



CIRCULATION PUMP

APUMP+

Energy-saving Pipe Canned Motor Pump Installation and Operating Instructions



CE RoHS EEI≤0.23

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 maintaince, 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 maintainace.
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.
22. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



Warning

Before installation, it's necessary to read the instruction of installation and operation carefully. The pump's installation and application must meet local regulations and comply with good operating rules.



Warning

People (including children) who is short of experience and relative professional knowledge, or feels his/her physical strength reduced, reaction slow or obnubilation can operate this pump under the guide of personnel who is responsible for the security.

1. Mark Description



Warning

The Operator will be injured without complying with such security description!

Caution

The pump will be damaged or break down without complying with such security description!

Note

To explain or describe how to operate or work in security.

2. Summarization

2.1. APUMP+ series motor pump is mainly applied to home heating and water circulation in domestic hot water system

The best system met APUMP+ Series circulator pump, following:

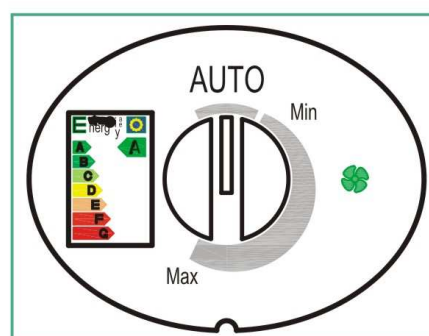
- the constant and variable flow heat system
- the heat system of variable pipeline temperature
- the air-conditioning system
- the industrial circulation system
- the home heating and living water system

APUMP+ series motor pump has the permanent magnet motor and the differential pressure controller, which can continuously adjust pump performance to meet actual requirements of the system.

The control panel installed in the front of APUMP + series motor pump is convenient to operate for users.

2.2. Advantages to Install APUMP+ series motor pump Install and start the pump easily

- APUMP+ series motor pump has AUTO mode (factory settings), so the pump usually can start without any adjustments and can meet the requirements of the system automatically.
- Low noise of the pump's and the whole system's operation.
Low power consumption
- Comparing to the traditional circulator pumps, APUMP+ series motor pump can consume low the power, and sticks European energy efficiency A mark that means the lowest power consumption can reach 5W.
- circulator pump can consume low the power, with the $EEI \leq 0,23$
- The benchmark for most efficient circulators is $EEI \leq 0,20$



3. Conditions

3.1. Environmental Temperature

Ambient temperature: 0°C ~ +40°C

3.2. Relative humidity of air (RH) :

Max. humidity: 95%

3.3. Medium (the liquid) temperature

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

In order to prevent condensate water in the control box and the stator, the liquid temperature transferred by the pump must be always higher than environmental temperature.

3.4. The System Pressure

The maximum pressure 1.0Mpa(10bar).

3.5. Protection grade

IP42

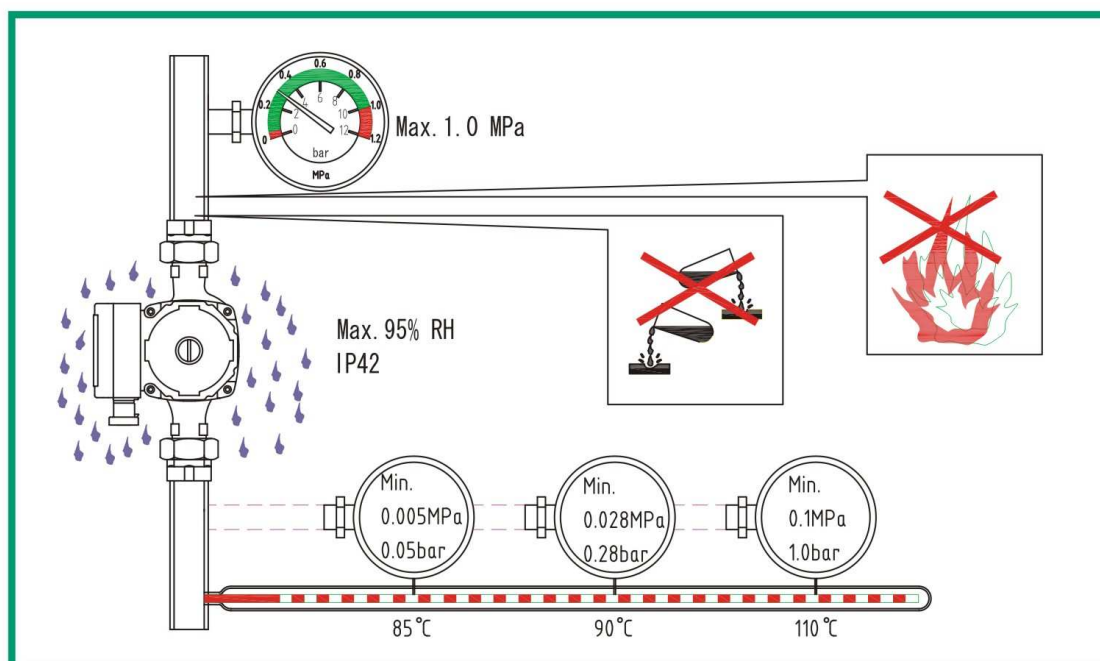
3.6. Inlet Pressure

Avoiding of damages caused by cavitations corrosion and pump shaft, it should keep the lowest pressure at the pump inlet , The highest import pressure must not be more than 1.0 MPa:

3.7. The liquid transferred by the pump

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

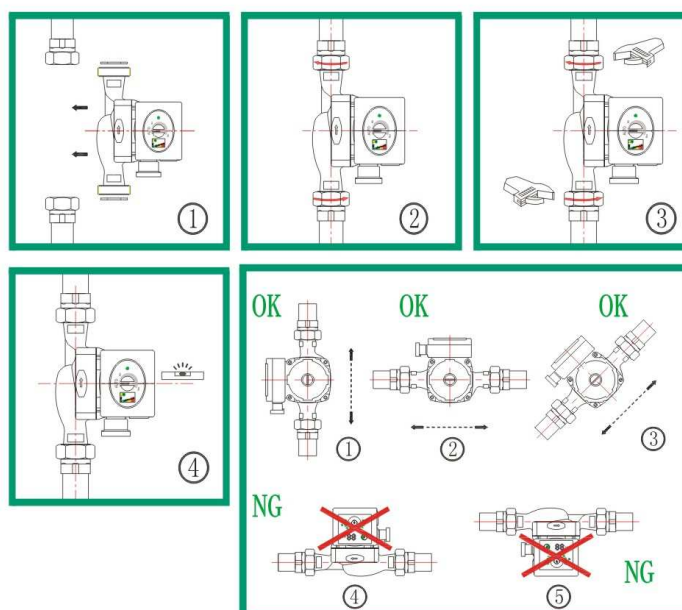
The liquid that is thin, clean, noncorrosive and non-explosive doesn't contain solid particles, fiber or mineral oil. This pump should not transfer flammable liquid such as vegetable oil and gasoline. If the circulator pump transfers the liquid with high viscosity, the performance will reduce, so it should consider the liquid viscosity when one pump is selected.



