Volute pumps
SIHI*SuperNova*

ZDIC 040160 . . . 080200
for hot water

FLOWSERVE
SIHI® Pumps

TECHNICAL DATA

Output:	max. 140 m³/h
Head:	max. 60 m
Speed:	max. 3600 rpm
Material:	Spheroidal graphite iron: 1B
Temperature:	max. 150 °C
Casing pressure:	PN 25
Shaft seal:	standard mechanical seal
Flange connection:	DIN 2501 PN 25
Sense of rotation:	clockwise, when looking at the pump from the drive end

APPLICATION

Volute pumps of the series ZDIC belong to the program of heat carrier circulation pumps. These pumps in inline design have been constructed as space saving and easy to install pumping units with standard motor.
They will be mainly used for circulating hot water in closed pipe systems and vessel systems.

The field of applications are

- Production of energy.
- Heat transfer.
- Other industries.

DESIGN

Single-stage pumping units in compact design with nominal performances according to DIN 24255 / EN 733 , where suction and discharge branch are arranged opposite to each other for direct installation into the pipe work.
There is no common shaft for motor and pump. The motors used are standard motors.
Due to the process design it is possible to withdraw the whole insert unit without detaching the pump casing from the pipe work.
The individual shafts of the unit connected by a plug-in coupling facilitate the dismantling or the replacement of the motor without affecting the pump.
At present the programme comprises 8 construction sizes.

CONSTRUCTION

Casing pressure:

Material design: max. 24 bar from 120 °C up to 150 °C
max. 25 bar from -40 °C up to 120 °C

Please note:
Technical rules and safety regulations.
Casing pressure = inlet pressure + delivery head with zero flow

Flanges location:

Suction and discharge branch radially arranged opposite to each other.

Flanges:

The flanges correspond to DIN 2534 PN25. Flange drilled ANSI 150 lbs. on request.

Hydraulic:

First hydraulic: Designation of this construction: R▪
Second hydraulic: Designation of this construction: S▪

Bearing:

Two grease-lubricated antifriction bearings to DIN 625 in the motor, one antifriction bearing grease-lubricated for service-life according to DIN 625 in the bearing bracket.
Code of this construction: ▪K

Sense of rotation:

Clockwise when looking at the pump from the drive end.

Shaft sealing:

The shaft sealing is a single mechanical seal, flushed from internal source, uncooled and balanced.
Code BG3: sliding material SiC/carbon for hot water without abrasive admixtures.
Temperature range: -20 ºC to 150 °C

Material design

Item	Components	Material						Execution
		EN material-number	EN material-denomination	DIN material-number	DIN material-denomination	US denomination		1B
						ASTM Standard	AISI	
10.10	Volute casing	EN-JS 1025	EN-GJS 400-18-LT	0.7043	GGG 40.3	A 395		X
16.10	Casing cover	EN-JS 1025	EN-GJS 400-18-LT	0.7043	GGG 40.3	A 395		X
34.00	Bearing bracket	EN-JL 1040	EN-GJL 250	0.6025	GG 25	A 278 Class 30		X
21.00	Shaft	1.4021	X20 Cr13	1.4021	X20 Cr13	A 276 Type 420	420	X
23.00	Impeller	EN-JL 1040	EN-GJL 250	0.6025	GG 25	A 278 Class 30		X
43.30	Mechanical seal	SiC / carbon - EP						X

Casing seal:

The casing is sealed by a flat gasket of EWP 210. Designation of this construction type: 2

Drive / Speed:

Using commercial electric motors, type of construction IM B5 resp. IM V 1
To determine the drive power we recommend the following safety margin:
up to 4 kW: 25 % 4 up to 7,5 kW: 20 % 7,5 up to 37 kW: 15 %

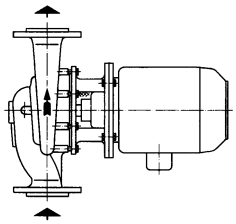
Please note: the max. motor power allowed for some construction sizes as shown in the individual characteristic curves.
The following speeds are to be observed:

Max. speed rpm	Size	
3600	040160	040200
	050160	050200
	065160	065200
	080160	080200

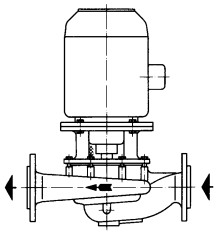
The max. speeds results from the admissible shaft load and from the permitted peripheral speed of the impellers.

