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Haier Group

Qingdao Economic and Technical Development Zone

Haier Water Heater Co.,Ltd

website: //www.haier.com

Rev: 01
specific number: 0040500208

Sea Elephant King

Haier Solar Water Heater

Users' Manual

Haier

PJF1- 120/150W

BRF1- 120/150W

Please read this manual carefully before use
Please keep this manual for future reference.

Dear Customers:

Thank you for your choosing and using Haier Water Heater.

Among products of the same kind, Haier products are excellent in quality and property. For your convenience, please read the instruction carefully before using and operate according to the procedures of the instruction. Please keep the instruction properly afterwards.

Haier-Sincerity For Ever!

Thank you again for your choosing and using Haier products. Due to the improvement of products, Haier water heater you purchase might not consist with the figures in the instruction, for which we apologize here to you.

Note



Correct Disposal of this product:

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased, they can take this product for environmental safe recycling.

Notes for usage

12. The temperature difference for running of circulating water pump suggests that the temperature should be chosen as 10 °C in seasons when the sunshine is strong (eg, summer), and 6°C in seasons when the sunshine is weak (eg, winter).
13. When water heater is not used for long and you use it again, to avoid occurrence of accidents, you should exhaust the system, and the system must be full of water before usage. Let the gas which lies in the pipe out, meanwhile, make sure there is no smoke, fire or other appliances near when you open the valve. The exhausting way: open the hot water outlet and cold water inlet valve, when the water comes out sustaining after exhausting all the gas, then close the hot water outlet valve. You had better operate the valve in the low temperature, such as wee hours or night, or the life of the system will be influenced. To check all the parts of the system in good condition, and make sure the tank full of water, then you can use it.

FAQ

Phenomenon	Please check	How to solve
No water output	Is water supply failed or water pressure too low?	Check
	Is water exit blocked? Is hot water valve opened?	Check and clean
Water exiting is cold	Is water temperature adjusted?	Readjust
	Is temperature controller loss of control?	Contact repair section
No temperature rising	Sunshine insufficient	Heat continually
	Is Heating element damaged?	Contact repair section
Unstable quantity and temperature with water output	Is the tap water pressure stable?	Check
Unable to turn on	Whether components and parts are damaged	Contact repair section
Indication E1	Circuit malfunction	Contact repair section
Indication E3	Is the sensor of collector damaged?	Contact repair section
	Is it connected well with power supply board?	
Indication E4	Is the sensor of storing tank damaged?	Contact repair section
	Is it connected well with power supply board?	
Indication E5	Whether the circuit is frozen to jam or whether it leaks	Contact repair section
Large amount of water flows out of safety valve	Whether tap water pressure is too large (over 0.75MPa)	Contact repair section

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- Product appearance, color or patterns shall refer to the actual machine.
- This manual uses recycling paper.

Features · Electric circuit diagram

■ Features

1. Comfortably-off home water heater

Collector equipment is aslant installed on the rooftop and perfectly consists with architectures around, which corresponds to the architectural standard fashion nowadays.

2. Heat tube coupling is efficient and reliable

Heat tube coupling is fast and conductive. Vacuum tube of collector equipment is without water and dirt, freeze-proof, high endurance, efficient and secure.

3. Selective coat endothermic system

The endothermic system adopts the latest international high-tech and absorbs coats selectively. It is characterized by high absorbing capacity and low reverse shape.

