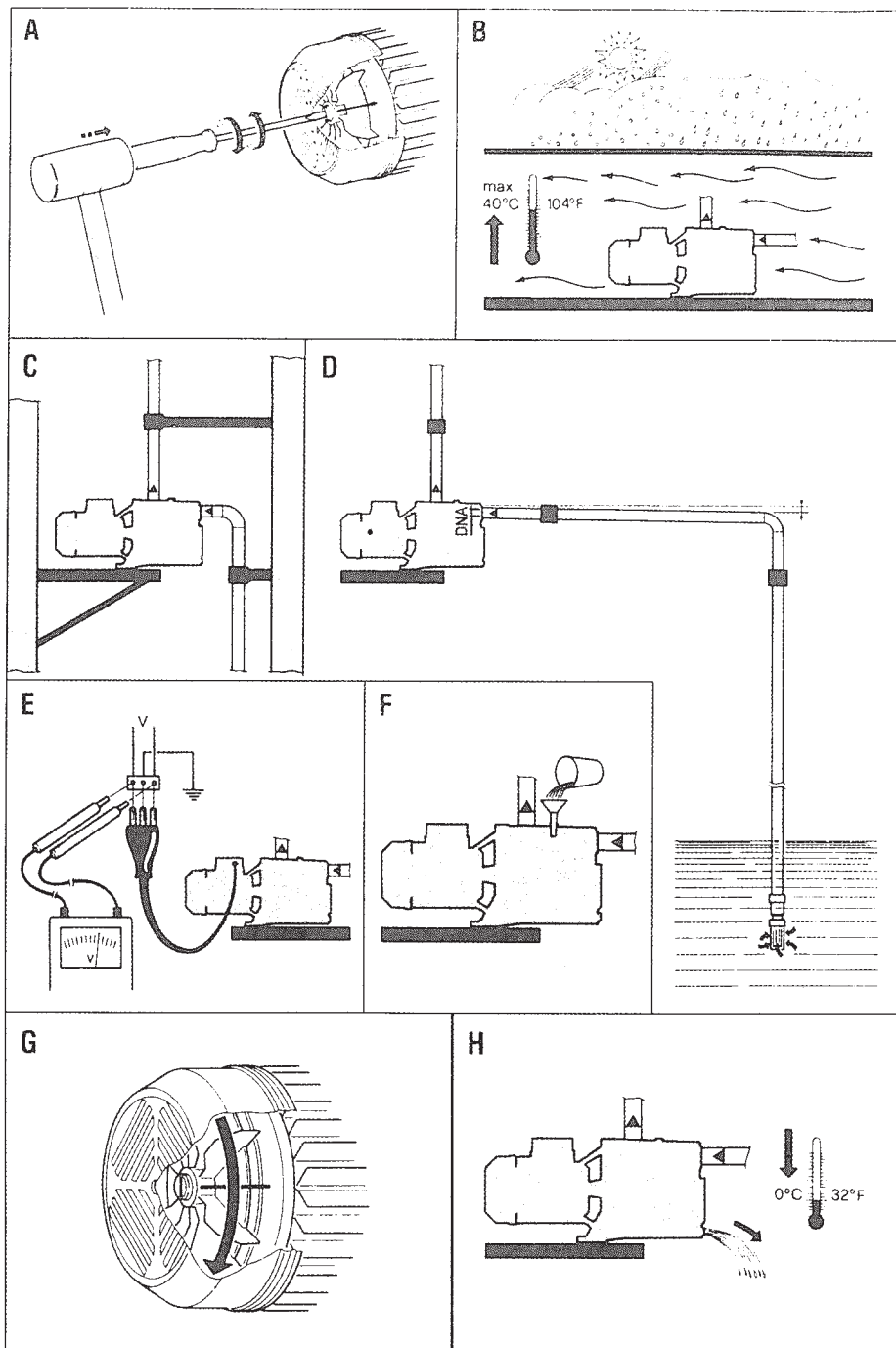


# PF BASIC PM1

## Installation and Operating Instructions





# CONTENTS

- 1. PF PUMP** 4 - 5
  - Applications
  - Pumped fluids
  - Technical data and limitations of use
  - Warnings
  - Installation
  - Electric connection
  - Starting up
  - Precautions
  - Maintenance and cleaning
  - Modifications and spare parts
  
