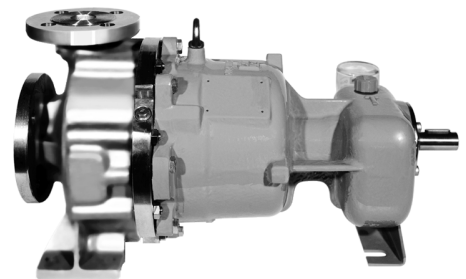


Volute Casing Centrifugal Pumps in High Temperature Design with Magnetic Drive



ALLMAG® Series CNH-ML

Usage

For pumping toxic, volatile, explosive or other fluids harmful to the environment which call for service of hermetically tight pumps without shaft seal. The liquids must not chemically attack the pump / magnetic coupling materials.

Design/Construction/Mounting

Horizontal volute casing centrifugal pump with axial inlet, single stage, single entry in back pull out design with magnetic drive. The volute casing dimensions and the hydraulic coverage corresponds to DIN EN 22858 / ISO 2858.

External bearing with either grease or oil lifetime lubricated antifriction bearings.

Arranged on the outer magnetic rotor supported in antifriction bearings are rows of permanent magnets. Separated by the stationary can the inner rotor with analog magnet equipment is inserted into the outer magnetic rotor. The inner rotor, together with the impeller, is arranged on the pump shaft supported in slide bearings.

Torque transmission is contactless via the magnetic field lines between the outer and inner magnetic rotors.

The inner rotor is supported in exceptional solid silicone carbide slide bearings (axial-radial bearing) which hydrodynamically absorb all hydraulic forces and shocks within the entire characteristics range.

Performance data at 50 Hz

Q	up to 300 m³/h	p _d	up to 25 bar ① ②
H	up to 145 m	DN _d	from 25 to 100 mm
t	0 up to 350 °C ③		

Nominal output of magnetic drive:

P up to 48 KW at 1450 1/min

P up to 96 KW at 2900 1/min

- ① Please take notice of the pressure/temperature limits in dependence of the material.
- ② Inlet pressure plus maximum delivery head (= 0-flow) must not exceed the stated value.
- ③ Special low-temperature version on request.

The mentioned performance data are only to be viewed as a product / performance overview. The exact operating limits are specified in the quotation and / or in the order acknowledgment.

Recommended Minimum

For actual flow rates, please see hydraulic coverage and / or individual hydraulic curves. As a protection against overheating when operating at low flow rates, a minimum flow rate is to be maintained according to the following formula:

$$Q_{min.} = 0,3 \times Q \cdot \eta_{opt}$$

Flanges

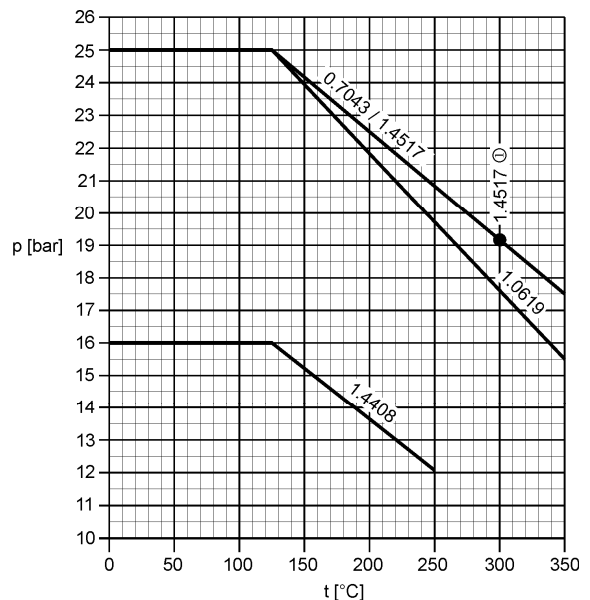
Flange dimensions according to DIN EN 1092-1 PN 16 / PN25 and DIN EN 1092-2 PN 25

Other flange dimensions are possible.

Drive

By serial three-phase squirrel-cage induction motor. Up to 2,2 kW, 230/400 V, from 3 kW 400/690 V, IP55.

Pressure and temperature limits as influenced by the casing material



① Maximum permissible temperature of casing material 1.4517 is 300°C

Abbreviation

Series	CNH-ML
Size	32 - 200/01/ 110/40 - W..
Nominal discharge nozzle diameter	
Nominal impeller diameter	
Hydraulic-No.	
Magnetic coupling size	
Magnet mounting (total length of magnets in mm)	
Material code	

Materials

Denomination	Material design			
	W 20	W 22	W 23	W 26 ①
Volute casing	1.4408	EN-JS 1025	1.0619	1.4517
Impeller	1.4408	EN-JL 1030	EN-JL 1030	1.4408
Casing cover	1.4408	EN-JS 1025	1.0619	1.4517
Pump shaft	1.4571	1.4021	1.4021	1.4571
Driving shaft	1.7139			
Hollow shaft	1.4122			
Bearing bracket	EN-JL 1040			
Can	2.4610/1.4571			
Rotor	1.4571/Steel			

Other materials upon request.

① max. 250 °C; higher temperatures on request

Bearing

Pump side: Sleeve bearing, conveyance fluid lubrication.

Drive side: ball bearing, oil or grease lubricated.

