



Centrifugal pumps



SAFETY

The instructions specify unsafe operations and other important information for your notice. The instructions emphasize warning issues with special symbols

Special note



General warning



Dangerous voltage/corrosive medium

Warning!	Indicates specified operating procedures should be observed for prevention against severe physical injuries
Care!	Indicates special operating procedures must be observed for prevention against damages to pump body
Notice!	Indicates important information to streamline operation or clarify operating procedure.

Preventive measure

Installation:

- Make sure to follow the technical data.
- It is necessary to remove the pump cover before handling.
- Electrical wiring of the pump must be performed by a qualified electrician (see motor description).
- Make sure to remove the pump head before checking the direction of the motor rotation.

Operation:

- It is necessary to observe the technical data. Motor overload may result in when the flow, density and viscosity of the fluid exceed value in the parameter table.
- It is strictly forbidden to contact pump and pipeline when high temperature fluid is being conveyed or sterilization is applied.
- It is not allowed to run the motor when the pump inlet and outlet are both closed.
- Special attention must be paid if lye, acid or other kinds of detergent is being processed.

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**Maintenance:**

- Make sure to observe the technical data.
- Cut off the power supply first before maintenance and care.
- It is not allowed to use hot pump for maintenance and care.
- It is not allowed pressure residence in the pump and pipeline during maintenance and care.

INSTALLATION

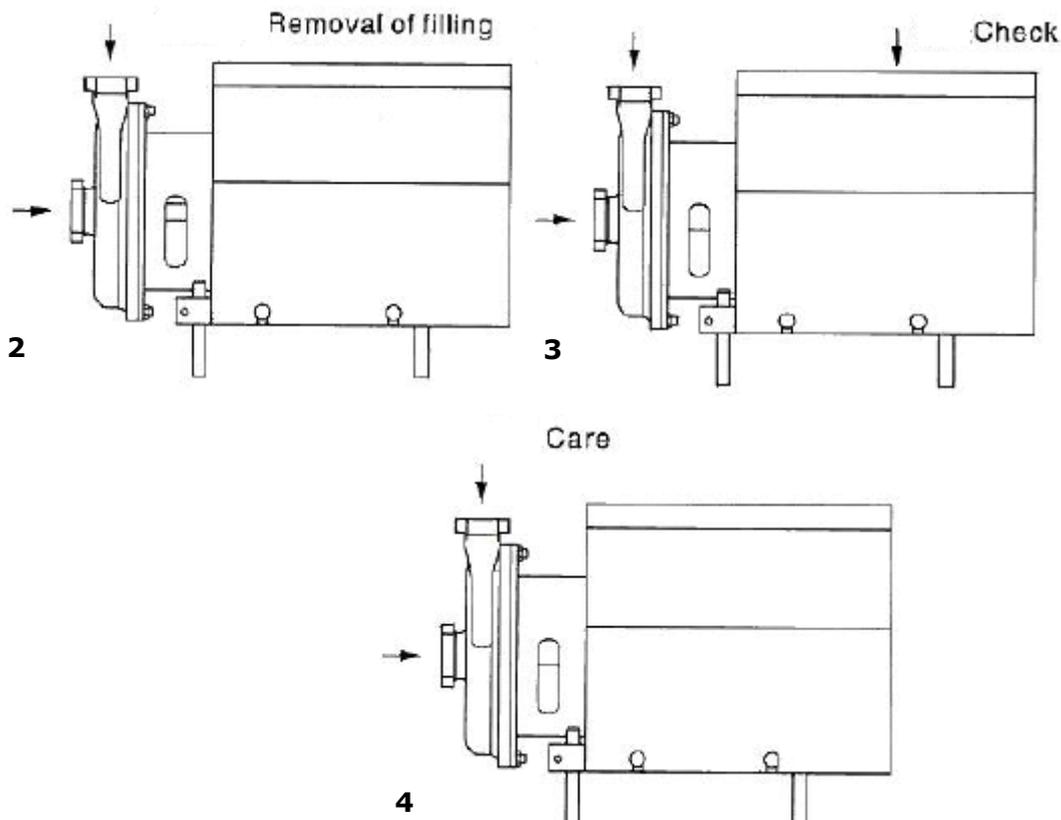
The instruction manual is delivered with product. Please read it through carefully before installation

Unpacking/Inspection

1. Make sure to remove the pump cover first when handling the pump

Attention: the company is not responsible for any damages resulting from improper unpacking.

