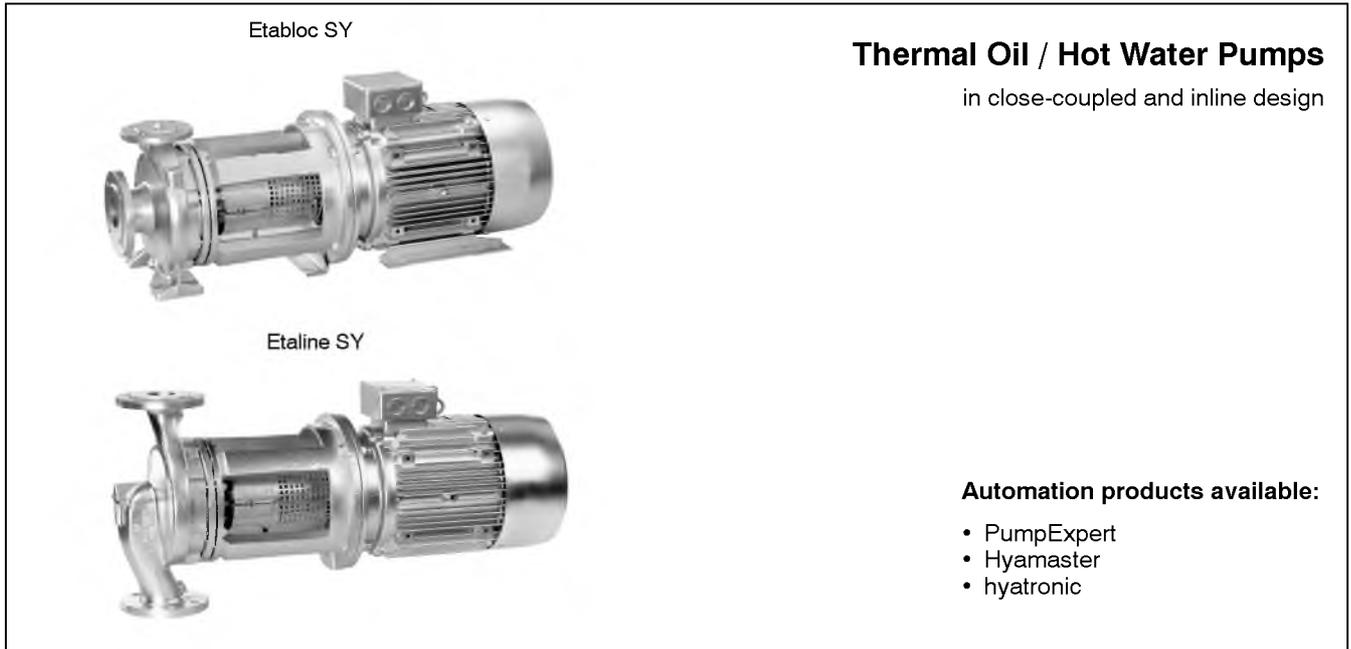
Teile-Nr. Part No.	Benennung Designation	Werkstoffauswahl / Material Selection	
		HGB	HGC
106	Sauggehäuse - suction casing	C-Stahl / C-steel	C-Stahl plattiert, Cr-Stahl / C-steel plated, Cr-steel
107	Druckgehäuse - discharge casing	C-Stahl / C-steel	C-Stahl plattiert, Cr-Stahl / C-steel plated, Cr-steel
108	Stufengehäuse - stage casing	C-Stahl / C-steel	Cr-Stahl / Cr-steel
130	Gehäuseteil - casing part	C-Stahl / C-steel	Cr-Stahl / Cr-steel
131	Einlaufring - inlet ring	C-Stahl, Cr-Stahl / C-steel, C-steel, Cr-steel	
171	Leitrad - diffuser	Grauguß, Cr-Stahl / Cast iron, Cr-steel	
210	Welle - shaft	C-Stahl, Cr-Stahl / C-steel, C-steel, Cr-steel	
230	Lauftrad - impeller	Grauguß, Cr-Stahlguß / Cast iron, Cr-steel casting	
350	Lagergehäuse - bearing housing	Grauguß / Cast iron	
441	Gehäuse für Dichtung - shaft seal housing	C-Stahl, Cr-Stahl / C-steel, Cr-steel	
502	Spaltring - casing wear ring	Cr-Stahl / Cr-steel	
524	Wellenschutzhülse - shaft protecting sleeve	Cr-Stahl / Cr-steel	
601	Entlastungsscheibe - balance disc	Cr-Stahl / Cr-steel	
602	Entlastungsgegenscheibe - balance disc seat	Cr-Stahl / Cr-steel	
603	Entlastungskolben - balance drum	Cr-Stahl / Cr-steel	
905	Verbindungsschraube - tie bolt	Vergütungsstahl / quenched and tempered steel	