Dismantling the insert unit

If using a shaft coupling with a spacer the insert unit can be taken out on the drive side without taking off the volute casing and the motor off the base plate or the pipe lines off the volute casing.

Dismounting of motor and drive unit can take place without tension release of system and draining.

Shaft coupling and accidental contact protection

Torsionally flexible shaft coupling according to DIN 740 with or without a spacer. A coupling guard as contact protection according to DIN EN 294 (DIN 31001) is included, if the delivery contains pump, base plate and shaft coupling.

Drive torque is transferred through a flexible coupling to the pump shaft. At higher liquid temperatures a double cardan coupling must be used in order to balance out the heat expansion.

Explosion protection



The pump fulfils the requirements according to EC Explosion Protection Directive 2014/34/EU (ATEX 100a) for equipment and equipment group II, category 2 G. Categorisation into temperature classes according to EN 13463-1 depends on the temperature of the pumped medium. The max. permissible temperature of the pumped medium for the respective temperature classes are shown in the below table:

Danger classification	Temperature classification according to EN 13463-1	Maximum fluid temperature
II 2G/ EEx c/b II 3G/ EEX c	T4	97 °C
	T3	171 °C
	T2	266 °C
	T1	350 °C

Fire protection type b = monitoring of ignition sources

Fire protection type c = safe design

The temperatures mentioned above correlate with a maximum speed of 2900 1/min, a maximum ambient temperature of 40°C and the can material Hasteloy.

Can materials with abnormal physical characteristics only may be used after consultation with Allweiler.

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, u, p = const.), a pump performance controller can be supplied with the pump to detect any operational faults.

Units: Only drives may be used, which correspond to the requirements according to EC Explosion Protection Directive 94/9EG.

Product certification supported by:

TÜV Product Service GmbH, Ridler Str. 65, D-80339 München
ID: 0123.

Series CNH-ML

Wear-resistant

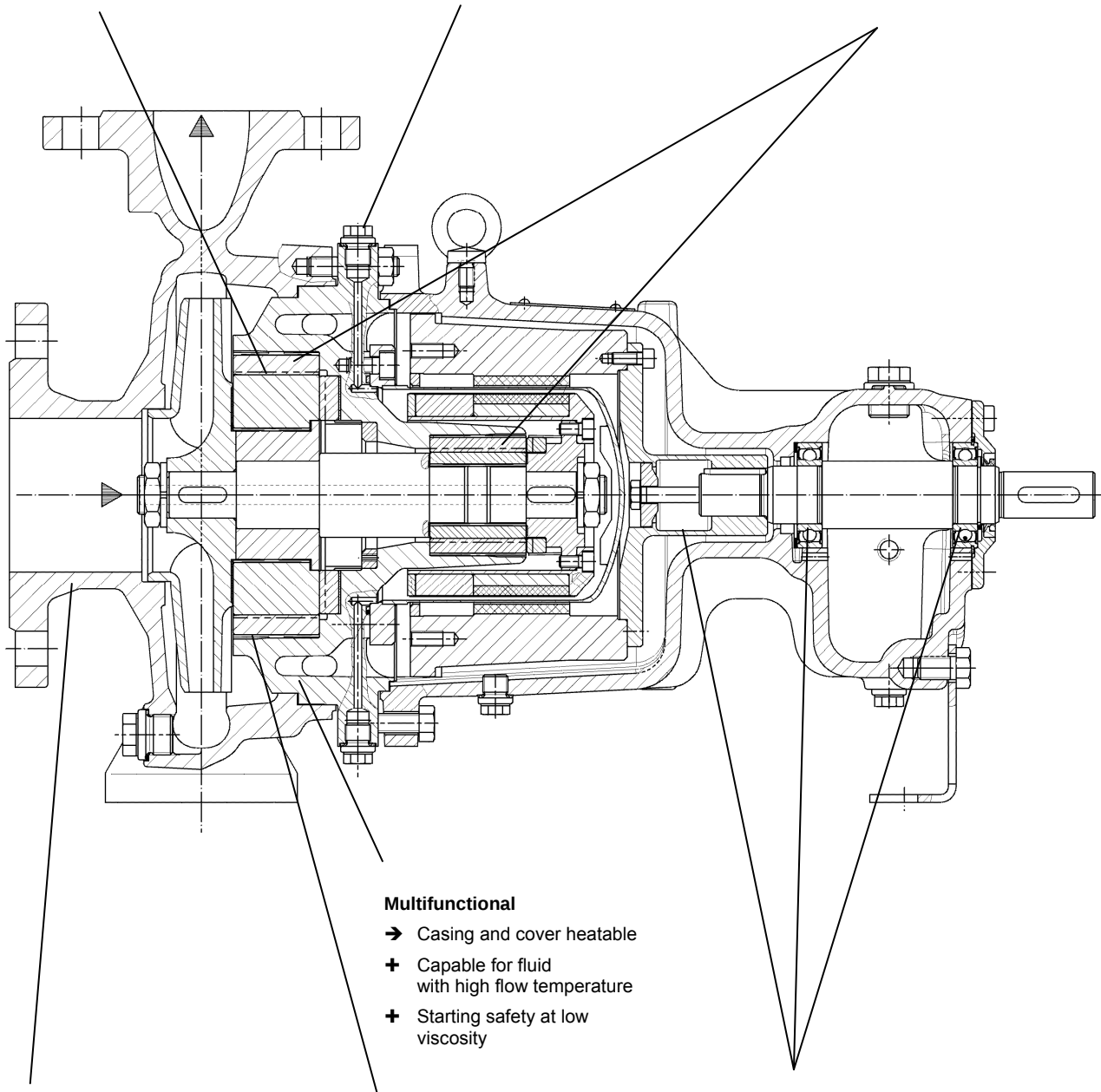
- ➔ Flush flow by SiC-sleeve bearings
- + Tolerance against solid particles
- + Security against leakages and damages of the can

