



SP Sewage Pumps

IND PUMPS
DRAKOS·POLEMIS

Applications

Handling of waste water and untreated sewage, in sewage treatment, industry, power plants and refinery. Unscreened sewage. Excavations and quarries. Industrial wastes. Sludge and viscous liquids. Food processing and breweries. Liquid with large solids and stringy materials.

Operating data

			Impeller types			
			DC - K	V	SC	
Capacity	Q	up to	6000	500	250	m ³ /h
			1700	140	70	l/sec
Head	H	up to	100	60	20	m
Operating pressure	P	up to	10	10	10	bar
Media temperature	t	up to	70	70	70	°C

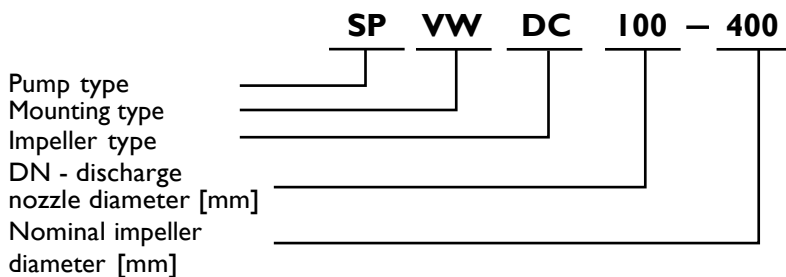
Shaft seal

Shaft sealing with choices between gland packing, mechanical seal or double mechanical seal.

Standard materials

Pump casing:	Cast iron (JL 1040)
Stuffing Box:	Cast iron (JL 1040)
Impeller:	Cast iron (JL 1040)
Shaft:	CK 60
Casing wear ring:	Cast iron (JL 1040)
Gland Packing / Mechanical seal / Double mechanical seal	

Designation



Mounting types: H (standard, belt-type), VD, VD-MSL, VW (see below)

Impeller types: DC, K, SC, V (see below)

Discharge nozzle & impeller nominal diameters: See below for wide range

Design

Horizontally or vertically mounted, volute casing pump. Dry or wet installation. Single-vane (SC), Multi-vane (DC & K), or Vortex (V) impellers.

Design features

- Simple mounting. No foundation required.
- No stuffing box for VW installation type.
- Automatic operation with float switches.
- Robust construction.
- Volute casing.
- Easy cleaning through suction and volute cleaning holes.
- Standardized for max parts interchangeability.
- Small horizontal space requirement and motor protection against flooding of the dry pit.

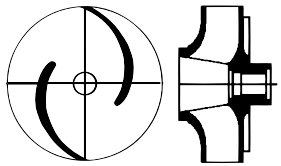
Bearings

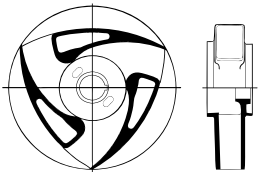
Self-media, clean water, grease or oil lubrication for the rolling bearings, radial and/or thrust bearings depending on the design.

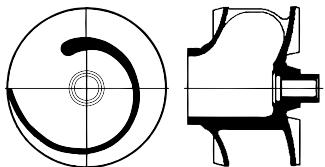
Impeller types

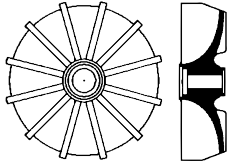
SP VW **DC** 200 – 400

DC, K, SC, V

	DC
	Closed multi-vane impeller (with 2 channels)
Maximum diameter of solid particle (D_{max}) up to 170 mm. For liquids containing sludge and solids not containing fibres. • waste water • storm water • treated sewage • screened sewage • activated sludge • effluent from waste disposal sites	

	K
	Closed multi-vane impeller (with 3 channels)
Maximum diameter of solid particle (D_{max}) up to 20 mm. For liquids containing sludge and small solids, not containing fibres. • storm water • treated sewage • screened sewage • industrial effluent	

	SC
	Single vane impeller
Maximum diameter of solid particle (D_{max}) up to 123 mm. For liquids containing sludge, small solids or fibres. • mixed water • raw sewage • raw sludge • activated sludge	

**V****VORTEX Free-flow impeller**

There is almost no contact of the pumped liquid with the impeller. For liquids containing fibres and solid substances. This type of impeller can manage gaseous liquids too.

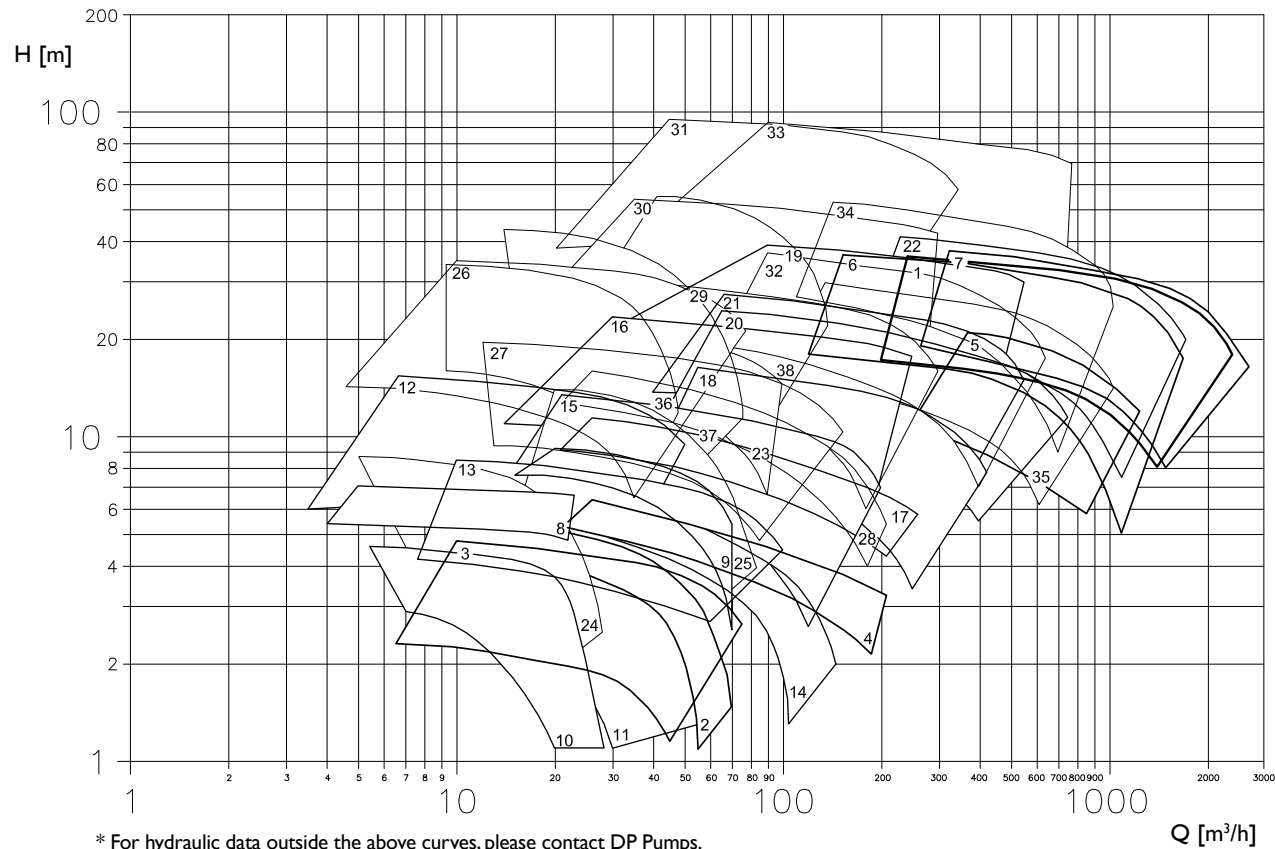
- mixed water
- raw sewage
- activated sludge
- raw sludge
- digested sludge
- circulated sludge

Selection of pump type and materials, depending on pumped medium

The following table is a general guide for the selection of the preferable pump for each system, based on DP PUMPS long experience. Contact DP PUMPS, if a pumped media is not listed. The first mentioned type of impeller is the most recommended. The details given cannot be taken as an absolute recommendation. More detailed advice is available from DP PUMPS.

