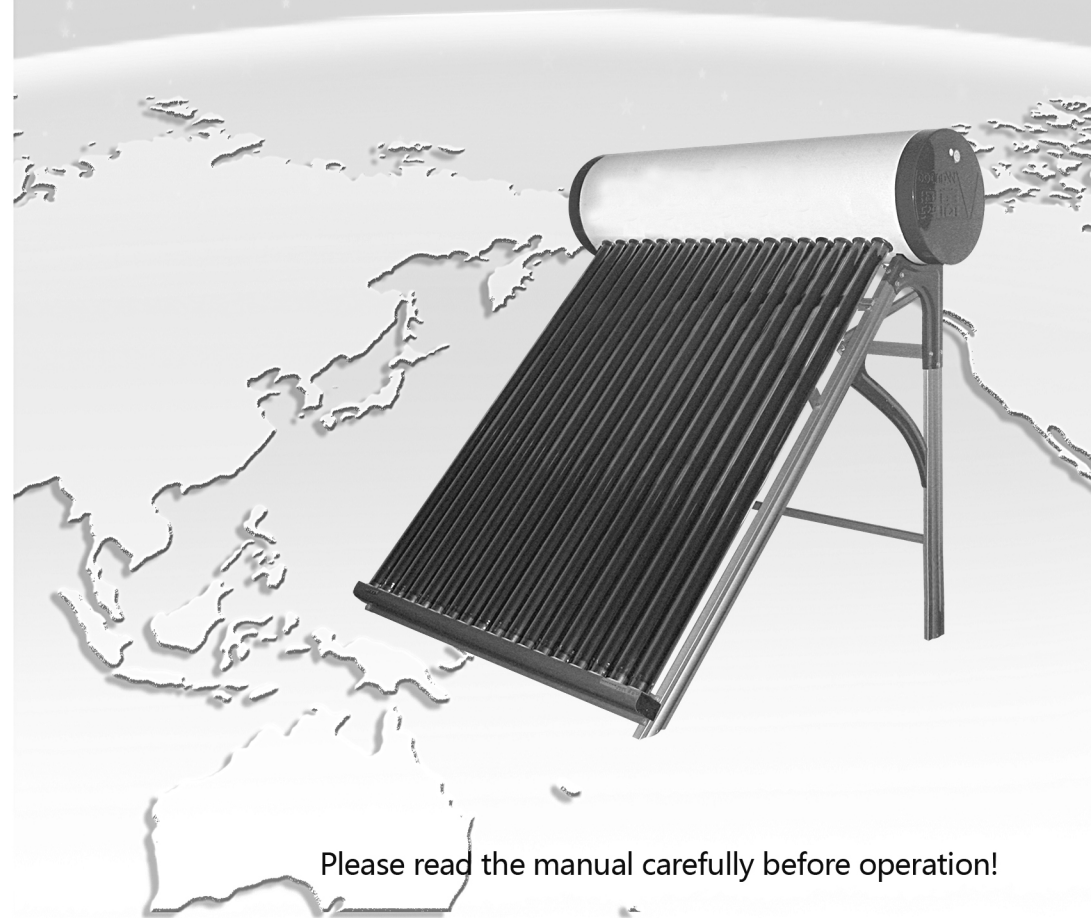




SOLAR WATER HEATER

User Manual



Please read the manual carefully before operation!

Preface

Thank you for using our solar water heater!

Our company's solar water heater consists of vacuum tube, water tank, bracket and baffle-board. Other parts and accessories belong to extra appliance.

Our solar water heaters are produced under the ISO9001:2008 quality manager system, we obtain the certificates of SOLAR KEYMARK (DIN EN 12975), SRCC, CE, CCC and GMC (Global Market Certificate, audited by TUV Rheinland), so please be assured to use our solar water heater.

In order to obtain the maximum efficiency of the solar water heaters and to avoid the possible problems in function, you are kindly requested to read very carefully the manual prior to installation and operation. This book provides users the technical characteristics, installation and maintenance of our solar water heater, and some related accessories as well.