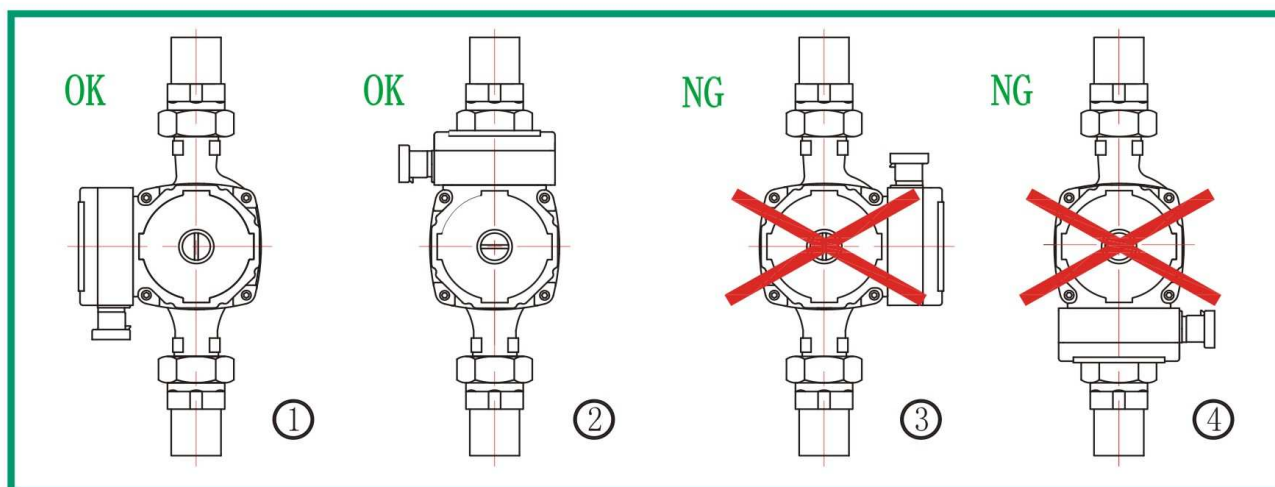
4. Installation of APUMP+ series pump

4.1. Installation

- Install APUMP+ series motor pump, sagittate mark means the direction of liquid flowing the pump body.
- Two gaskets must be set on the inlet and the outlet before installing the pump in the pipeline.
- Pump shaft must be on the horizon.



4.2.Site of the Junction Box

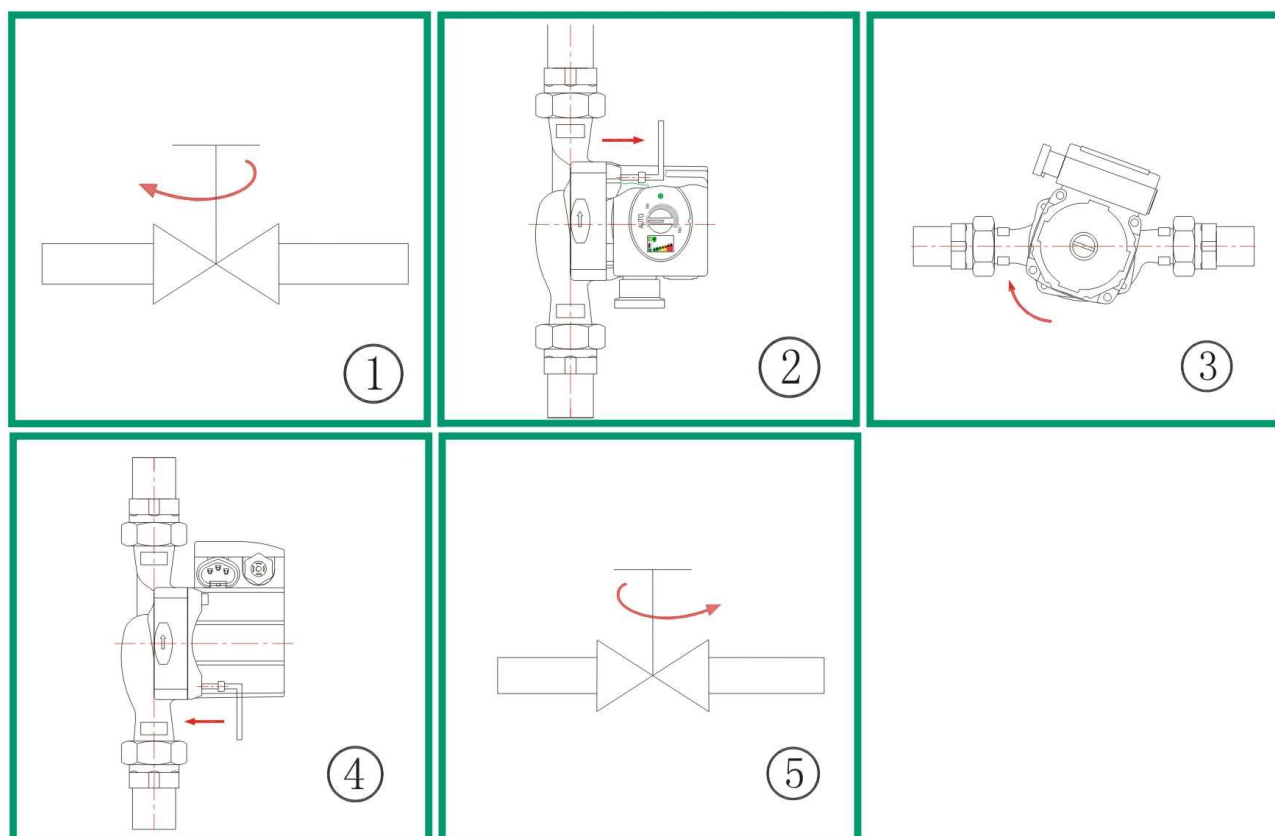


4.3. Changing the site of Junction Box

The junction box can be rotated in a step of 90° .

Changing the site of junction box, as follow :

1. Close inlet and outlet valve, and relief pressure.
2. Loosen and take down four hex screws fixed in motors.
3. Rotate the motor at the expected site and hole to hole.
4. Put four hex screws into holes and screw up them by the clockwise.
5. Open inlet and outlet valve.