Universal

- ➔ External flush flow
- + Suitable for stagnant and sticky fluid
- + Suited for temperature sensitive fluid

Reliable

- ➔ Generously dimensioned axial and radial bearing
- + Optimum counteract of all forces in the bearing
- ➔ Exceptionally fail safe



Multifunctional

- ➔ Casing and cover heatable
- + Capable for fluid with high flow temperature
- + Starting safety at low viscosity

Easy Assembly

- ➔ Back pull-out design
- + When dismantling the pump the volute casing can remain in the piping
- + Dismounting of motor and drive unit can take place without tension release of system and draining

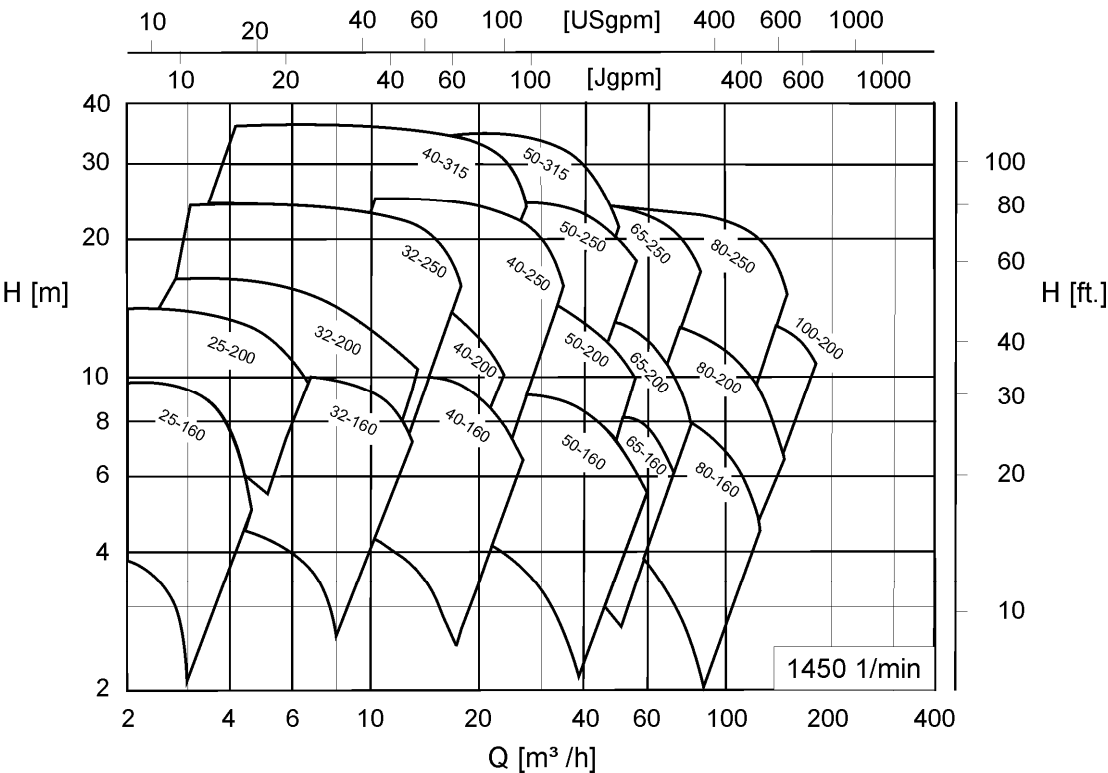
High temperature compatible

- ➔ Bearings mounted in flexible elements
- + Large temperature range also at high quality steel casing
- + Failure-free discharge at high temperature difference