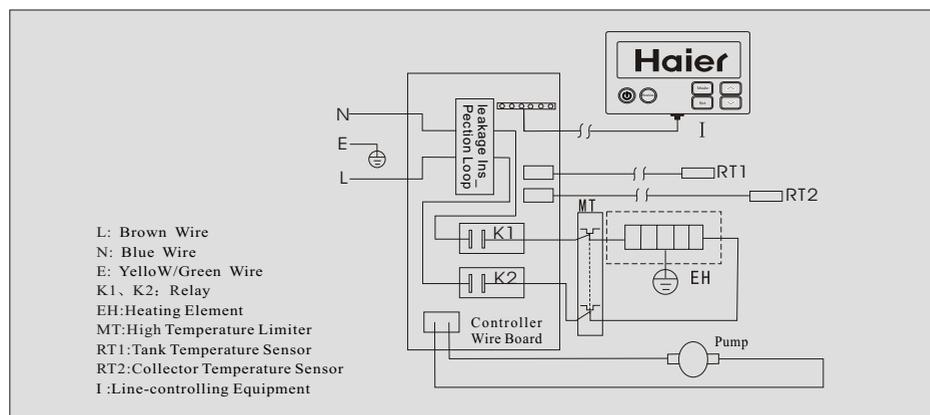
4. Hot water system of enduring pressure

A single machine can use the full system of enduring pressure in more than one way. Water is supplied in more than one line. There exists a large water stream, comfortable water supply and convenient water temperature. System functioning is reliable and can be used under all whether conditions.

5. Humanity design

Four special working modes are designed to supply water under different season climate environments. To automatically adjust linearly the circulating speed of water pump according to temperature difference. To save energy and to extend longevity of water pump. To ensure there exists the water temperature indication. To protect with low and high temperatures, and to use securely and conveniently.

■ Electric circuit diagram



Notes for usage

1. To avoid that water spurts out to the pump and the top cover of water-storing tank.
2. To check the functioning of the system regularly and to check whether the computer board works normally.
3. In order to ensure excellent running of solar water heater, you are suggested to keep the controller electrified constantly and keep it working under the solar energy heating mode.
4. In normal use, the tap water entrance valve of water-storing tank should be kept constantly open. You only need to open the mixed valve to adjust water temperature when taking a bath and then you can use freely.
5. Please pay attention to the temperature of water-storing tank when taking a bath and avoid being scalded by too hot water or being hurt by too cold water.
6. Please try to connect the probe of sensor to the bottom of the installed hole in installment or repair. Please avoid that the sensor receives wrong signals.
7. In winter when water heater is not used for long, the system should be closed and emptied in order to damage water heater as a result of icing. The emptying method is to close the valve where tap water pipe leads to the hot water system, to adjust the the mixing valve on the hot water place, then to open the decompression handle of safety valve and to empty the system. In order to make the emptying process convenient, you are suggested to purchase water releasing pipe (otherwise sold) in installment.
8. In summer when water heater is not used for long, please close the water-inlet valve so as to avoid the suddenness occur, at the same time empty the system. Before empty the system, please use hardboard or other same material to shade the collector fully, after empty the system, you had better tear down the whole circulating pipe so as not to burn the pipe as the sun high temperature. In order to make the emptying process convenient, you are suggested to purchase water releasing pipe (otherwise sold) in installment.
9. In cases when the power supply line of the appliance is damaged, it is the personnel of after service who change that for specially designed lines (provided by the manufacturer).
10. When the system runs continually over one month, you are suggested to check regularly whether the deviation of the clock is large so as to adjust the clock promptly and ensure that the preset and intellectual heating modes operate normally.
11. In cases when the temperature of water-storing tank exceeds 85°C , and the display board of the line-controlling indicates E2, you should cut off power supply and release an appropriate amount of hot water as well as supplement cold water. When the temperature drops, you should connect power supply again, which can eliminate malfunction.

Use method

press “ √ ” more than one second, the adjusted parameter will decrease progressively 3 numbers every second.). The adjusting clock can be set in clock column, the preset time can be set in fixing time column, the heating temperature can be set in fixing temperature column, and the temperature difference can be set in temperature difference column. Confirming of the setting of each parameter can be done by pressing the setting key or by not pressing the setting key about 6 seconds. Then the system will automatically confirm and automatically enter the next parameter setting, until the system finally withdraws from the set conditions and returns to the conditions of the previous clock. The set order of parameter in specific modes is as follows:

◆ Solar energy heating mode:

- Indicating clock condition---to set heating temperature in fixing temperature--indicating clock condition. For example: temperature difference value setting of water pump running: to press the setting key to enter the setting condition of temperature difference of water pump running. The indication board indicates the present set value (the first place on the left of the clock number tube indicates L, and the following two places indicate the tacitly approved set value, which is 10 ℃). To press “ ^ ” 、 “ √ ” to select between 10 ℃ and 6℃. For the indication interface, see Fig.8.

