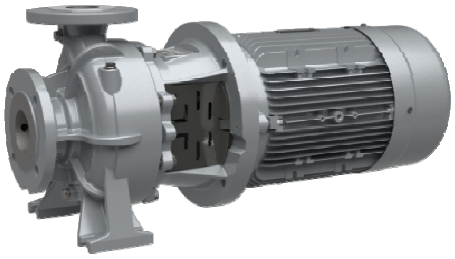
Volute Casing Centrifugal Pumps SERIES NB

Block Design



Application
For pumping pure water, industrial water, sea water, condensates, oils, brines, lyes and hot water.

The fluids to be pumped must not contain any abrassive particles nor chemically attack the pump materials.

Main fields of application
In cooling and heating systems, in circulating, water supply, water treatment, sea-water desalination, dedusting and spray painting plants as well as in air-conditioning, cooling, swimming pool and industrial engineering.

Design and series construction
Volute casing centrifugal pump, single entry, single or two-stage, of block design. Pump size according to DIN EN 733.

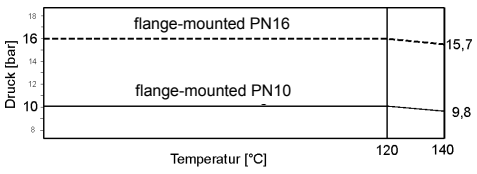
Stub and motor shaft are rigidly coupled together. Shaft bearing in the motor by means of grease-lubricated groove ball bearings. The mating dimensions of the two-stage sizes 2/25–200, 2/32–200, 2/40–250, 2/50–250, except for dimensions f and l depending upon the driving motors, correspond to the single-stage designs. Volute casing with feet cast on.

Horizontal or vertical installation, motor arrangement downwards is not admissible.

Performance data

Delivery	Q	up to	480 m^3/h
Delivery head	H	up to	145 m
Temperature of the fluid pumped	t	up to	140 °C
Inlet pressure	p_s	①	
Pump discharge pressure	p_d	to 10/16 bar ②	
Drive power	P	0,25 up to 37 kW	
Nominal diameter, delivery flange	DN_d	25 up to 150	

① inlet pressure plus maximum delivery head must not exceed the admissible pump outlet pressure
② Depends on flange version (PN stage, see diagram) and the shaft seal.



Branch position/flanges
Suction branch: axial
Delivery branch: radially upwards
Flanges: up to DN 150 acc. to DIN EN 1092-2 PN 16
as from DN 200 acc. to DIN EN 1092-2 PN 10 / PN16

Contact protection
The requirements of DIN EN 809 “Contact protection”, are met.

Shaft seal
By maintenance-free mechanical seal in unbalanced design (main dimensions acc. to DIN EN 12 756, design K, shape U).

Combination of components
The table on page 3 shows the combination possibilities of components of all NB sizes. The unit assembly system allows reduced stock keeping of spare parts.

Explosion protection
The pump fulfils the requirements according to EC Explosion Protection Directive 2014/34/EU for equipment and equipment group II, category 2 G. Categorisation into temperature classes according to DIN EN 13463-1 depends on the temperature of the pumped medium. The max. permissible temperature of the pumped medium for the respective temperature classes are shown in the specific order data sheet.

Note: In case of the operation of a category 2 pump, the unacceptable heating of the pump surfaces caused by a possible operational fault must be prevented by a control mechanism. In case of an operation with constant parameters (pressure, temperature, speed = const.), a pump performance controller can be supplied with the pump to detect any operational faults.

Drive
Surface-cooled three-phase squirrel-cage induction motors, with locating-type bearing, IM V1 type of construction, enclosure IP55 according to IEC Standard, class F insulation, performances and main dimensions according to DIN EN 50 347, up to 2.2 kW 230/400V, from 3.0 kW 400/690 V.

Attention: Motors provided by customers must also have a locating-type bearing!

Dismantling the driving unit
When dismantling the driving unit, the volute casing may remain in the piping.

Connections
The following auxiliary connections are always provided:

FD1	Draining
FV1	Venting
optional	
FF1 ③	Filling
PM1	Pressure measurement pump
PM2	Pressure measurement pump

③ connection FF1 at sizes 20-160; 25-200 und 2/25-200 not existent; failure at connection PM2 possible

Shaft seals with temperature and pressure limits

Available for all material designs

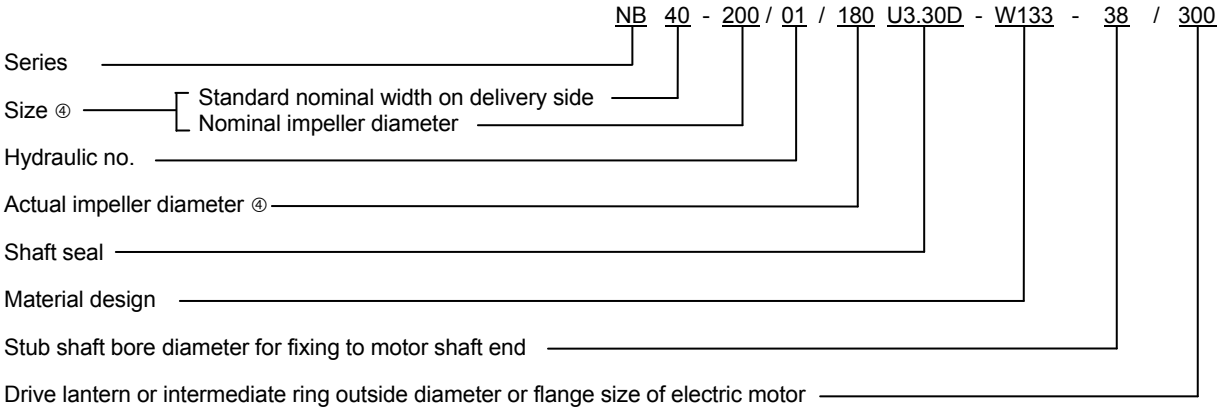
Mechanical seal, uncooled	Unbalanced			
Flushing	Internal self flushing			
Abbreviation	U3.30D	U3.40D	U3.50D	U3.51D
Rotating ring	hard carbon, resin impregnated	silicone carbide	hard carbon, antimony impregnated	
Stationary ring	silicone carbide	silicone carbide	silicone carbide	
Metal parts	CrNiMo steel	CrNiMo steel	CrNiMo steel	
O-rings	HNBR	HNBR	EPDM	FPM
Bellow			-	-
Material code DIN EN 12 756	BQ1XGG	Q1Q1XGG	AQ1EGG	AQ1VGG
Centrifugal pumps at all bearing housing sizes	Admissible temperature (° C) of pumped liquid and pump outlet pressure p_d (bar)			
	° C / bar	° C / bar	° C / bar	
single-stage	110 / 10	110 / 10	140 / 10	140 / 10 ②
two-stage	110 / 16 ③	110 / 16 ③	140 / 16 ③	140 / 16 ②③

② max. 90 °C with water-based liquids

③ with an inlet pressure > 5 bar the use of the shaft sealing type U3.50D/U3.51D is absolutely essential!

Other mechanical seal designs on inquiry.

Abbreviation system



④ The actual impeller diameter of two-stage sizes relates to the second stage. The number of stages is placed in front of the nominal width of the outlet branch, e.g. 2/40–200/...

Materials

Denomination	Part No.		Material designs				
	single-stage	two-stage	W 133	W 134	W 135	W 149	W152
Volute casing	102...	102...	CC333G	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-18-LT	EN-GJS-400-18-LT
Impeller	230...	-	CC333G	CC333G	EN-GJL-200	CC333G	EN-GJL-200
Impeller 1st stage	-	230...	CC333G	CC333G	EN-GJL-200	CC333G	EN-GJL-200
Impeller 2nd stage	-	230...	CC333G	CC333G	EN-GJL-200	CC333G	EN-GJL-200
Diffuser	-	171...	CC333G	CC333G	EN-GJL-200	CC333G	EN-GJL-200
Stage casing	-	108...	CC333G	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-18-LT	EN-GJS-400-18-LT
Casing cover	161...	161...	CC333G	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-18-LT	EN-GJS-400-18-LT
Stub shaft	220...	220...	1.4462/1.7139 ④	1.4462/1.7139 ④	1.4462/1.7139 ④	1.4462/1.7139 ⑤	1.4462/1.7139 ④
Drive lantern	341...	341...	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250
Intermediate ring	509.01	-	CC333G	EN-GJS-400-15	EN-GJS-400-15	EN-GJS-400-18-LT	EN-GJS-400-18-LT
Intermediate ring	509.02	-	EN-GJL-250 or St	EN-GJL-250 or St	EN-GJL-250 or St	EN-GJL-250 or St	EN-GJL-250 oder St

④ in contact with fluids 1.4462 / motor side 1.7139

Other versions available from the factory upon request.

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Combination of components

The following table shows the combination possibilities of components or spare parts of the NB sizes.
Within a vertical column, parts with identical numbers are interchangeable.

