

Volute pumps for hot water up to 230 °C

SIHI *SuperNova*



ZEND 031125 ... 125250

TECHNICAL DATA

Output:	max. 600 m ³ /h
Delivery head:	max. 90 m
Speed:	max. 3600 rpm
Temperature:	max. 230 °C
Casing pressure:	PN 40
Shaft sealing:	balanced standard mechanical seal uncooled
Flange connections:	material design 1B DIN EN 1092-2 PN 40 2B DIN EN 1092-1 PN 40
Direction of rotation:	clockwise, when looking at the pump from the drive end



APPLICATION

The volute pumps of the series ZEND 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 applications are

- the energy production
- heat transport and
- the industry

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

DESIGN

Horizontal, single-stage volute pumps with dimensions and nominal ratings to **DIN EN 22858** in back pull out design, with uncooled balanced mechanical seal.

The series **ZEND** has especially been designed for the trouble free handling of hot water up to 230 °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 100 °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 29 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 end 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. 40 bar from	0 °C to 120 °C
max. 35 bar from	120 °C to 200 °C
max. 32 bar from	200 °C to 230 °C

Intermediate values can be obtained by interpolation.

Please note:

Technical rules and safety regulations.
max. casing pressure = inlet pressure + zero head
max. test pressure = 52 bar

Flanges location:

Axial suction flange, discharge flange radially upwards.

Flanges:

The flanges comply with DIN EN 1092 part 1 and part 2 resp. PN 40.
Flange design to ANSI 300 is possible.

Hydraulic:

Designation of this construction type: A.

Bearing:

One grease-lubricated, reinforced antifriction bearing to DIN 625 and one internal liquid flushed sleeve bearing.
Designation of this construction type: S

Direction of rotation:

Clockwise, when looking at the pump from the drive end.

Shaft sealing:

Code BG3: 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	2B
						ASTM Standard	AISI		
10.20 15.20	volute casing* intermediate flange	EN-JS 1025	EN-GJS-400-18-LT	0.7043	GGG-40.3	A 395		X	
16.10 33.00	casing cover bearing bracket	1.0619	GP 240 GH	1.0619	GS-C 25	A 216 Gr WCB			X
10.91 17.11 23.00	intermediate piece** impeller**	1.4571	X6 Cr Ni Mo Ti 17 12 2	1.4571	X6 Cr Ni Mo Ti 17 12 2	A 276 Gr316Ti	316 Ti	X	
52.30	shaft sleeve	1.4571	X6 Cr Ni Mo Ti 17 12 2	1.4571	X6 Cr Ni Mo Ti 17 12 2	A 276 Gr316Ti	316 Ti	X	X
21.00	shaft	1.4021	X 20 Cr 13	1.4021	X 20 Cr 13	A 276 Type 420	420	X	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	X
43.30	mechanical seal	SIC / carbon						X	X
52.90 54.00	sleeve bearing	SIC / SIC						X	X

* for sizes 065315, 080315, 100315 material volute casing GP 240 GH.

** only for sizes 031125 ... 031250

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 speeds are to be observed:

max. speed rpm	size			max. speed rpm	size		max. speed rpm	size
3600	031125	040200	080200	3000	031250	100250	1800	125250
	031160	050160	100160		032250	125200		040315
	031200	050200	100200		040250	050315		
	032160	065160			050250	065315		
	032200	065200			065250	080315		
	040160	080160			080250	100315		

The max. speeds result from the permissible peripheral speed of the impeller or from the shaft load admissible at higher temperatures, respectively.

Bearing bracket / pump size:

Bracket 25	031125, 031160, 031200, 031250, 032160, 032200, 040160, 040200, 050160, 050200
Bracket 35	032250, 040250, 050250, 065160, 065200, 065250, 080160, 080200, 080250, 100160, 100200, 040315, 050315
Bracket 45	100250, 125200, 125250, 065315, 080315, 100315

General remarks:

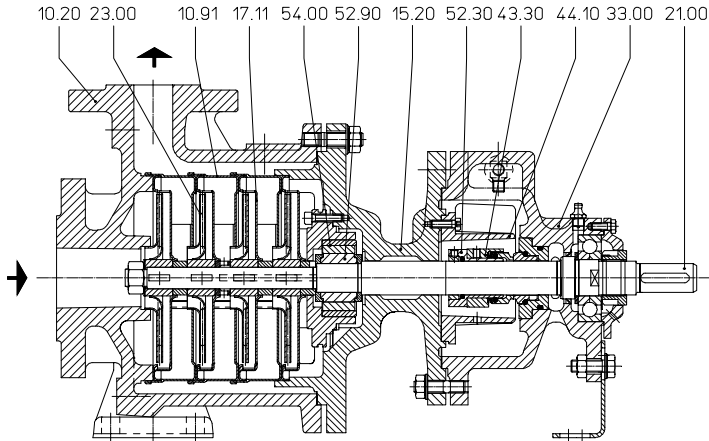
For equipping hot media systems a complete programme is available for a flow range between 1-600 m³/h consisting of the range:

- ZDN** volute pumps to DIN EN 22858, t_{max} 207 °C PN 25. 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.
- ZTN** volute pumps to EN 733, t_{max} 350 °C PN 16. Heat transfer oil design.
- 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.

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

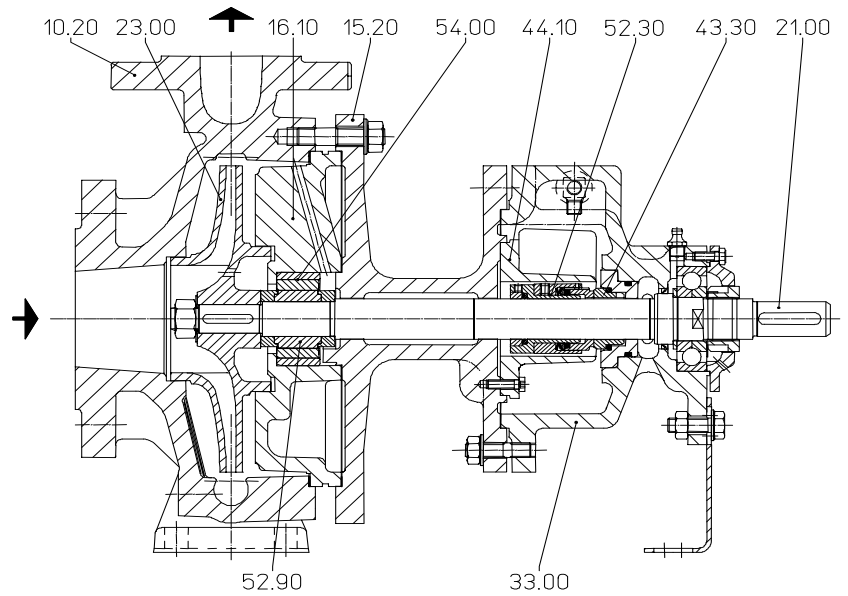
Sectional drawing and nomenclature

ZEND 031125 ... 031250 AS BG3...



- 10.20 volute casing
- 10.91, 17.11 intermediate piece
- 15.20 intermediate flange
- 16.10 casing cover
- 21.00 shaft
- 23.00 impeller
- 33.00 bearing bracket
- 43.30 mechanical seal
- 44.10 casing for mechanical seal
- 52.30 shaft sleeve
- 52.90, 54.00 sleeve bearing

ZEND 032160 ... 125250 AS BG3...