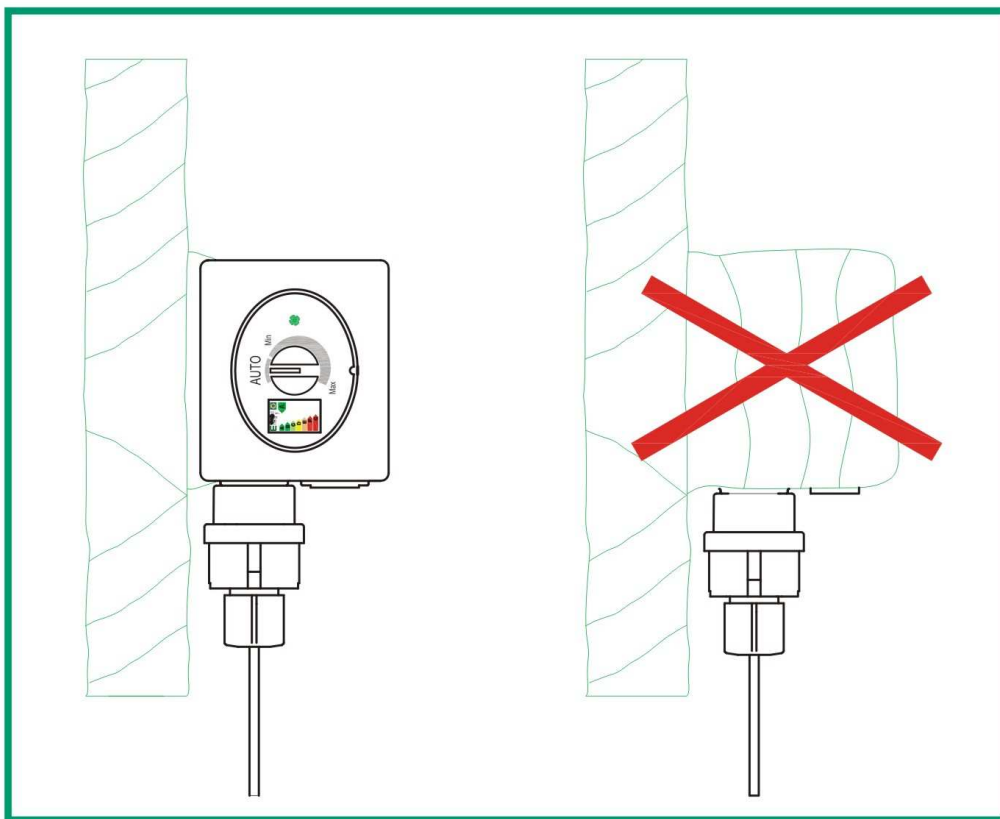
Warning

The liquid transferred by the pump may be high temperature and high pressure. It should drain off the system or switch off the valves in the pump's two sides before taking down hex-screws

Caution

After changing the site of junction box, the pump can be started when the system fills the liquid or valves in two sides of the pump.

4.4. Heat Insulation of Pump Body



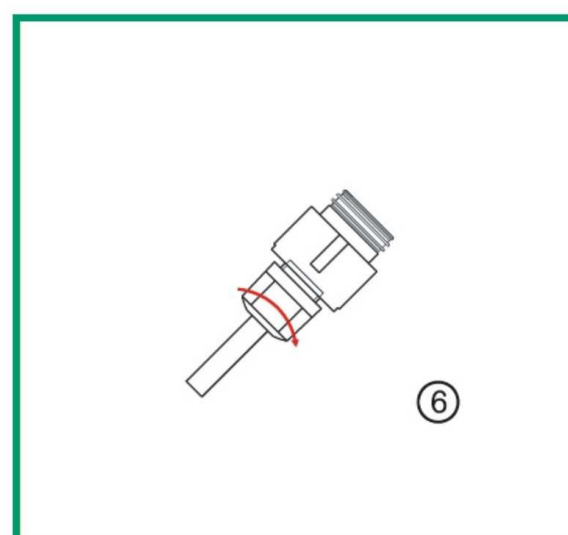
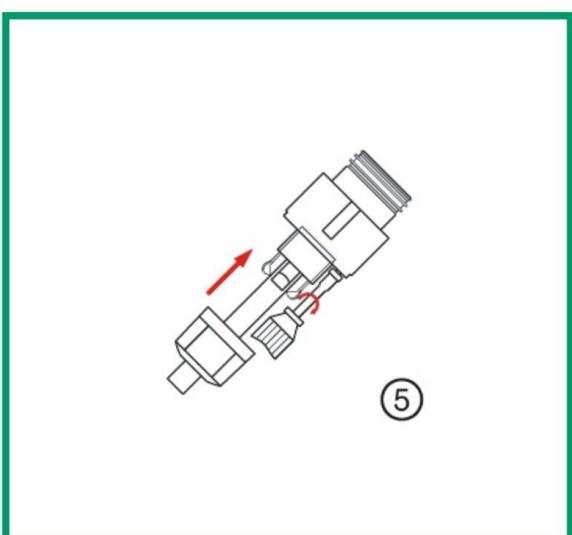
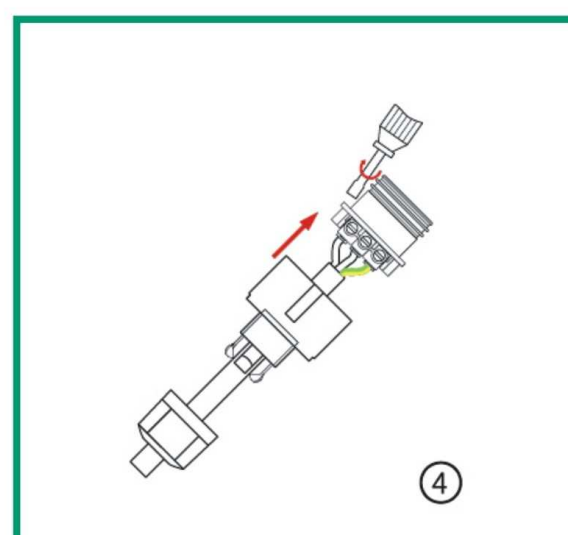
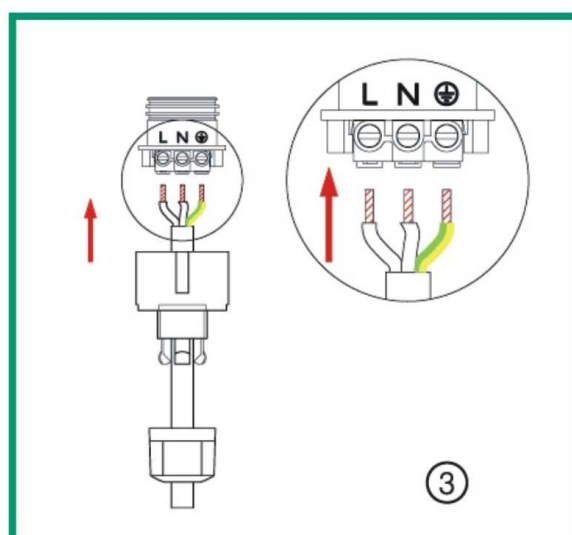
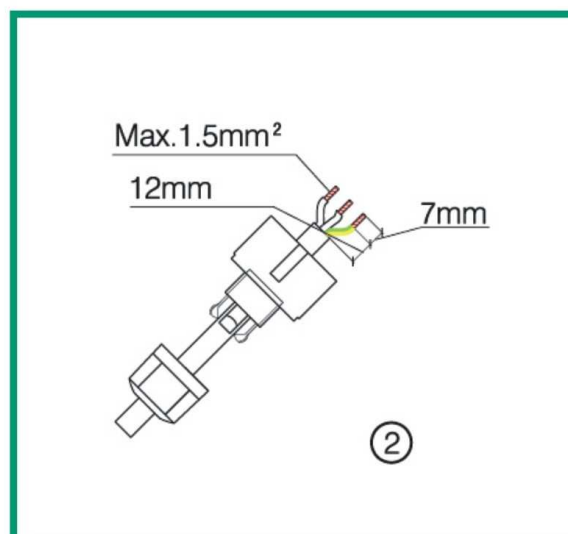
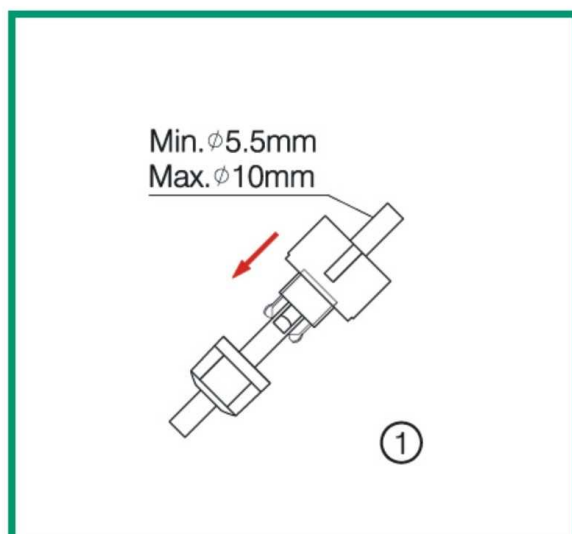
Note

