

**SHIMGE**<sup>®</sup>  
----- *for better life*

## Intelligent hot water recirculation pump

Model:HBS-12



Warning

- Ground motor before connecting to power supply.
- Do not touch the pump while it is running.
- Do not run the pump without water.

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## VII. Fault Analysis and Troubleshooting

Fault Phenomenon	Main Causes	Exclusion Methods
Fault code E1	Temperature sensor open circuit	Check the sensor after power out and restore it after power on again
Fault code E2	Temperature sensor short circuit	Check the sensor after power out and restore it after power on again
The Electric Pump is Not Running	Impeller jammed	Cleaning fiber/debris
	The power cord is loose	Connect the power cord reliably
	In the delay time	Change the delay time setting
	Enter protection logic	Power on again after 10 seconds of power out
The operation of the electric pump has stopped before the time and temperature limit	Non-return valve is blocked or installed reversely	Check whether the non-return valve is blocked or installed reversely
	The flow sensor is stuck or dropped	Check whether the flow sensor is stuck or dropped
	There is no loop formed in the circulation line	Check to see if any valve is not open
Abnormal noise occurred	There are sundries in the flow path of the electric pump	Remove the pump and sundries
	The flow setting of electric pump is too large	Switch to 1st gear operation or turn down the outlet value appropriately
	There is a lot of air in the electric pump	Turn on the hot water and drain some water. Tighten the water inlet pipe
	The inlet value is not open	Open the inlet value
Water flow mode does not start	Hot water value not opened	Please rotate the value toward the hot water end
	Insufficient flow of hot water pipe	Check whether there is no water supply or the water pressure in the house is too low
	The action of closing after opening is beyond the judgment range of 2-6 s	Please try a few more times to find the rhythm of opening and closing

Please read this instruction carefully before installing and using the product and keep it ready for review.

- **Step 9 Booster Function Setting:** The default flow of boosting is 30L/min (equal to close). If need to change, press "Setting" and use the +/- key to move the cursor to "Boost", press "OK", the left digital tube will display the flow data. Press +/- to change the flow. The minimum flow is 2L/min. Pressing "Setting" to confirm. After adjustment, press "OK" to return to the last level, or 20s do not operate to return to the main menu.



**Notes:**

- All the figures in this manual are schematic diagrams, and please understand
- that the electric pumps and accessories you buy may be different from the diagrams in this manual.

- The performance of the product is improved constantly, and all products (including appearance and color, etc.) are subject to physical products; no further notice will be given in case of any change.

Thank you very much for choosing our company's products. Please read the instructions carefully and save it properly before installation and use.

**Warnings**

- Please read the instructions carefully before installation and use.
- The electric pump must be reliably grounded and installed with leakage protection devices before use.
- It is strictly forbidden to touch the electric pump during operation.

**Warning for Children**

- It is strictly forbidden for children, incapacitated persons, or person limited in disposing capacity (if have not been taught how to use this product safely and understand the hazards involved) to use this product without supervision by a guardian.

**Electricity Warning**

- The electric power system may be used only when it has the safety protection measures specified by the existing provisions of the country where the product is installed.

**Pressure Warning**

- The pump system must be able to withstand the maximum pressure of the pump.

**Modification-related Warning**

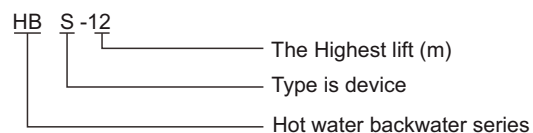
- The manufacturer is not responsible for any consequences caused by the user changing the electric pump or operating the electric pump beyond the operating conditions.

## I. Product Overview

1.If the domestic hot water supply equipment is far away from the water point, the cold water in the pipe must be emptied in advance to enjoy the hot water, which is a waste of time and resources. The smart hot water backwater device (hereinafter referred to as backwater device) is specially designed for such problems to ensure that you can enjoy hot water as you turn on the tap. This product can realize the functions of automatic constant temperature, inductive flow starting, remote control starting, forced water starting and the like within a set period of time throughout the day.