2. Clean up packing fillings at the inlet and outlet of pump
3. Check pump outside apparent damages out of transportation
4. Do not damage inlet and outlet

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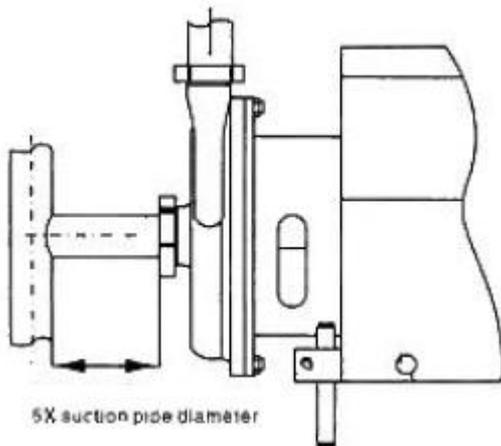


Installation

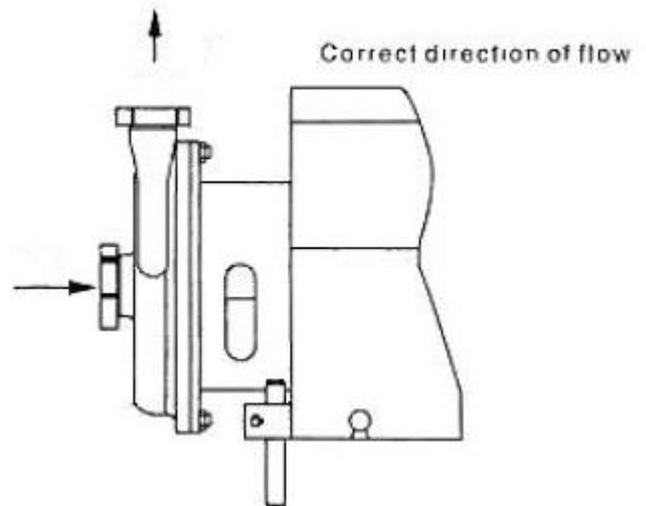


1. Make sure to observe the technical data. Electrical wiring of the pump must be performed by a qualified electrician.

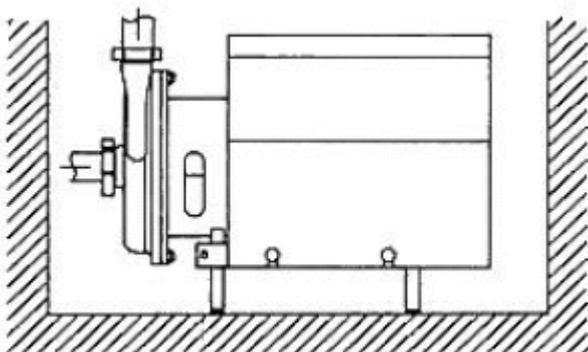
2. Keep suction inlet flow stable as possible



3. Ensure pump flow direction



4. Provide enough space surrounding pump (no less than 0.5m)



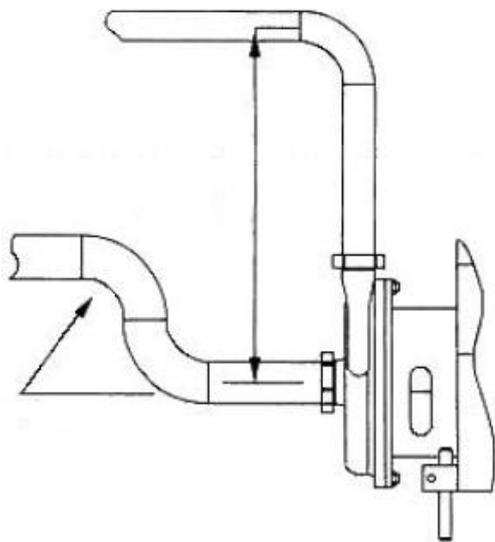
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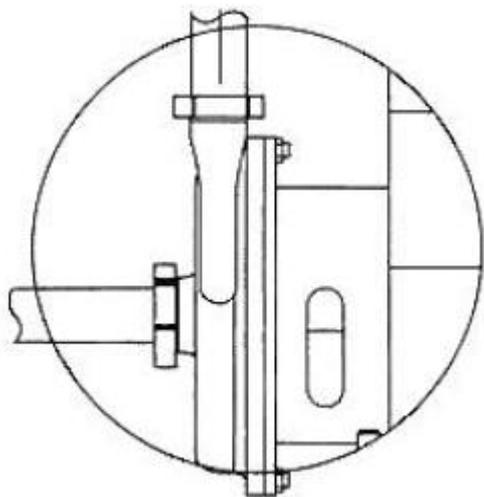


5.



- Keep suction pipeline as short as possible.
- Use as minimum bends as possible for suction pipe and use a large radius of curvature of variable bend as possible (radius > 2 times diameter).
- Tighten joints of suction pipe without air leakage.

