Volute pumps
for hot water up to 207°C

SIHI *SuperNova*

FLOWSERVE
SIHI® Pumps

ZDND 032160 ... 125250

TECHNICAL DATA

Output:	max. 600 m³/h
Delivery head:	max. 90 m
Speed:	max. 3600 rpm
Temperature:	max. 207 °C
Casing pressure:	PN 25
Shaft sealing:	balanced standard mechanical seal, uncooled
Flange connections:	DIN EN 1092-2 PN 40
Sense of rotation:	clockwise, when looking at the Pump from the drive end

APPLICATION

The volute pumps of the series ZDHD are part of the overall programme heat transfer and circulation pumps. They are primarily used for circulation of **hot water** in closed pipe and vessel systems.

Therefore their fields of application are

the energy production,

the heat transport and

the industry

and here mainly in systems where hot water as heat carrier is given preference, despite is high system pressure, over oil as heat carrier.

DESIGN

Horizontal, single-stage volute casing pumps with the dimensions ans nominal ratings to **DIN EN 22858** in back pull out design, with uncooled balanced mechanical seal.
The series **ZDND** has especially been designed for the trouble free handling of hot water up to 207 °C and is distinguished by:

- A double heat barrier that causes an optimal energy consumption by the pump and reduces the temperature level in the mechanical seal chamber to less than 90 °C without external cooling circuit (see temperature curve on page 3). The service life of the mechanical seal increases considerably.
- A special design that automatically leads accumulation of gas to exhaust. Consequently the dry operation of the mechanical seal can be excluded.
- A programme that comprehends 22 construction sizes and thus guarantees an optimal solution for every operating point.
- The back pull out design, which permits the removal of the complete, bearing unit towards the drive side without removing the pump casing from the pipe work. If a spacer coupling is installed it is also unnecessary to disconnect the motor.

CONSTRUCTION

Casing pressure

Max 25 bar from 0 °C up to 207 °C
Please note:
Technical rules and safety regulations.
Casing pressure = inlet pressure + zero head
max. test pressure = 33 bar

Flanges location:

Axial suction flange, discharge flange radially upwards.

Flanges:

The flanges comply with DIN EN 1092-2 resp. PN 40.
Flange design to ANSI 300 is possible.

Hydraulics:

Designation of this construction type: A

Bearing:

One grease lubricated antifriction ball bearing to DIN 625 and one internal liquid flushed sleeve bearing.
Designation of this construction type: A

Direction of rotation:

Clockwise when looking at the pump from the drive end.

Shaft sealing:

Code AF3: Balanced standard mechanical seal
Seal face materials SIC/Carbon, Elastomer EPDM

Material Design:

Item	Components	Material						Execution
		EN material-number	EN material-denomination	DIN material-number	DIN material-denomination	US denomination		1B
						ASTM Standard	AISI	
10.20 15.20 16.10 33.00	Volute casing Intermediate flange Casing cover Bearing bracket	EN-JS 1025	EN-GJS-400-18-LT	0.7043	GGG 40.3	A 395		X
21.00	Shaft	1.4021	X 20 Cr 13	1.4021	X 20 Cr 13	A 276 Type 420	420	X
23.00 44.10	Impeller Casing for mechanical seal	EN-JL 1040	EN-GJL 250	0.6025	GG 25	A 278 Class 30		X
43.30	Shaft seal	SIC / Carbon						X
52.90 54.00	Sleeve bearing	SIC / SIC						X

Casing gasket:

The casing is sealed by a flat gasket of graphite. Designation of this construction type: 2

Motor power:

Using commercial electric motors, type of construction IM B3.
To determine the drive power we recommend the following safety margin:

up to 4 kW: 25% 4 up to 7,5 kW: 20% above 7,5 kW: 15%

The following max. speeds are to be observed:

Max. speed rpm	Size	Max. speed rpm	Size	Max. speed rpm	Size
3600	032160 032200 040160 040200 050160 050200 065160 065200 080160 080200 100160 100200	3000	032250 040250 050250 065250 080250 100250 125200	1800	040315 050315 125250

The max. speeds results from the admissible peripheral speed of impellers or from the shaft load admissible at higher temperatures, respectively.

Bearing bracket / pump size:

Bracket 25	032160 032200 040160 040200 050160 050200
Bracket 35	032250 040250 040315 050250 050315 065160 065200 065250 080160 080200 080250 100160 100200
Bracket 45	100250 125200 125250

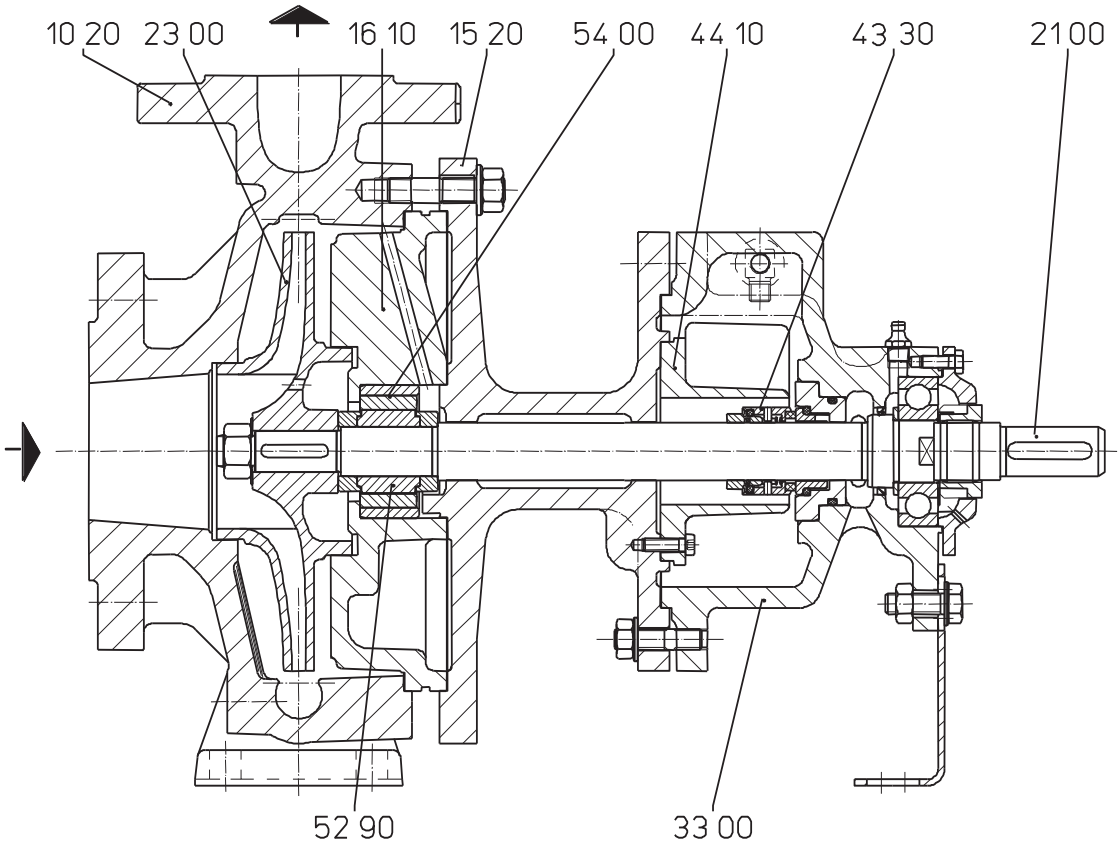
General remarks:

