ALLMARINE

SERIES MI-D IN-LINE MODEL

PN 10 vertical centrifugal pumps for ships - pedestal mounting

Use
For pumping freshwater, seawater, condensate, oils.

Main fields of application
In shipbuilding: as a general-service and fire-fighting pump, bilge, ballast, cooling-water, and seawater pump.
Other applications on request.

Design
Single-stage, double-suction volute centrifugal pump with a short, compact design. Capacity and hydraulics are specifically adapted to the requirements in shipbuilding.
The volute casing and bearing unit are connected via a bracket to the drive motor. The use of a coupling with spacer piece enables removal of the bearing unit and sealing insert with common wearing parts without removal of the volute casing, pipes, and drive motor.
Since pump and drive motor are precisely centered in the bracket, no alignment work of any kind is required.

Performance data

Flow rate	Q	up to	3900	m^3/h
Delivery heady	H	up to	60	m
Fluid temperature	t	up to	40	°C (seawater)
		up to	100	°C (freshwater)
Pump inlet pressure	p_s	up to	5	bar
Pump outlet pressure	p_d	up to	10	bar

The specified performance limits are maximum limits that may be lower in individual cases depending on technical variations. Inlet pressure plus maximum delivery head may not exceed the permissible outlet pressure.
The provided performance data are meant only as a product-performance overview. Refer to the respective proposal and order confirmation for exact operation limits.

Branch positions/flanges
Suction and discharge branches oppose each other inline.

Nominal widths: Suction branch 350 to 500 mm
Discharge branch 300 to 450 mm
according to DIN EN 1092-2 (standard) or drilled according to JIS B 2239 (option).

Safety guarding
The requirements of DIN EN 809 "Safety Guarding" are fulfilled.

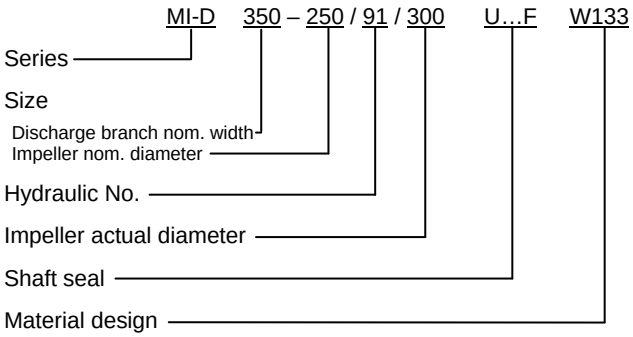
Bearing/lubrication
Lifetime grease-lubricated groove ball bearing according to DIN 625, in bearing bracket.

Drive
Surface-cooled three-phase squirrel-cage motors, design type IM B5 (V1), protection class IP55 according to IEC standard, insulator class F, output and main dimensions according to DIN EN 50 347.

Shaft seal
Main dimensions according to DIN EN 12 756

Mechanical seal	Uncooled, unbalanced			
Flushing	Seal flush from pump discharge			
Model code	U8.28F	U8.29F	U8.30F	U8.31F
Rotating ring	Silicon carbide	Hard carbon antimony-impregnat	Silicon carbide	Hard carbon antimony-impregnat
Counter ring	Silicon carbide			
O-ring	HNBR / Viton			
Bellow	HNBR / Viton			
Material key DIN EN 12 756	Q1Q1VGG	A2Q1VGG	Q1Q1VGG	A2Q1VGG
Sizes			300-250	
			300-315	
	450-400		350-250	
	450-500		350-315	