◆ Simultaneous heating mode:

- Indication clock condition--to set heating temperature in fixed temperature indication clock condition

◆ Preset heating mode:

- Indicating clock condition--to set hour of the first preset heating time in fixing time “ ① ” --to set minute of the first preset heating time in fixing time “ ① ” - -to set temperature of preset heating in fixing temperature “ ① ” -- to set hour of the second preset heating time in fixing time “ ② ” -- to set minute of the second preset heating time in fixing time “ ② ” ---to set temperature of the second preset heating in fixing temperature “ ② ” ---indicating clock condition. For example: to set the temperature of the first preset heating, and for the indication interface, see Fig. 9.

◆ Intellectual heating mode:

- Indicating clock condition---to set temperature of heating in fixing temperature column--- indicating clock condition.
Note: after the set (tacitly approved) information is confirmed, the machine will automatically store it and customers can select the present working mode according to their practical necessity. Only when the present working mode is selected, can the corresponding set content be carried out.

System structure

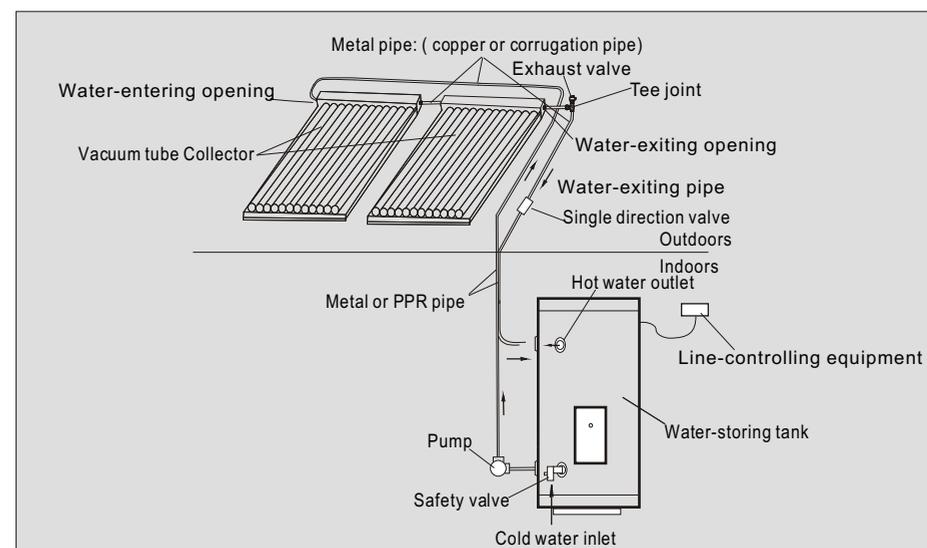


Fig.1 BRF1-120/150W structure sketch map

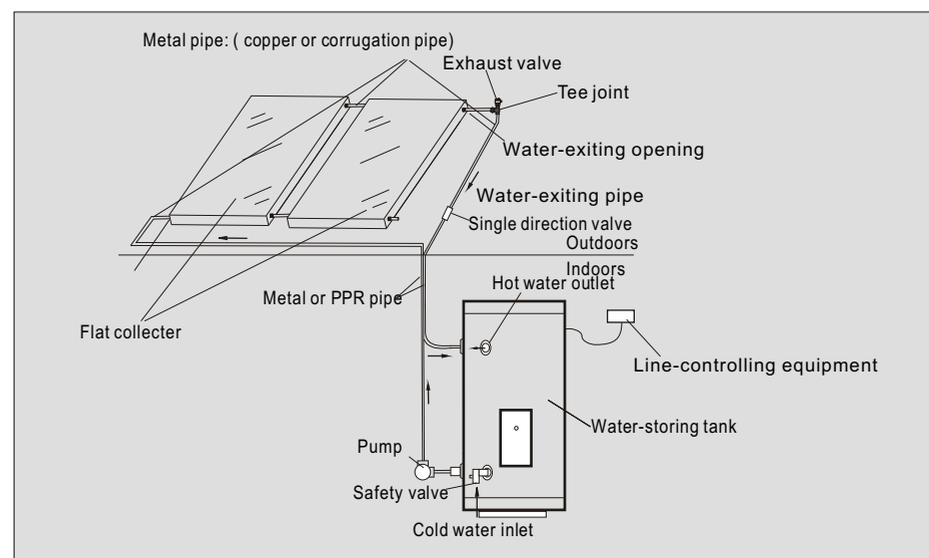


Fig.2 PJF1-120/150W structure sketch map

Technical parameter·Packing list

Technical parameter

Model	Volume	Water-proof Grade	Rated internal Pressure	Size
BRF1-120W PJF1-120W	120L	Drip-proof	0.75MPa	φ492×530×1160(mm)
BRF1-150W PJF1-150W	150L	Drip-proof	0.75MPa	φ492×530×1380(mm)
Model	Rated voltage	Frequency	Assistant power	Lighting area
BRF1-120W	220V~	50Hz	2000W	2.51m ²
BRF1-150W	220V~	50Hz	2000W	3.02m ²
PJF1-120W	220V~	50Hz	2000W	3.00m ²
PJF1-150W	220V~	50Hz	2000W	4.00m ²

Note: the above parameter errors (except power value) of the lighting area are $\leq 3\%$, volume errors are $\pm 3\%$, and the allowed error scope of other sizes is $\pm 10\%$.

Packing list

Packing method	Name of components	Model
		BRF1-120/150W、PJF1-120/150W
Packing container of water tank	Water-storing tank	1