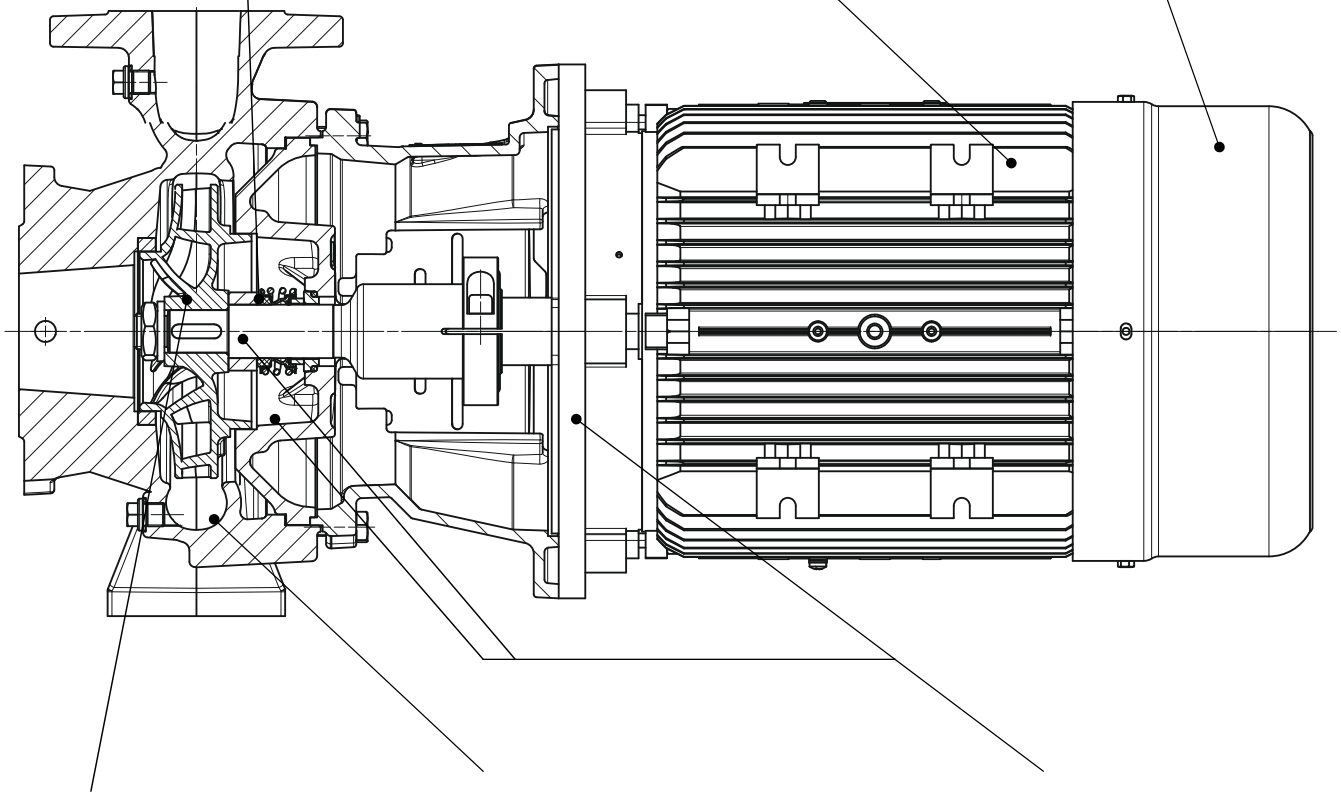
Shaft diameter at the shaft seal	Pump size NB	Volute casing	Impeller	Impeller		Diffuser	Stage casing	Inter-mediate ring	Casing cover	Stub shaft	Drive lantern	Intermediate ring
				1st stage	2nd stage							
mm										The allocation to the sizes depends on speed, motor performance and motor design		
16	20-160	1	1	-	-	-	-	-	1	16-14 16-19 16-24 16-28	16-160 16-200 16-250	-
24	32-125	2	2	-	-	-	-	-	2	24-14 24-19 24-24 24-28 24-38 24-42	24-160 24-200 24-250 24-300 24-350	-
	40-125	3	3									
	50-125	4	4									
	65-125	5	5									
30	25-160	6	6	-	-	-	-	-	3	30-19 30-24 30-28 30-38 30-42 30-48 30-55	30-200 30-250 30-300 30-350 30-400	-
	25-200	7	7									
	32-160	8	8									
	32-200	9	9									
	40-160	10	10									
	40-200	11	11									
	40-250	12	12						4			
	50-160	13	13						3			
	50-200	14	14									
	50-250	15	15						4			
	65-160	16	16						3			
	65-200	17	17						4			
	80-160	18	18						3			
	100-160	19	19									
30 two-stage	2/25-200	7	-	1	1	1	1	-	5	2/30-19 2/30-24 2/30-28 2/30-38 2/30-42 2/30-48 2/30-55	30-200 30-250 30-300 30-350 30-400	-
	2/32-200	9	-									
	2/40-250	12	-	6	6	2	2		6			
	2/50-250	15	-	3								
40	65-250	20	20	-	-	-	-	-	7	40-28 40-38 40-42 40-48 40-55	40-360	280.180.0 280.230.20 280.250.50 280.300.50
	65-315	21	21						8			
	65-400	22	22					3	7			
	80-200	23	23					-				
	80-250	24	24									
	80-315	25	25						8			
	100-200	26	26						7			
	100-250	27	27									
	100-315	28	28						8			
	125-200	29	29						7			
	125-250	30	30									
	150-200	31	31									

Benefits

Uncooled, unbalanced mechanical seal for cavities according to DIN EN 12 756, design K, form U.

Commercial standard motors with locating-type bearing, construction IM V1, all types of enclosures and speeds of rotation possible.

Horizontal and vertical mounting possible with exception of motor downward.

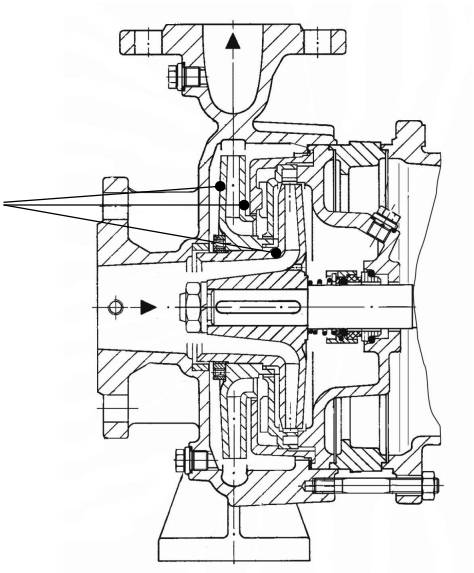


Negligible axial thrust by fine adaption of the balancing holes.

Optimized hydraulic with **very good efficiencies and NPSH-values** of the standard series NT acc. to DIN EN 733, **delivery rate partly considerable above the standard demands**

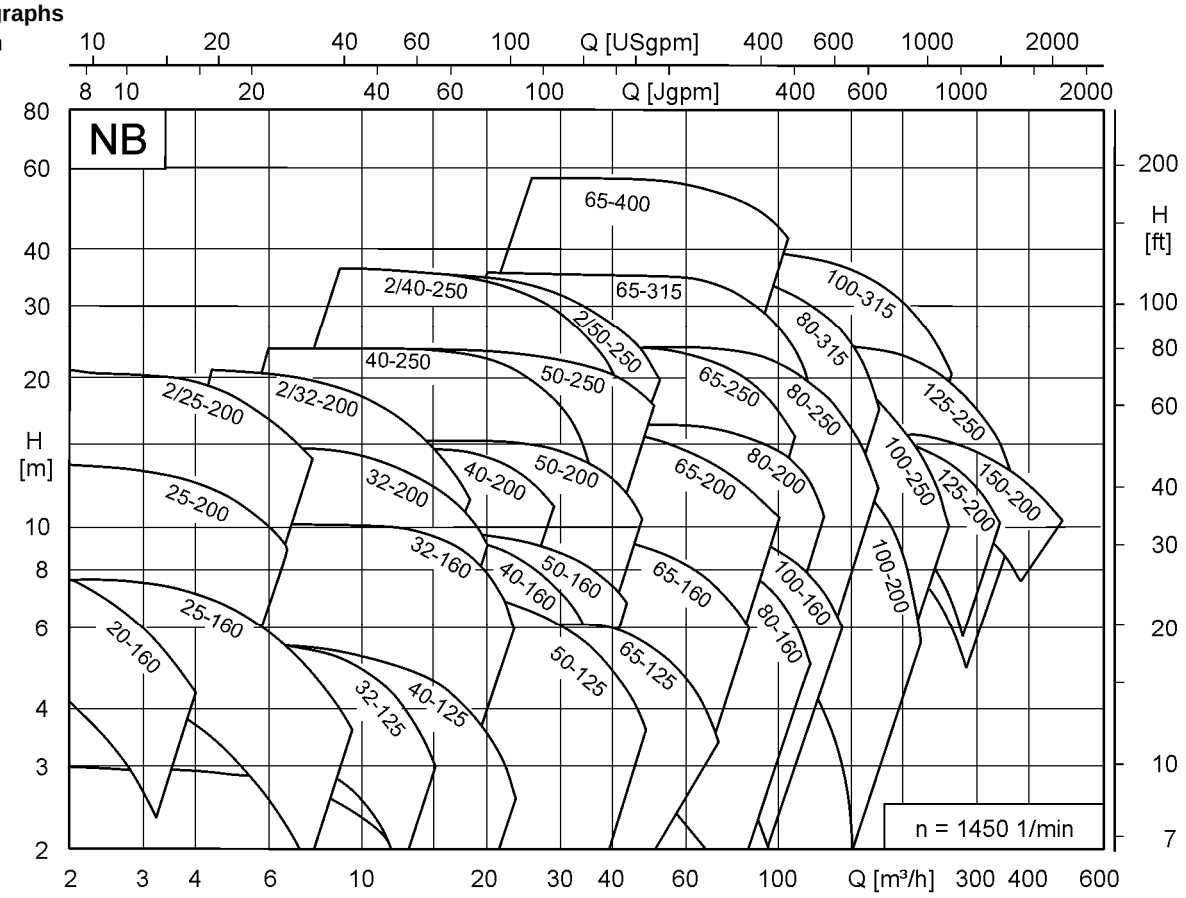
When dismantling the driving unit (including impeller) the **volute casing remains in the piping.**

Larger delivery heads with two-stage sizes (2/25-200, 2/32-200, 2/40-250, 2/50-250).
The outer dimensions correspond with the single stage design.