Model code

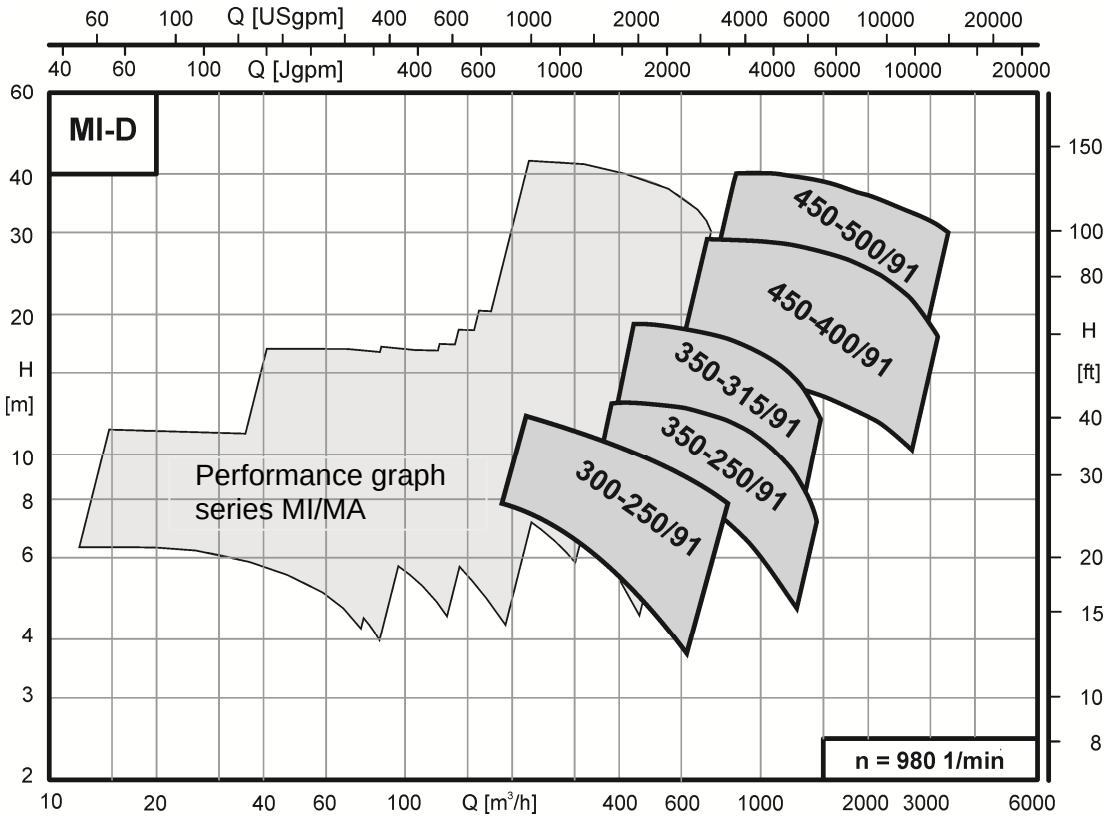


This model code is entered on the nameplate.

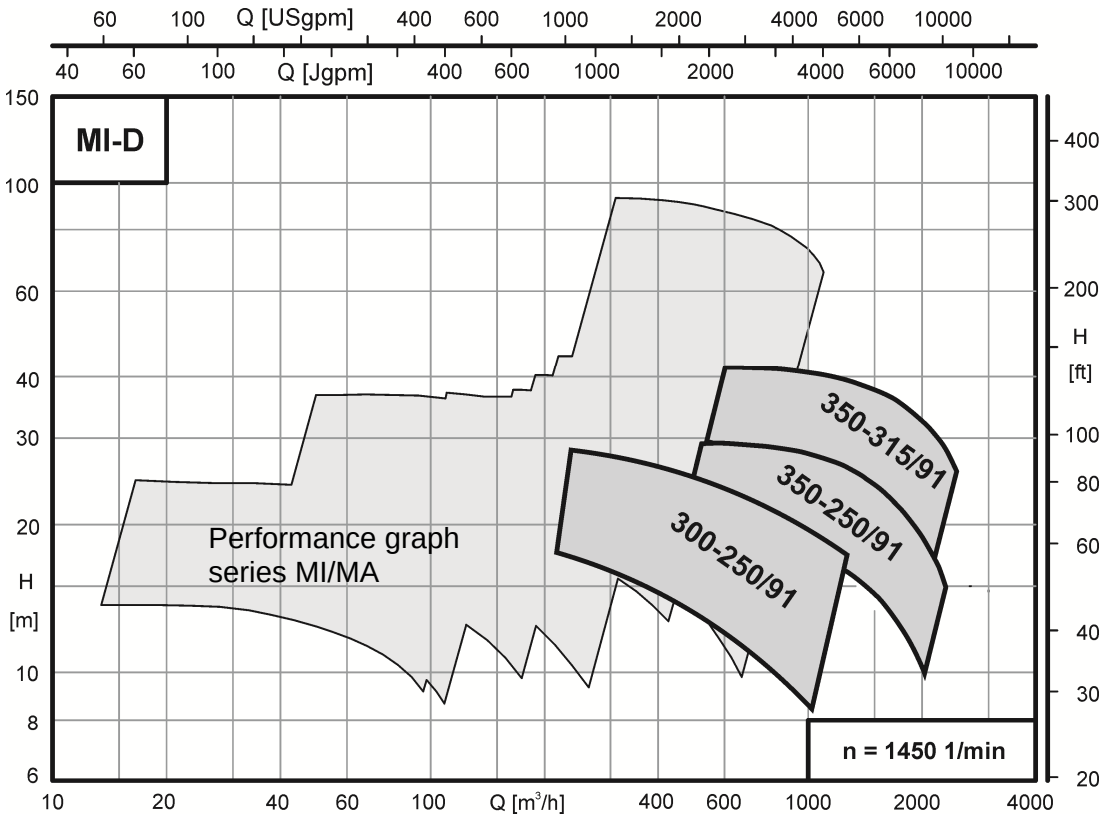
Part name	Part-No.	Material design W 133	Material design W146
Volute casing	102.01	CC333G	CC333G
Casing part	130.01	CC333G	CC333G
Shaft	210.01	1.4462	1.4462
Impeller	230.01	CC333G	1.4517
Bearing bracket	330.01	EN-JS 1030	EN-JS 1030
Bearing bracket	330.02	EN-JS 1030	EN-JS 1030
Motor bracket	341.01	Welded steel	Welded steel
Sealing cover	471.01	1.4571	1.4571
Wear ring	502.01	Bronce	Bronce
Screws and nuts contacting pumped liquid		Stainless steel	Stainless steel

