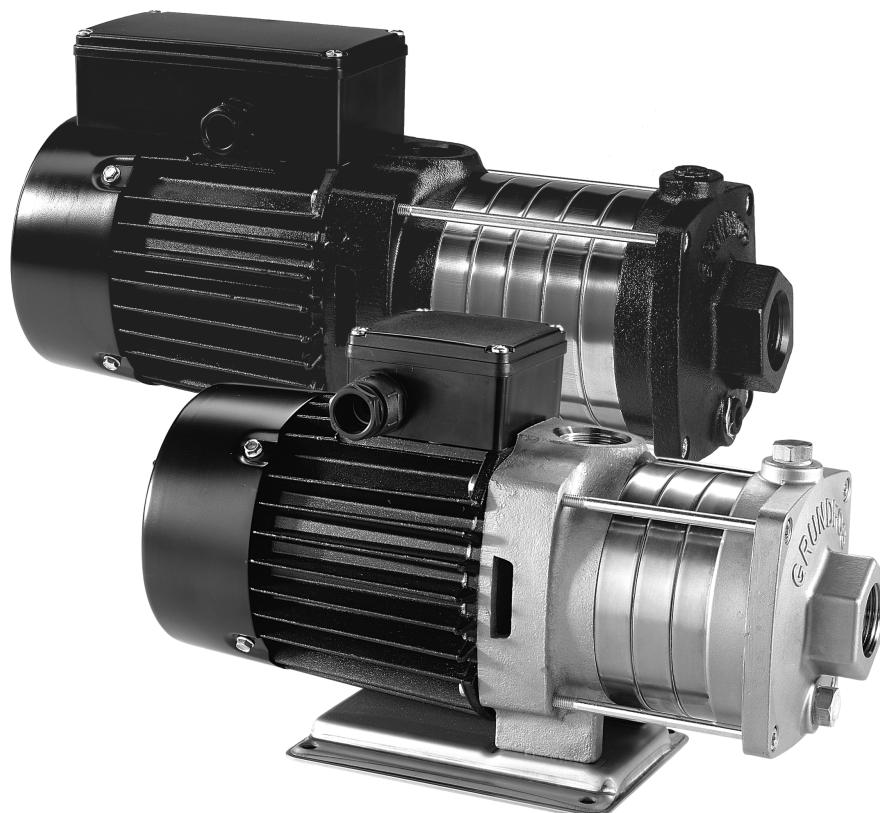


**GRUNDFOS INSTRUCTIONS**

**CH and CHN Series  
Stainless Steel Horizontal  
Multistage End Suction Pumps**

**Installation and operating instructions**



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Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

### PLEASE LEAVE THESE INSTRUCTIONS WITH THE PUMP FOR FUTURE REFERENCE.

If you need Technical Support, call your supplier or Grundfos Pumps Corporation at 1-888-237-1960 (toll-free in USA).

## 1. Pre-installation Checklist

### 1.1 Confirm you have the right pump

Read the pump nameplate to make sure it is the one you ordered.

### 1.2 Check the condition of the pump

The shipping carton your pump came in is specially designed around your pump during production to prevent damage. As a precaution, it should remain in the carton until you are ready to install it. At that point look at the pump and examine it for any damage that may have occurred during shipping.

## 2. General data

### 2.1 Applications

The CH/CHN range of GRUNDFOS horizontal multistage centrifugal pumps are designed for the pumping of water and other thin, non-aggressive and non-explosive liquids, not containing solid particles or fibers.

Official UL approval has been given for this pump for use with water only.

## CAUTION - This pump is approved for water only.

This product is Listed to applicable UL standards and requirements by Underwriters Laboratories Inc. for use with water only.

The pump with integral motor is fitted to a base plate. The pump is made of corrosion-resistant materials, which makes it ideally suited for water supply and a wide range of applications in industry, agriculture and in the food industry. The pump is designed for pumping clean water, domestic hot water, aqueous solutions, cleaning solutions, suspensions or light oils and other liquids with a density and viscosity corresponding to water. The liquids must not contain abrasive particles or fibers. When pumping liquids with a density or viscosity higher than that of water, motors with correspondingly higher outputs must be used.