This product must be installed by trained workers with the professional qualification. We will be exempted from any responsibility of damages or defects that are caused by the disobedience of the instructions.

This manual is a universal instruction of our non-pressurized solar water heaters. The structure drawings and comments of our solar water heater were correct when the book was published. We shall apologize that the structure may have some changes in accordance with our policy of continuous improvement of our products.

Thanks again for your support and trust for our solar water heater.

Contents

Features & Advantages of Our Solar Water Heater	1
Technical Data Sheet of solar Water Heater	2
Structure of Solar Water Heater	3
Installation Explanation	5
Installation Drawing	9
Using Instruction	10
Optional Accessories	11
Installation of Accessories.....	12
Analysis and Solution of Common Errors.....	13
Maintenance of Solar Water Heater.....	14
Warm Tips About Solar Water Heater.....	15
Installation Video Disc.....	16

Main Features & Advantages:

- A.** Operate all the year round, can work with electric backup, and produce hot water every day and night.
- B.** Use high quality vacuum tubes, high heat absorption efficiency and low radiativity.
- C.** Excellent heat preservation: more than 72 hours.
Entire polyurethane foaming –adopt advanced international high–tension frothing technique–makes the foaming layer high density and low porosity.
- D.** Corrosion resistant inner tank: Use imported stainless steel 304–2B plate, welded by automatic high frequency soldering machine, corrosion resistant, aging resistant–guarantee healthy and clean hot water.
- E.** Imported silicon rubber sealing gaskets: no smelly, no toxic, high temperature resistant, long lifespan.
- F.** Strong wind, Hailstone, Freezing Resistant.
- G.** More optional accessories:
- ★ Completely Intelligent Controller: safer and more convenient–automatically supply cold water and control the temperature of hot water outlet.
 - ★ Magnesium Rod–to clean water in the tank–to prevent from water scale.
 - ★ Backup electrical heater –to guarantee hot water supplied on cloudy and rainy days.
 - ★ Assistant Small Water Tank – to supply cold water automatically.

Technical data sheet of water heaters:

Model	Vacuum tube Size	Q'ty	Absorbing Area	Water Capacity	Persons
WBN–420/1500–47/15	Φ47mm × 1500mm	15	0.76m ²	85 L	1
WBN–420/1500–47/18	Φ47mm × 1500mm	18	0.91m ²	100 L	1–2
WBN–420/1500–47/20	Φ47mm × 1500mm	20	1.01m ²	115 L	2–3
WBN–420/1500–47/24	Φ47mm × 1500mm	24	1.21m ²	136 L	3–4
WBN–420/1500–47/30	Φ47mm × 1500mm	30	1.51m ²	168 L	4–5
WBN–470/1800–58/12	Φ58mm × 1800mm	12	0.96m ²	100 L	1–2
WBN–470/1800–58/15	Φ58mm × 1800mm	15	1.2m ²	130 L	2–4
WBN–470/1800–58/18	Φ58mm × 1800mm	18	1.44m ²	150 L	3–5
WBN–470/1800–58/20	Φ58mm × 1800mm	20	1.6m ²	180 L	4–5
WBN–470/1800–58/24	Φ58mm × 1800mm	24	1.91m ²	200 L	4–6
WBN–470/1800–58/30	Φ58mm × 1800mm	30	2.4m ²	250 L	5–8
WBN–470/1800–58/36	Φ58mm × 1800mm	36	2.88m ²	300 L	6–9

Note:

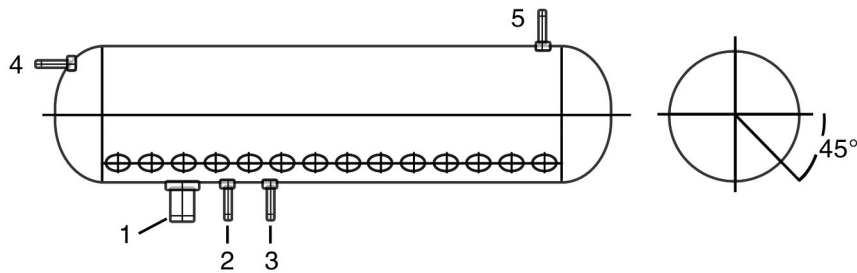
The data for indication only, any change will not notice.

