

CM-PM1

Installation and Operating Instructions



CONTENTS

1. CM PUMP

1.1	General Data	3
1.2	Installation	3
1.3	Electrical Connections	4
1.4	Start Up	4
1.5	Operation and Maintenance	5

2. PRESS CONTROL

2.1	Applications	6
2.2	Technical Data	6
2.3	Mode of Operation	6
2.4	Installation	6
2.5	Electrical Connection	6
2.6	Starting and Maintenance	6

3. FAULT FINDING CHART 8

4. INSTALLATION 10

1.1 GENERAL DATA

APPLICATIONS:

Grundfos CM-PM1 Water Pressure Systems are suitable for a wide range of applications, including:

- Domestic Water Supply and Pressure Boosting.
- Domestic Irrigation.
- Washdown.

TYPE DESIGNATION:

The pumps used in the Pressure System are standard CM2 and CM4 Multistage pumps.

OPERATING RANGE:

Liquid temperature 0°C to 40°C

Maximum pump operating pressure 10bar(145psi).

1.2 INSTALLATION

PUMP LOCATION:

The pump should be housed in a weatherproof, ventilated enclosure. Care should be taken to ensure that an adequate air supply reaches the motor cooling fan.

PIPEWORK:

Suction and delivery pipes should be selected to withstand the maximum operating pressure of the system. Selection of pipe size should be carried out in consultation with a GRUNDFOS Dealer to ensure minimal friction losses. Unnecessary long suction lines should be avoided as should high spots in the suction line which may trap air.

A footvalve or non return valve should be installed on the suction side of the pump to prevent pressure loss through the suction line.

It is recommended that an isolating valve be fitted on the discharge side of the delivery manifold.

1.3 ELECTRICAL CONNECTIONS

Please ensure that the motor is suitable for the electrical supply on which it is to be used. All single phase Water Pressure System are supplied with a lead cable for ease of installation.

Three phase motors should be connected to the supply as shown in the terminal box cover.

MOTOR PROTECTION:

SINGLE PHASE MOTORS

GRUNDFOS Standard motors have built-in thermal relays and require no further motor protection.

THREE PHASE MOTORS

These motors must be connected to an effective motor starter to ensure that the motor is protected against damage from phase failure, voltage variations and overload. The overload unit should be adjusted to trip at the motor full load current shown on the motor nameplate.

1.4 START UP

PRIMING:

Do not attempt to start the pump until both the suction line and pump body have been completely filled with water. Care should be taken to ensure that no air remains entrapped in the suction line.

POSITIVE SUCTION

Gradually open the isolating valve in the suction pipe until a steady stream of water runs out the priming port. Replace the plug and tighten securely. Completely open the isolating valve.

NEGATIVE SUCTION

In an open system where the liquid level is below the pump, the suction pipe and the pump must be filled and vented of air before starting the pump. Close the discharge isolating valve. Pour water through the priming hole, until the suction pipe and the pump are completely filled with water.

CHECK THE DIRECTION OF ROTATION: (Three Phase Only)

Once the priming of the pump is completed, start the pump and observe the direction of rotation. If the pump is rotating in the opposite direction to the arrows shown on the pump head and fan cowl, isolate the power supply and make the following change.

THREE PHASE: Change over any two of the three supply lines in the motor terminal box.

1.5 OPERATION AND MAINTENANCE

LUBRICATION AND MAINTENANCE:

Pumps installed in accordance with these instructions will operate efficiently with very little maintenance. The mechanical shaft seal is self adjusting and has wear-resistant seal faces which are lubricated and cooled by the pumped liquid. Pump bearing are also lubricated by the pumped liquid. All GRUNDFOS motors have sealed bearings and do not require routine lubrication.

INSPECTION:

At regular intervals, depending on the conditions of service and hours of operation, the following checks should be carried out.