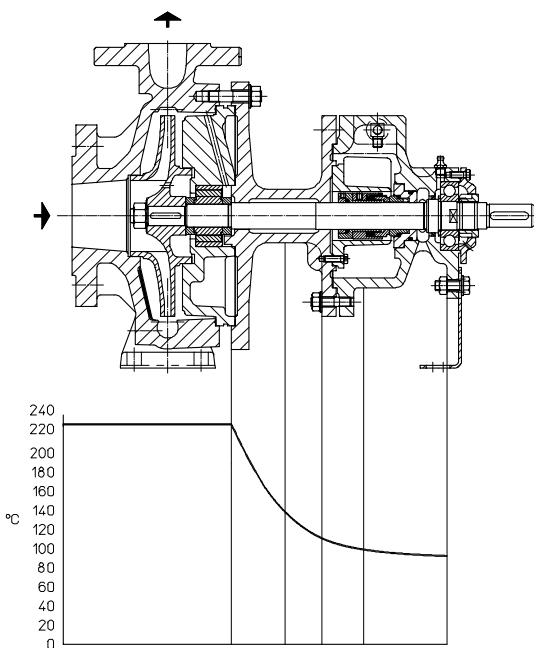


Heat barrier / shaft seal / bearing / feet arrangement

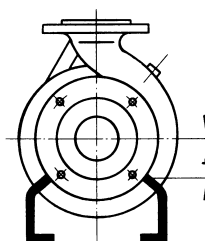
Heat transfer installations have achieved a high level of technical development. Consequently the requirements on the pumps handling heat carriers have increased regarding operating safety, environmental protection, maintenance and operating costs. On the basis of many years' experience and latest technical know-how the ZEND 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 **230 °C**.



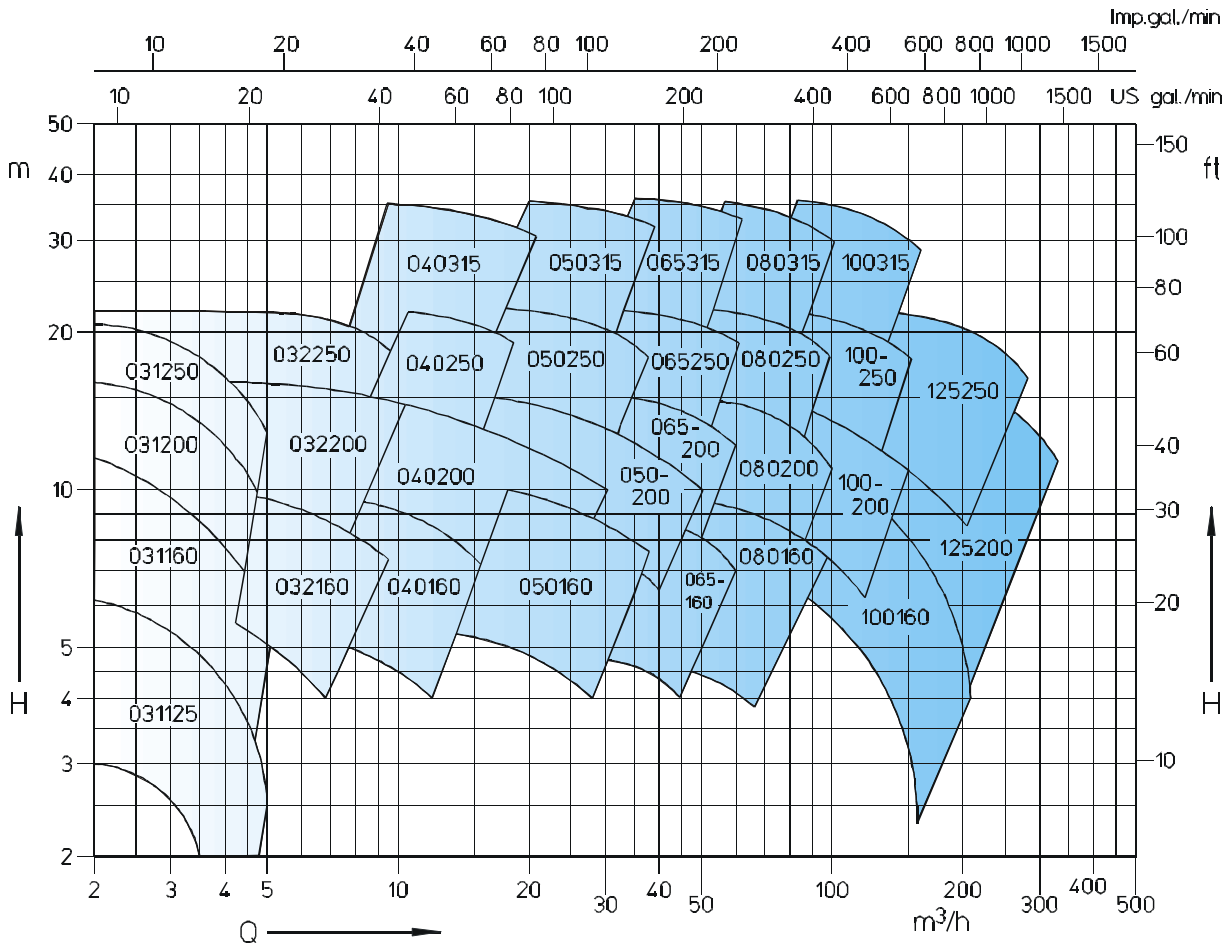
Curve of temperature decrease



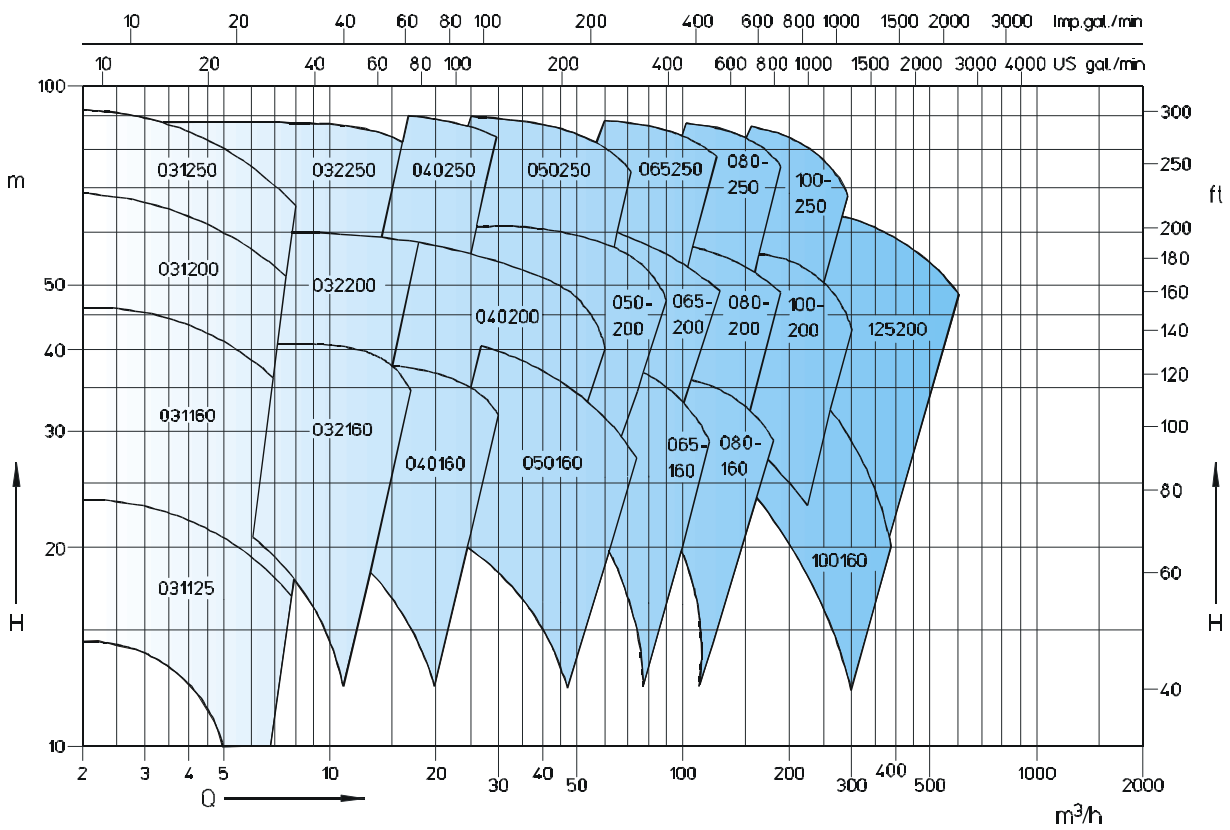
By special constructional shaping of the pump feed, displacements caused by thermal expansion are prevented to a great extent. For the vertical displacement only the measure h is decisive, since the rest of the foot remains cold. The horizontal expansion is taken up by the elastic foot bracings.