- 2. PRESS CONTROL** 6 - 7
  - Applications
  - Technical data
  - Mode of operation
  - Installation
  - Electrical connection
  - Starting and maintenance
  
- 3. FAULT FINDING CHART** 8 - 9

## PF 1-30 Pump



**Read this documentation carefully before installation.** Installation and functioning must comply with the safety regulations in force in the country in which the product is installed. The entire operation must be carried out in a workmanlike manner.

Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

### APPLICATIONS

PF peripheral pump suitable for domestic use, with limited bulk, capable of generating high heads for water supply, small gardening jobs, draining and filling cisterns. Also suitable for small industrial uses.

### PUMPED LIQUIDS

**The machine has been designed and built for pumping water, free from explosive substances and solid particles or fibres, with a density of 1000 kg/m<sup>3</sup> and a kinematic viscosity of 1 mm<sup>2</sup>/s, and chemically non-aggressive liquids.**

### TECHNICAL DATA AND LIMITATIONS USE

#### Supply voltage

1 x 220-240 V, 50 Hz  
3 x 380-415 V, 50 Hz

#### Delivery

0.6 to 1.8 m<sup>3</sup>/h

#### Head up

33 m

#### Pumped liquid

clean, free from solid bodies or abrasive substances, non-aggressive.

#### Degree of motor protection

IP44

#### Degree of terminal board protection

IP44

#### Protection class

F

#### Cable clamp

PG 11 and/or PG 13.5, depending on models

#### Line fuses

4 A (for single phase)  
2 A (for three phase)

#### Max. operating pressure

6 bar (600 kPa)

#### Liquid temperature range

-10°C to +50°C

#### Storage temperature

-10°C to +45°C

#### Relative humidity of the air

Max. 95%

#### Noise level

Falls within the limits envisaged by EC Directive 89/392/EEC and subsequent modifications. Motor construction in conformity with standards CEI 2-3 pamphlet 1110 - CEI 61-69 (EN 60335-2-41)

### WARNINGS

1. Before installing the pump you must check that the rotating parts turn freely. For this purpose remove the fan cover from its seat in the motor end cover. Insert a screwdriver in the notch on the motor shaft from the ventilation side. If there is a blockage, turn the screwdriver, tapping it gently with a hammer. **Fig. A**
2. The Manufacturer does not vouch for correct operation of the pump if it is tampered with or modified.

### INSTALLATION

1. The electropump must be fitted in a well ventilated place, protected from unfavourable weather conditions and with an environment temperature not exceeding 40°C. **Fig. B**
2. A firm anchoring of the pump to the bearing surface favours the absorption of any vibrations caused by pump operation. **Fig. C**
3. Ensure that the metal pipes do not exert undue strain on the apertures, thus preventing deformations or breakages. **Fig. C**

## INSTALLATION

4. **It is always good practice to place the pump as close as possible to the liquid to be pumped.** The pump must be installed only in horizontal position. The internal diameters of the pipes must never be smaller than that of the mouth of the electropump. It is advisable to fit a foot valve on suction. **Fig. D** For suction depths of over four meters or with long horizontal stretches it is advisable to use an intake hose with a diameter larger than that of the intake aperture of the pump. To prevent the formation of air pockets, the intake hose must slope slightly upwards towards the pump. **Fig. D**
5. If the intake pipe is made of rubber or flexible material, always check that it is of the reinforced type to avoid throttling due to suction.

### ELECTRIC CONNECTION



**Caution! Always follow the safety regulations. Scrupulously follow the wiring diagrams inside the terminal board box.**

1. **Electric installation must be carried out by skilled and authorized electrician who accepts all the responsibility for the job.**
2. Ensure that the mains voltage is the same as the value shown on the motor plate and that there is the possibility of **MAKING A GOOD EARTH CONNECTION. Fig. E**
3. In fixed installation, International Safety Standards require the use of isolating switches with a fuse-carrier base.
4. Single-phase motors are provided with built-in thermal overload protection and may be connected directly to the mains. Three-phase motors must be protected with special remote-control motor-protectors calibrated for the current shown on the plate.

