

CM-PT

Installation and Operating Instructions



CM-PT INSTALLATION AND OPERATING INSTRUCTIONS

1. GENERAL DATA

APPLICATIONS:

Grundfos CM-PT 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 CM3 and CM5 Multistage pumps.

OPERATING RANGE:

Liquid temperature - 10°C to 40°C

Maximum pump operating pressure 10bar(145psi).

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.

CM-PT Pump

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.

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, the suction pipe and the isolating valve. Pour water through the priming hole, until the suction pipe and the pump are completely filled with water.

CHECKING 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.

5. OPERATION AND MAINTENANCE

Frequency of start and stops:

Out of consideration for the motor and the motor starter, the pump should not start too often. However, local regulations may set limits to the frequency of starts and stops. As a guide a maximum of 20 starts per hour is recommended. If it is found that it starts too often, adjustment must be made to the controls to reduce the frequency of starts.

ADJUSTING THE PRESSURE SWITCH:

The pressure switch is pre-set. Should on-site adjustments be required refer to the enclosed instructions. The adjustments should be made with the pump running. Use extreme care not to contact live terminals.

PRESSURE TANK PRE-CHARGE:

The pressure tank pre-charge is pre-set. On site adjustment should be made with power off and delivery line open so that there is no pressure on the system. The pressure tank pre-charge should be 10% below the pressure switch cut in.

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.
- Pressure tank precharge.
- Operation of all controls
- Frequency of starts and stops.

6. FAULT FINDING CHART

If the pump fail to operate, the following chart may help you to find the cause of the more common faults or disturbances of operation.

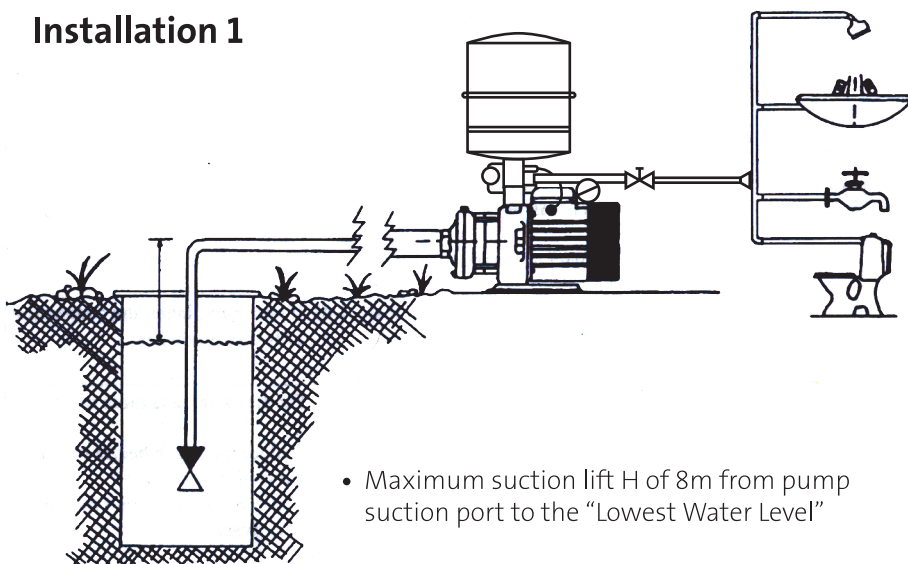
Fault Finding Chart



Before starting work on the pump/Presscontrol, make sure that electricity supply has been switched off. It must be ensured that the electricity supply cannot be accidentally switched on.

