

# COMFORT 10-16

Temp, Auto and Digital Timer

Installation and operating instructions





# COMFORT 10-16

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## English (US)

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## English (US) Installation and operating instructions

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### Original installation and operating instructions

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## 1. Limited warranty

Products manufactured by Grundfos Pumps Corporation (Grundfos) are warranted to the original user only to be free of defects in material and workmanship for a period of 36 months from the date code listed on the nameplate of the pump. Grundfos' liability under this warranty shall be limited to repairing or replacing at Grundfos' option, without charge, F.O.B. Grundfos' factory or authorized service station, any product of Grundfos manufacture. Grundfos will not be liable for any costs of removal, installation, transportation, or any other charges that may arise in connection with a warranty claim. Products which are sold, but not manufactured by Grundfos, are subject to the warranty provided by the manufacturer of said products and not by Grundfos' warranty. Grundfos will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Grundfos' printed installation and operating instructions and accepted codes of good practice. The warranty does not cover normal wear and tear. To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed. Grundfos will not be liable for any incidental or consequential damages, losses, or expenses arising from installation, use, or any other causes. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction. Products which are repaired or replaced by Grundfos or authorized service center under the provisions of these limited warranty terms will continue to be covered by Grundfos warranty only through the remainder of the original warranty period set forth by the original purchase date.

## 2. General information



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

### 2.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



#### **DANGER**

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



#### **WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



#### **CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:



#### **SIGNAL WORD**

##### **Description of the hazard**

Consequence of ignoring the warning

- Action to avoid the hazard.

## 2.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



A blue or gray circle with a white graphical symbol indicates that an action must be taken.



A red or gray circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.



## 2.3 Pumped liquids

The product is suitable for domestic hot water with unrestricted water hardness.

The kinematic viscosity of water is 1 mm<sup>2</sup>/s (1 cSt) at 68 °F (20 °C). If the pump is used for a liquid with a higher viscosity, the hydraulic performance of the pump will be reduced.

**Example:** 50 % glycol at 68 °F (20 °C) means a viscosity of approximately 10 mm<sup>2</sup>/s (10 cSt), reducing pump performance by approximately 15 %.

When selecting a pump, the viscosity of the pumped liquid must be taken into account.

## 3. Receiving the product

### 3.1 Inspecting the product



#### **CAUTION**

##### **Crushing of feet**

Minor or moderate personal injury

- Wear safety shoes when handling the product.

- Make sure that the delivered product corresponds to the order.
- Make sure that the supply voltage and frequency correspond to the values stated on the product nameplate.

## 4. Mechanical installation

### WARNING

#### Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

### WARNING

#### Electric shock

Death or serious personal injury



- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.

### WARNING

#### Pressurized system

Death or serious personal injury



- Before installation of the pump, drain the system or close the isolating valves on both sides of the pump. The pumped liquid may be scalding hot and under high pressure.

## 4.1 Applications

COMFORT pumps are designed for use in domestic hot-water systems.

The pumps are suitable for open and closed systems.

## 4.2 Location

The pump is designed for indoor use in a non-aggressive and non-explosive atmosphere.

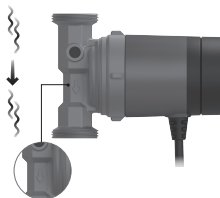
Relative air humidity: Maximum 95 %.

### 4.3 Preparing the product for installation

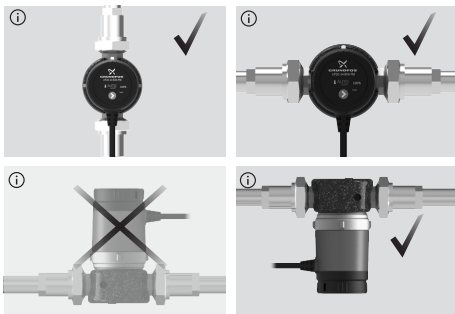
The product has integrated power cable, check valves and isolating valves.

Before installing the product, observe the following:

- Flush the system of debris before installation.
- Refer to the arrows on the pump housing indicating the direction of the liquid flow through the pump.



- See below for correct installation positions.