Performance graphs 50 Hz

n = 980 1/min



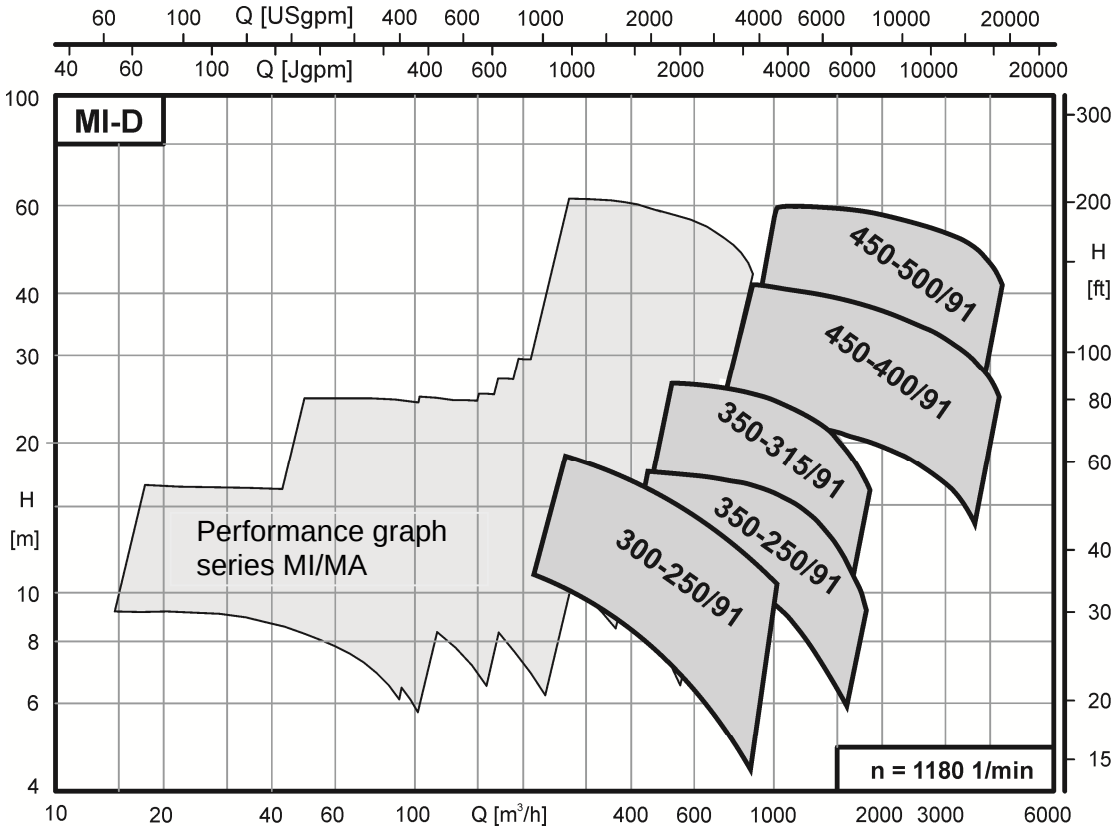
n = 1450 1/min



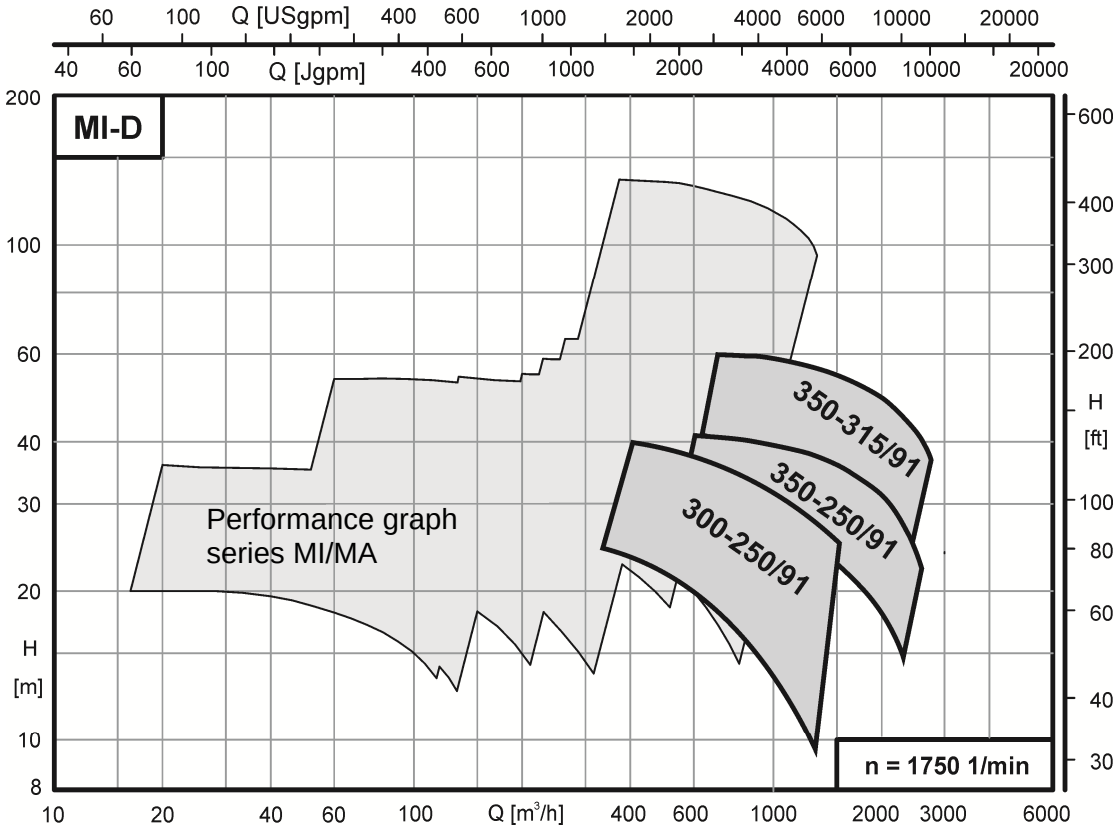
Refer to the individual curves for precise performance data.