6.



- Support inlet and outlet of pipelines for prevention against stress on the pump.
- Please prevent against following situations:
 - Pipeline vibrations
 - Pipeline thermal expansion and shrinkage
 - Deformation resulting from excess in welding
 - Pipeline overload.

Before operating, make sure to check the direction of impeller rotation first. Follow the sign of rotary direction on pump casing.



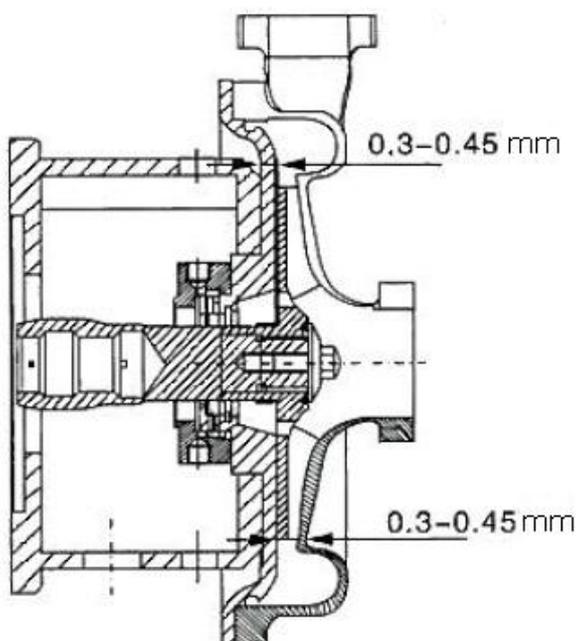
Pre-use inspection



1. Operator must remove the pump head before checking direction of rotation. Remove impeller if necessary.

2. Refer to indication sign. Set motor to inch action to ensure direction of motor shaft (08) rotation.

- 3.
- Check distance of the pump casing and impeller with clearance gauge.
 - If the distance is not proper, adjust it according to procedures in section "Reassembly of pump"



4. Clean impeller surfaces. Apply the impeller onto the pump shaft and turn the impeller (11) manually and clockwise (when you face the impeller) to mount it onto pump shaft (08).

5. Clean pump chamber and then mount the pump cover (10). Mount washer (31n) and fasten screw caps (31).

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OPERATION

Operation/control

1. The motor may encounter excess electric current if there is no resistance inside the pipeline.

Attention: the noise may be large if gas-free fluid is being suctioned.

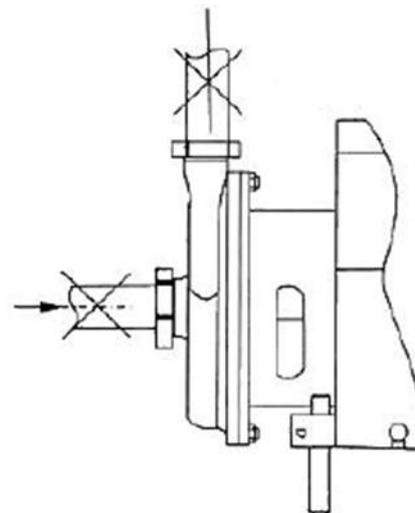
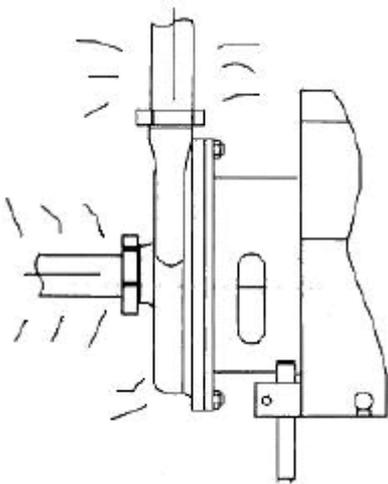
Attention: the company is not responsible for any consequence resulting from improper operation/control.



2. It is strictly forbidden to contact the pump and pipe if high temperature fluid is conveyed or high temperature.



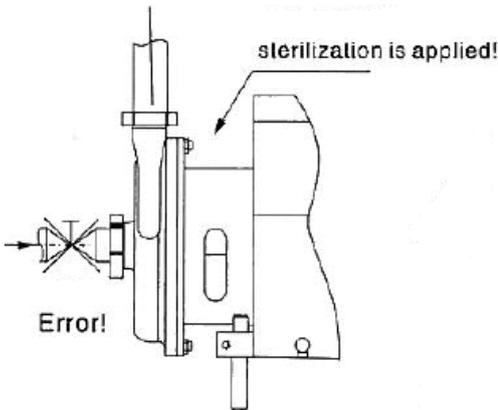
3. Never operate the pump when the inlet and outlet are both turned off.