- Pump performance and operating pressure.
- Check for any gasket, shaft seal or pipeline leaks.
- Check for any motor bearing wear.
- Remove and clean any filters.
- Operation of all controls.
- Frequency of starts and stops.

Press Control



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

2.1 APPLICATIONS

The Presscontrol is a pressure regulator with built-in dry-running protection designed for use with GRUNDFOS pumps. It is used for automatic operation of pumps in small water supply systems in single-family houses and blocks of flats, for garden watering, etc.

2.2 TECHNICAL DATA

Ambient temperature

Max. +50°C

Liquid temperature

Max. +40°C

Cut-in pressure

1.5 bar

System pressure

Max. 10 bar

Supply voltage

1 x 220-240 V, 50 Hz

Enclosure class

IP 65

Dimensions

See Fig. J at the end of these instructions

The technical data may be limited by the pump data. See Installation and Operating Instructions for the pump.

2.3 MODE OF OPERATION

By means of a built-in flow valve and a pressure switch, the Presscontrol ensures a steady flow without water hammering, irrespective of the water consumption.

The Presscontrol starts and stops the pump automatically on demand.

The pump will start at the preset cut-in pressure. The Pump will stop when water is no longer being drawn off.

The Presscontrol incorporates a pump dry-running protection, which will stop the pump if it has been running for approx. 10 seconds without delivering water.

2.4 INSTALLATION

The Presscontrol must be fitted on the discharge side of the pump.

See installation example on page 10 & 11 at the end of these instructions.

When pumping from a well, borehole, etc., a non-return valve must always be fitted to the suction pipe of the pump.

It is recommended to connect the pump/ Presscontrol to the piping system by means of unions.

2.5 ELECTRICAL CONNECTION

The electrical connection and protection should be carried out in accordance with local regulations.



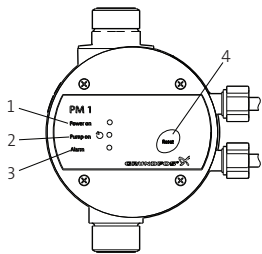
Never make any connections in the terminal box of the Presscontrol unless the electricity supply has been switched off.

Connections should be made as shown in Fig. K at the end of these instructions.

2.6 STARTING AND MAINTENANCE

Fig L shows the control panel on the Presscontrol.

Fig L



TM 03 9360 1708

The function of the three indicator lights and the button on the panel is as described below.

Pos.	Description	Function
1	"Power on"	The green indicator light is permanently on when the power supply has been switched on.
2	"Pump on"	The green indicator light is permanently on when the pump is running.
3	"Alarm"	The red indicator light is permanently on or flashes when the pump has stopped due to an operating fault See section 12. Fault finding chart.
4	[Reset]	The button is used for <ul style="list-style-type: none">• resetting fault indications• enabling and disabling of the anti-cycling function.

When the Presscontrol has been installed and the electrical connection has been carried out, switch on the electricity supply.

Press Control

The green indicator light (Supply) illuminates. The pump will start when the electricity supply or a possible on/off switch on the delivering water within 10 seconds, the dry-running protection will stop the pump.

To avoid this, press the Reset button until the pump starts delivering water (the pump has been primed).

Note : The pump is not allowed to run without delivering water for a period longer than that stated in the Installation and Operating Instructions for the pumps.

Functions

Anti-cycling

If there is a minor leakage in the system, or a tap has not been closed entirely, the unit will start and stop the pump periodically. In order to avoid cycling, the anti-cycling function of the unit will stop the pump and indicate an alarm.

Default setting: The function is enabled.

Enabling and disabling the function

1. Keep [Reset] pressed for 3 seconds until "Power on" starts flashing.
2. Select whether the function should be enabled or disabled. Each press on [Reset] will change between enable and disable.
 "Pump on" is off when the function is disabled
 "Pump on" is on when the function is enabled.
3. Keep [Reset] pressed for 3 seconds to return to operation.

