

Shinhoo[®]

Installation and operation instructions

Household zero cold water shielded electric pump
SPA15-12E External zero cold water shielded electric pump



Anhui Shinhoo Canned Motor Pump Co., Ltd

CAUTIONS FOR USE

- ◆ Read the installation instructions carefully before installation and use.
- ◆ Any failure to comply with the contents of the safety warning mark may cause personal injury, pump damage and other property losses, for which the manufacturer shall not assume any responsibility and compensation.
- ◆ Installers and operators must comply with local safety regulations.
- ◆ The user must confirm that the installation and maintenance of the product is carried out by personnel who are proficient in this manual and have professional qualifications.
- ◆ Do not install the pump in a place that is wet or may be splashed by water.
- ◆ In order to facilitate maintenance, a stop valve should be installed on both sides of the inlet and outlet of the pump.
- ◆ Disconnect the water pump power supply during installation and maintenance.
- ◆ When the pump is in trial operation, if there is obvious vibration, abnormal noise or odor, turn off the power immediately and ask the dealer or the company's after-sales service center.
- ◆ Do not start the pump without pumping liquid.
- ◆ Some models can not be used for dietary water.
- ◆ The pumped liquid may be high temperature and high pressure liquid. Before moving and removing the pump, the liquid in the system must be emptied or the stop valve on both sides of the pump must be closed to avoid burns.
- ◆ In summer or when the ambient temperature is high, please pay attention to ventilation to prevent condensation and cause electrical failure.

◆ In winter, if the pump system is not running or the ambient temperature is below 0 ° C, the liquid in the pipeline system should be emptied to avoid freezing and cracking of the pump body.

◆ If the pump is not used for a long time, close the water pipe valve at the inlet and outlet of the pump and cut off the power supply of the pump.

◆ If the cable cord is damaged, it must be replaced by a professional.

◆ If the motor is found to be hot or abnormal, close the valve at the inlet of the pump immediately, cut off the power supply of the pump, and contact the local dealer or service center immediately.

◆ If the pump fault cannot be rectified according to the instructions in this manual, close the water pipe valve at the inlet of the pump, cut off the power supply of the pump, and contact the local distributor or service center immediately.

◆ This product should be placed out of reach of children, and after installation, isolation measures should be taken to prevent children from reaching it.

◆ This product should be stored in a dry, ventilated and cool place at room temperature.

◆ The following does not comply with the contents of this manual, and the disaster or loss occurs.

not within the scope of the company's quality assurance:

◆ Due to the disassembly, maintenance or use of the pump out of the operating conditions of the pump by unqualified personnel, the pump cannot be used normally.

◆ Loss due to voltage, mechanical, chemical reasons.

◆ Environmental pollution caused by the use of dangerous media.

◆ If you have any questions about the contents of this manual or find any errors or omissions, please contact the distributor or the company.

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1. Safety instructions

- ◆ Please read the instructions carefully before use, the installation and use of the equipment must comply with local regulations and applicable operating standards, in order to correctly use the pump.
- ◆ In the manual, there are various signs such as warning/attention, the purpose is to use the product correctly and prevent harm and loss, please strictly abide by it.
- ◆ When the pump is in trial operation, if there is obvious vibration, abnormal noise or odor, turn off the power immediately and ask the dealer or the company's after-sales service center.
- ◆ The following do not comply with the contents of this manual, and the disaster or loss occurs, not within the scope of the company's

quality assurance:

- ◆ Due to the disassembly, maintenance or use of the pump out of the operating conditions of the pump by unqualified personnel, the pump cannot be used normally.
- ◆ Loss due to voltage, mechanical, chemical reasons.
- ◆ Environmental pollution caused by the use of dangerous media.

2. Transportation and storage

The equipment should be transported in covered wagons, closed cars, by air, river or sea transport.

During transportation, the packed equipment must be securely fastened to the means of transportation to prevent unintentional movement.

The maximum prescribed storage period is 2 years. No preservation is required during the entire storage period.

Storage and transportation temperature (in empty state) min. -20 °C; max. +60 °C.

3. Meaning of symbols and inscriptions



Warning
Live element, very dangerous.



Warning
Instructions that must be strictly followed in order to prevent risks, personal injury, etc., when in contact with live components!



Warning
Before installing the device, read the installation and operation instructions carefully. The equipment must be installed and used in accordance with local regulations and good operation practices.