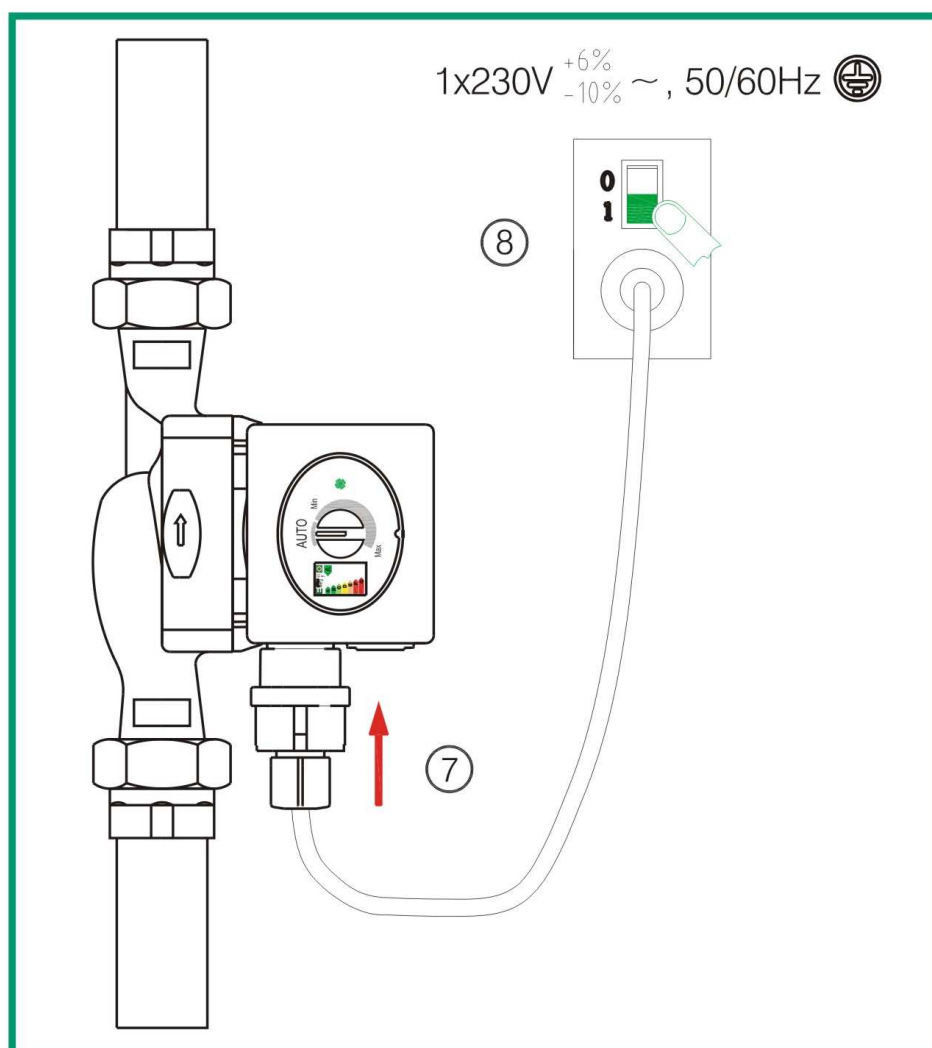
Control pump body and pipeline's heat consumption
Insulate pump body and pipeline to reduce heat consumption

Caution

Don't insulate or cover the junction box and the control panel

5. APUMP+ Electric Connection





The electric connection and protection should be done by local regulations.



Warning

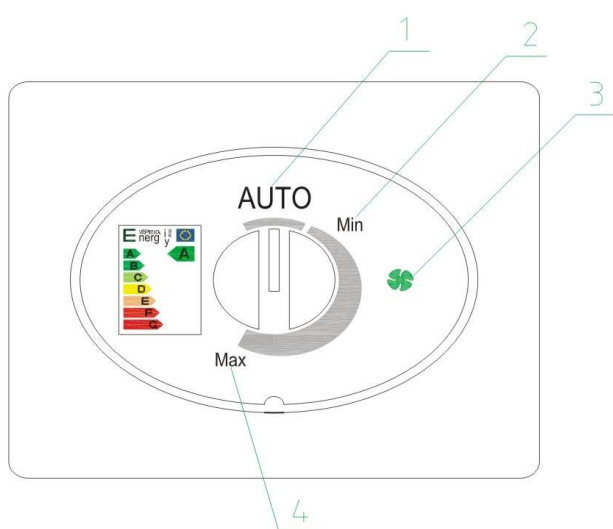
The pump must be connected with earth wire (⏏)

The pump must be connected with an external switch, all intervals among electrodes are 3mm, the narrowest distance.

- APUMP+ series motor pump doesn't need protection from the external pump.
- Check the voltage and the frequency with parameters on the nameplate.
- Connecting the pump with the electricity with the plug supplied.
- The indicator light on the control panel shows the electricity.