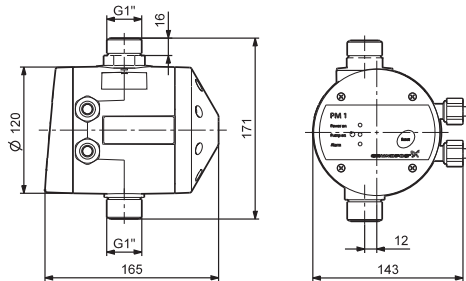
Resetting a cycling alarm

If a cycling alarm has been activated, the pump can be restarted by pressing [Reset].

Note

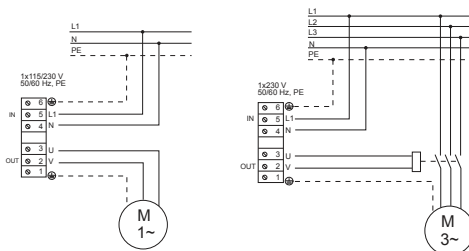
In case of a very small consumption, the anti-cycling function may detect this as cycling and stop the pump inadvertently. If this occurs, the function can be disable.

Fig J



TM 03 9366 I708

Fig K



TM 03 9220 3707 - TM 04 1953 J508

Fault Finding Chart



Warning

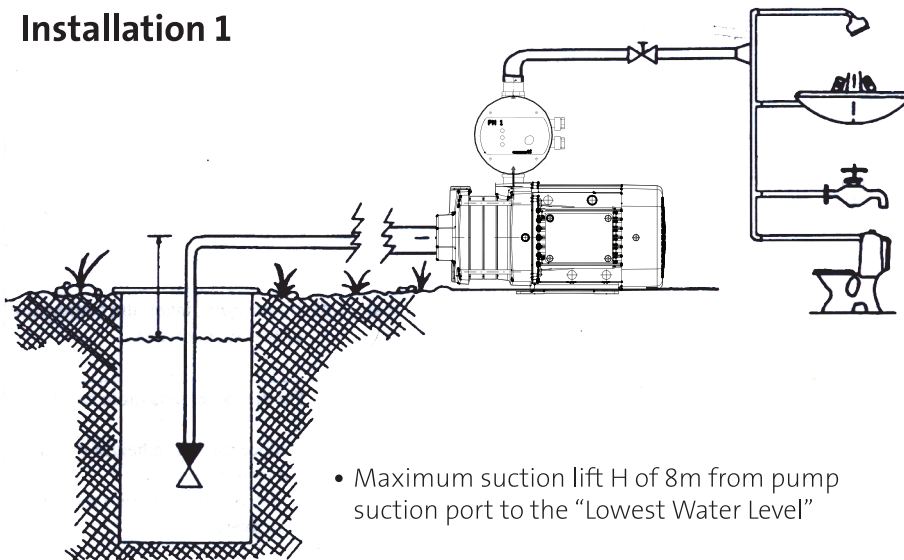
Before starting work on the pump, make sure that the power supply to the pump has been switched off and that it cannot be accidentally switched on.