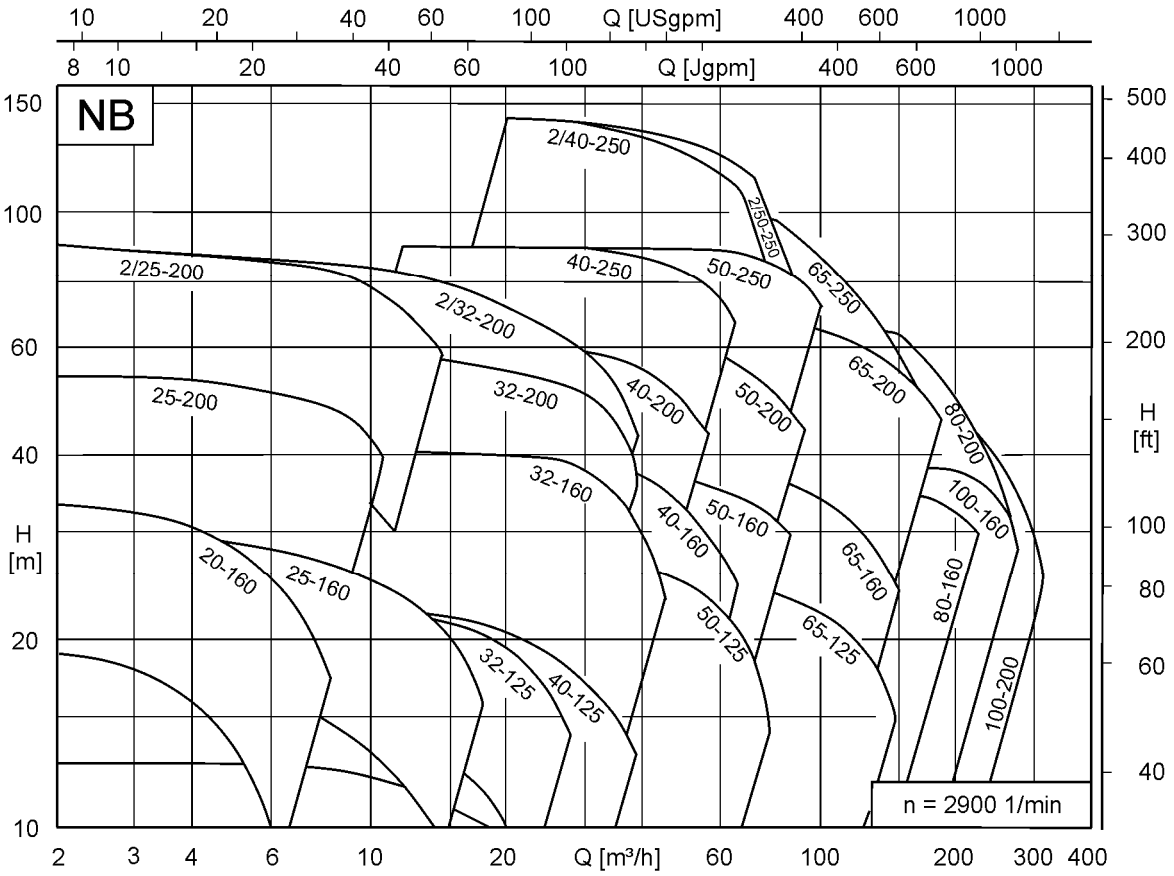


Performance graphs

n = 1450 1/min

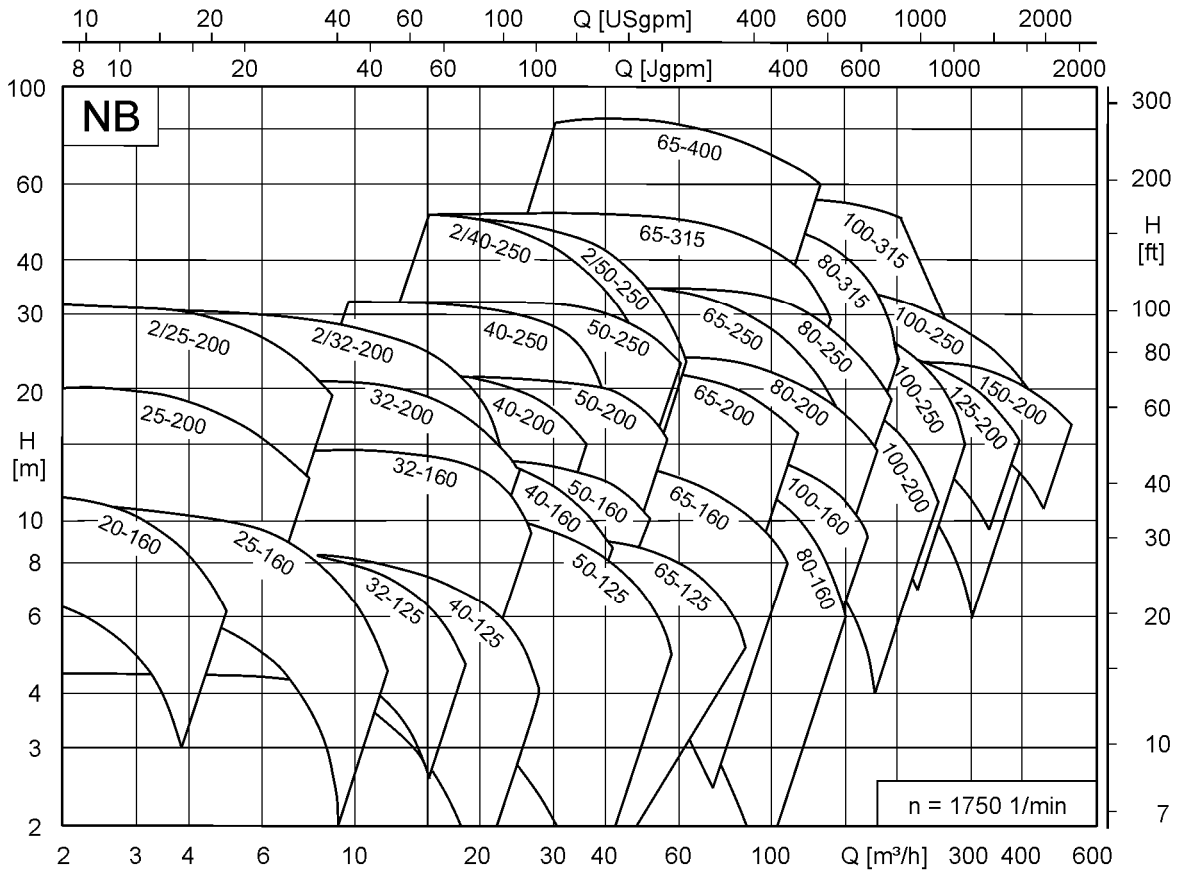


n = 2900 1/min

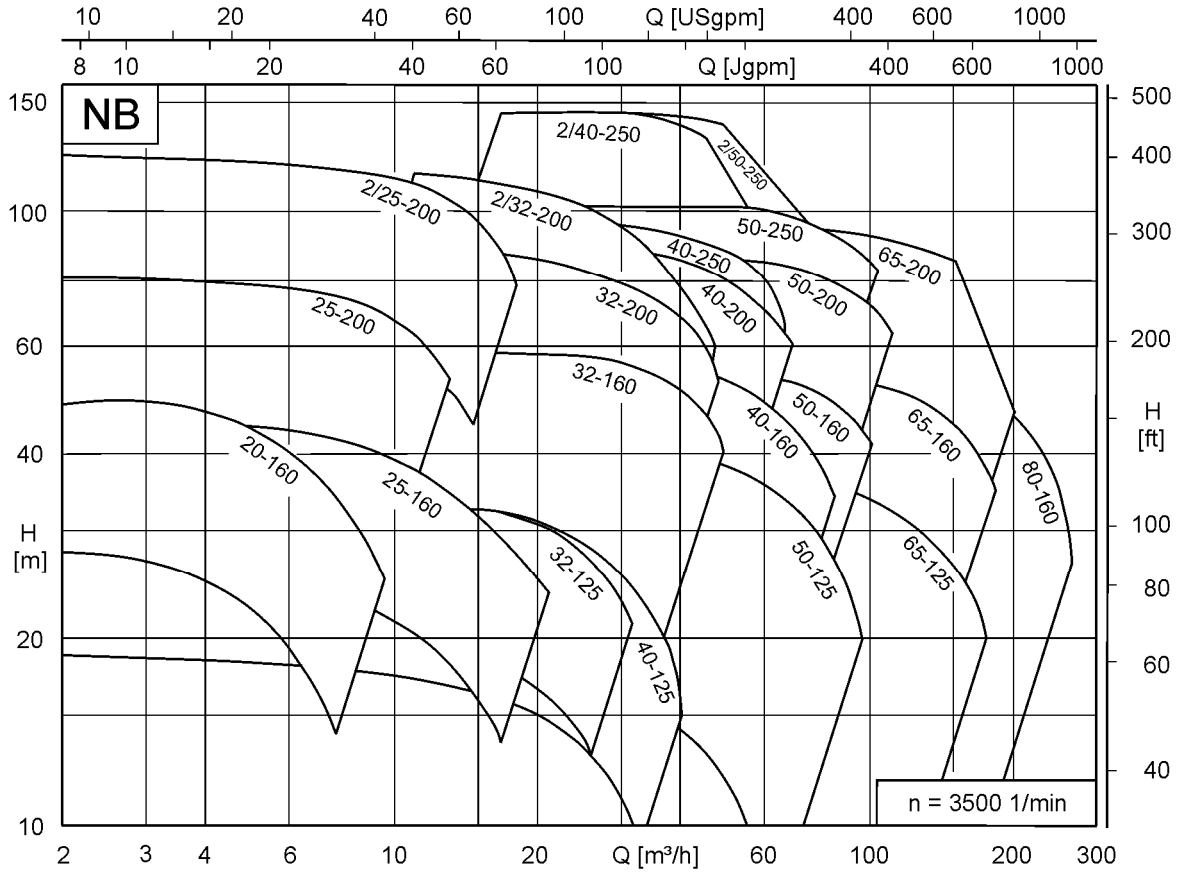


Refer to the individual curves for precise performance data.
Valid for ρ = 1 kg/dm³ and ν = 1 mm²/s.

n = 1750 1/min



n = 3500 1/min



Refer to the individual curves for precise performance data.
Valid for ρ = 1 kg/dm³ and v = 1 mm²/s.