Compare the pump's nameplate data or its performance curve with the application in which you plan to install it. Will it perform the way you want it to perform? Also, make sure the application falls within the following limits:

## 2.2 Operating conditions

2.2.1 Liquid temperature	32° F to 194° F [0°C to 90°C].
2.2.2 Ambient temperature	Up to 130° F [55°C].
2.2.3 Maximum operating pressure	32° F to 104° F [0°C to 40°C]: Up to 145 psi [10 bar]. 105° F to 194° F [41°C to 90°C]: Up to 87 psi [6 bar].
2.2.4 Maximum Inlet Pressure	The actual inlet pressure plus the pressure when the pump is operating against a closed valve should always be lower than the "maximum operating pressure".

### 2.2.5 Minimum Flow

CH/CHN 2:	1.3 gpm
CH/CHN 4:	2.8 gpm
CH 8:	3.9 gpm
CH 12:	5.2 gpm

## 3. Installation

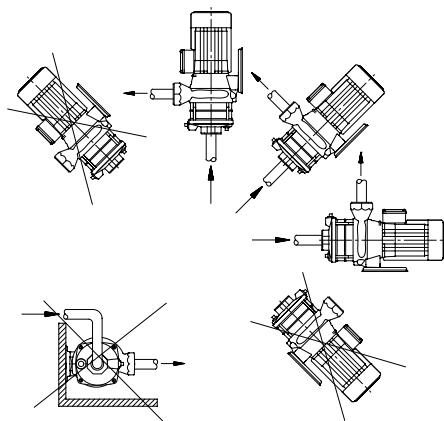
### 3.1 Pump location

The pump should be installed so that the suction pipe is as short and the suction lift as small as possible.

The pump should be sited in a well ventilated but frost-free position (see section 6.1 Frost protection). It may be sited outside, but it should be protected from the elements by means of a suitable cover.

The pump may be installed in one of the positions shown in fig. 1.

Fig. 1

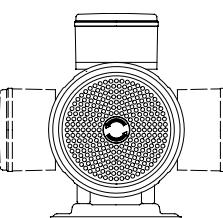


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### 3.2 Position of terminal box

The terminal box can be turned to any one of the positions shown in fig. 2 before the pump is installed.

Fig. 2



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To change the position of the terminal box:

1. Remove the four screws which, from the motor side, are screwed into the discharge chamber.
2. Turn the stator housing to the required position.
3. Replace the screws and tighten securely.

### 3.3 Pipework

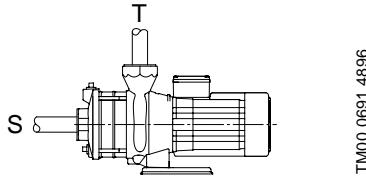
The pipes should be fitted so that any tension caused by variations in temperature does not affect the pump.

#### 3.3.1 Suction pipe

If the pump is to draw liquid from a level lower than the pump suction port, a foot/non-return valve must be fitted to the end of the suction pipe, below the lowest liquid level, since the pump is not self-priming.

The suction pipe is connected to the pump suction port S, fig. 3.

Fig. 3



When the suction pipe is longer than 10 meters or the suction lift is greater than 4 meters, the diameter of the suction pipe must be larger than that of the pump suction port.

Every joint of the suction pipe must be completely tight.

If a hose is used as suction pipe, it must be non-collapsible. A strainer is recommended in cases where solids could enter the suction pipe and block the pump.

#### 3.3.2 Discharge pipe

The discharge pipe is connected to the discharge port T, fig. 3.

The discharge pipe should be at least the same diameter as the discharge port of the pump, to minimize pressure drop, high flow velocities and noise.

#### 3.3.3 Bypass

If there is any danger of the pump running against a closed discharge valve, a minimum liquid flow through the pump should be ensured by connecting a bypass/a drain to the discharge pipe. The drain can, for instance, be connected to a tank.

A minimum flow rate equal to 10% of the flow rate at maximum efficiency is needed at all times. Flow rate and head at maximum efficiency are stated on the pump nameplate.

### 3.4 Installation examples

The pump is suitable for a wide range of applications.

Some examples are shown on page 2.

### 3.5 General Installation Hints

Isolating valves should be fitted either side of the pump to avoid draining the system in case it is necessary to clean or repair the pump.

If pumps are installed close to living accommodations, it is advisable to fit anti-vibration mountings on either side of the pump and between foundation and pump to prevent vibration being transmitted through the pipework. This applies especially to pumps installed in concrete buildings.

- Install the pump so that it is not stressed or strained by the pipework, especially tension caused by variations in temperature.
- If the pumps are installed in long pipes, these should be adequately supported before and after the pump.
- If there is any danger of the pump running against a closed valve in the discharge pipe, a bypass should be installed on the discharge side of the pump to ensure that adequate cooling and lubrication water is circulated through the pump (a minimum flow equal to 10% of the nominal flow is needed at all times). This is less for CHIE pumps.
- Contact Grundfos for assistance if your pump will run at shut-off. CHIE pumps can automatically stop at no flow conditions.

