

TOPSFLO TS5 Series Instructions

Excellence in Micro Pump, DC Pump

Solar DC Circulation Pump Installation & Operating

Areas of use

Hot Water Circulation
Radiant Floor Heating
Solar Applications
Liquid Transfer
General Purpose Pumping

PV operated easily

For solar system loops, the pump can be powered directly from a PV panel. The sun comes up, heat builds in the solar hot water panel and at the same time electricity is made in the PV panel. The pump slowly starts with the smallest amount of current and pushes the heated water to the storage tank. It's all too simple and eliminates all controllers, thermostats and sensors.

Main Features

Voltage: 6V~24V DC (Rated:12V DC)
Max working temperature: 110° C (230° F)
Max system pressure: 10Bar
Low noise: ≤45dB far from 1m distance
Long life brushless pump with energy efficiency technology
Soft start at very low in-rush current, good convenient working directly with PV panel
Min start-up power consumption less than 2 Watt
Advanced magnetic drive technology for static-impeller, without any leakage for ever
Durable permanent magnetic rotor/impeller and fine ceramic shaft
Heavy duty work, can sustain continual 24 hours' work
Low power consumption, low or no maintenance

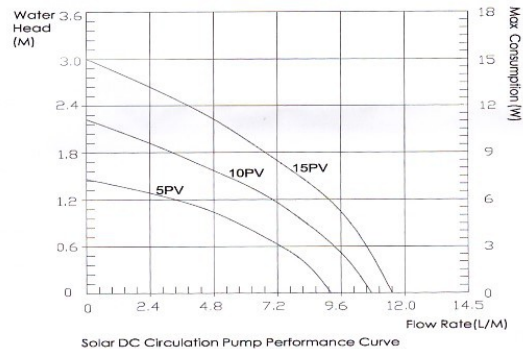
Motor protective functions:

- Protection against dry operation.
Drive circuitry can detect no or little liquid in pump chamber and will stop the pump
- Excessive temperature.
The pump will slow or stop when the motor temperature increases beyond rated temperature as a result of elevated fluid temperature and installed environment temperature, and will automatically recover when temperature decrease to rated temperature
- Over load protection.
The drive circuitry is protected against excessive current and load.
- Over voltage protection
The drive circuitry is protected against over voltage range.

Materials of Construction (Wetted Parts)

- Hi-Temp Ryton Plastic- PPS (food grade)
- Brass Inlet/Outlet
- Viton "O" Ring
- Hi-Temp Ryton (PPS) Impeller
- Ceramic Ferrite Magnet

The performance

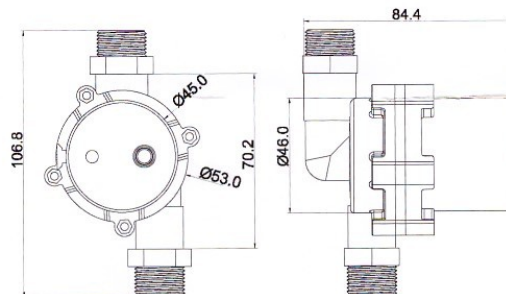


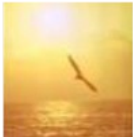
Max. flow based on discharge pressure of 0 psi and max. head based on operating pump at shut-off.
Performance data is based on pumping clear water at normal ambient temperature.

MODEL	PV MODULE (W)	MAX HEAD (M)	MAX FLOW (L/M)
5PV	5	1.4	8.5
10PV	10	2.3	10
15PV	15	3	11.5

For direct PV operation, real PV output is affected by efficiency of PV and intensity of sunlight, the full load working of pump is subject to the sufficient power supply.

Dimensions





FreeFuelForever

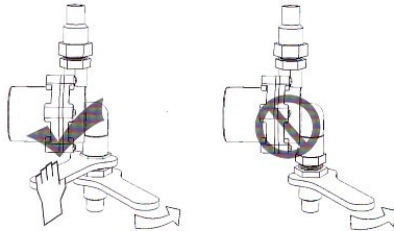
Solar Panels & Pumps

Solar DC Circulation Pump Installation & Operating

AUTION!

