

MP200A, MP280A
**ENERGY-SAVING, A-RATED
CIRCULATING PUMP**
QUICK GUIDE



General information

The MP100A, MP200A and MP280 motor pumps are mostly applicable to the following systems:

- Stable and variable-flow heat supply system
- Variable-temperature pipeline heat supply system
- Heat supply system with night mode
- HVAC system
- Industrial circulation system
- Domestic heating and domestic water supply system

The MP series are equipped with permanent-magnet motor and differential pressure controller, capable of automatically & continuously adjusting motor performance to meet the actual needs of system. They also are equipped with control panel on the front for easy operation by users.

Advantages

1. Easy installation and start-up
Provided with self-adaptive mode AUTO

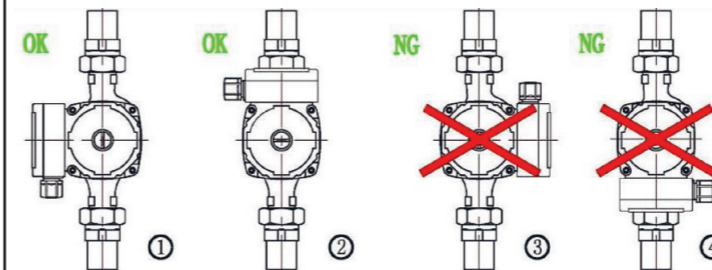
(Initial setting). In most cases, the motor pump needs no adjustment and can be readily started and automatically adjusted to meet the actual needs of the systems.

2. High-degree comfort
Low operational noise of motor pump and whole system.

3. Low energy consumption
Compared with traditional circulation motor pumps, it has lower energy consumption. SALUS MPA series circulation motor pump is attached with Europe Energy Label Class A marking, and the minimum energy consumption can reach up to 5W.



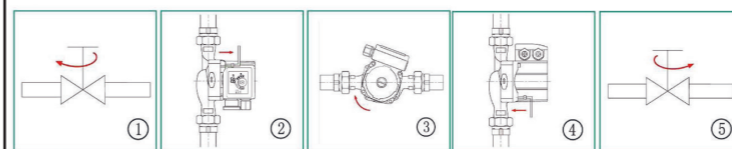
Position of Junction Box



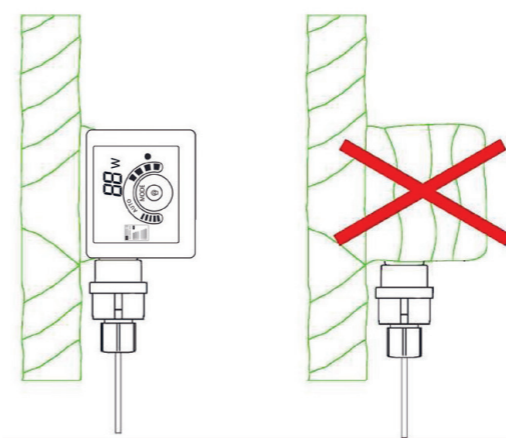
Changing the position of the junction box

The junction box can be rotated in a step of 90°. The procedures for changing the position of junction box are as follows:
1. Close the valves at the inlet and outlet and release the pressure.
2. Unscrew and remove the four socket head screws that fasten the pump body.
3. Rotate the motor to the expected position and align the four screw holes.
4. Install the four socket head screws again and fasten them clockwise.
5. Open the valves at the inlet and outlet.

Warning: Pumping liquid may be high-temperature and high-pressure; therefore, the liquid in the system must be completely drained or the valves on both sides of motor pump must be closed before removing the socket head screws.