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4. Make sure the pump casing is filled with fluid before startup. Never set to idling with glance seal. Never apply throttling at pump inlet.

Pay attention to potential faults. Read through the instructions manual carefully.

Attention: please read through maintenance instructions before dismantling the pump and replacing parts and components.

Troubleshooting

Fault	Cause	Solution
Motor overload	Excessive resistance at outlet pipeline	Reduce resistance or replace with a larger power motor
	Excessive fluid viscosity pumped	Replace with a larger power motor
	Excessive specific gravity of pumped fluid	Replace with a larger power motor
	Overspeeds of motor	Check circuit frequency
	Sediments inside pump	Disassemble pump for cleaning regularly
Short flow	Excessive inlet resistance or excessive suction lift	Reduce inlet pipeline resistance or suction height
	Excessive outlet pipeline resistance	Reduce outlet pipeline resistance or replace with larger pump
	Insufficient fluid quantity inside pump	Check bottom valve against water leak and refill with water
	Suction pipeline air leak	Check sealing opening
	Insufficient voltage and motor rotation	Check motor wiring and loop voltage and frequency
	Excessive fluid temperature	Reduce fluid temperature or increase suction inlet pressure

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Troubleshooting (cont.)

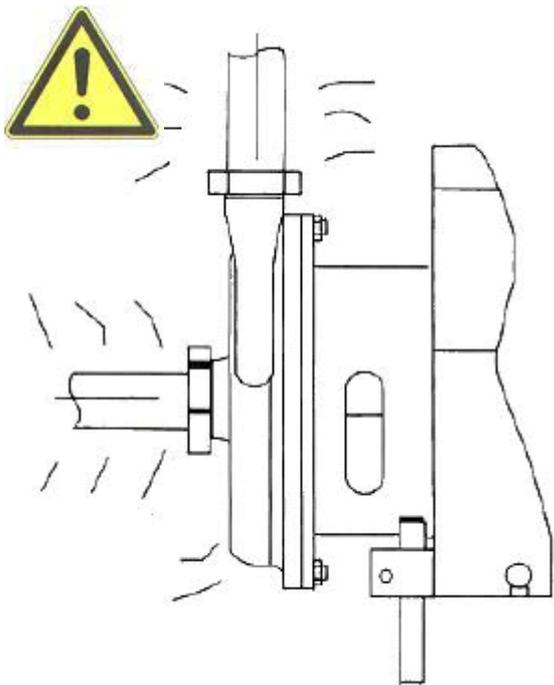
Fault	Cause	Solution
Pump vibration Increased noise Gas corrosion	Excessive lift height or insufficient suction inlet pressure	Reduce suction pipeline resistance or suction height
	Excessive fluid temperature	Reduce fluid temperature
	Jam between impeller and pump casing by foreign matters	Disassemble pump for cleaning up foreign matters
	Friction between impeller and pump casing	Re-adjust the distance between impeller and pump casing
	Motor bearing damage	Replace motor bearing
	Gas in fluid	Change with centrifugal pump
Gland seal leak	Dry run of gland seal	Replace gland seal and make sure that there is fluid in side the pump before startup
	Excessive friction of dynamic or static ring	Replace gland seal
	Improper selection of material or ageing for O-ring	Select O-ring material again
	Corrosive particles in fluid	Use silicon carbide for static and dynamic rings
	Crystallization in seal	Disassemble pump for cleaning or rinsing with water
Rubber seal leak	Improper rubber material selection	Replace and reselect material for rubber seal ring



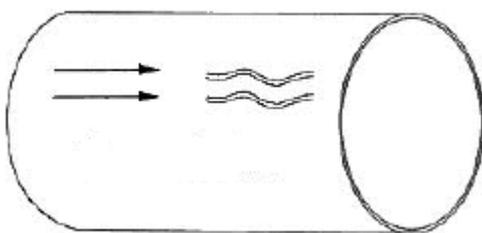
Recommended cleaning procedure

The pump is suitable for CIP-cleaning. Read through the instructions carefully and pay special attention to the sections concerning warning: NaOH (sodium hydroxide) and HNO₃ (nitric acid).

1. Dangerous acid and lye! Make sure to use rubber gloves! Use protective spectacles! Pay special attention when dealing with acid and lye.
2. It is strictly forbidden to contact pump and pipeline during high temperature sterilization.



