

GPA-II BL Series

Energy-saving Pipeline Canned
Motor Pump

Installation and
Operation Manual



CE RoHS $EI \leq 0.20$

Notes:

01. Read the installation manual carefully before installation and use.
02. The manufacturer 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 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. Some models are 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 must be closed before moving and dismantling the pump to prevent burning.
13. If removing the exhaust bolt, high-temperature and high-pressure liquid will be overflow. Therefore, it is necessary to insure 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 your vendor or service center immediately.

19. If trouble cannot be addressed according to the manual, please close the valves on the inlet and outlet of the pump immediately, cut off power supply and contact your vendor or service center immediately.
20. This product shall be put in a place out of reach of children. After installation, take an isolation measures to avoid access of children.
21. This product shall be stored in a dry, well ventilated and cool place under room temperature.



Warning

Before installation, you must carefully read the installation and operation manual. The installation and use of the equipment must comply with local regulation and applicable operation standards.



Warning

Those who have weak physical strength, react slowly or lack experience and knowledge (including children) can use this motor pump only under the monitoring and direction of his/her safety personnel.

1. Signs



Warning

Failure to comply with this safety instruction may lead to personal injury!

Caution

Failure to comply with this safety instruction may lead to equipment malfunction or damage!

Note

Note or instruction for easy and safe operations.

2. General

2.1. GPA-II BL series circulation motor pump is mainly used in domestic heating and hot water system.

The product is most 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

This pump is equipped with permanent-magnet motor and differential pressure controller, capable of automatically & continuously adjusting motor performance to meet the actual needs of system.

This pump is equipped with control panel on the front for easy operation by users.

2.2. Advantages

Easy installation and start-up

- Provided with selfadaptive mode ATUO

(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.

High-degree comfort

- Low operational noise of motor pump and whole system.

3. Operating Conditions

3.1. Ambient Temperature

Ambient temperature: 0 °C ~+ 40 °C

3.2. Relative humidity(RH):

Max. humidity: 95%

3.3. Medium (liquid delivery) temperature

Liquid delivery temperature: +2 °C ~110 °C

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.

3.4. System Pressure

Maximum pressure 1.0MPa(10bar).

3.5. Degree of Protection

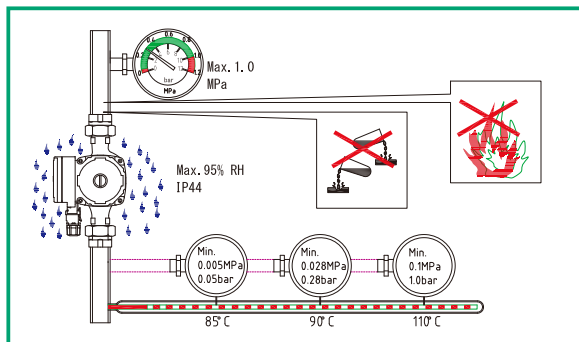
IP 44

3.6. Inlet Pressure

Liquid Temperature	< 85°C	90°C	110°C
Inlet Pressure	0.05bar	0.28bar	1bar
	0.5m head	2.8m head	10m head

3.7. Pumping Liquid

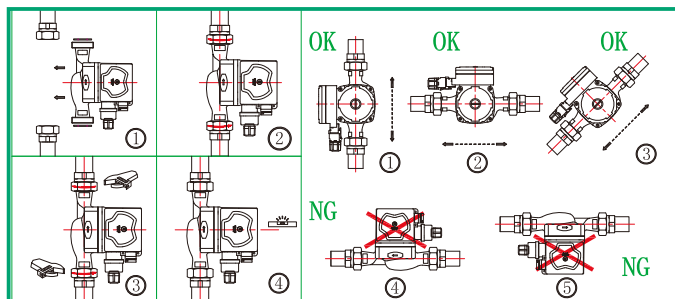
The pumping liquid includes thin, clean, non-corrosive and non-explosive liquid which shall not contain any solid particles, fiber or mineral oil, and the pump must definitely not be used to pump inflammable liquid such as rapeseed oil and gasoline. If the pump is used in a place with relatively high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



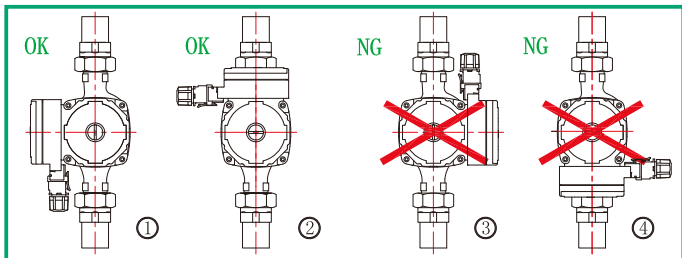
4. Installation

4.1. Installation

- When installing GPA-II BL series circulation pump, the arrow on motor pump case indicates the flow direction of liquid through the pump.
- 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.



