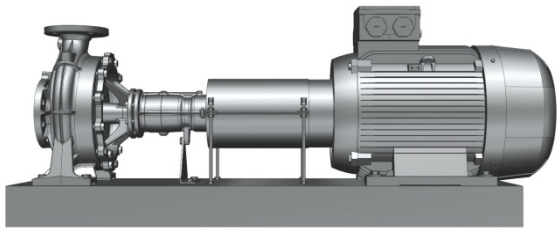
Volute Casing Centrifugal Pumps PN 16 for Heat Transfer Oils up to 350°C SERIES NTT

Pump dimensions acc. to DIN EN 733 with additional sizes



Application

For handling organic heat-transfer oils in heat transfer plants (DIN 4754). The fluids pumped must not contain any abrasive particles nor chemically attack the pump materials.

Main Fields of application

Chemical and pharmaceutical industry:
Heating and drying plants, stirring apparatuses, autoclaves, reaction tanks, in plants for the production of synthetic fibres, plastics, lacquer raw materials, in mixing and storage facilities for viscous media.

Food industry:
Heating of baking and roasting ovens, plants for the production of fatty acids, edible oils, glycerine, dry pastes.

Textile, leather and paper industry:
Heating of calendars, drying chambers, rolls, drying cylinders.

Rubber and plastic industry:
Heating of presses, automatic injection, moulding machines, calendars, fusion kettles.

Paint and lacquer industry:
Heating of agitators and mixing vessels.

Tar and bitumen-processing industry:
Heating of storage tanks, tankers, for heating up heavy oil, in asphalt processing and roofing-felt production.

Mineral-oil industry:
Heating of transportation means, pipes and storage installations, for pre-heating of oils, in the bitumen production.

Laundries:
Heating of dryers, hot mangles, automatic ironing machines.

Additionally, for the most varied fields of application in the metal-working industry, electrical-engineering industry, wood industry, building industry.

Type and series construction

Horizontal, single- and two-stage, single-flow volute casing centrifugal pumps with axial inlet. The pump dimensions are according to DIN EN 733. The series contains additional sizes with dimensions exceeding to the standard.

Series design according to unit assembly system. Shaft bearing in a bearing bracket equipped with a support foot.

Volute casing with cast-on feet.

Sizes NTT 2/25-200/01, 2/32-200/01, 2/40-200/01 and 2/50-200/01 are double-stage, but in their outer dimensions, they correspond to the respective single-stage sizes. Owing to the two-stage design, relatively small delivery flows are achieved with the great delivery heads, good efficiencies and low NPSH values.

Branch position/Flanges

Suction branch:	axial
Delivery branch:	radially upwards
Flanges:	according to EN 1092-2, PN16

Delivery

With the sizes according to DIN EN 733, the delivery considerably exceeds the standard nominal capacity.

With further sizes, the performance range was extended in both directions, viz greater and smaller deliveries, for the economic operation of smaller heat-transfer plants.

Shaft sealing

By means of uncooled, maintenance-free mechanical seal of the unbalanced type.

A safety stuffing box with a following throttling area is arranged in front of the mechanical seal.

Even in case of failure of the mechanical seal, these additional safety elements prevent seepage from the emerging in a hazardous quantity and manner. The requirements according to DIN 4754 are thus exceeded.

It is ensured that any heat-transfer seepages emerging from the shaft sealing are safely drained through leakage outlet LO, and completely collected.

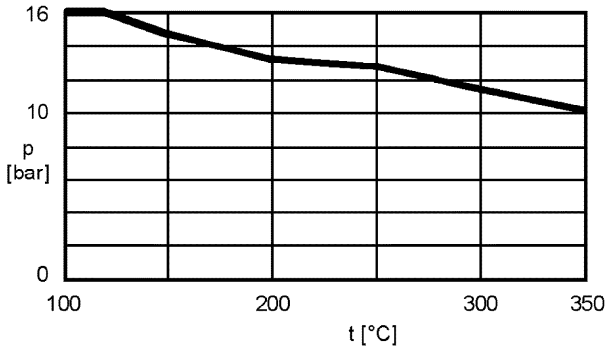
Owing to a special design of the built-in unit, the temperature is reduced to such an extent that proper functioning of the bearing and shaft sealing is ensured.

Shaft sealing			
Abbreviation	Material design		Material key DIN EN 12 756
U5A	Rotating seal ring	Hard carbon, antimony impregnated	A
	Stationary seal ring	SSiC, silicon carbide	Q
	O-ring	Caoutchouc fluoride (FPM)	V
	Spring	CrNiMo steel	G
	Other construction parts	CrNiMo steel	G

Performance data

Q	up to 1450 m^3/h	p_s	up to 7 bar
H	up to 155 m	p_d	16 bar ①
t	up to 350 °C		

① p_d depends on the temperature of the fluid pumped. Please refer to the diagram on page 2.



Inlet pressure (p_s) plus maximum delivery head must not exceed the curve values for the final pump pressure (p_d).

Application limits

Ambient temperature: min. -10 °C
max. +40 °C

Bearing and lubrication

By means of two grooved ball bearings C4 DIN 625 with the one on the pump side being lubricated by the fluid to be pumped, the one on the driving side by special grease.

Viscosity limit

The viscosity of the pumped fluid must be at least 3 cSt at 120 °C (temperature at the pump-sided bearing).

Dismantling of the insert unit

When using a shaft coupling with spacer, the insert unit may be dismantled towards the motor side while the volute casing and motor may remain on the base plate and the pipe lines at the volute casing.

Combination of components

The table on page 3 shows the combination possibilities of components of all NTT sizes.

The unit assembly system allows a simplified spare parts management.

Connections

The following connections are always provided:

FD1 Draining

FD2 Draining

FF2 Filling

LO1 Leakage outlet *

FV1 Venting

Optional:

TM3 Temperature measurement connection
VM2 Vibration measurement connection

* According to DIN 4754 for the safe draining of the heat transfer seepage quantities emerging from the shaft sealing.

Shaft coupling and accidental contact protection

Flexible shaft coupling according to DIN 740 without or with spacer. A coupling guard as protection against accidental contact according to DIN 31001 is supplied as soon as the scope of supply includes pump, base plate and shaft coupling.

Two coupling types are available: single flexible and double cardanic coupling.

The pump sizes with bearing bracket size 470, nominal impeller diameter 315 and 400 and the pump sizes with bearing bracket sizes 530 and 650 will be equipped with double cardanic couplings.

Base plates

Two base plate designs are available: base plates of steel, U-beam and base plates with drip channel of cast iron or steel, welded (material design depending on size).

All coupling types and base plate designs can be combined with each other.

With our interactive system ALL2CAD, you will get the aggregate dimensions.

Drive

Surface-cooled, three-phase squirrel cage induction motors, IM B3 type of construction, enclosure IP 55 according to IEC Standard, class F insulation, capacities and main dimensions according to DIN 42673.

Materials

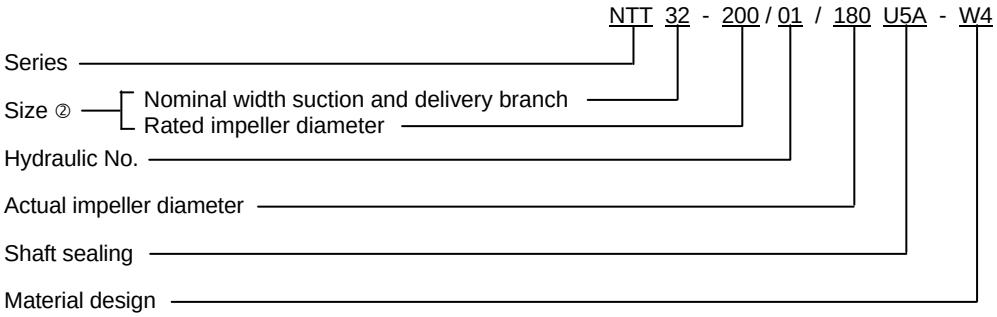
Denomination	Part No.		Material design
	single-stage	two-stage	W 4
Volute casing	102.01	102.01	EN-GJS-400-15 (GGG-40)
Impeller	230.01	-	EN-GJL-200 (GG-20)
Impeller 1st stage	-	230.02	EN-GJL-200 (GG-20)
Impeller 2nd stage	-	230.03	EN-GJL-200 (GG-20)
Diffuser	-	171.01	EN-GJL-200 (GG-20)
Stage casing	-	108.01	EN-GJL-250 (GG-25)
Casing cover	161.01	-	EN-GJS-400-15 (GGG-40)
Casing cover	-	161.02	EN-GJS-400-15 (GGG-40)
Shaft	210.01	210.02	1.7139 (16MnCrS5)
Bearing bracket	330.01	330.01	EN-GJL-250 (GG-25)
Bearing cover	360.02	360.02	EN-GJL-250 (GG-25)
Intermediate ring	509.01	-	EN-GJS-400-15 (GGG-40)
Impeller nut	922.01	922.01	5
Spring washer	936.01	936.01	Spring steel
Spring disk	934.01	-	Spring steel
Key	940.01	940.03	St 50-1 K
Key	940.02	940.02	St 50-1 K

Explosion protection

The pump fulfils the requirements according to EC Explosion Protection Directive 2014/34/EU (ATEX 100a) for equipment and equipment group II, category 2 G. Categorisation into temperature classes according to 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 order specific 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 know parameters (Q, H, υ, ρ = const.), a pump performance controller can be supplied with the pump to detect any operational faults.