3. Make sure to use clean water without chlorine ions.



4. - Avoid excessive concentration and temperature of detergent → gradual charging

- Control detergent flow based on conditions milk sterilization/viscous fluid → increase detergent flow

5. Attention: the storage and release of detergent must be in conformity to prevailing specifications/directives.

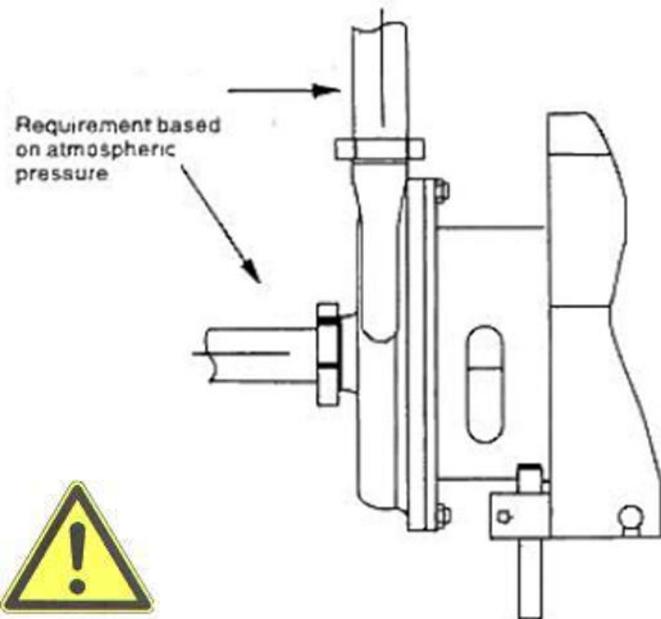
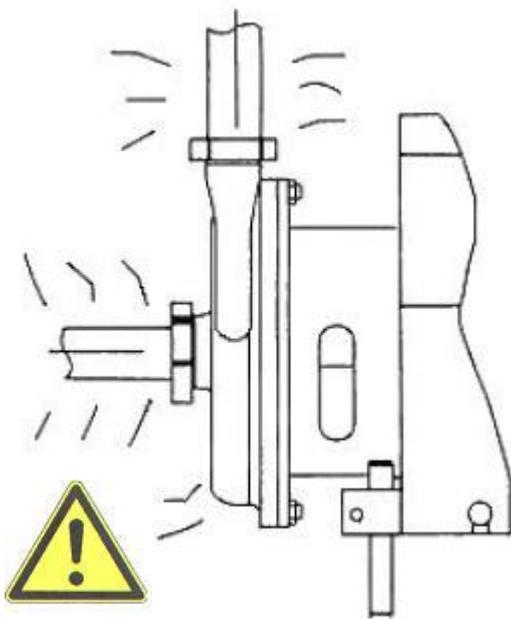
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**MAINTENANCE****General maintenance**

1. Make sure to observe the technical data. Cut off power supply before maintaining the pump. Attention: residual medium inside the pump and pipeline must be stored /disposed of based on prevailing procedures.
2. It is not allowed to keep the pump hot during maintenance.
3. Inside the pipeline and pump must be maintained at normal pressure during pump maintenance.



4. Attention: when the power cord is removed from the pump during maintenance, make sure to reconnect the cord correctly to resume connection (see items on pre-use inspection). Pay special attention to the parts on warning!

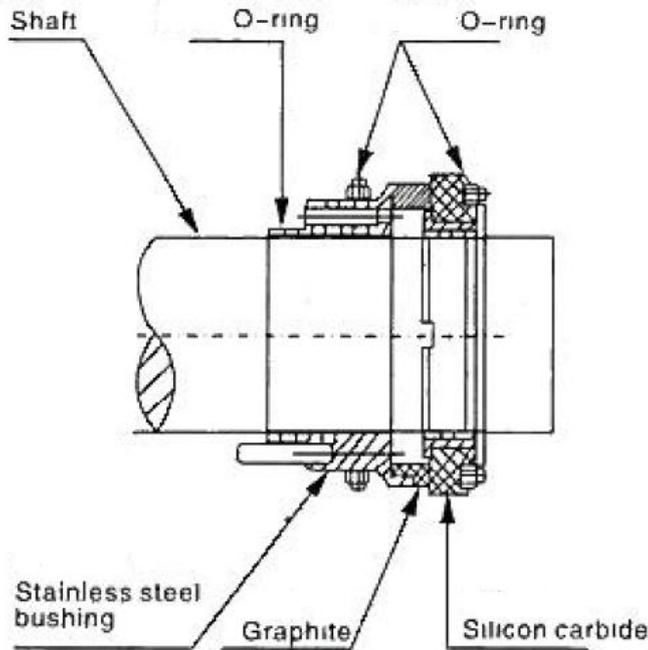
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Specification of gland seal



Gland seal (mechanical seal) will be easily damaged, so please pay special attention when operating the seal. before assembly, clean parts completely and check seal surface against damages. Use new elastic parts during assembling.