## 4. Electrical connections

The electrical connections should be carried out in accordance with local regulations.

The operating voltage and frequency are marked on the nameplate. Please make sure that the motor is suitable for the electricity supply on which it will be used.



Never make any connections in the pump terminal box unless the electricity supply has been switched off.

The pump must be connected to an external mains switch.

Single-phase motors incorporate a thermal overload switch and require no additional motor protection.

Three-phase motors must be connected to a motor starter, the set nominal current of which must correspond to the electrical data on the pump nameplate.

Do not start the pump until it has been filled with liquid and vented (primed).

Connections should be made as shown on the inside of the terminal box cover.

Choose one of the two cable entries and knock out the pre-cut disk.

### 4.1 Checking of direction of rotation (three-phase motors)

Arrows on the motor fan cover indicate the correct direction of rotation.

The pump should rotate counter-clockwise when viewed from the motor end.

To reverse the direction of rotation, switch off the electricity supply and interchange any two of the incoming supply wires.

## 5. Starting

### 5.1 Priming

Do not start the pump until it has been filled with liquid and vented

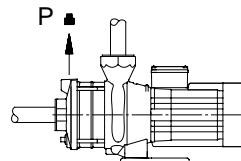


In systems with hot liquids, extreme caution should be exercised when venting the pump to eliminate the risk of personal injury caused by escaping water.

### Booster systems and systems where the liquid level on the suction side is above the pump inlet:

1. Close the isolating valves either side of the pump.
2. Remove the priming plug P, fig. 4.
3. Slowly open the suction valve and keep it open until a steady stream of liquid runs out the priming port.
4. Close the valve, replace the priming plug and tighten securely.
5. Open the suction valve. Start the pump and slowly open the discharge valve until it is fully open.

Fig. 4



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### Pumping from tanks and wells where the liquid level on the suction side is below the pump inlet:

1. Close the discharge isolating valve.
2. Remove the priming plug P, fig. 4.
3. Pour water through the priming port. Make sure that the suction pipe and pump are completely filled with liquid and vented.
4. Replace the priming plug and tighten securely.
5. Start the pump and slowly open the discharge valve until it is fully open.

### 5.2 Frequency of starts and stops

Maximum 100 starts per hour.

## 6. Operation and maintenance

Under normal operating conditions, the pump does not require any maintenance.

If the pump has been used for pumping liquids that may leave impurities in the pump, it should be flushed through with clean water immediately after use.

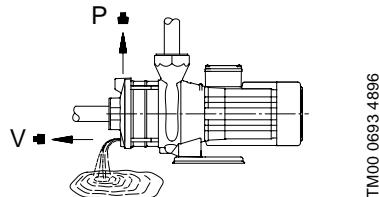
## 6.1 Frost protection

Pumps which are not being used during periods of frost should be drained to avoid damage.

Remove the priming and drain plugs P and V, fig. 5.

Do not replace the plugs until the pump is to be used again.

Fig. 5



## 6.2 Cleaning

If the pump has been used for pumping aggressive or polluted liquids, it should be flushed through with clean water to avoid corrosion or sediment in case the pump is not being used for some time.

## 7. Fault finding chart



Before attempting to diagnose any fault, make sure that the electricity supply has been switched off.

Fault	Cause
Pump does not start.	Supply failure. Control circuit has cut out or is defective. Motor is defective. Pump is blocked by impurities.
Pump runs but gives no water.	Pump is not filled with liquid. Suction or discharge pipe is blocked by impurities. Pump is blocked by impurities. Suction lift is too great. Leakage in suction pipe. Foot or non-return valve is blocked.
Pump runs at reduced capacity.	Wrong direction of rotation (three-phase). Suction lift is too great. Suction or discharge pipe is blocked. Pump is blocked by impurities. Foot or non-return valve is partly blocked.
Pump stops during operation.	Thermal overload switch in motor or external motor protection cuts out. Control circuit has cut out.

## 8. Disposal

Disposal of this product or parts of it must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, dispose of the product according to local regulations.







BEING RESPONSIBLE IS OUR FOUNDATION  
THINKING AHEAD MAKES IT POSSIBLE  
INNOVATION IS THE ESSENCE



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**GRUNDFOS** A stylized 'X' or checkmark shape.