Abbreviation system



The abbreviation is displayed on the nameplate. With the two-stage sizes, the actual impeller diameter relates to the second stage.

② With the two-stage sizes, the number of stages is placed with an oblique stroke in front of the nominal width of suction branch, e.g. 2/32-200/01/...

Combination of components

The following table shows the combination possibilities of components or spare parts of the NTT sizes.

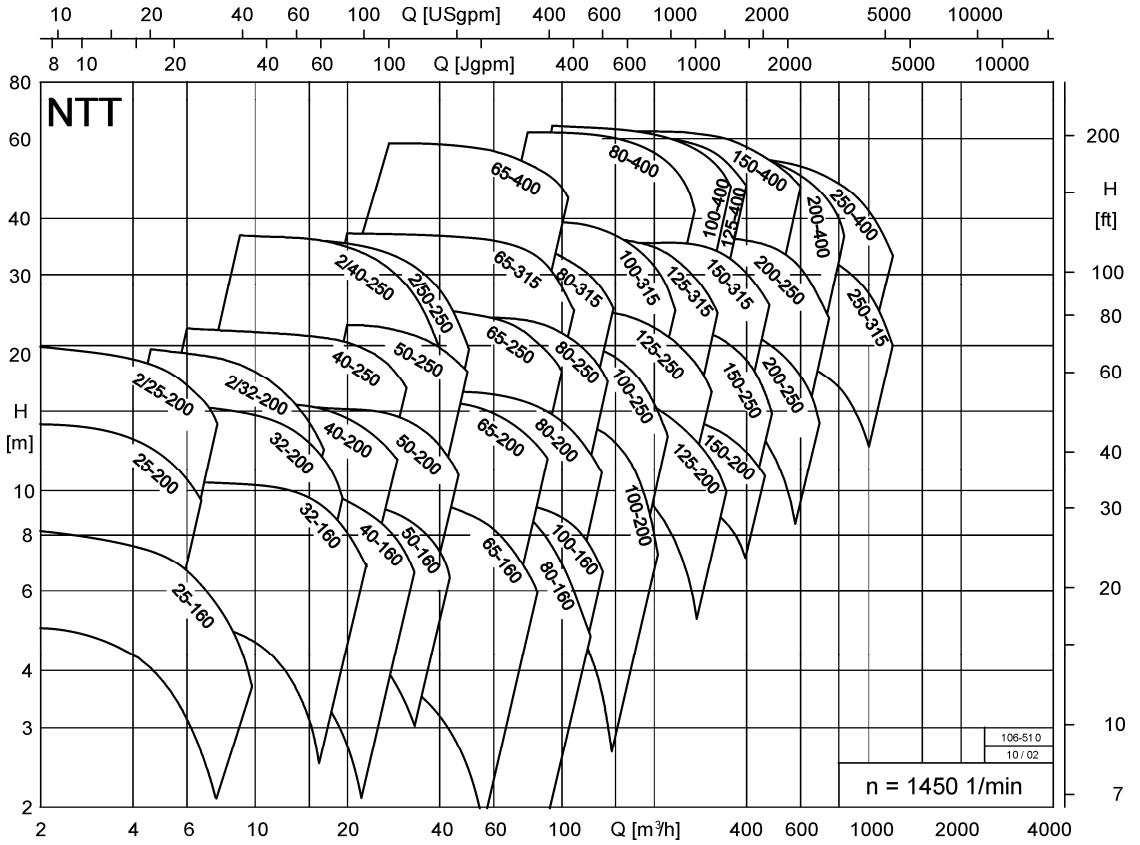
Bearing bracket size	Pump size	Volute casing	Impeller	Impeller 1st stage	Impeller 2nd stage	Diffuser	Stage casing	Intermediate ring	Casing cover	Bearing bracket	Shaft	Support foot
360	25-160 ③	1	1	-	-	-	-	-	1	1	1	1
	25-200 ③	2	2									2
	2/25-200 ③		-	1	1	1	1		2		2	
	32-160	3	3	-	-	-	-		1		1	1
	32-200	4	4									2
	2/32-200 ③		-	1	1	1	1		2		2	
	40-160	5	5	-	-	-	-		1		1	1
	40-200	6	6									2
	40-250	7	7						3			3
	2/40-250 ③		-	2	2	2	2		4		2	
	50-160	8	8	-	-	-	-		1		1	2
	50-200	9	9									
	50-250	10	10						3			3
	2/50-250 ③		-	3	2	2	2		-		2	
	65-160	11	11	-	-	-	-		1		1	2
	65-200	12	12						3			3
	80-160 ③	13	13						1			
	100-160 ③	14	14									4
470	65-250	15	15	-	-	-	-	-	5	2	3	5
	65-315	16	16					2				6
	65-400 ③	17	17					3				7
	80-200	18	18					-				8
	80-250	19	19									5
	80-315	20	20					2				7
	100-200	21	21					-				5
	100-250	22	22									6
	100-315	23	23					2				7
	125-200 ③	24	24					-				
	125-250	25	25									
	150-200 ③	26	26									8
530	80-400 ③	27	27	-	-	-	-	4	6	3	4	9
	100-400	28	28									
	125-315	29	29					-				
	125-400	30	30					4				10
	150-250 ③	31	31					-	7			9
	150-315	32	32						6			
	150-400	33	33					4				10
	200-250 ③	34	34					-	7			11
650	200-315 ③	35	35	-	-	-	-	-	8	4	5	12
	200-400 ③	36	36									
	250-315 ③	37	37									13
	250-400 ③	38	38									

③ Additional size

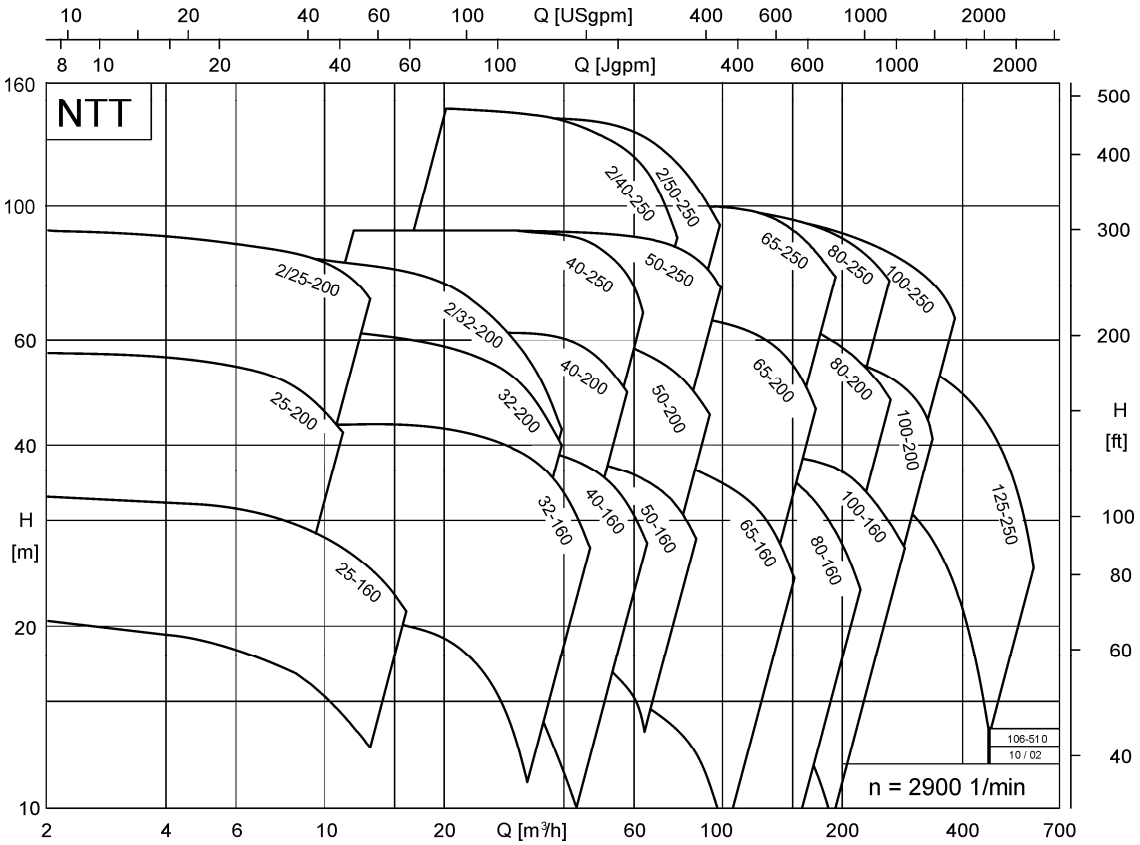
Within a vertical column, parts with identical numbers are interchangeable.