	Safety valve	1
	Exhaust valve	1
	Large expanding bolt	4
	User's manual	1
	Tee joint	1
	Opposite wires S1/2F-3/4M	4
	3/4 fiber spacer	4
	Board hanging on door	1
	Top cover for in-wall box	1
	Bottom cover for in-wall box	1
Packing of pump	water pump joint 1	1
	water pump joint 2	1
	Screw nut	1
	Rubber spacer	2
	Pump	1
Packing of collector	Collector equipment	1

Note: accessories of BRF1-120/150W and PJF1-120/150W products are suitable only for oblique installment. For flat installment, prop stand of different angles should be made according to requirements, which is not included in the packing accessories.

Use method

Fig.7 and at this time, only power supply key is effective and other keys are ineffective. The interface only displays water temperature of water-storing tank and the temperature of water exiting of collector equipment. However, when the system is turned off, the solar heating and malfunction alarm protection are all working and only if the conditions for the running of the water pump are Satisfied, water pump will run at full speed. When malfunction alarm appears, it will display malfunction code.

B. Selection of working mode: the system provides four working modes, and customers can select any mode as the present working mode. When the system is turned on, press the mode key, and the system will circularly exchange in order of solar energy heating, simultaneous heating, preset heating and intellectual heating. Meanwhile, the corresponding icon point will be on. Press mode key to choose a certain mode and stop pressing mode key for six seconds, then the system will automatically enter this mode.

C. Parameter setting in all modes: to press the setting key can set the following parameters: clock, preset time, heating temperature, and temperature difference value of water pump running. The number tube in the set parameter indicates glisteningly. To press the adjusting key “ \wedge ”、“ \vee ” to adjust numbers (to continually press “ \wedge ” more than one second, the adjusted parameter will increase progressively 3 numbers every second; to continually