Performance graph

**50 Hz
n= 1450 rpm**

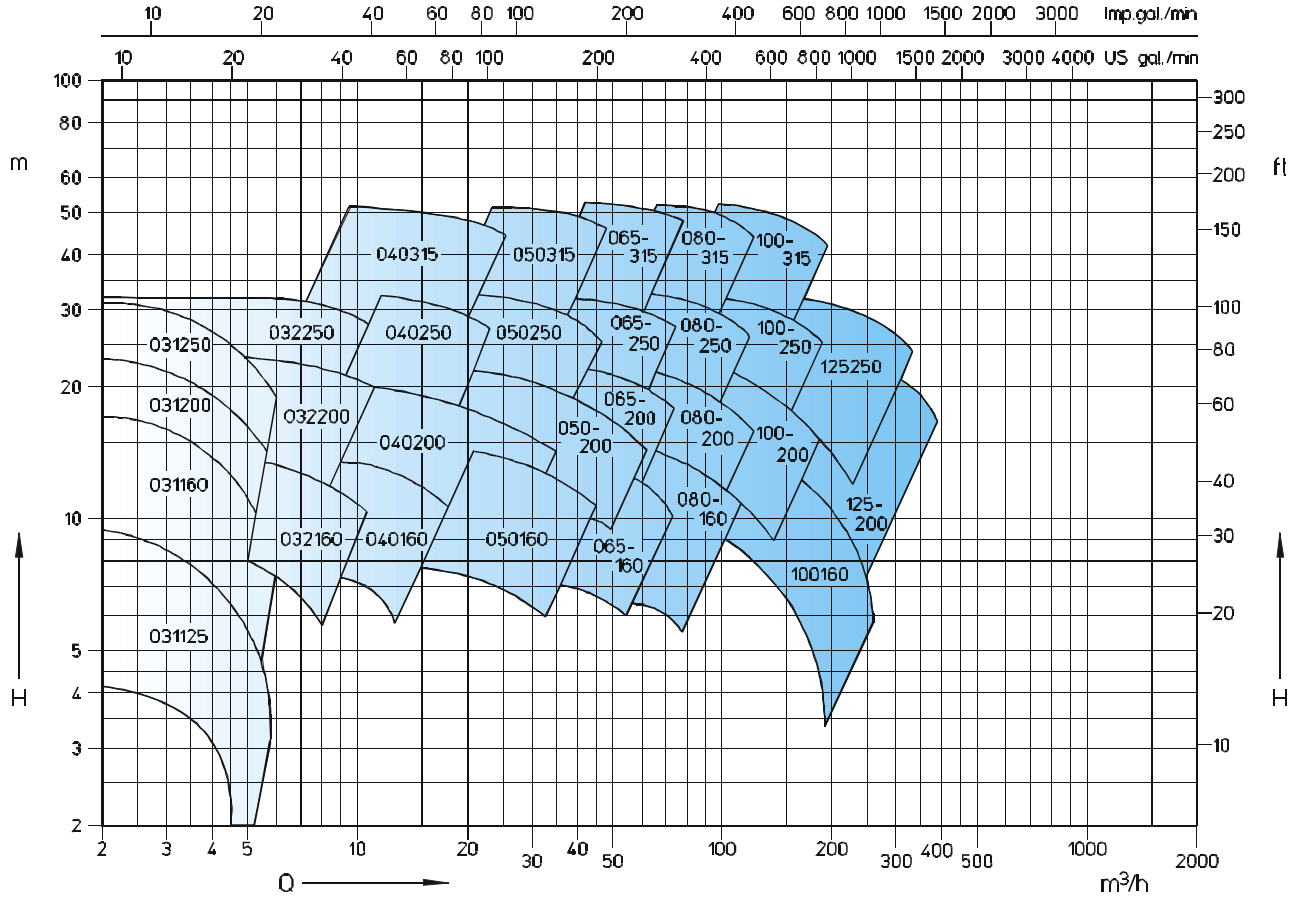


n= 2900 rpm

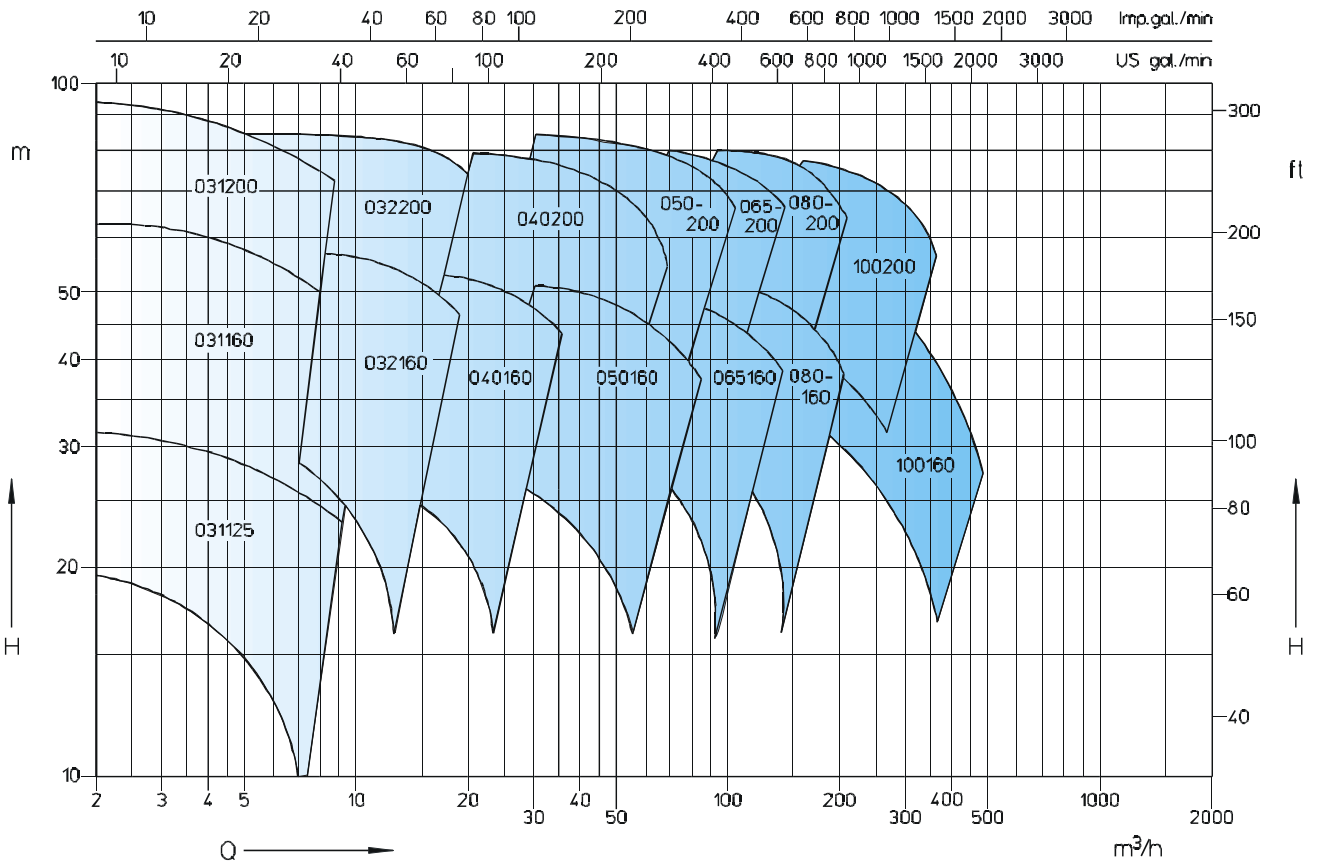


Performance graph

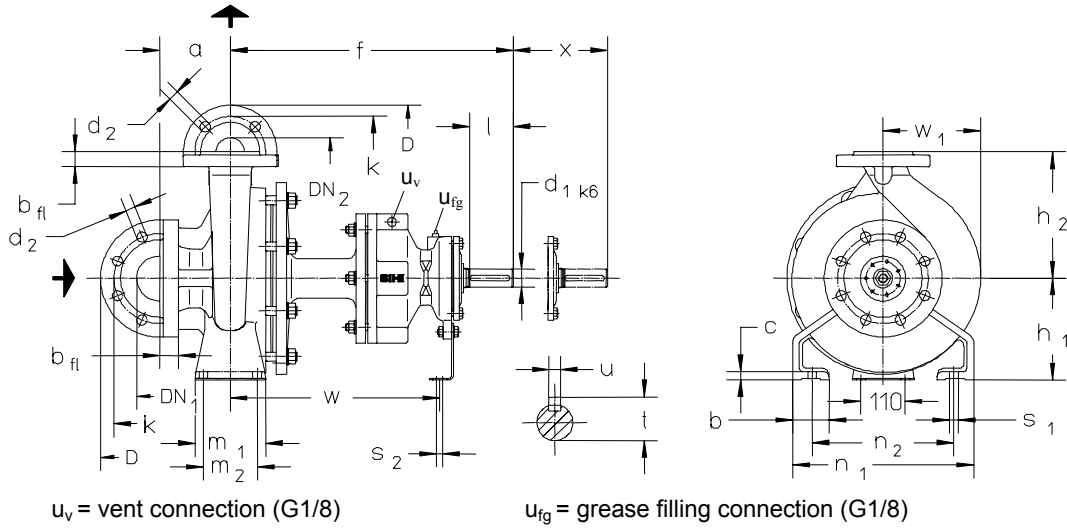
**60 Hz
n = 1750 rpm**



n = 3500 rpm



Dimension table



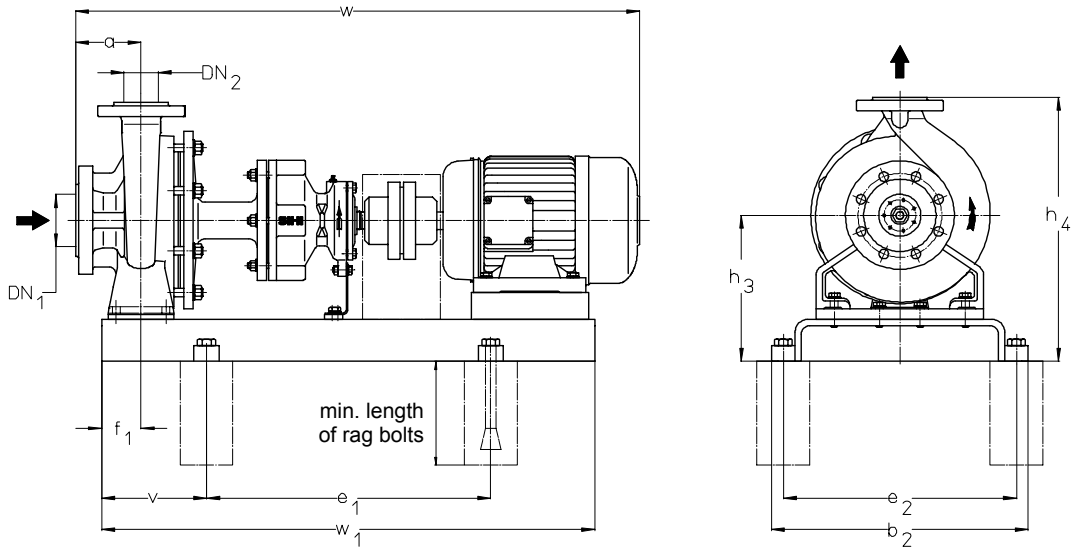
Dimensions in mm

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	w ₁	x	d ₁	l	t	u											
031125 ¹⁾	32	50	80	50	17	450	132	160	100	70	240	190	M12	M12	350	128	140	24	50	27	8											
031160 ¹⁾																																
031200 ¹⁾																																
031250 ¹⁾																																
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																								
032250							500	180								225						125	95	320	250	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																				
040250			125				65	20			500	180				225						125	95	320	250	370	170	32	80	35	10	
040315												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																									
050250							125	65			20	500				180						225	125	95	320	250	370	175	32	80	35	10
050315																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	530				200	250					160	120	360	280	M16	195	42	110	45	12	