Performance graphs

n = 1450 1/min

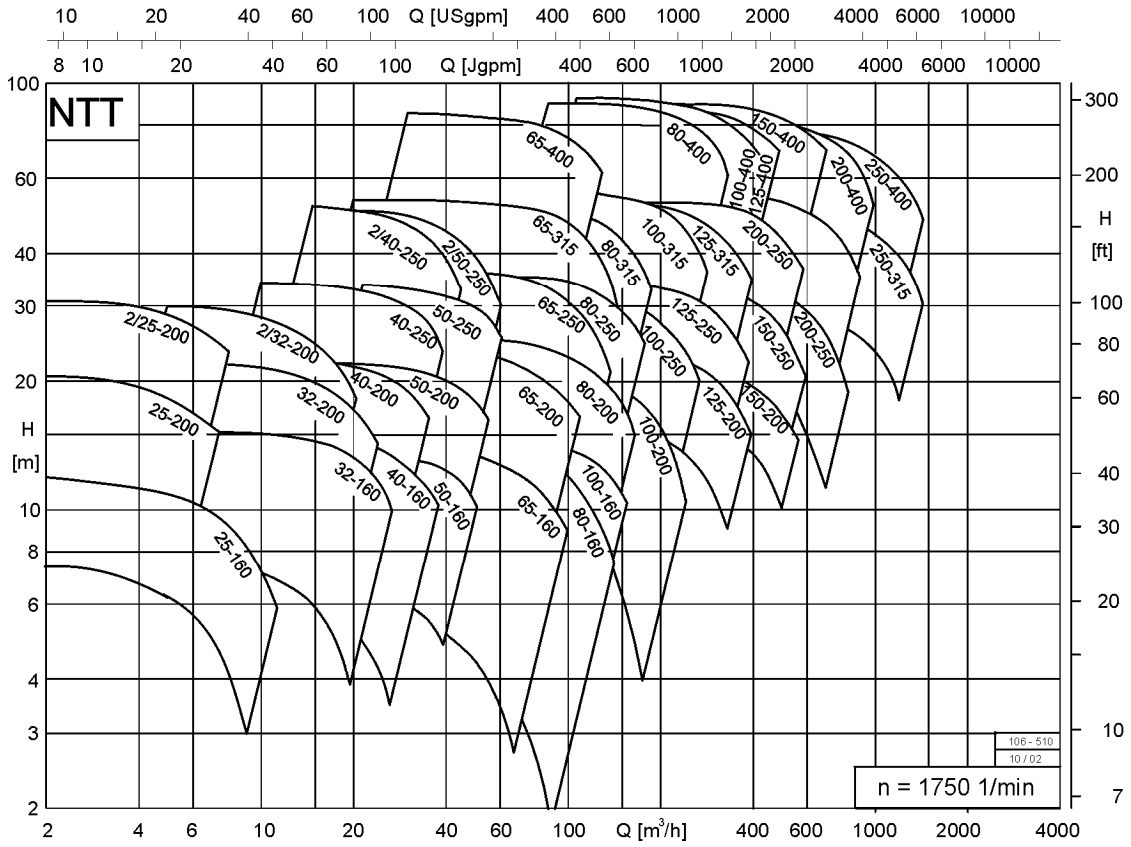


n = 2900 1/min

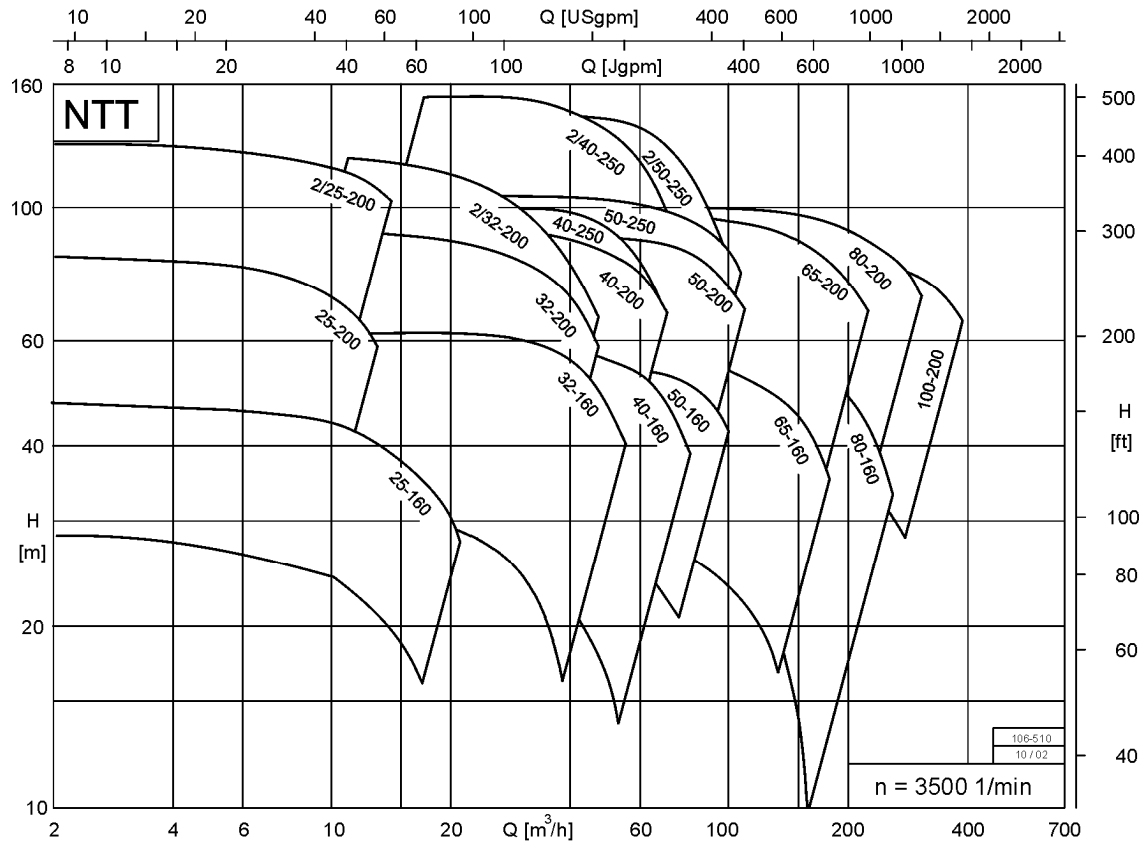


For exact performance data, please refer to the individual characteristics.

n = 1750 1/min

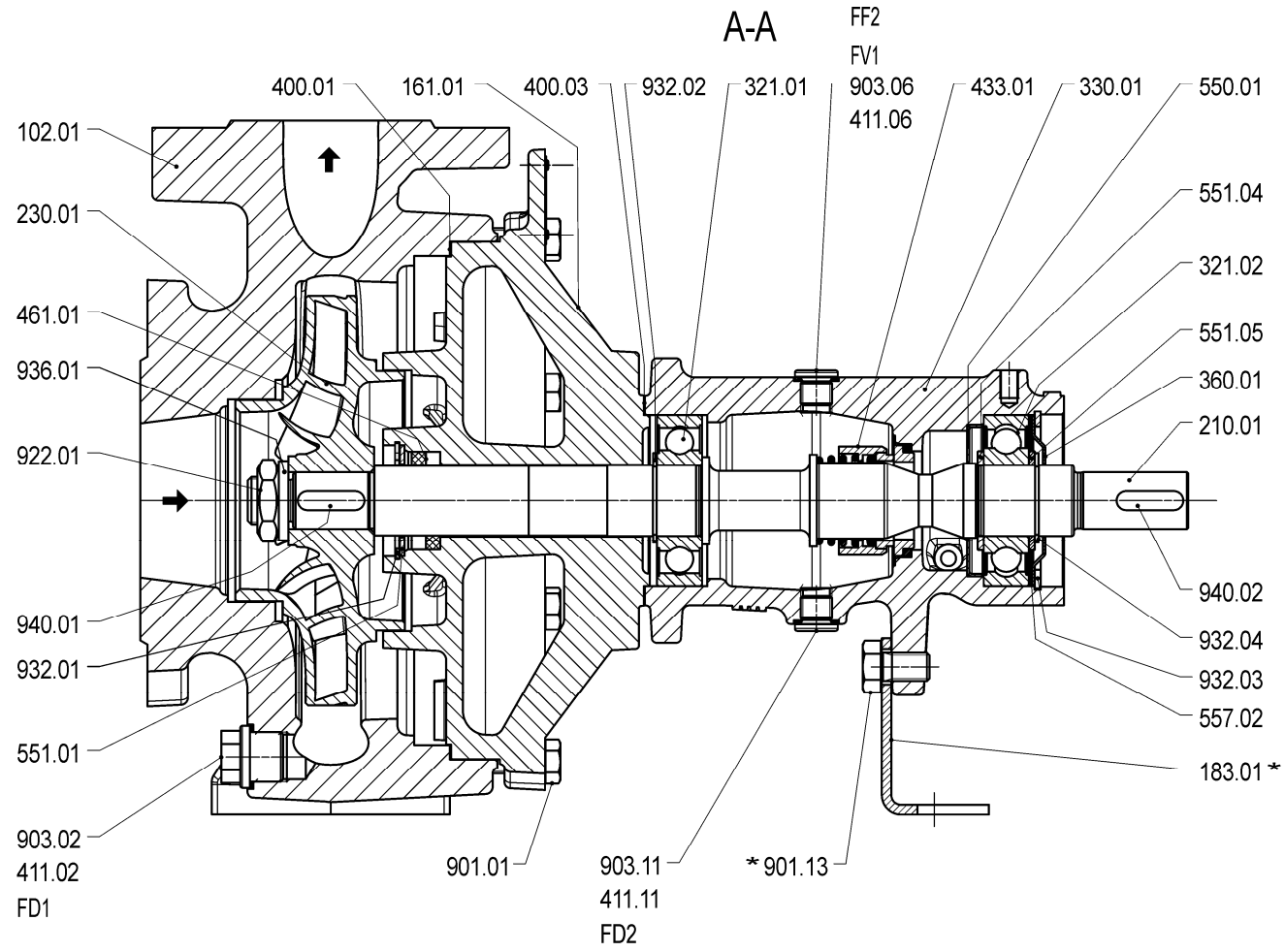


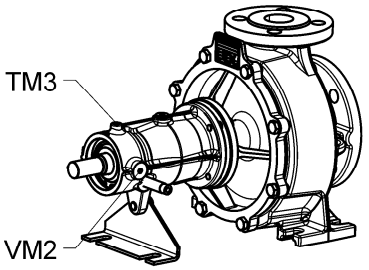
n = 3500 1/min



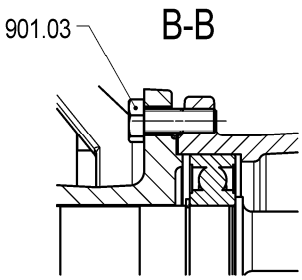
For exact performance data, please refer to the individual characteristics.

