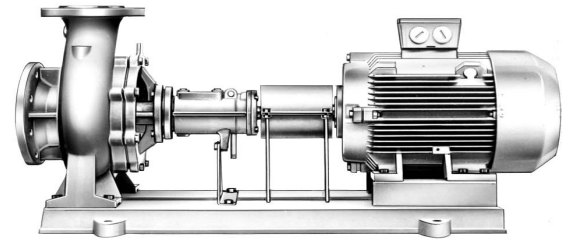


Volute Casing Centrifugal Pumps PN 16 for Heat Transfer Oils up to 350°C

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, anti-mony 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

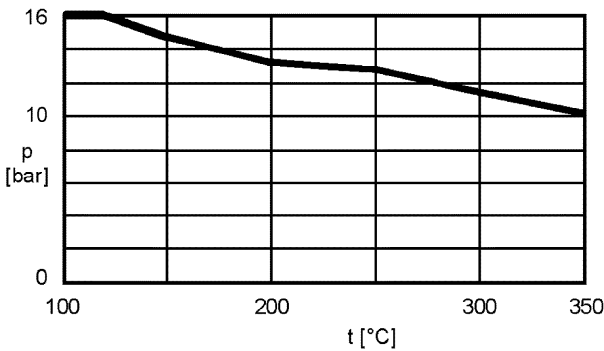
Performance data

Q up to 1450 m³/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:

- FD Draining
- FF Filling
- LO Leakage outlet *
- V Venting

* 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

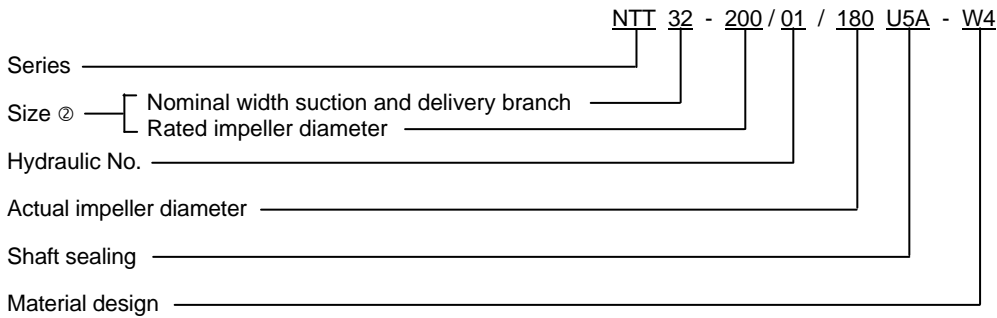
Explosion protection



The pump fulfils the requirements according to EC Explosion Protection Directive 94/9EG (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, v , 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.

Ⓢ 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.