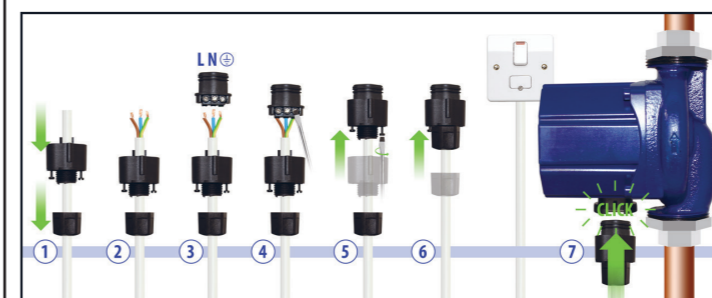
Thermal insulation of motor pump body



Limiting the heat loss of the motor pump body and pipeline using thermal insulation.

Do not insulate or cover the junction box and control panel.

Electrical connection

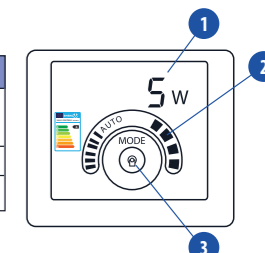


Warning: The motor pump must be earthed. The motor pump must be connected to an external power switch, and the minimum space between the electrodes must be 3 mm.

- SALUS MPA series circulation motor pump needs no protection from external motor.
- Check if the supply voltage and frequency are the same as parameters indicated on the nameplate of the motor pump.
- Connect the power supply to the plug supplied.
- After the power is supplied, the indicator lamp on the control panel is ON.

Controls on the Control Panel

Position	Descriptions
1	Monitor that displays the actual power consumption of motor pump in Watts.
2	Indication area of seven modes.
3	Button for setting operation modes of the motor pump.



Indication lamp area of power consumption of motor pump

After the power is connected, the monitor in Position 2 works. During operation, the indicated value is in Watt, showing the actual power consumption of the motor pump.

When the motor pump fails to work, the monitor indicates:

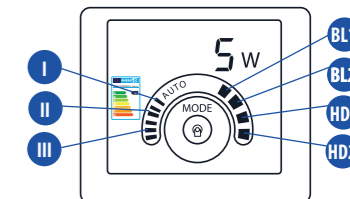
Fault code	Description
E1	Over-voltage protection
E2	Under-voltage protection
E3	Over-current protection
E4	Under-load protection
E2-E4	Open-phase protection

If malfunction is detected, the power supply must be cut off before troubleshooting. After the trouble is addressed, re-connect the power and start the motor pump.

Indication lamp area of motor pump setting

SALUS MPA - series circulation motor pump has eight settings which can be chosen with the button.

The motor pump settings are indicated with seven different indication areas.



Button times	Indication Lamp Area	Description
0	Auto (Initial setting)	Self-adaptive (Auto)
1	BL1	Lowest Proportional Pressure Curve
2	BL2	Highest Proportional Pressure Curve
3	HD1	Lowest Constant Pressure Curve
4	HD2	Highest Constant Pressure Curve
5	III	Constant Velocity Curve, Velocity III
6	II	Constant Velocity Curve, Velocity II
7	I	Constant Velocity Curve, Velocity I

Note: By pressing the button once at 2 seconds interval, the motor pump setting mode will change once. A cycle is constituted of every eight presses on the button.

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Introduction

The SALUS MPA series recirculation pumps are mainly used in heating and domestic hot water systems. This type of pump is able to automatically and continuously adjust the motor performance to meet the actual needs of the system.

Product Compliance & safety information

This product complies with the essential requirements and other relevant provisions of the Directives GPSR 2023/988/EU, EMC 2014/30/EU, LVD 2014/35/EU, RED 2025/183/EU and RoHS 2017/2102/EU. The full text of the EU Declaration of Conformity is available at the following internet address: www.saluslegal.com. These instructions apply only to the SALUS Controls model specified on the front cover of this manual and must not be used with other makes or models. Installation must be carried out by a qualified person in accordance with national and EU regulations.

Before you start

Always isolate the AC Mains supply before installing or working on any components that require 230 VAC 50Hz supply.