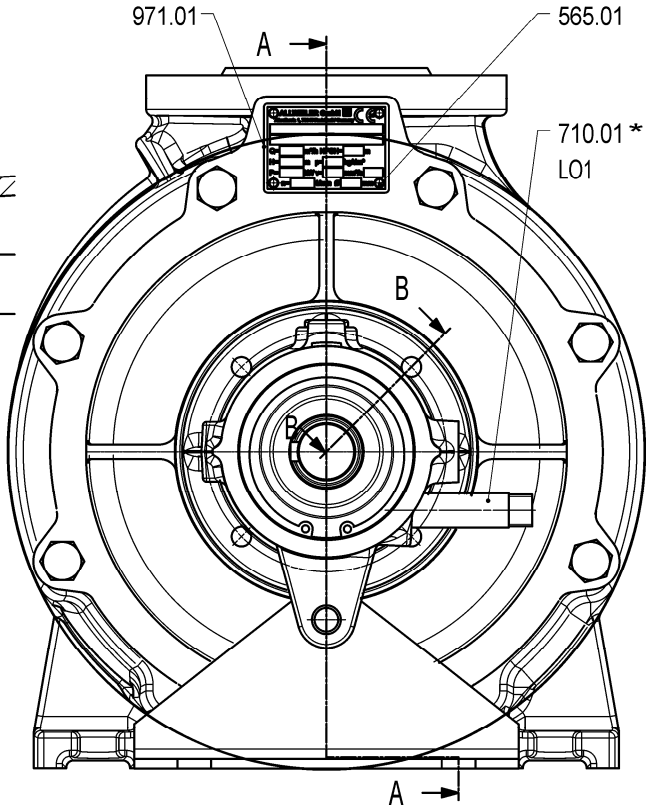
Sectional drawing for single-stage sizes
Sizes at bearing bracket 360





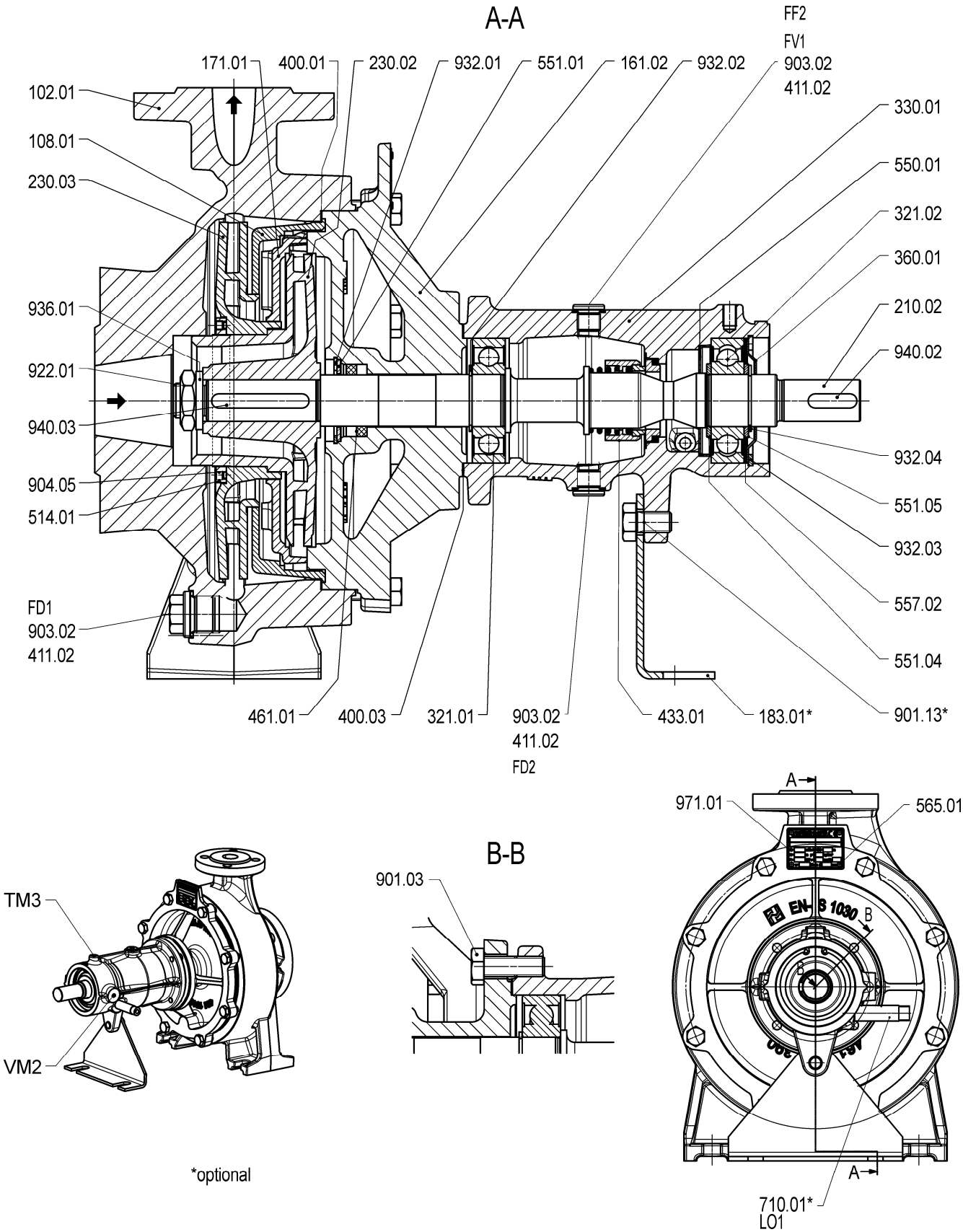
*optional





Shaft sealing:	Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front
Abbreviation:	**U 5 A**