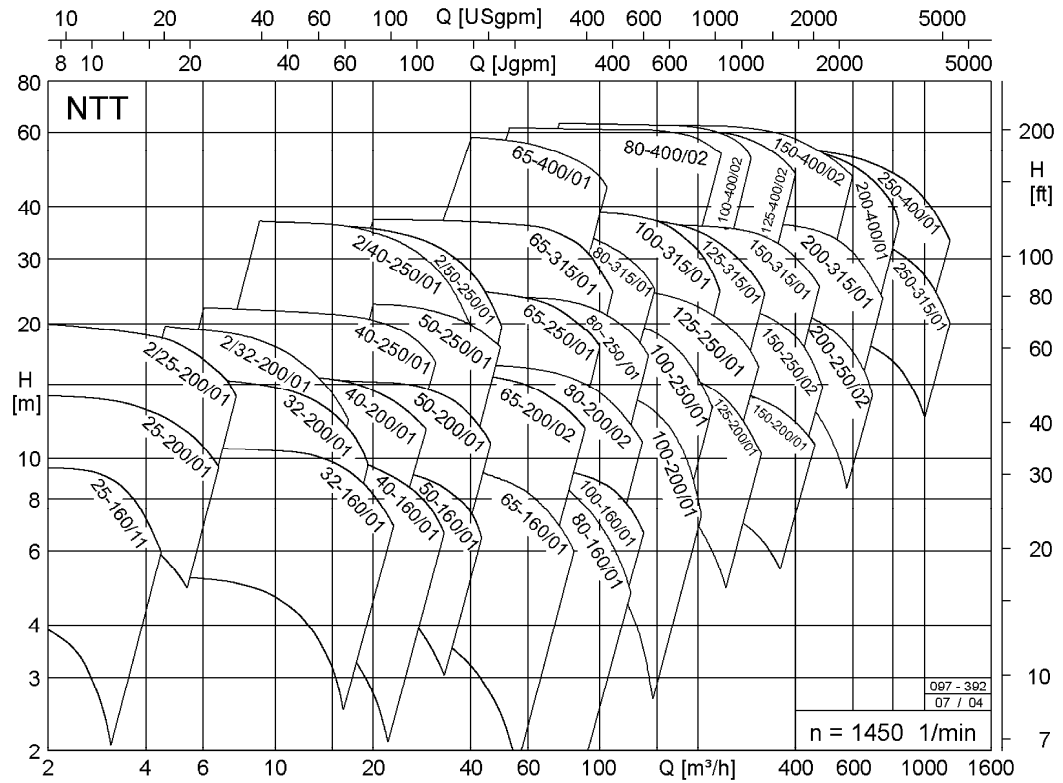
Bearing bracket size	Pump size	Volute casing	Impeller	Impeller 1 st stage	Impeller 2 nd stage	Diffuser	Stage casing	Intermediate ring	Casing cover	Bearing bracket	Shaft	Support foot		
360	25-160/11 Ⓢ	1	1	-	-	-	-	-	1	1	1	1		
	25-200/01 Ⓢ	2	2	-	-	-	-	-	1			2		
	2/25-200/01 Ⓢ		-	1	1	1	1	2	2					
	32-160/01	3	3	-	-	-	-	-	1			1		
	32-200/01	4	4	-	-	-	-	-	1			2		
	2/32-200/01 Ⓢ		-	1	1	1	1	2	2					
	40-160/01	5	5	-	-	-	-	-	-			1	1	
	40-200/01	6	6	-	-	-	-	-	1			2		
	40-250/01	7	7	-	-	-	-	1	-			1	3	
	2/40-250/01 Ⓢ		-	2	2	2	2	3	2			2		
	50-160/01	8	8	-	-	-	-	-	1			1	2	
	50-200/01	9	9	-	-	-	-	-	1			2	3	
	50-250/01	10	10	-	-	-	-	1	-			3	1	3
	2/50-250/01 Ⓢ		-	3	2	2	2	3	2			2		
65-160/01	11	11	-	-	-	-	-	1	1	2				
65-200/02	12	12	-	-	-	-	-	1	1	3				
80-160/01 Ⓢ	13	13	-	-	-	-	-	-	-	1	4			
100-160/01 Ⓢ	14	14	-	-	-	-	-	-	-	-	5			
470	65-250/01	15	15	-	-	-	-	-	2	4	2	3		
	65-315/01	16	16	-	-	-	-	2	4			5		
	65-400/01 Ⓢ	17	17	-	-	-	-	3	4			6		
	80-200/02	18	18	-	-	-	-	-	4			7		
	80-250/01	19	19	-	-	-	-	-	4			8		
	80-315/01	20	20	-	-	-	-	2	4			5		
	100-200/01	21	21	-	-	-	-	-	4			6		
	100-250/01	22	22	-	-	-	-	-	4			7		
	100-315/01	23	23	-	-	-	-	2	4			8		
	125-200/01 Ⓢ	24	24	-	-	-	-	-	4			9		
125-250/01	25	25	-	-	-	-	-	4	10					
150-200/01 Ⓢ	26	26	-	-	-	-	-	4	11					
530	80-400/02 Ⓢ	27	27	-	-	-	-	4	5	3	4	12		
	100-400/02	28	28	-	-	-	-	-	5			13		
	125-315/01	29	29	-	-	-	-	4	5			14		
	125-400/02	30	30	-	-	-	-	-	6			15		
	150-250/02 Ⓢ	31	31	-	-	-	-	-	6			16		
	150-315/01	32	32	-	-	-	-	-	5			17		
	150-400/02	33	33	-	-	-	-	4	5			18		
650	200-250/02 Ⓢ	34	34	-	-	-	-	-	6	19				
	200-315/01 Ⓢ	35	35	-	-	-	-	-	7	20				
	200-400/01 Ⓢ	36	36	-	-	-	-	-	7	21				
	250-315/01 Ⓢ	37	37	-	-	-	-	-	7	22				
250-400/01 Ⓢ	38	38	-	-	-	-	-	7	23					