065315																225	280					400	315	230								
080160	80	125	125	65	17	500	180	225	125	95	320	250	M12	M12	370	170	140	32	80	35	10											
080200							250																									
080250							80	20			530	225				280						160	120	400	315	M16	205	42	110	45	12	
080315												250				315						220										
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								315						400	315	215	42	110	45	12				
100315								250								315						255										
125200 ¹⁾	125	150	140	80	20	530	250	315	160	120	400		M16	M12	370	245	140	42	110	45	12											
125250							355	240																								

- Transnom 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 connection according to DIN EN 1092-2 PN 40 execution material 1B									Flange connection acc. to DIN EN 1092-1 PN 40 execution material 2B									
DN ₂ /DN ₁	32	40	50	65	80	100	125	150	32	40	50	65	80	100	125	150		
D	140	150	165	185	200	235	270	300	140	150	165	185	200	235	270	300		
k	100	110	125	145	160	190	220	250	100	110	125	145	160	190	220	250		
b _{fl}	18	19	19	19	19	19	23,5	26	18	18	20	22	24	24	26	28		
Tolerances	+4,0 -3,0									+4,5 -1,5								
d ₂ x number	19x4	19x4	19x4	19x8	19x8	23x8	28x8	28x8	18x4	18x4	18x4	18x8	18x8	22x8	26x8	26x8		