Fault	Checks (Possible causes)	Remedy
1. The pump does not run.	a) Supply failure.	Switch on the switch. Check cables and cable connections for defects and loose connections.
	b) Fuses are blown.	Check cables and cable connection for defects, and replace the fuses.
	c) Motor protection tripped.	See 2. a), b), c), d), e), f).
	d) Control-current circuit defective.	Repair or replace the control-current circuit.
2. Motor-protective circuit breaker has tripped (trips out immediately when supply is switched on).	a) Fuses are blown	See 1. b).
	b) Contacts of the motor-protective circuit breaker or magnet coil defective.	Replace the contacts of the motor-protective circuit breaker, the magnet coil or the entire motor-protective circuit breaker.
	c) Cable connection is loose or faulty.	Check cables and cable connections for defects, and replace the fuses.
	d) Motor winding is defective.	Repair or replace the motor.
	e) The pump is mechanically blocked.	Switch off the power supply, and clean or repair the pump.
	f) The setting of the motor-protective circuit breaker is too low.	Set the motor-protective circuit breaker according to the rated current of the motor (I _N /1). See nameplate.
3. The motor-protective circuit breaker trips out occasionally.	a) The setting of the motor-protective circuit breaker is too low.	See 2. f).
	b) Periodic supply failure.	See 2. c).
	c) Periodically low voltage.	Check cables and cable connections for defects and loose connections. Check that the supply cable of the pump is correctly sized.
4. The pump performance is unstable.	a) Pump inlet pressure too low.	Check the inlet conditions of the pump.
	b) Suction pipe is partly blocked by impurities.	Remove and clean the suction pipe.
	c) Leakage in suction pipe.	Remove and repair the suction pipe.
	d) Air in suction pipe or pump.	Vent the suction pipe/pump. Check the inlet conditions of the pump.
5. The pump runs, but gives no water.	a) Pump inlet pressure too low.	See 5. a).
	b) The suction pipe is partly clogged by impurities.	See 5. b).
	c) The foot or non-return valve is stuck in its closed position.	Remove and clean, repair or replace the valve.
	d) Leakage in suction pipe.	See 5. c).
	e) Air in suction pipe or pump.	See 5. d).
6. The pump runs backwards when switched off.	a) Leakage in suction pipe.	See 5. c).
	b) Foot or non-return valve defective.	See 6. c).
	c) The foot valve is stuck in completely or partly open position.	See 6. c).
7. The pump runs with reduced performance.	a) Wrong direction of rotation.	Three-phase pumps only: Switch off the power supply with the external circuit breaker, and interchange two phases in the pump terminal box. See also section 8.2 Checking the direction of rotation.
	b) See 5. a), b), c), d).	

Fault Finding Chart

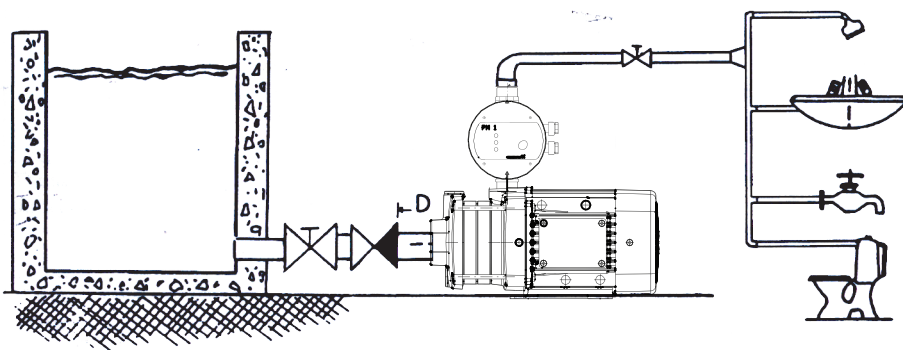
Fault	Checks (Possible causes)	Remedy
8. The green "Power on" indicator light is off.	a) The fuses in the electric installation have burnt.	Replace the fuses. If the new fuses also burn, check the electric installation.
	b) The earth leakage circuit breaker or the voltage-operated circuit breaker has tripped out.	Cut in the circuit breaker.
	c) No power supply.	Contact the power supply authorities.
	d) The Press Control is defective.	Repair or replace the PM unit.
9. The green "Pump on" indicator light is on, but the pump does not start.	a) The power supply to the pump is disconnected after the Press Control.	Check the plug and cable connections, and check if the built-in circuit breaker of the pump is switched off.
	b) The motor protection of the pump has tripped out due to overload.	Check if the motor/pump is blocked.
	c) The pump is defective.	Repair or replace the pump.
	d) The Press Control is defective.	Repair or replace the Press Control.
10. The pump does not start when water is consumed. The "Pump on" indicator light is off.	a) Too big difference in height between the Press Control and the tapping point.	Adjust the installation, or select a Press Control with a higher start pressure.
	b) The Press Control is defective.	Repair or replace the Press Control.
11. Frequent starts/stops.	a) Leakage in the pipework.	Check and repair the pipework.
	b) Leaky non-return valve.	Clean or replace the non-return valve.
	c) A valve close to the PM 1 outlet has been closed.	Open the valve.
12. The pump does not stop.	a) The pump cannot deliver the necessary discharge pressure.	Replace the pump.
	b) A Press Control with too high start pressure is installed.	Select a Press Control with a lower start pressure.
	c) The Press Control is defective.	Repair or replace the Press Control.
	d) The non-return valve is stuck in open position.	Clean or replace the non-return valve.
13. The red "Alarm" indicator light is permanently on.	a) Dry running. The pump needs water.	Check the pipework.
	b) The power supply to the pump is disconnected after the Press Control.	Check the plug and cable connections, and check if the built-in circuit breaker of the pump is switched off.
	c) The motor protection of the pump has tripped out due to overload.	Check if the motor/pump is blocked.
	d) The pump is defective.	Repair or replace the pump.
	e) The Press Control is defective.	Repair or replace the Press Control.
14. The red "Alarm" indicator light is flashing.	a) Cycling. A tap has not been closed entirely after use.	Check that all taps have been closed.