6. Control Panel

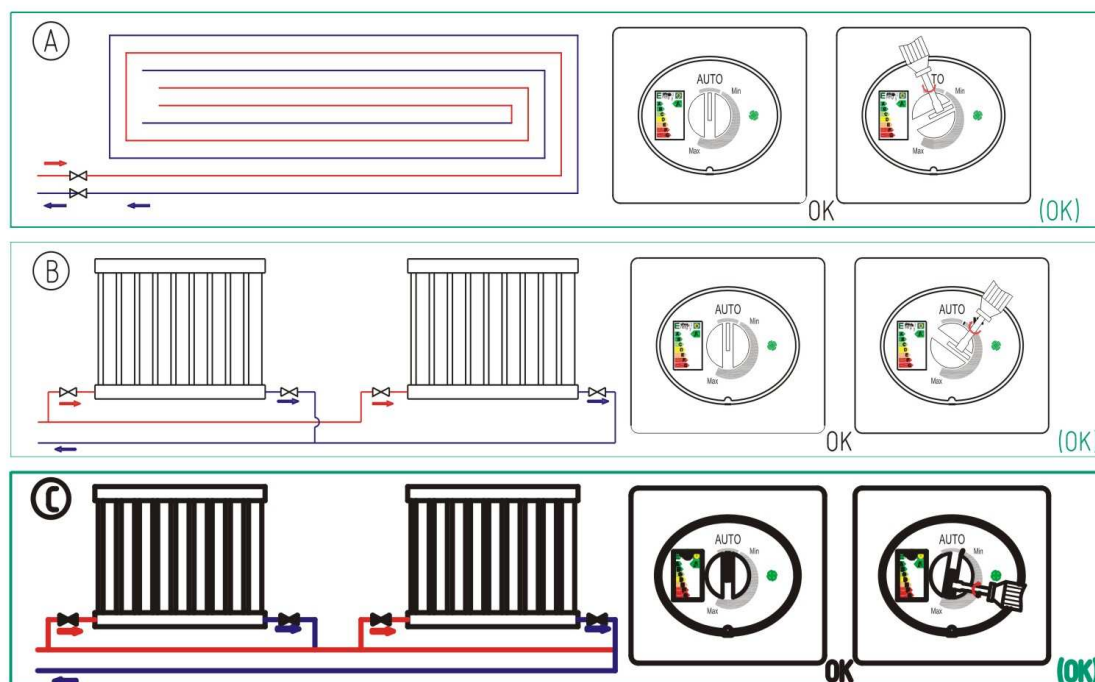
6.1. Components



Site	Descriptions
1	AUTO
2	Continuously variable speed—Min
3	Indicator light of the pump operating
4	Continuously variable speed—Max

7. Pump Setting

7.1. The pump setting based on types of system



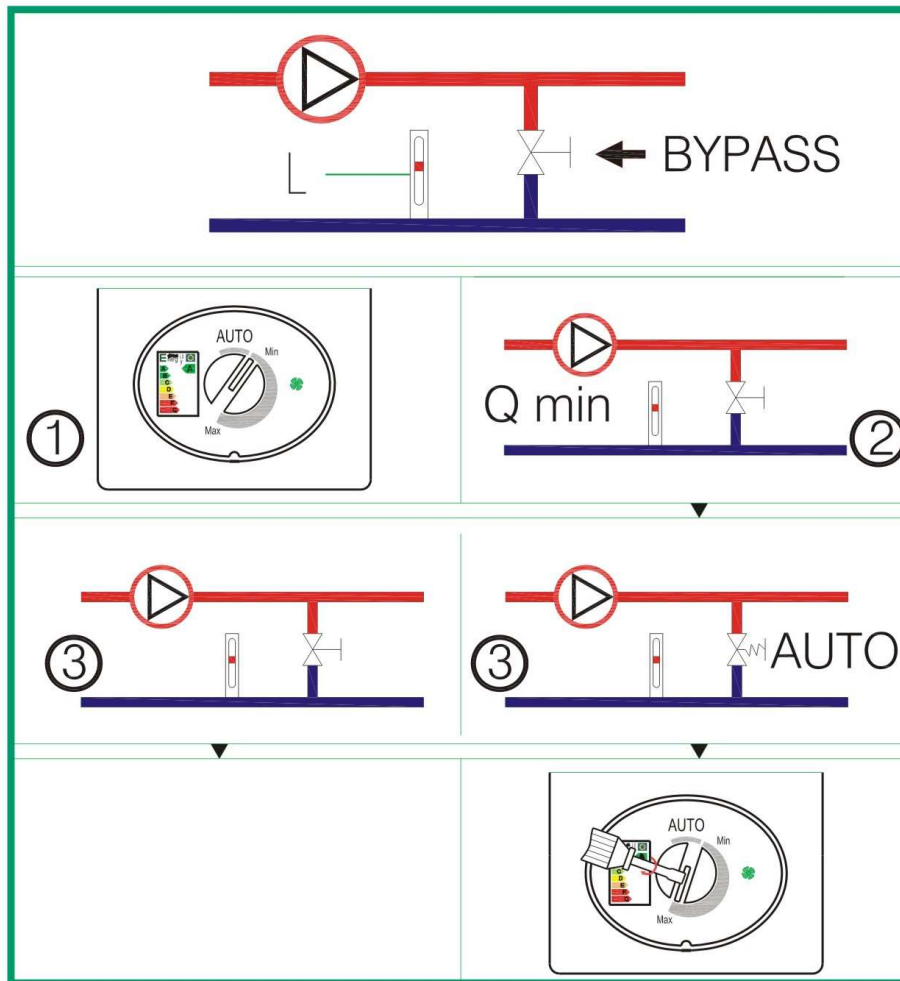
Site	System Type	Motor Pump Setting	
		Recommended	Options
A	Floor heating system	AUTO	Mix-Max
B	Dual pipeline heating system	AUTO	Mix-Max
C	Single pipeline heating system	AUTO	Mix-Max

The pump settings suggested:

- AUTO model is to automatically adjust the pump performance according to actual heat demand of the system. Due to gradual performance adjustment, it's suggestion that the pump should be set at AUTO model for at least one week before changing the settings.
- APUMP+ series motor pump can keep on automatically adjusting the performance on the basis of its storage that records last setting point of AUTO model, if it selects the AUTO model.
- The pump can change from the best settings to other settings supplied.
- The heating system is a slow operating system, so it cannot reach its best operating pattern in several minutes or hours. If the best pattern cannot do the ideal heat distribution for each room, the pump settings should change to other settings.
- About the relation between the pump settings and performance curve, please referring to Section 10. 1.

8. Bypass–valve System Installed Between Inlet water pipeline and Returnwater pipeline

8.1. Application



Bypass valve

Function: When all valves of heating return pipeline for the floor or temperature control valves of radiators are close, it's sure that the heat from the boiler can be distributed.