2.The backwater device consists of three parts: shell, electric pump and interactive interface. The shell is made of high strength engineering plastics, with excellent workmanship and beautiful appearance. The electric pump adopts plastic package motor, which is safe, reliable and durable. All-copper water-passing parts protect your health and that of your family. The interactive interface adopts large screen and touch button, making your operation simpler and more intuitive.

## II. Model Description



## III. Technical Parameters

Product Model:HBS-12	Rated Voltage :220V
Rated Frequency:50Hz/60Hz	Maximum Input Power:55W
Maximum Input Current: 0.42A	Connecting Thread: G1/2
Highest Lift: 12m	Rated Lift: 10m
Rated Flow:8L/Min	Protection Level: IP21
Temperature Level:TF70	Maximum Working Pressure: 1.0Mpa
Type of Protection Against Electric Shock:I	
Range of head: 0-12m	

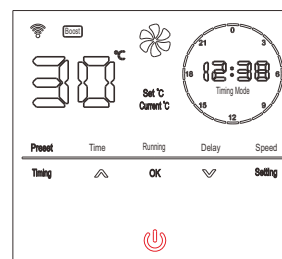
- Note**
- The minimum temperature of transport medium is 2°C and the maximum temperature is not more than 70°C.
  - The inlet pressure must be higher than 0.005 MPa. Otherwise, the backwater device will not work properly and cause damage to the backwater device.

## IV. Notes

**Notes** Before installation, check if there are backwater pipes in the domestic pipeline. The pipeline without backwater pipe can not use timing mode and booster function. For use, please consult the dealer or install special components after sale.

- Before installing the backwater device, check whether the pipeline system is connected reliably and ensure that impurities, welding slag and dirt in the pipe have been cleared; confirm that the frequency of power supply is 50 Hz, the voltage is single phase 220 V, and the voltage fluctuation value should be -10%~ +6%.
- During Installation, a filter device should be installed at the inlet of the backwater device to filter the large particles of impurities in the water and clean the filter screen regularly.

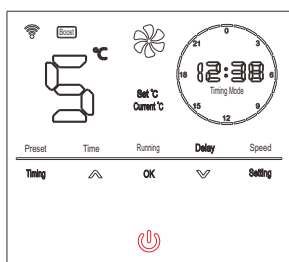
- **Step 7 Reservation Change:** If you want to change the reservation period of each day, press the key "Setting", press the +/- key to move the cursor to "Preset", press "OK" to enter the round display panel, the current selected period cursor blinks, use +/-key to move the cursor to the period you want, press "setting" to confirm the period(and continue to press the +/- key to move the cursor to other periods and press "Setting" to confirm the selected period if needed). After the adjustment is completed, press "OK" to return to the last level or return to the main menu without operation for 20s.



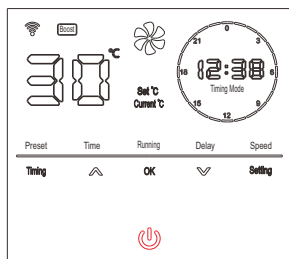
- **Step 8 Gear Change:** If you need to change the head and flow of the backwater device, press "Setting" and use the +/-key to move the cursor to "Speed", and press OK, the left digital tube will display the speed. Press the +/-key to change the speed to 1 or 2 (highest). After adjustment, press "OK" to return to the last level or return to the main menu without operation for 20s.



► **Step 5 Delay Time Change:** If the pipe heat preservation effect is different, need to change the delay time of pump restarting. Press the key "Setting", press the +/- key to move the cursor to "Delay", press "OK", the left digital tube will display the delay time, then press the +/-key to change the running time. After adjustment, press "OK" to return to the last level, or return to the main menu without operation for 20s.



► **Step 6 Timing Mode On:** If the timing mode needs to be on, press the key "Setting", press the +/- key to move the cursor to "Timing", then press "OK" and the timing mode will be on. The "Timing mode" lights up, and the reservation time period lights up.