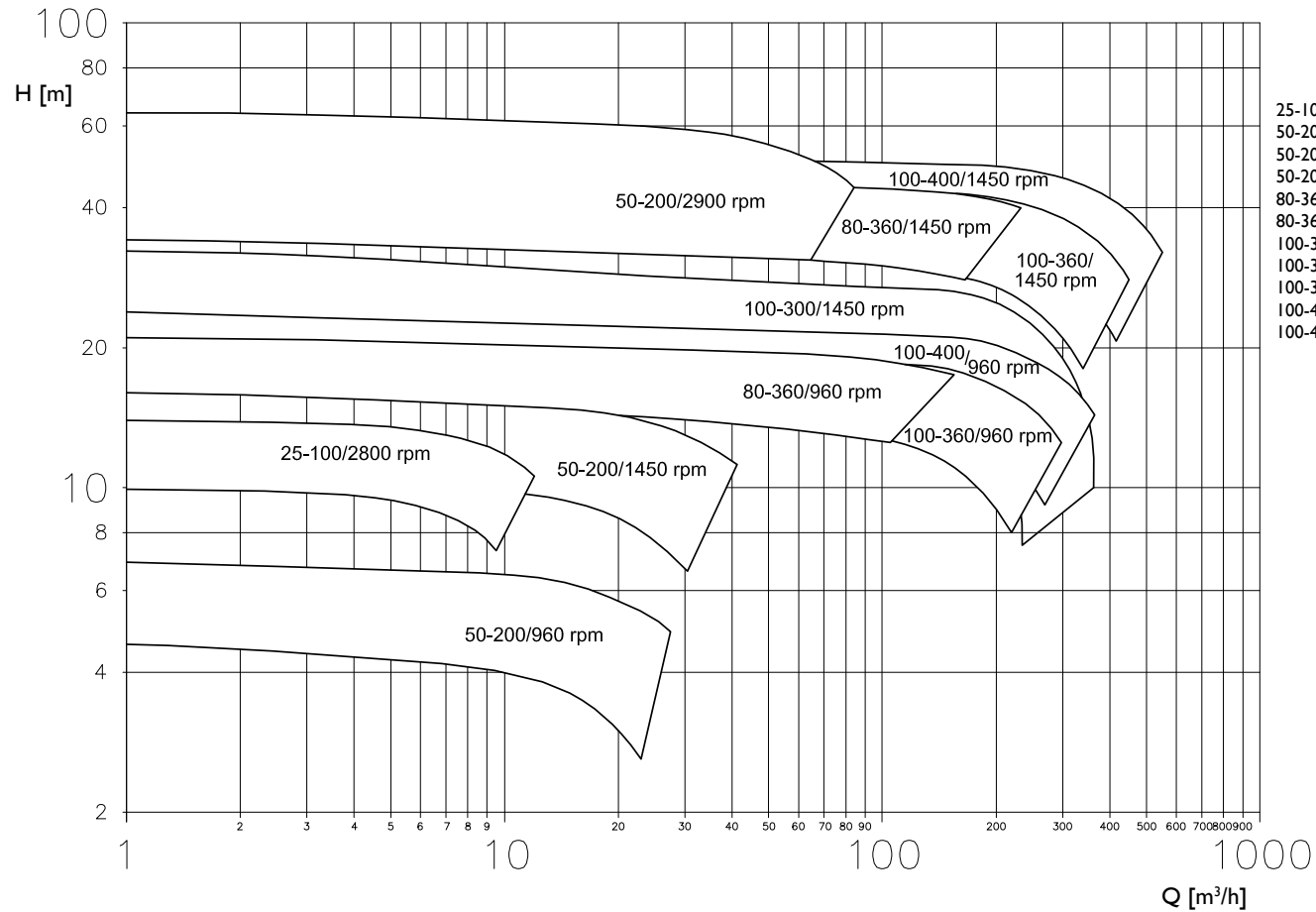
Pumped media	Recommended material	Recommended type of impeller	Remarks
Water Storm water Waste water	Cast Iron	DC, SC, K	Screening for big solid substances, if any.
		DC, SC, K	
		DC, SC, K	
Industrial effluent, containing: - paint suspension - fibres - swarf - abrasive materials - slightly acidic		DC, V SC, V V, DC DC, K K, V	Special materials, special mechanical seal, depending concentration.
Sludges - Raw sludge - Digested sludge - Activated sludge		V, SC, DC V, SC DC	Slurry to contain no more than 4 % dry solids
Sewage - municipal, not treated - containing air or gas		V, DC, SC V	Choose the free impeller passage, depending the media. For highly gaseous media, contact DP PUMPS.
Industrial effluent, slightly acidic	Cast Iron	DC, V, SC	Screening for big solid substances, if any.
Effluents, non-corrosive - Ammonia water - Ammonium, Potassium, Calcium or Sodium hydroxide - Sodium carbonate - Containing aliphatic, aromatic or chlorinated hydrocarbons		DC DC	Special materials, special mechanical seal, depending concentration.
Abrasive media - Washing water with solids - Milk of lime with quartz particles - Sinter water - Effluents containing dust or cinders	Contact DP Pumps	DC DC V, DC DC	Special materials depending the conditions (duration of operation, rotational speed and flow rate).
Water and sand mixtures		DC, V	Up to 5 g/l solids, Special materials, special mechanical seals.
Waste water and land fill seepage water	Duplex steel	DC, V	Special materials, choose the free impeller passage for DC.

Selection diagrams for SC, DC and K type impeller



1. 350-800 / 590 RPM (DC)
2. KK3" / 730 RPM (DC)
3. 80-240 / 730 RPM (DC)
4. 125-315 / 730 RPM (SC)
5. 250-500 / 730 RPM (DC)
6. 250-650 / 730 RPM (DC)
7. 300-630 / 730 RPM (DC)
8. KK2" / 960 RPM (DC)
9. KK3" / 960 RPM (DC)
10. 50-207 / 960 RPM (DC)
11. 65-207 / 960 RPM (K)
12. 65-300 / 960 RPM (DC)
13. 80-240 / 960 RPM (DC)
14. 100-250 / 960 RPM (SC)
15. 100-300 / 960 RPM (DC)
16. 100-380 / 960 RPM (DC)
17. 125-315 / 960 RPM (SC)
18. 150-315 / 960 RPM (DC)
19. 150-500 / 960 RPM (DC)
20. 200-400 / 960 RPM (DC)
21. 200-430 / 960 RPM (DC)
22. 250-500 / 960 RPM (DC)
23. KK3" / 1450 RPM (DC)
24. 40-167 / 1450 RPM (DC)
25. 65-207 / 1450 RPM (K)
26. 65-300 / 1450 RPM (DC)
27. 80-240 / 1450 RPM (DC)
28. 100-250 / 1450 RPM (SC)
29. 100-300 / 1450 RPM (DC)
30. 100-380 / 1450 RPM (DC)
31. 100-500 / 1450 RPM (DC)
32. 150-315 / 1450 RPM (DC)
33. 150-500 / 1450 RPM (DC)
34. 200-400 / 1450 RPM (DC)
35. 200-460 / 1450 RPM (DC)
36. 40-167 / 2900 RPM (DC)
37. 50-207 / 2900 RPM (DC)
38. 65-207 / 2900 RPM (K)