Schematic diagram

	Gland seal	Rubber seal	Motor bearing
Care	Replace gland seal for every 12 months' service (1-shift system)	Replace simultaneously with gland seal	
Maintenance against leak	Replace all gland seals when production is complete in a day	Replace simultaneously with gland seal	
Planned maintenance	Check against leak and check operational stability. Keep pump maintenance into record. Arrange inspection plan using statistics.	Replace simultaneously with gland seal	Annual inspection is recommended. Replace all bearings in case of abrasion. Make sure no distance between bearings
Lubrication	Lubricate O-ring and sealing face with silicone grease or oil before installation	Lubricate O-ring and sealing face with silicone grease or oil before installation	

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ASSEMBLY

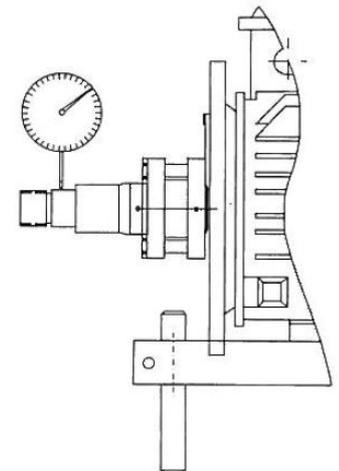
For parts number, see drawings and parts list. Dispose of residual medium inside the pump carefully and correctly. When impeller is blocked by foreign matters or serious vibration is featured, check pump shaft.

Removal of pump/gland seal

1. Unscrew cap nut (16) and remove washer (16a) and pump cover (10).
2. Remove rear cover (13) and release and remove O-ring (15).
3. Unscrew impeller nut (09a) and O-ring (09).
4. Turn impeller (11) with hook spanner (05a) counterclockwise (facing the impeller) to remove the impeller. If necessary, knock the impeller root slightly to loosen it.
5. Remove dynamic ring (22) from the impeller with special spanner provided with the pump (facing the dynamic ring, turn clockwise).
6. Unscrew fastening nut (31) on pump rear cover and remove washer (31n).
7. Remove static ring (26) from rear cover (13) and remove the static O-ring (25).

Pump shaft check

1. Measure up shaft bouncing with dial indicator.
2. If the extent of bounding is larger than 0.06mm, replace pump shaft and re-adjust.



Reassembly of the pump

Clean the parts completely before assembly and lubricate rubber sealing members. Use food-grade lubricating grease for rubber seal ring and mechanical seal in conformity to FDA specification.

1. Place lubricated O-ring (25) into the groove of the inner hole of rear cover (13).
2. Mount lubricating seal spring (24) into static ring (26) and then mount them into rear cover (13). During installation, align anti-rotary pin of static ring to the notch of rear inner hole.
3. Fasten impeller nut (8) and O-ring (9).
4. Mount rear cover (31a) and fasten nut (31).
5. Lubricate dynamic ring O-ring (23) and dynamic ring. Screw them together into impeller (11). Then fasten the dynamic ring with special spanner.
6. Screw impeller onto pump shaft (08) and check the distance (supposed to be 0.03-0.045mm) between the impeller and the pump rear cover. When the distance is correct, it is allowed to release the coupling bolt (06) for adjusting. After adjusting the gap between impeller and rear cover, fasten the bolt.
7. Lubricate O-ring (15) and apply it onto rear cover (13).
8. Install pump head (12) fastening nut. Finally, turn pump shaft manually to check possible friction.

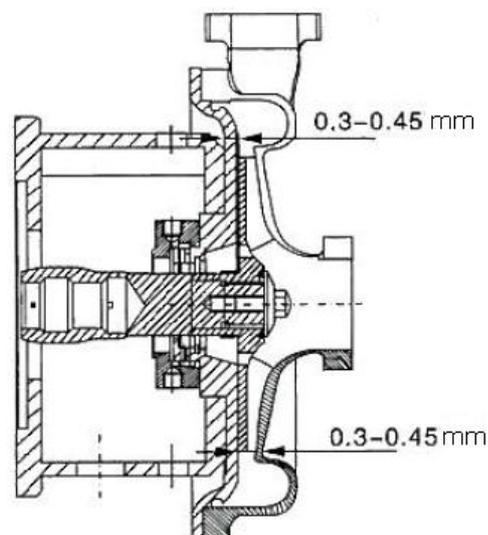
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Strength grade	M16	M8	M10	M12
8.8	10	25	49	85
A2-70	7.3	17	35	69



!! SEE LAST PAGE FOR ASSEMBLY OF THE FREQUENCY CONVERTER

TECHNICAL DATA

It is necessary to observe the technical data from time to time during installation, operation and maintenance.