Installation 1



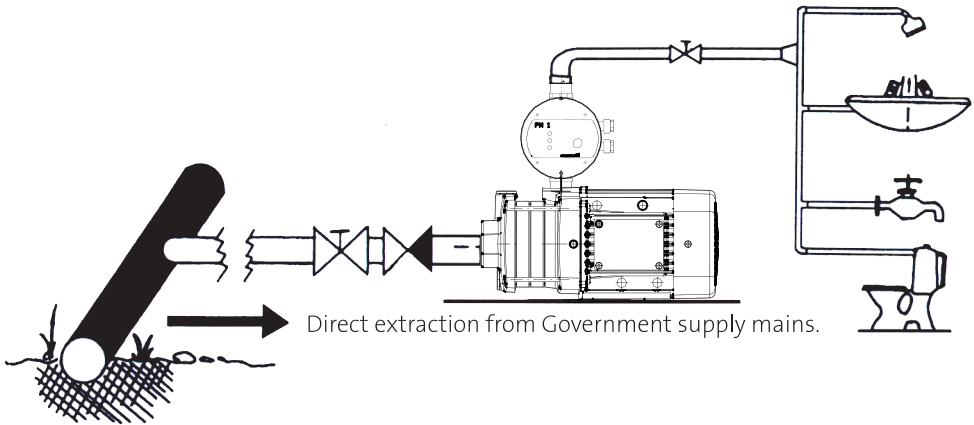
- Maximum suction lift H of 8m from pump suction port to the "Lowest Water Level"

Installation 2



- Check valve at Suction side must be with a minimum distance of $4 \times$ diameter of inlet pipe from the suction port