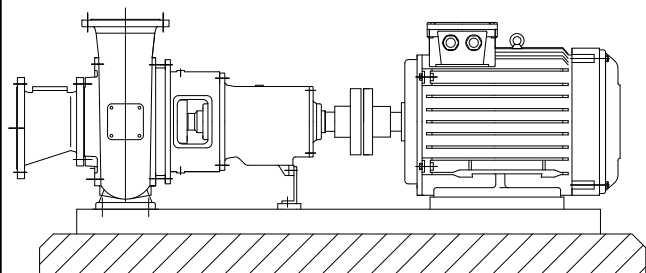
Selection diagrams for V type impeller



- 25-100 / 2800 RPM
- 50-200 / 960 RPM
- 50-200 / 1450 RPM
- 50-200 / 2900 RPM
- 80-360 / 960 RPM
- 80-360 / 1450 RPM
- 100-300 / 1450 RPM
- 100-360 / 1450 rpm
- 100-300 / 1450 RPM
- 100-360 / 960 RPM
- 100-360 / 1450 RPM
- 100-400 / 960 RPM
- 100-400 / 1450 RPM

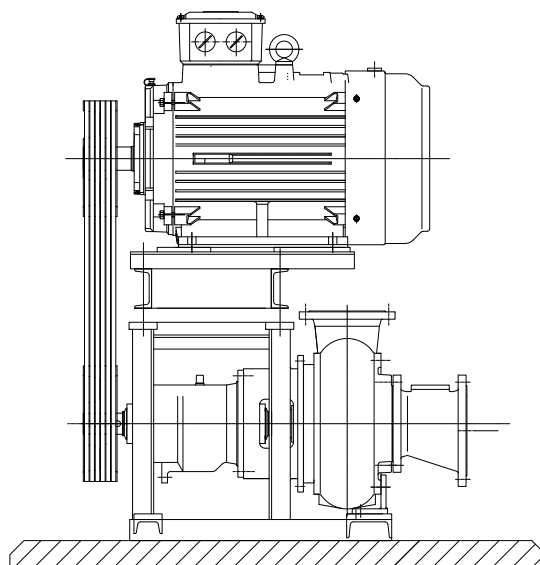
Installation types

SPH



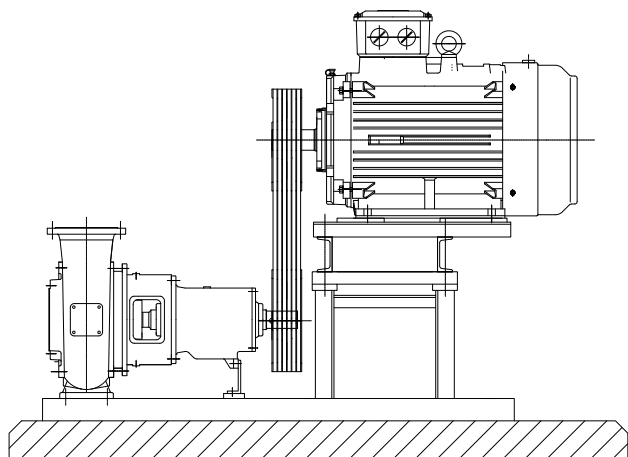
Standard type horizontal installation. For more details and accessories, contact DP Pumps.

SPH stacked belt type



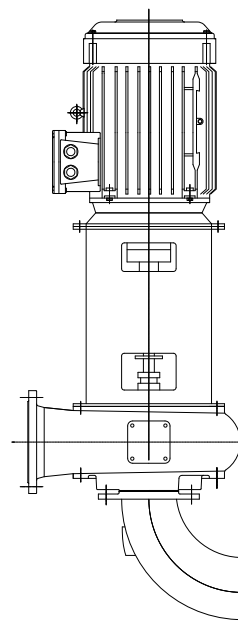
Stacked, belt type, horizontal installation. For more details and accessories, contact DP Pumps.

SPH belt type

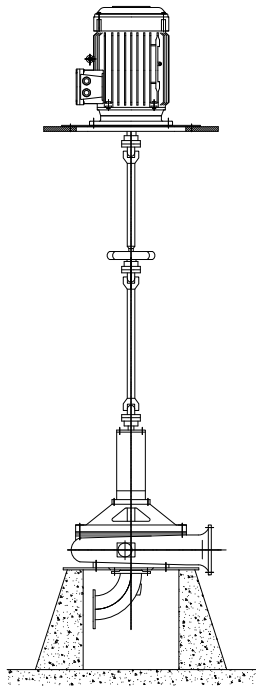


Belt type, horizontal installation. For more details and accessories, contact DP Pumps.

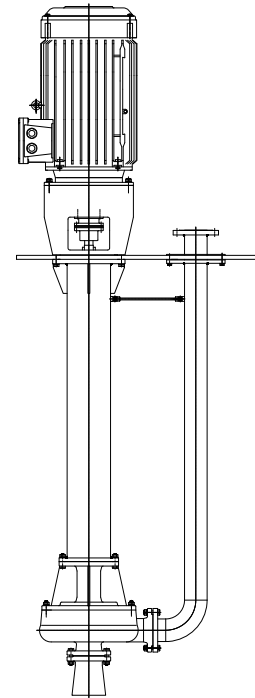
SPVD



Direct vertical installation. For more details and accessories, contact DP Pumps.

SPVD - MSL


Vertical installation on separate levels or floors, with drive shaft. For more details and accessories, contact DP Pumps.

SPVW


Vertical installation on wet pit or tank, with pump column and suction pipe. For more details and accessories, contact DP Pumps.

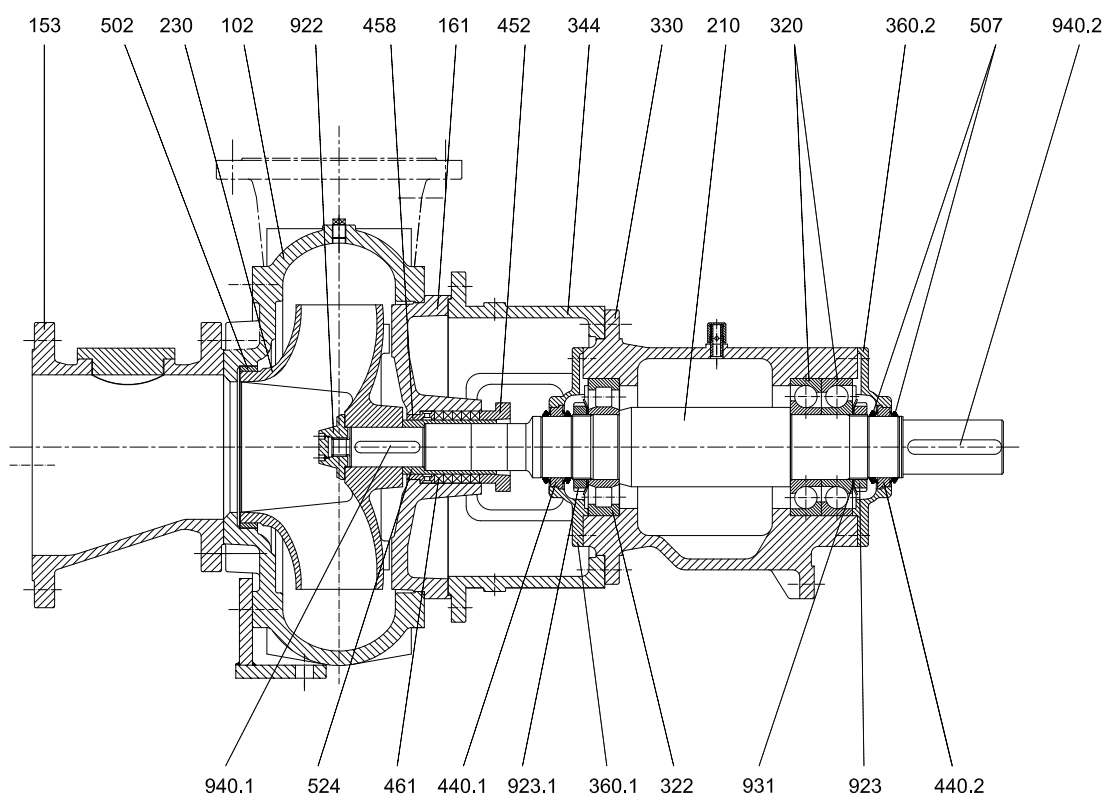
Impeller / Mounting type combinations^(*)