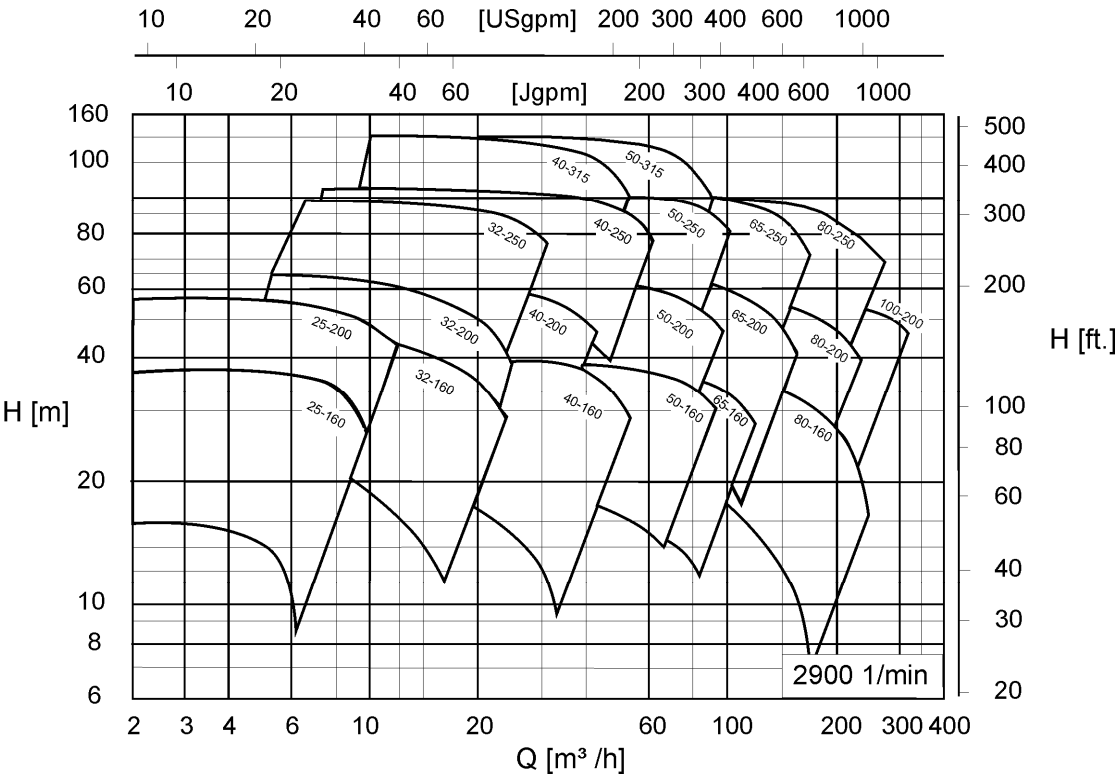
Durable

- ➔ External bearing with either grease or oil lifetime lubricated groove ball bearings
- + Large bearing clearance
- + Easy mounting
- + Optimized cooling of bearings by a heat lock-out to the can

Performance graphs
n = 1450 1/min

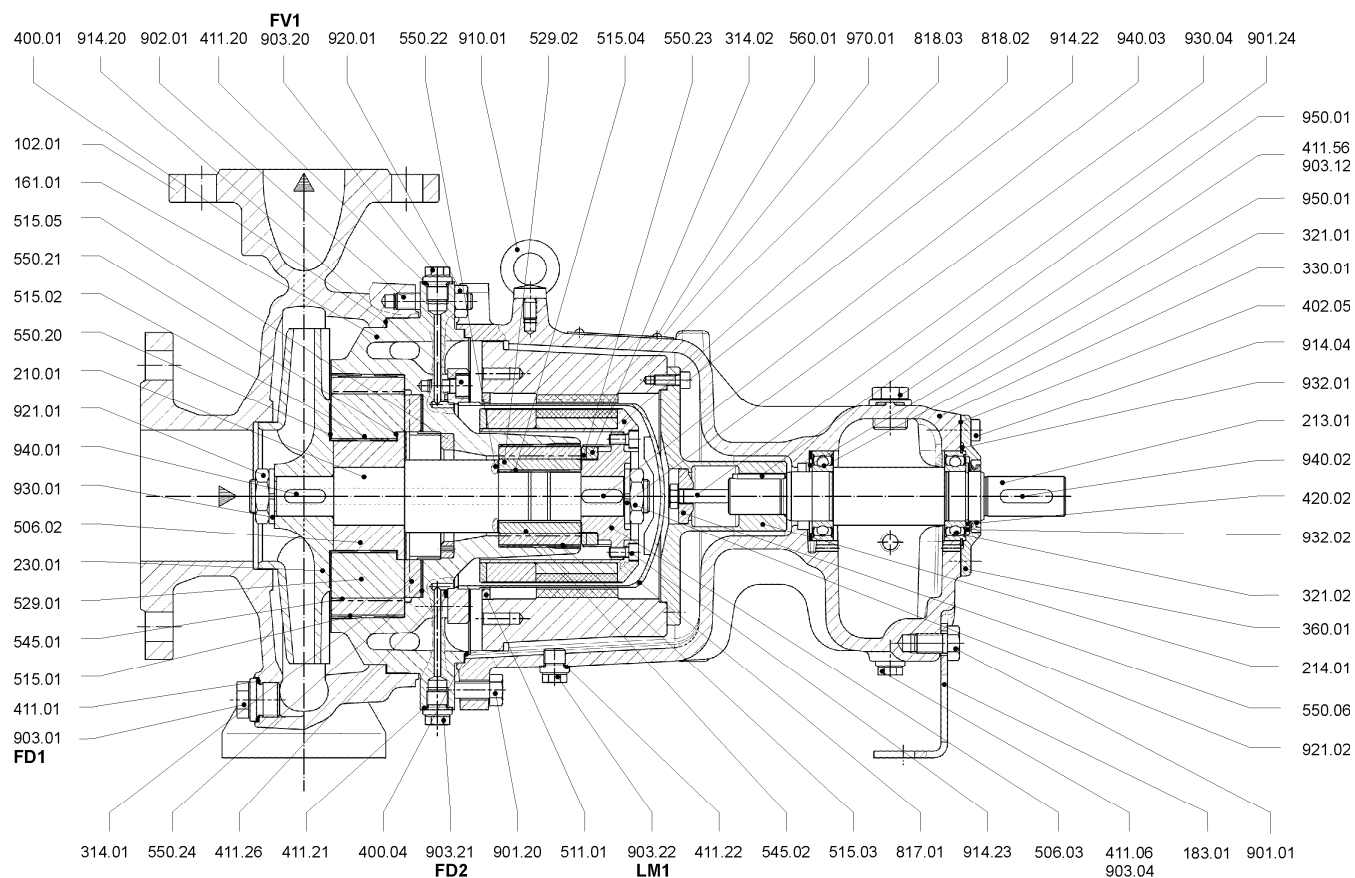


n = 2900 1/min



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

Sectional drawing, series CNH-ML incl. Grease lubrication and single axial bearing
Standard design