If the water heater used for other purpose, like bathing and washing vegetables, you can decide for your own reference.

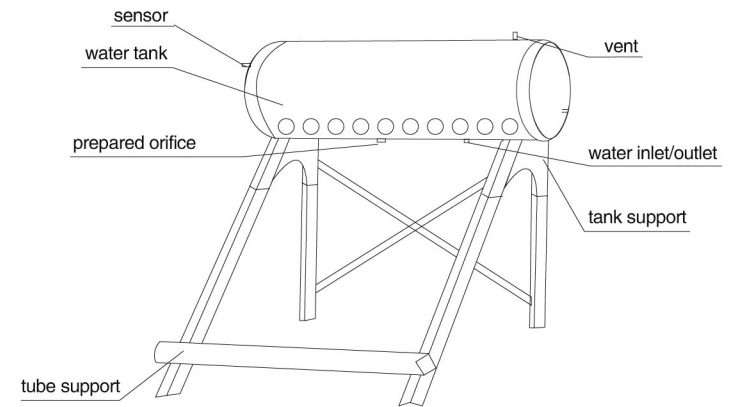
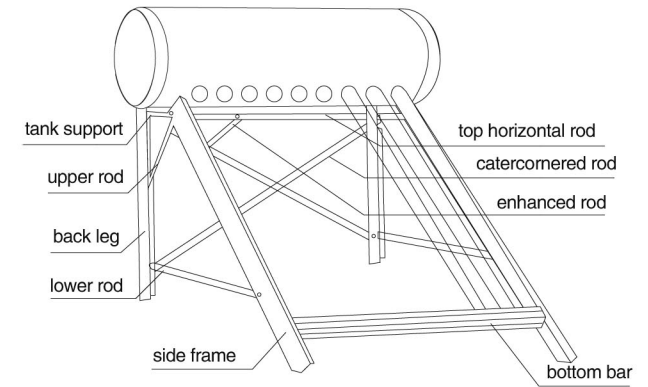
Structure of Solar Water Heater



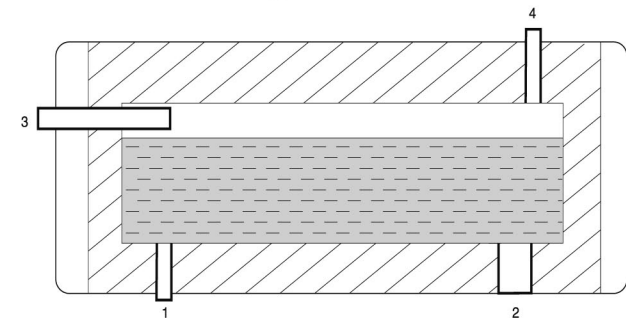
- | | |
|-----------------------------|---------------------|
| 1. Heat preservation layer | 2. Outer water tank |
| 3. Inner water tank | 4. Anti-dust seal |
| 5. Evacuated-tube collector | 6. Tank cover |
| 7. Silicon ring | 8. Bracket |



- | | |
|----------------------|------------------------------------|
| 1. Electrical heater | 2. Hot water outlet |
| 3. Cold water inlet | 4. Water level, temperature sensor |
| 5. vent pipe | |



Structure of Water Storage Tank



- (1) water inlet/outlet (2) prepared orifice (3) sensor/ overflow (4) vent

Installation Explanation

STEP 1: Install the Bracket

★ Make sure each part is ready there.