Pump size	Mounting type				Impeller type
	H	VD	VW	VD-MSL	
KK2"			x		DC
KK3"			x		DC
25-100			x		V
40-167	x		x		DC
50-200	x		x		V
50-207	x		x		DC
65-207	x		x		K
65-300			x		DC
80-240	x		x		DC
80-360	x		x		V
100-250	x				SC
100-300	x	x	x		DC
100-360	x		x		V
100-380	x		x		DC
100-400			x		V
100-500	x				DC
125-315	x	x			SC
150-315	x	x		x	DC
150-500	x		x		DC
200-400	x	x		x	DC
200-430		x	x		DC
200-460	x				DC
250-500	x	x			DC
250-650	x	x	x		DC
300-630		x			DC
350-800	x				DC

* For combinations not shown on the above table, please contact DP Pumps.

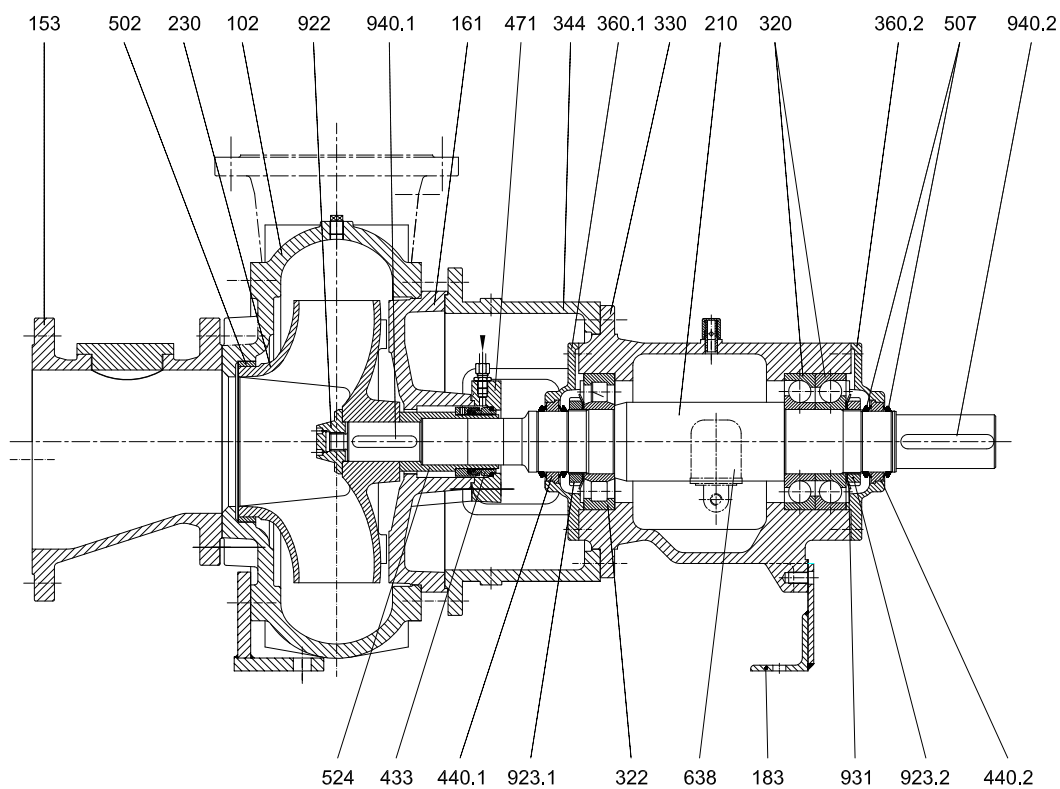
General assembly drawing with list of components