Performance graphs 60 Hz

n = 1180 1/min



n = 1750 1/min

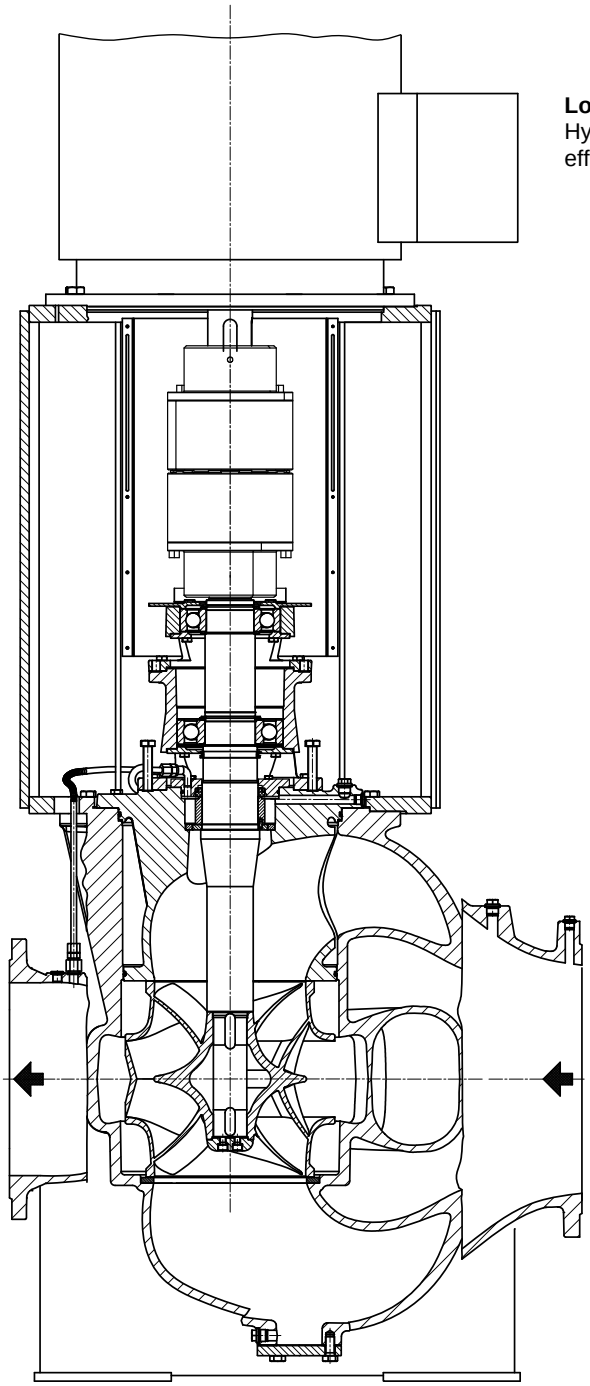


Refer to the individual curves for precise performance data.

Benefits

Low weight and small, compact dimensions
with operation up to 1750 1/min.

Durable
Corrosion- and cavitation-resistant materials extend service life.



Low energy consumption
Hydraulics designed for efficiency.

Saves time
Bracket is easily accessible from 4 side.
Pump-maintenance-free between overhaul intervals.

Easy to maintain
Wearing parts may be exchanged separately.

Minimized loads
Double-suction design distributes hydraulic forces symmetrically, reducing loads on bearing.

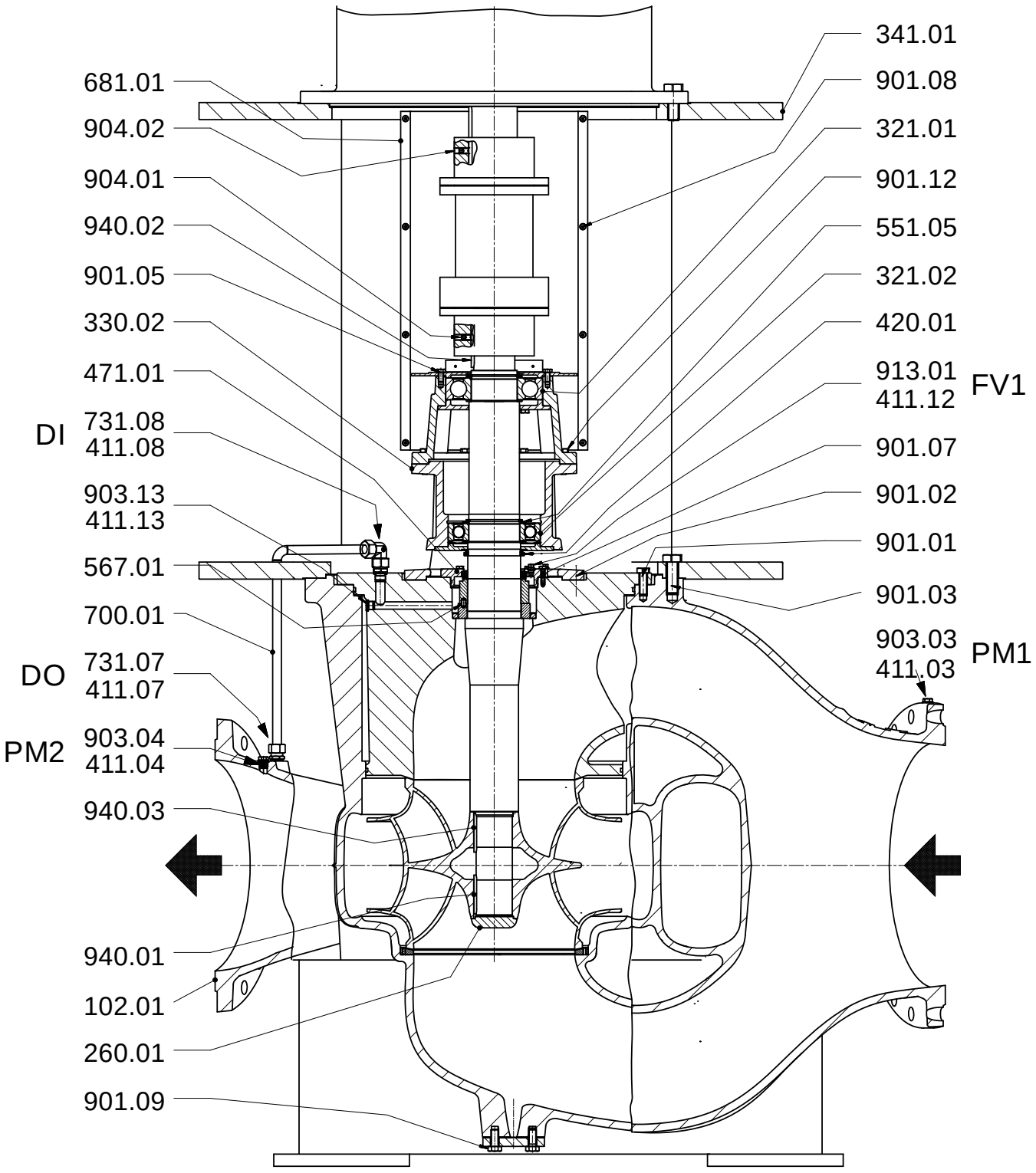
Insensitive and stable
One-piece volute casing without split cannot leak or twist.