Ⓢ Additional size

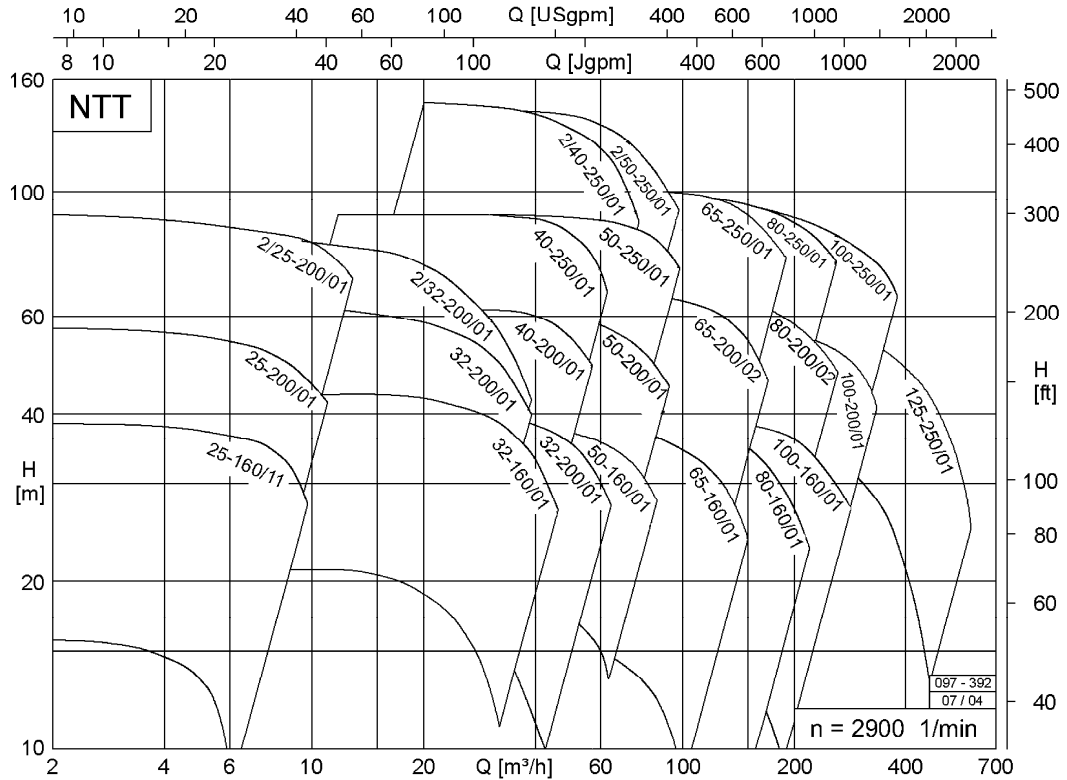
Within a vertical column, parts with identical numbers are interchangeable.