Warning
Persons (including children) with reduced physical strength, lethargy or mental impairment, lack of experience and relevant knowledge must be supervised and guided by the person responsible for their safety before using this electric pump.



Warning
There will be high temperature and high pressure hot water in the pump. Before operation, close all valves and drain the water in the pump to prevent hot water scalding or damage by high pressure water.



Warning
Instructions that must be strictly followed to prevent risks, personal injury, etc. Failure to follow this safety instruction may result in personal injury!



Representative pump



Failure to follow this safety instruction may result in failure or damage to the equipment!

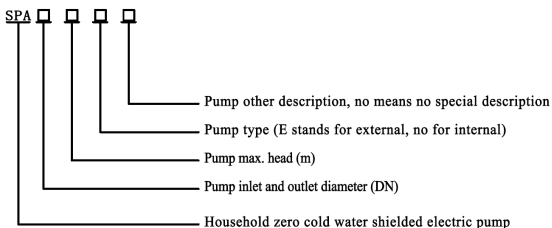


Notes or instructions that facilitate work and ensure safe operation.

4. General information about product

4.1 Product model description

The pump model consists of components such as uppercase Latin letters and Arabic numerals, which have the following meanings:



Type key example: SPA15-12E indicates that the inlet and outlet diameter of the pump is DN15,

Maximum head 12m, belongs to the external pump, no other special requirements

Fig. 1 Product model description

4.2SPA15-12E pump parameters

Flow(Max): 20 l/min	Head(Max): 12 m	Voltage: AC 220V	Current(MAX): 0.5A
Rated flow: 10 l/min	Rated head : 8 m	Power(Max) : 60 W	Noise : < 42dB (A)
Design pressure : 10bar	Temperature rating :TF80	Protection level:IP44	Insulation level: H
Overall dimension: 140mm*115mm*85mm			

4.3SPA15-12E pump advantages

This product is easy to install and use. The product has the functions of one-click start, timing mode, all-day mode, etc., can be fixed temperature timing Settings, can be adjusted according to actual needs, high comfort. Product operation noise is low, low power consumption.

4.4Conditions of use (keep the shaft horizontal)

Medium: clear water	Medium temperature: 4 C~80 C
Ambient temperature : 0 C ~+40 C 。	Inlet pressure : >0.1bar
Medium hardness: 25°dH	Relative humidity of the air : 95%(MAX)

4.5Conditions of storage

Humidity of storage environment 30%~95%	Storage ambient temperature: -20 C ~ 60 C (there is no freezing in the pipeline and water pump)
Stacking height: less than 6 layers	

4.6Performance curve

Flow(Max): > 20 L/min	Head(Max): 12 m	Power(Max): 60 W
Rated flow: 10 L/min	Rated head: 8 m	

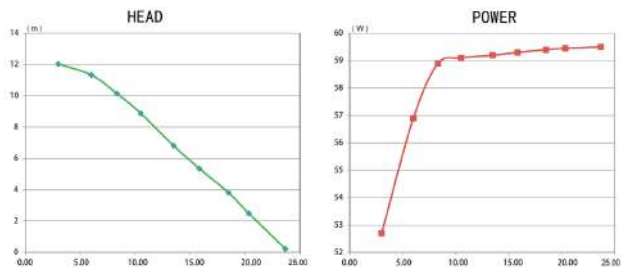


Fig. 2 Performance curve

4.7 Nameplate

Shinwoo	
SPA15-12E	
Rated voltage AC 220V	Flow(Max) 20L/min
Current(MAX) 0.5A	Head(Max) 12m
Frequency 50/60 Hz	Power(Max) 60W
Temperature rating TF80	Rated flow 10L/min
Insulation level H	Protection level IP44
Design pressure 10bar	

Fig. 3 Nameplate

4.8 Technical data

Power voltage	220-240V, 50/60Hz	
Protection level	IP44	
Insulation level	H	
Ambient relative air humidity (RH)	≤95%	
System pressure level	10bar	
Inlet pressure	Liquid temperature	Inlet pressure (Min)
	≤+60 °C	0.1 bar
	≤+80 °C	0.28 bar
Noise level	< 42dB (A)	
Ambient temperature	0 ~ +40 °C	
Temperature rating	TF80	
Surface temperature	≤+80 °C	
Liquid temperature	4 °C ~ +80 °C	