*Installation positions*

TM075626

TM075625

## 4.4 Mounting the product

### WARNING

#### Pressurized system

Death or serious personal injury



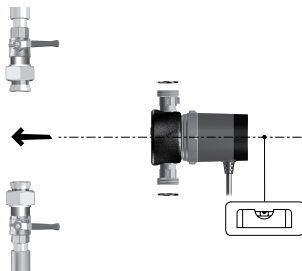
- Tighten the union nuts before opening the isolating valves. The pumped liquid may be scalding hot and under high pressure.

The arrows on the pump housing indicate the flow direction through the pump.

1. Close the isolating valves and make sure that the system is not pressurized during the installation of the pump.



2. Mount the pump with gaskets in the pipes.



TM075632

TM075633

3. Tighten the fittings.



TM075634

4. Connect the plug to the socket, and switch on the pump.  
Note that the pump is double insulated and does not require ground connection.



Do not switch on the pump until the system has been filled with liquid and vented.



TM075637

## 4.5 Installing the temperature sensor

The following only applies to the AUTO pump variants: The attached temperature sensor must be installed in the system in order to use the AUTOADAPT function.

Do as follows:

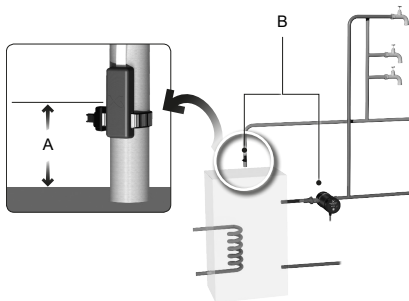
1. Turn the faceplate counterclockwise on the pump, to release the sensor cable.
2. Pull out the sensor cable to the desired length. Do not pull the cable downwards.

The maximum cable length is 8 ft (2.5 m).



3. Install the temperature sensor on the pipes on the hot-water outlet side.

The sensor must be installed 8 to 20 inches (20 to 50 cm) (A) from the heat source and can be installed maximum 8 ft (2.5 m) (B) from the pump.



TM075628

TM075639

## 4.6 Changing the pump head position

### WARNING

#### Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

### WARNING

#### Hot surface

Death or serious personal injury



- At high liquid temperatures, the product may become so hot that only the operating panel must be touched to avoid burns. Close the isolating valves on all sides of the product and then drain it. Wear protective gloves.

To change the orientation of the pump head, do as follows:

1. Use a wrench to loosen the union.



2. Carefully turn the pump head to the desired position and tighten the union (max. 20 Nm). Open the isolating valves.



TM075635

TM075636

## 5. Startup

### WARNING



#### Hot surface

Death or serious personal injury

- At high liquid temperatures, the product may become so hot that only the operating panel must be touched to avoid burns.

### WARNING



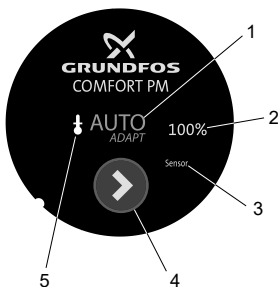
#### Electric shock

Death or serious personal injury

- Clean only the product with a dry cloth.



## 5.1 COMFORT Auto



TM077262

Pos.	Description
1	AUTOADAPT. It lights up when the pump is running in AUTOADAPT.
2	100 % LED. When lit, the pump runs according to continuous 100 % mode.
3	Sensor defect alarm. It lights up in red color if the internal or external temperature sensor is defect.
4	Arrow button for changing mode.
5	Temperature control mode. It lights up when the pump is running in temperature control mode.

To change the control mode on the pump, press the button on the operating panel. Press the button more times to change between the three available control modes:

- **AUTOADAPT**

This mode adapts the operating hours by switching on and off according to the tapping pattern of the users as detected by the sensors attached to the hot-water outlet.

- **100 % mode**

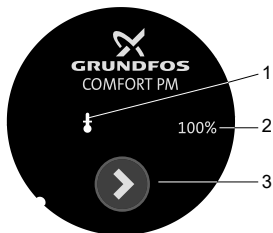
The pump is running continuously at full speed.