Technische Änderungen bleiben vorbehalten.  
Subject to technical modifications

XBS

05.10

1850.1/08-90



## Thermal Oil / Hot Water Pumps

in close-coupled and inline design

### Automation products available:

- PumpExpert
- Hyamaster
- hyatronic

## Fields of Application

Etabloc SY, Etaline SY pumps are used in heat transfer systems (DIN 4754) or in hot water circulation systems.

## Operating Data

	50 Hz		60 Hz	
	Thermal oil	Hot water	Thermal oil	Hot water
Q	up to 280 m <sup>3</sup> /h, 78l/s		up to 325 m <sup>3</sup> /h, 90l/s	
H	up to 67 m		up to 97 m	
t	-30 up to +350 °C	up to +180 °C	-30 up to +350 °C	up to +180 °C
p <sub>2</sub> <sup>1)</sup>	up to 16 bar		up to 16 bar	

1) see pressure/temperature limits given on page 5 of type series booklet 1170.5-10

## Design

Volute casing pump, single-stage, with standardized motor. Pump and motor shaft rigidly connected.

Etabloc SY: close-coupled pump

Etaline SY: close-coupled pump in in-line design

## Bearings

Product-lubricated plain bearings

## Shaft Seal

Mechanical seal to EN 12 756.

## Materials

Volute casing	Nodular cast iron JS1025 <sup>2)</sup>
Discharge cover	Nodular cast iron JS1025 <sup>2)</sup>
Shaft	Chrome steel 1.4021.05 HRC 55
Impeller	Grey cast iron JL1040 <sup>3)</sup>
Casing wear rings	Grey cast iron GG
Drive lantern	Grey cast iron JL1040 <sup>3)</sup>
Bearing housing	Nodular cast iron JS1025 <sup>2)</sup>

2) to EN 1563: GJS-400-18-LT

3) to EN 1561: GJL-250

## Drive

Surface-cooled KSB IEC three-phase squirrel cage motor

Winding: 50 Hz up to 2,2 kW 220-240 V/380-420 V  
for 3 kW 380-420 V/660-725 V

60 Hz up to 2,6 kW 440-480 V  
for 3,6 kW 440-480 V

Design: IM V1

Enclosure: IP 55

Thermal class: F with temperature sensors:  
3 PTC thermistors

Operating mode: continuous operation S1

or

surface-cooled three-phase squirrel cage motor as described above, but West European brand to KSB's choice.

## Contact Guard

Guard in drive lantern to EN 294.