4.9 Installation dimensions

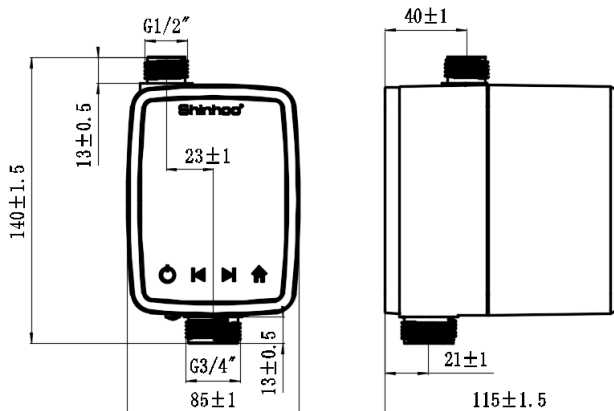


Fig. 4 Installation dimensions

5. Packing and moving

5.1 Packaging

Upon receipt of the equipment, inspect the packaging and the equipment itself for any damage that may have occurred during transportation. Before disposing of the packaging, carefully check for any documents or small parts that may have been left behind. If the equipment received does not match your order, contact to the equipment supplier. If the equipment is damaged in transit, contact the shipping company immediately and notify the equipment supplier. The supplier reserves the right to thoroughly inspect possible damage.

5.2 Moving



Caution

Warning

Local code restrictions for manual lifting and loading and unloading operations must be observed.

Do not lift the pump by the supply cable.

6. Area of application

6.1 Application

SPA15-12E household zero cold water shielded electric pump is mainly used for water circulation or pressurization in domestic hot water systems, the front of the product is equipped with an operation panel, which is easy for users to operate.

6.2 Usage scenario

Usage scenario 1 (No water return pipe, no power supply at the farthest water point, the pump has the function of circulation and pressurization)

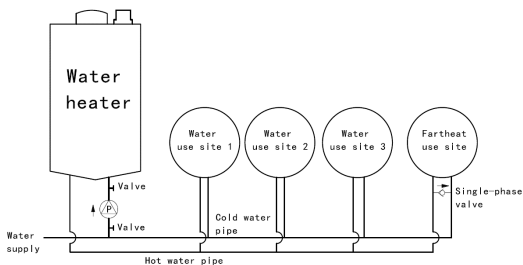


Fig. 5 Usage Scenario 1

Note: Valves need to be installed on both sides of the pump for easy maintenance

Usage scenario 2 (No water return pipe, the farthest water point has a power supply, the pump has the function of circulation)

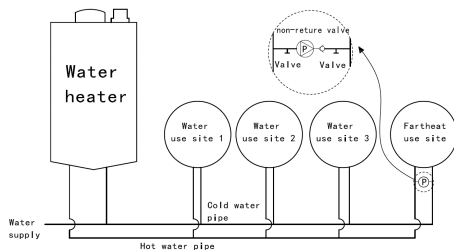


Fig. 6 Usage Scenario 2

Note: Valves need to be installed on both sides of the pump for easy maintenance

Usage scenario 3 (The waterway has a return pipe , the pump has the function of circulation and pressurization)

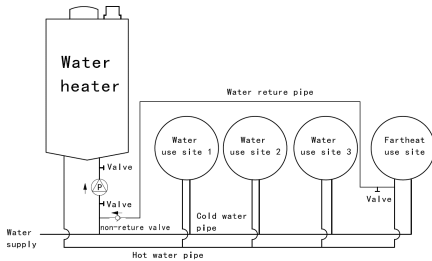


Fig. 7 Usage Scenario 3

Note: Valves need to be installed on both sides of the pump for easy maintenance

Usage scenario 4 (The waterway has a return pipe , the pump has the function of circulation)

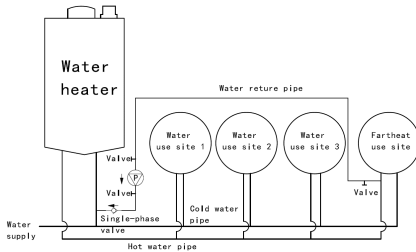


Fig. 8 Usage Scenario 4

Note: Valves need to be installed on both sides of the pump for easy maintenance

7. Principle of action

The pumps work by increasing the pressure of the liquid moving from the inlet connection. The liquid flows through the pump inlet into the rotating impeller.

The centrifugal forces increase the speed of the liquid.

The increasing kinetic energy of the fluid is converted into increased pressure at the outlet. The rotation of the impeller is provided by an electric motor.