- **Temperature control**

The operating range of the pump is kept within a predetermined temperature range.

When a control mode is chosen, the corresponding LED is lit. If the LED flashes, the pump is in standby. The sensor must be installed regardless of what control mode the pump will run in.

## 5.2 COMFORT Temperature control



TM077263

Pos.	Description
1	Temperature control mode. It lights up when the pump is running in temperature control mode.
2	100 % LED. When lit, the pump runs according to continuous 100 % mode.
3	Arrow button for changing mode.

To change control mode on the pump, press the button on the operating panel. Keep pressing the button to change between the two available control modes:

- **Temperature control**

The operating range of the pump is kept within a predetermined temperature range.

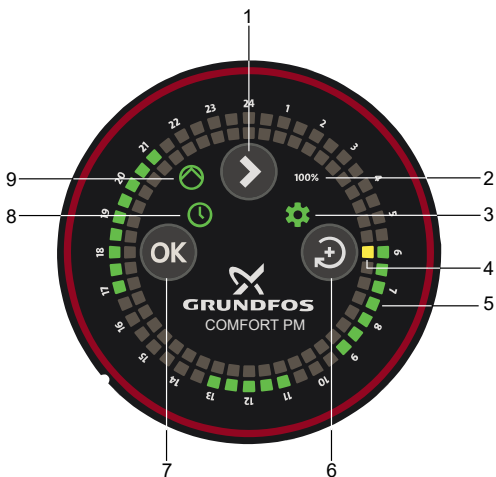
- **Continuous 100 % mode**

The pump is running continuously at full speed.

When a control mode is chosen, the corresponding LED is lit. If the LED flashes in temperature control mode, the pump is in standby.

## 5.3 COMFORT Digital Timer

### 5.3.1 Operating panel



TM076110

*Operating panel of the COMFORT BDT and BXDT PM models in default timer mode*

Pos.	Description
1	<b>Arrow</b> button for changing mode.
2	100 % LED. When lit, the pump runs according to continuous 100 % mode.
3	Gear wheel LED. It lights up when the actual time and operating time can be set.
4	Actual time. One LED equals a time interval of 30 minutes.

Pos.	Description
5	Timer LEDs showing the pump's operating periods. One LED equals a time interval of 30 minutes.
6	<b>Change</b> button for toggling the actual time and timer LEDs.
7	<b>OK</b> button for confirming, changing or deleting settings.
8	Activated timer function. When lit, the LED indicates that the timer function is activated and that operating periods have been set.
9	Pump LED. It indicates that the pump is operating.

In the event of a power cut the LED showing the actual time (4) flashes, indicating that the actual time setting may be incorrect.



TM086098

*COMFORT Digital Timer instruction video*

<http://v2.t2g.me/?q=fc0652a6>

### 5.3.2 Setting the pump to continuous 100 % mode

The pump is factory set to run at continuous 100 % mode.

1. When the pump is powered on the 100 % LED is lit.

### 5.3.3 Setting the actual time

1. Press the **Arrow** button to start the process. The gear wheel LED lights up.
2. Move the actual timer LED by pressing the **Change** button until it indicates the actual time.

One LED equals a time interval of 30 minutes.

3. Confirm by pressing **OK**.

### 5.3.4 Setting the timer

Once the actual time has been set the pump's timer LEDs become lit according to the default timer settings. They are as follows:

- 6-9 AM (06:00-09:00)
- 11 AM - 1 PM (11:00-13:00)
- 4-9 PM (16:00-21:00)

If you want to keep the default settings press the **Arrow** button to confirm.

If you want to customize the timer, do as follows:

1. Press the **Arrow** button.
2. Move the timer LED by pressing the **Change** button.
3. Select or deselect a time period by pressing **OK**.  
One LED equals a time interval of 30 minutes.
4. Press the **Arrow** button to confirm the settings.

### 5.3.5 Resetting to factory setting

When resetting the timer, all saved time periods will be lost.

1. Press and hold the **Arrow** button for 5 seconds.

All LEDs light up, after which the actual time LED blinks and the 100 % LED is lit.