For equipping hot media systems a complete programme is available for a flow range between 1-1000 m^3/h consisting of the range:

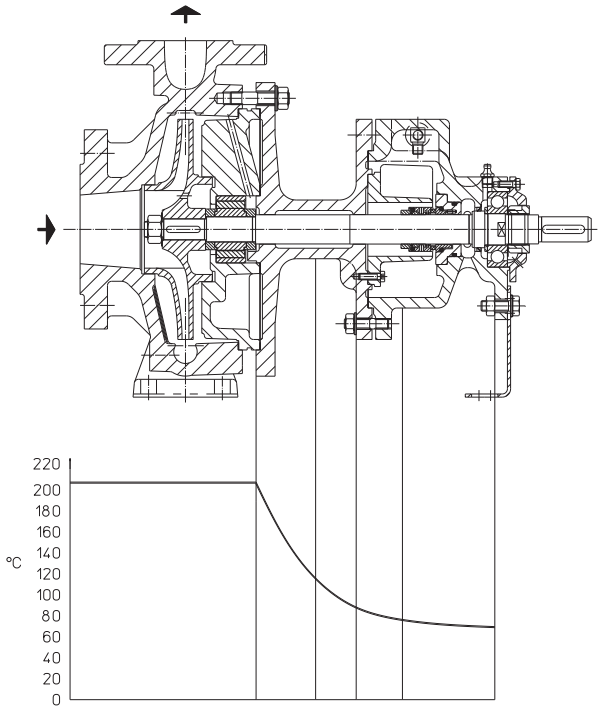
ZTN volute pumps to EN 733 design with base plate, t_{max} 350 °C PN 16. Heat transfer oil.
ZTK volute pumps to EN 733 close coupled design, t_{max} 350 °C PN 16. Heat transfer oil.
ZTI volute pumps to EN 733 as INLINE construction, t_{max} 350 °C PN 16. Heat transfer oil.
ZEN volute pumps to DIN EN 22858, t_{max} 230 °C PN 40. Hot water design.
ZHN volute pumps to EN 733, t_{max} 180 °C PN 16. Hot water design.
ZLI volute pumps to EN 733 as INLINE construction, t_{max} 150 °C PN 25. Hot water design.

Technical documentation on these programmes will readily be supplied on request.

Sectional drawing and nomenclature



10.20 volute casing	23.00 impeller	44.10 casing for mechanical seal
15.20 intermediate flange	33.00 bearing bracket	52.90, 54.00 sleeve bearing
16.10 casing cover	43.30 shaft seal	
21.00 shaft		



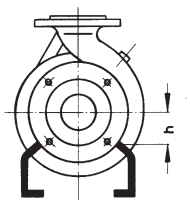
Curve of temperature decrease

Heat barrier / shaft seal / bearing / feet arrangement

Heat transfer installations have achieved a high level of technical development. Consequently the requirements on the pumps handling heat carriers have increased regarding operating safety, environmental protection, maintenance and operating costs. On the basis of many years´ experience and latest technical know-how the ZDND fully complies with these requirements. Special attention was paid to the above technical details.

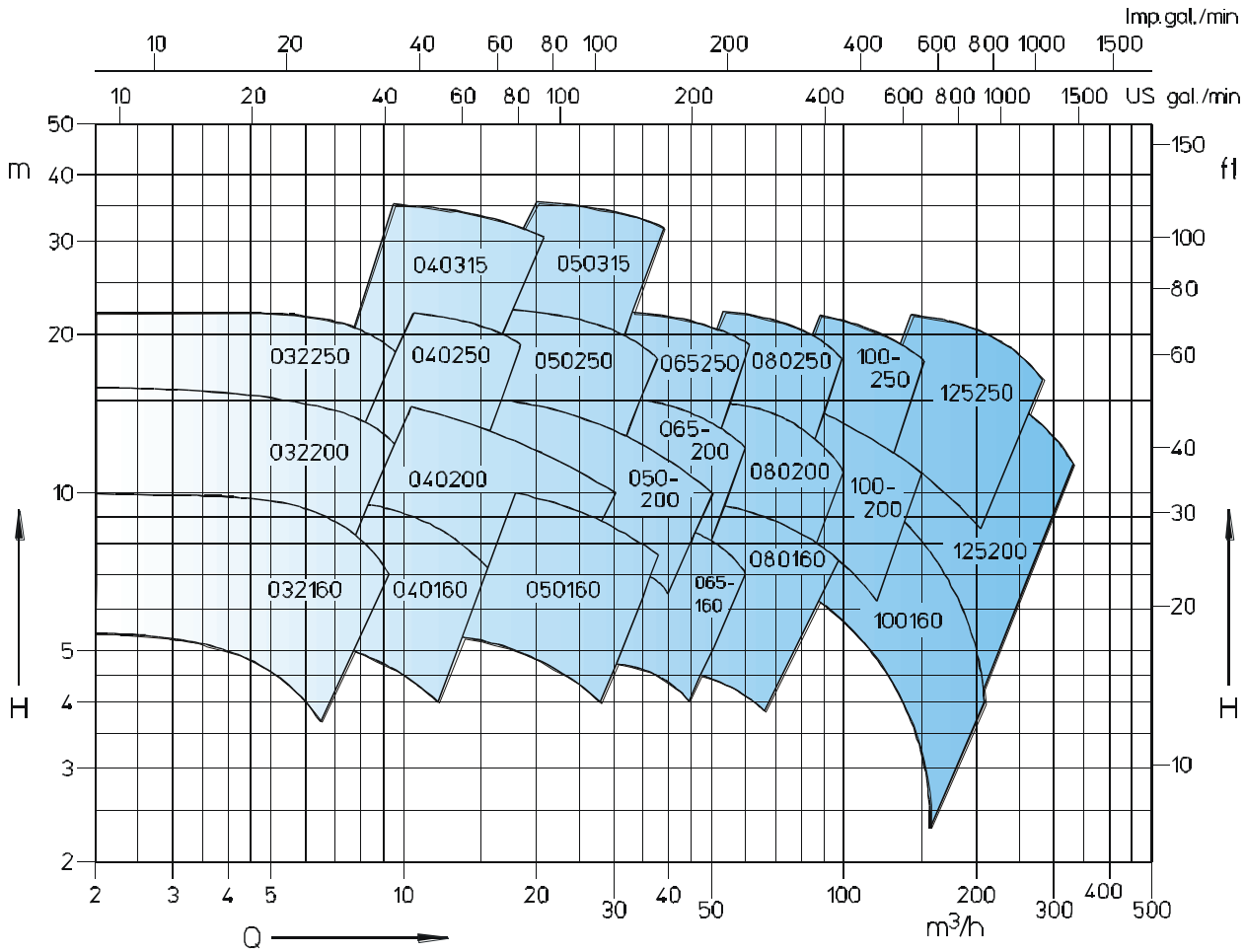
A favourable reduction in temperature is obtained towards the drive side by fitting a double acting heat barrier between the casing cover and the shaft seal housing. See illustration.
Product-side heat losses are effectively prevented (energy saving). The temperature reduction makes it possible to use safely an **uncooled** mechanical seal up to a pumping medium temperature of **207 °C.**

By special constructional shaping of the pump feed, displacements caused by thermal expansion are prevented to e great extent. For the vertical displacement only the measure h is decisive, since the rest of the foot remains cold. The horizontal expansion is taken up by the elastic foot bracings.