Positioning

ZDIC pumps can be mounted either horizontally or vertically into the pipe system with sufficient carrying capacity as follows, taking the drive power into consideration:



Horizontal installation up to 7,5 kW



Vertical installation up to 7,5 kW possible, from 11 kW on necessity.
The pump unit can be additionally supported for that. For this particular purpose a threaded bore hole is provided in the pump casing (see dimension table).

Please note

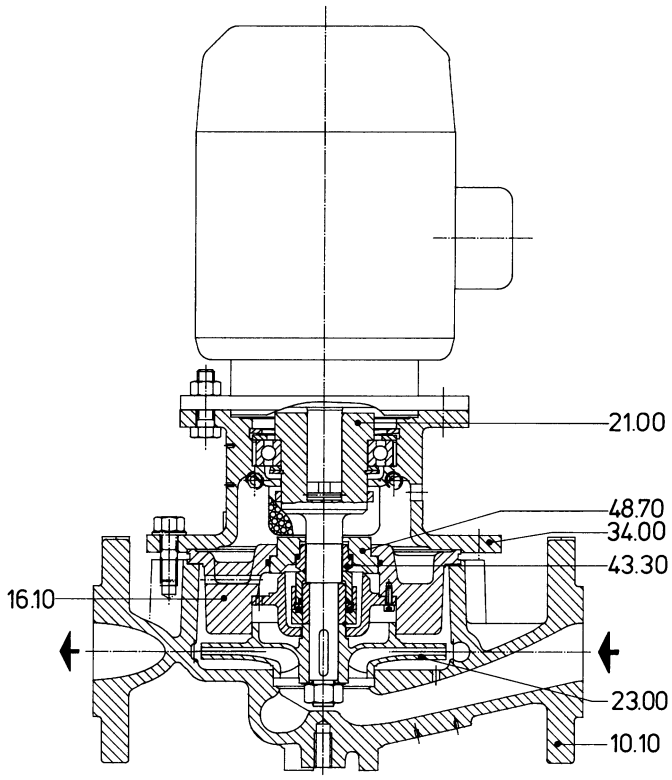
The installation of the motor below the pump is not allowed due to operating safety reasons.
The installation of compensators is not necessary.

General comments

For the equipment of heat transfer plants, which are running with hot water, a programme for the range up to 600 m³/h is available, e.g. volute pumps:

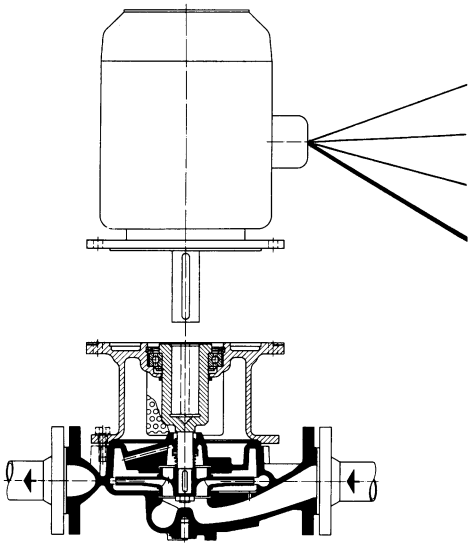
series **ZEND** as per EN 22858, t_{max} 230 ºC PN40, with uncooled mechanical seal.
series **ZDND** as per EN 22858, t_{max} 207 ºC PN25, with uncooled mechanical seal.
series **ZHND** as per EN 733, t_{max} 180 ºC PN16, with uncooled mechanical seal.

Sectional drawing and nomenclature



10.10	volute casing	21.00	shaft
16.10	casing cover	34.00	bearing bracket
43.30	mechanical seal	23.00	impeller
48.70	stationary seal ring support		

Standard set of components / bearing bracket - plug-in coupling / standard motor* / space requirements
By supplementing the standard set of components consisting of pump casing, casing cover,impeller and mechanical seal by a special bearing bracket (DBP) results an inline pumps which is easy to combine. The bearing bracket removes the standard motor from the load of hydraulic forces and allows suitable motor combinations at the complete mounted pumping unit.