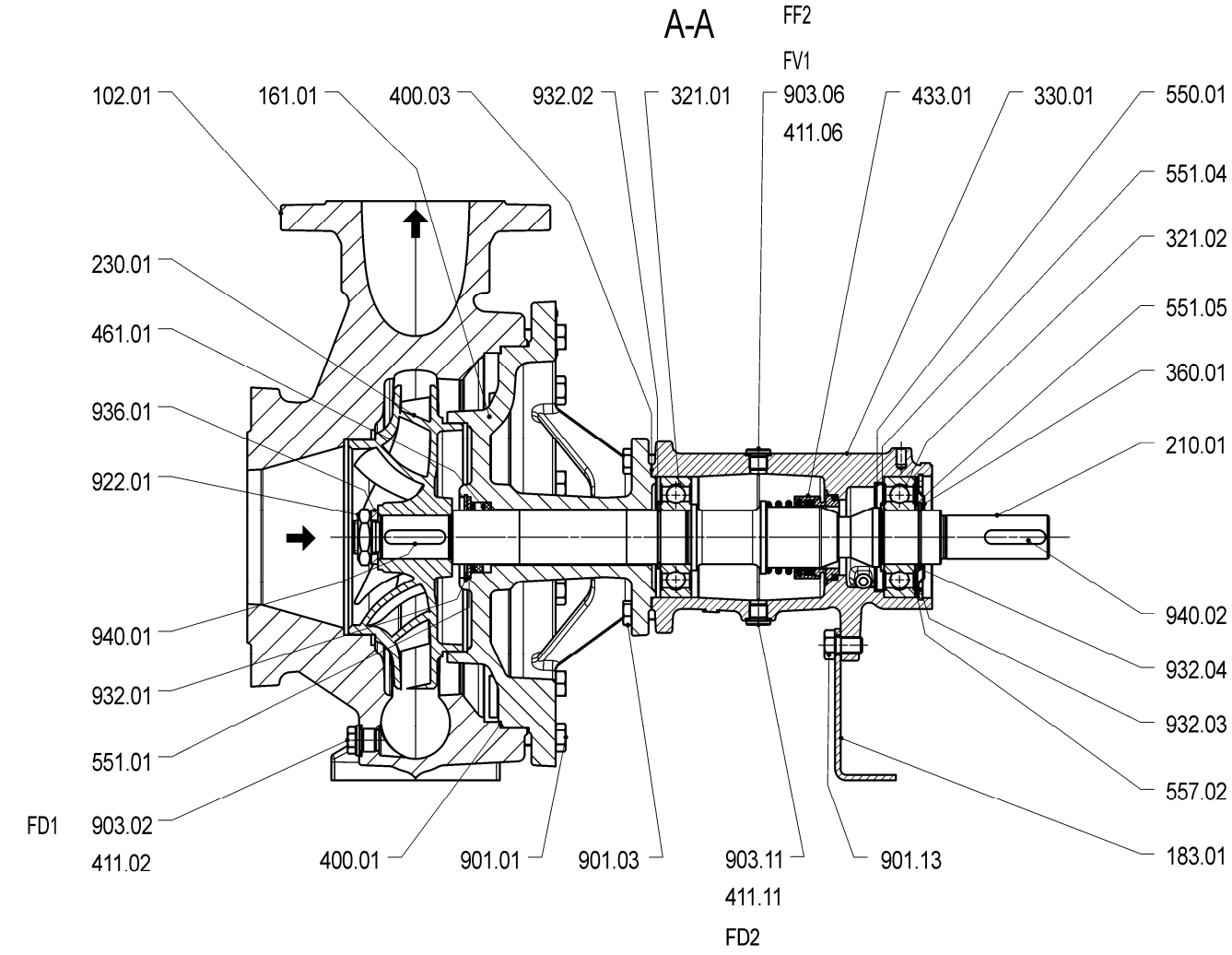
Sizes at bearing bracket 360, two stage

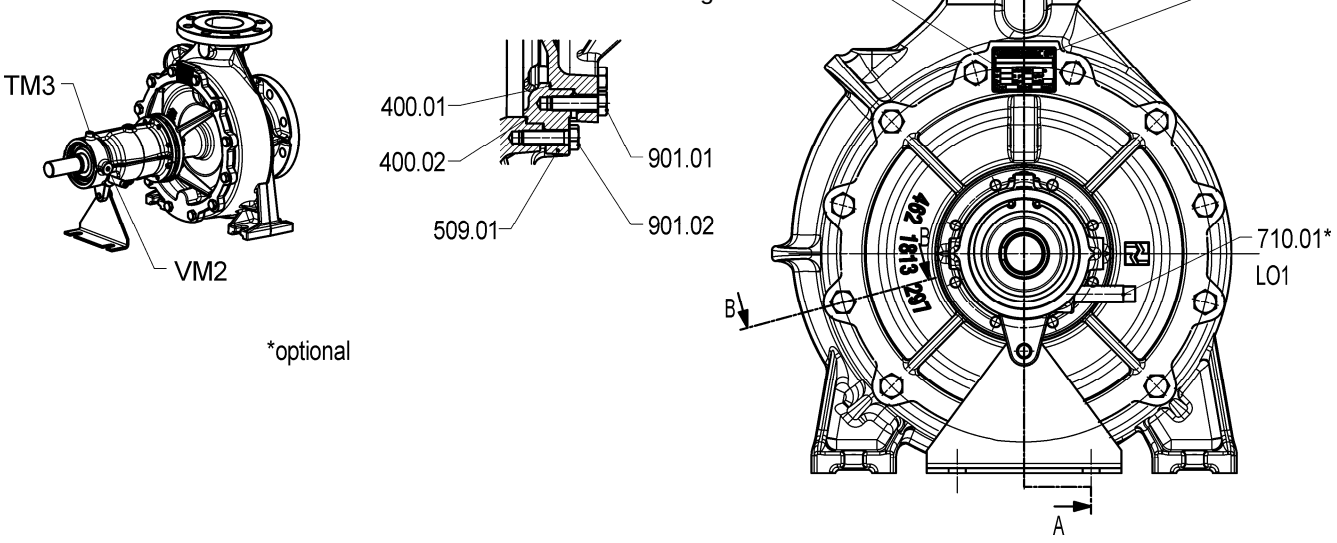


Shaft sealing: Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front

Abbreviation: **U 5 A**

Sizes at bearing bracket 470



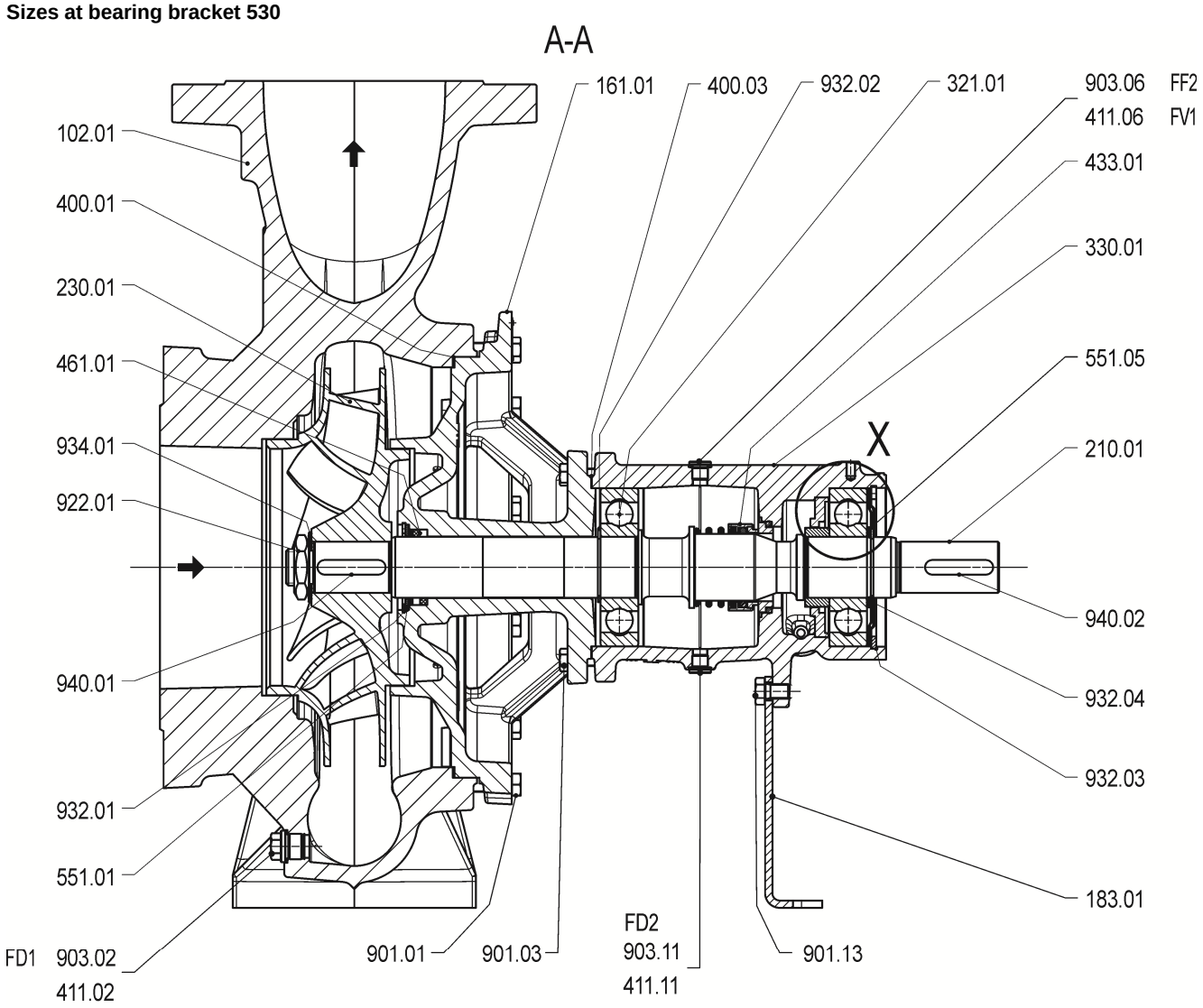


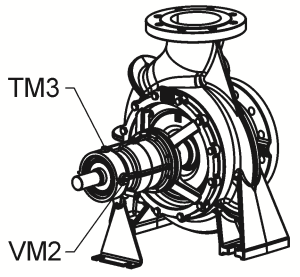
*optional

Shaft sealing: Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front

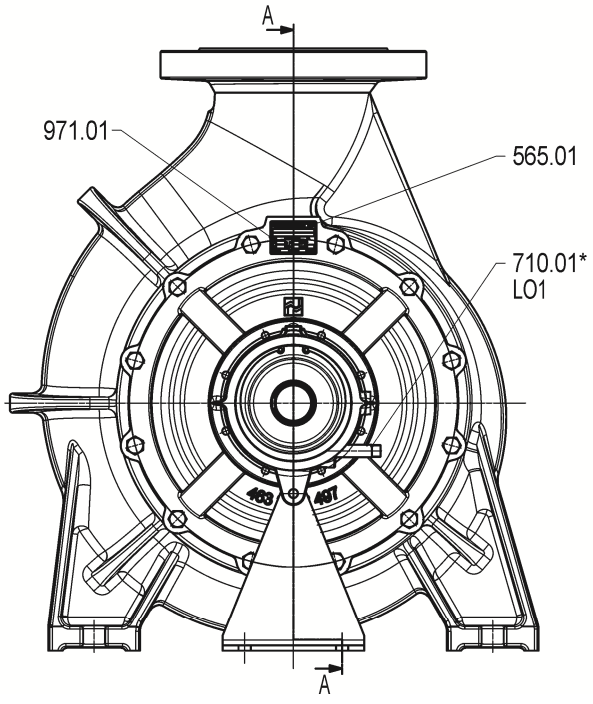
Abbreviation: **U 5 A**

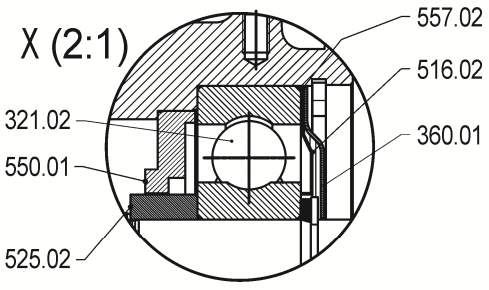
Sizes at bearing bracket 530





*optional

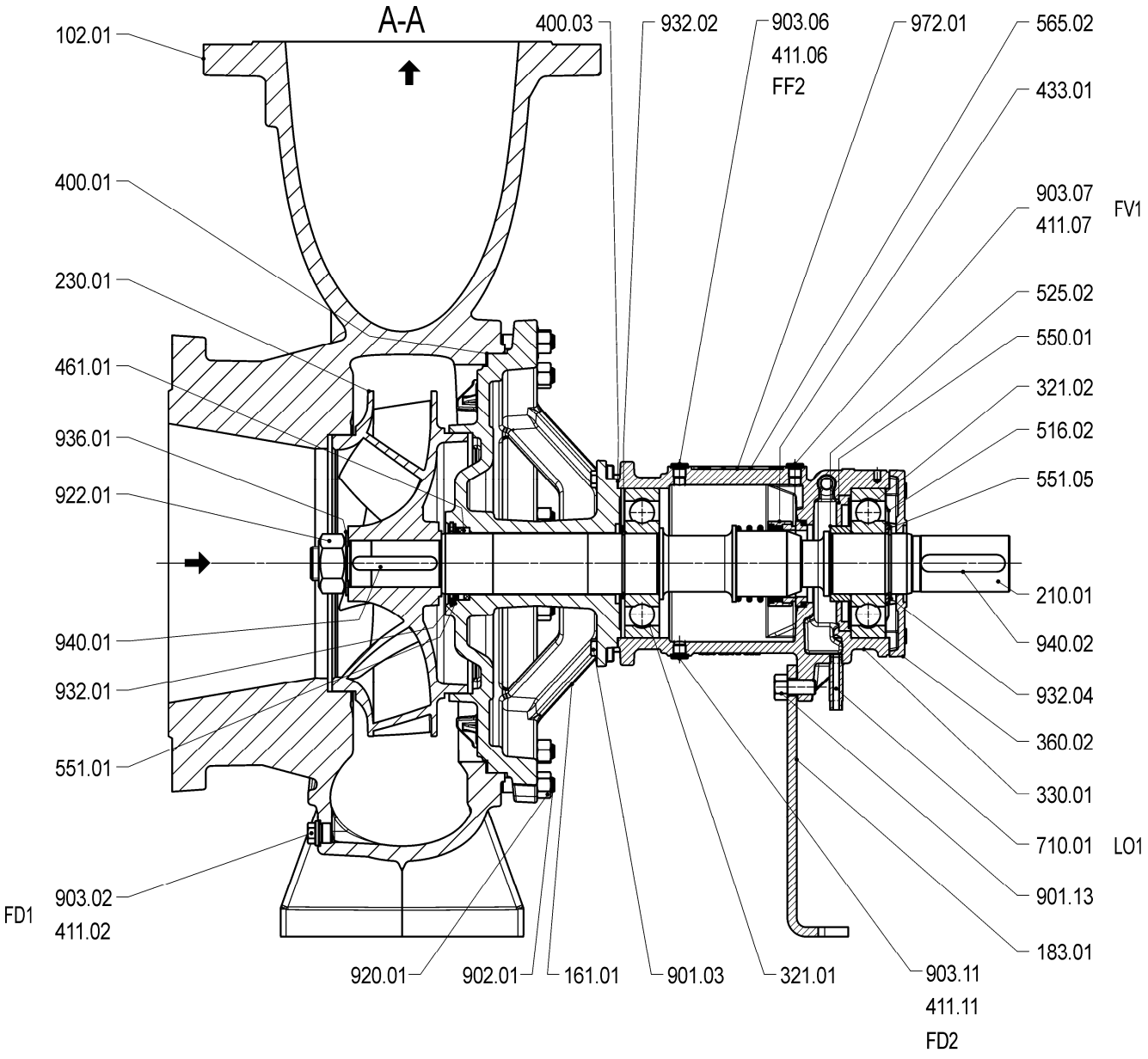


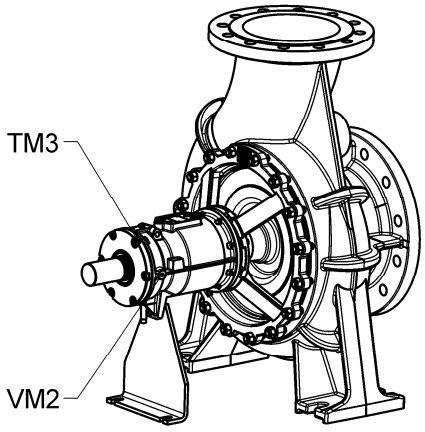


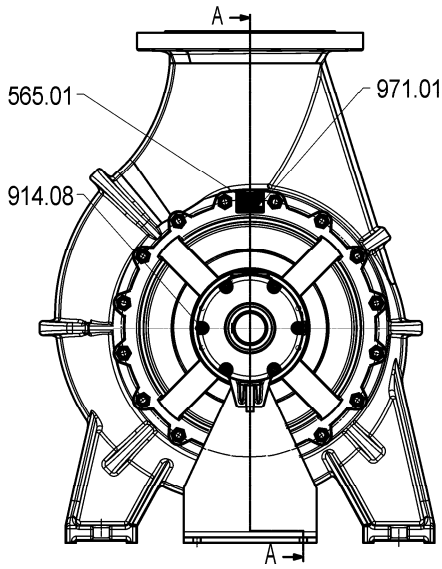