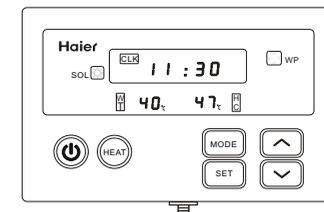


Fig.6 Solar heating interface

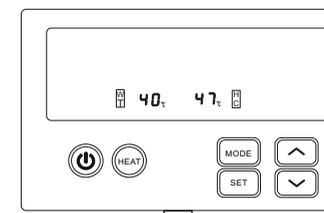


Fig.7 Turning off interface

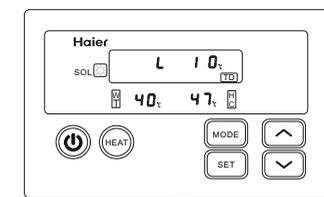


Fig.8 Temperature difference setting interface for water pump

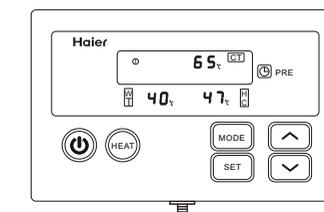


Fig.9 Temperature setting Interface for the first time Preset heating

Use method

heats ahead according to the preset 65°C before the first heating period arrives the second day. In cases when the machine is turned on, press the mode key continually to enter intellectual heating mode. The green point in the working indication icon is on. When the electrical heating starts, the red point in the icon glistens. And when the electrical heating is over, the green point is constantly on. Press the setting mode and you can set the heating temperature, whose scope is 30°C-75°C. Note: in this mode, the solar energy heating is not concerned.

3.introduction of other functions

A.the system has a function of electricity-loss memory and that of automatic starting when electrified.

B.high temperature protection: in the process of the water pump running, when the water temperature of water-storing tank exceeds the high-temperature protection temperature (85°C) set by the system, the water pump will automatically stop running .

C.low temperature protection: when the water exiting temperature is lower than the low temperature protection temperature (4°C) set by the system, the water pump will automatically start running at full speed. And when the temperature rises to 7°C, the water pump will stop running.

D.malfunction protection: this system has circuit malfunction alarm (E1),high temperature alarm (E2), sensor malfunction alarm of collector equipment(E3), sensor malfunction alarm of water-storing tank (E4), as well as pipeline leakage and water pump empty running alarm (E5), etc. When these problems happen, the system will display malfunction code E1~E5. The above malfunction protection is non-restorable and therefore, the system can only normally run after malfunction is eliminated and the electricity is reconnected

4.interface indication and instruction for operation

After the solar water heater center is installed, to confirm that the water-storing tank is full with water and to check that each pipeline is connected properly and not leaking. To check that the power supply of the water-storing tank corresponds to the requirements and then to connect power supply.

5.Instruction for controller

A.turning on/ turning off: the system is turned on directly and automatically enters the working mode and conditions before power supply is cut off. The first tacitly approved working mode of the system is the solar heating mode. The four-number tube of the indication screen displays the clock. The five-number tube under the screen respectively displays water temperature of water-storing tank and the temperature of water exiting. The indication interface is displayed in Fig. 6 and at this time, all the pressing keys are effective. Then press power supply key and the system will be turned off and enter the electricity saving mode. The indication interface is displayed in

Particular warning· Attentions in installment

■ Particular warning

To ensure that customers can use waterheater properly and safely, we here seriously inform our customers that you must contact the appointed professional serving personnel for installing and service. For any improper installment, our company will not burden any responsibility.

- When the power supply is connected, the pump is electrified; Pay attention that connecting lines of pump are inserted stably, and can not load emptily. Before any maintenance and repair of water heater, please make sure that you cut off other power supply. Non-professional persons are not allowed to adjust and maintain water supply.
- Before electrification please make sure that machines are full with water, otherwise it will cause a system malfunction. Please make sure that the sockets are subject to national standards and are connected to the ground reliably. It is prohibited to use water heater without a reliable grounding.
- The water heater is equipped with safety valves. for secure use, please do not change installment position personally. The evacuating tube nozzle should be downwards vertically and are open to the air so as to prohibit jamming the exit. A draining pipe is linked to the evacuating tube nozzle and leads to the sewer opening. (the draining pipe is otherwise sold)
- Hot water with a temperature higher than 50°C might result in scalding and customers should mix hot water and cold water and then have a shower or wash.
- In cases when water heater is seriously soaked, it must be checked by technical personnel ratified by our company before it is reused.
- The hot water in water heater is not suitable for drinking. As a result of long-term use, scale might be produced in the water tank. Meanwhile, the aging of the water pipe can result in a change of water quality. Therefore, when you wash rice and vegetables with water in the container, please wash them once again with clean tap water.