Key data

Model	
Number	
Flow	M ³ /b
Lift	M
Max. inlet pressure	0.4MPa
Operating temperature	10-140°C (EPDM)

Material

Overflow	AISI316L
Other steel parts and components	AISI304
Surface smoothness	Overflow current: 0.6 µm Polish Exterior surface: glossy
Sealing members with contacts to medium	EPDM (standard)
Other O-rings	EPDM

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Gland seal

	Type of seal	Single-(double-)ended mechanical seal/water flush type
Max. hydraulic pressure	Double-ended mechanical seal	0.5MPa (normal pressure for most cases)
	Water flush type	0.1MPa (normal pressure for most cases)
Water consumption	Double-ended mechanical seal	0.25-0.51/min
	Water flush type	0.25-0.51/min
Material of double-ended mechanical seal		Dynamic ring: silicon carbide Static ring: graphite
Oil seal material or water flush type seal		Fluororubber
O-ring material		EPDM

Electric motor

As per IEC metric system	
No. Of poles for electric motor	2-pole, 4-pole
Motor protection level	IP55
Motor insulation level	F
Voltage and frequency	Three-phase AC380 = 420V, 50Hz

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Specifications

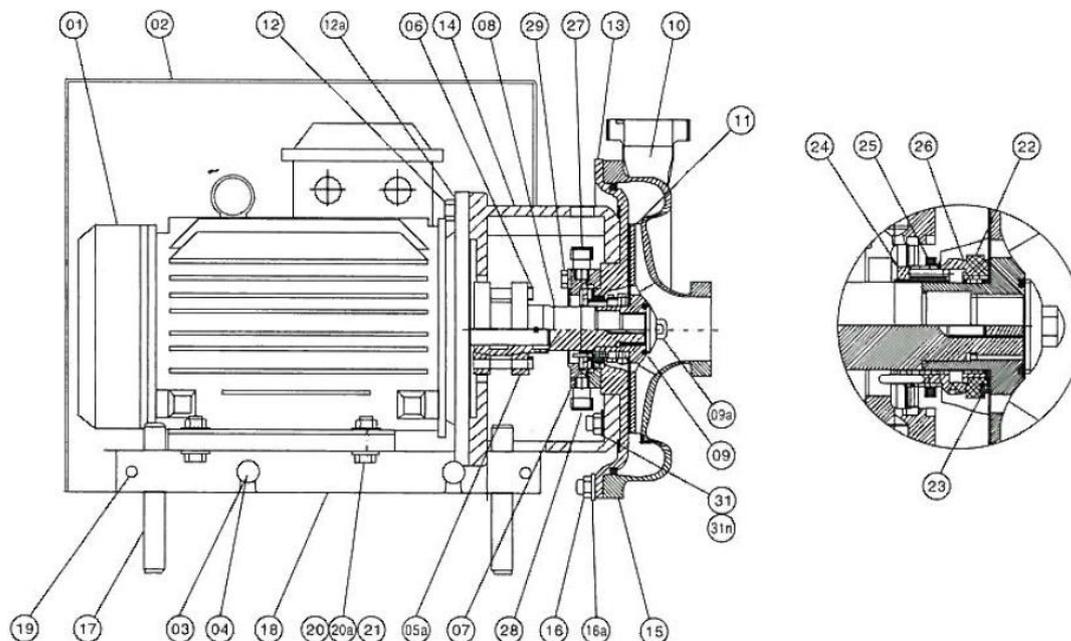
Professional sanitary centrifugal pump with open impeller for the foodstuffs sector. Suitable for pumping lightly charged and viscous fluid products such as water, wine, must, beer, wort, milk, etc. It is also suitable for pumping fluid cleaning agents and can be used as a CIP pump.

- Pump housing made from stainless steel AISA 316
- Supplied with mechanical shaft seal + VITON seals, suitable for temperatures between 5 and 95 °C.
- Connections: DIN NW40 cable
- ABB electric motor 400V, 50Hz, 2900 RPM 50 Hz, IP55
- With protective cover and adjustable feet

art. no.	Description	Frequency regulator	Max. flowrate	Max. pressure	Max. head	Motor	Dimensions
018.160.75	Centrifugal pump B-TECH 0,75 kw	0	2500 liter / h.	1,6 Bar	16 meter	400V, 0,75 kw, 50Hz, 2900r/min 50 Hz	570 x 260 x 430 mm, 40 kg
018.160.150	Centrifugal pump B-TECH 1,5 kw with frequency regulator	x	3000-5000 (*) liter / h.	2 Bar	20-24 meter	400V, 1,5 kw, 50Hz, 2900 r/min 50 Hz	570 x 260 x 430 mm, 45 kg

(*) Provided adjustment of the frequency regulator, the flow rate can be increased up to 5000 liters/h.