SP H DC with gland packing



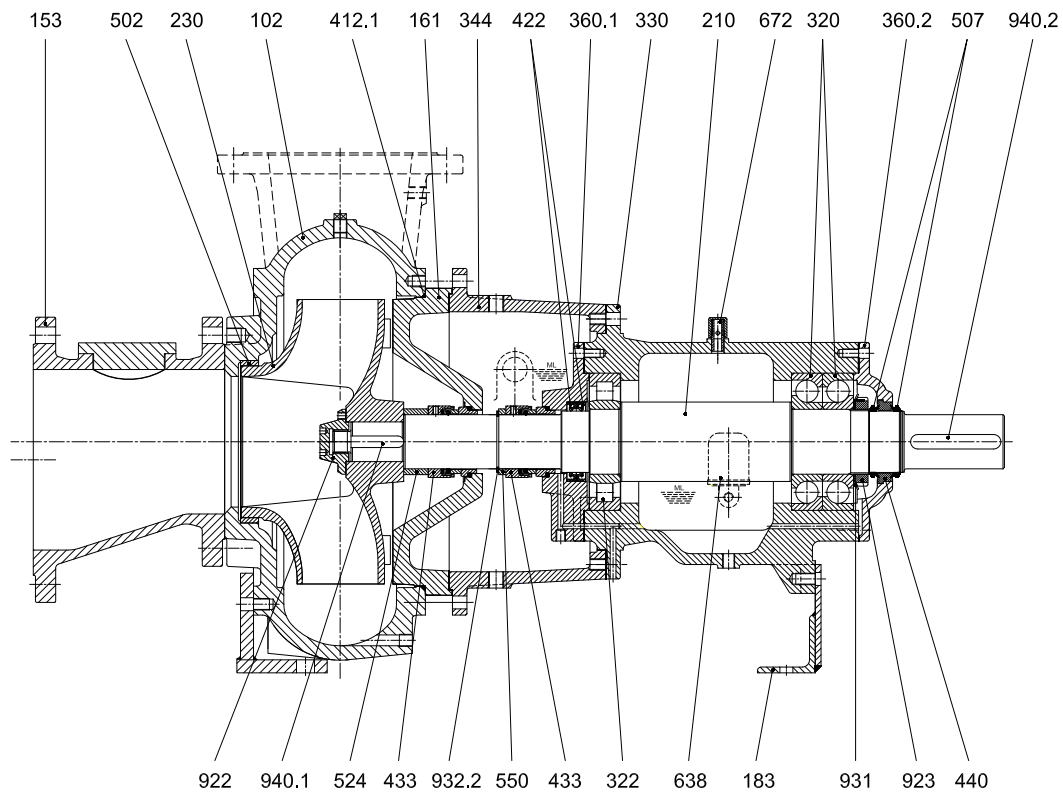
Reference type: SP H DC 200-400

SP H DC with single mechanical seal



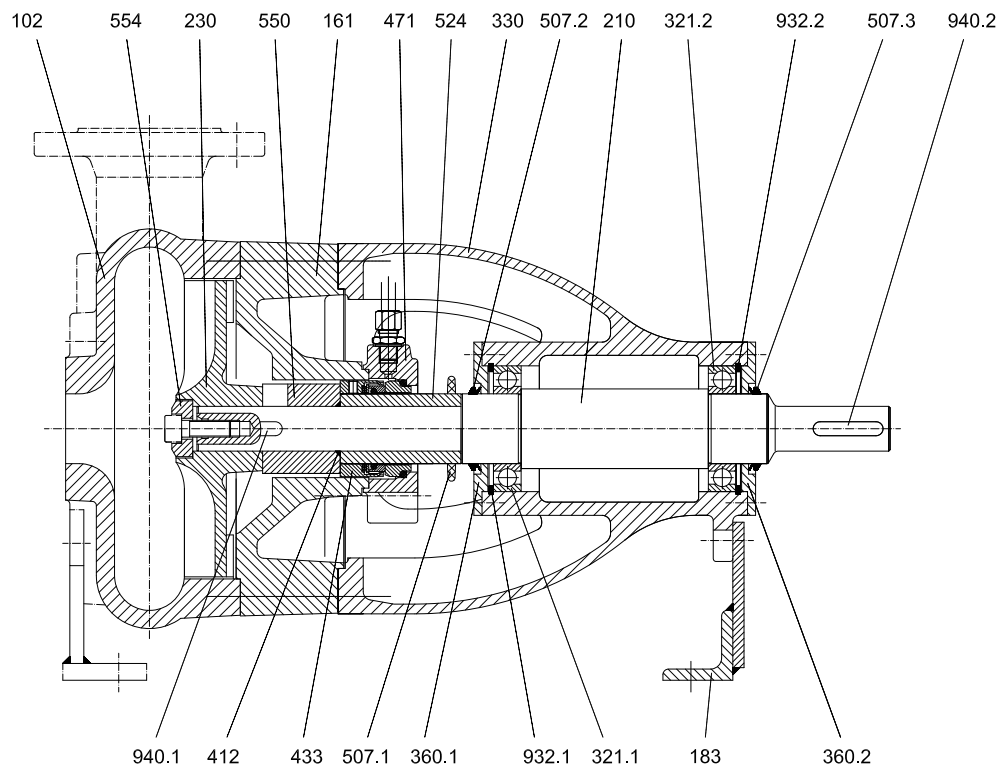
Reference type: SP H DC 200-400

SP H DC with double mechanical seal



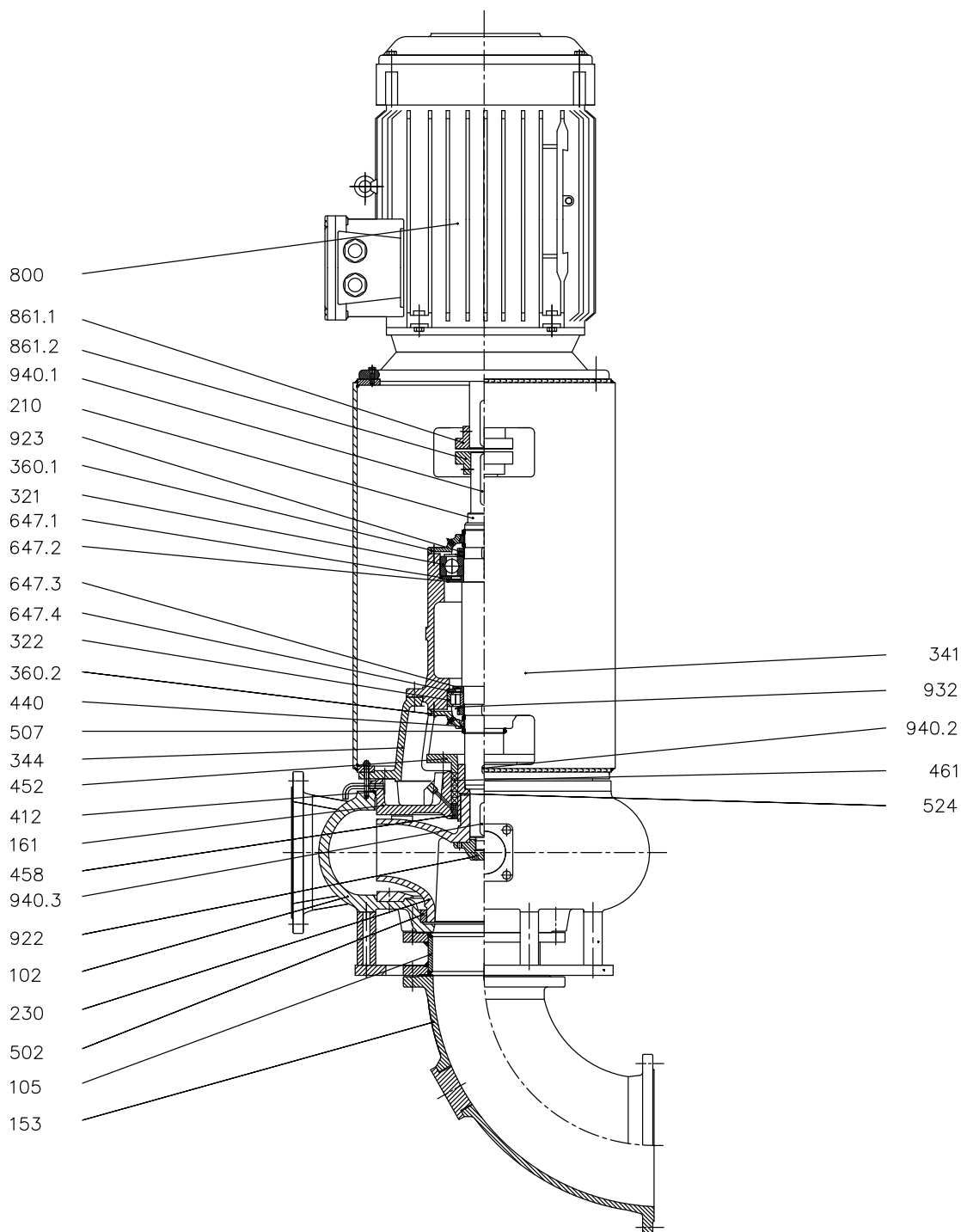
Reference type: SP H DC 200-400

SP HV with single mechanical seal



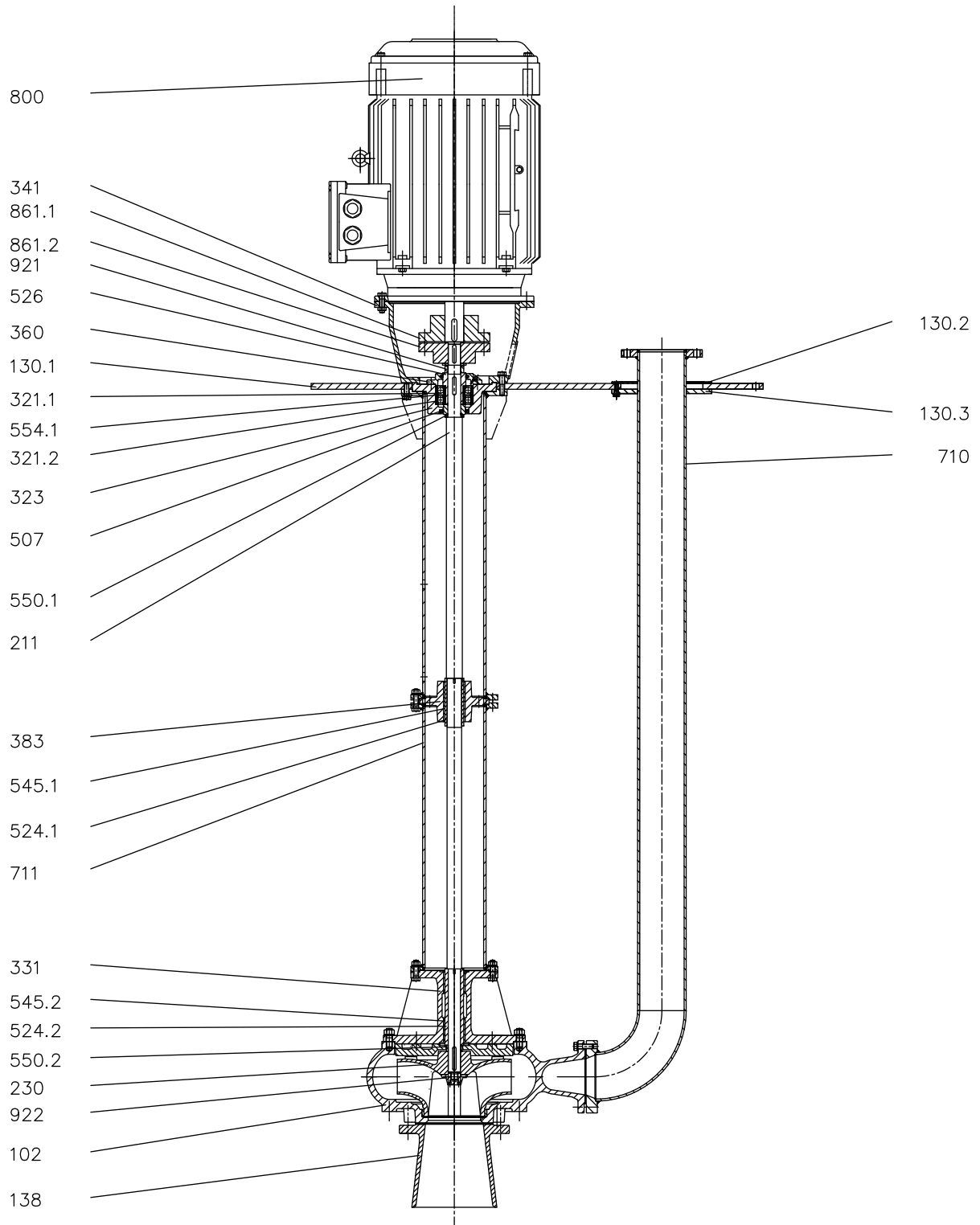
Reference type: SP HV 50-200

SPVD DC



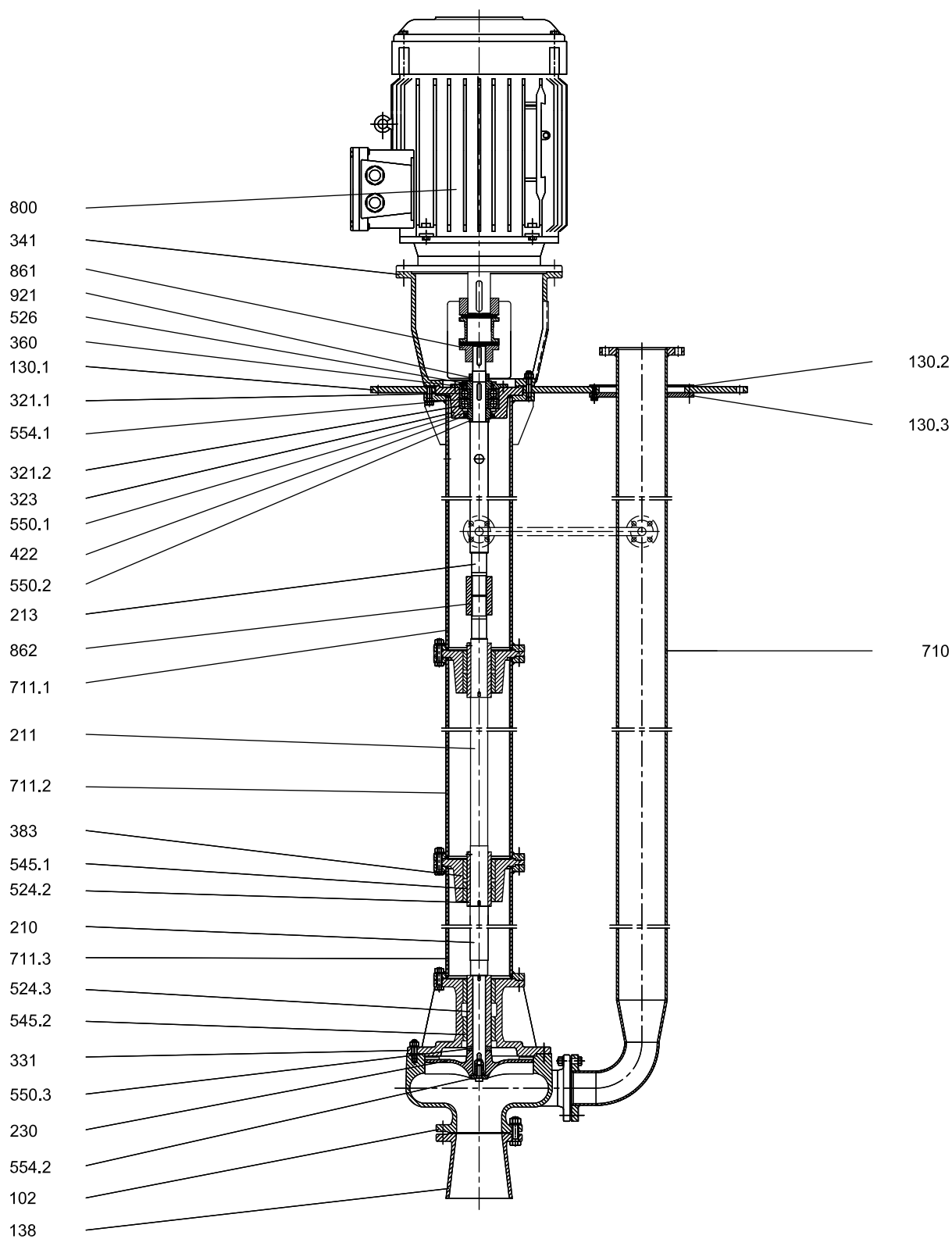
Reference type: SPVD DC 200-400

SP VW DC



Reference type: SPVW DC 100-380

SPVVV



Reference type: SPVVV 100-360

List of components with standard versions of materials

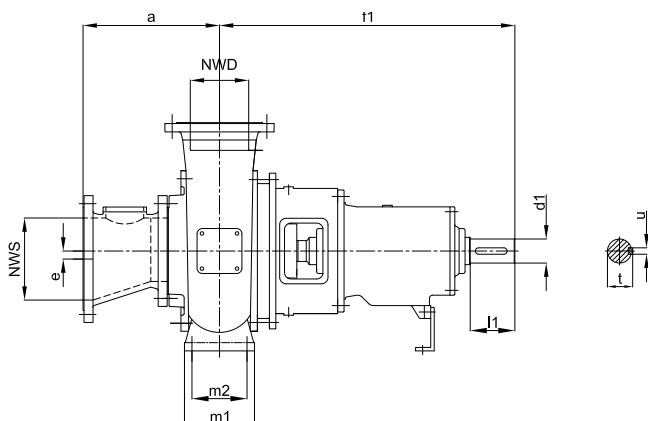
Part number to VDMA	Part name	Standard material of construction
102	Pump casing	Cast Iron GG - 20
105	Pump casing part	Steel St 37.2
130	Housing part	Steel St 37.2
138	Suction bell	Cast Iron GG - 20
153	Suction	Cast Iron GG - 20
161	Housing cover	Cast Iron GG - 20
183	Support foot	Steel St 37.2
210	Shaft	CK 60
211	Pump shaft	Stainless steel SS AISI 420
213	Headshaft	Stainless steel SS AISI 420
230	Impeller	Cast Iron GG - 20
320	Angular contact ball bearing	---
321	Grooved ball bearing	---
322	Cylindrical roller bearing	---
323	Thrust ball bearing	---
330	Bearing housing	Cast Iron GG - 20
331	Bearing housing	Cast Iron GG - 20
341	Motor stool	Cast Iron GG - 20
344	Pump casing part	Cast Iron GG - 20
360	Bearing cover	Cast Iron GG - 20
383	Bearing retainer	Cast Iron GG - 20
412	O-ring	Rubber
422	Felt ring	---
433	Mechanical seal	---
440	Shaft sealing part	CuSn12
452	Stuffing box gland	Cast Iron GG - 20