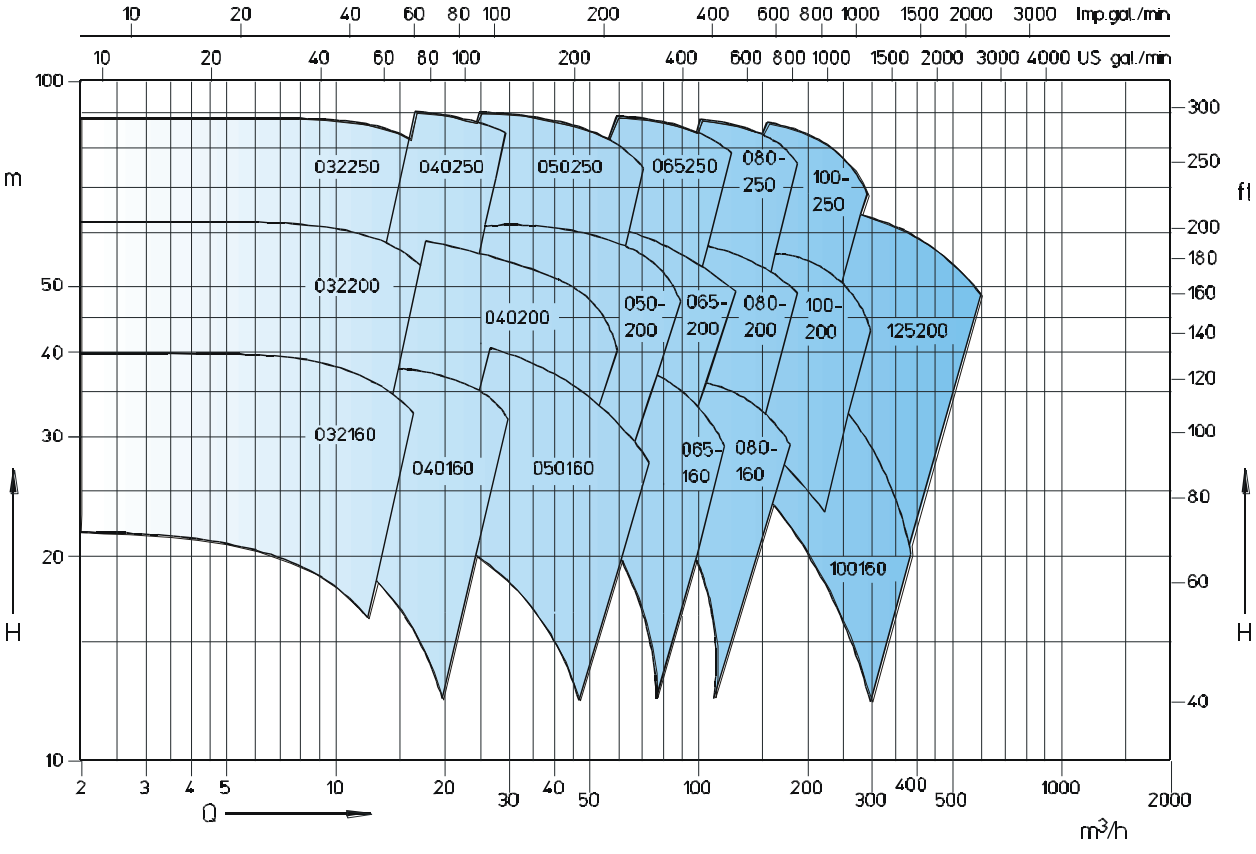


Performance graph

50 Hz
n = 1450 rpm

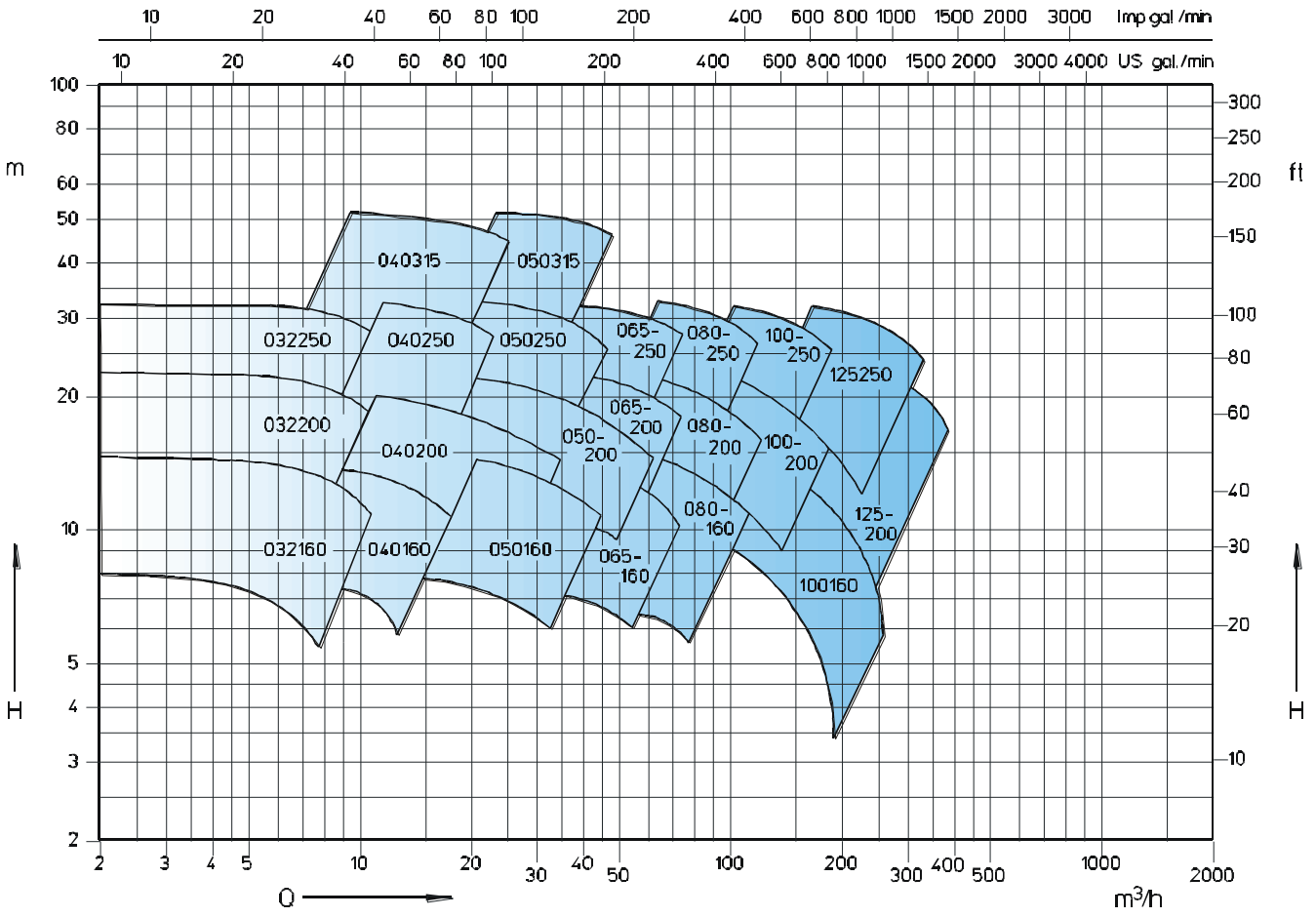


n = 2900 rpm

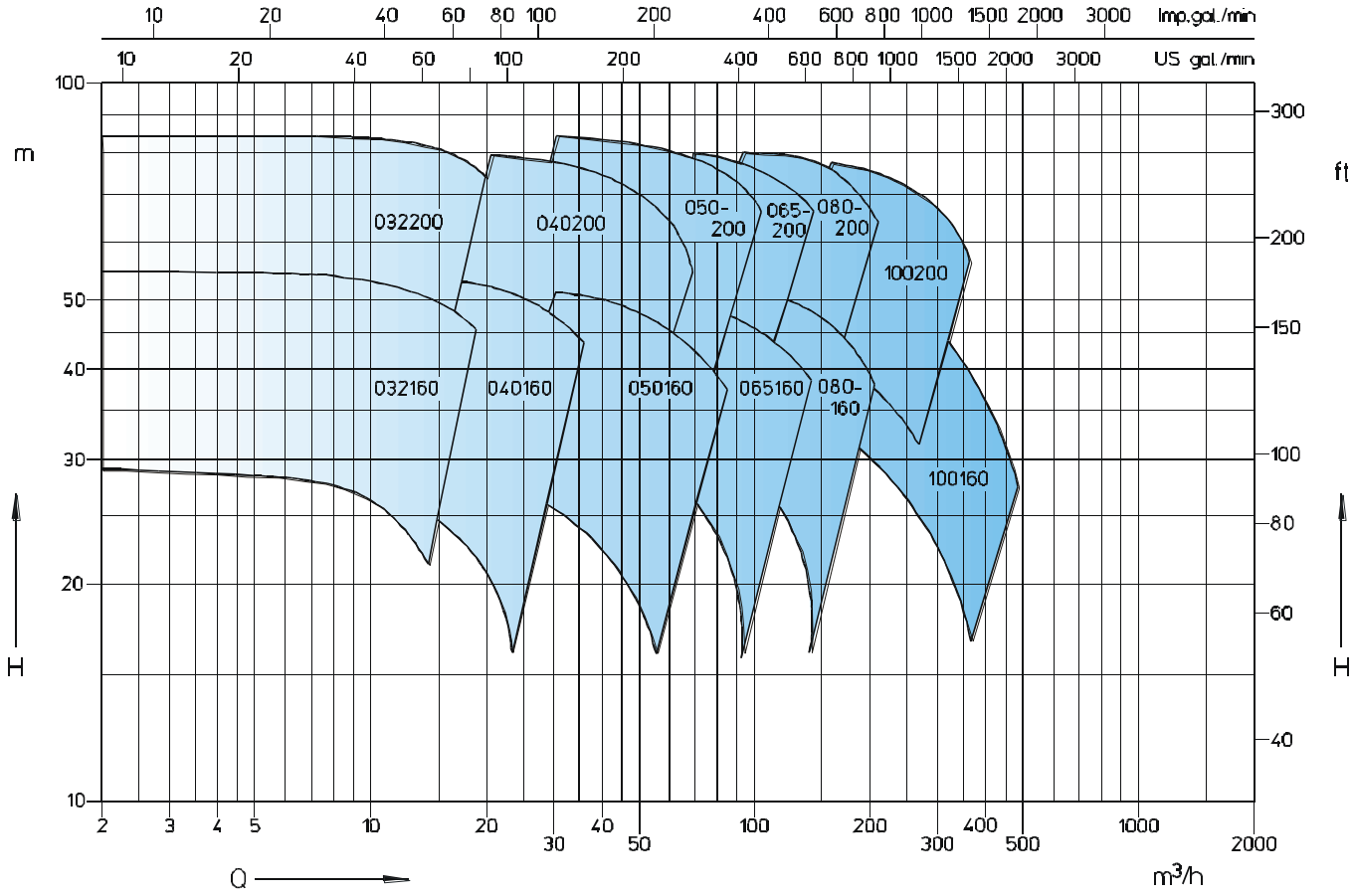


Performance graph