Shaft sealing: Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front

Abbreviation: **U 5 A**

Sizes at bearing bracket 650







Shaft sealing:	Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front
Abbreviation:	**U 5 A**

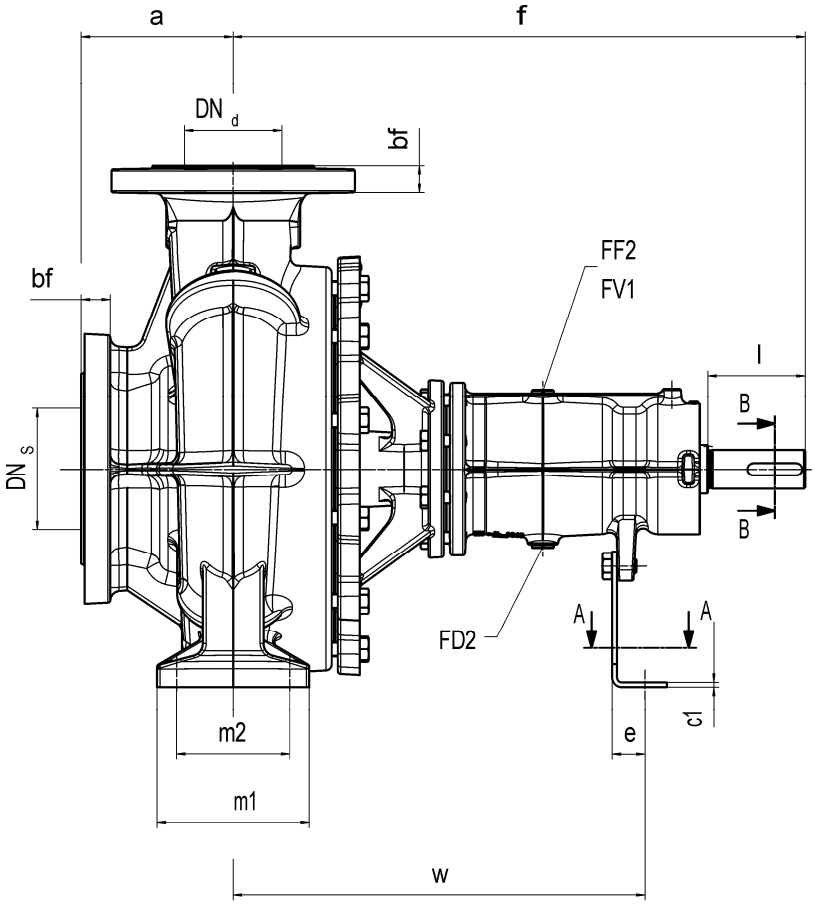
Denomination	Part No.
Volute casing	102.01
Stage casing	108.01
Casing cover	161.01
Casing cover	161.02
Diffuser	171.01
Supporting foot	183.01
Shaft	210.01
Shaft	210.02
Impeller	230.01
Impeller 1st stage	230.02
Impeller 2nd stage	230.03
Grooved ball bearing	321.01
Grooved ball bearing	321.02
Bearing bracket	330.01
Bearing cover	360.01
Gasket	400.01
Gasket	400.02
Gasket	400.03
Joint ring	411.02
Joint ring	411.06
Joint ring	411.07
Joint ring	411.11
Mechanical seal	433.01
Gland packing	461.01