	1. bracket
	2. tools may need
	3. water tank support
	4. tube shoe bars
	5. anti-dust ring
	6. rubber gasket, silicon ring
▲ screws, bolts and nuts supplied	

Put the pieces of brackets and water tank supports together in order, and fixed them with the screws, bolts and nuts, **(not too tight at first, in lest any adjustment afterward)**. See as the following photos:

P1: put the pieces together	P2: fix with screws, bolts and nuts	P3: primary effect
P4: go on step after step	P5: put the end bars onto the holes	P6: bracket primarily finished

STEP 2: Fix the Water Tank on the Bracket

- Put the two black rubber gaskets on the top of the water tank supports.
See P7
- Loose the nuts of the bolts fixed on the two sides of the water tank.
See P8
- Put the water tank on the top of the bracket to make 4 bolts get through the holes.
See P9
- Revolve the nuts back onto the 4 bolts.
See P10

P7: put the gasket onto the tank support	P8: loose the nuts of bolts fixed on the two sides of tank	P9: put the water tank on the support	P10: Revolve the nuts back, The finished effect

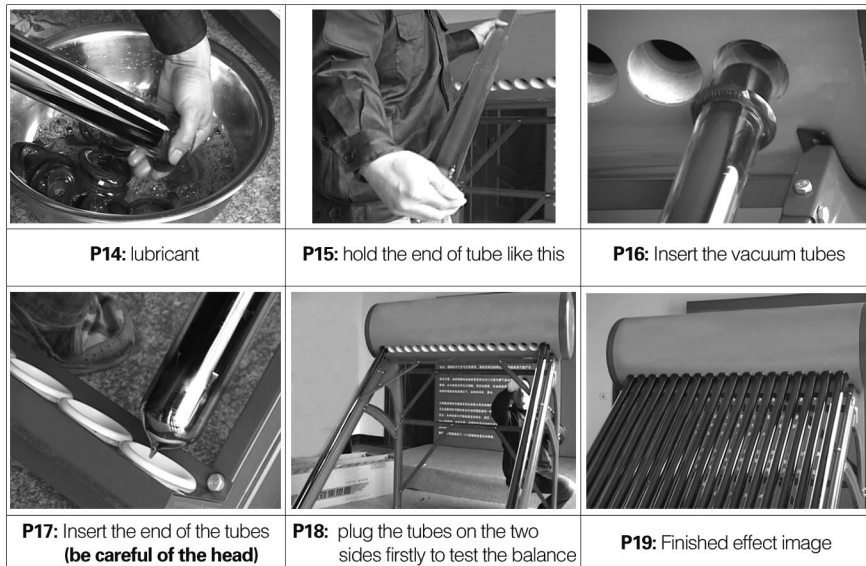
STEP 3: Plug the Vacuum Tubes into the Water Tank

- Insert the white silicon rings into the holes of the water tank. **See P11-P13**

P11	P12	P13: finished effect

If your water tank has already with the silicon rings inside, then move to next step directly.

- B.** Put some lubricant such as detergent on the anti-dust rings and the mouth of the vacuum tubes, (It will help you install more easily), put the anti-dust rings onto the vacuum tubes.
See P14;
- C.** Hold the end of the vacuum tube as **P15** shows, to protect the end of the tube from broken.
- D.** Insert the vacuum tube (with turning) slowly into the water tank along holes of the tank.
See P16,
Then insert into the hole of the end seat. **See P17**
- E.** Firstly install the vacuum tubes on the two sides to test the balance of the whole system, if not balance, adjust the screws on the brackets, and then fix tightly with the tools, as **P18** shows. Then, assemble the rest of the vacuum tubes on the system.