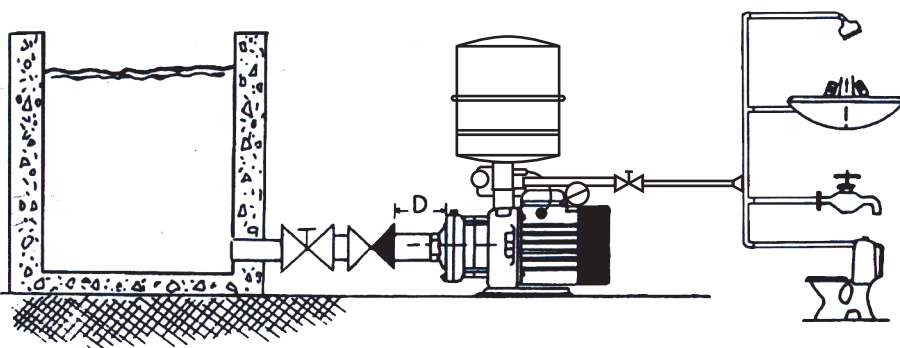
Fault	Checks (Possible causes)	Remedy
Pump does not start.	a) Supply failure. b) Fuses blown. c) Motor protection has tripped out (see Installation and Operating Instructions for the pump. d) Cable connection is loose or defective. e) Pressure switch faulty.	b) Replace the fuses. c) Ensure proper installation. d) Ensure proper cable connection.
Pump does not stop.	a) Pressure switch blocked by impurities.	a) Remove the impurities.
The motor does not start but makes no noise.	a) Check the electric connections. b) Check that the motor is live. c) Check the protection fuses.	c) If they are burnt-out, change them. N.B. If the fault is repeated immediately this means that the motor is short circuiting.
The motor does not start but makes noise.	a) Ensure that the mains voltage is the same as the value on the plate. b) Ensure that the connections have been made correctly. c) Check that all phases are present on the terminal board. d) Look for possible blockages in the pump or motor. e) Check the condition of the capacitor.	b) Correct any errors. c) If not, restore the missing phase. d) Remove the blockage. e) Replace the capacitor.
The motor turns with difficulty.	a) Check the voltage which may be insufficient. b) Check whether any moving parts are scraping against fixed parts.	b) Eliminate the cause of the scraping.
The pump does not deliver.	a) The pump has not been primed correctly. b) On three phase motors, check that the direction of rotation is correct. c) The diameter of the intake pipe is insufficient. d) Blocked foot valve.	b) If necessary, invert the connection of two supply wire. c) Replace the pipe with one with a larger diameter. d) Clean the foot valve.
High frequency stops and start.	a) Incorrect pressure switch setting. b) Incorrect pressure tank precharge. c) Faulty checkvalve and/or footvalve. d) Leaking pipework.	c) Replace the checkvalve & or footvalve. d) Ensure no leaking pipework.
The pump supplies insufficient flow.	a) Blocked foot valve. b) The impeller is worn or blocked. c) The diameter of the intake pipe is insufficient. d) On three-phase motors, check that the direction of rotation is correct.	a) Clean the foot valve. b) Remove the obstructions or replace the worn parts. c) Replace the pipe with one with a large diameter. d) If necessary, invert the connection of two supply wires.
The pump vibrates and operates noisily.	a) Check that the pump and the pipes are firmly anchored. b) There is cavitation in the pump, that is the demand for water is higher than it is able to pump. c) The pump is running above its plate characteristics.	a) Fix the loose parts more carefully. b) Reduce the intake height or check for load losses. c) It may be useful to limit the flow at delivery.

Installation 1



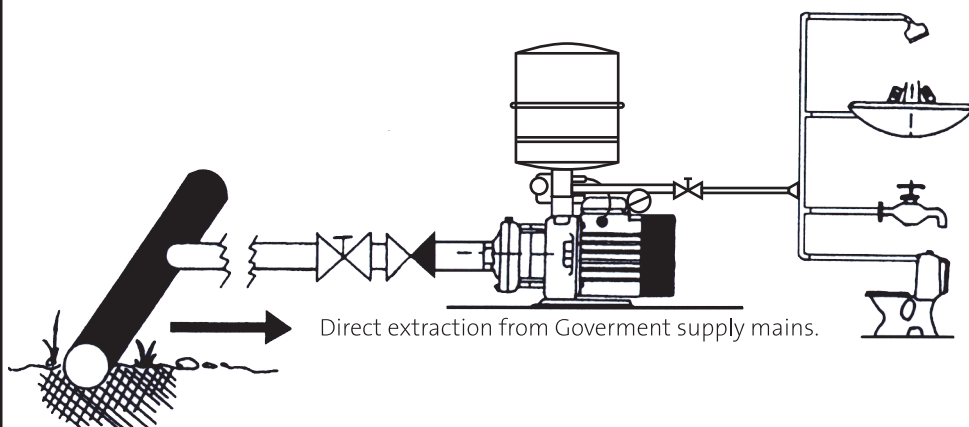
- Maximum suction lift H of 8m from pump suction port to the "Lowest Water Level"