■ Attentions in installment

- When collector equipment is installed, it can not be inversely placed.
- Outdoor pipeline must use metal pipes.
- Heat-preserving of pipelines must use specially designed materials by our company.
- Collector equipment should be installed facing south.
- Evacuating opening of the system safety valve should be connected to the release opening of sewage.
- All parts of the whole system are not allowed to be disconnected personally otherwise, results should be burdened personally.

Attentions in installment·Installation

■ Attentions in installment

- Electric controller should be far from strong interfering sources.
- One-way pipeline between water-storing tank and collector equipment must be less than 10 meters.
- Sensor of collector equipment should be installed at the water exiting Opening.
- The exhaust valve should be installed vertically at the water exiting opening of collector equipment and its position in the pipeline should be kept the highest. To screw loosely the exhaust cap after installment to make it exhaust freely.
- Pay attention the crossing corner of water entering and exiting opening should be connected and the bottom one is for water-entering and the top one is for water exiting in the installment of collector equipment with flat board.

■ Installation

Installment of solar water heater is composed by the following parts: installment of collector equipment, installment of water-storing tank and installment of water pump. Installment of each part should be completed by the professional installing personnel appointed by our company in order to ensure good functioning of the system.

◆ Installment of collector equipment

- Collector equipment of solar water heater is installed with the method of oblique top. collector equipment is placed on the southern rooftop of the house so as to ensure that the equipment faces south and there is no shelter ahead. All the four corners of each collector equipment are linked perfectly with steel wire rope. the other end of the steel wire rope is fixed under eaves or on the wall with an expanding bolt. Pay attention that the steel wire rope is strained and the expanding bolt is beaten firmly. Take the installment of solar water heater of BRF1-120/150W as an example. For the sketch map of installment, please see Fig.3.

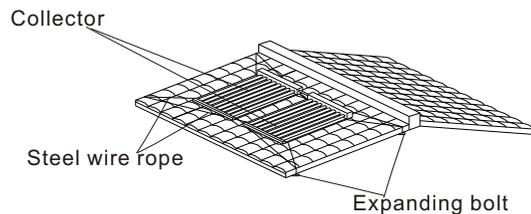


Fig.3 Installment sketch map of BRF1-120/150W

Use method

storage. in cases when the machine is turned on, press the mode key to enter the solar energy heating mode (Note: the first time the system is electrified, this mode can be entered). The green point is in the working indication icon is on in the solar energy heating. Press the setting key and you can adjust the clock and choose temperature difference value (6°C or 10°C, the tacitly approved value is 10°C) of the water pump running. When the starting conditions for water pump are reached, then the water-exiting temperature of collector equipment $\geq 20^{\circ}\text{C}$. Meanwhile, when temperature difference between water-exiting of collector and water in Water-storing Tank is higher than the set value (6°C or 10°C), water pump will start and run at full speed. When the temperature difference is less than 2°C, water pump will automatically stop.