Motor combination

+ type IM B 5 or IM V 1

+ type of protection IP 54 up to eII (Ex)

+ speed at 50 and 60 cycles

= motor at your choice

+ shaft sealing pump unit

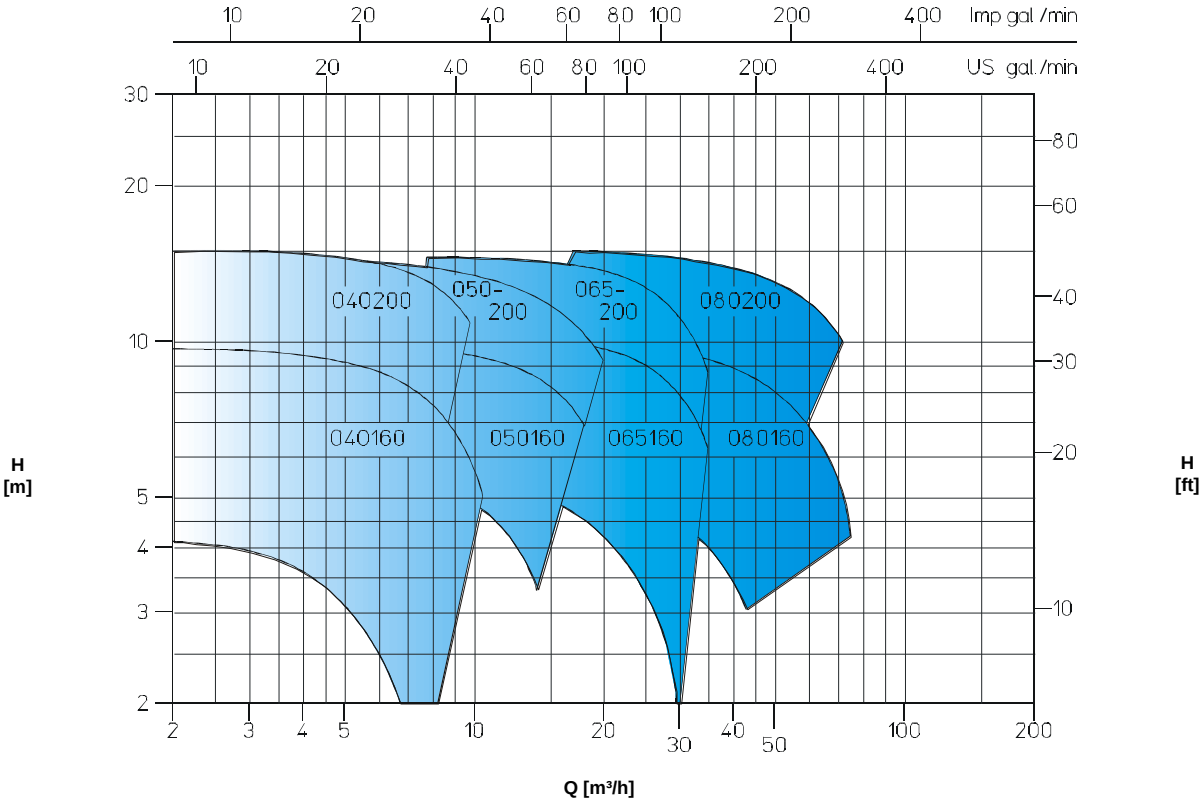
= readiness for operation

* shaft end according to DIN 748 T 3