8. Mechanical installation

◆ Install SPA15-12E series household zero cold water shielded electric pump. The arrow on the pump housing indicates the direction of liquid flowing through the pump body.

◆ When installing the electric pump in the pipeline, the inlet and outlet shall be fitted with the two gaskets provided.

◆ The electric pump shaft must be in a horizontal position when installed.

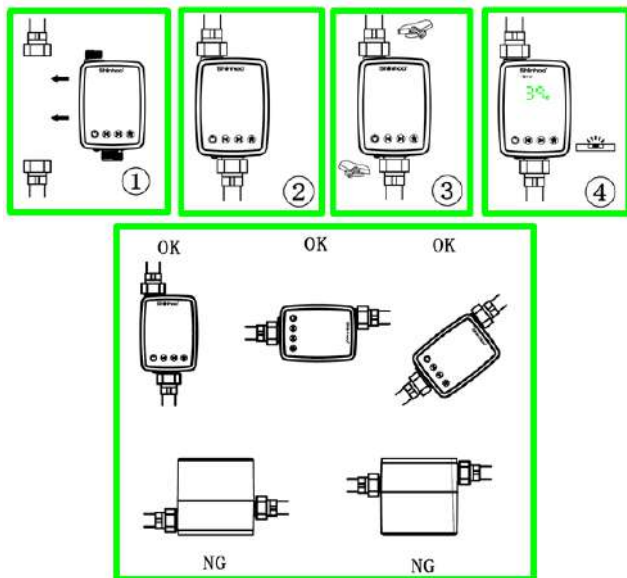


Fig. 9 Mechanical installation

9. Connection of electrical equipment

AC 220V
50/60Hz

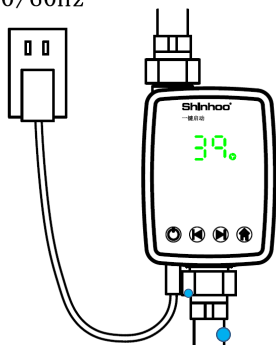


Fig. 10 Wiring Diagram

Check that the supply voltage and frequency are consistent with the parameters indicated on the pump nameplate.

Use the adapter that comes with the pump to connect to the power supply.

The light on the control panel indicates that the power is on.

Prohibit live operation

10. Commissioning

All products are subjected to acceptance testing at the factory. No additional testing is required at the installation site.

The system must be filled with operating fluid before operation.



Warning

Do not allow the pump to run without pumped liquid ("dry run")

To put the pumps into operation, the mains switch must be turned to position "On." The indicator light on the control panel will indicate that the power is on. If necessary, the pump and system must be vented before operation.

11. Operation

11.1 All on interface and function area description



Fig. 11 Display and function area

Position	Instructions
Pattern area	Displays the current running mode and mode selection
Running display	Displays the current water temperature in the pump and pump operation indication Displays other control modes Display pump fault code, fault indication
Temperature setting	Temperature setting lighting area
Time setting	Time set the lighting area
Key	From left to right, the buttons are Start, Back, forward, and HOME

11.2 Display interface and function description when pump is running

One-click start function: After the user touches the "Start" button, the pump starts to run. When the water temperature reaches the set temperature upper limit or there is no flow in the pipeline, the pump stops running. After starting, click the "Start" button again to shut down the pump.



Fig. 12 One-click start

Timing function: The current time is within the set period, if the water temperature is lower than the lower limit, the pump starts to run. When the water temperature reaches the upper limit or there is no flow in the pipe, the pump stops running.



Fig. 13 Timing mode

All-day mode function: If the water temperature is lower than the set lower limit, the pump starts to run. When the water temperature reaches the set upper limit or there is no flow in the pipeline, the pump stops running.



Fig. 14 All-day mode

Faucet start function: Lift the faucet for about 1 second, the pump starts to run, and stops running when the water temperature reaches the set temperature upper limit or there is no flow in the pipeline.

Pressurization function: When there is fluid flow in the pump, the pump starts and is in pressurization mode; When the liquid does not flow, the pump stops. This mode does not have temperature control.

11.3 Pump operation and fault self-test

After the power is turned on, the corresponding mode light will be on in the mode area, and the water temperature and running indicator will be on in the operation display area.