- Check that the pump body and parts have not been accidentally damaged or that any bolts or nuts have not been loosened in transit.
- To avoid break the inlet&outlet, when connect and tighten the pipe connections, it' s necessary to reliably fix the hexagonal nut of inlet/outlet by wrench. (as shown in the following figure)
- Wires have polarity. Red is plus and black is minus. Wrong polarity will damage the motor.
- Make certain that the system is filled with liquid and that all air has been purged before start the pump.
- Be sure the power source conforms to the requirements of pump.
- There is a powerful magnet inside the pump liquid end, do not use any liquid that contains metallic substances such as iron, nickel, etc.
- To avoid the introduction of water into the electronics, keep the pump body dry.
- Pump should be drained when subjected to freezing temperatures.

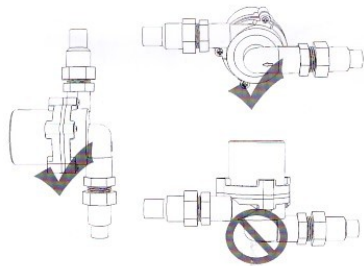
Connecting:



Installation & direction

- It is preferred that the pump always remains in a horizontal direction and pumping upward. (as shown in the following figure)
- It is acceptable for the pump to be mounted under the piping in a vertical direction.
- The pump cannot be mounted over the piping in a vertical direction and any position of the motor is over the pump chamber, this can cause the pump to run dry leading to premature failure of the pump.
- It is recommended that the pump shall be installed in a position lower than the liquid level of the tank by at least 12 inches (30 cm). If this distance is too short, air may enter the pump, causing damage.
- To minimize frictional resistance, the shortest piping possible with minimum number of bends should be utilized on the inlet or suction side of the pump.
- Install a water conditioner if you have hard water.

Installing:



Before start the pump:

- Install the pump in correct direction and position.
- Make certain that the power source conforms to the requirement of pump.
- Be sure the check valve is installed in the proper direction of flow.
- Make certain that the system is filled with liquid and that the air has been purged.

Start the pump

- Open the isolation valves and any other valves that may have been closed during the pump installation
- Plug the pump on
- Power cycling the pump several times accelerates the air removal. If you hear noise initially, this should abate after a short while as air is purged from around the impeller
- If the pump is noisy there may be air trapped in the system. To purge the air from the pump, turn the pump off and on several times.
- To purge the air from the system open a faucet until all the air in the line has escaped.
- If the noise does not disappear or decrease substantially, change the pump' s installation direction or position, and purge the system once again.

Trouble Shooting

Noise in the System

- The pump should run smoothly and quietly, the virtual noise intensity is relative to the pump consumption. During normal operation, an occasional air bubble may pass through the pump housing causing a momentary gurgling noise. However, if noise at the pump persists for any prolonged period, correct the problem (see below).
- The check valve/non-return valve is mistakenly installed on the inlet side of pump or in the wrong direction.
 - The inlet side shut-off valve is closed or clogged.
 - There is air trapped in the pump housing, turn the pump on and off several times to see if the air pocket can be "bumped" out of the pump and if not, then open a faucet for manual venting until all the air in the line has escaped.
 - The untight pipe connections permit air into the loop.
 - The pump was mounted over the piping in a vertical direction, the rotor maybe be surrounded by air and no liquid lubricate the bearing, dry running virtually (change installation direction and purge of air)
 - There is sediment or crimps blocking the rotor/impeller.
 - The rotor bearing has worn due to dry running causing the rotor to wobble during operation.

Pump Operating Intermittently or Not at All

- Error in polarity connecting (will damage the motor)
 - No or insufficient power to the pump.
 - Dry running protection is action, need switch the pump on again.
 - Over-temperature protection is working, will resume normal running when the temperature decreases.
 - The ceramic bearing of rotor is worn or damaged, need replace the rotor/impeller.
 - There are sediment or crimps in the recirculation line that would restrict the flow, please clean the impeller.
- If above reason can not resolve the problem, please unplug the pump several times.