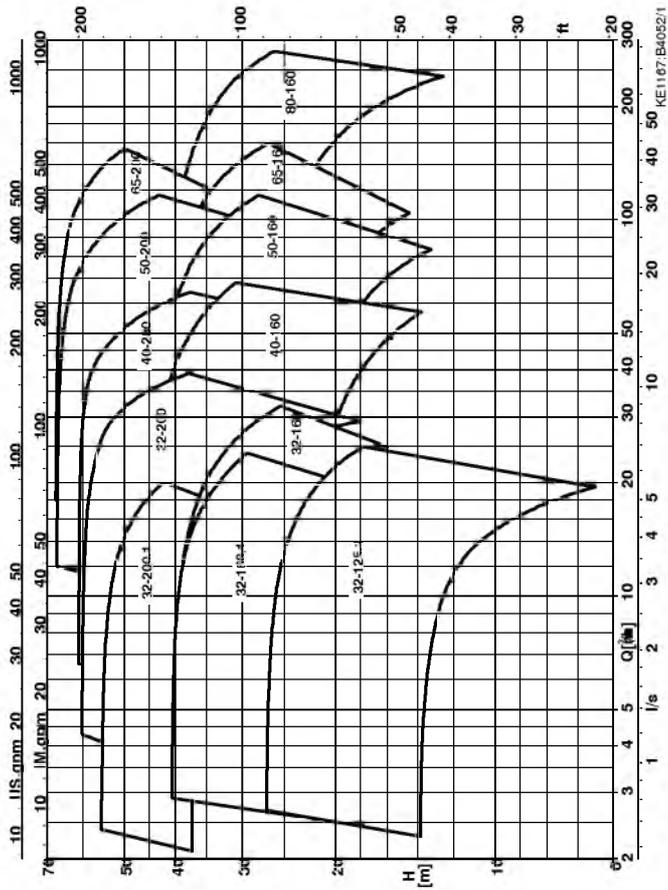
## Designation

	Etabloc	80 - 160 / 150	2	S	Y
Type series, e.g.	_____	_____	_____	_____	_____
Pump size, e.g.	_____	_____	_____	_____	_____
Nominal impeller diameter in mm	_____	_____	_____	_____	_____
Motor rating: kW x 10 (example 15 kW)	_____	_____	_____	_____	_____
Number of motor poles	_____	_____	_____	_____	_____
Casing material nodular cast iron JS1025 <sup>2)</sup>	_____	_____	_____	_____	_____
Thermal oil/Hot water variant	_____	_____	_____	_____	_____

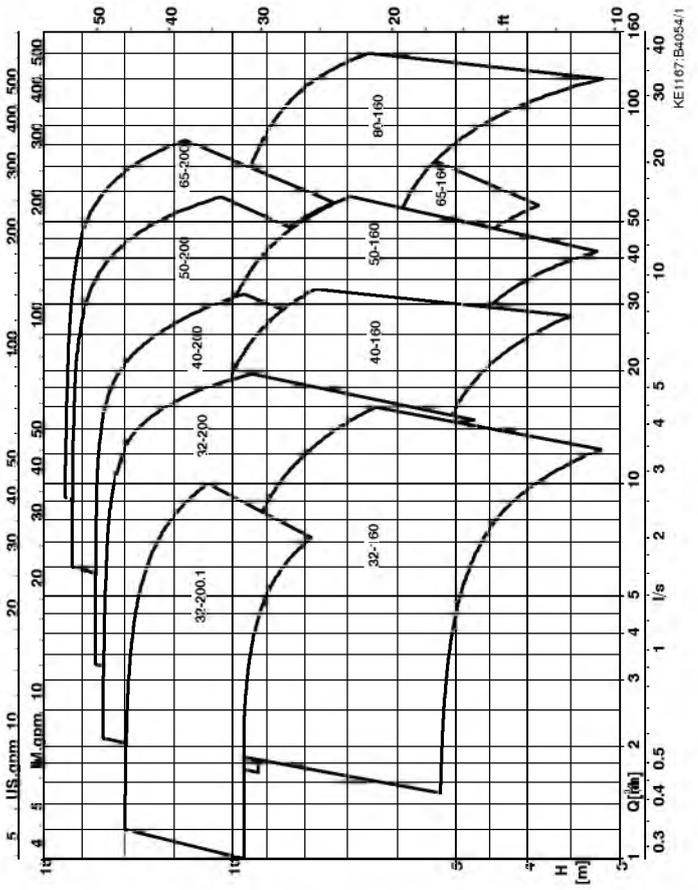
## Certification

Certified quality management ISO 9001.