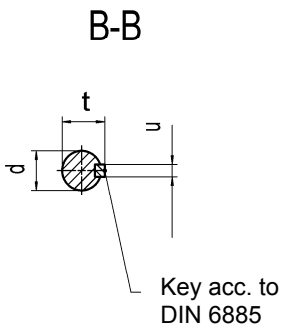
Denomination	Part No.
Intermediate ring	509.01
Threaded ring	514.01
Nilos ring	516.02
Spacer sleeve	525.02
Disc	550.01
Disc spacer	551.01
Disc spacer	551.04
Disc spacer	551.05
Compensating disc	557.02
Rivet	565.01
Pipe	710.01
Hexagonal screw	901.01
Hexagonal screw	901.02
Hexagonal screw	901.03
Hexagonal screw	901.13
Stud bolt	902.01
Screwed plug	903.02
Screwed plug	903.06
Screwed plug	903.07
Screwed plug	903.11
Grub screw	904.05
Socket-head cap screw	914.08
Nut	920.01
Impeller nut	922.01

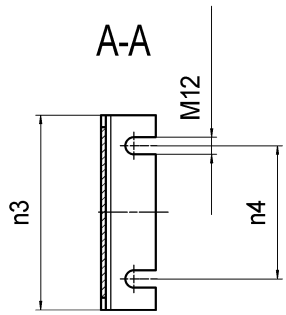
Denomination	Part No.
Circlip	932.01
Circlip	932.02
Circlip	932.03
Circlip	932.04
Spring disc	934.01
Spring ring	936.01
Key	940.01
Key	940.02
Key	940.03
Name plate	971.01

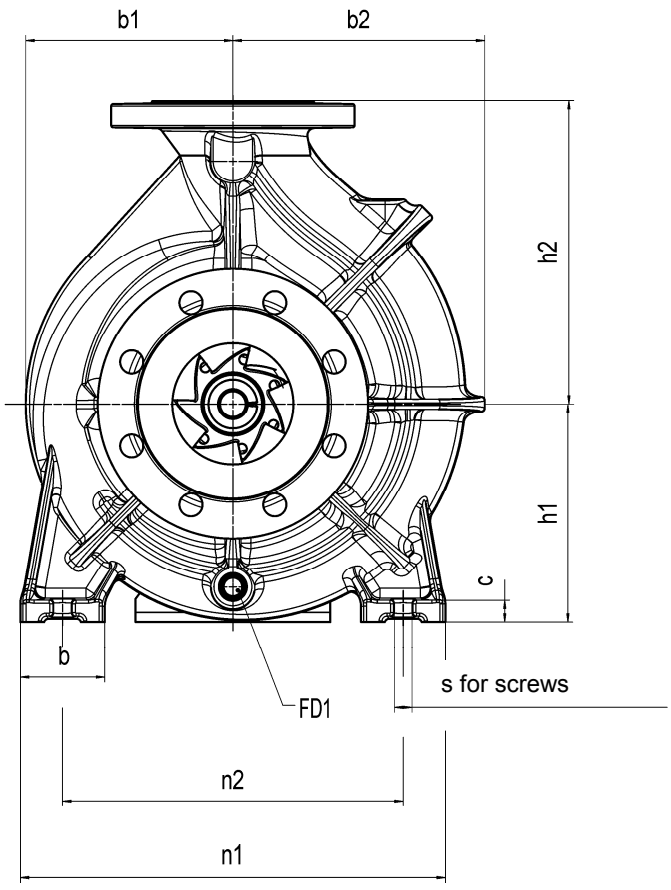
Connections	
FD1	Draining pump
FD2	Draining
FF2	Filling
FV1	Venting
LO1	Leakage outlet
TM3	Temperature measurement
VM2	Vibration measurement

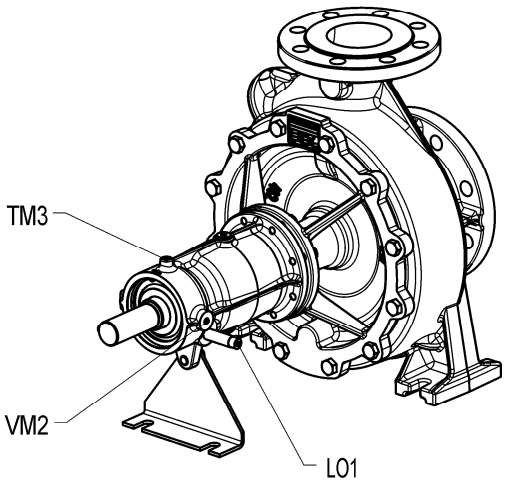
Pump dimensions Size at bearing bracket sizes 360, 470 and 530



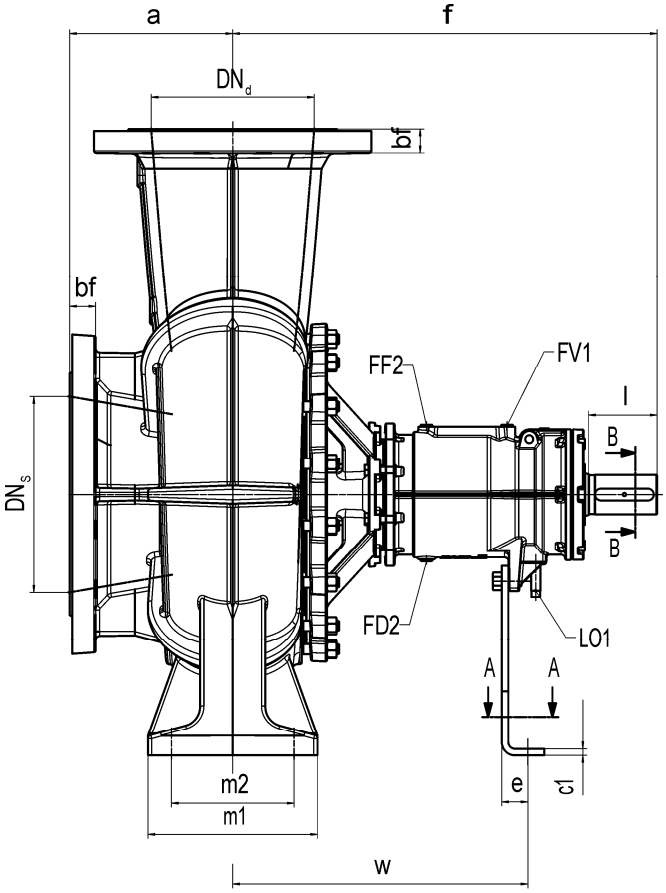


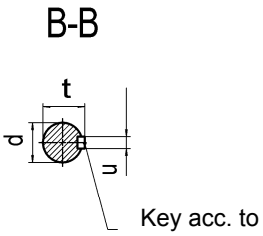


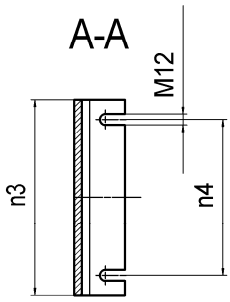


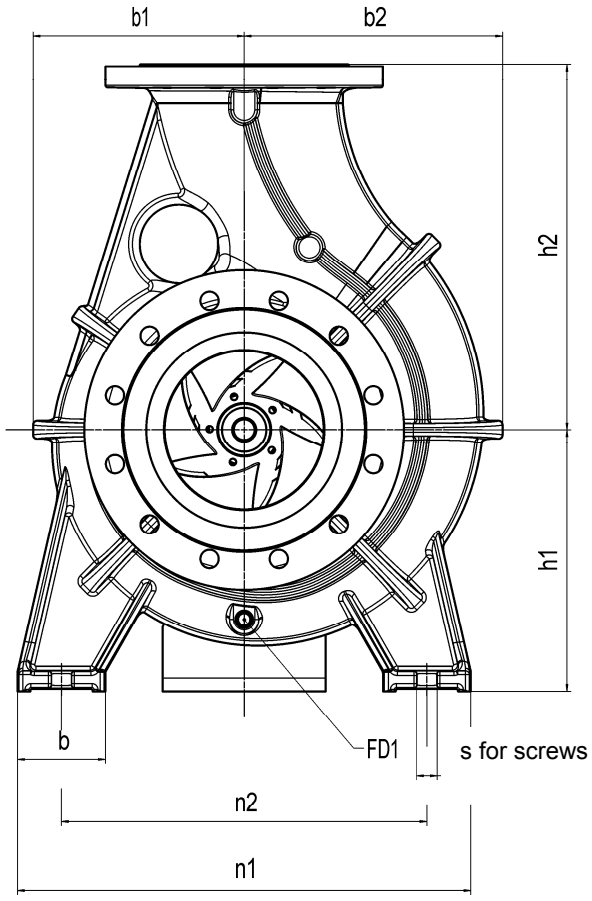


Pump dimensions Size at bearing bracket sizes 650



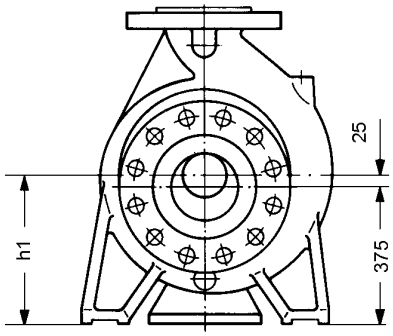






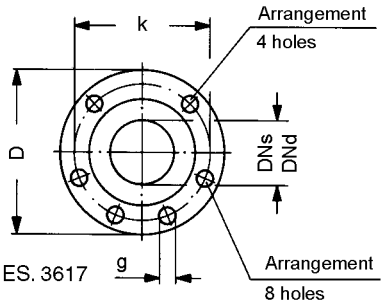
Bearing bracket size	Connections			
	Draining	Filling	Leakage outlet	Venting
	FD ④	FF	LO	V
360	G ¼	G ¼		
470	G ⅜			
530				
650				