Installation 3

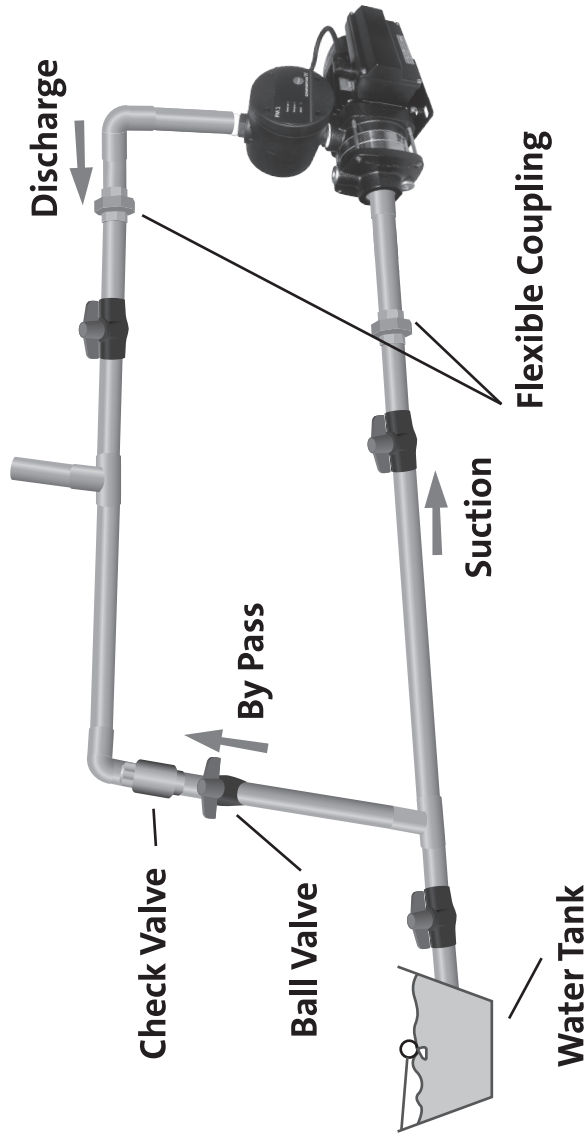


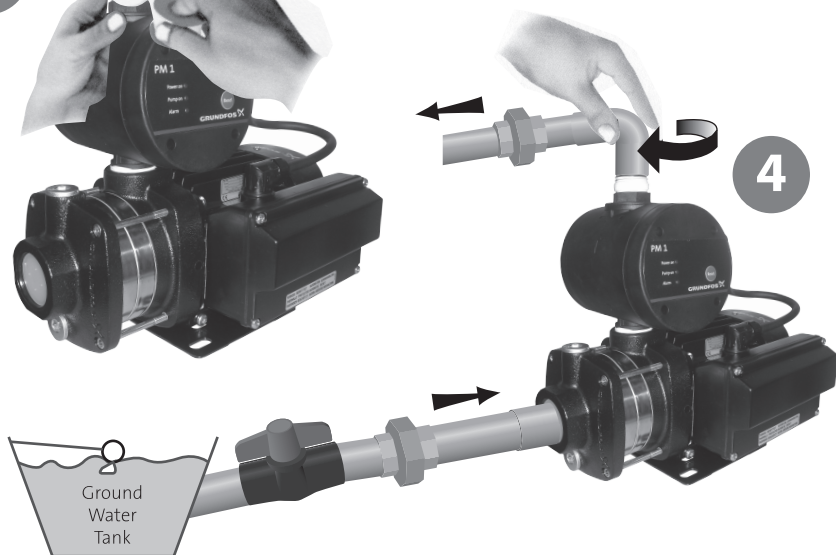
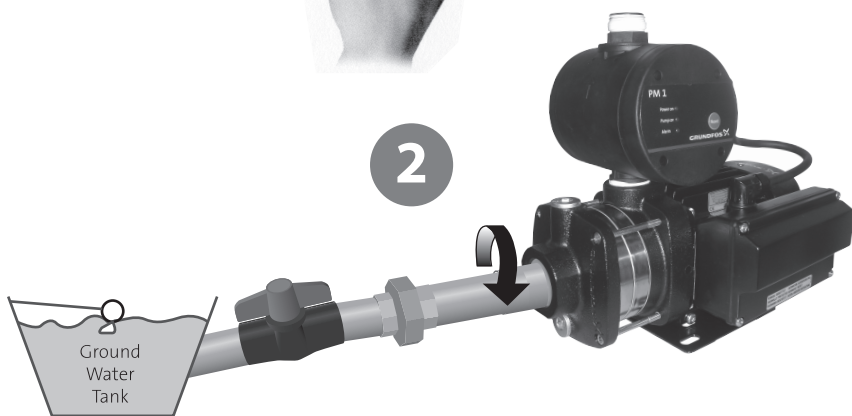
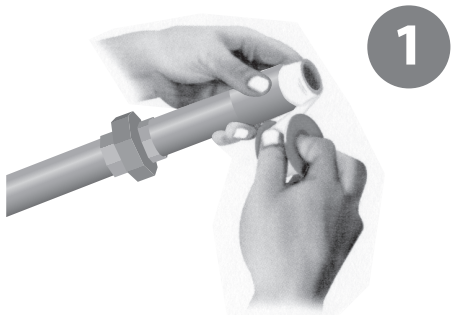
- Direct extraction from Government supply mains usually against regulation, therefore we recommend installation of suction tank as per installation 2