Contents of the box



Important notes

01. Read the installation manual carefully before installation and use.
02. SALUS will not be liable for any personal injury, pump damage and other property damage due to failure to comply with contents specified in safety warning signs.
03. The installers and operators must comply with all relevant local safety regulations.
04. The user must confirm that only qualified personnel with professional certification and proficiency of this manual is allowed to install and maintain this product.
05. The pump must not be installed in a place that is damp or may be splashed by water.
06. For convenient access of maintenance, a shut-off valve shall be installed on each side of the pump.
07. The power supply of the pump shall be cut off before installation and maintenance.
08. For domestic hot water, copper or stainless steel pump body shall be used.
09. Heat supply pipelines shall not be frequently filled with non-softened water so as to avoid increasing calcium in the circulating water inside the pipeline, which may thus block the impeller.
10. Do not start the pump without liquid.
11. Not suitable for drinking water.
12. The liquid may be high temperature and high-pressure; therefore, the liquid in the system must be completely drained or the shut-off valves on both sides, closed before moving and dismantling the pump to prevent burning.
13. If removing the vent plug, high temperature and high-pressure liquid will be overflow. Therefore, it is necessary to guarantee that the outflow liquid will not cause personal injury or damage other parts.
14. Ventilation must be ensured in summer or high ambient temperature period to avoid condensation that may cause electrical malfunctions.
15. In winter, the pump system does not work or when the ambient temperature drops below 0°C, liquid in the system shall be completely drained so as to avoid frost cracking of pump body.
16. If the pump is left unused for a long time, please close the pipe valve in the inlet and outlet of the pump and cut off the power supply.
17. If the flexible cord of cable is damaged, it must be replaced by a qualified person.
18. Please close the valve at the inlet of the pump and cut off power of the pump immediately if overheating and abnormality of motor is detected, and contact SALUS technical helpline immediately.
19. This product shall be put in a place out of reach of children. After installation, take an isolation measures to avoid access of children.
20. This product shall be stored in a dry, well ventilated and cool place under room temperature.

Operating conditions

Ambient temperature: 0°C~+40 °C
Max. humidity: 95%
Liquid delivery temperature: +2 °C~ 110 °C
Maximum pressure: 1.0Mpa(10bar)
Degree of Protection: IP42

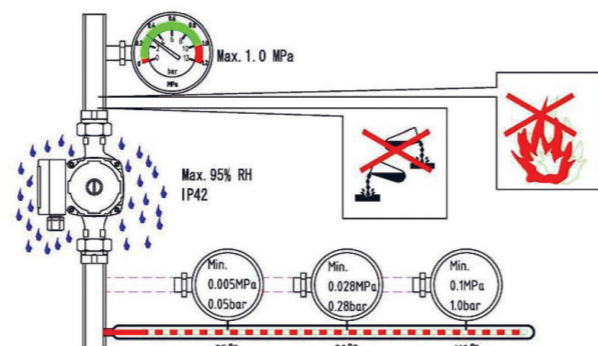
To avoid condensation in control box and the stator, the temperature of liquid pumped by the motor pump must be always higher than ambient temperature.

Inlet pressure

Liquid Temperature	<80°C	90°C	110°C
Inlet pressure	0.05bar 0.5m head	0.28bar 2.8m head	1 bar 10m head

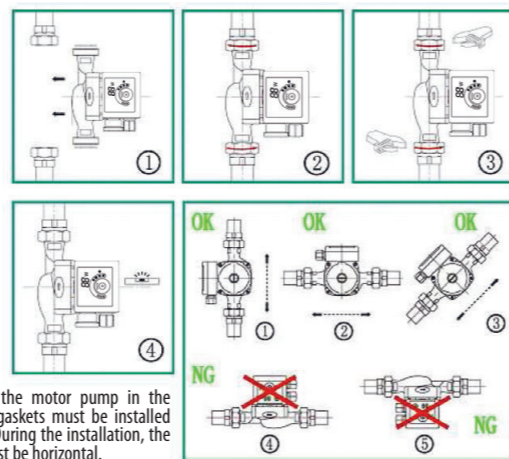
Pumping liquid

The pumping liquid includes thin, clean, non-corrosive and non-explosive liquid which shall not contain any solid particles, fiber or mineral oil, and the pump must definitely not be used to pump inflammable liquid such as rapeseed oil and gasoline. If the pump is used in a place with relatively high viscosity, the pump has lower performance. So when choosing a pump, the viscosity of liquid must be taken into account.