Parts of the system:

- bypass valve
- the flow meter at L .

All valves closing, the flow must keep at the lowest.

The pump setting depends on type of bypass valve installed, that's manual operation valve or temperature control valve.

8.2. Manual operation Valve

Steps:

- 1.The bypass valve adjusting, the pump should be set at Min.The flow of system must be kept at the lowest, please referring to bypass-valve instruction.
- 2.After adjusting the bypass valve, please set the pump by referring to Chapter 10 (Pump setting and Performance) .

8.3. Automatic Bypass-valve (Temperature Control)

Steps:

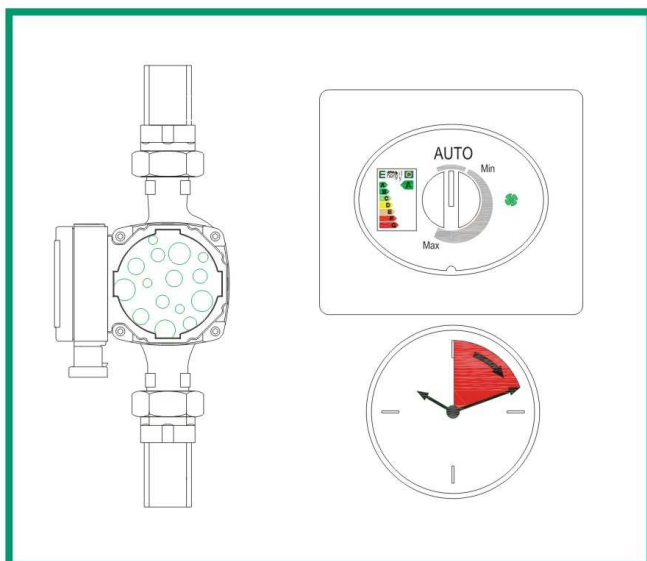
1. When bypass-valve is adjusted, the pump is set at Min and the system keeps at minimum flow. Please refer to the bypass-valve instruction.
2. When bypass-valve is adjusted, the pump is set at lowest or highest constant pressure mode. About relation of setting and performance curve, please refer to Chapter 10 (Pump Setting and Performance).

9. Start

9.1. Preparation

Before starting the pump, it must make sure that the system is full of liquid, air drained off and inlet pressure at the lowest, please refer to Chapter 3.

9.2. Air drained

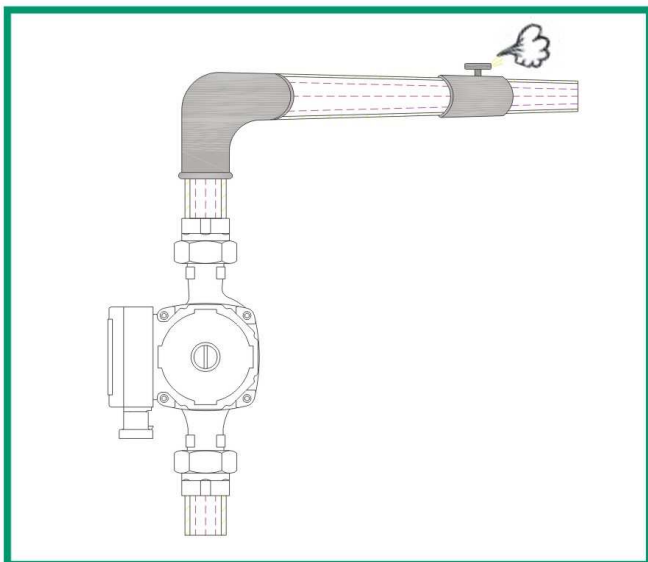


Caution Don't run the pump without liquid pumped.

APUMP+ series motor pump has its own exhaust function. Before starting, it's unnecessary to drain off the air. The air in the pump may produce noise that will vanish when it started in several minutes.

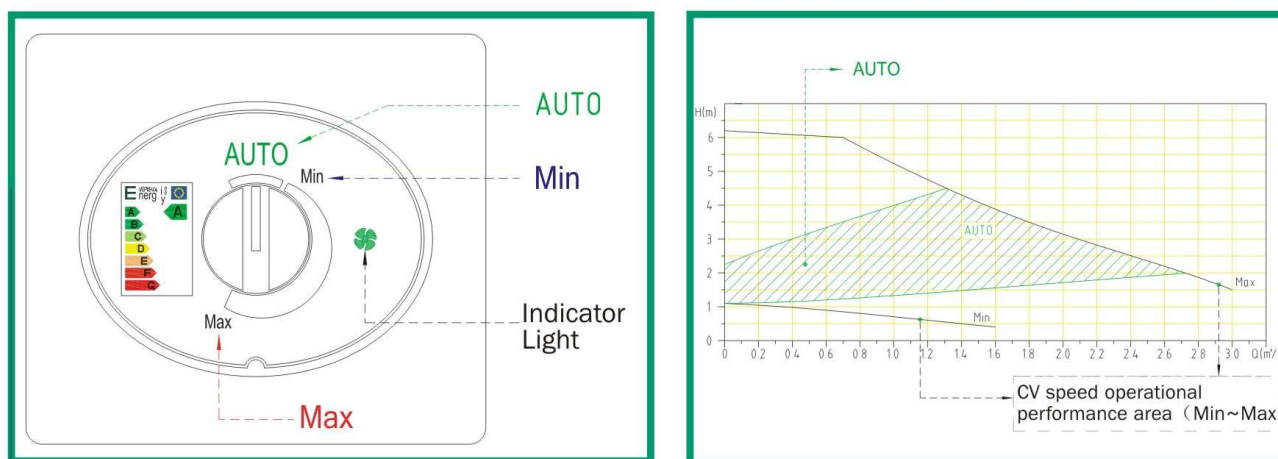
APUMP+ series motor pump can be set in Speed Max in short time, that's to drain off air quickly, according to the system mode and structure. After draining off air, that's the noise vanished, please set the pump by according to the instruction.

9.3. Air drained for heating system



10. Pump Setting and Performance

10.1. Relation of setting and performance



Model	Setting	Performance curve	Function
APUMP+	AUTO (factory settings)	pressure curve of maximum rate to minimum rate	“auto-adaptation” function will automatically adjust pump performance to the standard range. Pump performance adjusting to system scale. Pump performance adjusting to the change of load in a long time. The pump set in rate pressure control in “auto-adaptation” pattern.
	CV Speed	“Min-Max” Curve	At constant speed, the pump operates on the constant curve. Pump will operate at “Min-Max” speed in any working condition.

11. Performance Curve

11.1. Direction

Each part of the pump has its own performance curve (Q/H curve), but auto-adaptive pattern has a whole range of performance curve.