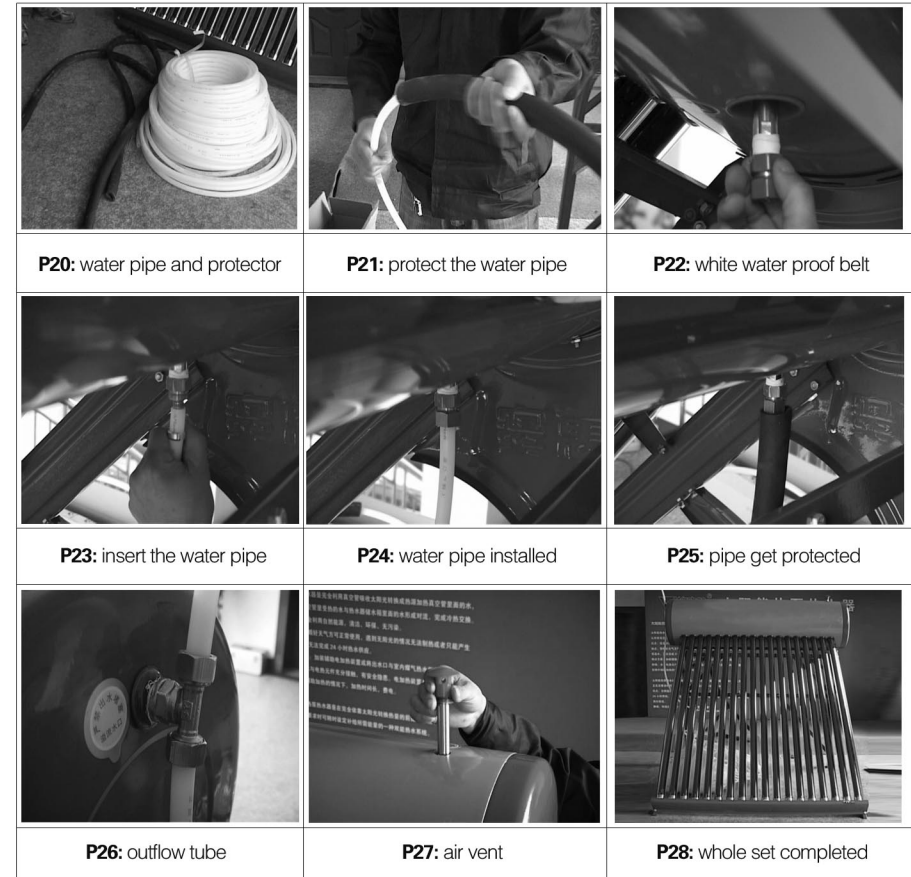


STEP 4: Install the Pipe Connection

The pipe connection include water pipes (the PPR pipe is the best) and pipe protector (anti-freezing pipe) for cold water inlet and hot water outlet, overflow tube, air vent, assistant electrical heater.

Put the cables into protector pipe when heating by electrical backup. Fix the inlet and outlet water pipe on brackets or on the roof.

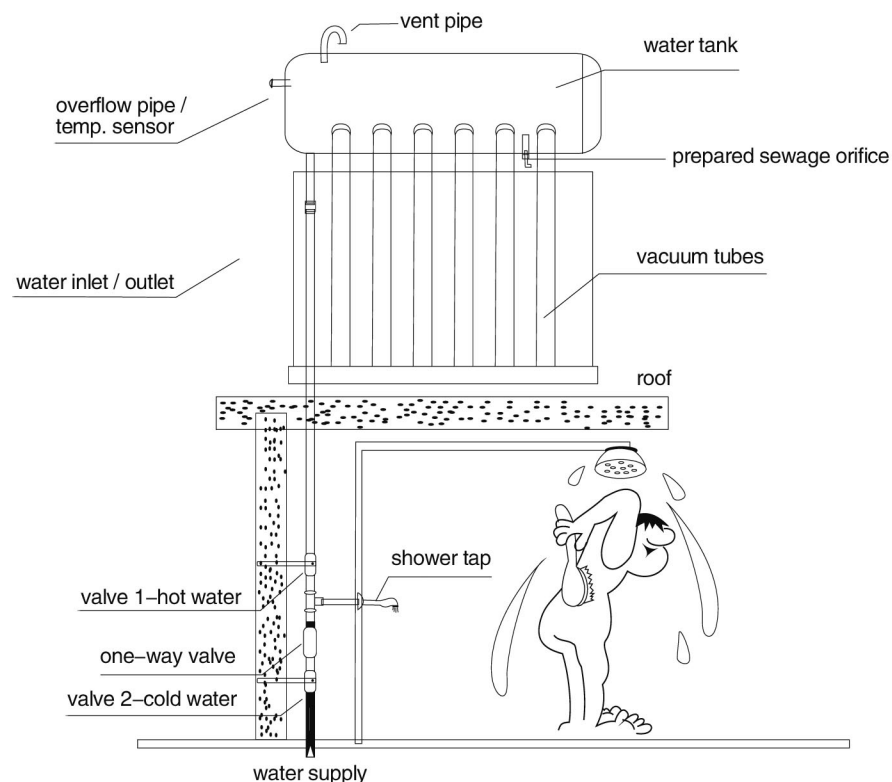
In the cold areas, you can add an emptying valve to empty the inlet and outlet water pipes. There are labels marked beside every vent.