Versatile usage options
Double-suction design provides good suction performance in applica-tions with large capacties.

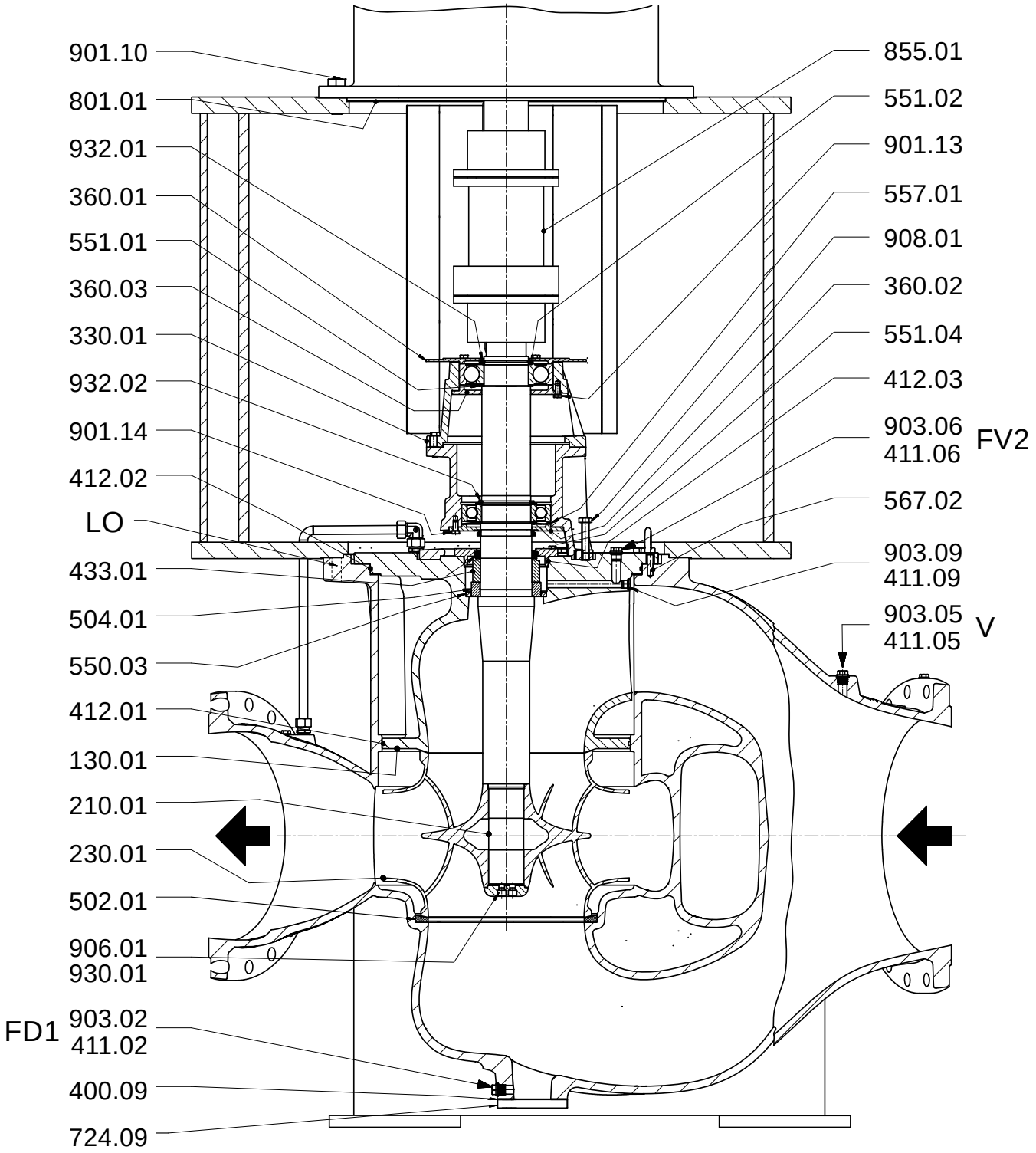
High MTBF, long service life
Horizontal gap between impeller and volute casing minimizes risk of touching faults.