Performance graphs

n = 1450 1/min

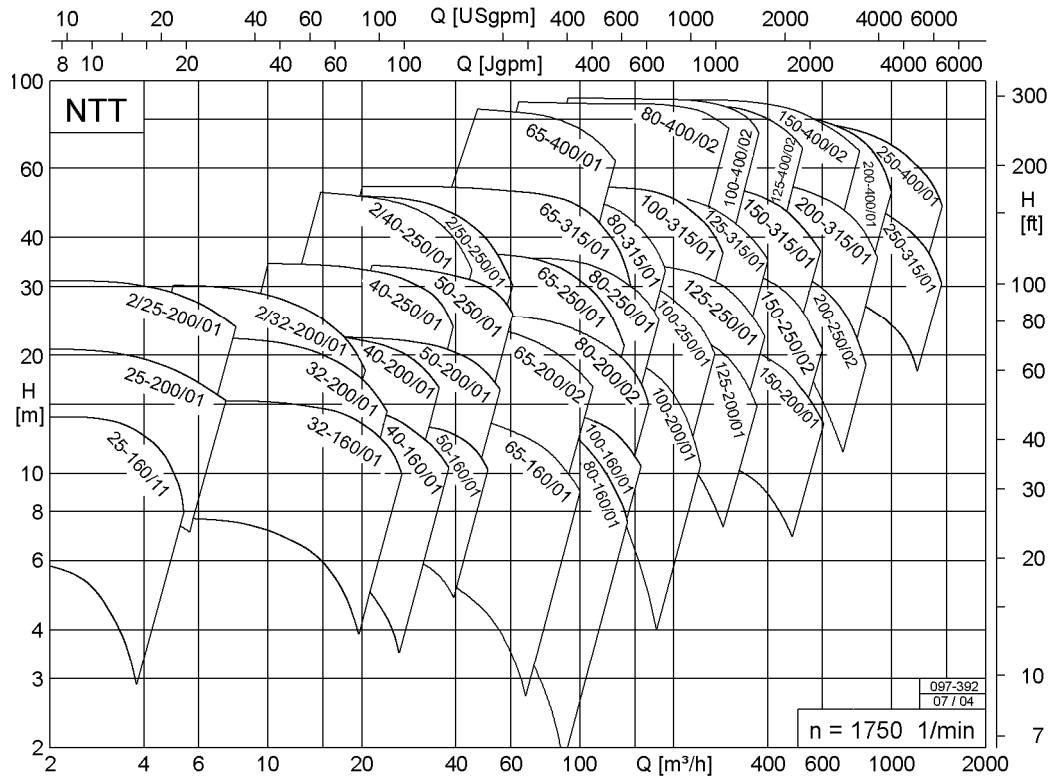


n = 2900 1/min

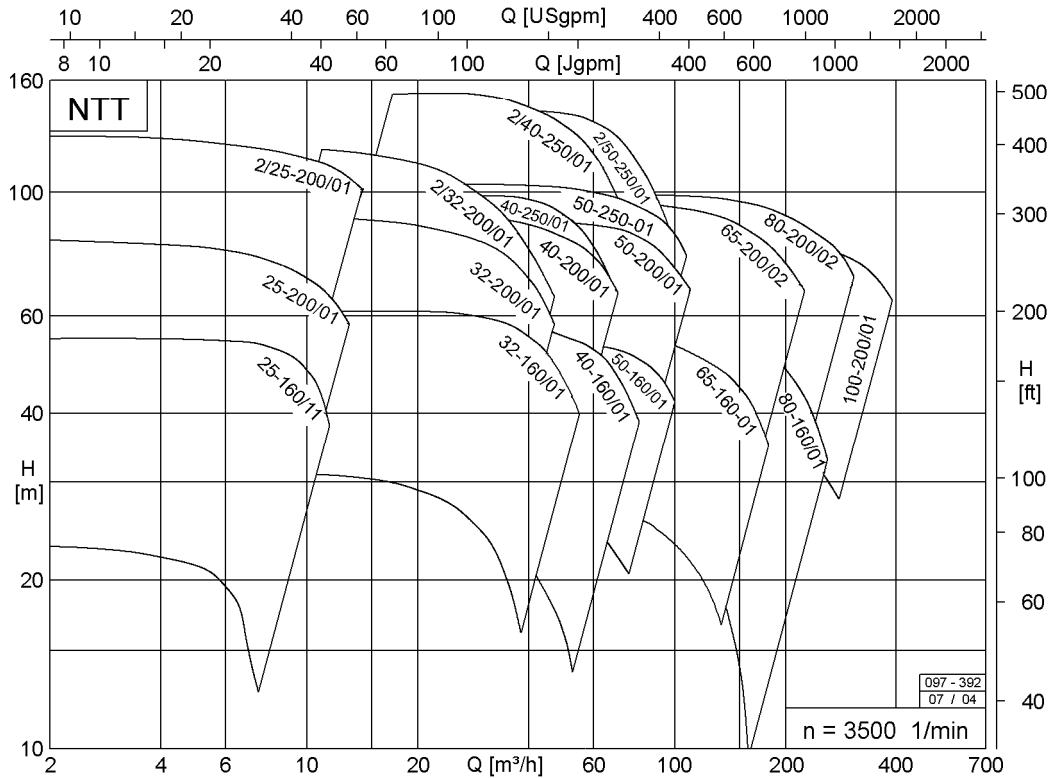


For exact performance data, please refer to the individual characteristics.