Installation

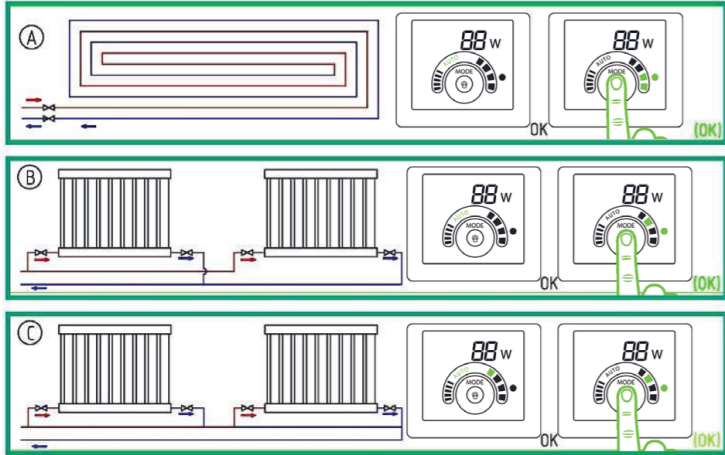
When installing SALUS MPA series circulation pump, the arrow on motor pump case indicates the flow direction of liquid through the pump.



Note: When installing the motor pump in the pipeline, two supplied gaskets must be installed at the inlet and outlet. During the installation, the shaft of motor pump must be horizontal.

Setting the pump

Pump settings based on system type



Initial setting = AUTO (self-adaptive mode)

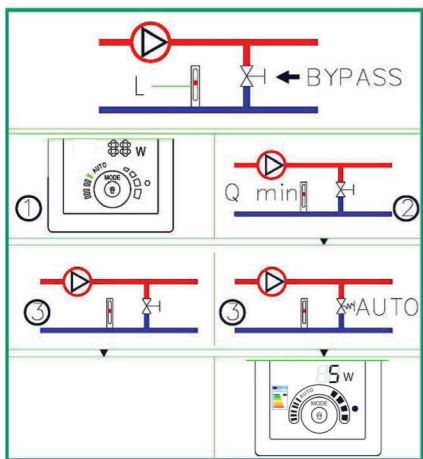
Recommended and available pump setting

Position	System type	Motor Pump Setting	
		Recommended	Options
A	Floor heating system	AUTO	HD1, HD2
B	Dual pipeline heating system	AUTO	BL2
C	Single pipeline heating system	BL1	BL2

- AUTO (Self Adaptive Mode) mode can adjust the performance of motor based on the actual heat demand of the system. As the performance is adjusted gradually, it is suggested, before changing motor pump setting, to maintain AUTO (Automatically Adaptive Mode) mode setting for at least one week.
- If you select to change back to AUTO (Self Adaptive Mode) mode, the SALUS MPA series motor pump can memorize its last setting in AUTO mode and continue adjusting the performance automatically.
- It may take several minutes or even hours to reach the optimum operation mode after motor pump setting is changed from the optimal setting (the "Recommended above" mode) to other optional setting. If the optimal setting of motor pump fails to enable each room to obtain desired heat distribution, then you should change the motor pump setting to other settings.

Bypass valve system installed between the inlet pipeline and return pipeline

Purposes of the bypass valve



The purpose of bypass valve: when all the valves and/or temperature-sensing valves of heat radiator in the floor heating loop are closed, it can ensure that the heat from boiler can be distributed.