## 6. Service and dismantle the product

### WARNING

#### Electric shock

Death or serious personal injury



- A damaged product must be repaired or replaced by Grundfos or a service workshop authorized by Grundfos.

### WARNING

#### Electric shock

Death or serious personal injury



- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

### WARNING

#### Electric shock

Death or serious personal injury



- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.

### WARNING

#### Electric shock

Death or serious personal injury



- Excessive use of water when cleaning the product may cause the product to short circuit.

### WARNING

#### Pressurized system

Death or serious personal injury



- Drain the system or close the isolating valve on either side of the pump before you do any work on the product. The pumped liquid may be scalding hot and under high pressure. Wear protective gloves and glasses.

## WARNING

### Hot surface

Death or serious personal injury



- At high liquid temperatures, the product may become so hot that only the operating panel must be touched to avoid burns. Close the isolating valves on all sides of the product and wait for the product to cool down before working on it.

## WARNING

### Hot liquid

Death or serious personal injury



- The pumped liquid may be scalding hot and under high pressure. Close the isolating valves on all sides of the product and then drain it.

## CAUTION

### Crushing of feet

Minor or moderate personal injury



- Wear safety shoes when handling the product.

## 7. Fault finding the product

### 7.1 Defective external temperature sensor (only COMFORT Auto)

The red error LED indicator is turned on during AUTOADAPT and turns off when the pump is switched manually to temperature control mode.

Cause	Remedy
The external temperature sensor is defective. Per default, the pump turns internally to temperature control mode, due to the external temperature sensor is needed for the AUTOADAPT control mode. The display does not automatically change to temperature control mode.	<ul style="list-style-type: none"> <li>• Replace the pump.</li> </ul>

### 7.2 Defective internal temperature sensor

The red error LED indicator is turned on during AUTOADAPT and does not go off when the pump is switched manually to temperature control mode.

Cause	Remedy
The internal temperature sensor is defective. Per default, the pump uses the external temperature sensor for the temperature control mode	<ul style="list-style-type: none"> <li>• Replace the pump.</li> </ul>



### 7.3 Actual time LED is blinking (only COMFORT DT)

When the actual time LED blinks, it indicates that the actual time setting may be incorrect.

Cause	Remedy
A power cut has occurred. After a power failure, the pump will retain the programmed settings.	<ul style="list-style-type: none"> <li>• Adjustment of the actual time is needed.</li> </ul>

### 7.4 No instant hot water

No instant hot water.

Cause	Remedy
The pump is not running.	<ul style="list-style-type: none"> <li>• Check the power supply.</li> <li>• Check the operating periods are according to the needs.</li> <li>• Check if the impeller is blocked.</li> </ul>

### 7.5 No instant hot water

No instant hot water.

Cause	Remedy
The pump is running.	<ul style="list-style-type: none"> <li>• Check if the return line or pump is air bound (dry running).</li> <li>• Check the water heater aggregate.</li> </ul>

## 8. Technical data

Liquid temperature	35-176 °F (2-80 °C)
Ambient temperature	32-104 °F (0-40 °C ) <sup>1)</sup>
Max. system pressure (PN 10)	145 psi (1.0 MPa / 10 bar)
Min. inlet pressure	0.75 psi (0.05 bar)
Max. head	3.9 ft (1.2 m)
Max. flow rate	2.2 gpm (0.5 m <sup>3</sup> /h)
Min. power consumption	5 W
Max. power consumption	7 W
Pump housing	EcoBrass
Lead content	< 0.2 %
Port-to-port length	4 3/8" (110 mm)
Connection type	1 1/4" NPSM
Enclosure class	2
Appliance class	Double insulated
Overvoltage category (OVC)	II
Pollution degree	2
Altitude max.	6500 ft (2000 m)

1) The ambient temperature must always be lower than the liquid temperature to minimize condensation in the stator housing, and not exceed 104 °F (40 °C).

## 9. Disposing of the product

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop. See also end-of-life information at [www.grundfos.com/product-recycling](http://www.grundfos.com/product-recycling).
3. Consider recycling scrap metal to reduce waste and to help to limit new mining.

## 10. Document quality feedback

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