

Heat pipe solar collector Installation Manual--SB series

Solar Keymark & CE certificates

Introduction of SB series solar Collector

SB series solar collector are all-glass evacuated solar domestic water systems combined with heat pipes. The selective coating in the inner cover of the evacuated tubes ensures high energy absorption and low heat radiance losses, which converts solar energy into heat energy and transfers to the heat pipe by an aluminum fin. The liquid in the heat pipe changes into vapour which rises to the condenser. The heat conducts the water inside the Header pipe and the vapour becomes liquid, returning to the base of the heat pipe. This continuous circulation transfers heat from the heat pipe to the cold water in the header pipe as long as sun is heating the collectors. Hot water can be obtained by injecting cold water from the bottom of the tank.



Features

- Very fast start-up even under low solar irradiance, due to the small heat capacity of the heat pipe combined with good thermal conductivity of the aluminum fin which contacts the inside of the inner glass tube.
- Utilization all year round even in cold climates;
- The system will still operate in the event of occasional tube breakages;
- The diffuse flat plate reflector unit behind the glass tubes can be easily assembled and increase efficiency by 5%;
- Larger solar water systems consisting of more than one panel can be installed using parallel and/or series connections;
- Auxiliary electric booster is available.

The most obvious advantages of Heat pipe solar collector

- Can be installed individual or combined with a traditional system;
- Withstand pressure;
- Can operate with occasional tubes breakage and be replaced easily;
- Works well in low-irradiance day with an electric booster
- How to avoid cold water and hot water mixing?

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If the outflow rate is limited within 8L/min, through a lot of testing such phenomenon is not obvious.

- How to clean clime after heat pipe has been used for a long time?

Carefully remove collector tubes, screw loose the heat pipe, clean the top end with decontamination.

Solar collector specification

Model	SB-1800/58-12 ST	SB-1800/58-18 ST	SB-1800/58-20 ST	SB-1800/58-24 ST	SB-1800/58-30 ST
Weight for Manifold (KG)	10.00	13.50	15.00	18.00	21.00
Packing Size for manifold	1130*170*190	1610*170*190	1770*170*190	2090*170*190	2570*170*190
Weight for Heat Pipe (KG)	30.30	45.50	50.50	60.60	76.00
Weight for Frame (KG)	4.30	5.13	5.40	7.20	8.40
Packing Size for Frame	2020*130*130	2010*130*130	2010*130*130	2010*130*130	2440*130*130
Weight of the Collector (KG)	44.60	64.13	70.90	85.80	105.40
Size of the Collector (mm)	1110*2000	1590*2000	1750*2060	2070*2000	2550*2000
Insulation	Rock Wool	Rock Wool	Rock Wool	Rock Wool	Rock Wool
Absorbing Area (m ²)	2.9	4.34	4.83	5.81	7.25
Max. Operating Pressure(Mpa)	0.6	0.6	0.6	0.6	0.6
Max. Title Angle	60°	60°	60°	60°	60°
Min. Title Angle	20°	20°	20°	20°	20°
Hailstone Resistance	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm
Wind Resistance	≤30m/s	≤30m/s	≤30m/s	≤30m/s	≤30m/s
Snow load	470mm thick Snow on record	470mm thick snow on record	470mm thick snow on record	470mm thick snow on record	470mm thick snow on record

Plumbing Instruction

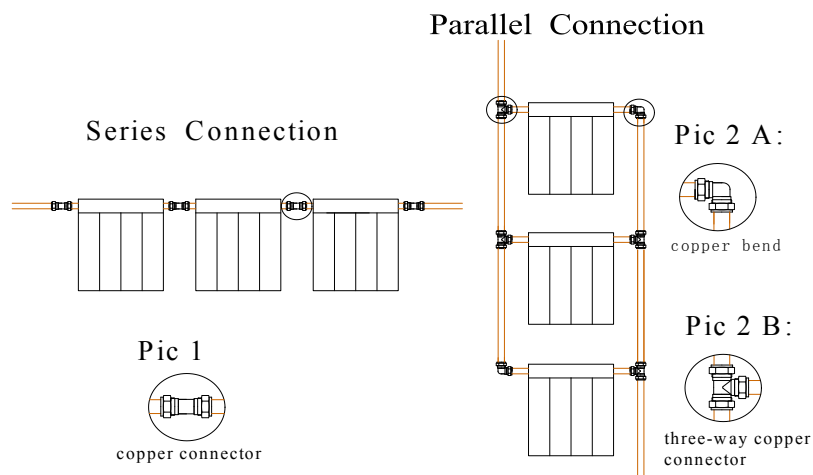
Solar Collector Connecting

The connecting of the collectors to a collector array can be designed according to the location and position of the system. Different ways of the connecting reflects the different operation efficiency. And generally parallel connection and in series connection is suitable for the collectors as shown with below drawings.

Connection in series: As shown in picture1, put two assembled collectors together, use the copper connector to connect each solar collector with its 22mm size head. Then connect the other side of the connector with pipeline. The same kind of connecting shall be carried out between all the collectors needed.

Parallel connection: First, connect the solar collector outlet and inlet with pipeline with the copper connector; then, as shown in pic2A and pic2B, the copper bends and three way copper connectors are used to connect the pipeline together.

The diameter of the pipeline can be $\Phi 12$, $\Phi 14$, $\Phi 16$ and etc, and the pipeline can be some kind of copper pipe or stainless steel pipe.



Maintenance for the system

Maintenance

- There's maybe dust and oil existing in water pipe when installing. Please turn out the tap to get rid of the sundries at the first using.
- For collector surface, please do the cleaning regularly according to the local dusty rate. Raining can clean the solar water heater and maintaining a clean surface can be higher collection efficiency.
- For the solar water heaters with reflector, please clean out the reflector simultaneity.
- Please check the vacuum rate or whether the vacuum tube is crashed regularly. It shows that the vacuum tube rate is down and must be replaced when the barium- titanium get black.
- Generally, it has filter gauze setting at the outlet of tap, the scale and sundries from water pipe always

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generate in filter gauze, so please clean out regularly.

- Solar water heater must be clean out, check-up , antiseptis every 2 or 3 years. At normal time, user can disinfect the system by themselves. Such as buying chlorine disinfection of Pharmacy into the water, soaking for a period of time, and then let it be known, it can play a Sterilization effect (the use of disinfecting agents, please note the instruction, and using quantity).

Lightning protection procedures

- Place a lightning rod using metal frame to avoid the thunder, the lightning rod should have a suitable height.
- The solar collector must be installed in the available area where it can avoid thunder, it's important to make the top of the lightning rod on the roof higher than the top of solar collector. At the same time, the distance between the solar collector and lightning rod should be less than 3 meters.
- Make sure that the solar water tank is connected with the lightning rod or earth-wire.
- Install a power supply lightning arrester to prevent the incursion of lightning electric wave. Don't take shower on the days with thundering and raining.

Trouble Shooting

Troubles	Probable Reasons	Solutions
No water flows out	Not enough pressure or no water supply. piping or connections have been fallen off or stemmed. Piping freezing	Repair circulation or clean stems away.. Melt the piping
Low hot water temperature	Low radiation Leakage occurs caused by loose or damaged valves Collector within shadow using hot water too much in one day.	tighten or replace valves Take the shade away or mount the solar water heater anywhere else.
No continuous water	The outflow is more than the inflow .	Turn down the outflow valve .