Denomination	Part No.
Volute casing	102.01
Casing cover	161.01
Supporting foot	183.01
Shaft	210.01
Driving shaft	213.01
Hollow shaft	214.01
Impeller	230.01
Axial bearing	314.01
Axial bearing	314.02
Groove ball bearing	321.01
Groove ball bearing	321.02
Bearing bracket	330.01
Bearing cover	360.01
Gasket	400.01
Gasket	400.04
Gasket	402.05
Joint ring	411.01
Joint ring	411.06
Joint ring g	411.20
Joint ring	411.21
Joint ring	411.22
Joint ring	411.26
Joint ring	411.56
Shaft seal ring	420.02
Retaining ring	506.02
Retaining ring	506.03
Centering ring	511.01
Straining ring	515.01
Straining ring	515.02

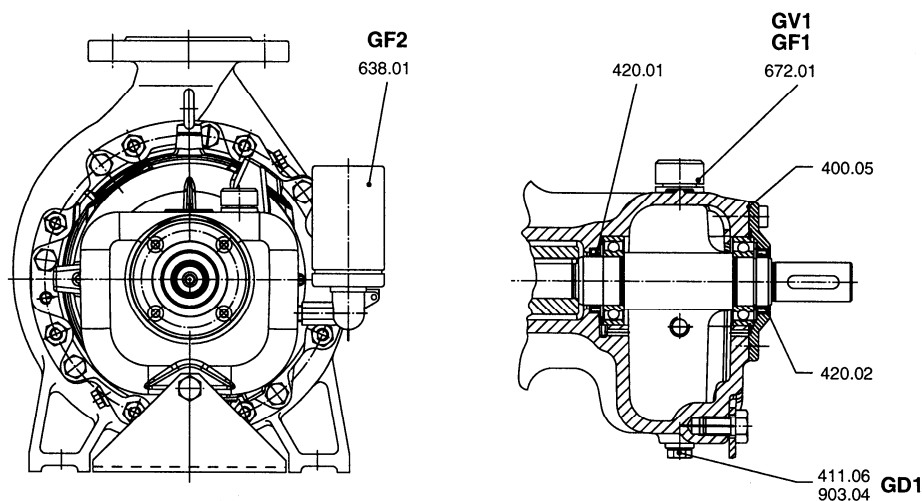
Denomination	Part No.
Straining ring	515.03
Straining ring	515.04
Straining ring	515.05
Bearing sleeve	529.01
Bearing sleeve	529.02
Bearing bush	545.01
Bearing bush	545.02
Disc	550.06
Disc	550.20
Disc	550.21
Disc	550.22
Disc	550.23
Disc	550.24
Rivet	560.01
Can	817.01
Rotor	818.02
Rotor	818.03
Hexagonal screw	901.01
Hexagonal screw	901.20
Hexagonal screw	901.24
Stud bolt	902.01
Screw plug	903.01
Screw plug	903.04
Screw plug	903.12
Screw plug	903.20
Screw plug	903.21
Screw plug	903.22
Eye bolt	910.01
Socket-head cap screw	914.04

Denomination	Part No.
Socket-head cap screw	914.20
Socket-head cap screw	914.22
Socket-head cap screw	914.23
Hexagonal nut	920.01
Hexagonal nut	921.01
Hexagonal nut	921.02
Spring ring	930.01
Spring ring	930.04
Circlip	932.01
Circlip	932.02
Key	940.01
Key	940.02
Key	940.03
Key	940.04
Ball bearing	950.01
compensating disc	
Name plate	970.01