Few wearing parts, no bottom bearing
Highly efficient hydraulics with double volute eliminate the need for double bearing.

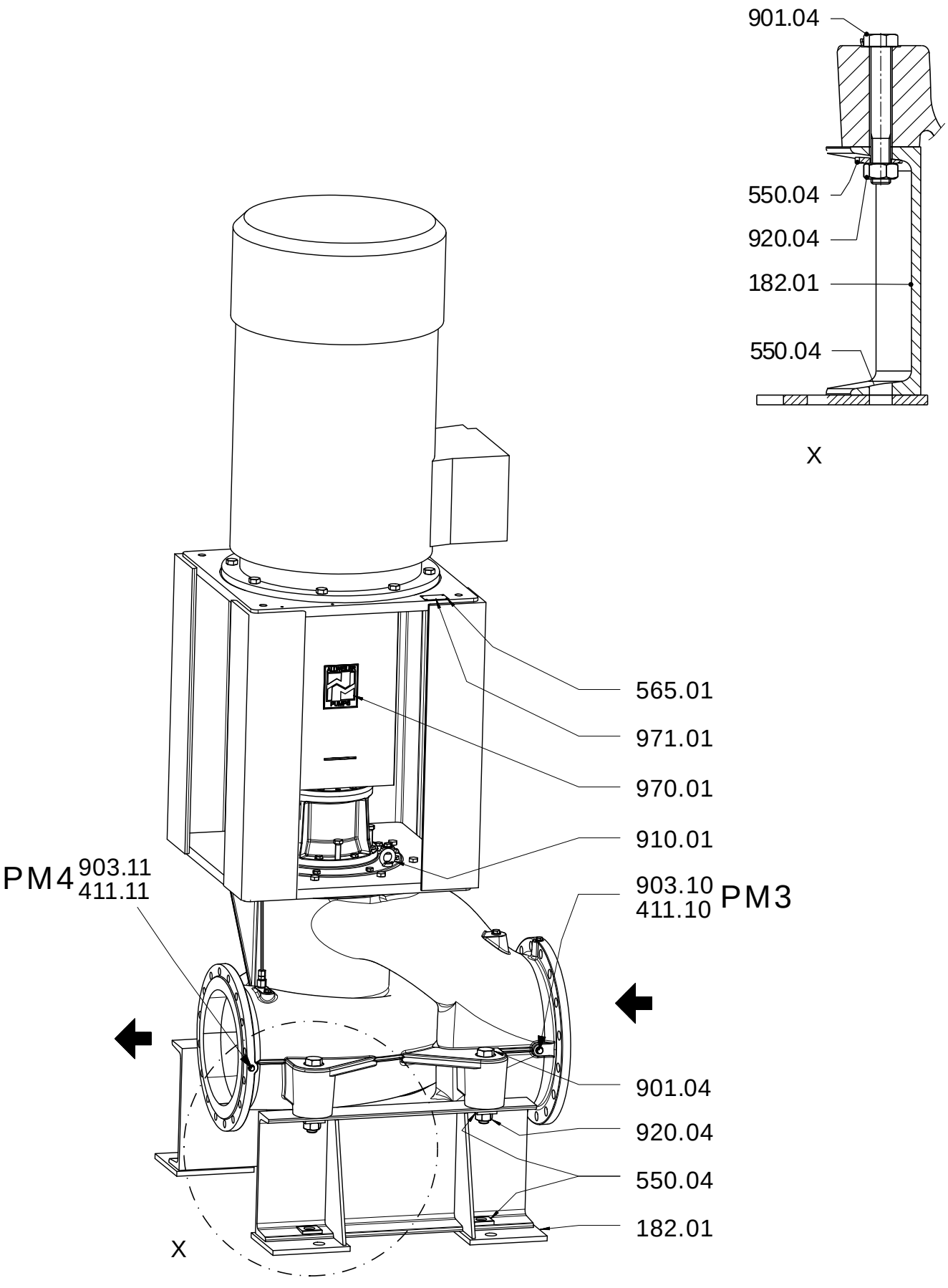
Sectional drawing



Sectional drawing



Sectional drawing



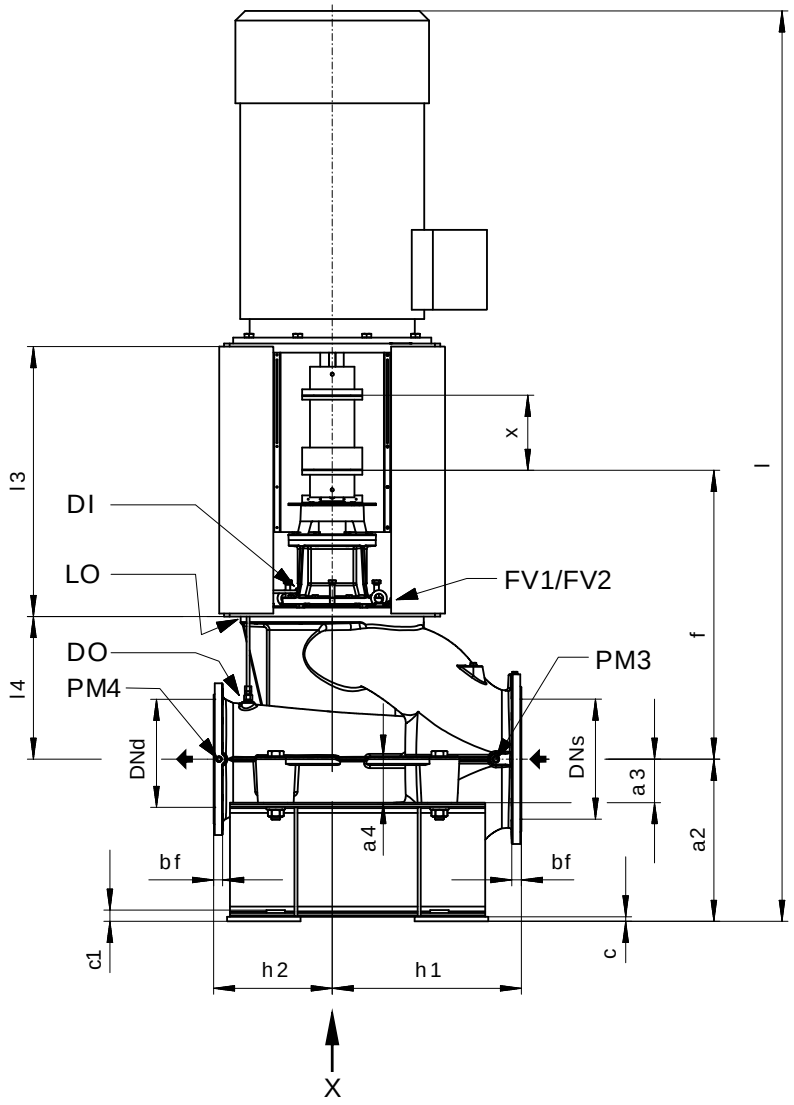
List of components

Denomination	Part-No.	Denomination	Part-No.	Denomination	Part-No.
Volute casing	102.01	Sealing cover	471.01	Hexagon screw	901.13
Casing part	130.01	Wear ring	502.01	Hexagon screw	901.14
Foot	182.01	Spacer ring	504.01	Screw plug	903.02
Shaft	210.01	Disc	550.03	Screw plug	903.03
Impeller	230.01	Disc	550.04	Screw plug	903.04
Impeller hub cap	260.01	Spacer disc	551.01	Screw plug	903.05
Radial ball bearing	321.01	Spacer disc	551.02	Screw plug	903.06
Radial ball bearing	321.02	Spacer disc	551.04	Screw plug	903.09
Bearing bracket	330.01	Spacer disc	551.05	Screw plug	903.10
Bearing bracket	330.02	Compensating disc	557.01	Screw plug	903.11
Motor bracket	341.01	Rivet	565.01	Screw plug	903.13
Bearing cover	360.01	Spring dowel	567.01	Setscrew	904.01
Bearing cover	360.02	Spring dowel	567.02	Setscrew	904.02
Bearing cover	360.03	Coupling guard	681.01	Impeller screw	906.01
Gasket	400.09	Pipe	700.01	Jacking screw	908.01