STEP 5: Install the Water Heater on the Roof

- A.** The solar water vacuum tube must expose to the sun, and make sure there is no shelter from the round and above. It must be fixed firmly in order to be protected from the damage of strong wind.
- B.** Crossing type water heater is suitable for roof with 30°C slope and low ridge.
- C.** Adjustable type of water heater is suitable for roof with 60°C slope and low ridge.
- D.** Crossing type and adjustable type heater are parts interchangeable for re-configuration

Installation Drawing



Note:

- A.** If supply water by hand, please follow the instructions below:
 Open valve 1 (hot water) and valve 2 (cold water), thus water is supplied to the tank. Close the valve when the water overflows (about 20 minutes).
 Open valve 1 (hot water), close the valve 2 (cold water), then adjust the shower tap, you can take a shower.
- B.** If installed the automatic water supplying accessory (assistant small water tank or intelligent controller), please refer the relevant instructions separately.

** Please feel the water temperature by your hand before bathing, in lest that the hot water may scald your skin.

** Children are not suggested to use water heater alone.

Using instruction:

1. This product must be installed by authorized professional workers. Users installing it unauthorized do so at their own risk.
2. It's recommended to fill water into the tank in the morning (before sunrise) or during the night time (when no more hot water is needed), because it may cause explosion when fill cold water to the empty vacuum tubes heated for a long time in the strong sunshine.
3. Please use your hand to feel the water temperature before bathing in order to prevent you from scalding by overheated water. Child uses the water heater alone is prohibited.
4. Please avoid insulating for long with empty tank, otherwise the lifespan and performance of the gaskets and vacuum tubes will be affected.
5. This type of solar water heater is non-pressurized, please do not block the vent and overflow orifice, otherwise the water tank will be expanded to explode when water added, or the inner tank will shrivel when water is released.
6. Any users who change the structure of the water heater in any form can't obtain the service of maintenance.
7. Do not heat without water. Before using the water heater with electric backup, please make sure the leakage protector fuse and grounding device are working properly. Please check the plug of the leakage protector at least once a week. Please stop using the electric heater when any problem is found and ask professional workers for an overhaul. Make sure the water tank is full before you plugged in. Cut off the electricity supply when water is heated. Bathing with electricity turned on is strictly forbidden! Do not use the water heater in lightning days! Keep the water tank full in typhoon days.
8. It is recommended to protect the exposed water pipes to ensure the water heater work normally in the frozen weather.
9. The vacuum tube is cryophylactic. It can be still tough at -70°C without water. But solar water heater without electric backup must be in a state of full water in cloudy and snow-covered winter days. Moreover, the cold water in the water tank must be changed every two days or the vacuum tube may crack for internal icing.
10. In summer days, the vacuum tubes can reach temperature higher than 250°C after insulating without water, thus supply cold water may easily cause crack of the vacuum tubes. to avoid such accidents, please add water into the water tank immediately after you use or put water into the water tank during the night.
11. If you go out for days and leave your solar water heater full of water, you can cover the vacuum tubes from irradiation. It is recommended to check the water tank firstly to prevent the water from evaporating to dryness, and supply cold water also in the evening.