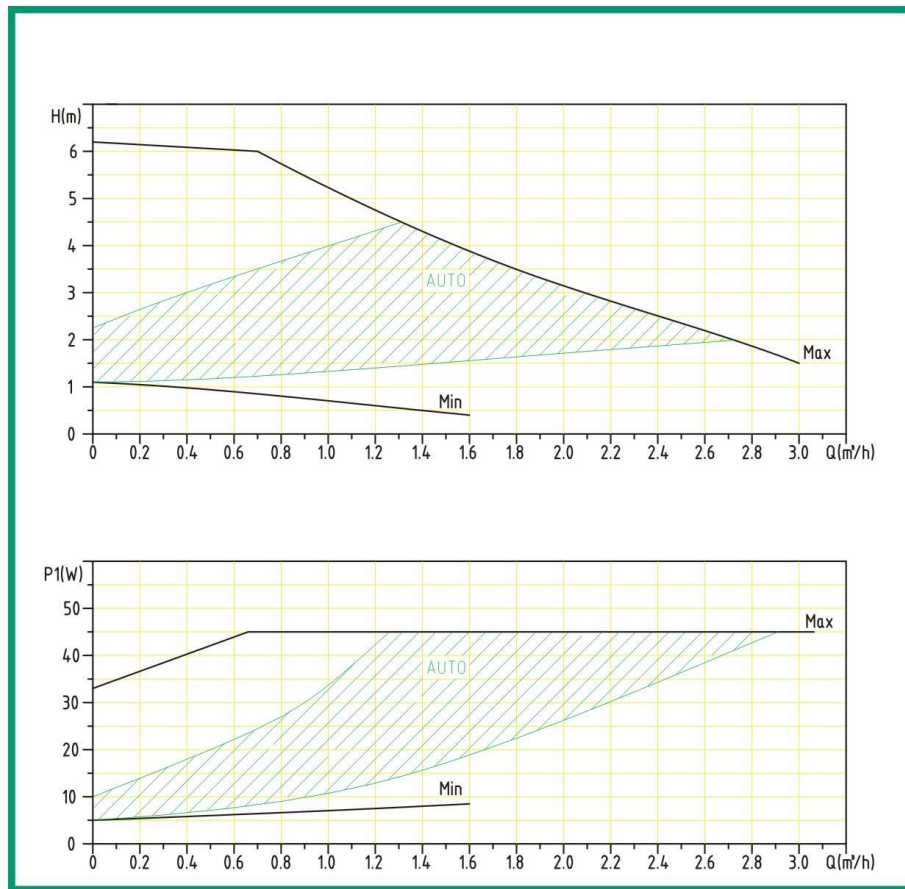
The area of Min-Max controlling performance curve (Q/H curve) is between the Min and Max speed of pump.

Input power curve P1 is fit to every Q/H curve. Input power curve means the power unit is Watt and power consumption is P1 on the setting Q/H curve.

11.2. Condition

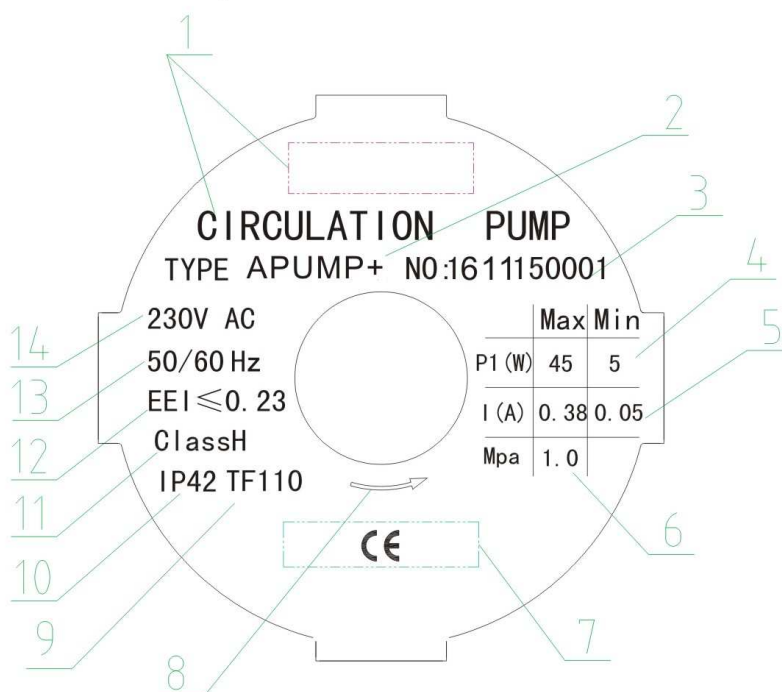
- Test liquid: gas-free water
- Adaptive density of the curve is 983.2 kilos per cubic meter and liquid temperature +60°C.
- All curves reveal average value, so it can't be taken as the standard value. Individual test should be done if the specific performance needs.
- The curves of AUTO , Min , Max have been all marked.
- Adaptive kinematic viscosity is 0.474 mm²/s (0.474CcST).