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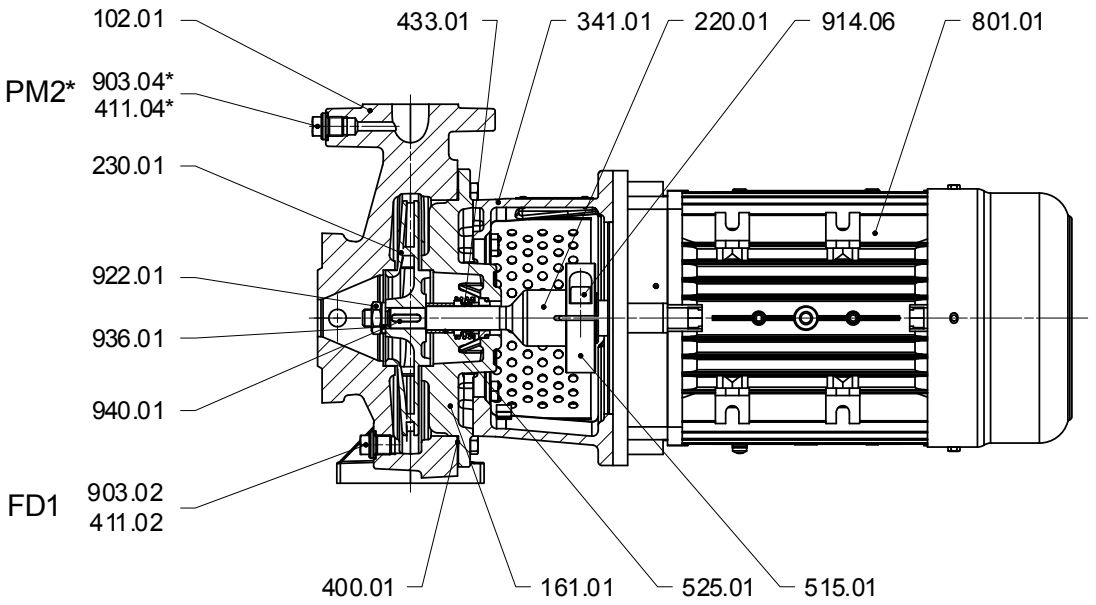
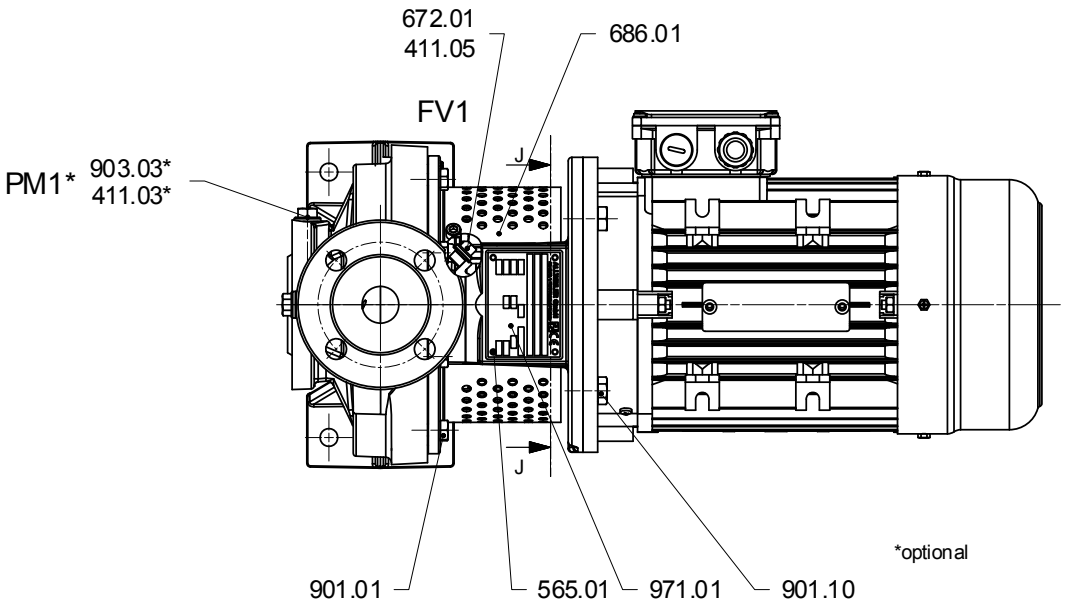
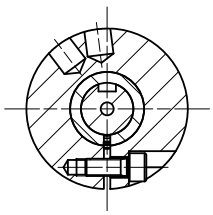
Sectional drawing
Single-stage sizes with **shaft diameter 16** at the shaft seal

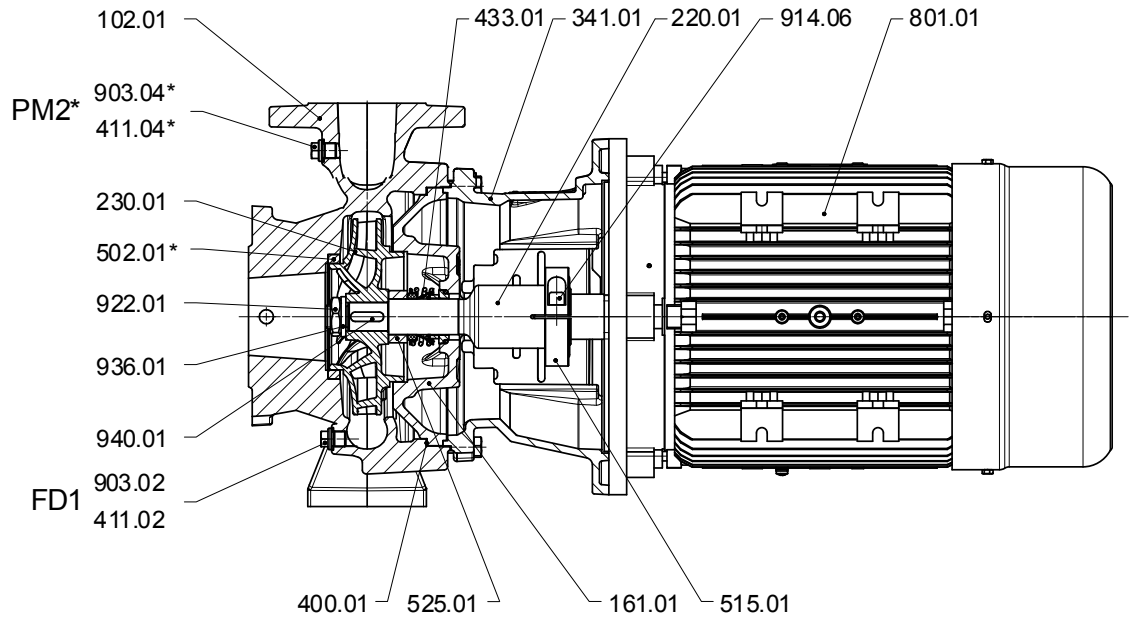


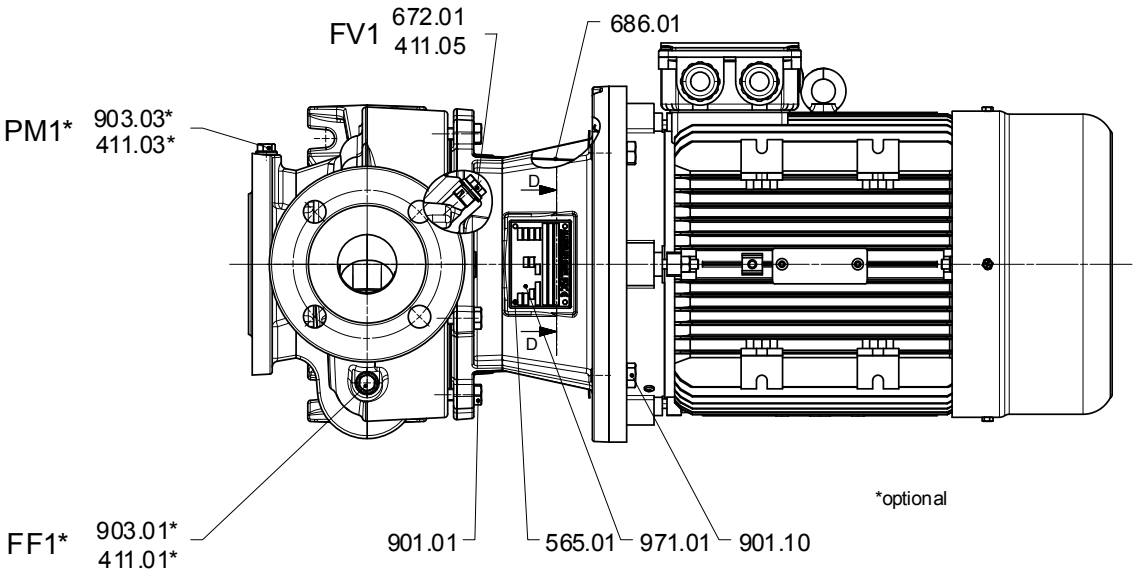




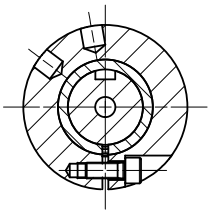
J - J

Sectional drawing
Single-stage sizes with **shaft diameters 24 and 30** at the shaft seal