key according to DIN 6885 T 1

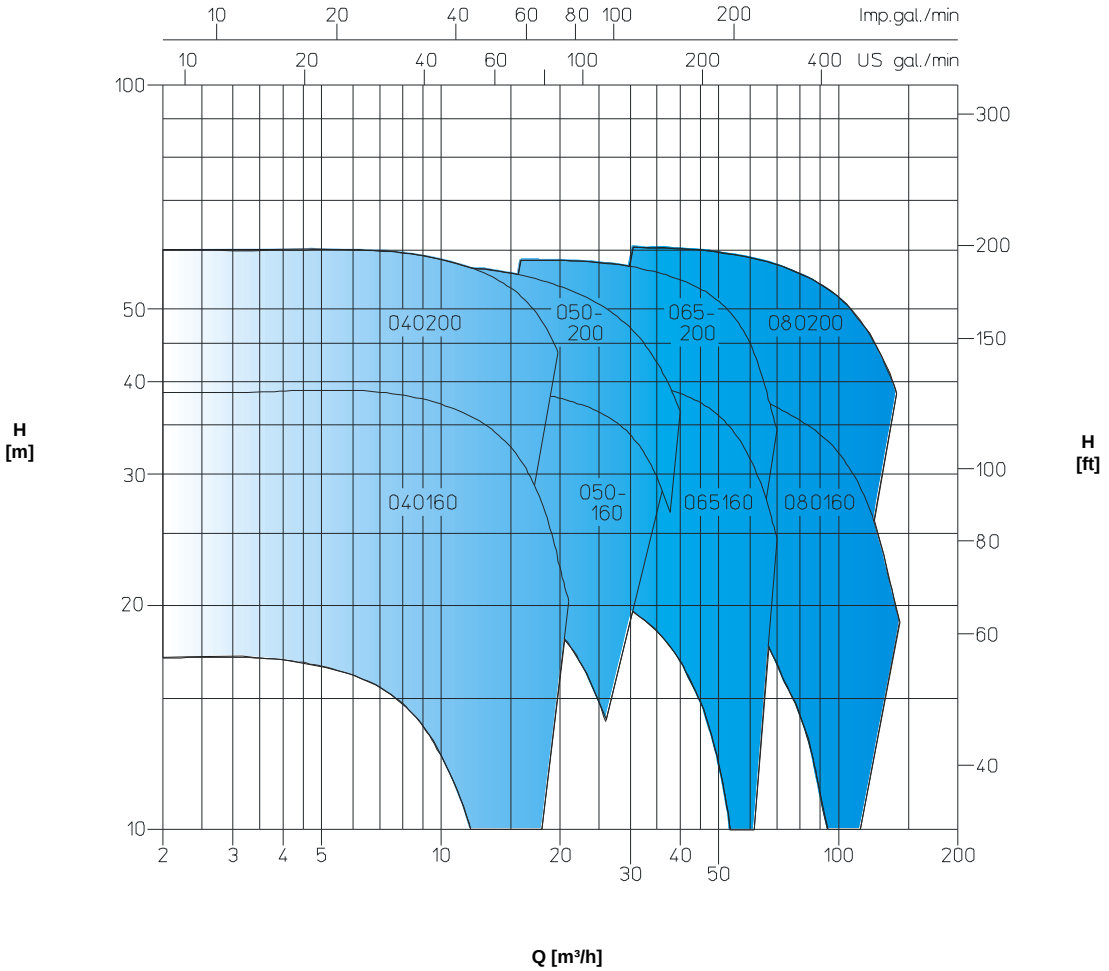
If neseccary the motor can also be changed in the unit without draining, the pipe work. The pump unit remains as „**shaft tight armature**“ in the pipe work and so the readiness for operation is increased.