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

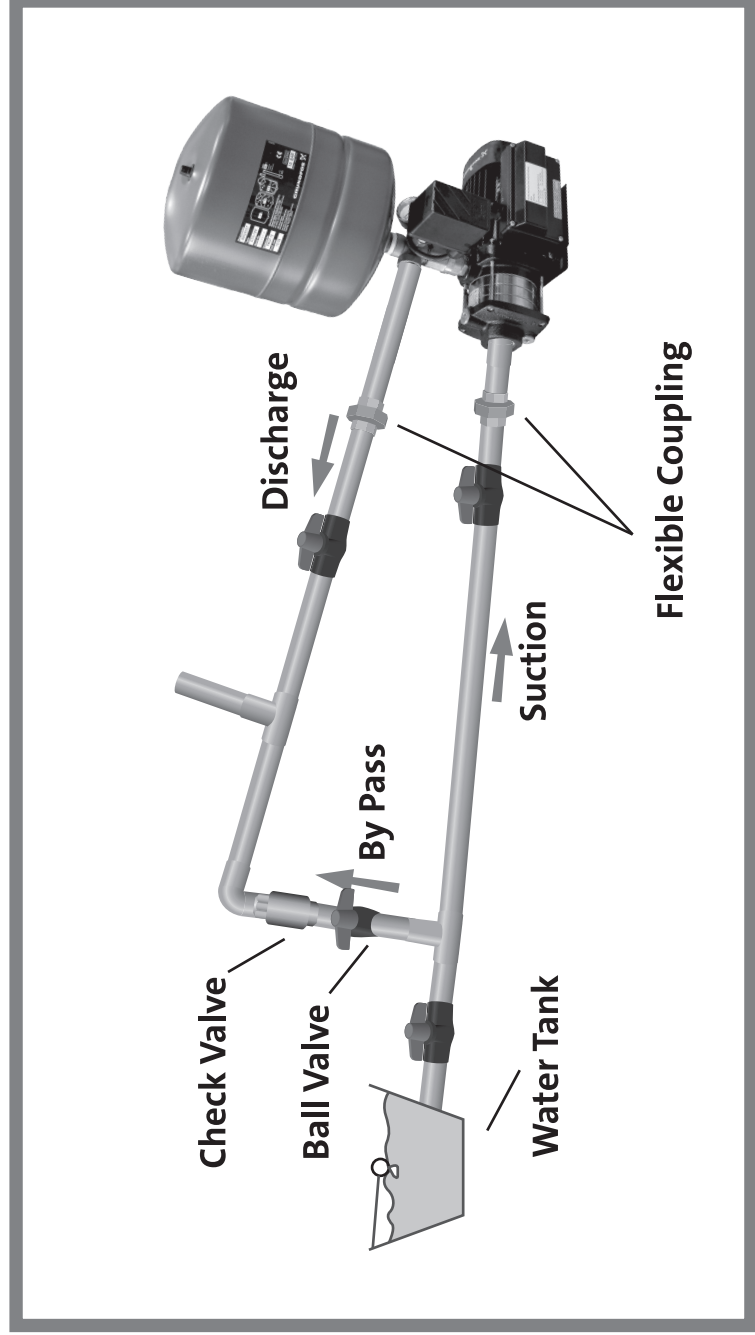


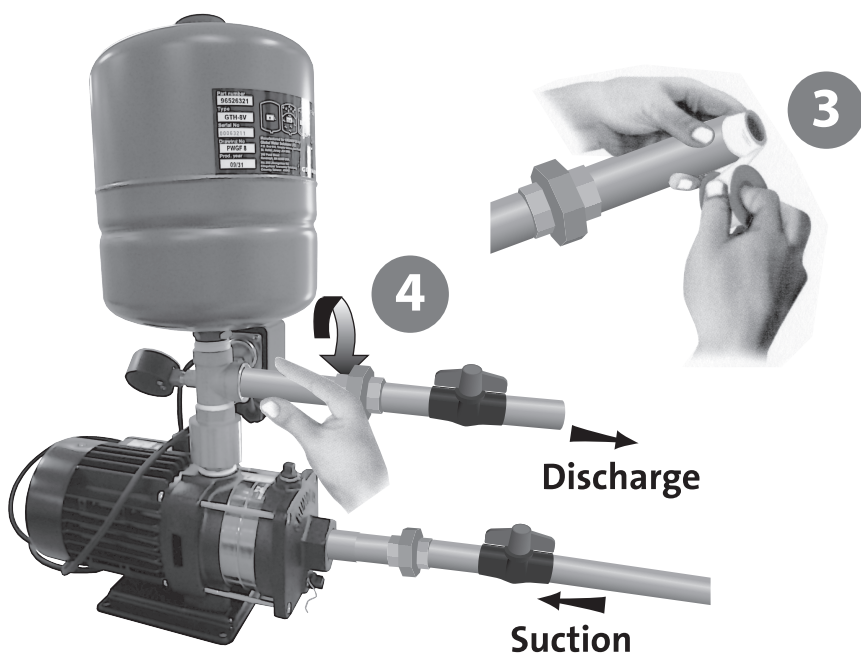
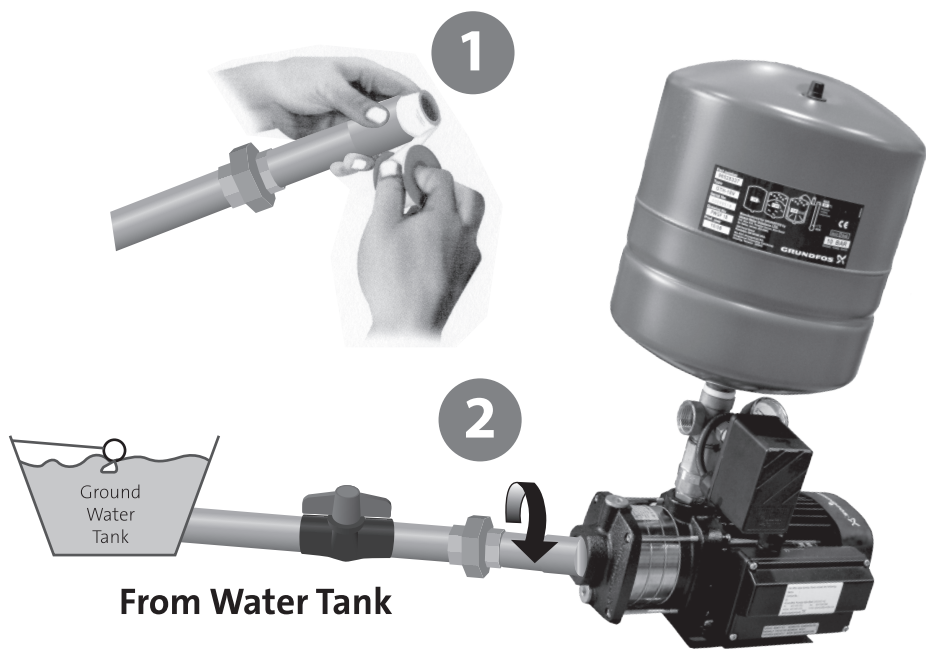
- Direct extraction from Goverment