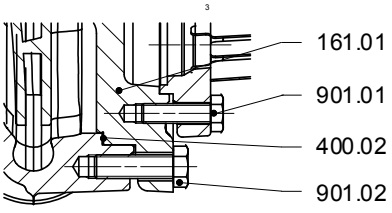




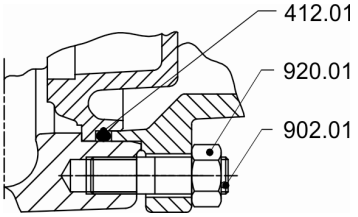
Uncooled, unbalanced mechanical seal



D - D



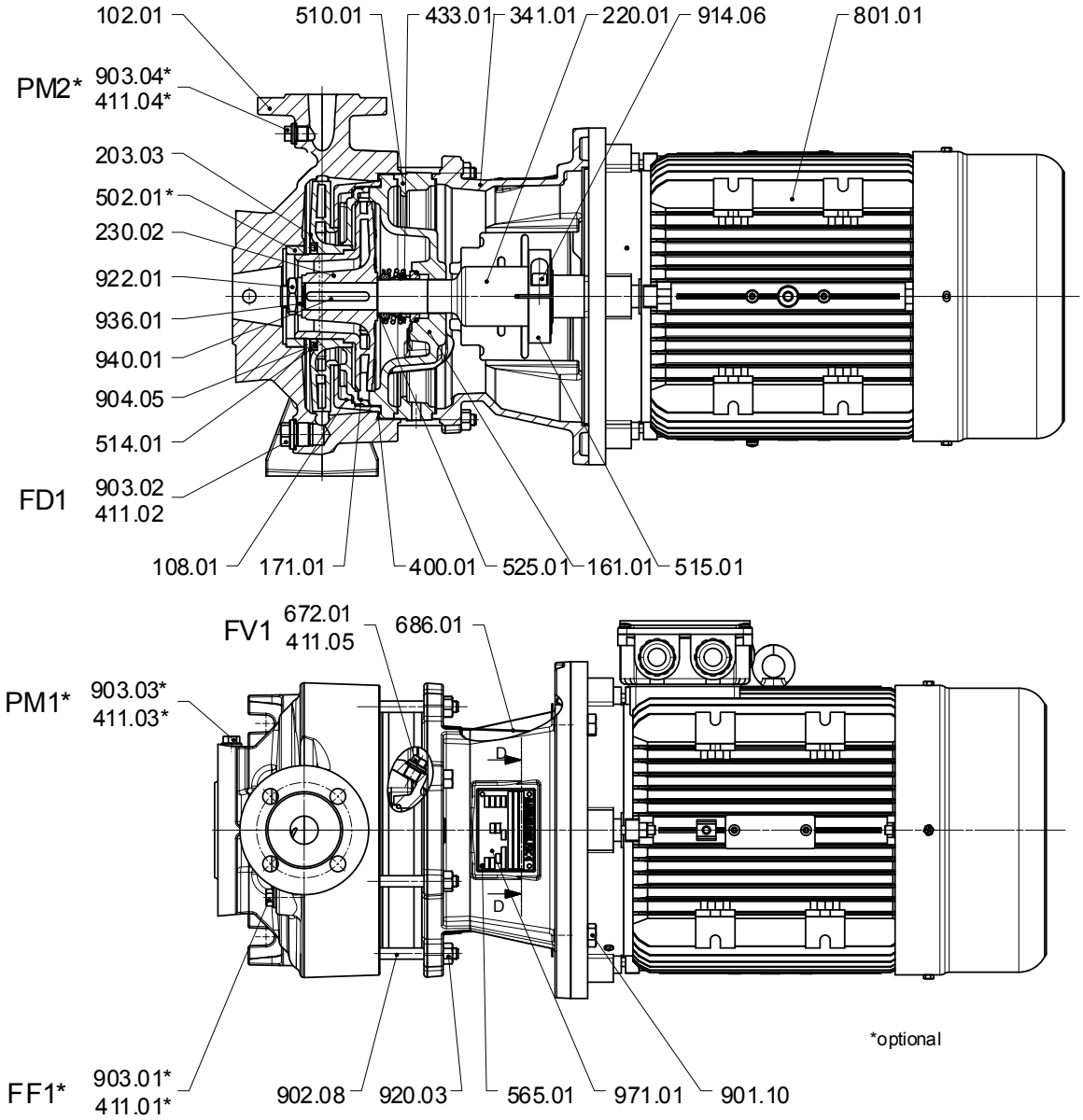
Design of size 40-250, 50-250 & 65-200



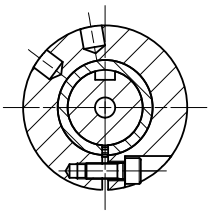
Sizes with shaft diameters 24 at the shaft seal

Sectional drawing

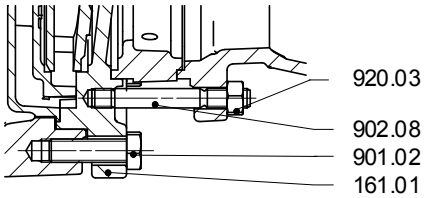
Two-stage sizes with **shaft diameters 30** at the shaft seal



Uncooled, unbalanced mechanical seal



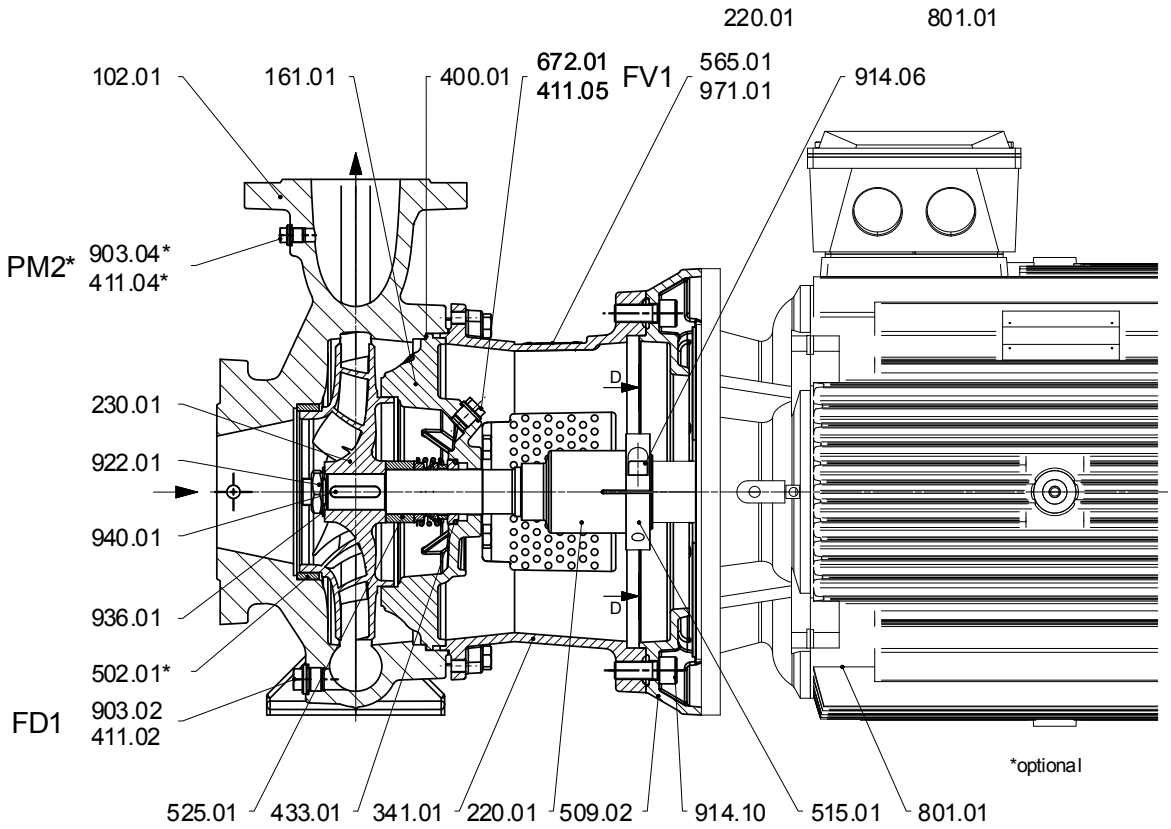
D - D



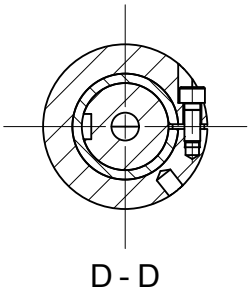
Design of size 2/40-250 und 2/50-250

Sectional drawing

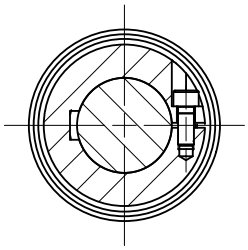
Sizes with **shaft diameter 40** at the shaft seal



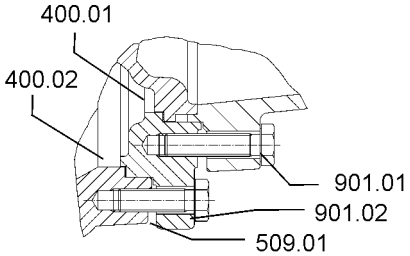
Uncooled, unbalanced mechanical seal



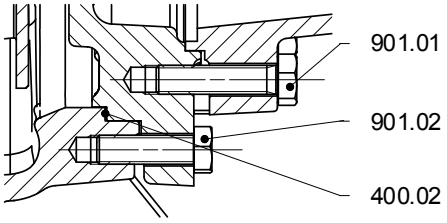
Motor shaftl dia. up to 55



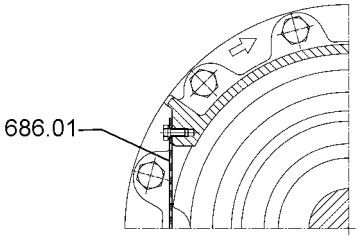
Motor shaft dia. > 55



Design with intermediate ring, size 65-400



Design with size 65-315, 80-315 & 100-315



Fixing of guard plate to the drive lantern. Protection against accidental contact acc. to DIN EN 809