4.2. Position of Junction Box

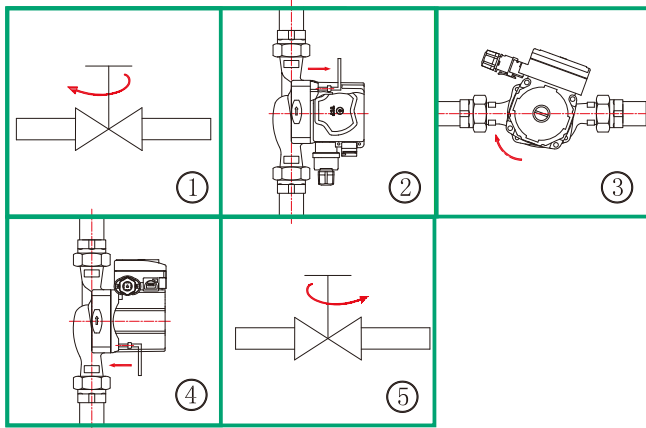


4.3. Changing Position of Junction Box

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.

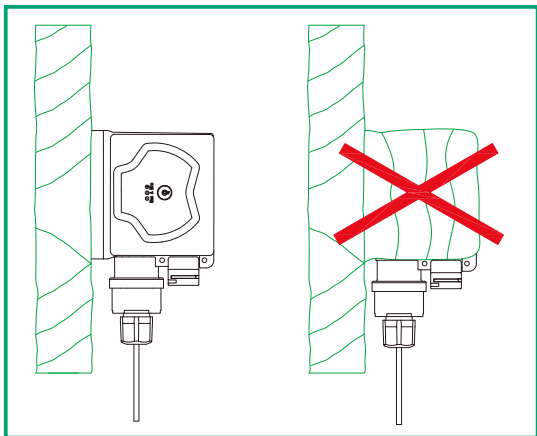




Warning

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.

4.4. Thermal Insulation of Motor Pump Body



Note

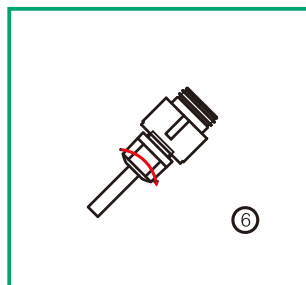
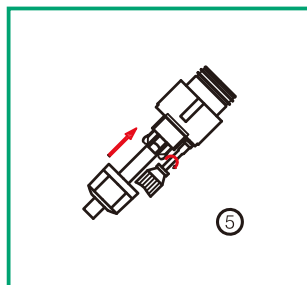
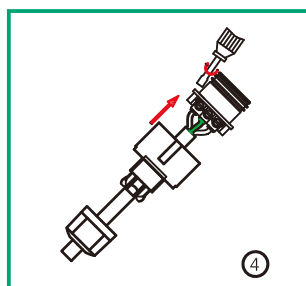
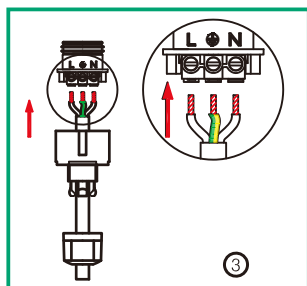
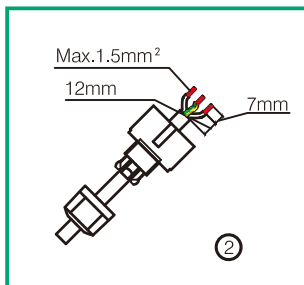
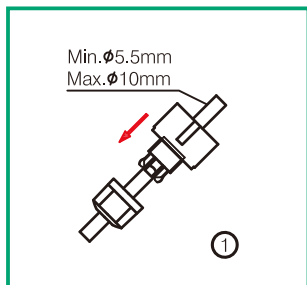
Limiting the heat loss of motor pump body and pipeline.