Connections

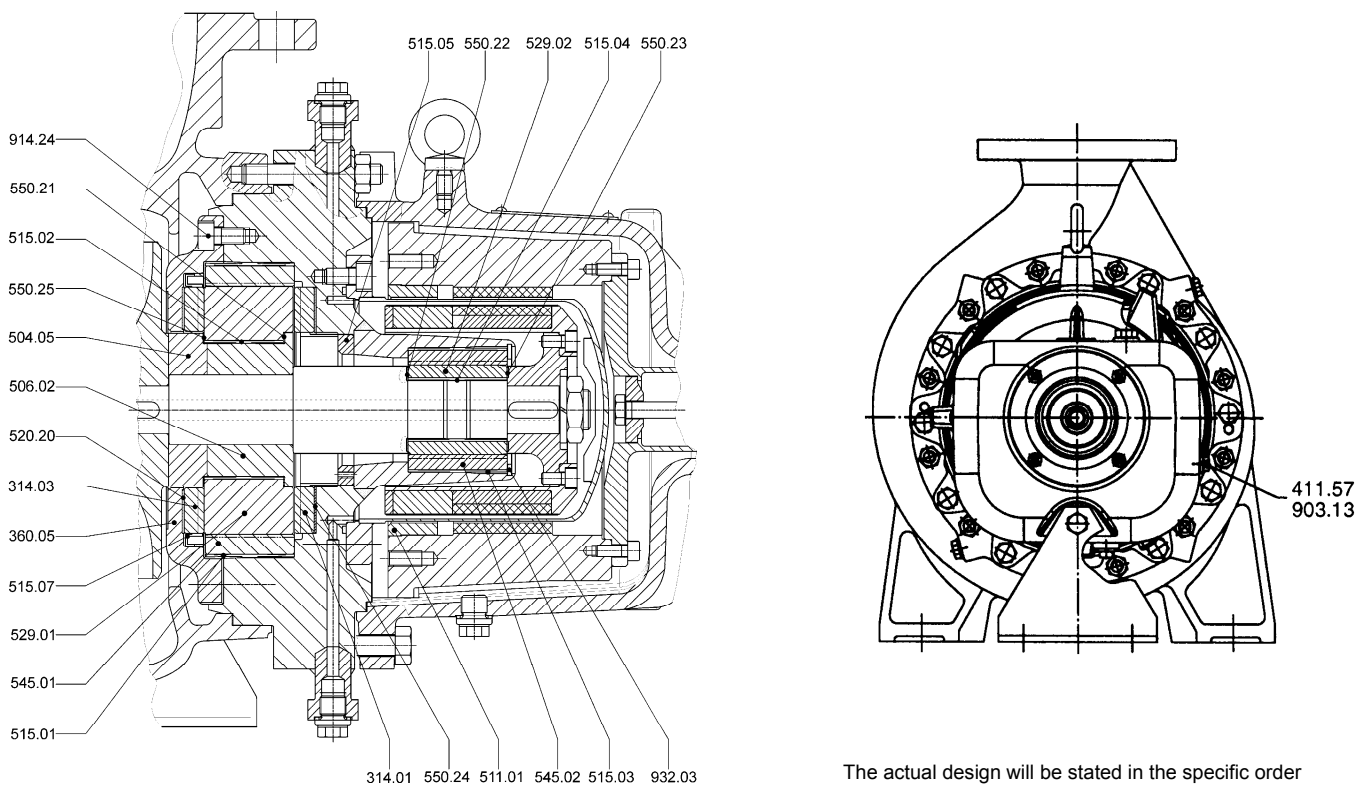
FD1	Draining pump casing
FD2	Draining can
FV1	Venting can
LM1	Leakage monitoring

Sectional drawing, series CNH-ML incl. Oil lubrication



Sectional drawing, series CNH-ML and double axial bearing

Standard design for the pump sizes 65-160/01, 80-160/01, 100-200/01



The actual design will be stated in the specific order documents.

Denomination	Part No.
Axial bearing	314.01
Axial bearing	314.03
Bearing cover	360.05
Gasket	400.05
Joint ring	411.06
Joint ring	411.57
Shaft seal ring	420.01
Shaft seal ring	420.02
Distance ring	504.05
Retaining ring	506.02
Centering ring	511.01
Straining ring	515.01
Straining ring	515.02
Straining ring	515.03

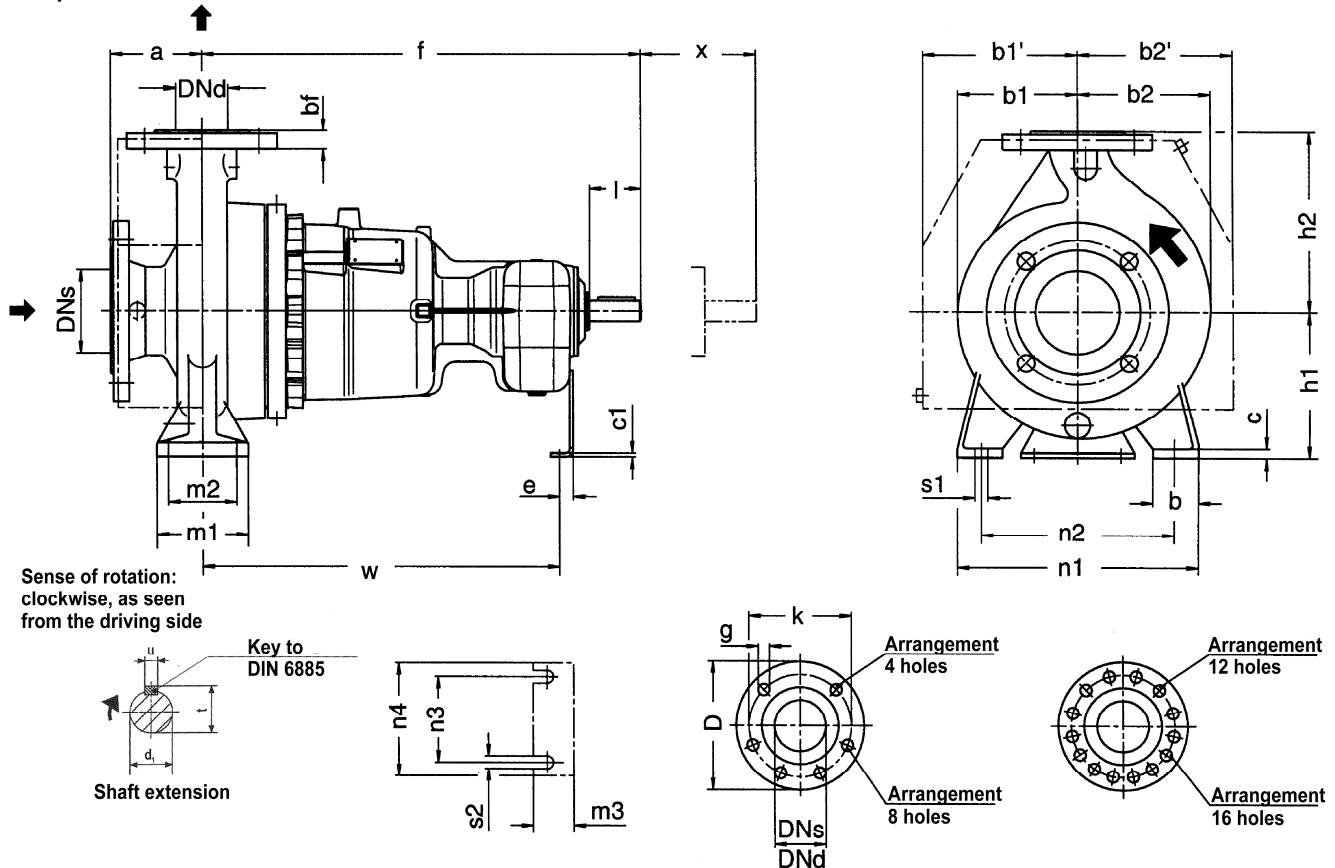
Denomination	Part No.
Straining ring	515.04
Straining ring	515.05
Straining ring	515.07
Bearing sleeve	529.01
Bearing sleeve	529.02
Bearing bush	545.01
Bearing bush	545.02
Disc	550.20
Disc	550.21
Disc	550.22
Disc	550.23
Disc	550.24
Disc	550.25
Constant level oiler	638.01