List of components

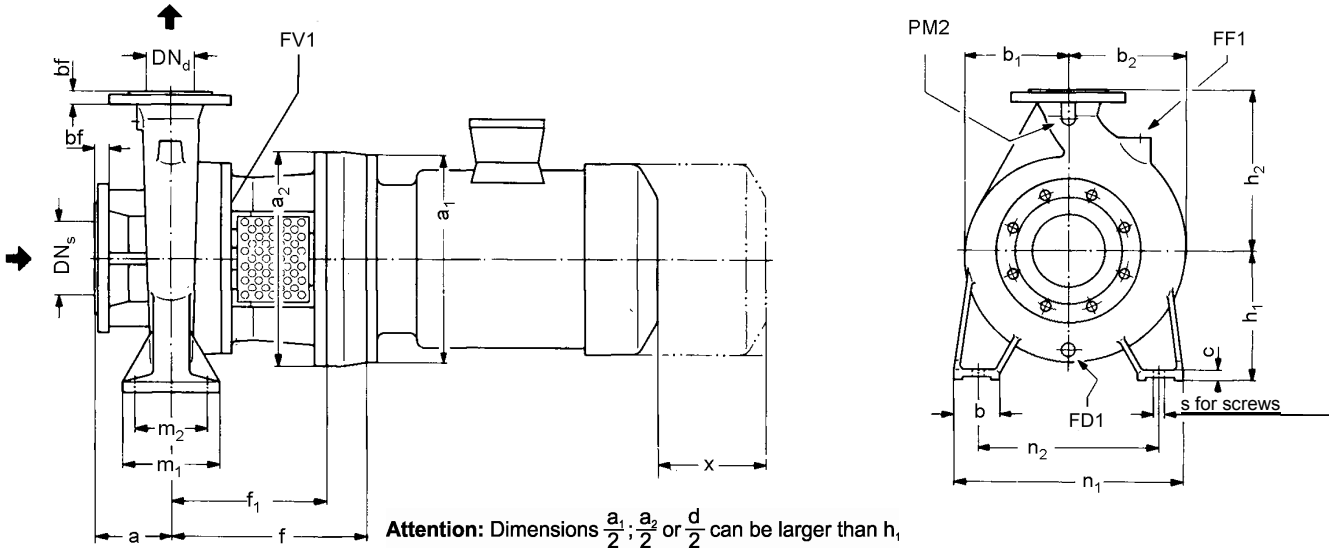
Denomination	Part-No
Volute casing	102.01
Stage casing	108.01
Casing cover	161.01
Diffuser	171.01
Stub shaft	220.01
Impeller	230.01
Impeller 1st stage	230.02
Impeller 2nd stage	230.03
Drive lantern	341.01
Gasket	400.01
Gasket	400.02
Joint ring	411.01
Joint ring	411.02
Joint ring	411.03
Joint ring	411.04
Joint ring	411.05
O-ring	412.01
Mechanical seal	433.01
Intermediate ring	509.01
Intermediate ring	509.02
Spacer ring	510.01
Threaded ring	514.01
Clamping ring	515.01
Spacer sleeve	525.01
Rivet	565.01
Bleeder screw	672.01
Guard plate	686.01
Flange-mounted motor	801.01
Hexagonal screw	901.01
Hexagonal screw	901.02
Hexagonal screw	901.10

Denomination	Part-No
Stud bolt	902.08
Stud bolt	902.10
Screwed plug	903.01
Screwed plug	903.02
Screwed plug	903.03
Screwed plug	903.04
Grub screw	904.05
Socket head cap screw	914.06
Socket head cap screw	914.10
Hexagonal nut	920.03
Hexagonal nut	920.10
Impeller nut	922.01
Spring washer	936.01
Key	940.01
Rating plate	971.01

Connections		Connections
FD1	Drainage	FD1
FF1	Filling	FF1
FV1	Venting	FV1
PM1	Pressure measurement	PM1
PM2	Pressure measurement	PM2

n = 1450/1750 min^{-1}

Aggregate dimensions: Sizes with **shaft diameters 16, 24 and 30** at the shaft seal



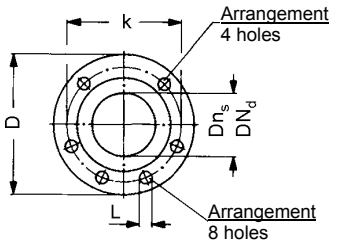
Attention: Dimensions $\frac{a_1}{2}$; $\frac{a_2}{2}$ or $\frac{d}{2}$ can be larger than h_1

Shaft diameter at the shaft seal	Connections			
	Drain-ing	Fill-ing	Vent-ing	Pressure measurement
mm	FD1	FF1	FV1	PM2
16	G 1/4	G 1/4	G 1/8	G 1/4
24			G 1/4	
30			G 3/8	

Connections at sizes 25-160, 25-200 and 2/25-200: FD1 = G 1/2; FF1 at sizes 20-160, 25-200 and 2/25-200 not existent.

Flanges acc. to DIN EN 1092-2 PN 16 (10)

DN_d DN_s	D	bf	k	L	No. of holes
25	115	16	85	14	4
32	140	18	100	19	
40	150		110		
50	165	20	125		
65	185		145		
80	200	22	160		8



Tolerances of connection dimensions acc. to DIN EN 735

Sense of rotation: clockwise as seen from the driving side

Dimensions in mm without commitment

Shaft diameter at shaft seal	Pump size	Motor-size	Perfor-mance		Aggregate dimensions																		Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
					Pump dimensions																Motor and flange dimen-sions approx. dimensions varying depending upon manufacturer	Extension dim	
					Flanges		Feet																
mm			kW		DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s	a_1	x	
16	20-160	71	0,25	0,37	25	25	63	118	-	108	108	-	112	145	50	14	100	70	220	180	M10	160	62	14/160
		80	0,55	0,75				138														200		19/200
24	32-125	71	0,25	0,37	50	32	80	148	-	96	96			140		15			190	140	M12	160	89	14/160
		80	0,55	0,75																		200		19/200
		90 S	1,1																					24/200
	40-125	71	0,25	0,37	65	40					110								210	160		160		14/160
		80	0,55	0,75																		200		19/200
		90 S	1,1																					24/200
	50-125	71	0,25	0,37		50	100			110	130	-	132	160					240	190		160		14/160
		80	0,55	0,75																		200		19/200
		90 S	1,1																					24/200
		90 L	1,5																					
		100 L	2,2	3																		250		28/250
	65-125	71	0,25	0,37	80	65				120	148		160	180	65		125	95	280	212		160	95	14/160
		80	0,55	0,75																		200		19/200
		90 S	1,1																					24/200
		90 L	1,5																					
		100 L	2,2	3																		250		28/250
30	25-160	80	0,55	0,75	40	25	80	149	-	133	133	-	132	160	50		100	70	240	190		200	102	19/200
	25-200	80	0,55	0,75						132	132		160	180										19/200
		90 S	1,1																					24/200
		90 L	1,5																					
	2/25-200	80	0,55	0,75				183																19/200
		90 S	1,1																					24/200
		90 L	1,5																					
		100 L	2,2	3				193														250		28/250

n = 1450/1750 min^{-1}

Shaft diameter at shaft seal	Pump-size	Motor-size	Performance	Aggregate dimensions																			Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimensions																	Motor and flange dimensions approx. dimensions varying depending upon manufacturer	Extension dim	
				Flanges										Feet									
mm			kW	DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s	a_1	x	
30	32-160	80	0,55 0,75	50	32	80	149	-	130	130	-	132	160	50	15	100	70	240	190	M12	200	102	19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
	32-200	80	0,55 0,75						124			160	180								200		19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
	2/32-200	80	0,55 0,75				183														200		19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3				193														250		28/250
	40-160	80	0,55 0,75	65	40		149		130			132	160								200		19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
	40-200	80	0,55 0,75			100			125	135		160	180					265	212		200		19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
		112 M	4																				
	40-250	90 S	1,1						150	156		180	225	65		125	95	320	250		200	85	24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
		112 M	4																				
	2/40-250	110 L	2,2 3				193																
		112 M	4																				
		132 S	5,5				238														300		38/300
		132 M	7,5																				
		160 M	11				274														350		42/350
	50-160	80	0,55 0,75	65	50		149		123	130		160	180	50		100	70	265	212		200	102	19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
	50-200	80	0,55 0,75						133	145			200										19/200
		90 S	1,1																		200		24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
		112 M	4																				
		132 S	5,5				204														300		38/300
	50-250	90 L	1,5						156	169		180	225	65		125	95	320	250		200	85	24/200
		100 L	2,2 3				149																
		112 M	4																		250		28/250
		132 S	5,5				204														300		38/300
		132 M	7,5																				
		160 M	11				219														350		42/350
	2/50-250	100 L	2,2 3				193														250		28/250
		112 M	4																				
		132 S	5,5				238														300		38/300
		132 M	7,5																				
		160 M	11				274														350		42/350
		160 L	15																				
	65-160	80	0,55 0,75	80	65		149		133	162		160	200					280	212		200	102	19/200
		90 S	1,1																				24/200
		90 L	1,5																				
		100 L	2,2 3																		250		28/250
		112 M	4																				

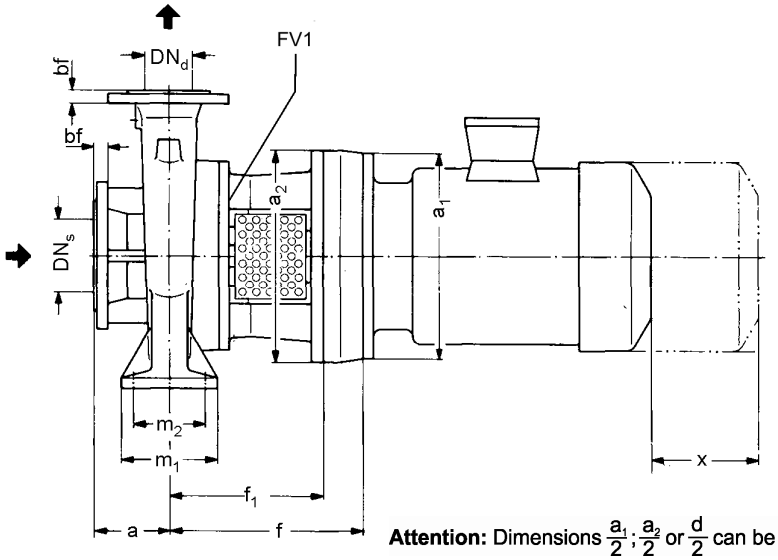
The motor dimensions as indicated are approximate dimensions. Exact data depend on the motor make.

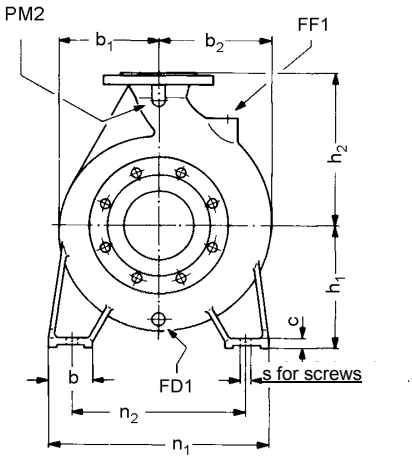
When using special motors, make sure that other performances are allocated to the individual sizes, depending upon the enclosure. The main dimensions change accordingly. In case of order, binding tables of motor dimensions must be supplied to us.