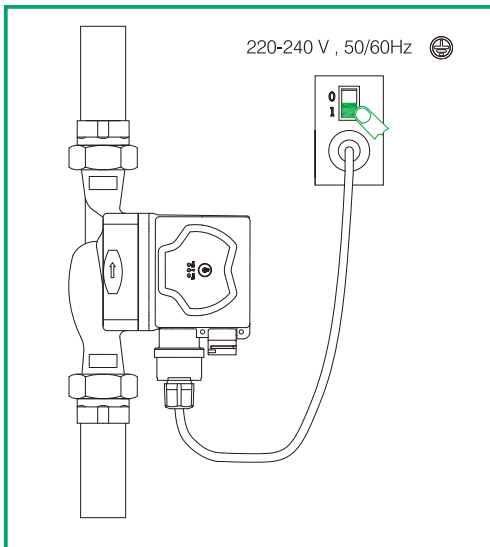
Motor pump body and pipeline should be thermally insulated to reduce their heat loss.

Caution

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

5. Electrical Connection





Electrical connection and protection shall comply with local codes and norms.



Warning

The motor pump must be earthed .

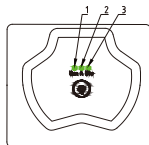
The motor pump must be connected to an external power switch, and the minimum space between all the electrodes is 3mm.

- GPA-II BL 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 motor pump and power supply with the plug supplied together with the pump.
- After the power is supplied, the indicator lamp on the control panel is ON.

6. Control Panel

6.1. Controls on Control Panel

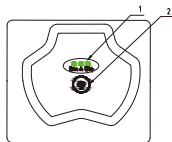
Position	Descriptions
1	Indication lamp area of three operation modes set by motor pump.
2	Button for setting operation modes of the motor pump.



6.2. Indication Lamp Area of Motor Pump Setting

GPA-II BL series circulation motor pump has three settings which can be chosen with the button.

The motor pump settings are indicated with three different indication lamp areas.



Button Times	Indication Lamp Area	Descriptions
0	AUTO (Initial setting)	Self-adaptive (AUTO)
1	MIN	Constant Speed Curve, Velocity Min
2	MAX	Constant Speed Curve, Velocity Max

6.3. Button for selecting motor pump settings

By pressing the button once at 2 seconds interval, the motor pump setting mode will change once.

A cycle is constituted of every three presses on the button. For details, please refer to Section 6.2.

7. Motor Pump Setting

7.1. Motor Pump Setting Based on System Type

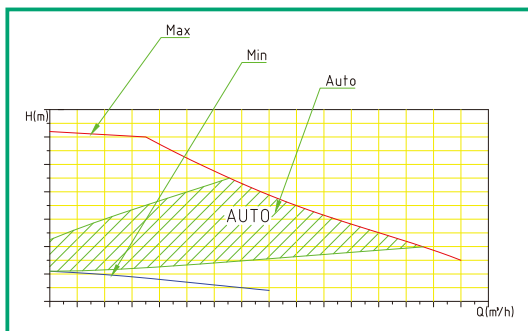
Initial setting= AUTO (Self-adaptive mode)

Recommended and available pump setting

- AUTO (Self Adaptive Mode) mode can adjust the performance of motor pump 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 GPA 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 optimal operation mode after motor pump setting is changed from the optimal setting (the "Recommended abovevention") 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.
- Please refer to Section 8.1 for the relations between pump setting and performance curve.

8. Motor Pump Setting and Performance

8.1. 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;
Max	Velocity Max	It runs on the constant curve in a constant velocity. In the Velocity Max mode, the pump is set to work on the highest curve under all working conditions.
Min	Velocity Min	It runs on the constant curve in a constant velocity. In the Velocity Min mode, the pump is set to work on the lowest curve under all working conditions.

9. Performance Curve

9.1. 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 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.