458	Locking ring	CuSn12
461	Stuffing box packing	Teflon
471	Seal cover	Cast Iron GG - 20
502	Bowl wear ring	Cast Iron GG - 20
507	Thrower ring	Rubber
524	Shaft sleeve	Stainless steel SS AISI 420
526	Ball bearing ring	Stainless steel SS AISI 420
545	Bush bearing	CuSn12
550	Distance ring	Stainless steel SS AISI 420
554	Washer	Stainless steel SS AISI 420
638	Oil level regulator	---
647	Grease regulator	---
672	Breather	---
710	Pipe	Steel St 37.2
711	Column Pipe	Steel St 37.2
800	Electric Motor	---
861	Motor coupling	Cast Iron GG - 20
862	Pump coupling	Cast Iron GG - 20
921	Adjusting Nut	CuSn12
922	Impeller nut	CK 60
923	Bearing nut	St
931	Locking plate	St
932	Circlip	FSt
940	Key	St

Material cross reference

DIN Designation	DIN Number	USA Designation
GG - 20	0.6020	A48 Class 30
X20Cr13	1.4021	AISI 420
Ck35	1.1181	AISI 1035
Ck45	1.1191	AISI 1045
St 35	1.0308	
St 60-2	1.0543	
St 70-2	1.0633	
St 37-2	1.0112	
USt 37-2	1.0036	A 570 Gr 33.36
Rg 5 (CuSn5 ZnPb)	2.1096.01	SAE 40
Rg 7 (CuSn7 ZnPb)	2.1090.01	SAE 660

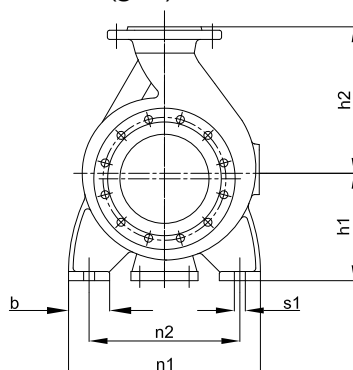
Installation dimensions

NA type bearing bracket

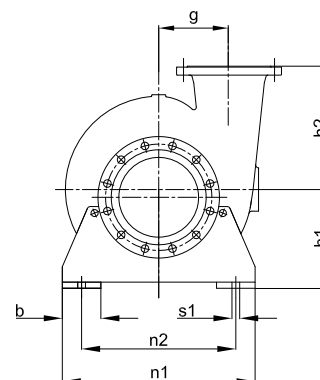


Discharge output types

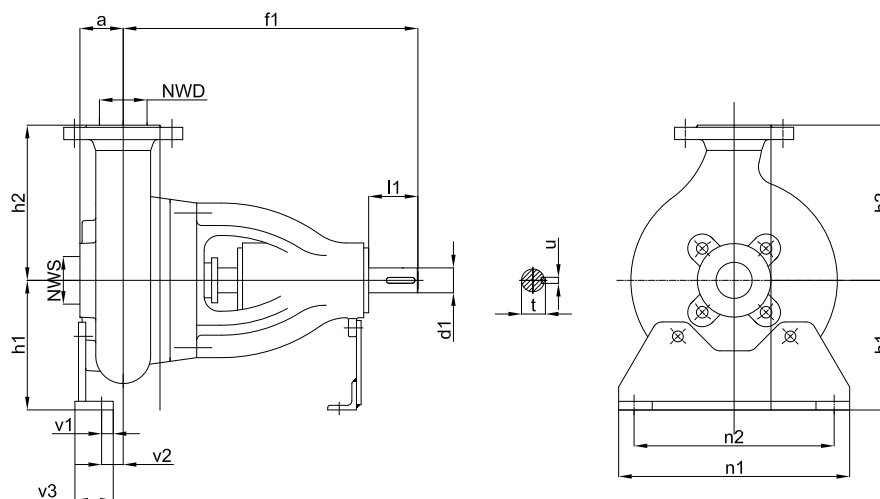
type I - centered (g=0)



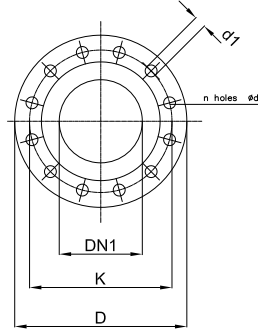
type II - offset



LDP type bearing bracket



Pump size	Bearing bracket size/ type	Dimensions to mm																					
		Pump								Mounting										End shaft			
		NW _s	e	NW _D	a	f ₁	h ₁	h ₂	g	b	m ₁	m ₂	v ₁	v ₂	v ₃	n ₁	n ₂	s ₁	d ₁	l ₁	t	u	
40-167	16/LDP	65	-	40	80	360	132	160	-	50	100	70	-	-	-	240	190	15	24	50	27	8	