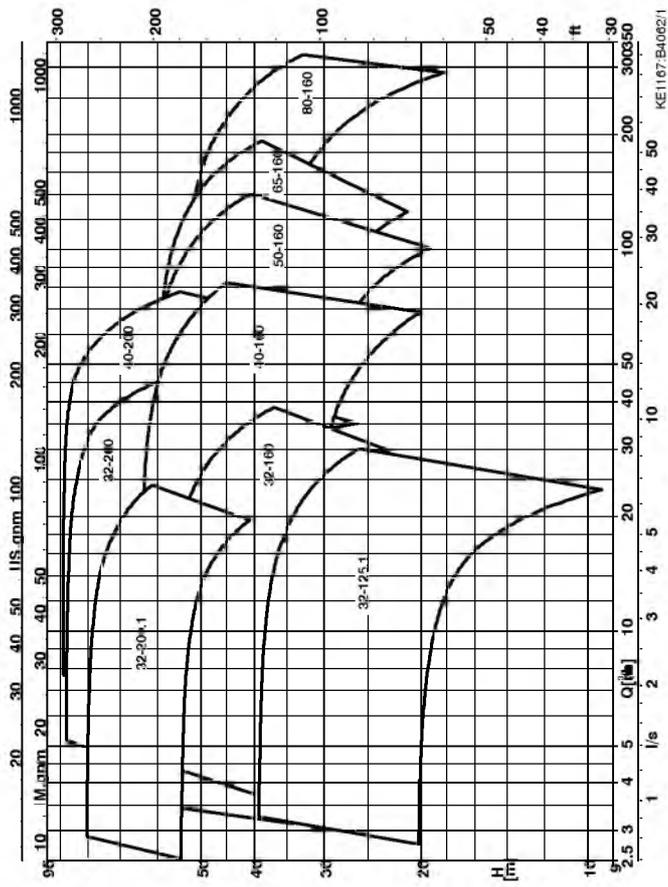
Etabloc SY  
 $n \approx 2900$  1/min



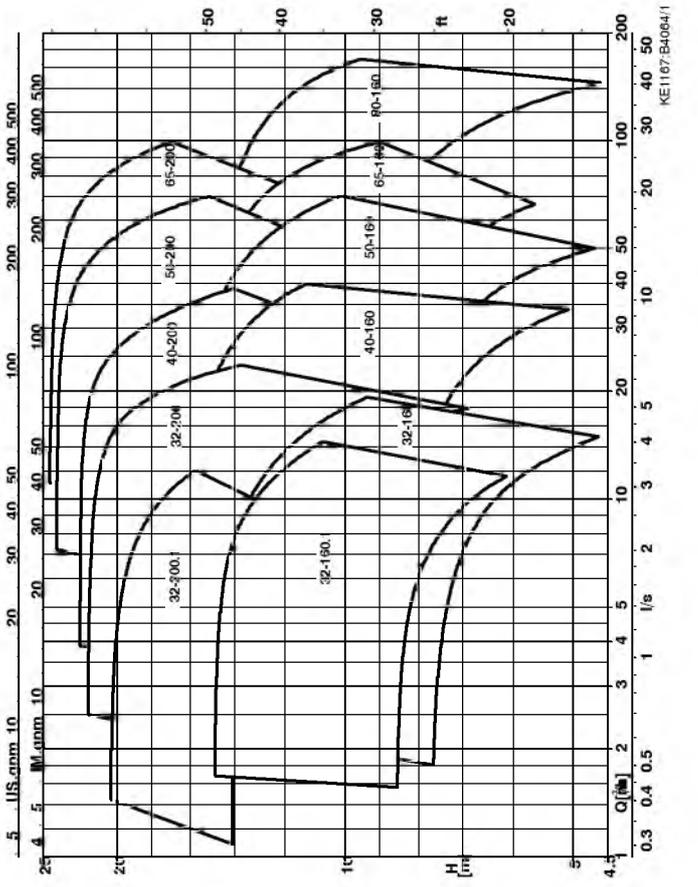
$n \approx 1450$  1/min



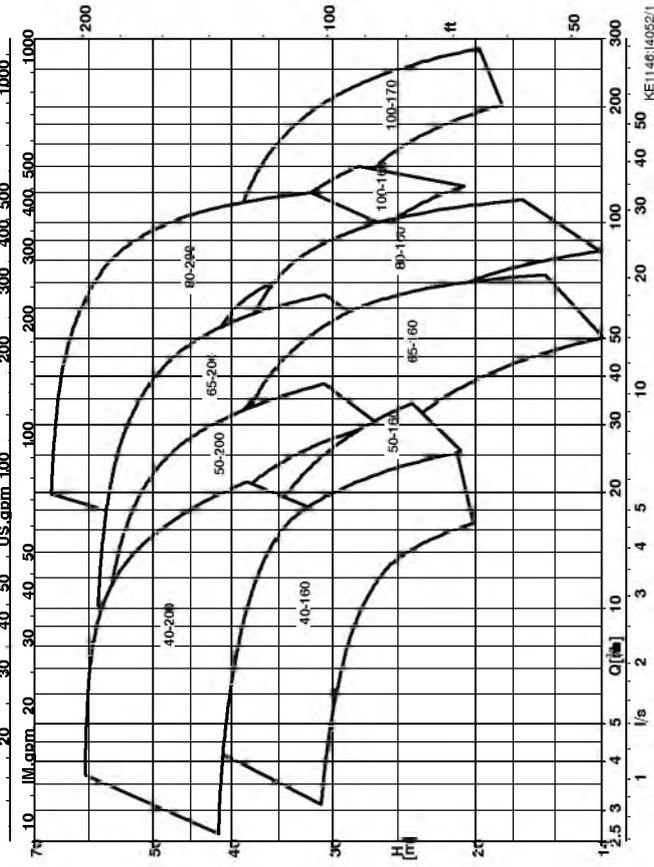
$n \approx 3500$  1/min



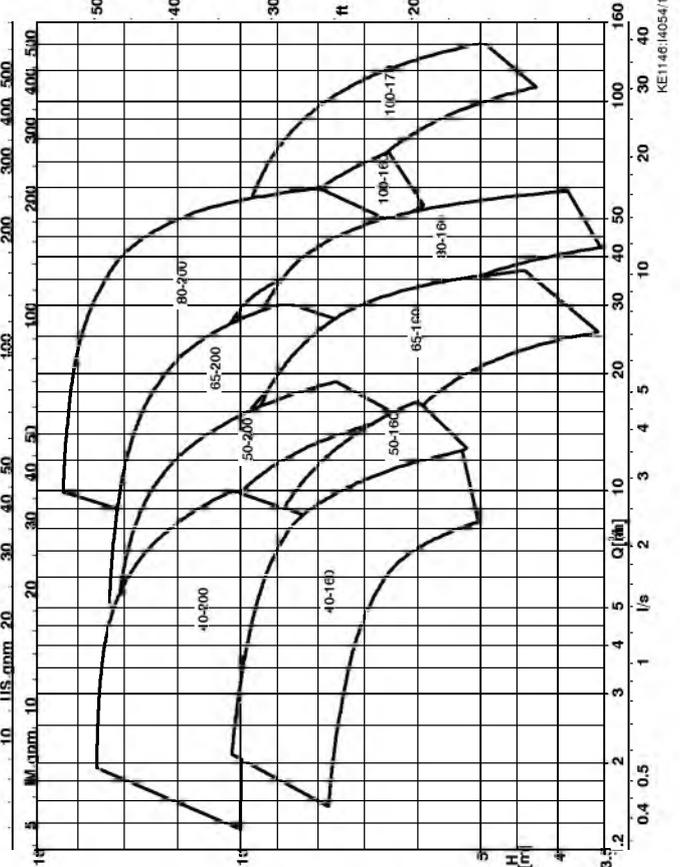
$n \approx 1750$  1/min



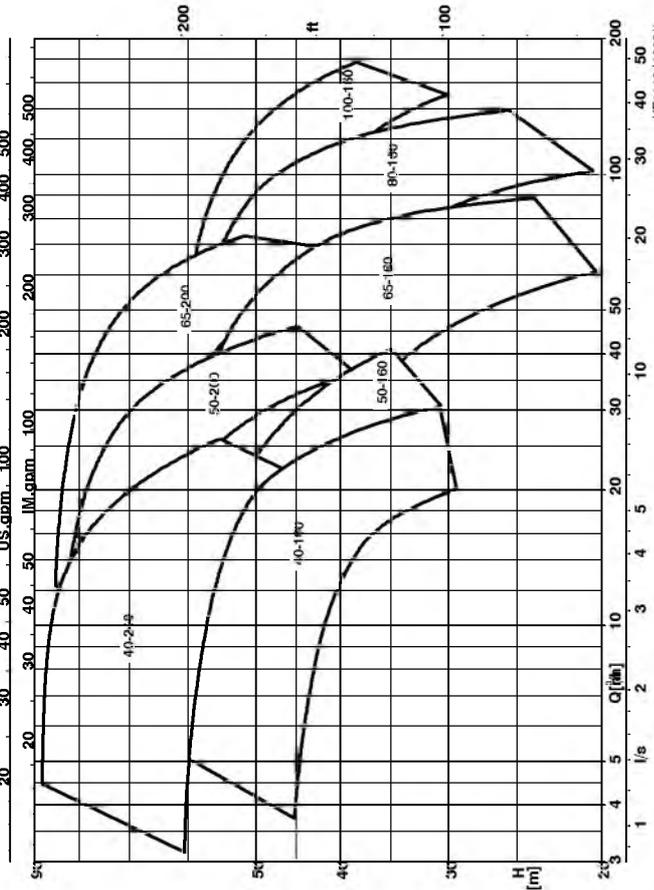