Foundation plan

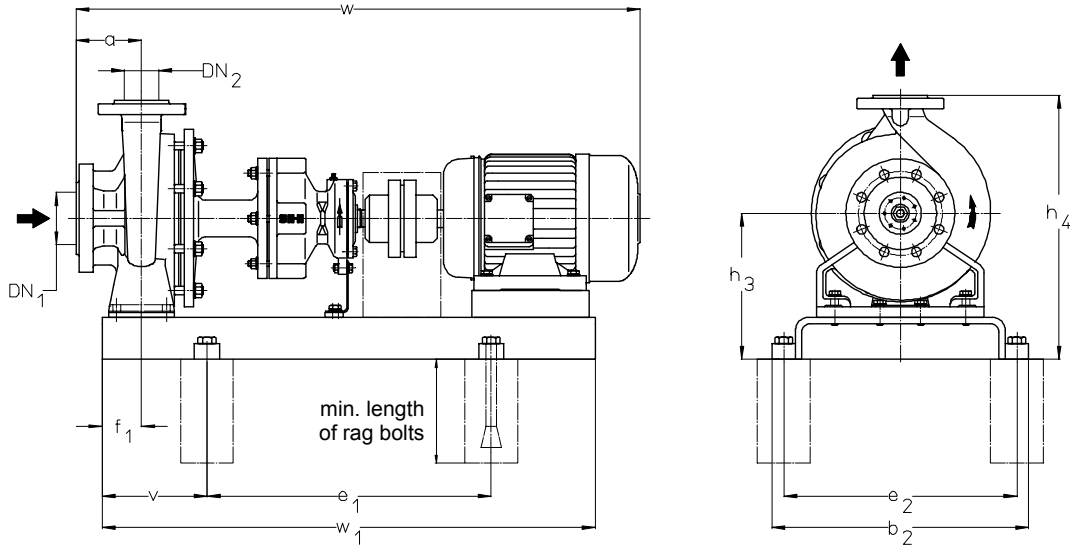


Dimensions in mm

ZEND Size	Motor Speed		Size	Base plate No.	Coupling	weight (kg)		DN ₂	DN ₁	a	b ₂	e ₁	e ₂	v	f ₁	h ₃	h ₄	w*	w ₁	Rag bolt size															
	1450	2900				Pump	Unit																												
031125	0,25	-	71a	S272	B68	57	93	32	50	80	360	540	320	140	60	197	357	766	820	M16x200															
	-	2,20	90L															101																	
031160	0,37	-	71b		B80													57			94	32	50	80	360	540	320	140	60	197	357	766	820	M16x200	
	-	3,00	100L																													107			
031200	0,55	-	80a		B68													57			95	32	50	80	360	540	320	140	60	197	357	802	820	M16x200	
	-	4,00	112M																													112			
031250	0,75	-	80b		B68													57			97	32	50	80	360	540	320	140	60	197	357	802	820	M16x200	
	-	5,50	132S																													143			
032160	0,37	-	71b		S272													B68			55	93	32	50	80	360	540	320	140	60	197	357	701	820	M16x200
	-	1,10	80b																														94		
	-	1,50	90S	97																															
	-	2,20	90L	100																															
	-	3,00	100L	106																															
	-	4,00	112M	110																															
	032200	0,55	-	80a		B68	57	95	32	50	80	360	540	320	140	60	225	405	737	820													M16x200		
		0,75	-	80b															97																
	032250	1,10	-	90S		B80	96	149	32	50	100	490	600	440	160	75	260	485	737	920													M20x400		
		-	3,00	100L															99																
-		4,00	112M	108																															
-		5,50	132S	112																															
-		7,50	160M	143																															
0,75		-	80b	S383	B80	96													149		32	50	100	490	600	440	75	260	485	149	920	M20x400			
1,10		-	90S																											151					
1,50		-	90L	153																															
2,20		-	100L	159																															
-		7,50	132S	217																															
-	11,00	160M	261																																
-	15,00	160M	275																																
040160	0,37	-	71b	S272	B68	55	85	40	65	80	360	540	320	140	60	197	357	700	820	M16x200															
	0,55	-	80a															94																	
	0,75	-	80b		96																														
	1,10	1,50	90S		99																														
	-	2,20	90L		102																														
	-	3,00	100L		107																														
	-	4,00	112M		125																														
	-	5,50	132S		143																														
	040200	0,75	-		80b													S301			63	102	40	65	100	390	480	350	125	60	225	405	757	730	M20x400
		1,10	-		90S																												105		
1,50		-	90L	108																															
2,20		-	100L	120																															
-		4,00	112M	138																															
-		5,50	132S	151																															
-		7,50	160M	130																															
-		11,00	160M	213																															
-		15,00	160M	215																															
040200		0,75	-	80b	S303	63	102	40	65	100	390	480	350	125	60	225	405	757	920	M20x400															
	1,10	-	90S	105																															
1,50	-	90L	108																																
2,20	-	100L	120																																
-	4,00	112M	138																																
-	5,50	132S	151																																
-	7,50	160M	130																																
-	11,00	160M	213																																
-	15,00	160M	215																																

* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

Foundation plan



Dimensions in mm

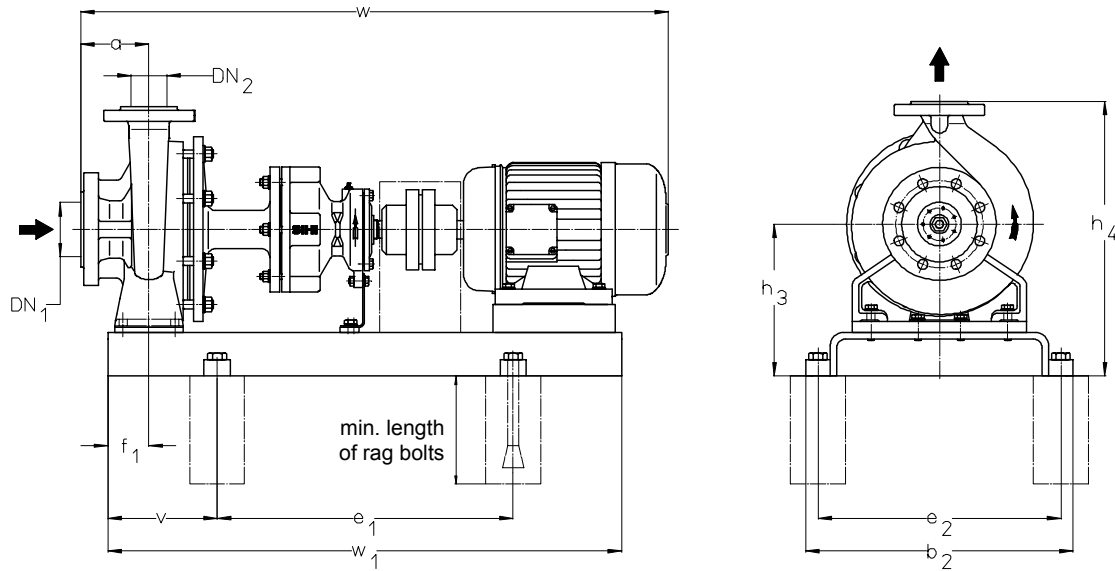
ZEND Size	Motor Speed		Size	Base plate No.	Coup-ling	weight (kg)		DN ₂	DN ₁	a	b ₂	e ₁	e ₂	v	f ₁	h ₃	h ₄	w*	w ₁	Rag bolt size
	1450	2900				kW	Pump													
040250	1,10	-	90S	S383	B80	98	156	40	65	100	490	600	440	160	75	260	485	900	920	M20x400
	1,50	-	90L															159		
	2,20	-	100L															162		
	3,00	-	-															165		
	-	5,50	132S	S385	B95													215		
	-	7,50	-															218		
	-	11,00	160M															267		
	-	15,00	-															269		
-	18,50	160L	-	293																
040315	2,20	-	100L	S383	B80	136	197	40	65	125	490	600	440	160	75	280	530	993	920	M20X400
	3,00	-	-	201																
	4,00	-	112M	S435	B95													207		
	5,50	-	132S	-	262															
050160	0,55	-	80a	S301	B68	61	98	50	80	100	390	480	350	125	60	225	405	757	730	M16x200
	0,75	-	80b															100		
	1,10	-	90S															103		
	1,50	2,20	90L	S303	B80													105		
	-	3,00	100L															118		
	-	4,00	112M															136		
	-	5,50	132S															149		
	-	7,50	-	B95	152															
	-	11,00	160M		211															
	-	15,00	160L	S344	-													217		
0,75	-	80b	S301	B68	65	104	50	80	100	390	480	350	125	60	225	425	1073	1020	M20x400	
1,10	-	90S															107			
1,50	-	90L															110			
2,20	-	100L	S303	B80													122			
-	4,00	112M															140			
-	5,50	132S															157			
-	7,50	-															160			
-	11,00	160M	B95	215																
-	15,00	160L		S344													217			
-	18,50	160L	-	232																
050250	1,50	-	90L	S383	B80	101	162	125	100	490	600	440	160	75	260	485	949	920	M20x400	
	2,20	-	100L														164			
	3,00	-	-														168			
	4,00	-	112M														184			
	-	7,50	132S	S385	B95												221			
	-	11,00	160M														264			
	-	15,00	-														272			
	-	18,50	160L														297			
	-	22,00	180M	B110	324															
	-	30,00	200L		S436												433			
050315	4,00	-	112M	S486	B80	140	254	610	840	550	205	325	605	1010	1072	1110	1250	M24X400		
	5,50	-	132S																283	
	7,50	-	132M																295	
065160	0,75	-	80b	S342	86	134	65	100	100	450	660	400	180	75	240	440	872	820	M20x400	
	1,10	-	90S														146			
	1,50	-	90L														149			
	2,20	-	100L														152			
	-	4,00	112M	S344													B80	159		
	-	5,50	132S															184		
	-	7,50	-															187		
	-	11,00	160M															255		
	-	15,00	160L	B95													257			
	-	15,00	160M														S385	257		

* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

ZEND Size	Motor Speed		Size	Base plate No.	Coupling	weight (kg)		DN ₂	DN ₁	a	b ₂	e ₁	e ₂	v	f ₁	h ₃	h ₄	w*	w ₁	Rag bolt size					
	1450 kW	2900 kW				Pump	Unit																		
065200	1,10	-	90S	S344	B80	94	65	100	100	450	660	400	180	75	260	485	154	900	1020	M20x400					
	1,50	-	90L														157	924							
	2,20	-	100L														160	968							
	3,00	-	100L														163	968							
	4,00	-	112M														179	985							
	-	7,50	132S	S385	B95												214	490	740		440	200	263	1047	1140
	-	11,00	160M														265						1213		
	-	15,00	160L														289						1213		
	-	18,50	160L														317						1257		
	-	22,00	180M														426						1280		
	-	30,00	200L	S436	B125												426	840	215		1368	1270			
	065250	2,20	-	100L	S434												B80	113	65		100	125	540	660	490
3,00		-	112M	193		1010																			
4,00		-	132S	208		1072																			
5,50		-	160M	S435	B95	228	740	490	200	298	1213	1140													
-		15,00	160L			313				1257															
-		18,50	180M			341				1280															
-		22,00	180M	S436	B110	445	840	550	205	461	1368	1270													
-		30,00	200L			504				300	550	1425	M24x400												
-		37,00	225M			504				325	605	1425													
065315		5,50	-	132S	S486	B95	146	65	125	125	610	840		550	205	90	325			605					
	7,50	-	132M	292									1140												
	11,00	-	160M	325									1243												
	15,00	-	160L	341									1287												
080160	0,75	-	80b	S383	B80	95	80	125	125	490	600	440	160	75	260	485	150	897	920	M20x400					
	1,10	-	90S														153	924							
	1,50	-	90L														156	949							
	2,20	-	100L														159	993							
	3,00	-	100L														162	1072							
	-	7,50	132S	S385	B95												215	740	440		200	264	1213	1140	
	-	11,00	160M														266					1257			
	-	15,00	160L														290					1280			
	-	18,50	160L														318					1368			
	-	22,00	180M														341					1425			
080200	1,50	-	90L	S383	B80	102	80	125	125	540	600	490	160	75	280	0	1368	162	949	920	M20x400				
	2,20	-	100L															166	993						
	3,00	-	112M															169	1010						
	4,00	-	112M	S385	B95													185	740	440		200	226	1072	1140
	5,50	-	132S															266					1213		
	-	11,00	160M															273					1257		
	-	15,00	160M	B110	B110													297	840	550		215	325	1280	1270
	-	18,50	160L															434					1368		
	-	22,00	180M															450					1425		
	080250	3,00	-	100L	S486													B80	125	80		125	125	610	840
4,00		-	112M	251		1010																			
5,50		-	132S	270		1072																			
7,50		-	132M	283		1110																			
-		18,50	160L	347		1225																			
-		22,00	180M	B110	B110	370	940	550	240	466	1280	1420													
-		30,00	200L			482				1368															
-		37,00	225M			542				1425															
-		45,00	225M	S487	B140	642	940	550	240	642	1493	1420													
-		55,00	250M			642				1493															
080315	5,50	-	132S	S486	B95	150	80	125	125	610	840	550	205	90	350	665	293	1102	1250	M20x400					
	7,50	-	132M														305	1140							
	11,00	-	160M														338	1243							
	15,00	-	160L														354	1287							
100160	2,20	-	100L	S434	B80	126	100	125	140	540	660	490	170	90	280	560	203	1008	1000	M20x400					
	3,00	-	100L														206	1025							
	4,00	-	112M														222	1087							
	5,50	-	132S														241	1272							
	-	18,50	160L	S435	B110												326	740	490		200	354	1295	1140	
	-	22,00	180M														458					1383			
	-	30,00	200L	S436	B125												474	840	550		215	474	1425	1270	
	-	37,00	225M														474					1425			

* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
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Foundation plan

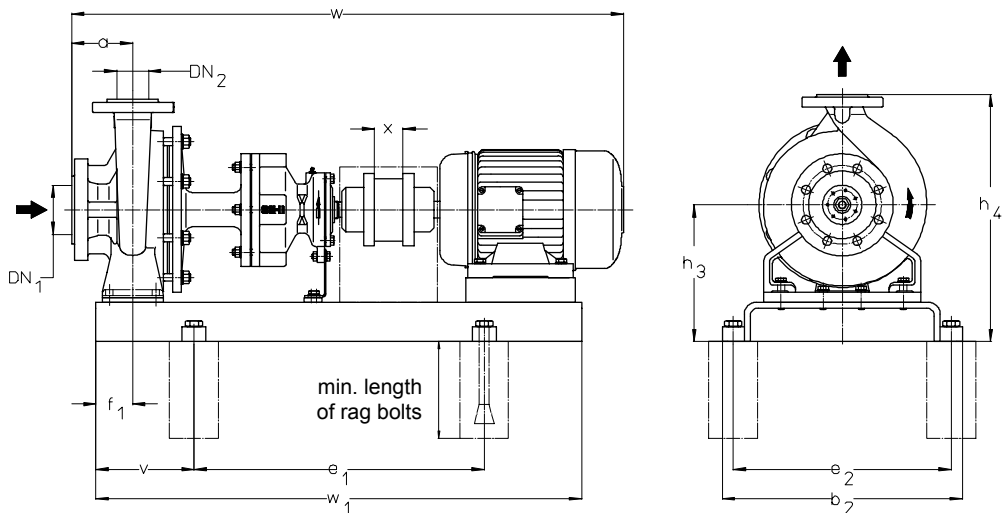


Dimensions in mm

ZEND Size	Motor Speed		Size	Base plate No.	Coupling	weight (kg)		DN ₂	DN ₁	a	b ₂	e ₁	e ₂	v	f ₁	h ₃	h ₄	w*	w ₁	Rag bolt size
	1450	2900				kW	Pump													
100200	2,20	-	100L	S434	B80	118	195	100	125	125	540	660	490	170	280	560	993	1000	M20x400	
	3,00	-	112M				213													
	4,00	-	132S				233													
	5,50	-	132S	S435	B95		246													
	7,50	-	160L				318													
	-	18,50	180M				346													
	-	22,00	200L	S436	B110		450													
	-	30,00	200L				466													
	-	37,00	225M				500													
100250	4,00	-	112M	S486	B95	132	259	125	140	610	840	550	205	90	325	605	1055	1250	M24x400	
	5,50	-	132S				277													
	7,50	-	132M				290													
	11,00	-	160M	S487	B125		328													
	-	30,00	200L				473													
	-	37,00	225M				499													
	-	45,00	250M	S487	B140		543													
	-	55,00	280S				658													
	-	75,00	280S				858													
100315	11,00	-	160M	S486	B95	153	311	125	150	140	610	940	550	240	90	350	665	1258	1250	M24x400
	15,00	-	160L				368													
	18,50	-	180M				397													
	22,00	-	180L				414													
125200	7,50	-	132M	S486	B95	142	300	125	150	140	610	940	550	240	90	350	665	1155	1250	M24x400
	11,00	-	160M				338													
	15,00	-	160L				361													
	-	45,00	225M	S487	B125		575													
	-	55,00	250M				668													
	-	75,00	280S				868													
125250	7,50	-	132M	S486	B95	147	305	125	150	140	610	940	550	205	90	350	705	1155	1250	M24x400
	11,00	-	160M				343													
	15,00	-	160L				366													
	18,50	-	180M				391													

* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
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Foundation plan for units with spacer coupling