3. The backwater device must be installed or maintained by professional service personnel and must be vertically hung on the wall and installed at a floor drain. Install according to the installation diagram of backwater device. Pay attention to the connection of water inlet and outlet, and the installation direction of non-return valve. After installation, check whether the backwater device and all the pipe fittings are leaking (seeping) water, and prevent the backwater device from being splashed with water to avoid electric shock.
4. After the leakage protection plug is connected, the backwater device is tested to check if the start is normal, but the idle time should not exceed 5 seconds to prevent the operation from reducing the bearing life.
5. If you want to adjust the position or touching the backwater device when in running, you must first cut off the power supply to prevent accidents.
6. Regular inspection, if any damage, should be timely replacement.
7. Turn off the backwater device when no one is at home or no using it for a long time.
8. If the cable is damaged, it must be replaced by a special leakage protection switch or a special component designated by the manufacturer.
9. In winter, when the ambient temperature is below 0°C , if the electric pump stops running, the water in the pipe system must be drained to avoid freezing crack of the pump body.

## V. Installation

The backwater device is suitable for gas water heaters, air energy water heaters, wall-mounted boilers, solar water heaters, electric water heaters.

The solar water heater requirements: inlet and outlet water pipe separate, and non-pressure type solar water heater must be equipped with backwater pipe before it can be used.

Electric water heater requirements: fast electric water heaters connected to outlet pipes or electric water heaters with backwater pipes.

- ◆ **Recognize the availability of backwater pipes and select the correct installation drawings.**
  - ◆ **Do not install the non-return valve reversely.**
- Installation points**
- ◆ **Remember to open the valves for cold/hot/backwater pipes after installation.**
  - ◆ **Filter net must be installed at the inlet of backwater device.**

1. Schematic diagram of backwater pipe installation

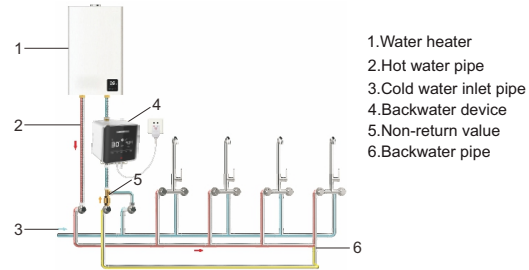


Figure 1

Working Process: as shown above, in the installation system with backwater pipe, water heater [1], backwater device [4], hot water pipe [2], backwater pipe [6] installed at the far end of hot water pipe. When the backwater device [4] starts, the water heater [1] starts, and the hot water flows through the end of the hot water pipe [2]- the backwater pipe [6]-non-return valve [5]-the inlet of backwater device [4], which circulates the water in the hot water pipe [2]. Fill it with hot water. Pump running time should be slightly longer than the water in the loop to the end of the tap time. The next time you turn on a tap and use hot water, you can enjoy hot water.

2.Schematic diagram of no backwater pipe installation

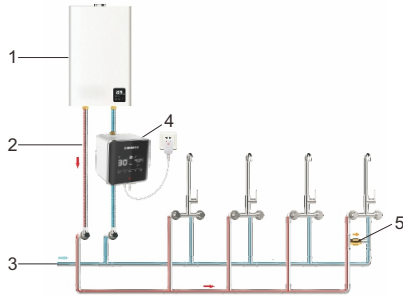
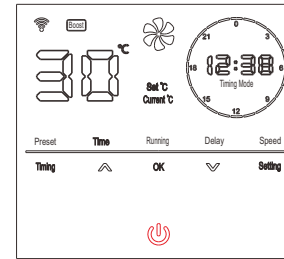


Figure 2

- 1.Water heater      2.Hot water pipe      3.Cold water inlet pipe
- 4.Backwater device
- 5. Non-return valve (Installed at the furthest end of the hot water pipe)



► **Step 4 Running Time Setup:** Check the pipeline: press the red ON/OFF key to start the pump forcibly, when the pump starts, the water heater starts normally, the pipeline is normal.