- B. simultaneous heating: turn on the machine, press the mode key to enter the simultaneous heating mode. The green point of this heating is on. To automatically start electrical heating according to the preset 65°C of the system and the red point glitters. Press the setting mode and you can set water temperature 30°C -75°C. When reach the preset temperature, the electrical heating will stop automatically. The working mode will automatically leap from this mode to the solar energy heating mode. If the present water temperature is higher than that set previously, this kind of heating can not start.
- C. preset heating: this function automatically works out the time needed to the set temperature according to the tacitly approved heating power (1KW), and then ensures the time when water heater begins to heat. This mode can realize both one-time preset and twice preset. You can choose either heating method based on your practical life necessity. If you need one-time preset heating, press the setting mode to set the time of the two presetting as the same. If you need twice preset heating, set the two times respectively. (Note: the setting order is irrelevant to the time set). The preset time is subject to the clock time of the system. In cases when the machine is turned on, press continually the mode key to enter the preset heating mode. The green point in the working indication icon is on. Press the mode key and you can set each preset time and their respective preset temperature 30°C -75°C. Note: in this mode, the solar energy heating is not concerned. If the preset temperature is reached before the preset time, the system will automatically start electrical heating each time the system drops 5°C until the preset time is reached. If the temperature has not reached the preset one after the preset time is reached, then the system will delay at most half an hour for heating.
- D. Intellectual heating: this function automatically classifies and analyzes the latest seven-day bathing regularity and memorizes the period of time that customers have a bath most frequently within the seven days. And it then

Use method

For the first use after installation, due to there's no water within the tank, first the cold water inlet valve and mixing valve must be opened. Close the mixing valve when water flows out continuously from the showerhead or other outlets (the tank is full). Check connections are free of water leakage, and insert the power plug.

1. Function introduction of controlling board

There are five icons on the indication screen, among which are the following four icons: solar energy, simultaneous heating, preset, and intellectual power. They respectively represent the four modes of the system working, that is solar energy heating mode, simultaneous heating mode, preset heating mode and intellectual heating mode. And the water pump icon is used to prove that water pump is in a condition of full speed circulated running. For the indication board, see Figure 5.

For details, see the following:

 ---When the green point in the icon is on, it tells that the system is in the solar energy heating mode.

 (Double color) ---when the green point in the icon is on, it tells that the system is in the simultaneous heating. When the red light is glistening, it tells that the system in electrical heating and when it reaches the mounted temperature, it will automatically leap to the solar energy heating mode.

 (Double color) --- when the green point in the icon is on, it tells that the system is in the preset heating mode. When the red light is glistening, it mounted tells that the system in electrical heating and when it mounted reaches the temperature, the green point will be on constantly.

 (Double color) --- when the green point in the icon is on, it tells that the system is in the intellectual heating mode. When the red light is glistening, it tells that the system in electrical heating and when it reaches the temperature, the green point will be on constantly.

 --- Arrows on the icon are in proper order with counter hour hand. When the green point is on, it tells that the water pump is in 100% full speed running condition.

Temperature indication icon for tank --- when the character is on, it tells that the present indication temperature is water temperature of the tank.

Temperature indication icon for collector equipment --- when the character is on, it tells that the present indication temperature is the water-exiting temperature of collector equipment.

2. introduction of basic working mode

A. Solar energy heating: this function adopts the temperature difference between water-exiting temperature of collector equipment and that of water-storing tank to control the running of water pump. It transfers solar energy absorbed by collector equipment to hot water in water-storing tank for

Installation

◆ Installment of water-storing tank

- Water storing tank equipped for water heater is a standing tank. Based on customers' requests, ensure specific installment position, and place water-storing tank. Connection opening of water-storing tank faces one side of the pipeline, and then all corresponding parts of each connection opening should be connected. Layout of water tank should be perfected in installing.

◆ Installment of water pump

- To connect the the water inlet of pump to circulating water-exiting opening and the dirrection must be right.pay attention that the connection of water pump must be firm. Power of water pump should be adjusted to the third grade, and it is prohibited to put other articles on water pump.To avoid that water spurts outto the pump,orthe result is serious.

◆ Connection of pipeline

- To measure the distance between water inlet of collector equipment and water pump as well as that between water-exiting of collector equipment and circulating entrance of water-storing tank. To cut pipes according to the measured size, to cover the heat preservation layer, and to connect collector equipment, water pump and water-storing tank. Pay attention that the connection of circulating pipeline should avoid the opposite alternative. The connection of pipe parts should be proper and firm, and the heat preservation materials should be covered perfectly. Pay attention that the probe of the sensor is placed properly. Installment of pipeline should be artistic and neat.