n = 1750 1/min

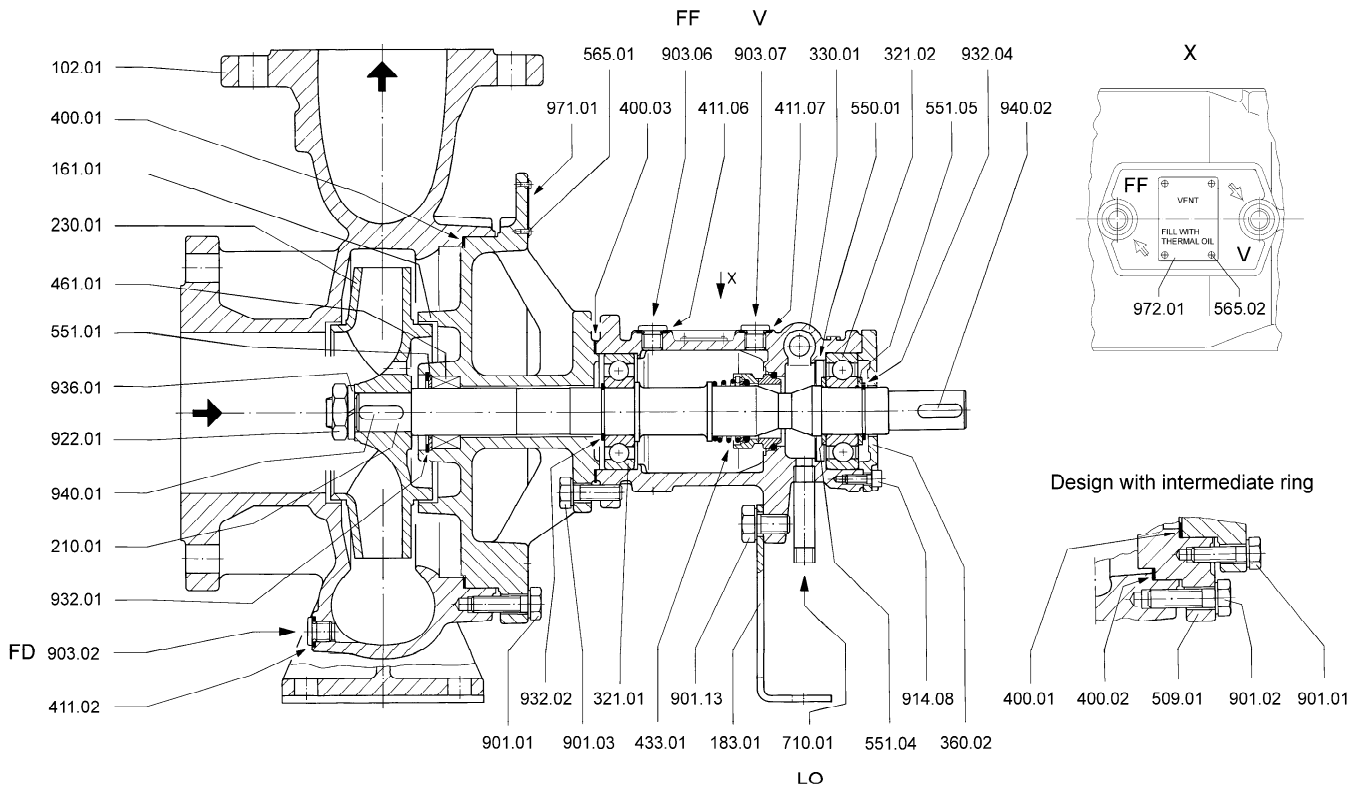


n = 3500 1/min

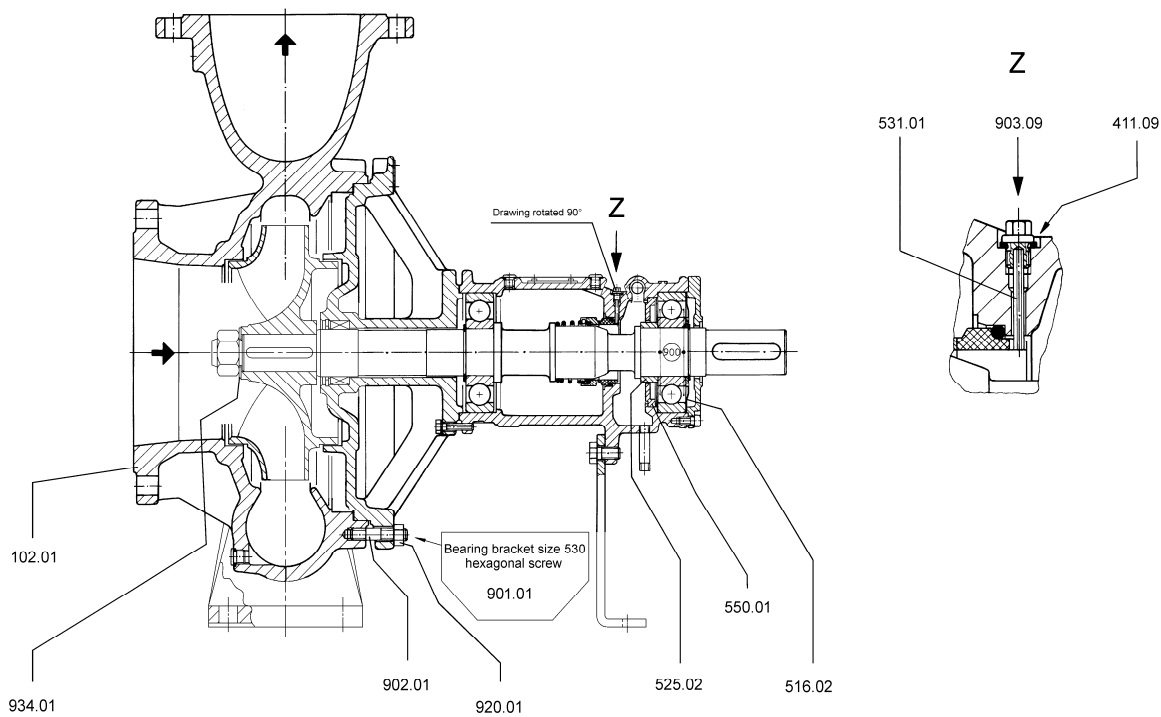


For exact performance data, please refer to the individual characteristics.