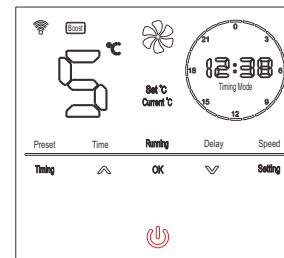


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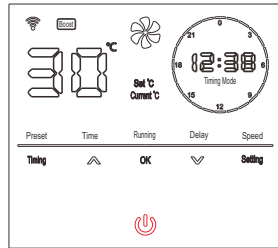
- ◆ **If the pump starts, the water heater does not start:**
- ◆ **Check whether the non-return valve is installed reversely.**
- ◆ **Make sure that the valves of the cold water/hot water/backwater pipes are open.**
- ◆ **Change the speed of the backwater device to speed 2.**

When the pump stops running, check whether the tap at the furthest water faucet releases hot water. If there is no hot water, turn off the water faucet and force the pump to start. In this way, the proper running time is determined, and the running time is equal to the number of times the key is forced to touch.

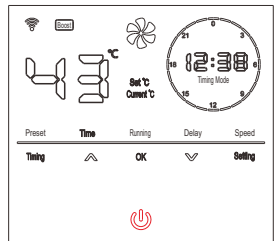
**Run Time Change:** press the key "Setting", press the +/- key to move the cursor to "Running", press "OK", the left digital tube will display the running time (see below), then press the +/--key to change the running time. After adjustment is completed, press "OK" to return to the last level or return to the main menu without operation for 10s.



► **Step 1 Start-up:** Press the red ON/OFF key, the backwater device is switched on(see below). At this time, the default setting temperature is 42°C, the running time is 5min, the delay time is 5mins,the booster function is closed, the pump running speed is 2.



► **Step 2 Set Temperature:** If you need to change the set temperature, directly press the +/-key in the main interface, enter the "Set °C" interface (see below), after adjustment, press "OK" or 20s without operation to finish setup and return to the main menu.  
Note: It is suggested that the set temperature of backwater device should be 5°C lower than that of heat source water outlet.



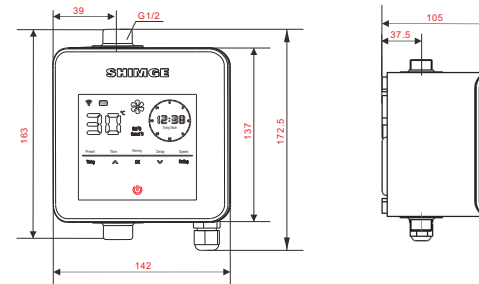
► **Step 3 Time Calibration:** If the time of the backwater device is not correct, press the key "Setting", press the +/-key to move the cursor to "Time", press "OK", then press the +/-key to get the correct minutes. Then press "Setting", enter hour setting, press the +/-key to get the correct hour. Then press "OK" to return to the last level, or 20s do not operate to return to the main menu.

**Working Process:** as shown above, in the installation system without backwater pipe, one way valve, water heater [1], backwater device [4], hot water pipe [2], cold water pipe [3] are installed in the furthest end of hot water pipe. When the backwater device [4] starts, the water heater [1] starts, and the hot water flows through the inlet outlet of the hot water pipe [2] -non-return valve [5]-cold water pipe [3] – the inlet of backwater device [4], which circulates the water in the hot water pipe [2], fill it with hot water. The running time of water pump should be a little longer than the time when the hot water in the circuit reaches the non-return valve [5], overtime running will cause the cold water pipe [3] to be full of hot water and affect the normal use. The next time you turn on a tap and you can enjoy hot water immediately.