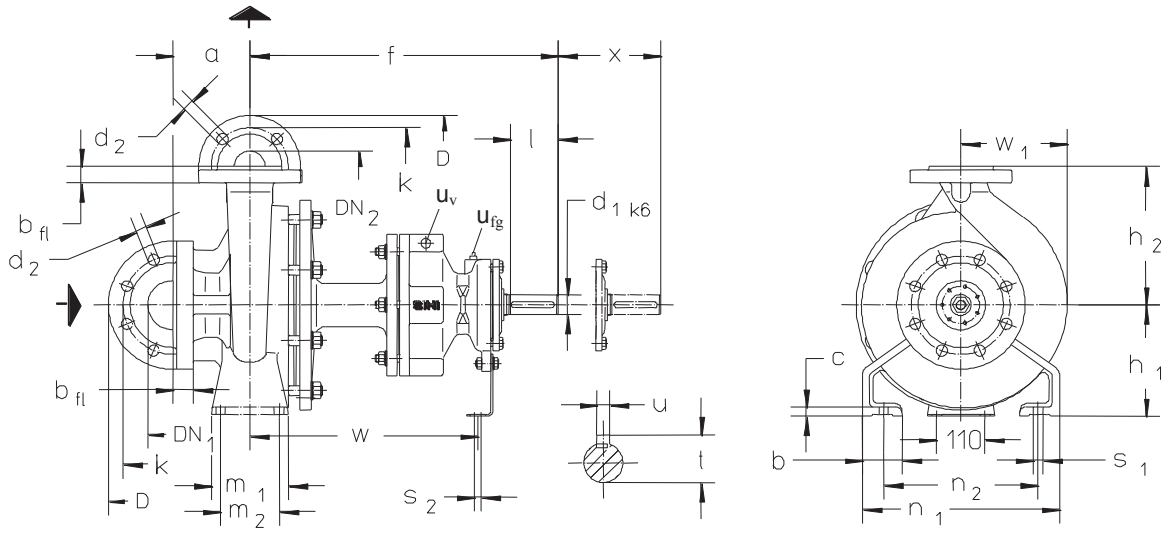
60 Hz
n = 1750 rpm



n = 3500 rpm



Dimension table



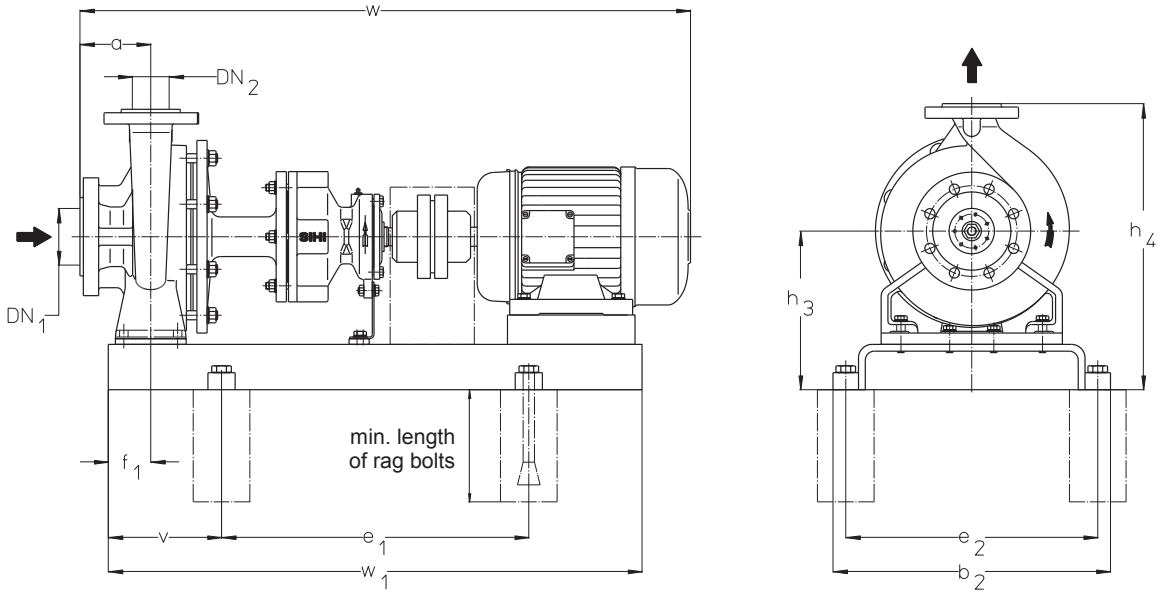
u_v = vent connection (G1/8) u_{fg} = grease filling connection (G1/8)