Performance graph

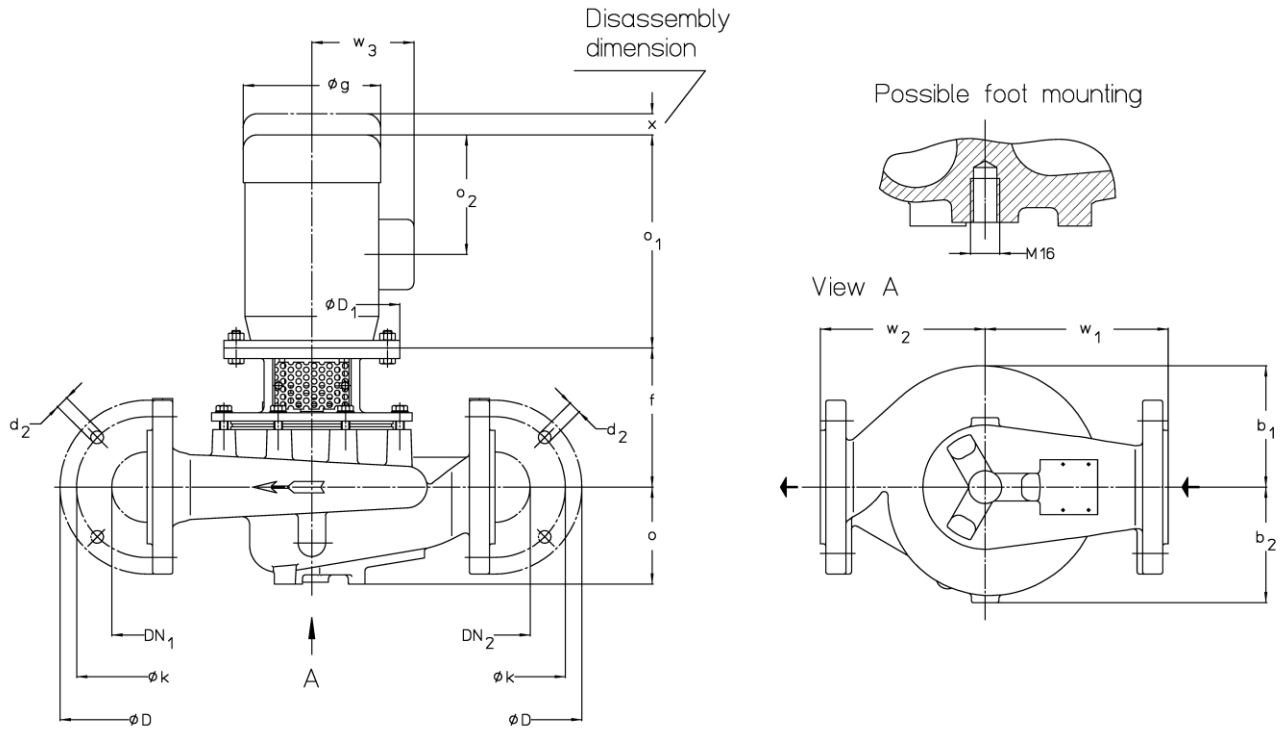
n = 1450 rpm



n = 2900 rpm



Dimension table



n = 1450 rpm

Size	Motor		$DN_{1,2}$	b_1	b_2	D_1	f	g*	o	o_1*	o_2*	w_3*	w_1	w_2	x	Weight app. kg	
	Size	kW														Pump	Motor
040160	80	0,55	40	113	114	200	167	175	82	253	178	133	180	160	80	36	10
040200	80	0,55		133	127				90				200	180		44	10
	80	0,75															11
	90 S	1,1						190		298	220	140					15
050160	80	0,55	50	121	119			175		253	178	133	190	160		41	10
	80	0,75															11
050200	80	0,75		139	138								200	180		45	11
	90 S	1,1						190		298	220	140					15
	90 L	1,5															17
065160	80	0,75	65	133	126			175	106	253	178	133				40	11
	90 S	1,1						190		298	220	140					15
065200	90 S	1,1		148	143								215	200		47	15
	90 L	1,5															17
	100 L	2,2				250		210		325	229	170					24
080160	90 S	1,1	80		135	200		190	120	298	220	140	240			51	15
	90 L	1,5															17
	100 L	2,2				250	162	210		325	229	170					24
080200	90 L	1,5		165	155	200	167	190		298	220	140	255	225	100		17
	100 L	2,2				250		210		325	229	170					24
	100 L	3,0															28

n = 2900 rpm

Size	Motor		$DN_{1,2}$	b_1	b_2	D_1	f	g*	o	o_1*	o_2*	w_3*	w_1	w_2	x	Weight app. kg	
	Size	kW														Pump	Motor
040160	90 L	2,2	40	113	114	200	167	190	82	298	220	140	180	160	80	36	18
	100 L	3,0				250	162	210		325	229	170					27
	112 M	4,0						236		350	248	180					31
040200	112 M	4,0		133	127				90				200	180		44	
	132 S	5,5				300	210	275		435	327	195					48
	132 S	7,5															51
050160	100 L	3,0	50	121	119	250	162	210		325	229	170	190	160		41	27
	112 M	4,0						236		350	248	180					31
	132 S	5,5				300	210	275		435	327	195					48
050200	132 S	5,5		139	138								200	180		45	
	132 S	7,5															51
	160 M	11,0				350		335		545	400	250					100
065160	112 M	4,0	65	133	126	250		236	106	350	248	180	200	180		40	31
	132 S	5,5				300		275		435	327	195					48
	132 S	7,5															51
	160 M	11,0						335		545	400	250					100
065200	132 S	7,5		148	143			275		435	327	195	215	200		47	51
	160 M	11,0				350		335		545	400	250					100
	160 M	15,0															107
080160	132 S	7,5	80		135	300		275	120	435	327	195	240			51	51
	160 M	11,0				350		335		545	400	250					100
	160 M	15,0															107
080200	160 M	15,0		165	155								255	225	100		
	160 L	18,5															122
	180 M	22,0						380		600	450	275					145
	200 L	30,0				400		415		673	488	300					220

Flange connection to DIN 2501 PN 25				
$DN_{1,2}$	40	50	65	80
k	110	125	145	160
D	150	165	185	200
d_2 x number	18 x 4	18 x 4	18 x 8	18 x 8

Standard motors to DIN 42677.
Truth of rotation, centricity and right angle of shaft ends and mounting flanges as per DIN 42955, normal precision.

* Motor protection IP 55
Dimension depend on the motor make.

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