Optional Accessories

Accessories	Function & Characteristics	Technical data
Back-up Electrical Heater	<ul style="list-style-type: none"> ▲ Temperature auto-control at 65°C ± 10°C ▲ Double protection from dry heating ▲ Terminal box furnished with function of water-proof and anti-aging ▲ In security of National Standard, GB4706 1-1998 ▲ With structure of inserting, easy to assemble and maintain ▲ Compensation to the low water temperature due to cold weather 	<p>Rated voltage: 220V, 110V Rated frequency: 50HZ Input power: 1.5kw, 3kw Working pressure: 0.6Mpa Grade of water proof: IPx4</p>
Magnesium Rod / Anode Rod	<ul style="list-style-type: none"> ▲ Strong cleaning anti-dirty, and softening of water ▲ Extend the life of inner tank layer ▲ Keeps water no toxic, smell less, and ionized, good for shower. ▲ Inserting form with seal to fix for assembly, easy for replacement 	<p>Size: 120g, 210g Rate of loss: 1.2g-1.8g/t</p>
Intelligent Controller	<ul style="list-style-type: none"> ▲ Set the water level, auto-water filling and stop filling at will ▲ Auto-heating, temperature to be set at will ▲ Fill and heat water manually ▲ Automatic control of boost pump ▲ Lowest water level alert, and filling water auto-matically ▲ Really display of water temperature and level ▲ Time display ▲ Longer life with sensor and water separation from each other 	<p>Power consumption: > 3W Accuracy of temperature control: ± 1°C Working voltage of solenoid valve: 12v</p>
Assistant Small Water Tank	Control the water level, and supply water automatically	<p>Material: painted steel or stainless steel 304 Tank capacity: 3L, 5L, 8L, 12L</p>
Water temperature and level indicator	<ul style="list-style-type: none"> ▲ Dynamic indication of water temperature and level ▲ Full level alarm ▲ Sensor with wet structure, durable ▲ DC power supply by battery, safe and reliable 	Working voltage: 4.5V

Installation of Accessories

A. Auxiliary Electrical Heater

1. Installation of electrical heater must be professional personnel.
2. Three wires flexible cable with cross-sectional area not less than 1.75mm² is used for the connection of power supply.
3. The short wire in dual color, yellow and green. is for the grounding of solar water heater. Fix the bared end of copper wire together with the dual color wire of power supply to the middle terminates located in the terminal block of electrical leakage protection plug, in order to avoid short circuit. The length of bare section of the copper wire should be controlled at around 5mm. The bare section length of dual color grounding wire should be 10-12mm longer than that of other two wires.
4. Since the wiring has been finished, clamp down the power supply cable. Put on the cover of the terminal block and fasten it with screw with lead wire of electrical heater downward.
5. There is a silver soldering terminal fixer at an end of the dual color grounding wire. Fix it with a BT3 × 10 self-tapping screw to the rivet hole located at the lower part of the end of water tank.

B. Magnesium Rod / Anode Rod

Most of time the magnesium rod has already been installed in the water tank before sold. If not, please connect the relevant dealer and ask him to install it for you.

C. Intelligent Controller

The installation and operation instruction of our intelligent controller is put together with the controller, please read it firstly and operate strictly as the instruction shows.

B. Assistant Water Tank

The function of the small water tank is to control the water level and supply water automatically. It is optional, please install according to its instruction, which is put in its packing box.