size	DN_2	DN_1	a	b	c	f	h_1	h_2	m_1	m_2	n_1	n_2	s_1*	s_2	w	w1	x	d_1	l	t	u
032160	32	50	80	50	17	385	132	160	100	70	240	190	M12	M12	285	120	100	24	50	27	8
032200							160	180								140					
032250			100	65		500	180	225	125	95	320	250			370	170		32	80	35	10
040160	40	65	80	50	17	385	132	160	100	70	240	190	M12	M12	285	125	100	24	50	27	8
040200			100				160	180			265	212				150					
040250				65		500	180	225	125	95	320	250			370	170		32	80	35	10
040315			125		20		200	250			345	280				205					
050160	50	80	100	50	17	385	160	180	100	70	265	212	M12	M12	285	135	100	24	50	27	8
050200								200								160					
050250			125	65		500	180	225	125	95	320	250			370	175		32	80	35	10
050315					20		225	280			345	280				215					
065160	65	100	100	65	17	500	160	200	125	95	280	212	M12	M12	370	155	100	32	80	35	10
065200							180	225			320	250				175	140				
065250			125	80	20		200	250	160	120	360	280	M16			195					
080160	80	125	125	65	17	500	180	225	125	95	320	250	M12	M12	370	170	140	32	80	35	10
080200								250			345	280				185					
080250				80	20		225	280	160	120	400	315	M16			205					
100160[1)]	100	125	140	80	20	500	200	280	160	120	360	280	M16	M12	370	210	140	32	80	35	10
100200			125																		
100250			140			530	225				400	315				215		42	110	45	12
125200[1)]	125	150	140	80	20	530	250	315	160	120	400	315	M16	M12	370	245	140	42	110	45	12
125250								355								240					

[1)]Transnorm pump sizes, not included in DIN EN 22858.
*Slots suitable for bolts with dimensions indicated. Bolts are not included in the bare shaft pump standard scope of supply.

Flange connections to DIN EN 1092-2 PN 40								
DN2/DN1	32	40	50	65	80	100	125	150
D	140	150	165	185	200	235	270	300
k	100	110	125	145	160	190	220	250
bfl	18	19	19	19	19	19	23,5	26
Tolerance	+4,0 -3,0							
d2 x number	19x4	19x4	19x4	19x8	19x8	23x8	28x8	28x8

Foundation plan

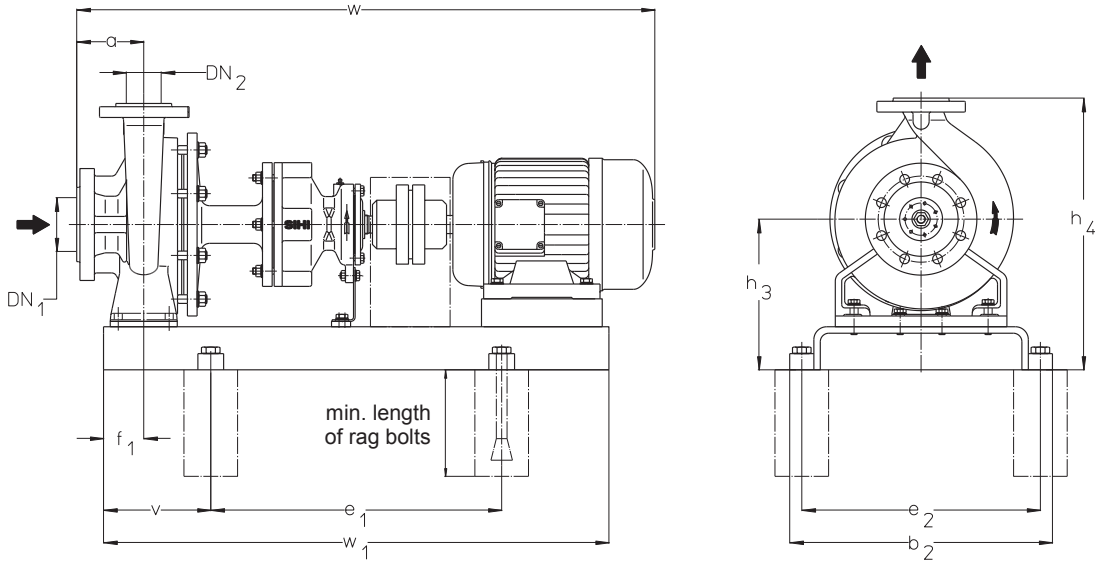


Dimensions in mm

ZDND Size	Motor Speed 1450 kW	Motor Speed 2900 kW	Size	Base plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	w*	w_1	Rag bolt size
032160	0,37	-	71	S272	B80	54	86	32	50	80	360	420	320	115	60	197	357	701	650	M16x200
	0,55	-	80				93					540		140				737	820	
	-	1,10					94													
	-	1,50	90S				96											764		
	-	2,20	90L				99													
	-	3,00	100L				105											833		
	-	4,00	112M				109											850		
032200	0,55	-	80		B68	56	94									225	405	737		
	0,75	-					96													
	1,10	-	90S				98											764		
	-	3,00	100L		B80		107											833		
	-	4,00	112M				111											850		
	-	5,50	132S	S303	B95		142				390	600	350	160				912	920	
	-	7,50	132S				148													
032250	0,75	-	80	S383	B80	89	142			100	490	600	440	160	75	260	485	872		M20x400
	1,10	-	90S				144											893		
	1,50	-	90L				146											924		
	2,20	-	100L				152											968		
	-	7,50	132S	S385	B95		210					740		200				1047	1140	
	-	11,00	160M				254											1188		
	-	15,00					267													
040160	0,37	-	71	S270	B68	55	85	40	65	80	360	420	320	115	60	197	357	700	650	M16x200
	0,55	-	80	S272			94					540		140				737	820	
	0,75						96													
	1,10	1,50	90S				99											765		
	-	2,20	90L				102											792		
	-	3,00	100L		B80		107											833		
	-	4,00	112M				125											857		
	-	5,50	132S	S303	B95		143				390	600	350	160				912	920	
040200	0,75	-	80	S301	B68	56	95			100		480		125		225	405	757	730	
	1,10	-	90S				98											784		
	1,50	-	90L				101											809		
	2,20	-	100L	S303	B80		106					600		160				870	920	
	-	4,00	112M				131											877		
	-	5,50	132S		B95		144											932		
	-	7,50					123													
	-	11,00	160M	S344			206				450	660	400	180		240	420	1073	1020	
	-	15,00					208													
040250	1,10	-	90S	S383	B80	92	150				490	600	440	160	75	260	485	900	920	M20x400
	1,50	-	90L				153											924		
	2,20	-	100L				156											968		
	3,00	-					159													
	-	5,50	132S	S385	B95		209					740		200				1047	1140	
	-	7,50					212													
	-	11,00	160M				261											1188		
	-	15,00					263													
	-	18,50	160L				287											1232		
040315	2,20	-	100L	S383	B80	131	192			125		600		160		280	530	993	920	
	3,00	-					196													
	4,00	-	112M				202											1010		
	5,50	-	132S	S435	B95		257				540	740	490	200				1072	1140	