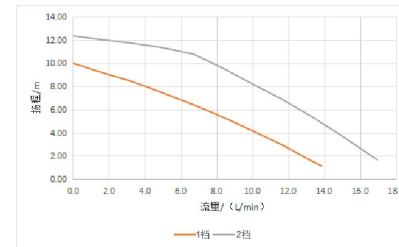
3.Product fittings:

- T-connector: 2 pieces G1/2
- Non-return valve:1 piece G1/2
- Filter net: 1 piece G1/2
- Hook: 1 piece
- Expansion screw: 2 pieces M6x30
- Remote control: 1
- Temperature-controlled non-return valve: 1 piece (optional)

4.Product Shape Size and Mounting Hole Size



5.Product Performance Curve



## Mode list

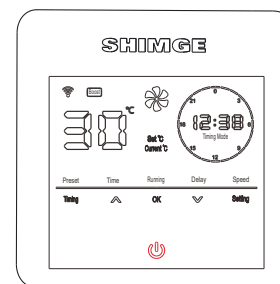
Mode name	Mode description
Timing mode	If the timing mode is turned on, the timing period 24 hours a day can be set separately to turn on or off in hours. When the timing mode is on, the pump will run if the temperature is below the limit of the target temperature (set temperature -5°C), and stop when temperature reaches the preset target temperature or the preset operating time.
Water flow mode	When the timing mode is not turned on, the pump will run automatically under water flow mode. Before using hot water, turn on the hot water faucet for 2-6 seconds and then turn off the faucet. At this time, the backwater device starts to detect the water temperature. If the current temperature is lower than the target temperature, the pump starts running. When reach the preset temperature or reach the preset running time, the backwater device stop. From 8:00 am to 10:00 pm, the buzzer will trigger three reminders after the backwater is completed.
Remote control mode	The same as the water flow mode, water temperature detection triggered by remote control, the signal can through a wall and the remote distance can reach to 15m.
Forced water mode	In any state, press ON/OFF key, pump starts, reach set time or preset target temperature, pump stops.
Function name	Function description
Reservation(Preset) setting	Reservation settings are valid only when the timing mode is open. The factory settings: 6-8 o'clock, 11-13 o'clock and 18-21 o'clock.
Time Calibration function	Used to adjust the time of backwater device to local time
Running setting	According to the length of the hot water pipeline, set the pump running time, the factory settings: 1min, the setting range is 1-10min.
Delay setting	After the electric pump operation stops, the delay time will be set according to the user's water pipe heat preservation degree. The default value is 5 minutes, the setting range is 1-20 min. During the delay period, the water pump does not run. After the delay time exceeds, the backwater device continues to operate in the original set mode.
Speed setting	According to the length of the pipeline, adjust the appropriate operating speed, factory setting : speed 1 .
Temperature setting	Set the pump stop temperature, the factory setting: 42°C, setting range 20°C-60°C.
One key recovery	In the standby interface, long press Set and OK keys 5s to recover each parameter to the factory setting.
Screen sleeping function	In a period of time if there is no operation, the main interface stop to display, press any key to resume display.
Booster function	When there are multiple faucets in use, the water flow is bigger than 3.5 L/min, the pump will automatically start and boosting.
Antifreeze function	The water temperature of the anti-freezing function pipeline is lower than the icing warning value, and the electric pump operates according to a certain logic to prevent the pipeline from icing.
Temperature/Flow display	The temperature or flow sensed by the temperature sensor is alternately displayed in real time with a display range of 0°C-99°C.

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Please read this instruction carefully before installing and using the product and keep it ready for review.

## VI. How to use

## 1. Panel description



◀ Display area

◀ Key area

## Debugging and menu settings:

For the first time, select the appropriate line installation diagram to complete the installation, check and make sure that the line installation is correct, all valves are open normally, enter product debugging and menu settings.

- ◆ The change in the running time of the pump at the time of operation will take effect at the next operation.



## Notes

- ◆ To stop the water pump operation, you can turn off the power supply or press the set key.
- ◆ One key recovery: press the Set key and OK keys for 5s at the same time, release after the main interface flashing and recover the factory setting.
- ◆ Shutdown: press red key for 5s, main interface extinguished, complete shutdown

Please read this instruction carefully before installing and using the product and keep it ready for review.

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