Elements in the system:

- bypass valve
- flow meter, position L

When all valves are closed, the minimum flow rate must be guaranteed.

The setting of pump position depends on the type of bypass valve, i.e. manual bypass valve or temperature-sensing bypass valve.

Purposes of the bypass valve

In accordance with the following procedures:

- When regulating bypass valve, the pump shall be in Setting I (Velocity I Mode). The minimum flow rate (Q) of the system shall be always guaranteed. Please refer to bypass valve manual provided by the manufacturer.
- After the regulating of bypass valve completes, set the pump in accordance with the pump settings described in the tables that follow.

Automatic bypass valve (temperature-sensing type)

Use the following procedures:

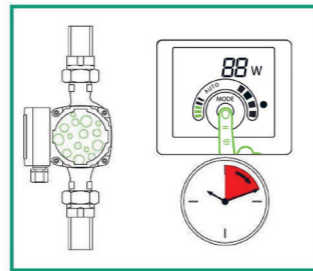
- When regulating bypass valve, the pump shall be in Setting I (Velocity I Mode). The minimum flow rate (Q min) of the system shall be always guaranteed. Please refer to bypass valve manual provided by the manufacturer.
- After the regulating of bypass valve completes, set the pump to lowest or highest constant pressure mode.

Startup procedure

Pump settings based on system type

Before starting the motor pump, ensure that the system is filled with liquid, air has been completely exhausted, and the inlet of motor pump must reach minimum inlet pressure.

Exhaust the Motor Pump

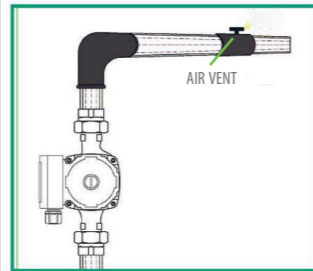


The SALUS MPA series motor pump is equipped with self-venting function. Before the start up, it is not necessary to vent the air. Air in the motor pump may cause noise. After the motor pump is put into operation for several minutes, the noise will disappear.

Based on the system scale and structure, set the SALUS MPA series motor pump to Velocity III for a short period of time and air in the pump can be quickly vented. After air is vented from the motor pump and noise disappears, set the motor pump in accordance with the manual.

Warning! The motor pump cannot run at idle speed without pumping liquid.

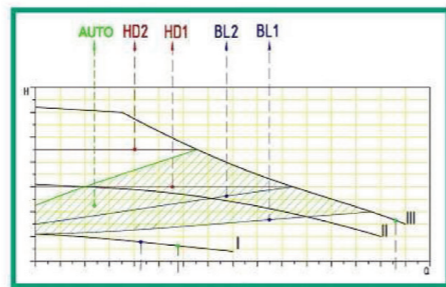
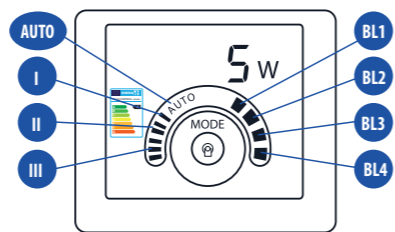
Vent the heating system



Warning! Make sure that the system and pump are correctly vented.

Motor pump setting and performance

Relations between pump setting and performance



Setting	Pump Characteristics Curve	Functions
AUTO (Initial Setting)	Highest to Lowest Proportional Pressure Curve	AUTO function will automatically control the pump performance within the specified scope. Adjust pump performance based on system scale; adjust pump performance based on load variance within a period of time; Under the AUTO mode, the pump will be set to proportional pressure control;
BL1	Lowest Proportional Pressure Curve	The operating point of the pump will move up and down on the lowest proportional pressure curve based on the demand of system flow rate. When flow demand decreases, the pressure supply of pump drops; when flow demand increases, the pressure supply of pump rises.
BL2	Highest Proportional Pressure Curve	The operating point of the pump will move up and down on the highest proportional pressure curve based on the demand of system flow rate. When flow demand decreases, the pressure supply of pump drops; when flow demand increases, the pressure supply of pump rises.