Flanges processed according to DIN EN 1092-2 PN 10/16. (Flange outer diameter D and thickness b_f can exceed the standard dimensions.)

n = 1450/1750 min^{-1}

Aggregate dimensions: Sizes **with shaft diameter 30 and 40** at the shaft seal





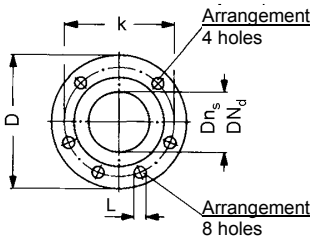
Attention: Dimensions $\frac{a_1}{2}$; $\frac{a_2}{2}$ or $\frac{d}{2}$ can be larger than h_1

Shaft diameter at the shaft seal	Connections			
	Drain-ing	Fill-ing	Vent-ing	Pressure measurement
mm	FD1	FF1	FV1	PM2
30	G 1/4	G 1/4	G 1/4	G 1/4
40	G 3/8	G 3/8	G 3/8	G 3/8

Connections at sizes 25-160, 25-200 and 2/25-200: FD1= G 1/2; FF1 at sizes 20-160, 25-200 and 2/25-200 not existent.

Flanges:
DN 150 acc. to DIN EN 1092-2 PN 16
DN 200 acc. to DIN EN 1092-2 PN 10

DN$_d$ DN$_s$	D	bf	k	L	No. of holes
65	185	20	145	19	4
80	200	22	160		8
100	220	24	180		
125	250	26	210		
150	285		240	23	
200	340	30	295		12



Tolerances of connection dimensions acc. to DIN EN 735

Sense of rotation: clockwise as seen from the driving side

Dimensions in mm without commitment

Shaft diameter at shaft seal	Pump-size	Motor-size	Perfor-mance	Aggregate dimensions																				Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimension																		Motor and flange dimensions ap-prox. dimensions varying depending upon manufacturer	Extension dim	
				Flanges		Feet																			
mm			kW	DN$_s$	DN$_d$	a	f	a$_2$	b$_1$	b$_2$	f$_1$	h$_1$	h$_2$	b	c	m$_1$	m$_2$	n$_1$	n$_2$	s		a$_1$	x	
30	65-200	90 S	1,1	80	65	100	149	-	148	170	-	180	225	65	15	125	95	320	250	M12		250	85	24/200
		90 L	1,5																					
		100 L	2,2 | 3																				28/250
		112 M	4																					
		132 S	5,5				204															300		38/300
		132 M	7,5																					
	80-160	80	0,55 | 0,75	100	80	125	149		136													200	102	19/200
		90 S	1,1																					24/200
		90 L	1,5																					
		100 L	2,2 | 3																			250		28/250
		112 M	4																					
		132 S	5,5																			300		38/300
		132 M	7,5				204																	
	100-160	90 S	1,1	125	100		149		165	200			280									200		24/200
		90 L	1,5																					
		100 L	2,2 | 3																			250		28/250
		112 M	4																					
		132 S	5,5																			300		38/300
		132 M	7,5				204																	
40	65-250	100 L	2,2 | 3	80	65	100	261	360	164	184	261	200	250	80	18	160	120	360	280	M16		250	123	28/250
		112 M	4																					
		132 S	5,5				281															300		38/300
		132 M	7,5																					
		160 M	11				311															350		42/350
		160 L	15																					
		180 M	22																					48/350
	65-315	112 M	4			125	261		202	219		225	280		25			400	315			250	105	28/250
		132 S	5,5				281															300		38/300
		132 M	7,5																					
		160 M	11				311															350		42/350
		160 L	15																					
		180 M	18,5																					48/350
		180 L	22																					
		200 L	30																			400		55/400

n = 1450/1750 min^{-1}

Shaft diameter at shaft seal	Pump-size	Motor-size	Performance	Aggregate dimension																				Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimension																		Motor and flange dimensions approx. dimensions varying depending upon manufacturer	Extension dim	
				Flanges										Feet										
mm			kW	DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s	a_1	x	
40	65-400	132 M	7,5	80	65	125	281	360	239	255	261	250	355	80	25	160	120	420	335	M16	300	105	38/300
		160 M	11				311														350		42/350
		160 L	15																				
		180 M	18,5																				48/350
		180 L	22																				
		200 L	30																		400		55/400
	80-200	100 L	2,2 | 3	100	80	125	261	360	163	188	261	180	250	65	18	125	95	345	280	M12	250	123	28/250
		112 M	4																				
		132 S	5,5				281														300		38/300
		132 M	7,5																				
		160 M	11				311														350		42/350
	80-250	112 M	4				261		182	208		200	280	80		160	120	400	315		250		28/250
		132 S	5,5				281														300		38/300
		132 M	7,5																				
		160 M	11				311														350		42/350
		160 L	15																				
		180 M	18,5																				48/350
		180 L	22																				
		200 L	30																		400		55/400
	80-315	132 S	5,5				281		210	231		250	315		25						300	105	38/300
		132 M	7,5																				
		160 M	11				311														350		42/350
		160 L	15																				
		180 M	18,5																				48/350
		180 L	22																				
		200 L	30																		400		55/400
	100-200	100 L	2,2 | 3	125	100		261		165	203		200	280		18			360	280		250	133	28/250
		112 M	4																				
		132 S	5,5				281														300		38/300
		132 M	7,5																				
		160 M	11				311														350		42/350
		160 L	15																				
	100-250	112 M	4			140	261		189	224		225		80		160	120			M16	250		28/250
		132 S	5,5				281														300		38/300
		132 M	7,5																				
		160 M	11				311														350		42/350
		160 L	15																				
		180 M	18,5																				48/350
		180 L	22																				
		200 L	30																		400		55/400
	100-315	132 M	7,5				281		220	250		250	315		25			400	315		300	112	38/300
		160 M	11																				
		160 L	15				311														350		42/350
		180 M	18,5																				
		180 L	22																				48/350
		200 L	30																		400		55/400
	125-200	132 M	7,5	150	125		281		196	236		250			18						300	143	38/300
		160 M	11																				
		160 L	15				311														350		42/350
		180 M	18,5																				
		180 L	22																				48/350
		200 L	30																		400		55/400
	125-250	132 M	7,5				281		212	255			355								300		38/300
		160 M	11																				
		160 L	15				311														350		42/350
		180 M	18,5																				
		180 L	22																				48/350
		200 L	30																		400		55/400
	150-200	132 M	7,5	200	150	160	281		214	268		280	370	100	27	200	150	550	450	M20	300		38/300
		160 M	11																				
		160 L	15				311														350		42/350
		180 M	18,5																				
		180 L	22																				48/350
		200 L	30																		400		55/400

The motor dimensions as indicated are approximate dimensions. Exact data depend on the motor make.

When using special motors, make sure that other performances are allocated to the individual sizes, depending upon the enclosure. The main dimensions change accordingly. In case of order, binding tables of motor dimensions must be supplied to us.

Flanges processed according to DIN EN 1092-2 PN 10/16. (Flange outer diameter D and thickness b_f can exceed the standard dimensions.)

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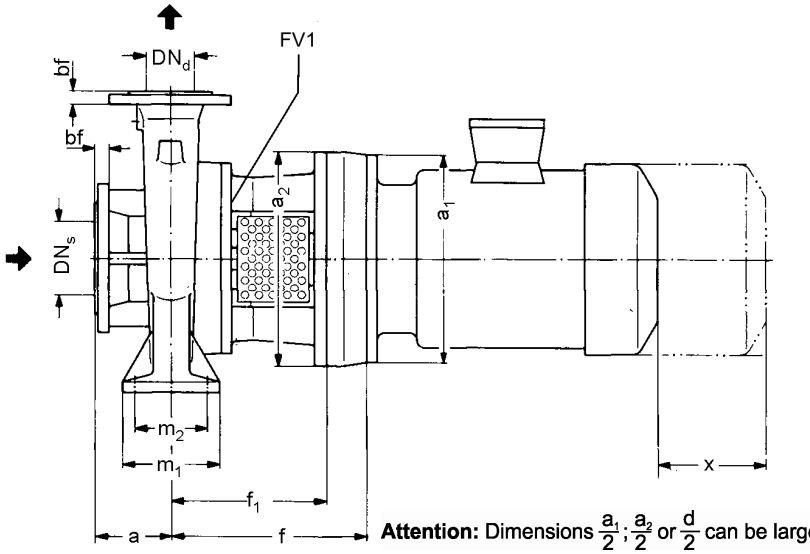
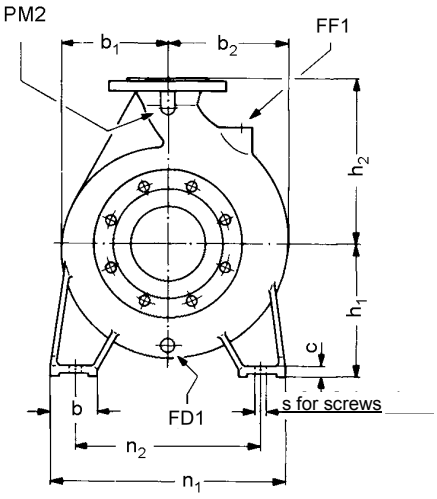
n = 2900/3500 min^{-1}

Aggregate dimensions: Sizes with **shaft diameter 16, 24 and 30** at the shaft seal





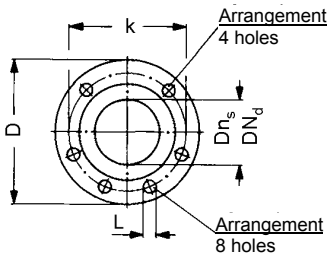
Attention: Dimensions $\frac{a_1}{2}$; $\frac{a_2}{2}$ or $\frac{d}{2}$ can be larger than h_1

Shaft diameter at the shaft seal	Connections			
	Drain-ing	Fill-ing	Vent-ing	Pressure measurement
mm	FD1	FF1	FV1	PM2
16	G 1/4	G 1/4	G 1/8	G 1/4
24			G 1/4	
30			G 3/8	

Connections at sizes 25-160, 25-200 and 2/25-200: FD1= G 1/2; FF1 at sizes 20-160, 25-200 and 2/25-200 not existent.