④ Connection FD in sizes 25-160/11, 25-200/01 and 2/25-200/01 each G ½

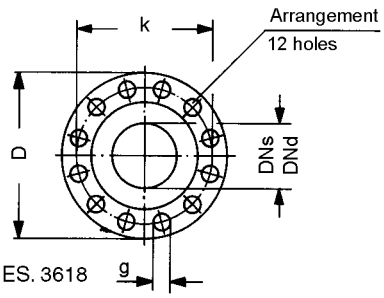


ES. 3619

With size 250-400/01 only



ES. 3617



ES. 3618

Flanges acc. to EN 1092-2 PN 16					
DNs / D Nd	D	bf	k	g	No. of holes
25	115	16	85	14	4
32	140	18	100	19	4
40	150	18	110	19	4
50	165	20	125	19	4
65	185	20	145	19	4
80	200	22	160	19	8
100	220	24	180	19	8
125	250	26	210	19	8
150	285	26	240	23	8
200	340	30	295	23	12
250	405	32	355	28	12
300	460	32	410	28	12

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

Bearing bracket size	Pump size	Suction flange	Delivery flange	Pump dimensions						Feet dimensions											for screws	Extension dim. ⑥	Shaft end acc. to DIN 784			
		DN_s	DN_d	a	f	b1	b2	h1	h2	b	c	c1	e	m1	m2	m3	n1	n2	n3	n4	w	s	x	d	l	t	u
360	25-160 ⑤	40	25	80	360	133	133	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	25-200 ⑤	40	25	80	360	132	132	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	2/25-200 ⑤	40	25	80	360	132	132	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	32-160	50	32	80	360	123	123	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	32-200	50	32	80	360	124	130	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	2/32-200 ⑤	50	32	80	360	124	130	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	40-160	65	40	80	360	133	133	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M12	80	24	50	27	8
	40-200	65	40	100	360	125	135	160	180	50	15	4	28	100	70	45	265	212	160	110	260	M12	80	24	50	27	8
	40-250	65	40	100	360	150	156	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	80	24	50	27	8
	2/40-250 ⑤	65	40	100	360	150	156	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	80	24	50	27	8
	50-160	65	50	100	360	133	147	160	180	50	15	4	28	100	70	45	265	212	160	110	260	M12	80	24	50	27	8
	50-200	65	50	100	360	133	145	160	200	50	15	4	28	100	70	45	265	212	160	110	260	M12	80	24	50	27	8
	50-250	65	50	100	360	156	169	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	80	24	50	27	8
	2/50-250 ⑤	65	50	100	360	156	169	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	80	24	50	27	8
	65-160	80	65	100	360	133	174	160	200	65	15	4	28	125	95	45	280	212	160	110	260	M12	100	24	50	27	8
	65-200	80	65	100	360	160	170	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	100	24	50	27	8
	80-160 ⑤	100	80	125	360	136	170	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M12	100	24	50	27	8
	100-160 ⑤	125	100	125	360	165	200	200	280	65	15	4	28	125	95	45	320	250	160	110	260	M12	100	24	50	27	8
470	65-250	80	65	100	470	173	196	200	250	80	18	4	28	160	120	45	360	280	160	110	340	M16	100	32	80	35	10
	65-315	80	65	125	470	202	235	225	280	80	25	6	30	160	120	47	400	315	160	110	340	M16	100	32	80	35	10
	65-400 ⑤	80	65	125	470	239	255	250	355	80	25	6	30	160	120	47	420	335	160	110	340	M16	100	32	80	35	10
	80-200	100	80	125	470	170	207	180	250	65	18	4	28	125	95	45	345	280	160	110	340	M12	100	32	80	35	10
	80-250	100	80	125	470	181	225	200	280	80	18	4	28	160	120	45	400	315	160	110	340	M16	100	32	80	35	10
	80-315	100	80	125	470	210	231	250	315	80	25	6	30	160	120	47	400	315	160	110	340	M16	100	32	80	35	10
	100-200	125	100	125	470	165	203	200	280	80	18	4	28	160	120	45	360	280	160	110	340	M16	120	32	80	35	10
	100-250	125	100	140	470	189	224	225	280	80	18	6	30	160	120	47	400	315	160	110	340	M16	120	32	80	35	10
	100-315	125	100	140	470	220	250	250	315	80	25	6	30	160	120	47	400	315	160	110	340	M16	120	32	80	35	10
	125-200 ⑤	150	125	140	470	183	267	250	315	80	18	6	30	160	120	47	400	315	160	110	340	M16	120	32	80	35	10
	125-250	150	125	140	470	212	255	250	355	80	18	6	30	160	120	47	400	315	160	110	340	M16	120	32	80	35	10
	150-200 ⑤	200	150	160	470	214	268	280	370	100	27	6	30	200	150	47	550	450	160	110	340	M20	120	32	80	35	10
530	80-400 ⑤	100	80	125	530	261	282	280	355	80	25	6	31	160	120	47	435	355	160	110	370	M16	140	42	85	45	12
	100-400	125	100	140	530	268	292	280	355	100	27	6	31	200	150	47	500	400	160	110	370	M20	140	42	85	45	12
	125-315	150	125	140	530	226	252	280	355	100	27	6	31	200	150	47	500	400	160	110	370	M20	140	42	85	45	12
	125-400	150	125	140	530	285	315	315	400	100	27	6	31	200	150	47	500	400	160	110	370	M20	140	42	85	45	12
	150-250 ⑤	200	150	160	530	215	308	280	375	100	27	6	31	200	150	47	500	400	160	110	370	M20	140	42	85	45	12
	150-315	200	150	160	530	240	320	280	400	100	27	6	31	200	150	47	550	450	160	110	370	M20	140	42	85	45	12
	150-400	200	150	160	530	277	305	315	450	100	27	6	31	200	150	47	550	450	160	110	370	M20	140	42	85	45	12
	200-250 ⑤	200	200	180	530	293	310	355	425	100	27	6	31	200	150	47	550	450	160	110	370	M20	140	42	85	45	12
650	200-315 ⑤	250	200	200	650	275	365	355	450	110	27	10	42	200	150	65	550	450	250	200	455	M20	180	60	105	64	18
	200-400 ⑤	250	200	180	650	322	374	355	500	100	30	10	42	200	150	65	550	450	250	200	455	M20	180	60	105	64	18
	250-315 ⑤	300	250	250	650	324	396	400	560	130	30	10	42	260	190	65	690	560	250	200	455	M24	180	60	105	64	18
	250-400 ⑤	300	250	225	650	350	440	400	600	120	30	10	42	280	200	65	630	500	250	200	455	M27	180	60	105	64	18

⑤ Additional size

⑥ The spacer of the coupling can be larger than the required extension dimension.

Tolerances of companion dimensions acc. to DIN EN 735.

Dimensions in mm without commitment.

ALLWEILER solutions

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Decades of experience and branch-specific know-how ensure solutions that are practical and dependable. In addition to individual units with a motor or with a free shaft end, you can get complete systems and customer-specific cast parts from ALLWEILER GmbH. You are not just investing in machines with ALLWEILER GmbH You are also profiting from decades of know-how about applications and processes in your branch.

You will find pumps and systems by ALLWEILER GmbH in the following sectors:

- **Marine and Offshore**
  Made of particularly corrosion-resistant, saltwater-proof materials and in accordance with specific standards (shock testing, national marine, international classifications, etc.).

- **Power Generation**
  Block and twin units for fuel and water injection in gas and steam turbines.
  For fuel supply, injection and lubricating oil delivery in power plants.

- **Water and Wastewater**
  Pumps for water treatment; share of dry solids content up to 45 percent; macerators, which make is possible to pump delivery media that are high in fibre and solids.

- **Process Engineering and Chemical Industry (ATEX-conformity)**
  Shaft bearing, shaft seal and material designs in accordance with the chemical characteristics of the delivery media. Magnetic coupling for hermetically sealed pumps.

- **Building Industry**
  Special units for oil furnace and lift systems. oil submersible pumps for all types of hydraulic machines.

- **Food and Pharma**
  Stainless steel pumps with CIP and SIP design, EHEDG and FDA certified. Especially for the careful delivery and proportioning of even sticky, paste-like and solids-rich media.

- **Tool Machinery**
  Designed for large delivery amounts or a high delivery pressure; resistant to contaminants and foreign materials. Especially for cooling lubricant supply.

- **Pulp and Paper**
  Pumps with extremely high availability (24 hours; 365 days) and many sizes, starting with small proportioning pumps and ranging to large Kaolin feeding pumps.

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  In supply circuits, circulating systems and heating circuits for the delivery of hot water and heat-transfer oil up to 207 °C and 450 °C.

Subject to technical alterations.

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