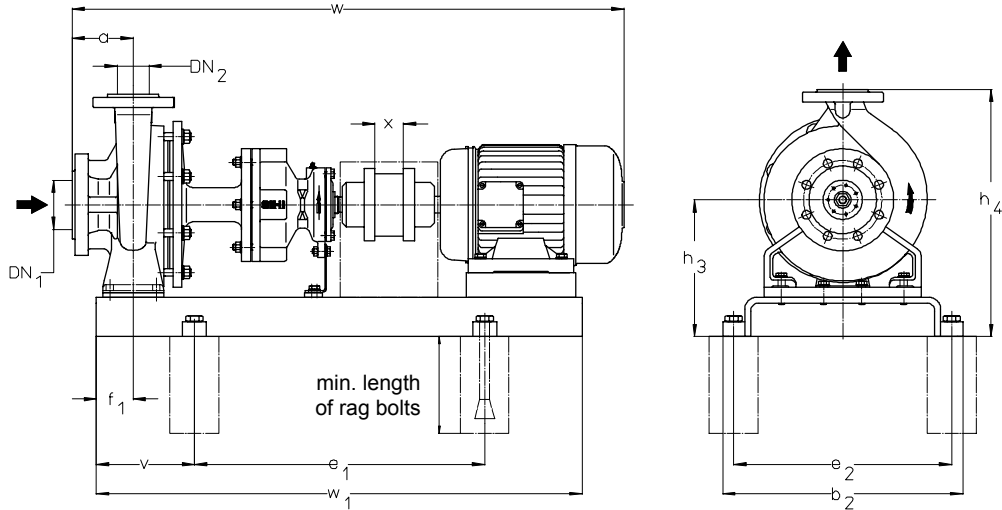


Dimensions in mm

ZEND Size	Motor Speed		Base ling No.	Coup-ling	weight (kg)		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	
	1450	2900			Size	Pump															Unit
031125	0,25	-	71a	S303	57	101	32	50	80	390	600	350	160	60	197	357	140	906	920	M16X200	
	-	2,20	90L	S344																	120
031160	0,37	-	71b	S303	57	102	32	50	80	390	600	350	160	60	197	357	140	906	920	M16X200	
	-	3,00	100L	S344																	127
031200	0,55	-	80a	S303	57	103	32	50	80	390	600	350	160	60	197	357	140	542	920	M16X200	
	-	4,00	112M	S344																	130
031250	0,75	-	80b	S303	57	105	32	50	80	390	600	350	160	60	197	357	140	542	920	M16X200	
	-	5,50	132S	S344																	155
032160	0,37	-	71b	S272	55	95	32	50	80	360	540	320	140	60	197	357	100	801	820	M16x200	
	-	1,10	80b																		96
	-	1,50	90S																		97
	-	2,20	90L																		100
	-	3,00	100L																		103
	-	4,00	112M																		113
032200	0,55	-	80a	S272	57	98	32	50	80	360	540	320	140	60	225	405	100	837	820	M16x200	
	0,75	-	80b																		100
	1,10	-	90S																		102
	-	3,00	100L																		115
	-	4,00	112M																		120
	-	5,50	132S																		146
032250	0,75	-	80b	S383	96	155	40	65	100	490	740	440	200	75	260	485	100	972	1140	M20x400	
	1,10	-	90S																		175
	1,50	-	90L																		177
	2,20	-	100L																		181
	-	7,50	132S																		220
	-	11,00	160M																		277
040160	0,37	-	71b	S272	55	94	40	65	80	360	540	320	140	60	197	357	100	800	820	M16x200	
	0,55	-	80a																		97
	0,75	-	80b																		99
	1,10	1,50	90S																		102
	-	2,20	90L																		105
	-	3,00	100L																		114
040200	0,75	-	80b	S303	63	111	40	65	100	390	600	350	160	60	225	405	100	857	920	M16x200	
	1,10	-	90S																		114
	1,50	-	90L																		117
	2,20	-	100L																		122
	-	4,00	112M																		142
	-	5,50	132S																		154
040200	-	7,50	132S	S344	63	157	40	65	100	450	660	400	180	75	240	420	100	1032	1020	M20x400	
	-	11,00	160M																		216
	-	15,00	160M																		218
	-	15,00	160M																		218

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Foundation plan for units with spacer coupling



Dimensions in mm

ZEND Size	Motor Speed		Base ling No.	Coup-ling	weight (kg)		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										
	1450	2900			Size	Pump															Unit									
040250	1,10	-	90S	S385	H80	98	40	65	100	490	740	440	200	75	260	485	100	1000	1140	M20x400										
	1,50	-	90L															1024												
	2,20	-	100L															186												
	3,00	-																189												
	-	5,50	132S															220												
	-	7,50	160M															223												
	-	11,00																270												
	-	15,00																272												
-	18,50	160L	S436	H95	309	540	840	490	215	1288	1332	1270																		
040315	2,20	-	100L	S385	H80	136	40	65	125	490	740	440	200	75	280	530	100	1106	1140	M20x400										
	3,00	-	112M															1125												
	4,00	-	132S															221												
	-	-																225												
	5,50	-																232												
050160	0,55	-	80a	S303	H80	61	50	80	100	390	600	350	160	60	225	405	100	857	920	M16x200										
0,75	-	80b	109																											
1,10	-	90S	112																											
1,50	2,20	90L	116																											
-	3,00	100L	120																											
-	4,00	112M	139																											
-	5,50	132S	153																											
-	7,50		155																											
-	11,00	160M	S344	H95	214	450	660	400	180	1173	420	1020	M20x400																	
050200	0,75	-	80b	S303	H80	65	50	80	100	390	600	350	160	60	225	425	100	857	920	M16x200										
	1,10	-	90S															110												
	1,50	-	90L															113												
	2,20	3,00	100L															116												
	-	4,00	112M															124												
	-	5,50	132S															143												
	-	7,50																156												
	-	11,00	160M															S344			H95	159	450	660	400	180	1173	420	1020	M20x400
	-	15,00	218															220			240	440	1173	1020						
	-	18,50	160L															235			1213	1020								
050250	1,50	-	90L	S385	H80	101	65	100	125	490	740	440	200	75	260	485	100	1049	1140	M20x400										
	2,20	-	100L															189												
	3,00	-	112M															192												
	4,00	-	132S															192												
	-	7,50	160M															208												
	-	11,00																245												
	-	15,00	286															288			280	505	1468							
	-	18,50	160L															S436			H95	312	540	840	490	215	1313	1357	1270	
	-	22,00	180M															H110			341	840	490	215	1380					
	-	30,00	200L															H125			438	280	505	1468						
050315	4,00	-	112M	S486	H80	140	65	100	125	610	550	205	75	325	605	100	1125	1250	M24x400											
	5,50	-	132S														1185													
	7,50	-	132M														1223													
065160	0,75	-	80b	S344	H80	86	65	100	100	450	660	400	180	75	240	440	100	857	1020	M20x400										
	1,10	-	90S															144												
	1,50	-	90L															147												
	2,20	-	100L															150												
	-	4,00	112M															155												
	-	5,50	132S															181												
	-	7,50																206												
	-	11,00	160M															S385			H95	209	490	740	440	200	1147	1140		
	-	15,00																S436			H95	271	540	840	490	215	1288	1270		
					273																									

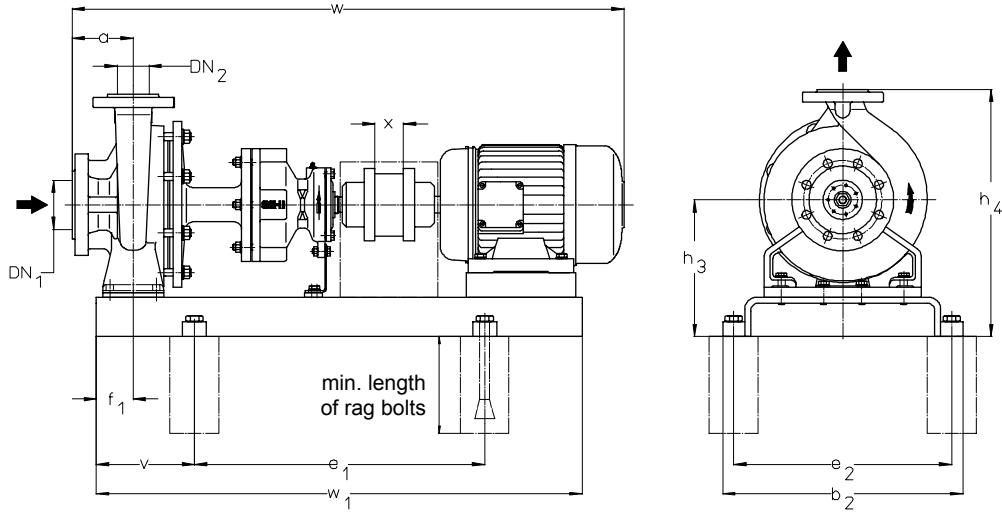
* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
Some sizes are not corresponding to the drawing in small details. Foundation plan for 60Hz on request.