Denomination	Part No.
Venting	672.01
Screw plug	903.04
Screw plug	903.13
Socket-head cap screw	914.24
Circlip	932.03

Connections

GD1	Lubrication - draining
GF1	Lubrication - filling
GF2	Lubrication - filling
GV1	Lubrication - venting

Pump dimensions



Tolerances of companion dimensions according to DIN EN 735.
Dimensions in mm without commitment.

Pump size	Pump dimensions										Feet dimensions																Extension dimension x	Shaft end					
																												for screws		d	l	t	u
	DNs	DNd	a	f	b1	b1'	b2	b2'	h1	h2	b	c	c1	e	m1	m2	m3	n1	n2	n3	n4	w	s1	s2									
25-160/01	40	25	80	465	128	151	128	151	132	160	50	15	4	29,5	100	70	45	240	190	110	160	365	M 12	M 12	80	24	50	27	8				
25-200/01	40	25	80	465	132	153	132	153	160	180	50	15	4	29,5	100	70	45	240	190	110	160	365	M 12	M 12	80	24	50	27	8				
32-160/01	50	32	80	465	130	147,5	130	147,5	132	160	50	15	4	29,5	100	70	45	240	190	110	160	365	M 12	M 12	100	24	50	27	8				
32-200/01	50	32	80	465	130	147,5	135	147,5	160	180	50	15	4	29,5	100	70	45	240	190	110	160	365	M 12	M 12	100	24	50	27	8				
32-250/01	50	32	100	655	170	186	170	186	180	225	65	15	6	24	125	95	40	320	250	110	160	520	M 12	M 12	100	32	80	35	10				
40-160/01	65	40	80	465	130	146	130	146	132	160	50	15	4	29,5	100	70	45	240	190	110	160	365	M 12	M 12	100	24	50	27	8				
40-200/01	65	40	100	465	130	156	140	156	160	180	50	15	4	29,5	100	70	45	265	212	110	160	365	M 12	M 12	100	24	50	27	8				
40-250/01	65	40	100	655	170	186	170	186	180	225	65	15	6	24	125	95	40	320	250	110	160	520	M 12	M 12	100	32	80	35	10				
40-315/01	65	40	125	655	200	223	200	223	200	250	65	20	6	24	125	95	40	345	280	110	160	520	M 12	M 12	100	32	80	35	10				
50-160/01	80	50	100	465	130	146	130	146	160	180	50	15	4	29,5	100	70	45	265	212	110	160	365	M 12	M 12	100	24	50	27	8				
50-200/01	80	50	100	465	135	162,5	150	162,5	160	200	50	15	4	29,5	100	70	45	265	212	110	160	365	M 12	M 12	100	24	50	27	8				
50-250/01	80	50	125	655	170	203	170	203	180	225	65	15	6	24	125	95	40	320	250	110	160	520	M 12	M 12	100	32	80	35	10				
50-315/01	80	50	125	655	200	221	200	221	225	280	65	20	6	24	125	95	40	345	280	110	160	520	M 12	M 12	100	32	80	35	10				
65-160/01	100	65	100	485	130	178	155	178	160	200	65	15	4	29,5	125	95	45	280	212	110	160	385	M 12	M 12	100	24	50	27	8				
65-200/01	100	65	100	655	170	186	170	186	180	225	65	15	6	24	125	95	40	320	250	110	160	520	M 12	M 12	140	32	80	35	10				
65-250/01	100	65	125	655	170	201	190	201	200	250	80	18	6	24	160	120	40	360	280	110	160	520	M 16	M 12	140	32	80	35	10				
80-160/01	125	80	125	485	145	203	180	203	180	225	65	15	4	29,5	125	95	45	320	250	110	160	385	M 12	M 12	100	24	50	27	8				
80-200/01	125	80	125	655	170	208	190	208	180	250	65	18	6	24	125	95	40	345	280	110	160	520	M 12	M 12	140	32	80	35	10				
80-250/01	125	80	125	655	185	231	210	231	225	280	80	18	6	24	160	120	40	400	315	110	160	520	M 16	M 12	140	32	80	35	10				
100-200/01	125	100	125	655	170	225	205	225	200	280	80	18	6	24	160	120	40	360	280	110	160	520	M 16	M 12	140	32	80	35	10				