The failure of the electric pump to work normally is displayed as follows on the display interface:

Fault type	Fault code	Protection mode
Over-voltage protection	E0	Test under full load conditions: Detects the input voltage above $29V \pm 5\%$, after 2 seconds the pump enters overvoltage protection. The pump will work normally if the voltage returns to the normal state.
Under-voltage protection	E1	Test under full load conditions: the detection input voltage is lower than $19V \pm 5\%$, after 2S it enters the under-voltage protection. After The pump will work normally if the voltage returns to the normal state.
Over-current protection	E2	The water pump will stop working immediately if the current is too high. And it will be restarted after 8s. The water pump will be completely protected and will not be restarted unless the power is re-energized if the protection accumulates to 5 times.
Light load protection	E3	The pump is not loaded or the load is low, or the flow sensor is not working properly.
Phase loss protection	E4	Power on to detect phase loss, the water pump will stop working immediately when the phase-loss fault is detected. The water pump will be restarted after 8s. The water pump will be completely protected and will not be restarted unless the power is re-energized if the protection accumulates to 5 times.

Stalled rotor protection	E5	The water pump will stop working after the rotor locked 3 second , Pump will stop working , and restart after 8s. The water pump will be completely protected and will not be restarted unless the power is re-energized if the protection accumulates to 5 times.
The temperature parameter is invalid	F0	The lower limit of temperature is greater than the upper limit of temperature
Timing parameter setting is invalid (early)	F1	The start time of the timing is longer than the end time
Timing Parameter Settings are invalid (Medium)	F2	The start time of the timing is longer than the end time
Timing Parameter Settings are invalid (late)	F3	The start time of the timing is longer than the end time
Battery low voltage	F4	Check the battery voltage when the battery is powered on. If the battery voltage is low, a fault message is displayed 3 seconds after the battery is powered on, indicating that the battery needs to bereplaced. (Battery failure will affect the system time in timing mode.)
Temperature sensor anomaly	FF	The temperature sensor is not connected properly or is abnormal

If a fault is displayed, the power supply must be disconnected for troubleshooting. After troubleshooting, reconnect the power supply and start the pump.

11.4 Pump parameter setting

“One-click start” parameter setting

After the screen is lit up, hold down the "HOME" button for 2 seconds, then the corresponding mode on the screen starts to blink, tap the "HOME" button, select the "one-button start" mode to blink, tap the "Forward" button to select the parameter to be set, the corresponding parameter blinks after selection, tap the "Back" button parameter value increases in cycles. After the parameters are set as required, Hold down the "HOME" button" for 2 seconds to exit the parameter setting screen, or tap the HOME button to enter the next mode setting.



Fig. 15 “One-click start” setting

“Timing mode” parameter setting

After the screen is lit up, hold down the "HOME" button for 2 seconds, then the corresponding mode on the screen starts to blink. Tap the "HOME" button and select the "Timing mode" mode to blink. Tap the "Forward" button to select the parameter to be set, the corresponding parameter blinks after selection, tap the "Back" button parameter value increases in cycles. Tap the "Start" button to select Early, Middle, or Late. After the parameters are set as required, hold down the HOME button for 2 seconds to exit the parameter setting screen, or tap the HOME button to enter the next setting mode.



Fig. 16 “Timing” setting

“All-day mode” parameter setting

After the screen is lit up, hold down the "HOME" button for 2 seconds, then the corresponding mode on the screen starts to blink. Tap the "HOME" button and select "All-Day Mode" to blink. Tap the "Forward" button to select the parameter that you want to set, the corresponding parameter blinks after selection, tap the "Back" button parameter value increases in cycles. After the parameters are set as required, hold down the HOME button for 2 seconds to exit the parameter setting screen, or tap the HOME button to enter the next mode setting.



Fig. 17 “All-day mode” setting

Time calibration (time alignment)

After the screen is lit up, hold down the "HOME" button for 2 seconds, then the corresponding mode on the screen starts to blink. Tap the "HOME" button and select "Time Settings" to blink. Tap "Forward" to select a parameter to be set, the corresponding parameter blinks after selection, tap the "Back" button parameter value increases in cycles. After the timing is complete, hold down the "HOME" button for 2 seconds to exit the parameter setting screen, or tap the "HOME" button to enter the next mode setting.

11.5 Startup and mode selection

Before starting the electric pump, ensure that the system is filled with liquid and the power supply is in good contact.