Setting	Pump Characteristics Curve	Functions
HD1	Lowest Constant Pressure Curve	The operating point of the pump will move around the lowest constant pressure curve based on the demand of system flow rate. The supply pressure of pump remains constant and it is irrelevant with the flow rate.
HD2	Highest Constant Pressure Curve	The operating point of the pump will move around the highest constant pressure curve based on the demand of system flow rate. The supply pressure of pump remains constant and it is irrelevant with the flow rate.
III	Velocity III	It runs on the constant curve in a constant velocity. In the Velocity III mode, the pump is set to work on the highest curve under all working conditions. Setting the pump as Velocity III mode within short period of time can quickly vent the pump.
II	Velocity II	It runs on the constant curve in a constant velocity. In the Velocity II mode, the pump is set to work on the intermediate curve under all working conditions.
I	Velocity I	It runs on the constant curve in a constant velocity. In the Velocity I mode, the pump is set to work on the intermediate curve under all working conditions.

Motor pump setting and performance

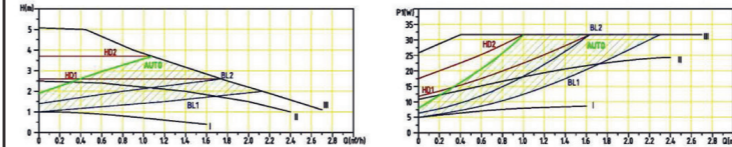
Guide on Performance Curve

Every setting of the motor pump has corresponding performance curve (Q/H curve). However AUTO (Self Adaptive Mode) mode covers just one performance scope. The area of PWM signal control performance curve (Q/H curve) is between motor pump velocity I-III. The input power curve (P1 curve) belongs to every Q/H curve. Power curve represents the power consumption of motor pump in given Q/H curve with Watt as the unit. P1 value corresponds to the readings taken from the monitor of motor pump.

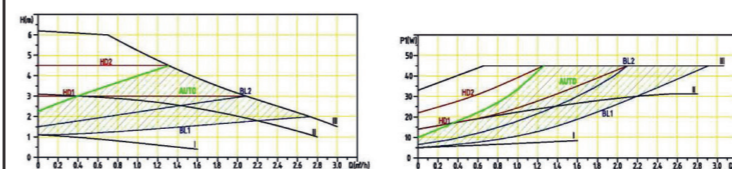
Curve conditions

- The followings are applicable to the performance curve specified in the SALUS MPA series manual:
- Test liquid: air-free water.
- Applicable density of curve $\rho=983.2 \text{ kg/m}^3$, and liquid temperature $+60^\circ\text{C}$.
- All curves represent averaged value, and shall not be used as guarantee curve.
- If a specific performance is needed, then separate measuring shall be conducted.
- Velocity I, II, III curves have all been marked.
- The applicable Kinetic viscosity of the curve $\nu=0.474 \text{ mm}^2/\text{s}$ (0.474cSt)