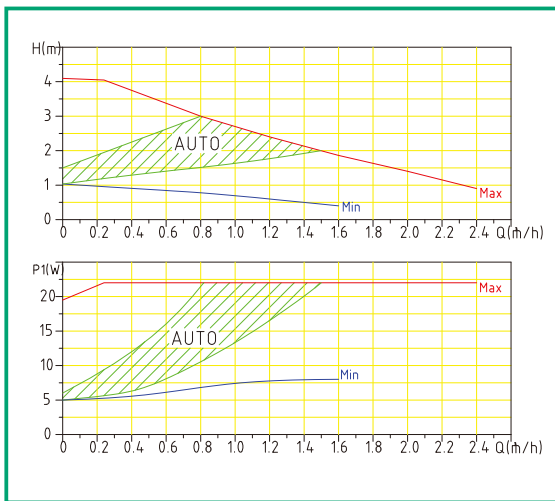
9.2. Curve conditions

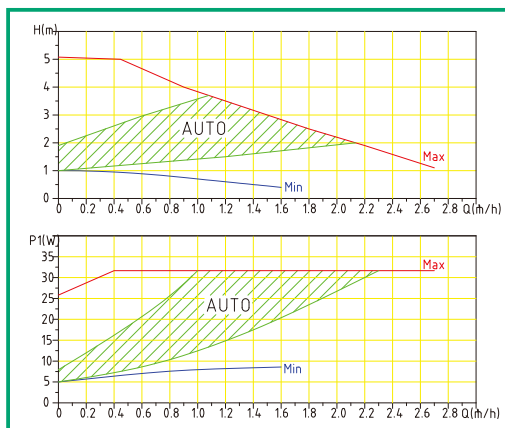
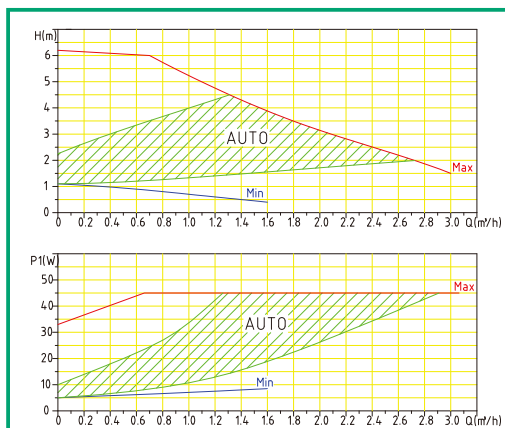
The followings are applicable to the performance curve specified in the GPA-II BL series manual:

- 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 Max, Min curves have all been marked.
- The applicable Kinetic viscosity of the curve $\nu=0.474 \text{ mm}^2/\text{s}(0.474\text{CcST})$

9.3. Performance Curve

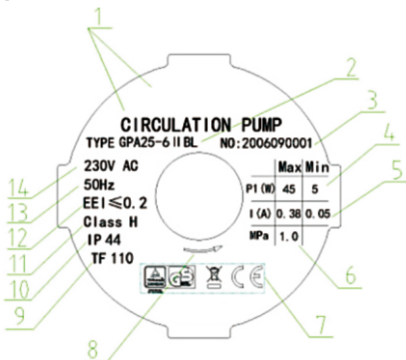
GPA-II BL $\times\times$ -4 II Series



GPA-II BL $\times \times$ -5 II SeriesGPA-II BL $\times \times$ -6 II Series

10. Features

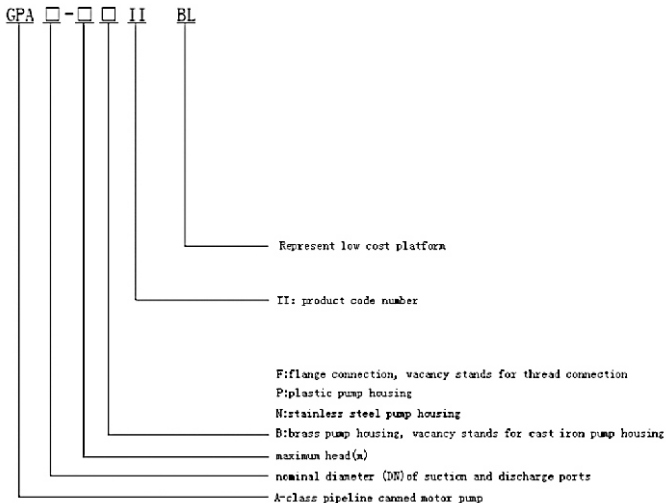
10.1. Nameplate Instructions



No.	Descriptions	
1	Manufacturer Name	
2	Product Model	
3	Product No.	Digit 1 to digit 6 indicates manufacturing date
		Digit 7 to digit 10 indicates serial number
4	Power (Watt)	Minimum input power P1
		Maximum input power P1
5	Current (Amp)	Minimum current
		Maximum current
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 Efficiency Index	
13	Frequency (Hz)	
14	Voltage (V)	

10.2. Model Instructions

The model of motor pump is composed of capitalized Latin letters and Arabic numbers, which means:



Model Example: Model Example: GPA25-6B II BL means the inlet and outlet diameter of pump is DN25, maximum head 6m, copper pump body, II series, low cost platform.