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

Foundation plan



Dimensions in mm

ZDND Size	Motor Speed 1450 kW	Motor Speed 2900 kW	Size	Base plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	w*	w_1	Rag bolt size
050160	0,55	-	80	S301	B68	61	98	50	80	100	390	480	350	125	60	225	405	757	730	M16x200
	0,75	-					100													
	1,10	-	90S				103											784		
	1,50	2,20	90L				105											812		
	-	3,00	100L	S303	B80		118					600		160				853	920	
	-	4,00	112M				136											877		
	-	5,50	132S		B95		149											932		
	-	7,50					151											932		
	-	11,00	160M	S344			211				450	660	400	180		240	420	1073	1020	M20x400
050200	0,75	-	80	S301	B68	65	104			100	390	480	350	125		225	425	757	730	M16x200
	1,10	-	90S				107											784		
	1,50	-	90L				110											809		
	2,20	-	100L	S303	B80		115					600		160				870	920	
	-	4,00	112M				140													
		5,50	132S		B95		155											932		
	-	7,50					160													
	-	11,00	160M	S344			215				450	660	400	180		240	440	1073	1020	
	-	15,00					217													
	-	18,50	160L				232											1113		
050250	1,50	-	90L	S383	B80	95	156			125	490	600	440	160	75	260	485	949	920	M20x400
	2,20	-	100L				158											993		
	3,00	-					162													
	4,00	-	112M				178											1010		
	-	7,50	132S	S385	B95		215					740		200				1072	1140	
	-	11,00	160M				265											1213		
	-	15,00					267													
	-	18,50	160L				291											1257		
	-	22,00	180M		B110		318											1280		
	-	30,00	200L	S436	B125		427				540		490	215				1368	1270	
050315	4,00	-	112M	S486	B80	135	249				610	840	550	205		325	605	1010	1250	M24x400
	5,50	-	132S		B95		278											1072		
	7,50	-	132M				290											1110		
065160	0,75	-	80	S342	B80	81	129	65	100	100	450	540	400	140	75	240	440	872	820	M20x400
	1,10	-	90S	S344			141					660		180				900	1020	
	1,50		90L				144											924		
	2,20	-	100L				147											968		
	-	4,00	112M				154											985		
	-	5,50	132S		B95		179											1047		
	-	7,50					182													
	-	11,00	160M	S385			250				490	740	440	200				1188	1140	
	-	15,00					252													
065200	1,10	-	90S	S344	B80	88	148				450	660	400	180		260	485	900	1020	
	1,50	-	90L				151											924		
	2,20	-	100L				154											968		
	3,00	-					157													
	4,00	-	112M				173											985		
	-	7,50	132S	S385	B95		208				490	740	440	200				1047	1140	
	-	11,00	160M				257											1213		
	-	15,00					259													
	-	18,50	160L				283											1257		
	-	22,00	180M		B110		311											1280		
	-	30,00	200L	S436	B125		420				540	840	490	215				1368	1270	

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

ZDND Size	Motor Speed 1450 kW	Motor Speed 2900 kW	Size	Base plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	w*	w_1	Rag bolt size
065250	2,20	-	100L	S434	B80	113	190	65	100	125	540	660	490	170	90	280	530	993	1000	M20x400
	3,00	-					193											1010		
	4,00	-	112M				208											1072		
	5,50	-	132S		B95		228											1213		
	-	15,00	160M	S435			298					740		200				1257	1140	
	-	18,50	160L				313											1280		
	-	22,00	180M		B110		341											1368	1270	
	-	30,00	200L	S436	B125		445					840		215						
	-	37,00					461													
	-	45,00	225M	S486			504				610		550	205		300	550	1425	1250	M24x400
080160	0,75	-	80	S383	B80	89	144	80	125	125	490	600	440	160	75	260	485	897	920	M20x400
	1,10	-	90S				147											924		
	1,50	-	90L				150											949		
	2,20	-	100L				153											993		
	3,00	-					156													
	-	7,50	132S	S385	B95		209					740		200				1072	1140	
	-	11,00	160M				258											1213		
	-	15,00					260													
	-	18,50	160L				284											1257		
	-	22,00	180M		B110		312											1280		
080200	1,50	-	90L	S383	B80	96	156					600		160			510	949	920	
	2,20	-	100L				160											993		
	3,00	-					163													
	4,00	-	112M				179											1010		
	5,50	-	132S	S385	B95		220					740		200				1072	1140	
	-	11,00	160M				260											1213		
	-	15,00					267													
	-	18,50	160L				291											1257		
	-	22,00	180M		B110		319											1280		
	-	30,00	200L	S436	B125		428				540	840	490	215		280	530	1368	1270	
	-	37,00					444													
080250	3,00	-	100L	S486	B80	120	229	100	125	140	610	840	550	205	90	325	605	993	1250	M24x400
	4,00	-	112M				246											1010		
	5,50	-	132S		B95		265											1072		
	7,50	-	132M				278											1110		
	-	18,50	160L				342											1225		
	-	22,00	180M		B110		365											1280		
	-	30,00	200L		B125		461											1368		
	-	37,00					477													
	-	45,00	225M	S487			537					940		240				1425	1420	
	-	55,00	250M		B140		637											1493		
100160	2,20	-	100L	S434	B80	120	197	100	125	140	540	660	490	170	90	280	560	1008	1000	M20x400
	3,00	-					200													
	4,00	-	112M				216											1025		
	5,50	-	132S		B95		235											1087		
	-	18,50	160L	S435			320					740		200				1272	1140	
	-	22,00	180M		B110		348											1295		
	-	30,00	200L	S436	B125		452					840		215				1383	1270	
	-	37,00					468													
100200	2,20	-	100L	S434	B80	112	189											993		
	3,00	-					192													
	4,00	-	112M				207					660		170				1010	1000	
	5,50	-	132S		B95		227											1072		
	7,50	-	132M				240											1110		
	-	18,50	160L	S435			312					740		200				1257	1140	
	-	22,00	180M		B110		340											1280		
	-	30,00	200L	S436	B125		444					840		215				1368	1270	
	-	37,00					460													
	-	45,00	225M				494											1425		
100250	4,00	-	112M	S486	B95	132	259											1055		
	5,50	-	132S				277											1117		
	7,50	-	132M				290											1155		
	11,00	-	160M				328											1258	1250	
	-	30,00	200L		B125		473											1413		
	-	37,00					499													
	-	45,00	225M				543											1470		
	-	55,00	250M	S487	B140		658					940		240		350	630	1538	1420	
	-	75,00	280S		B160		858									380	660	1660		
125200	7,50	-	132M	S486	B95	142	300	125	150	140	610	840	550	205	90	350	665	1155	1250	M24x400
	11,00	-	160M				338											1258		
	15,00	-	160L		B110		361											1302		
	-	45,00	225M		B125		575											1470		
	-	55,00	250M	S487	B140		668					940		240				1538	1420	
	-	75,00	280S		B160		868											1660		
125250	7,50	-	132M	S486	B95	147	305					840		205			705	1155	1250	
	11,00	-	160M				343											1258		
	15,00	-	160L		B110		366											1302		
	18,50	-	180M				391											1325		