supply mains usually against regulation, therefore we recommend installation of suction tank as per installation 2

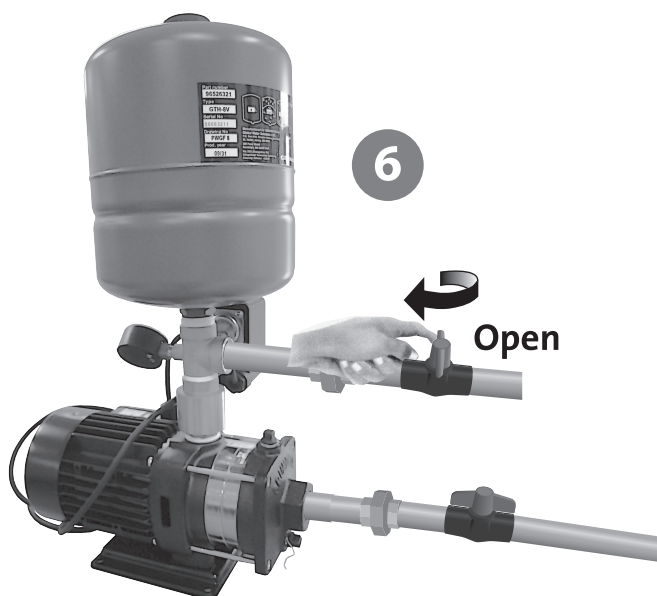
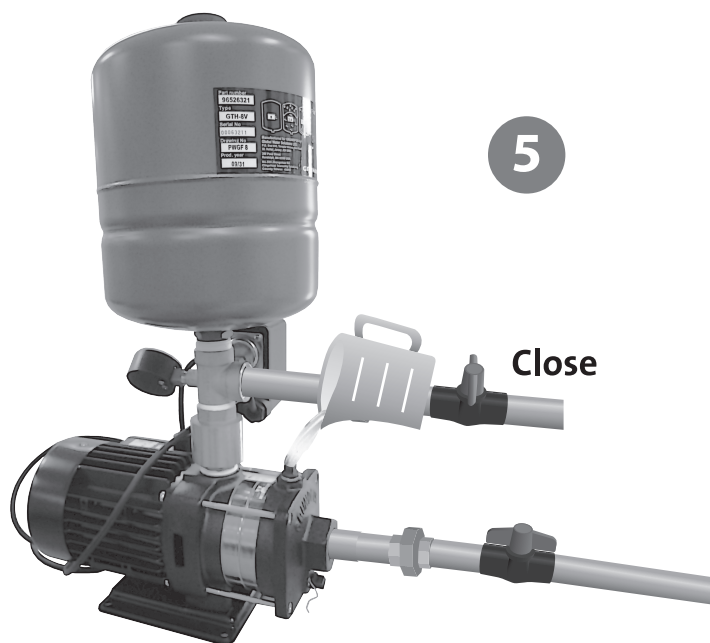
Points to note:

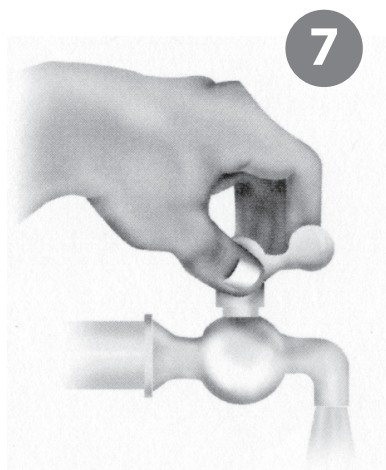
- Do not attempt to start the pump until both suction line and pump have been completely filled with water.
- Suction pipe to be as short as possible.
- Minimum pipe size to be the same as pump's inlet.

Overall Diagram

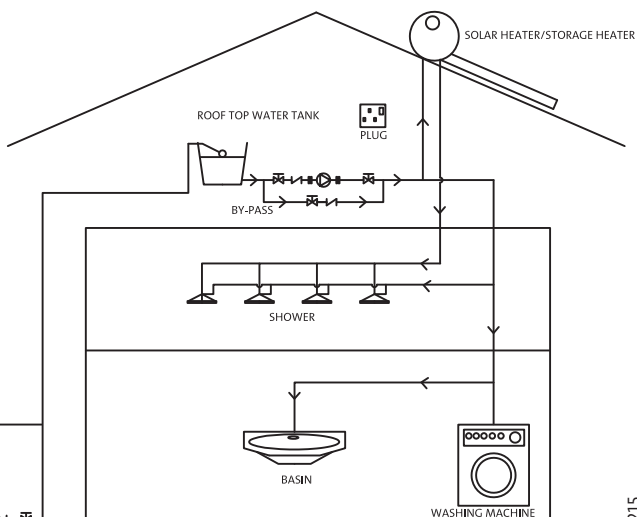
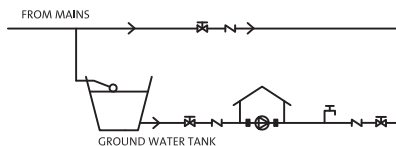
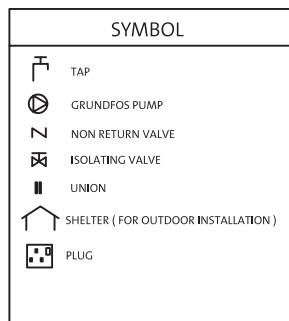








PROPER WAY TO INSTALL GRUNDFOS DOMESTIC WATER PUMP



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

Subject to alterations. CM-PT-0215

GRUNDFOS PUMPS SDN BHD (202527-A)

7, Jalan Peguam U1/25
Clenmarie 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 Tuanan Road,
88450 Inanam, Kota Kinabalu,
Sabah
Tel : +6088-380 663/-383 663
Fax : +6088-383 621

GRUNDFOS