50-200	32/LDP	50	-	50	60	530	180	215	-	60	-	-	20	22	60	320	250		32	87	35	10	
50-207	22/LDP	65	-		100	360	160	200	-	50	100	70	-	-	-	265	212		24	50	27	8	
65-207		80	-	65		180	225	-	65	125	95	-	-	-	320	250							
80-240	32/LDP	100	10	80	255	502	200	300	-	80	160	120	-	-	-	360	200	18	32	87	35	10	
80-360	55/NA		-		120	738	270		180	100	200	150	-	-	-	480	380	25	55	110	59	16	
100-250	32/LDP	125	12.5	100	343	532	225	250	-	70	-	-	30	93	70	320	230	18	32	87	35	10	
100-300	42/LDP					568	250	285	175	80	160	120	-	-	-	400	315		18	42	116	45	12
100-300	55/NA					733														-	-	-	
100-360					150	-	147	794	280	310	180	77.5	210	150	-	-	-	505	450	23	55	110	59
100-380		125	-	320	706	300	223	100							-	-	-	500	400	25			
100-500	42/LDP	150	12.5		333	695	355	380	277	150			-	-	-	625	475		134				
125-315				125	375	604	265	320	-		-	-		105		400		18	42	116	45	12	
150-315	55/NA	200	25	150	381	596	280	405	-	80	-	-	30	50	80	420	320	23	55	110	59	16	
150-315			32.5		380	743																	
150-500	75/NA	250	32.5		360	890	400	400	290	150	300	240	-	-	-	700	550	25	75	140	80	20	
150-500S					435	903	350	470	-	125	250	200	-	-	-							138	
200-400	55/NA	25	200		743	320	400	228	150	-	-				625	500			55	110	59	16	
200-400	75/NA			425	920				125	-	-	30	48	125									
200-400S							-	-															
200-460					150	445	945	400	450	256	150	300	240	-	-	-	700	550					
250-500	75/NA	300	35	250	470	935	420	470	306	160	-	-	30	50	150	800	640	75	140	80	20		
250-650					450	915	500	600	370														
350-800	90/NA	350	40	350	497	1100	600	750	460	250	500	420	-	-	-	1150	900	30	90	170	95.5	22	