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
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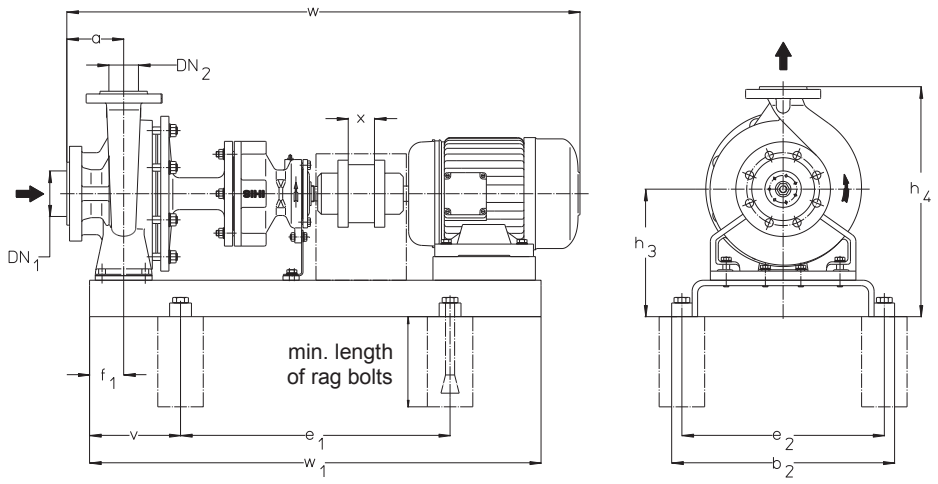
Foundation plan for units with spacer coupling



Dimensions in mm

ZDND Size	Motor Speed 1450 KW	Motor Speed 2900 KW	Size	Base-plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	x	w*	w_1	Rag bolt size
032160	0,37	-	71	S272	H80	54	94	32	50	80	360	540	320	140	60	197	357	100	801	820	M16x200
	0,55	-	80				95												837		
	-	1,10					96														
	-	1,50	90S				99												864		
	-	2,20	90L				102												889		
	-	3,00	100L	S303			112				390	600	350	160					933	920	
	-	4,00	112M				117												950		
032200	0,55	-	80	S272		56	97				360	540	320	140		225	405		837	820	
	0,75	-					99														
	1,10	-	90S				101												864		
	-	3,00	100L	S303			114				390	600	350	160					933	920	
	-	4,00	112M				119												950		
	-	5,50	132S		H95		145												1012		
	-	7,50					152														
032250	0,75	-	80	S383	H80	89	147			100	490	740	440	200	75	260	485		972	1140	M20x400
	1,10	-	90S	S385			168												1000		
	1,50	-	90L				170												1024		
	2,20	-	100L				174												1068		
	-	7,50	132S		H95		213												1147		
	-	11,00	160M	S436			270				540	840	490	215					1288	1270	
	-	15,00					282														
040160	0,37	-	71	S272	H80	55	94	40	65	80	360	540	320	140	60	197	357	100	800	820	M16x200
	0,55	-	80				97												837		
	0,75	-					99														
	1,10	1,50	90S				102												864		
	-	2,20	90L				105												889		
	-	3,00	100L	S303			114				390	600	350	160					933	920	
	-	4,00	112M				133												950		
	-	5,50	132S		H95		146												1012		
040200	0,75	-	80	S303	H80	56	104			100	390	600	350	160		225	405		857	920	
	1,10	-	90S				107												884		
	1,50	-	90L				110												909		
	2,20	-	100L				115												970		
	-	4,00	112M				135												977		
	-	5,50	132S				147												1032		
	-	7,50			H95		150														
	-	11,00	160M	S344			209				450	660	400	180		240	420		1173	1020	M20x400
	-	15,00					209														
040250	1,10	-	90S	S385	H80	92	172				490	740	440	200	75	260	485		1000	1140	
	1,50	-	90L				175												1024		
	2,20	-	100L				180												1068		
	3,00	-					183														
	-	5,50	132S		H95		214												1147		
	-	7,50					217														
	-	11,00	160M				264												1288		
	-	15,00					266														
	-	18,50	160L	S436			303				540	840	490	215					1332	1270	
040315	2,20	-	100L	S385	H80	131	216			125	490	740	440	200		280	530		1106	1140	
	3,00	-					220														
	4,00	-	112M				227												1125		
	5,50	-	132S		H95		255												1185		

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
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ZDND Size	Motor Speed 1450 KW	Motor Speed 2900 KW	Size	Base-plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	x	w*	w_1	Rag bolt size
050160	0,55	-	80	S303	H80	61	107	50	80	100	390	600	350	160	60	225	405	100	857	920	M16x200
	0,75	-					109												884		
	1,10	-	90S				112														
	1,50	2,20	90L				116												909		
	-	3,00	100L				120												953		
	-	4,00	112M				139												970		
	-	5,50	132S		H95		153												1032		
	-	7,50					155														
	-	11,00	160M	S344			214				450	660	400	180		240	420		1173	1020	M20x400
050200	0,75	-	80	S303	H80	65	110	50	80	100	390	600	350	160	60	225	425	100	857	920	M16x200
	1,10	-	90S				113												884		
	1,50	-	90L				114												909		
	2,20	-	100L				124												953		
	-	4,00	112M				143												970		
	-	5,50	132S				156												1032		
		7,50					159														
	-	11,00	160M		H95		218				450	660	400	180		240	440		1173	1020	M20x400
	-	15,00		S344			220														
	-	18,50	160L				235												1213		
050250	1,50	-	90L	S385	H80	95	178	50	80	125	490	740	440	200	75	260	485	100	1049	1140	M20x400
	2,20	-	100L				183												1093		
	3,00	-					186														
	4,00	-	112M				202												1110		
	-	7,50	132S		H95		239												1240		
	-	11,00	160M	S436			280				540	840	490	215					1313	1270	
		15,00					282														
	-	18,50	160L				306												1357		
	-	22,00	180M		H110		335												1380		
	-	30,00	200L		H125		432									280	505		1468		
050315	4,00	-	112M	S486	H80	135	252				610		550	205		325	605		1125	1250	M24x400
	5,50	-	132S		H95		281												1185		
	7,50	-	132M				292												1223		
065160	0,75	-	80	S344	H80	81	139	65	100	100	450	660	400	180	75	240	440	100	857	1020	M20x400
	1,10	-	90S				142												884		
	1,50	-	90L				145												909		
	2,20	-	100L				150												953		
	-	4,00	112M				176												1094		
	-	5,50	132S	S385	H95		201				490	740	440	200					1147	1140	
	-	7,50	132S				204														
	-	11,00	160M	S436			266				540	840	490	215					1288	1270	
	-	15,00	160M				268														
065200	1,10	-	90S	S344	H80	88	149				450	660	400	180		260	485	140	1039	1020	
	1,50	-	90L				152												1064		
	2,20	-	100L				157												1108		
	3,00	-					160														
	4,00	-	112M				176												1125		
	-	7,50	132S	S436	H95		224				540	840	490	215					1255	1270	
	-	11,00	160M				273												1328		
	-	15,00					279														
	-	18,50	160L				299												1372		
	-	22,00	180M		H110		328												1425		
	-	30,00	200L	S487	H125		455				610	940	550	240		300	525		1483	1420	M24x400
065250	2,20	-	100L	S435	H80	113	206			125	540	740	490	200	90	280	530		1133	1140	
	3,00	-					209														
	4,00	-	112M				225												1150		
	5,50	-	132S				238												1212		M20x400
	-	15,00	160M	S436	H95		309					840		215					1420	1270	
	-	18,50	160L				324														
	-	22,00	180M		H110		353												1425		
	-	30,00	200L	S487	H125		480				610	940	550	240		300	550		1508	1420	M24x400
	-	37,00					495														
	-	45,00	225M				531									325	575		1565		
080160	0,75	-	80	S344	H80	89	147	80	125	125	450	660	400	180	75	260	485	140	1037	1020	M20x400
	1,10	-	90S				150												1064		
	1,50	-	90L				153												1089		
	2,20	-	100L				158												1133		
	3,00	-					161														
	-	7,50	132S	S385	H95		212				490	740	440	200					1212	1140	
	-	11,00	160M	S436			274				540	840	490	215					1353	1270	
	-	15,00					276														
	-	18,50	160L				300												1397		
	-	22,00	180M		H110		329												1420		