STRUCTURAL DRAWING & PARTS LIST



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Parts list

No.	Quantity	Designation
01	1	Electric motor
02	1	Pump cover
03	4	Cushion
04	4	Bolt
05	1	Bolt hole connector
05a	1	Plain hole connector
07	1	Water seal seat cushion
08	1	Shaft
09	1	O-ring
09a	1	Impeller nut
11	1	Impeller
12	14	Bolt
12a	4	spacer
14	4	Fastening bolt
15	1	Pimp head O-ring
16	4	Fastening screw cap
17	4	Foot
18	2	Support
19	4	Fastening screw cap
20	4	Fastening bolt
21	4	Fastening spacer
22	1	Dynamic ring
23	1	Dynamic O-ring
24	6	Sealing ring
25	1	Static O-ring
26	1	Static ring
27	1	Cooling water outlet
28	1	Cooling water outlet
29	2	Fastening bolt
31	2	Fastening screw cap

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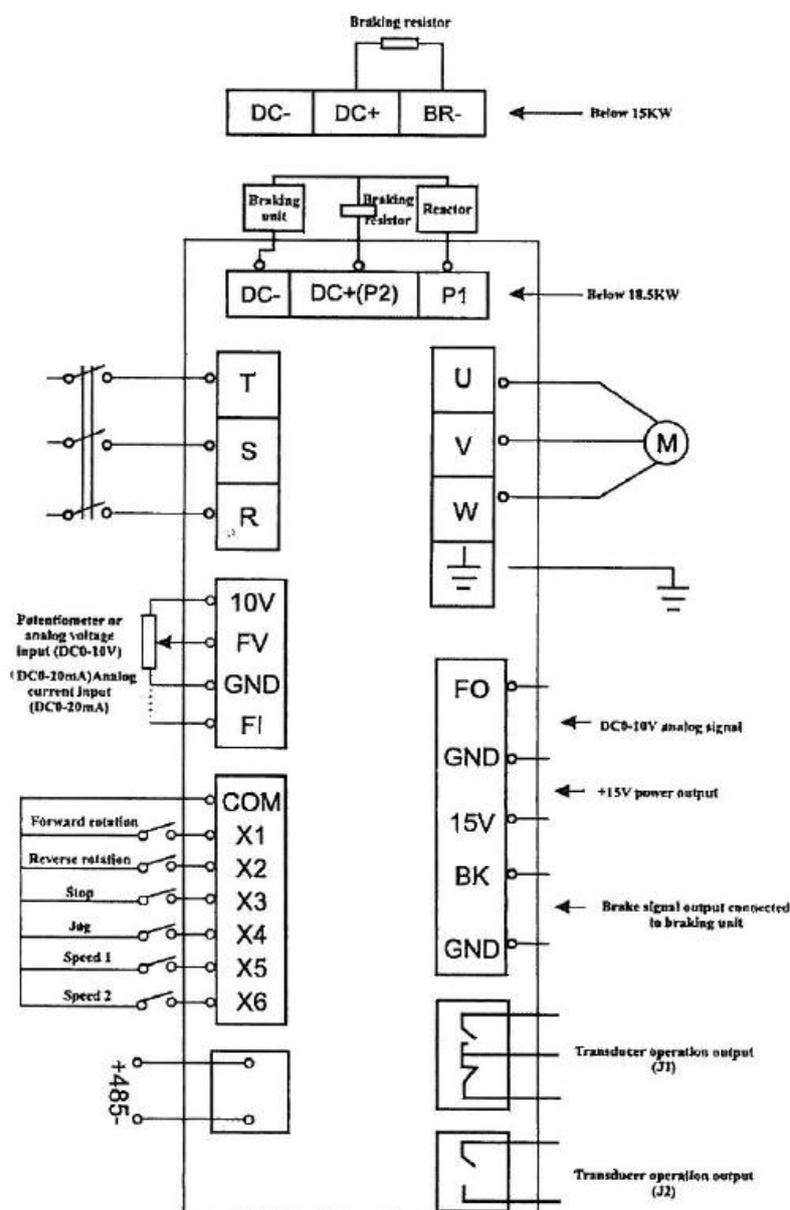




How to connect the frequency converter to the pump? (only for the 1,5 kW model!)

- Connect the cooling fan of the motor always directly to the mains (not through the converter).
- Connect the three phases of the mains to the connections R, S and T of the converter.
- Connect the pump to the connections U, V and W of the converter.
- Earth connections should be done on the converter on the connection on the right (besides W)

Once this is done you can plug the mains in and regulate the speed of your pump without changing any parameter.



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