Flange connections to DIN 2532 ND 10

DN ₁ / DN ₂	40	50	65	80	100	125	150	200	250	300	350
D	150	165	185	200	220	250	285	340	395	445	505
K	110	125	145	160	180	210	240	295	350	400	460
d ₁ x n	18 x 4	18 x 4	18 x 4	18 x 4	18 x 8	18 x 8	23 x 8	23 x 8	23 x 12	23 x 12	23 x 16
d ₂ x n											

Available materials and specifications (*)

	Type	Description	DIN Designation	W.K. Number	EN Designation	USA Designation
Castings	Cast Iron	Grey Cast Iron	GG-20	0.6020	BS-EN 1561:2012 EN-GJL-200 (EN-JL1030)	A48 Class 30
		Grey Cast Iron	GG-25	0.6025	BS-EN 1561:2012 EN-GJL-250 (EN-JL1040)	A48 Class 40
		Ductile Iron	GGG40.3	0.7043	BS-EN 1563:2011 EN-GJS-400-18 (EN-JS1025)	A536 60-40-18
		Ni-Resist	GGG-NiCrNb 20 2	0.7661	EN-ISO2892 EN-GJS-AXNiCrNb20-2	A571 D-2
	Bronze	Tin-Lead Bronze	G-CuSn5Zn5Pb5	2.1096	EN-1982:2008-G-CuSn5Zn5Pb5 (CB491K)	B62 C83600
		Zinc-Free Bronze	G-CuSn10	2.1050	EN-1982:2008-G-CuSn10 (CB480K)	
		Ni-Al Bronze	G-CuAl10Fe5Ni5	-	EN-1982:2008-G-CuAl10 Fe5Ni5	A148 C95500
	Cast Steel	Non alloy steel	GS-45	1.0446	EN-10293-GE240	A 27 (65-35)
		Non alloy steel	GS-52	1.0552	EN-10293-GE260	A 27 (70-40)
		Structural Steel	GP240GH	1.0619	EN 10213-2-GP240GH	A216 (WCB)
	Stainless Steel	Austenitic (316)	GX5CrNiMo19-11-2	1.4408	EN-10213-GX5CrNiMo19-11-2	A351 (CF8M)
		Austenitic (316L)	GX2CrNiMo19-11-2	1.4409	EN-10213-GX2CrNiMo19-11-2	A351 (CF3M)
		Full Austenitic (904L)	GX2NiCrMoCu25-20-5	1.4584	EN-10213-GX2NiCrMoCu25-20-5	~AISI-904L
		Duplex (1B)	GX2CrNiMoCuN25-6-3-3	1.4517	EN-10213-GX2CrNiMoCuN25-6-3-3	A890 (CD4MCuN)
		Duplex (3A)	-	-	-	A890 (CD6MN)
		Super Duplex (5A)	GX2CrNiMoN26-7-4	1.4469	EN-10213-GX2CrNiMoN26-7-4	A890 (CE3MN)
Wrought Steel	Stainless Steel	Martensitic (420)	X20Cr13	1.4021	EN-10088:2005-3 X20Cr13	A 276 UNS S42000
		Martensitic (431)	X17CrNi16-2	1.4057	EN-10088:2005-3 X17CrNi16-2	A 276 UNS S43100
		Austenitic (304)	X10CrNi18-8	1.4310	EN-10088:2005-3 X10CrNi18-8	A 276 UNS S30400
		Austenitic (316)	X5CrNiMo17-12-2	1.4401	EN-10088:2005-3 X5CrNiMo17-12-2	A 276 UNS S31600
		Austenitic (316L)	X2CrNiMo17-12-2	1.4404	EN-10088:2005-3 X2CrNiMo17-12-2	A 276 UNS S31603
		Duplex (2205)	X2CrNiMoN22-5-3	1.4462	EN-10088:2005-3X2CrNiMoN22-5-3	A 276 UNS S32205
		Super Duplex (2507)	X2CrNiMoN25-7-4	1.4410	EN-10088:2005-3 X2CrNiMoN25-7-4	A 276 UNS S32750

* Other material available on request. Please contact DP Pumps.

Materials - Information

Cast Iron / JL 1040 (GG-25) / Grey cast iron

The grey cast iron GG25 to DIN 1691 has very wide application to pumps production. It is usually used as the standard material for the parts of a pump for water, neutral media and/or media unlikely to cause excessive wear.

Ni Al Bronze / CuAl10Ni5Fe4

Aluminium nickel bronze alloy is a special high strength copper aluminium alloy, which is an excellent choice for applications involving heavy loads, abrasive wear resistant, friction, abrasive wear and corrosion. The addition of nickel increases the alloys strength without diminishing its excellent ductility, toughness and corrosion resistance. It is ideally used for sea water applications. Moreover, it has great behaviour to cavitation.

Duplex Steel / GX2CrNiMoCuN25-6-3-3 / Ferritic-austenitic corrosion resistant casting steel

Ferritic-austenitic corrosion resistant casting steel has a great resistance to pitting. This property makes it a good choice to the production of sewage pump for use with media containing substantial amounts of chlorides and acids, for use with sea water, etc. Its great mechanical and chemical characteristics, obtain a wide application in the industry, the power plants and the refinery.

Guarantee, inspections, tests and quality assurance

Pumps are subjected to ISO standard's functional test. Their performance is guaranteed to ISO 9906/A. Other inspections, tests or acceptance inspection conforming to ISO / DIN or another standard are offered as extras. The total quality is assured to EN ISO 9001.

Recommended spare parts stock for 2 years operation as per VDMA 24 296

Part	Description	Pumps quantity								Type
		1	2	3	4	5	6	8	10 and more	
		Spare parts quantity								
163	Discharge cover	1	2	2	2	3	3	4	50 %	RP
210-213	Shaft	1	1	1	2	2	2	3	30 %	RP
230	Impeller	1	1	1	2	2	2	3	30 %	SP
320-323	Rolling bearings (set)	1	1	1	2	2	3	4	50 %	WP
330	Bearing bracket complete	--	--	--	--	--	--	1	2 pcs	RP
433	Mechanical seal, cpl. (set)	1	2	3	4	4	4	6	90 %	WP
	Installation kit for packed gland (neck bush, shaft protection sleeve, lantern ring)	1	1	1	2	2	2	3	40 %	SP
461	Packing (4 rings)	4	4	6	8	8	9	12	100 %	WP
502	Casing wear ring	1	2	2	2	3	3	4	50 %	WP
135	Wear plate	1	2	2	2	3	3	4	50 %	WP
	Gaskets (set)	2	4	6	8	8	9	12	150 %	WP

RP = Replacement part

SP = Spare part

WP = Wear part

It is strongly recommended that the stock of wear parts and spare is always updated; even the units are still under warranty.



Engineered Pumping Technology.



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