11. Technical Parameters and Installation Dimensions

11.1. Technical Parameters

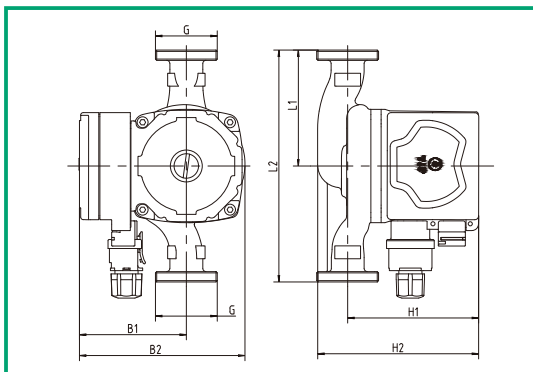
Power Supply Voltage	220V-240V,50/60Hz,PE	
Motor Protection	The pump needs no external protection	
Degree of Protection	IP 44	
Insulation Class	H	
Relative Humidity (RH)	Max. 95%	
System Load Bearing	1.0 MPa	
Suction Port Pressure	Liquid Temperature	Minimum Inlet Pressure
	≤+ 85°C	0.005 MPa
	≤+ 90°C	0.028 MPa
	≤+ 110°C	0.100 MPa
EMC Standard	EN61000-3-2 and EN61000-3-3	EN55014-1 and EN55014-2
Sound Pressure Class	The sound pressure level of pump is lower than 42dB(A)	
Ambient Temperature	0~+ 40°C	
Temperature Grade	TF110	
Surface Temperature	The maximum surface temperature is not higher than +125°C	
Liquid Temperature	+ 2~+ 110°C	

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.

11.2. Installation Dimensions



Power (W)	Product Model	Material of Pump Body				Dimension (mm)							
		Cast Iron	Plastic	Copper	SS	L1	L2	B1	B2	H1	H2	G	
22	GPA20-4P II BL		●			65	130	82	128	103	130	1"	
	GPA20-4 II BL	●		●	●	65/75	130/150	82	130	103	127		
	GPA25-4 II BL	●		●	●	65/75/90	130/150/180	82	130	103	130		1½"
	GPA32-4 II BL	●				90	180	82	130	102	132		2"
32	GPA20-5P II BL		●			65	130	82	128	103	130	1"	
	GPA20-5 II BL	●		●	●	65/75	130/150	82	130	103	127		
	GPA25-5 II BL	●		●	●	65/75/90	130/150/180	82	130	103	130		1½"
	GPA32-5 II BL	●				90	180	82	130	102	132		2"
45	GPA20-6P II BL		●			65	130	82	128	103	130	1"	
	GPA20-6 II BL	●		●	●	65	130	82	130	103	127		
	GPA25-6 II BL	●		●	●	65/75/90	130/150/180	82	130	103	130		1½"
	GPA32-6 II BL	●				90	180	82	130	102	132		2"

12. Trouble-Shooting Schedule



Warning

Before conducting any maintenance and repair of the motor pump, ensure that power supply has been cut off and will not be connected accidentally.

Symptom	Control Panel	Cause	Corrective Action
Motor pump cannot be started	Indication lamp "Off"	Equipment fuse burned	Replace the fuse
		The circuit breaker of current control or voltage control opens	Connect the circuit breaker
		Failure of motor pump	Return to factory maintenance
	Flicker one time	High voltage	Check whether power supply is in specified range
	Flicker two time	Under voltage	Check whether power supply is in specified range
	Flicker three time	PCB component failure or motor failure	Return to factory maintenance
	Flicker six time	No water in the pump	Open the valve and supply water to the pump
	Flicker four time	Missing phase protection	Return to factory maintenance
Flicker five time	Rotor blocked	Remove the pump housing and clean the rotor	