Flange dimensions

Flanges acc. to DIN EN 1092-1 PN 16

with material design W 20 / W 26

DNd DNs	D	bf	k	g	No. of holes
25	115	18	85	14	4
32	140	18	100	18	4
40	150	18	110	18	4
50	165	20	125	18	4
65	185	18	145	18	4
80	200	20	160	18	8
100	220	20	180	18	8
125	250	22	210	18	8

Flanges acc. to DIN EN 1092-1 PN 25

with material design W 22

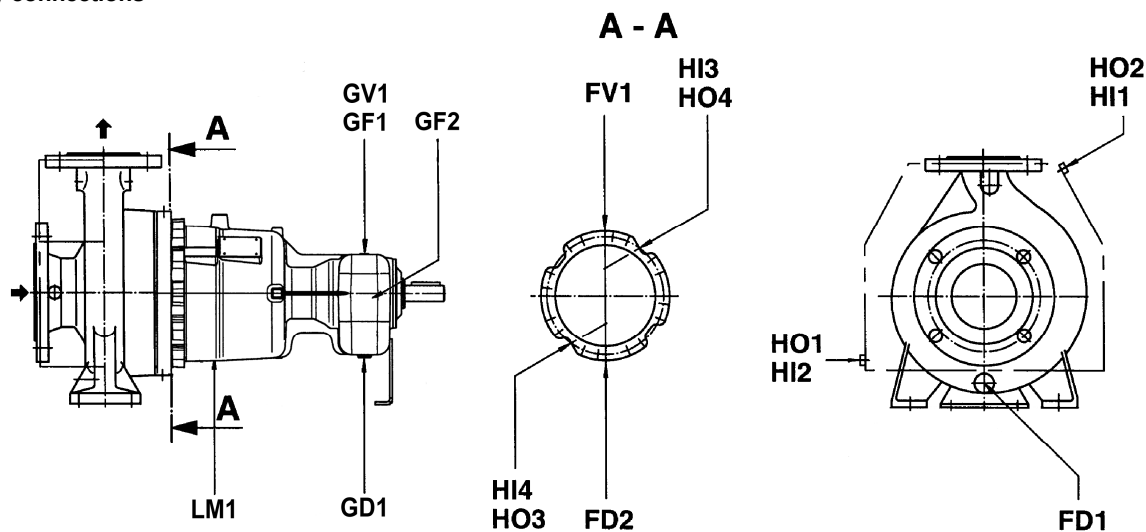
DNd DNs	D	bf	k	g	No. of holes
25	115	18	85	14	4
32	140	20	100	18	4
40	150	20	110	18	4
50	165	22	125	18	4
65	185	24	145	18	8
80	200	26	160	18	8
100	235	28	190	22	8
125	270	30	220	26	8

Flanges acc. to DIN EN 1092-2 PN 25

with material design W 23

DNd DNs	D	bf	k	g	No. of holes
25	115	18	85	14	4
32	140	18	100	18	4
40	150	18	110	18	4
50	165	20	125	18	4
65	185	22	145	18	8
80	200	24	160	18	8
100	235	24	190	22	8
125	270	26	220	26	8

Auxiliary connections



Connections	Size	Denomination
FD1	G 1/2	Pumped fluid – draining
FD2	G 1/4	Pumped fluid – draining
FV1	G 1/4	Pumped fluid – venting
GD1	G 1/4	Lubrication – draining
GF1	G 1/2	Lubrication – filling
GF2	-	Lubrication – filling
GV1	G 1/2	Lubrication – venting
HI1	G 3/8	Heating – inlet (steam)

Connections	Size	Denomination
HI2	G 3/8	Heating – inlet (fluid)
HI3	G 1/4	Heating – inlet (steam)
HI4	G 1/4	Heating – inlet (fluid)
HO1	G 3/8	Heating – outlet (steam)
HO2	G 3/8	Heating – outlet (fluid)
HO3	G 1/4	Heating – outlet (steam)
HO4	G 1/4	Heating – outlet (fluid)
LM1	G 1/4	Leakage – monitoring

Subject to technical alterations



ALLWEILER GmbH
 Postfach 1140 • 78301 Radolfzell
 Allweilerstr. 1 • 78315 Radolfzell
 Germany
 Tel. +49 (0)7732 86-0
 Fax. + 49 (0)7732 86-436
 E-mail: service@allweiler.de
 Internet: <http://www.allweiler.com>