**Sectional drawing for single-stage sizes
Sizes at bearing bracket sizes 360 and 470**



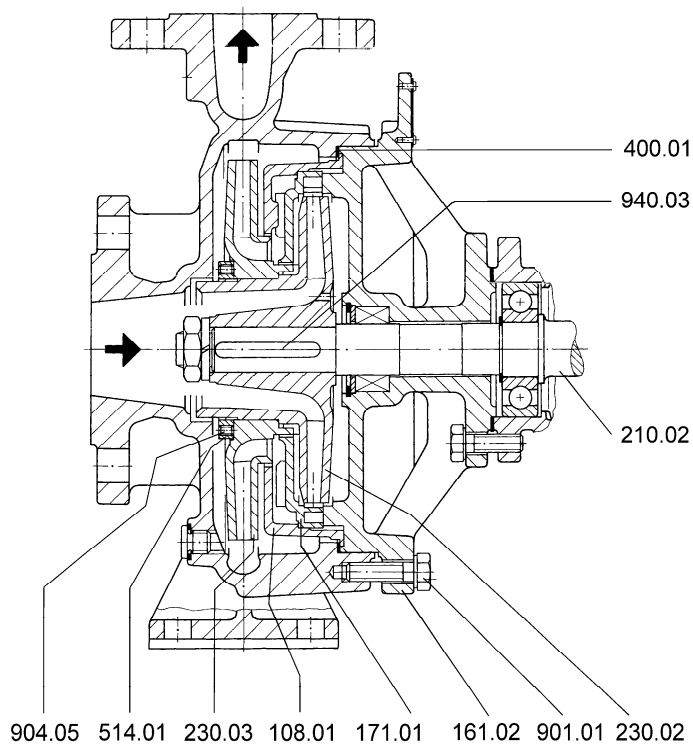
Sizes at bearing bracket sizes 530 and 650



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

Abbreviation: **U 5 A**

Sectional drawing for two-stage sizes
Sizes at bearing bracket size 360

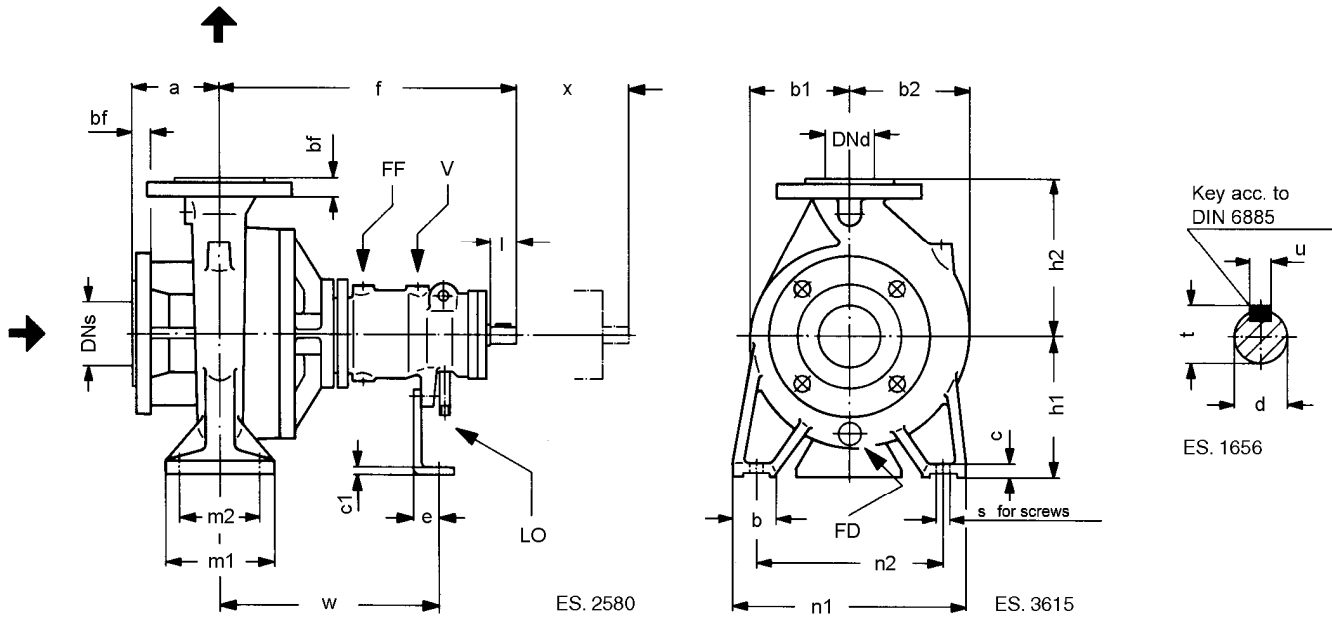


Shaft sealing: Uncooled, unbalanced mechanical seal with safety stuffing box arranged in front
Abbreviation: **U 5 A**