Set item	Setting instructions
One-click start	After touching the "Start" button, the pump will start to run. When the water temperature reaches the set temperature upper limit or there is no flow in the pipeline or the set temperature upper limit cannot be reached after continuous running for 3 minutes, the pump will stop running. Suitable for use without long periods of hot water or outside the range of other modes.
Timing mode	When the water temperature in the pump is lower than the set temperature lower limit, the pump starts to operate, and when the water temperature in the pump reaches the set temperature upper limit or there is no flow in the pipeline, the pump stops running. This mode is suitable for water use time stabilization.
All-day mode	The pump runs 24 hours. Suitable for all day long pressurization or cycling.
Faucet start	Lift the faucet for about 1 second, the pump starts to run, turn off the tap, and stops running when the water temperature reaches the set temperature upper limit or there is no flow in the pipeline. Suitable for bathing and other occasions.
Pressurization mode	Set the temperature range to 00-00, pump in pressurized mode, when there is fluid flow in the pump, the pump starts; When the liquid does

	not flow, the pump stops. Suitable for home water level is low, do not need temperature control function occasions.
Time set up	Set the time before the product is used, so that the pump time is consistent with the current time, and avoid the timing mode inconsistent with the expected setting time.
Temperature setting	The minimum temperature should be set higher than the current water temperature and the current ambient temperature to avoid the pump can not start after the pipeline water temperature is reduced; The set maximum temperature should be less than the current heat source temperature 2-3 ° C, to avoid the long-term circulation pipe temperature can not reach the set temperature, the pump can not stop. Avoid the pump inlet temperature is less than the current heat source temperature, resulting in frequent pump start.
Time setting	A maximum of 3 time periods can be set, which is 24h system. When 3 time periods are not required, the unnecessary time can be set as 0000-0000

11.6 Fault checklist



Warning

Before preparing for any service and repair of the pump, ensure that the power supply is disconnected and will not be accidentally switched on.

Fault	Cause		Troubleshooting method
Electric pump failed to start	Running light off	Not in the pump operating time range	Check the pump setting parameters
		The minimum temperature is set too low	Check the pump setting parameters
		Pump plug or power plug is not in place	Replug the power

		No power in the socket	Check if power is off
		Electric pump failure	Replace the electric pump
	Display "E3"	Pump idling (no water in the line)	Open water valve
	Display "E4"	Pump motor failure	Replace the pump
	Display "E5"	Electric pump rotor is stalled (stuck)	Remove impurities
Noise	There's gas in the system		Turn on the faucet and run the pump for a few minutes, draining the air with the water
	Valve not opened, water pump dry grinding		Open the valve
The pump runs but does not generate pressure or the water cannot be preheated	Main valve closed		Open the main valve
	Air goes into the system		Turn on the faucet and run the pump for a few minutes, draining the air with the water
	Air runs into the line		Remove and clean water pump
Heat deficiency	Display a number	The performance of electric pump is too low	Increase the inlet pressure of electric pump
The temperature display running indicator is off	Flow sensor fault		Replace the parts

Anhui Shinhoo product warranty

◆Anhui Shinhoo Canned Motor Pump Co., Ltd. provides quality assurance for its products for 12 months from the date of sale, and is responsible for product failure or damage caused by manufacturing and material defects. This warranty is valid on the premise that the installation of the product complies with the "Shinhoo Installation and Operation Instructions" and the recognized good operating procedures.

◆This warranty is not applicable to the product failure or damage caused by① using the product outside the recommended use of Shinhoo Company, ②using the product in violation of the "Shinhoo Installation and Use Instruction", ③improper maintenance and handling of the product,④self-disassembly of the product, replacement of parts.

◆Any products supplied by Anhui Shinhoo Canned Motor Pump Co., LTD., but not manufactured by Anhui Shinhoo Canned Motor Pump Co., LTD., shall comply with its manufacturer's quality assurance terms.

◆During the warranty period, the product shall be guaranteed by the product purchase invoice and warranty sheet. Please send or return the products that need to be repaired to the local distributor or designated repair point of Anhui Shinhoo Canned Motor Pump Co., LTD. Anhui Shinhoo Company may decide whether to provide free on-site maintenance services according to its local maintenance policy. The parts warranty is free of charge.

◆Anhui Shinhoo Canned Motor Pump Co., Ltd. does not accept claims for damages that should be the responsibility of a third party or caused by the failure of any other company's products.

◆Anhui Shinhoo Canned Motor Pump Co., Ltd. is not responsible for product failure or damage caused by abnormal operating conditions, war, riot, wind (rain) storm, disaster or other force majeure.

◆Anhui Shinhoo Canned Motor Pump Co., Ltd. reserves the right to explain the matters not mentioned in the warranty of this product.

Shinhoo®

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