Flanges acc. to DIN EN 1092-2 PN 16 (10)

DN_d DN_s	D	bf	k	L	No. of holes
25	115	16	85	14	4
32	140	18	100	19	
40	150		110		
50	165	20	125		
65	185		145		



Tolerances of connection dimensions acc. to DIN EN 735

Sense of rotation: clockwise as seen from the driving side

Dimensions in mm without commitment

Shaft diameter at shaft seal	Pump-size	Motor-size	Perfor-mance	Aggregate dimension																		Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimensions																	Motor and flange dimensions ap-prox. dimensions varying depending upon manufacturer	Extension dim	
				Flanese										Feet								
mm			kW	DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	$h0_1$	h_2	b	c	m_1	m_2	n_1	n_2	s	a_1	x	
16	20-160	80	0,75 1,1	25	25	63	138	-	108	108	-	112	145	50	14	100	70	220	180	M10	200	62	19/200
		90 S	1,5																				24/200
		90 L	2,2																				
		100 L	3				148														250		28/250
		112 M	4																				
24	32-125	80	0,75 1,1	50	32	80	148		96	96			140	50	15			190	140	M12	200	89	19/200
		90 S	1,5																				24/200
		90 L	2,2																				
		100 L	3																		250		28/250
		112 M	4																				
		132 S	5,5 7,5				188														300		38/300
	40-125	80	0,75 1,1	65	40		148		96	110								210	160		200		19/200
		90 S	1,5																				24/200
		90 L	2,2																				
		100 L	3																		250		28/250
		112 M	4																				
		132 S	5,5 7,5				188														300		38/300
	50-125	90 S	1,5		50	100	148		110	130		132	160					240	190		200		24/200
		90 L	2,2																				
		100 L	3																		250		28/250
		112 M	4																				
		132 S	5,5 7,5				188														300		38/300
		160 M	11 15				223														350		42/350

n = 2900/3500 min^{-1}

Shaft diameter at shaft seal	Pump-size	Motor-size	Perfor-mance	Aggregate dimensions																				Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimensions																		Motor and flange dimensions approx. dimensions varying depending upon manufacturer	Extension dim	
				Flanges										Feet										
mm			kW	DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s		a_1	x	
24	65-125	90 L	2,2	80	65	100	148	-	120	148	-	160	180	65	15	125	95	280	212	M12		200	95	24/200
		100 L	3																			250		28/250
		112 M	4																					
		132 S	5,5 7,5				188															300		38/300
		160 M	11 15				223															350		42/350
		160 L	18,5																					
30	25-160	80	0,75 1,1	40	25	80	149	-	133	133	-	132	160	50	15	100	70	240	190	M12		200	102	19/200
		90 S	1,5																					24/200
		90 L	2,2																					
		100 L	3																					28/250
		112 M	4																					
	25-200	100 L	3						132	132		160	180									250		
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
	2/25-200	112 M	4				193															250		28/250
		132 S	5,5 7,5				238															300		38/300
		160 M	11 15				274															350		42/350
		160 L	18,5																					
	32-160	100 L	3	50	32		149		130	130		132	160									250		28/250
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
	32-200	100 L	3				149		124	130		160	180									250		28/250
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
		160 L	18,5																					
		180 M	22																					48/350
	2/32-200	112 M	4				193															250		28/250
		132 S	5,5 7,5				238															300		38/300
		160 M	11 15				274															350		42/350
		160 L	18,5																					
		180 M	22																					48/350
		200 L	30 37																			400		55/400
	40-160	100 L	3	65	40		149		130			132	160									250		28/250
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
		160 L	18,5																					
	40-200	100 L	3			100	149		125	135		160	180					265	212			250		28/250
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
		160 L	18,5																					
		180 M	22																					48/350
		200 L	30 37																			400		55/400
	40-250	132 S	5,5 7,5				204		150	156		180	225	65		25	95	320	250			300	85	38/300
		160 M	11 15				219															350		42/350
		160 L	18,5																					
		180 M	22																					48/350
		200 L	30 37																			400		55/400
	2/40-250	160 M	11 15				274															350		42/350
		160 L	18,5																					
		180 M	22																					48/350
		200 L	30 37																			400		55/400
	50-160	100 L	3		50		149		123	130		160	180	50		100	70	265	212			250	102	28/250
		112 M	4																					
		132 S	5,5 7,5				204															300		38/300
		160 M	11 15				219															350		42/350
		160 L	18,5																					
		180 M	22																					48/350

The motor dimensions as indicated are approximate dimensions. Exact data depend on the motor make.

When using special motors, make sure that other performances are allocated to the individual sizes, depending upon the enclosure. The main dimensions change accordingly. In case of order, binding tables of motor dimensions must be supplied to us.

Flanges processed according to DIN EN 1092-2 PN 10/16. (Flange outer diameter D and thickness b_f can exceed the standard dimensions.)

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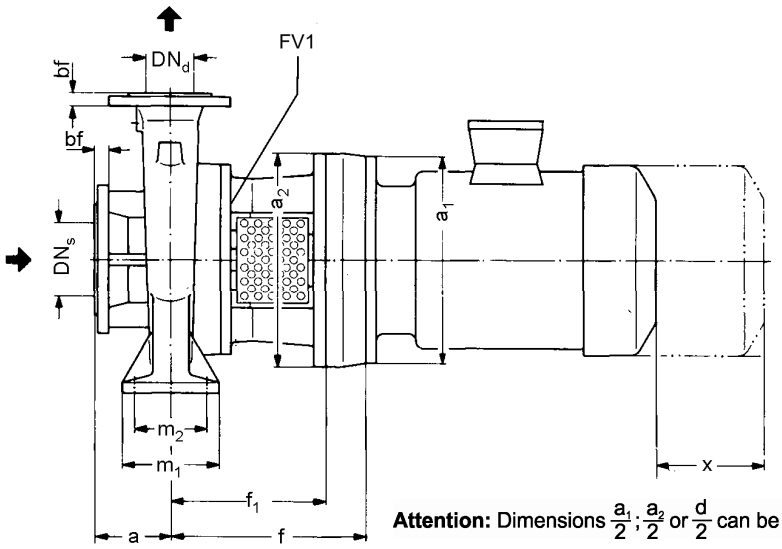
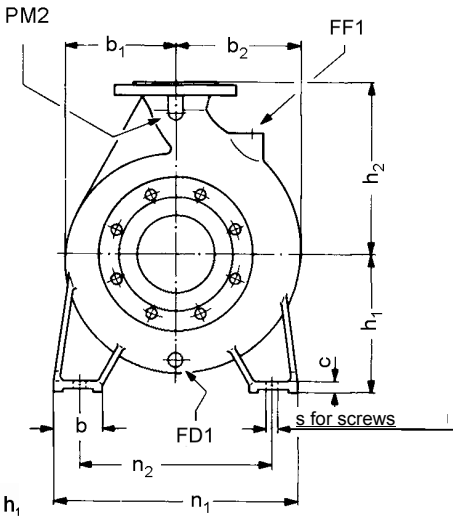
n = 2900/3500 min^{-1}

Aggregate dimensions Sizes with **shaft diameters 30 and 40** at the shaft seal

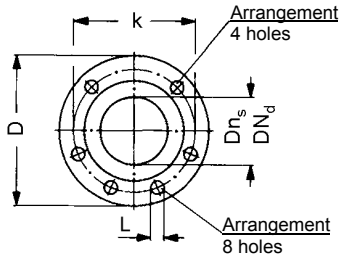




Attention: Dimensions $\frac{a_1}{2}$; $\frac{a_2}{2}$ or $\frac{d}{2}$ can be larger than h_1

Shaft diameter at the shaft seal	Connections			
	Drain-ing	Fill-ing	Vent-ing	Pressure measurement
mm	FD1	FF1	FV1	PM2
30	G 1/4	G 1/4	G 1/4	G 1/4
40	G 3/8	G 3/8	G 3/8	G 3/8

Flanges acc. to DIN EN 1092-2 PN 16 (10)					
DNd DNs	D	bf	k	g	No. of holes
50	165	20	125	19	4
65	185		145		
80	200	22	160		8
100	220	24	180		
125	250	26	210		



Tolerances of connections dimensions acc. to DIN EN 735 | Sense of rotation: clockwise as seen from the driving side | Dimensions in mm without commitment

Shaft diameter at shaft seal	Pump-size	Motor-size	Perfor-mance	Aggregate dimensions																		Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimensions																	Motor and flange dimensions approx. dimensions varying depending upon manufacturer	Extension dim	
				Flanges									Feet									
mm			kW	DNs	DNd	a	f	a2	b1	b2	f1	h1	h2	b	c	m1	m2	n1	n2	s	a1	x	
30	50-200	112 M	4	65	50	100	149	-	133	145	-	160	200	50	15	100	70	265	212	M12	250	102	28/250
		132 S	5,5 7,5				204														300		38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	50-250	132 S	5,5 7,5				204		156	169		180	225	65		125	95	320	250		300	85	38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	2/50-250	160 M	11 15				274														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	65-160	112 M	4	80	65		149		133	162		160	200	65		125	95	280	212		250	102	28/250
		132 S	5,5 7,5				204														300		38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	65-200	132 S	5,5 7,5				204		148	170		180	225					320	250		300	85	38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400

n = 2900/3500 min^{-1}

Shaft diameter at shaft seal	Pump-size	Motor-size	Performance	Aggregate dimensions																		Allocation stub shaft/ motor bracket/ intermediate ring Contained in abbreviation, v. page 2
				Pump dimensions																	Motor and flange dimensions approx. dimensions varying depending upon manufacturer	Extension dim	
				Flanges										Feet								
mm			kW	DN_s	DN_d	a	f	a_2	b_1	b_2	f_1	h_1	h_2	b	c	m_1	m_2	n_1	n_2	s	a_1	x	
30	80-160	112 M	4	100	80	125	149	-	136	170	-	180	225	65	15	125	95	320	250	M12	250	102	28/250
		132 S	5,5 7,5				204														300		38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	100-160	132 S	5,5 7,5	125	100		204		165	200		200	280								300		38/300
		160 M	11 15				219														350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
40	65-250	160 L	18,5	80	65	100	311	360	164	184	261	200	250	80	18	160	120	360	280	M16	350	123	42/350
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	80-200	160 M	11 15	100	80	125			163	188		180		65		125	95	345		M12	350		42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400
	100-200	160 M	11 15	125	100				165	203		200	280	80		160	120	360		M16	350	133	42/350
		160 L	18,5																				
		180 M	22																				48/350
		200 L	30 37																		400		55/400

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Subject to technical alterations.

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VM 528 GB/2019.05 – Ident No. 795261