Dimensions in mm

ZEND Size	Motor Speed		Size	Base ling No.	Coup-ling	weight (kg) Pump	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																				
	1450 kW	2900 kW																																							
065200	1,10	-	90S	S344	H80	94	155	65	100	100	450	660	400	180	75	260	485		1039	1020	M20x400																				
	1,50	-	90L																1064																						
	2,20	-	100L																1108																						
	3,00	-	-																1125																						
	4,00	-	112M																1255																						
	-	7,50	132S	1328	S436						H95	230	279	540					840	490		215	240	300	525				1372	1270	M24X400										
	-	11,00	160M	1425																																					
	-	15,00	160L	1483																									1420												
	-	18,50	160L	1483																									1420												
	-	22,00	180M	1483																									1420												
-	30,00	200L	206	S435	H80	113	206	100	125	540	740	490	200	90	280	530	140	1133	1140	M20x400																					
-	7,50	132S	209																																						
-	11,00	112M	225																																						
-	15,00	132S	238																																						
-	18,50	160M	309																																						
-	22,00	160L	324	S436	H95					309	324	610	940					550	240		240	300	550				1420	1270	M24x400												
-	15,00	160M	353																																						
-	18,50	160L	480																																						
-	22,00	180M	495																																						
-	30,00	200L	531																																						
-	37,00	225M	298	S486	H95	146	298	80	125	610	840	550	205	325	605				1252	1250	M24x400																				
-	7,50	132M	309																																						
-	11,00	160M	366																																						
-	15,00	160L	391																																						
-	22,00	180M	391																																						
065315	5,50	-	132S	S486	H95					146	298	80	125						610	840		550	205	325	605				1290	1420	M24x400										
	7,50	-	132M																										309												
	11,00	-	160M																										366												
	15,00	-	160L																										391												
	22,00	-	180M																										391												
	080160	0,75	-	80b	S344	H80	95	153	80					125	450	660	400	180	75	260	485		1037						1020	M20x400											
		1,10	-	90S																			1064																		
		1,50	-	90L																			1089																		
		2,20	-	100L																			1133																		
		3,00	-	100L																			1133																		
-		7,50	132S	1212	S385	H95				218	280	490	740		440	200	200	90					300	550	140	1212	1140	M20x400													
-		11,00	160M	1353																																					
-		15,00	160L	1353																																					
-		18,50	160L	1397																																					
-		22,00	180M	1420																																					
080200	1,50	-	90L	S385	H80	102	186	80	125	490	740	440	200	75	260	510			1089	1140	M20x400																				
	2,20	-	100L																1190																						
	3,00	-	112M																193																						
	4,00	-	132S																209																						
	5,50	-	132S																221																						
	-	11,00	160M	282	S436					H95	282	289	540					840	490	215		215	90	300	550	140	1420	1270	M24x400												
	-	15,00	160L	313																																					
	-	18,50	160L	342																																					
	-	22,00	180M	469																																					
	-	30,00	200L	478																																					
080250	3,00	-	100L	S486	H80	125	235	80	125	610	840	550	205	90	325	605		1133	1250	M24x400																					
	4,00	-	112M															254																							
	5,50	-	132S															267																							
	7,50	-	132M															269																							
	-	18,50	160L															372																							
	-	22,00	180M	395	S487					H110	395	492	940					940	240		240	240	90	350	630	140	1420	1420	M24x400												
	-	30,00	200L	501																																					
	-	37,00	225M	540																																					
	-	45,00	250M	671																																					
	-	55,00	250M	671																																					
080315	5,50	-	132S	S486	H95	150	296	80	125	610	940	550	205	350	665			1252	1250	M24x400																					
	7,50	-	132M															307																							
	11,00	-	160M															342																							
	15,00	-	160L															389																							
100160	2,20	-	100L	S435	H80	126	219	100	125	140	540	740	490	90	280	560		1148	1140	M20x400																					
	3,00	-	112M															222																							
	4,00	-	132S															238																							
	5,50	-	132S	S436	H95					251	338	364	610					940	550		240	240	90	300	580		1412	1270	M24x400												
	-	18,50	160L																								338														
	-	22,00	180M																								364														
	-	30,00	200L																								493														
-	37,00	225M	503	S487	H125	503	534	100	125	610	940	550	240	90	325	605		1523	1420	M24x400																					
100200	2,20	-	100L															S435			H80	118					211	100		125	540	740	490	200	90	280	560	140	1133	1140	M20x400
	3,00	-	112M																																				214		
	4,00	-	132S																				230																		
	5,50	-	132S																				243																		
	7,50	-	132M																				245																		
	-	18,50	160L															330			S436		H95	330	358	610			940		550	240	240	90					300	580	
	-	22,00	180M	495																																					
	-	30,00	200L	495																																					
	-	37,00	225M	495																																					
	-	45,00	225M	534																																					

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Foundation plan for units with spacer coupling



Dimensions in mm

ZEND Size	Motor Speed		Base Size	Base No.	Coupling	weight (kg)		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																																		
	1450	2900				Pump	Unit																																																
100250	4,00	-	112M	S486	H95	132	262	100	125	140	610	840	550	205	90	325	605	140	1195	1250	M24x400																																		
	5,50	-	132S				274												1257																																				
	7,50	-	132M		276		1295																																																
	11,00	-	160M		329		1398																																																
	-	30,00	200L	S487	H125		515												140			140	140	140	140	140	140	140	140	140	140	140	140	140	140	140																			
	-	37,00	225M				509																														1553																		
	-	45,00	250M		553		1585																																																
	-	55,00	280S		679		1678																																																
-	75,00	280S	S538	H160	880	660	1060	600	280	350	630	1678	1620																																										
100315	11,00	-	160M	S486	H95	153	346	125	150	140	610	840	550	240	90	350	665	140		140	140																140	140																	
	15,00	-	160L																																				392	1408															
	18,50	-	180M	S487	H110																																		424	125	150	140	660	1060	600	280	90	380	660	140	140	140	140	140	
	22,00	-	180L																H140			443	1452																																
	125200	7,50	-	132M	S486														H95			142	286	125	150	140	610	840	550	205	90	350	665	140	140	140			140																140
		11,00	-	160M																																																			
15,00		-	160L	S487	H110	362	125	150	140	660	1060	600	280	90	380	695	140	140	140	140	140																																		
-		45,00	225M																																		H125	613																	
-		55,00	250M	S538	H140	706																															125	150		140	660	1060	600	280	90	380	695	140	140	140	140	140			
-		75,00	280S																																																		H160	890	
125250	7,50	-	132M	S486	H95	147																291	125	150	140	610	840	550	205	90	350	705	140	140	140	140																			
	11,00	-	160M																																				344														1295		
	15,00	-	160L	S487	H110		367	125	150	140	660	1060	600	280	90	380	695	140	140	140	140																																		
	18,50	-	180M																																				H140														392	1398	

* Motor protection type IP 55, dimensions depend on the motor manufacturer. ** Weight higher by 20 % in case of cast steel
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 design	Casing gasket
	A = hydraulic 1 S = grease lubricated bearing	BG3 = balanced standard mechanical seal	1B = main parts of spheroidal cast iron 2B = main parts of cast steel	2 = confined flat gasket of graphite with A4 insertion
031125	AS	BG3	1B	2
031160				
031200				
031250				
032160				
032200				
032250				
040160				
040200				
040250				
040315				
050160				
050200				
050250				
ZEND 050315				
065160				
065200				
065250				
065315				
080160				
080200				
080250				
080315				
100160				
100200				
100250				
100315				
125200				
125250				
			alternative 1B 2B	

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

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