Points to note:

- Do not attempt to start the pump until both suction line and pump have been completely filled with water.
- Suction pipe to be as short as possible.
- Minimum pipe size to be the same as pump's inlet.
- Shelter is required for outdoor installation.

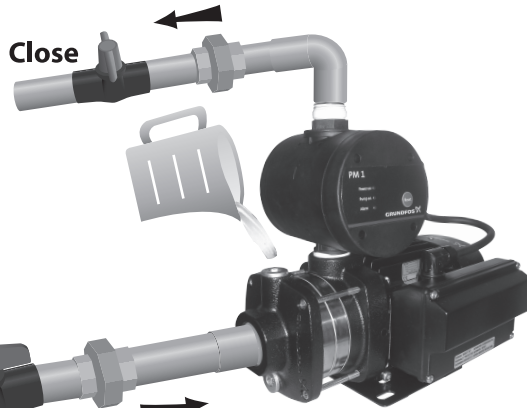
Overall Diagram





5

Discharge

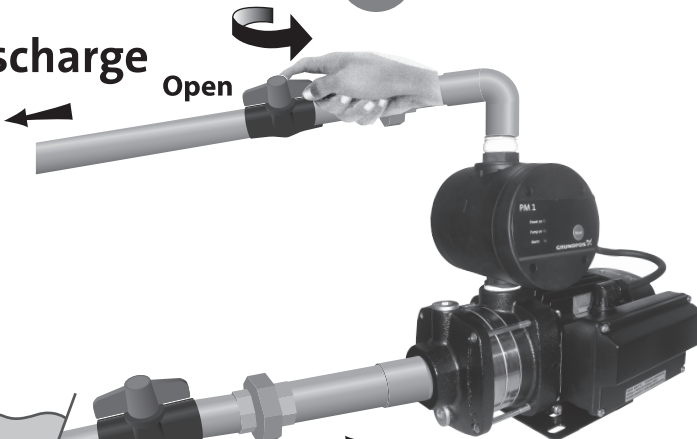


Suction

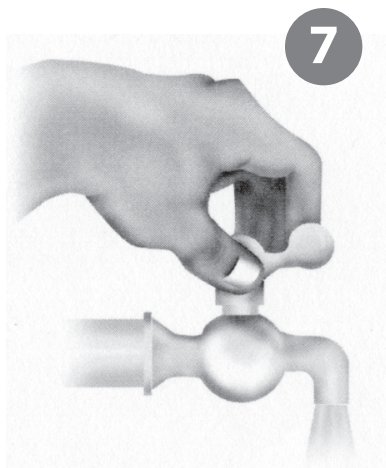
6

Discharge

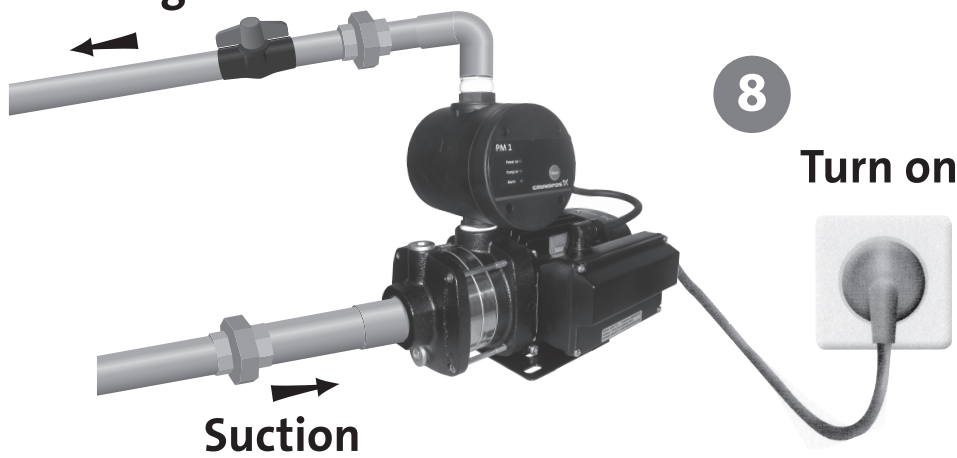
Open



Suction



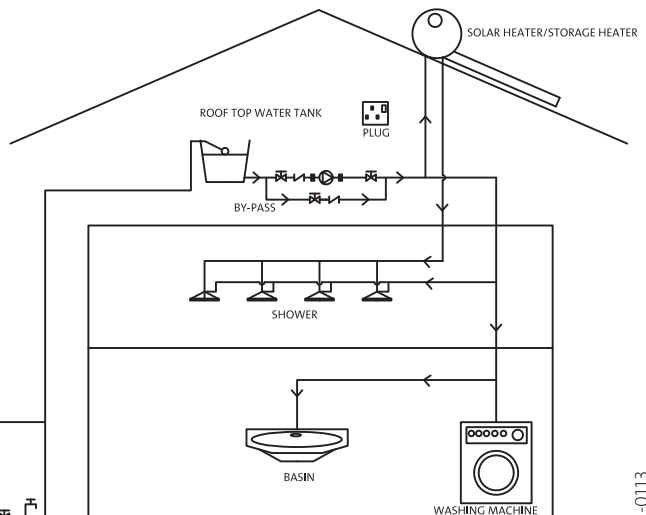
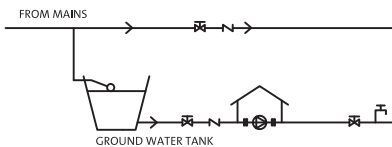
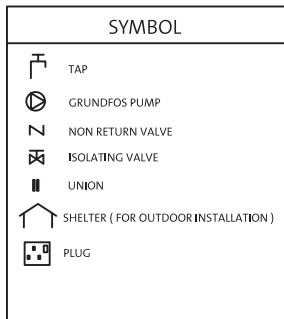
Discharge



8

Turn on

PROPER WAY TO INSTALL GRUNDFOS DOMESTIC WATER PUMP



- * We reserve the right to decline warranty claim if the above installation is not followed.
- * Direct suction from JKR main is prohibited.

GRUNDFOS PUMPS SDN BHD (202527-A)

7, Jalan Peguam U1/25
Glenmarie Industrial Park
40150 Shah Alam, Selangor,
Malaysia.
Tel : +603-5569 2922
Fax : +603-5569 2866
E-mail: gfosmy1@grundfos.com
Website : www.grundfos.com

Toll Free No. : 1800 88 PUMP (7867)



Branch Offices
Northern & East Coast
10, Ground Floor,
Jalan Todak 4, Bandar Sunway,
13700 Seberang Jaya,
Penang
Tel : +604-818 3779
Fax : +604-818 3848

East Malaysia
Lot 8, Lorong Industri Warisan 1,
Taman Industri Warisan Indah,
Mile 7, Old Tuaran Road
88450 Inanam, Kota Kinabalu,
Sabah
Tel : +6088-380 663/-383 663
Fax : +6088-383 621

GRUNDFOS