Seal ring	411.02	Blank flange	724.09	Eye bolt	910.01
Seal ring	411.03	Pipe connection	730.01	Vent screw	913.01
Seal ring	411.04	Pipe connection	730.07	Hexagon nut	920.04
Seal ring	411.05	Pipe fitting	731.07	Safety device	930.01
Seal ring	411.06	Pipe fitting	731.08	Circlip	932.01
Seal ring	411.07	Flanged motor	801.01	Circlip	932.02
Seal ring	411.08	Coupling with spacer piece	855.01	Key	940.01
Seal ring	411.09	Hexagon screw	901.01	Key	940.02
Seal ring	411.10	Hexagon screw	901.02	Key	940.03
Seal ring	411.11	Hexagon screw	901.03	Plate	970.01
Sael ring	411.12	Hexagon screw	901.04	Nameplate	971.01
Sael ring	411.13	Hexagon screw	901.05		
O-ring	412.01	Hexagon screw	901.07		
O-ring	412.02	Hexagon screw	901.08		
O-ring	412.03	Hexagon screw	901.09		
V-ring	420.01	Hexagon screw	901.10		
Mechanical seal	433.01	Hexagon screw	901.12		

Connections

	Connections										
Sizes	Flushing		Draining	Venting		Leakage	Pressure gauging				Venting
	Inlet	Outlet			Automa-tic aspi-rator						Casing with automatic aspirator
	DI	**DO**	**FD1**	**FV1**	**FV2**	**LO**	**PM1**	**PM2**	**PM3**	**PM4**	**V**
300-250/91	G1/4	G3/8	G1/2	G1/2	G1/2	G3/8	G3/8	G3/8	G3/8	G1/4	G1/2
350-250/91											
350-315/91											
450-400/91	G1/2	G1/2									
450-500/91											