Etaline SY  
 $n \approx 2900$  1/min



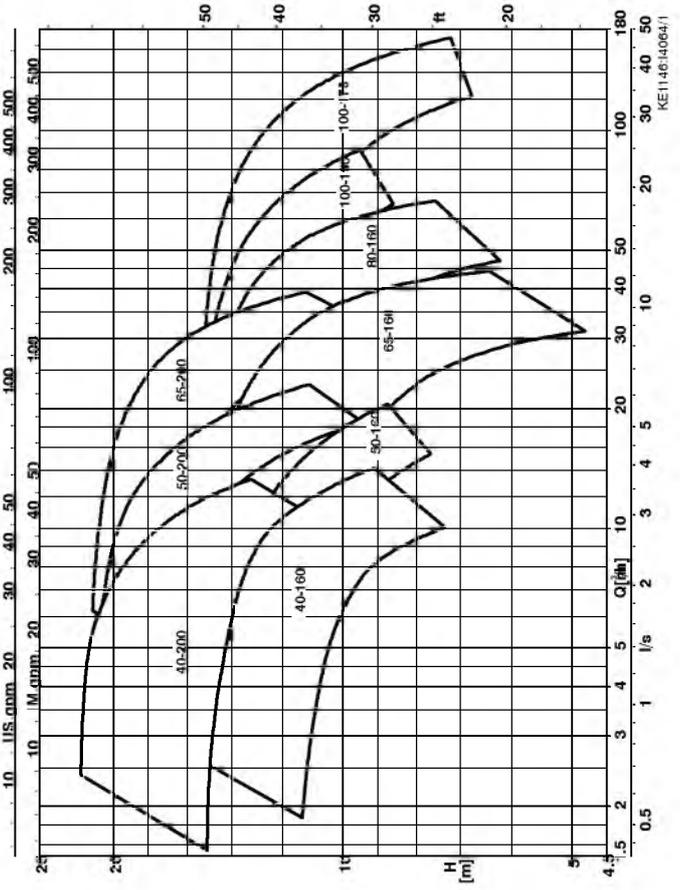
$n \approx 1450$  1/min



$n \approx 3500$  1/min



$n \approx 1750$  1/min



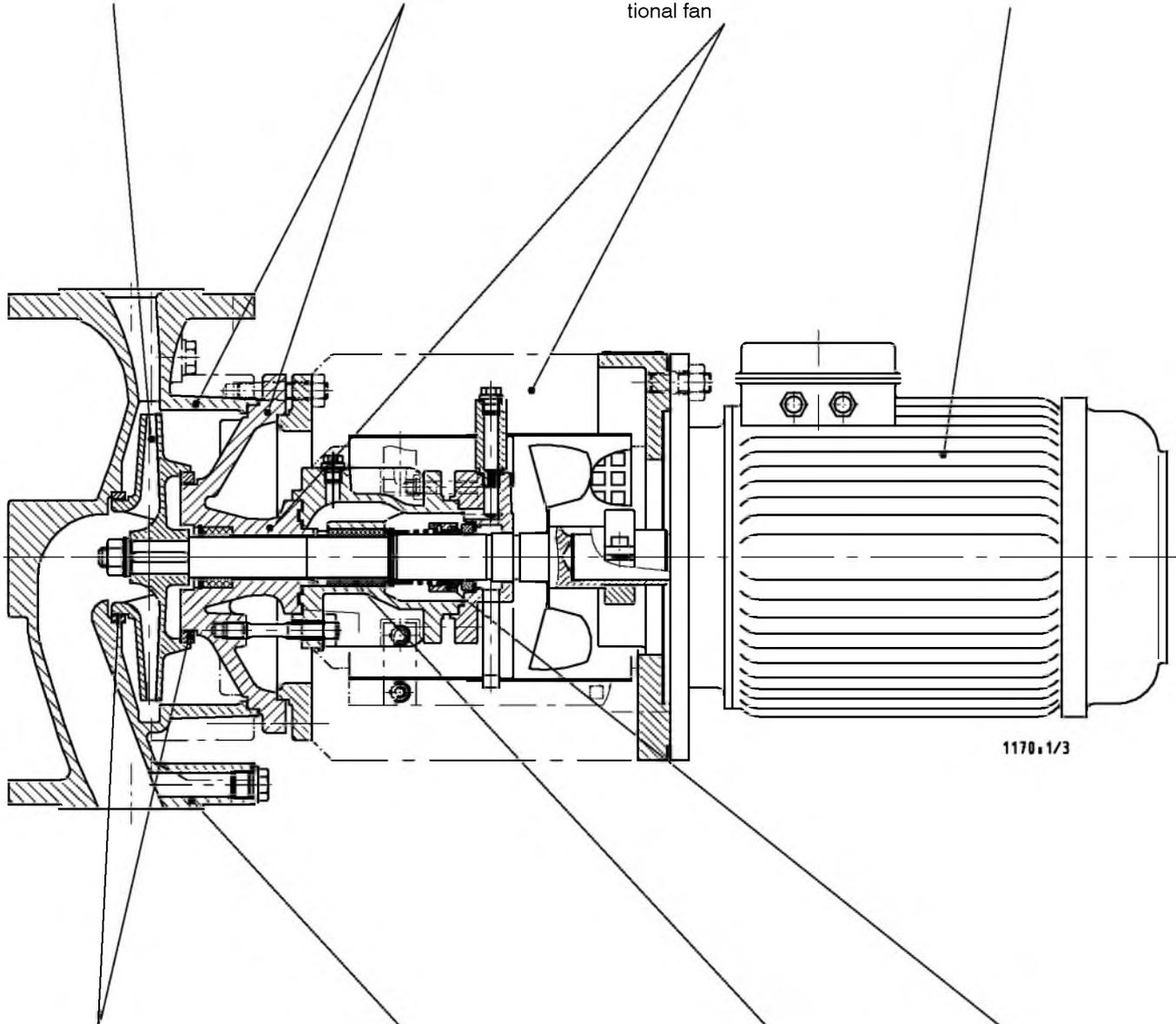
### Etaline SY

**Impeller** with optimized hydraulics, excellent efficiencies

**Pressure boundary** designed for 16 bar, made of nodular cast iron

**No cooling water required**, long cooling-down distances, large cooling fins, with additional fan

**Service-friendly**, robust KSB IEC three-phase motor



**Casing wear rings** service-friendly, no wear on the casing/impeller

**Inline design** simplifies installation and piping layout, insensitive to external nozzle forces and moments

Product-lubricated anti-seize **carbon bearing**, high operating reliability

Reliable **standardized mechanical seal**

Subject to technical modification without prior notice.

1.3.2006

1170.1/6-10

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