◆ Connection of collector equipment and water-storing tank

- After the collector equipment is fixed, one end of the equipment should be joined to the tee joint, and the top hole of the tee joint should be connected to an automatic exhausting valve and the bottom hole should be connected to the water- exiting pipe. The Water-exiting pipe should be connected to circulating entrance of water-storing tank,the oherside of the collector equipment should be connected to circulating exit of of water-storing tank.
- Pay attention that connection of circulating pipeline is proper and firm and that the heat-preservation materials are covered perfectly.

◆ Installment of other accessories

- Connection of Single direction valve: Fix the single direction valve on the Water-exiting pipe of the collector equipment,the direction of the single direction valve and the direction of the Water-exiting pipe must keep same, please see Fig.1- Fig.2.
- Connection and Use of Safety Valve: after switching on the water heater, a little water will drip from the safety valve pressure relief vent due to normal expansion. The vent shall always keep open to the air. Avoid being blocked.

Installation· Introduction of indication board

■ Installation

- Note: If your water heater is not installed in a bathroom with sewage drain, it is suggested you connect a drain hose (separately sold) to the safety valve. Connect one end of the hose to the safety valve vent and the other end to the sewage drain. The hose can be cut short or extended as necessary. The hose shall be installed as inclined downward.

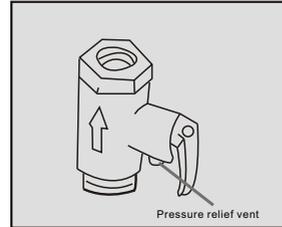


Fig.4 Sketch map of Safety Valve

Fix the showerhead holder at a suitable place on the wall, and place the showerhead on the holder. After making sure the tank is full of water, connections show no water leakage and power supply complies with requirement, connect the power supply and make trial operation.

- Note: the mixing valve is separately sold, you can get it from the local haier service, and contact the appointed professional serving personnel for installing and service.

◆ To fill water into the system

- To open water-exiting valve of hot water and to fill water into the whole System (water-storing tank, collector equipment and system pipeline) Through cold water opening of tap water. To close water exiting valve of hot water until the air is exhausted and water flows out continually. Meanwhile, to observe whether the system leaks and to keep the cold water entrance open in the process of use.

■ Introduction of indication board

1. Heating mode icon of solar energy.
2. Simultaneous heating mode icon
3. Turning on/ turning off key of power supply
4. Short-cut key of electrical heating starting
5. Icon for preset 1
6. icon for clock setting
7. icon for preset heating time set
8. icon for preset 2
9. icon for temperature setting of electrical heating
10. icon for temperature errors of water pump starting
11. icon for running conditions of water pump
12. icon for preset heating mode

Introduction of indication board·Operation diagram

■ Introduction of indication board

13. icon for intellectual power heating
14. upwards adjusting key
15. downwards adjusting key
16. indication icon of collector equipment temperature
17. selecting key of working mode
18. setting key of parameter
19. temperature indication of collector equipment
20. clock indication
21. temperature indication for tank
22. indication icon of tank temperature

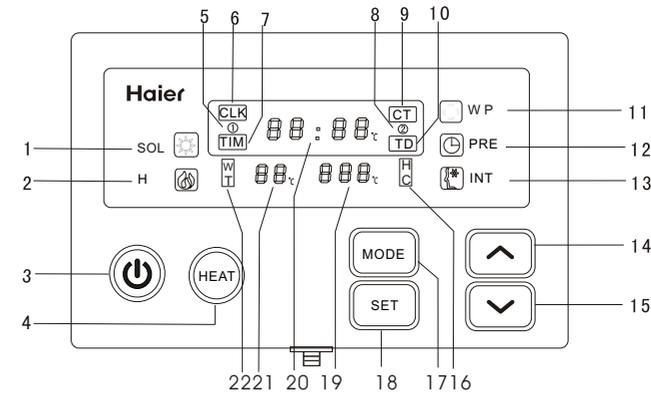


Fig.5 Front view of indication board

■ Operation diagram