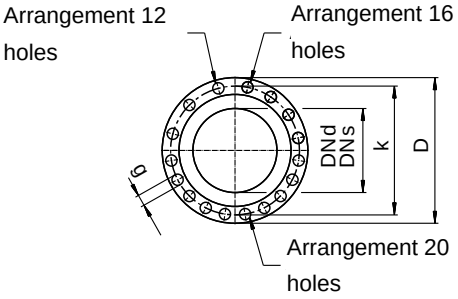
Unit dimensions

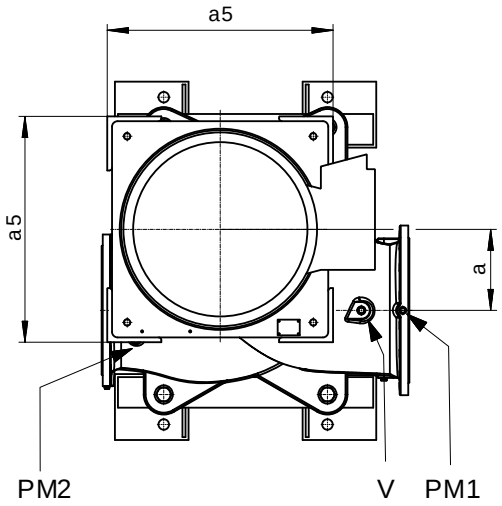


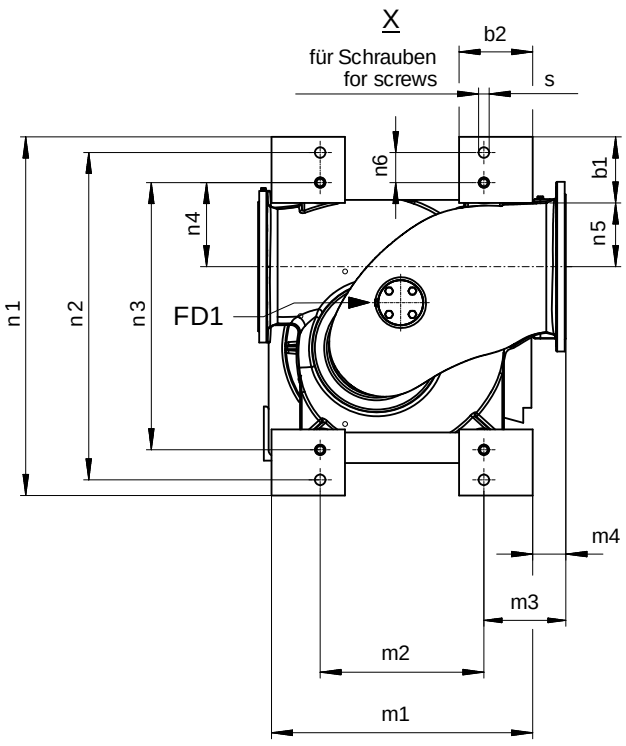
Flanges acc. to DIN EN 1092-2 PN10					
DNs/DNd	D	bf	k	g	No. of holes
300	445	28	400	23	12
350	505	30	460	23	16
400	565	32	515	28	16
450	615	32	565	28	20
500	670	34	620	28	20

Flanges acc. to JIS B 2239 PN10 ①			
DNs/DNd	k	g	No. of holes
300	400	25	16
350	445	25	16
400	510	27	16
450	565	27	20
500	620	27	20

① Remaining Flanges acc. to DIN EN 1092-2 PN10







Unit dimensions

Shaft diameter at shaft seal	Sizes		Unit dimensions												
	Pump	Motor	Pump dimensions												Dismant-ling dimension x
			DNs	DNd	a	a2	a3	a4	a5	f	h1	h2	l3	l4	
85	300-250/91	225S/M	350	300	220	442	127	145	752	887	530	350	821	386	180
		250M													
		280S/M													
		315S/M											851		
90	350-250/91	225S/M	400	350	250	480	145	153		935	590	300	873	452	250
		250M													
		280S/M													
		315S/M											903		
100	350-315/91	280S/M			270	540				962	630	395	873	479	
		315S/M											903		
105	450-400/91	315S/M	500	450	325	605	180	188	1100	1117	800	390	953	584	
110	450-500/91	315S/M			305	620	195	209		1150	860	520	978	592	

Unit dimensions

Shaft diameter at shaft seal	Sizes		Unit dimensions															
	Pump	Motor	Foot dimensions															Total length app. value l
			b1	b2	c	c1	m1	m2	m3	m4	n1	n2	n3	n4	n5	n6	s	
85	300-250/91	225S/M	190	190	15	ca. 40	670	450	235	125	969	885	725	250	182	80	M30	2449
		250M																2514
		280S/M																2639
		315S/M																2852
90	350-250/91	225S/M	200	200			700	485	263	156	1059	975	795	275	207	90		2605
		250M																2670
		280S/M																2795
		315S/M																3008
100	350-315/91	280S/M	220	245			870	545	273	111	1194	1090	890	280	212	100		2882
		315S/M																3095
105	450-400/91	315S/M			25	ca. 50		550	440	280	1320	1220	1020	335	265	100		3315
110	450-500/91	315S/M		265			1020	660	460		1230	1130	930	305	235			3363

Exact data depend on the motor make.
Consultation required for any motor sizes outside the standard (>315 S/M) because the motor connection dimensions are not standardized.
When using special motors, it must be noted that depending upon the enclosure, different performances are allocated to the individual sizes. The main dimensions are changed accordingly.

Sense of Rotation: clockwise as seen from the driving side.
Dimensions in mm. Subject to alteration.

Subject to technical alterations.

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