Analysis and Solution of Common Errors

Problems	Cause	Solution
Water is not hot in sunny days	<ol style="list-style-type: none"> 1. Some shelter against the sunlight or has severe air pollution above the water heater. 2. The inlet water valve cannot stay closed and the cold water supplanted the hot water. 	<ol style="list-style-type: none"> 1. Wipe out the shelter or move the heater away from the current location, or clean the tubes 2. Changes the water valves
Water tank can not reach the full level	<ol style="list-style-type: none"> 1. The tap water is lacking of pressure. 2. The inlet water pipe is leaking. 3. The water tank is leaking. 	<ol style="list-style-type: none"> 1. Add a small water pump. 2. Change the inlet water pipe. 3. Find the solutions on the next problem.
Water leakage of tank	<ol style="list-style-type: none"> 1. The silicon rubber gasket is broken or the water tank is out of true. 2. The inner water tank is leaking. 	<ol style="list-style-type: none"> 1. Replace the silicon rubber gaskets or adjust the angel of water tank. 2. Change the water tank.
Water is in fit and then cold when bathing	The pressure of tap water is unsteady	Install a supplementary water tank that can store cold water and steady pressure, blend cold water in or use automatic high-tension valve.
No hot water supplied in winter	<ol style="list-style-type: none"> 1. Inlet and outlet pipe freeze in cold winter. 2. It is too cold to heat up the water 3. The pipes are out of heat preservation. 	<ol style="list-style-type: none"> 1. Ask dealer or factory to do the heat preservation test of pipes. (Chargeable) 2. Use up the hot water and empty the water tank, and then add water in next early morning. 3. Furnish pipe with an electrical heating strip 4. In typically cold days, turn on hot water valve a bit to keep a small flow of hot water to avoid freeze of water. 5. Install a electrical backup.

Maintenance of the Solar Water Heater

Dear users:

Thanks for using our solar water heaters!

Our complete appliance has a three-year guarantee. We will exchange the appliances for you without compensation for the manufacturing and quality flaw of the product, including conditions as follows:

1. Steam leakage and blanch of the vacuum tube
2. leakage of water tank
3. Spontaneous cracking of the bracket

Conditions as follows are charged in principle during the guarantee time:

1. Products without maintenance card and valid bill, or either is altered without authorization.
2. Errors and damage caused by fault use of the product and unauthorized repair and remodel.
3. Errors and damage caused by the removing of the install position, transiting and falling.
4. Damages caused by unmerited transiting, keeping, using and other artificial reasons
5. Damages caused by irresistible natural disasters, such as earthquake, typhoon, lightning, cirrisuib caused by harmful gas, etc.

Warm Tips

How to identify the good quality of solar vacuum tubes

1. The luster of external appearance should be unified.
2. The air suction nozzle of the tail should unwounded.
3. The vacuum getter should be mirror-faced. Dim mirror face indicates reduce of vacuity; blanch of the bottom indicates the complete lose of vacuity.
4. To feel the ekstexine of the vacuum tube after being insolated for several hours; if it is cool, it means the tube is good.

How to increase the hot water temperature

1. To well protect the water outlet pipe, especially in the freezing winter days.
2. To supply water instantly after no more needed, in order to prevent heat lost during the night.
3. If not so much water needed, not to fully fill in the tank every time to heighten the water temperature.
4. If the water is not as hot as you wanted, you can use back-up heater, such as electrical heater, gas heater, and heat pump heating system.
The most comfortable temperature for shower for human beings is 15 °C.
5. To clear up the dust on the solar collector every 6 months, or at least once a year, in order to increase heat absorption to obtain higher water temperature.
6. To clean the water fouling inside the vacuum tubes every one or two years according to the water quality in your area. You can ask professionals for help.

Installation Video Disc

Notes:

1. Installation solar water heater is an overhead work, please take care!
2. Please watch the installation video and read the explanation (Page 5–9) carefully before installing. Follow the video and the explanation strictly, or please ask the professionals to install.
3. When installing on the roof, please take protections, like safe belt.

Installation CD