11.3 Performance Curve APUMP+ series



12. Features

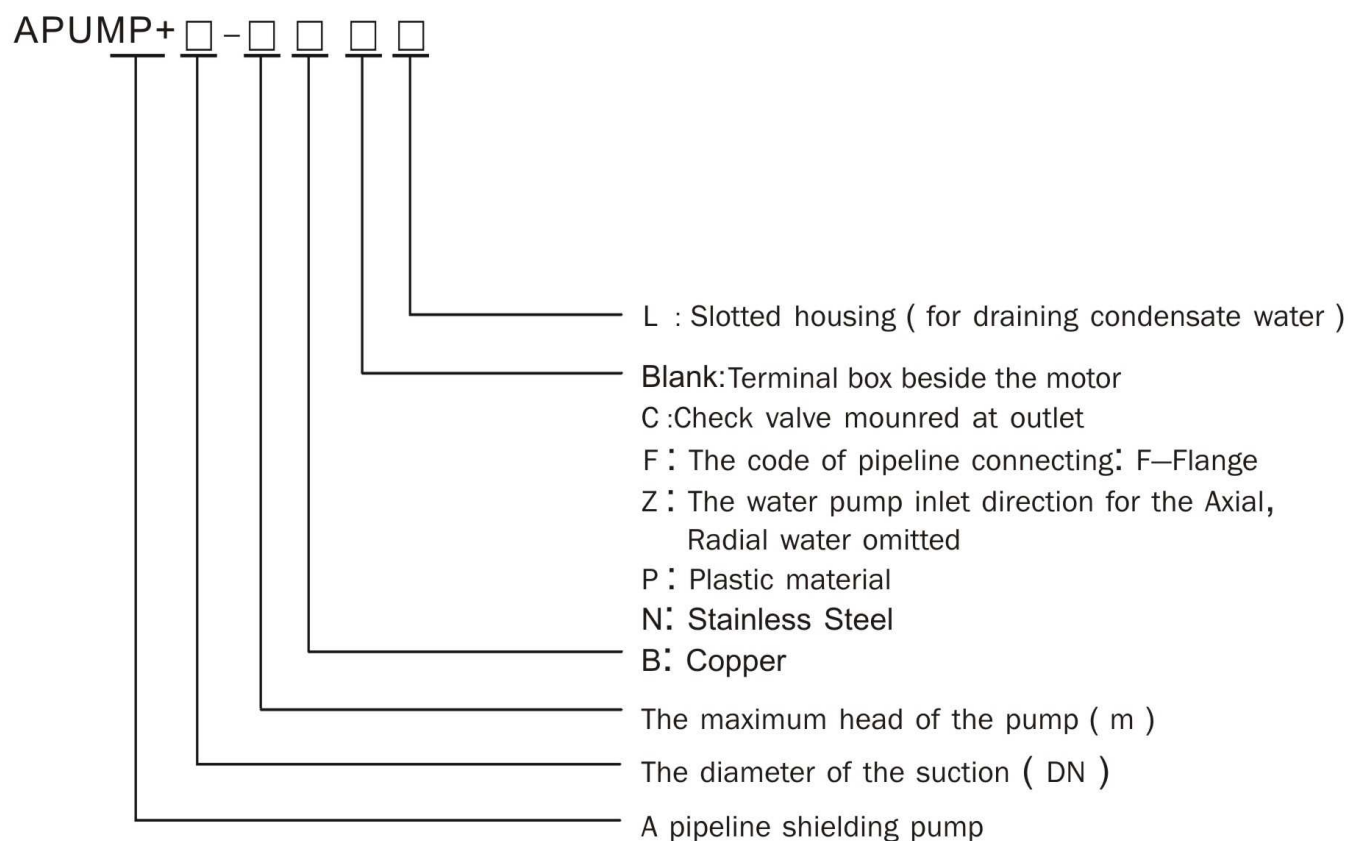
12.1 Nameplate Description



No.	Descriptions	
1	Company name (brand)	
2	Pump Type	
3	Number	Date of manufacture: the first six numbers
		Serial number: the rest four numbers
4	Power (Watt)	Minimum power input in minimum pattern
		Minimum power input in maximum pattern
5	Electricity (ampere)	Minimum flow in minimum pattern
		Minimum flow in maximum pattern
6	Maximum system load bearing (Mpa)	
7	Certification Mark	
8	Rotation Direction	
9	Highest Liquid Temperature	
10	Protection Grade	
11	Insulation class	
12	Energy Index	
13	Frequency (Hz)	
14	Voltage (v)	

12.2. Model Instructions

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



13. Technical Parameters and Installation Dimensions

13.1 Technical Parameters

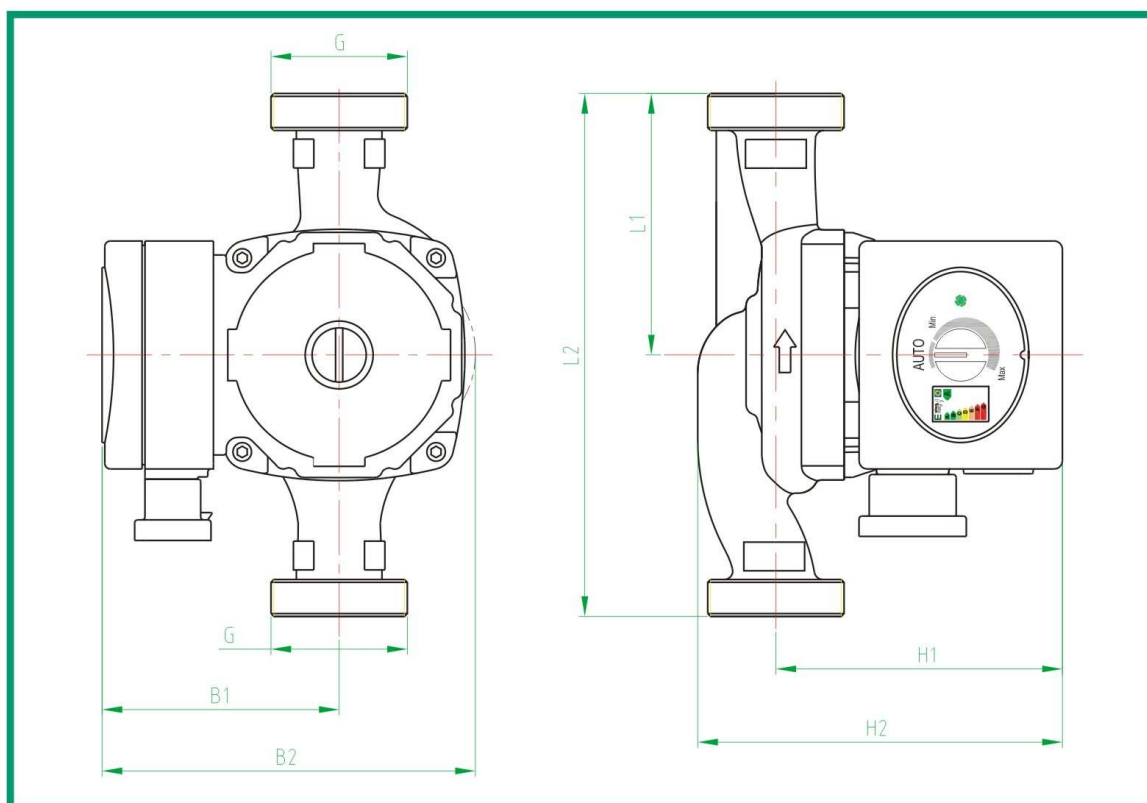
Power Supply Voltage	1×230V +6%/-10%,50/60Hz,PE	
Motor Protection	The pump needs no external protection	
Degree of Protection	IP42	
Insulation Class	H	
Relative Humidity (RH)	Max. 95%	
System Load Bearing	1.0 MPa	
Suction Port Pressure	Liquid Temperature	Minimum Inlet Pressure
	≤+ 85°C	0.005 MPa
	≤+ 90°C	0.028 MPa
	≤+ 110°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°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.

13.2. Installation Size



Power (W)	Product Model	Material of Pump Body				Dimension (mm)						
		Cast Iron	Plastic	Copper	SS	L1	L2	B1	B2	H1	H2	G
45	GPA25-6	●		●	●	65	130	82	128	103	130	11/2"

14. Malfunction Inspection Form



Warning

It makes sure that the electricity is cut and don't be switched on accidentally before maintaining or repairing the pump.

Malfunction	Control Panel	Reason	Measures
The pump can't be started	indicator lights out	the product's fuse burned	change the fuse
		disconnection of current control's or voltage control's breaker	connect the breaker
		dysfunction	change the pump
Noise in the system		air in the system	drain out the air
		overlarge flow	lower the inlet's pressure
Noise in the pump		air in the pump	drain out the air
		too low inlet's pressure	increase the inlet's pressure