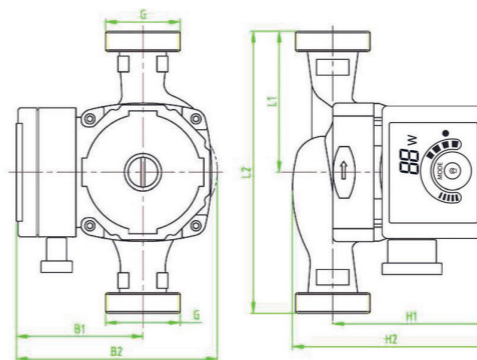
Salus MP100A Performance Curve



Salus MP200A/MP280A Performance Curve



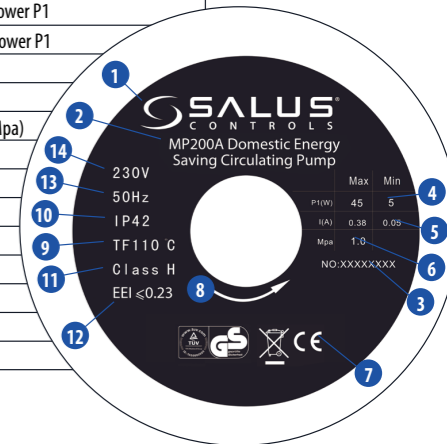
Installation dimensions (mm)



MP100A (5-32W): L1 (65), L2 (130), B1 (82), B2 (130), H1 (103), H2 (130)
 MP200A (5-45W): L1 (65), L2 (130), B1 (82), B2 (130), H1 (103), H2 (130)
 MP280A (5-45W): L1 (90), L2 (180), B1 (82), B2 (130), H1 (103), H2 (130)

No.	Description
1	Manufacturer Name
2	Product Model
3	Product No.
4	Power (Watt)
5	Current (Amp)
6	Maximum system load bearing (Mpa)
7	Authentication mark
8	Direction of rotation
9	Temperature class
10	Degree of protection
11	Insulation class
12	Energy Index
13	Frequency (Hz)
14	Voltage (v)

Features



Technical parameters

Power Supply Voltage	230V AC 50Hz	
Motor Protection	The pump needs no external protection	
Degree of Protection	IP42	
Insulation Class	H	
Relative Humidity(RH)	Max. 95%	
System Load Bearing	1.0 MPa	
Suction Port Pressure	Liquid Temperature	Minimum Inlet Pressure
	$\leq +85^\circ\text{C}$	0.005 MPa
	$\leq +90^\circ\text{C}$	0.028 MPa
	$\leq +110^\circ\text{C}$	0.100 MPa
EMC Standard	EN61000-6-1 and EN61000-6-3	
Sound Pressure Class	The sound pressure level of pump is lower than 43dB (A)	
Ambient Temperature	0 - 40°C	
Temperature Grade	TF110	
Surface Temperature	The maximum surface temperature is not higher than $+125^\circ\text{C}$.	
Liquid Temperature	2 - 110°C	

Note: To prevent condensation in the junction box and rotor, the temperature of pumping liquid of the motor pump must be always higher than ambient temperature.

Ambient temperature °C	Liquid temperature	
	Min (°C)	Max (°C)
0	2	110
10	10	110
20	20	110
30	30	110
35	35	90
40	40	70

For domestic hot water, it is suggested that water temperature should remain below 65°C to reduce scaling.

Troubleshooting

No.	Problem/Symptom	Cause	Solution/Corrective Action
1	The pump is not working	Blown fuse, check circuit breaker or pump failure	Replace the fuse, turn on the switch or replace the pump.
2	Symbol on the display	No power, blocked pump, electrical protection	Check the voltage, remove contamination, turn off the power and clear the error after repair.
3	Noise in the installation	Air in the system / too much efficiency	Vent the system / reduce the lifting height (change the pump setting)
4	Loud pump operation	Air in the pump / Inlet pressure too low	Leave the pump running (it will bleed itself) / Increase the inlet pressure
5	No thermal efficiency	Insufficient pump performance	Increase lifting height (change pump operating mode)
6	Dry work	No liquid in the system	Never run the pump without fluid. Prime the system before starting
7	Cavitation phenomena or overheating	Inlet pressure too low or airlock	Check the pressure and bleed the system
8	Condensation in the control box	Fluid temperature too low in relation to the environment	The liquid must be at a temperature higher than the surroundings
9	Increase in system pressure (all valves closed)	No bypass valve	Install a manual or automatic bypass valve
10	Failure after long downtime	No power, flooding, corrosion	Disconnect power and close valves during long periods of non-use, store in a dry place