### STARTING UP

1. Before starting up, check that the pump is properly primed; fill it completely with clean water by means of the hole provided after having removed the filler cap on the pump body. This ensures that the mechanical seal is well lubricated and that the pump immediately starts to work regularly. **(Fig. F) Dry operation causes irreparable damage to the mechanical seal.** The filling cap must then be screwed back on carefully.
2. Switch on the power and check, on the three-phase version, that the motor is turning in the correct direction; this should be in a clockwise direction, looking at the motor from the impeller side. **Fig. G** If it is turning in the wrong direction, invert the connections of any two wires on the terminal board, after having disconnected the pump from the power mains.

### PRECAUTIONS

1. The electropump should not be started more than 20 times in one hour so as not to subject the motor to excessive thermal shock.
2. **DANGER OF FROST** : When the pump remains inactive for a long time at temperatures of less than 0°C, the pump body must be completely emptied through the drain cap. **Fig. H**, to prevent possible cracking of the hydraulic components. This operation is advisable even in the event of prolonged inactivity at normal temperature.
3. When starting after long periods of inactivity, the starting-up operations listed above must be repeated.

### MAINTENANCE AND CLEANING



In normal operation, the pump does not require any specific maintenance. However, it may be necessary to clean the hydraulic parts when a fall in yield is observed.

**The electropump must not be dismantled unless by skilled personnel in possession of the qualifications required by the regulations in force.** In any case, all repairs and maintenance jobs must be carried out only after having disconnected the pump from the power mains.

### MODIFICATIONS AND SPARE PARTS



**Any modification not authorized before hand relieves the manufacturer of all responsibility.**

All the spare parts used in repairs must be original ones and the accessories must be approved by the manufacturer so as to be able to guarantee maximum safety of the machines and systems in which they may be fitted.

# 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-runing 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.



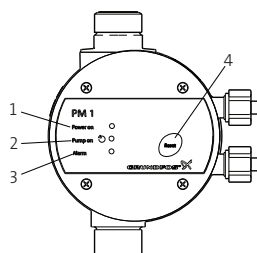
Never make any connections in the terminal box of the Presscontrol unless the electricity supply has been switched off.

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"> <li>• resetting fault indications</li> <li>• enabling and disabling of the anti-cycling function.</li> </ul>

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

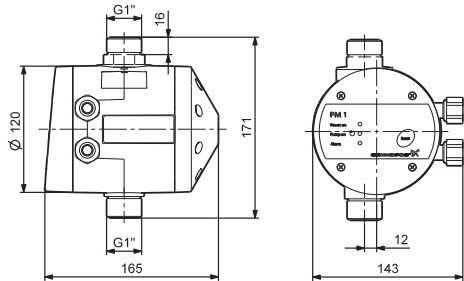
1. Keep [Reset] pressed for 3 seconds until "Power on" starts flashing.
2. Select whether the function should be enabled or disabled. Each press on [Reset] will change between enable and disable.  
 "Pump on" is off when the function is disabled  
 "Pump on" is on when the function is enabled.
3. Keep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

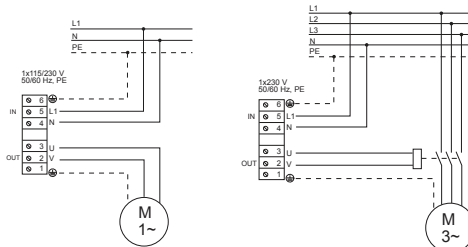
**Note** *In case of a very small consumption, the anti-cycling function may detect this as cycling and stop the pump inadvertently. If this occurs, the function can be disabled.*

Fig J



TM 03 9366 1708

Fig K



TM 03 9220 3707 - TM 04 1953 1508

# 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 <sub>N</sub> /I). 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.



**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](mailto:gfosmy1@grundfos.com)  
Website : [www.grundfos.com](http://www.grundfos.com)

**Toll Free No. : 1800 88 PUMP (7867)**



Branch Offices  
Northern  
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