Denomination	Part No.	Denomination	Part No.	Denomination	Part No.
Volute casing	102.01	Mechanical seal	433.01	Screwed plug	903.09
Stage casing	108.01	Gland packing	461.01	Grub screw	904.05
Casing cover	161.01	Intermediate ring	509.01	Socket-head cap screw	914.08
Casing cover	161.02	Threaded ring	514.01	Nut	920.01
Diffuser	171.01	Nilos ring	516.02	Impeller nut	922.01
Supporting foot	183.01	Spacer sleeve	525.02	Circlip	932.01
Shaft	210.01	Tension sleeve	531.01	Circlip	932.02
Shaft	210.02	Disc	550.01	Circlip	932.04
Impeller	230.01	Disc spacer	551.01	Spring disc	934.01
Impeller 1st stage	230.02	Disc spacer	551.04	Spring ring	936.01
Impeller 2nd stage	230.03	Disc spacer	551.05	Key	940.01
Grooved ball bearing	321.01	Rivet	565.01	Key	940.02
Grooved ball bearing	321.02	Rivet	565.02	Key	940.03
Bearing bracket	330.01	Pipe	710.01	Name plate	971.01
Bearing cover	360.02	Hexagonal screw	901.01	Information plate	972.01
Gasket	400.01	Hexagonal screw	901.02		
Gasket	400.02	Hexagonal screw	901.03		
Gasket	400.03	Hexagonal screw	901.13		
Joint ring	411.02	Stud bolt	902.01	<u>Connections</u>	
Joint ring	411.06	Screwed plug	903.02	FD Draining	
Joint ring	411.07	Screwed plug	903.06	FF Filling	
Joint ring	411.09	Screwed plug	903.07	LO Leakage outlet	
				V Venting	

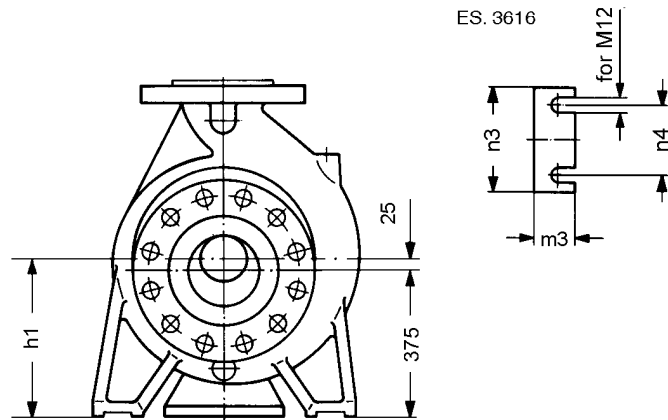
Pump dimensions

Size at bearing bracket sizes 360, 470, 530 and 650

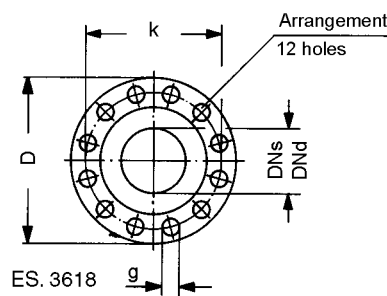
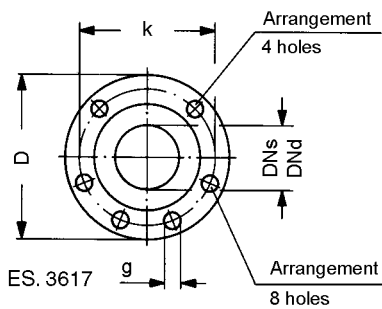


Bearing bracket size	Connections			
	Draining	Filling	Leakage outlet	Venting
360	FD ④	FF	LO	V
470	G 3/4	G 1/4	G 1/4	G 1/4
530				
650				

④ Connection FD in sizes 25-160/11, 25-200/01 and 2/25-200/01 each G 1/2



With size 250-400/01 only



Flanges acc. to EN 1092-2 PN 16					
DNs/DNd	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.

Successful in important branches

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 it 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.

► Heat Transfer

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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