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
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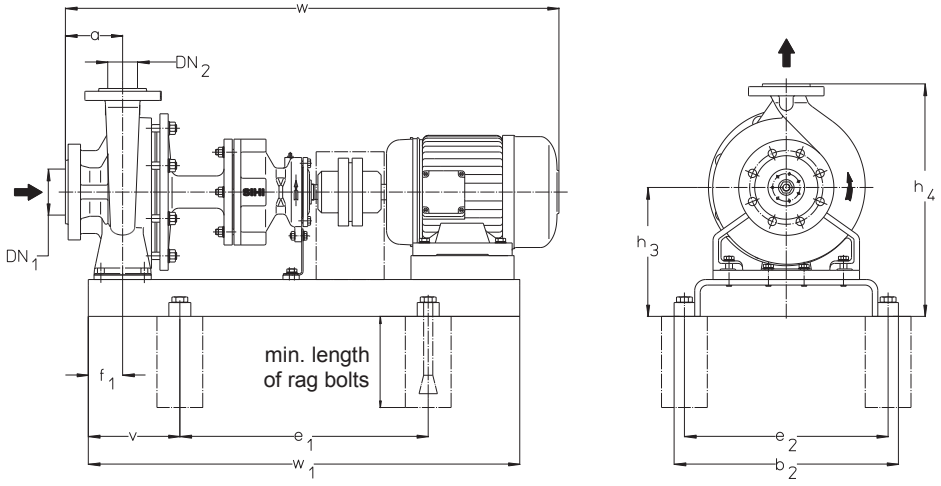
Foundation plan for units with spacer coupling



Dimensions in mm

ZDND Size	Motor Speed 1450 KW	Motor Speed 2900 KW	Size	Base-plate No.	Coup-ling	Weight (kg) Pump	Weight (kg) Unit	DN_2	DN_1	a	b_2	e_1	e_2	v	f_1	h_3	h_4	x	w*	w_1	Rag bolt size
080200	1,50	-	90L	S385	H80	96	180	80	125	125	490	740	440	200	75	260	510	140	1089	1140	M20x400
	2,20	-	100L				184												1133		
	3,00	-					187														
	4,00	-	112M				203												1150		
	5,50	-	132S				215												1212		
	-	11,00	160M	S436	H95		276				540	840	490	215					1420	1270	
	-	15,00					283														
	-	18,50	160L				307														
	-	22,00	180M		H110		336												1425		
	-	30,00	200L	S487	H125		463				610	940	550	240		300	550		1508	1420	M24x400
	-	37,00					472														
080250	3,00	-	100L	S486	H80	120	230					840		205	90	325	605		1133	1250	
	4,00	-	112M				249												1150		
	5,50	-	132S		H95		262												1212		
	7,50	-	132M				264												1250		
	-	18,50	160L	S487			367												1420		
	-	22,00	180M		H110		390														
	-	30,00	200L		H125		487					940		240					1508	1420	
	-	37,00					496														
	-	45,00	225M				535												1565		
	-	55,00	250M	S538	H140		666				660	1060	600	280		350	630		1633	1620	
100160	2,20	-	100L	S435	H80	120	213	100	125	140	540	740	490	200	90	280	560	140	1148	1140	M24x400
	3,00	-					216														
	4,00	-	112M				232												1165		
	5,50	-	132S		H95		245												1227		
	-	18,50	160L	S436			332					840		215					1412	1270	
	-	22,00	180M		H110		358												1435		
	-	30,00	200L	S487	H125		487				610	940	550	240		300	580		1523	1420	
	-	37,00					497														
100200	2,20	-	100L	S435	H80	112	205	100	125	125	540	740	490	200	90	280	560	140	1133	1140	M20x400
	3,00	-	100L				208														
	4,00	-	112M				224												1150		
	5,50	-	132S		H95		237												1212		
	7,50	-	132M				239												1250		
	-	18,50	160L	S436			324					840		215					1397	1270	
	-	22,00	180M		H110		352												1420		
	-	30,00	200L	S487	H125		489				610	940	550	240		300	580		1508	1420	M24x400
	-	37,00																			
	-	45,00	225M				528	100	125	140						325	605		1540	1250	
100250	4,00	-	112M	S486	H95	132	262				610	840	550	205					1195		
	5,50	-	132S				274												1257		
	7,50	-	132M				276												1295		
	11,00	-	160M				329												1398		
	-	30,00	200L	S487	H125		515			140		940		240					1553	1420	
	-	37,00					509														
	-	45,00	225M				553												1585		
	-	55,00	250M	S538	H140		679				660	1060	600	280		350	630		1678	1620	
	-	75,00	280S		H160		880									380	660		1800		
125200	7,50	-	132M	S486	H95	142	286	125	150	140	610	840	550	205	90	350	665	140	1295	1250	M24x400
	11,00	-	160M				339												1398		
	15,00	-	160L	S487	H110		362					940		240					1442	1420	
	-	45,00	225M		H125		613												1675		
	-	55,00	250M	S538	H140		706				660	1060	600	280					1678	1620	
	-	75,00	280S		H160		890												1800		
125250	7,50	-	132M	S486	H95	147	291				610	840	550	205			705		1295	1250	
	11,00	-	160M				344												1398		
	15,00	-	160L	S487	H110		367					940		240					1442	1420	
	18,50	-	180M				392												1520		

* Motor protection type IP 55, dimensions depend on the motor manufacturer.
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

Data regarding pump size

Type + Pump size		Hydraulic + Bearing	Shaft sealing	Material	Casing gasket
		A= Hydraulic 1 A= One grease lubricated antifriction ball bearing and one internal liquid flushed sleeve bearing	AF3= Balanced standard mechanical seal SiC/Carbon/EPDM	1B= Pressure loaded parts in ductile iron GGG-40.3	2= Confined flat gasket gasket of graphite with A4 insertion
ZDND	032160	AA	AF3	1B	2
	032200				
	032250				
	040160				
	040200				
	040250				
	040315				
	050160				
	050200				
	050250				
	050315				
	065160				
	065200				
	065250				
	080160				
	080200				
	080250				
	100160				
	100200				
	100250				
	125200				
	125250				

Any changes in the interest of the technical development are reserved.

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