

SOLAR PUMP KIT USER'S MANUAL

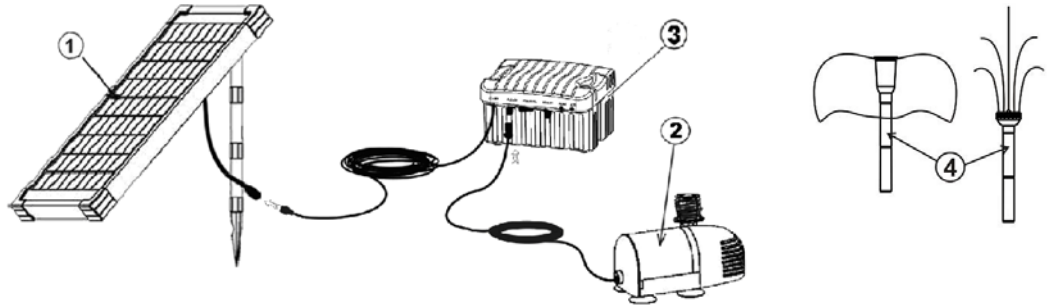
Design for fountain
Item No.: SPB20-501210

1. OVERVIEW

- 1) The solar pump is designed for outdoor or indoor fountain use, and is powered by a solar module. In order to make the pump work by solar energy, the solar module needs to be placed in the sunlight with its solar cells facing the sun as much as possible.
- 2) The power supply of the pump is provided by a battery which is charged by a solar module, so that the pump is capable of working at night and on overcast day.
- 3) The performance of the pump depends on the sunlight intensity and the orientation of the solar module.
- 4) The latest DC brushless motor technology is introduced in the pump design and manufacturing, so that the pump has high efficiency and long service life.

2. COMPONENTS

- 1) solar panel with spike
- 2) pump
- 3) solar battery back-up
- 4) nozzle accessories



3. ASSEMBLING

- 1) Unpack all components carefully.
- 2) Insert the "Input" plug of the battery back-up to the socket on the back of the solar module, and tighten the protection screw. Install the solar module at a sunny place by the ground spike, adjust the angle to face the solar module toward the sun.
- 3) Insert the pump plug to the "Output" socket of the battery back-up, and also tighten the screw.
- 4) For the application of producing a waterfall feature, fit the pump outlet to the water inlet of a small garden water decorations.
- 5) For the application of creating a small spraying up fountain, please follow the steps below:
 - a) Fit the nozzle on the top of the pump tube, the nozzle can produce 2 different jet shapes.
 - b) Fix the pump at the base of a basin or bottom of a small shallow pond etc.
 - c) It is best to keep the pump off the pond base to avoid drawing the pond waste into the pump, which will lead to blockage in the pump. Use a brick or similar to elevate the pump.
 - d) To produce excellent fountain effect, please leave the fountain head above the water surface by using the extension tubes. If these 4pcs of extension tubes are all used and the pump head is still immersed in the water, please uplift the pump body somehow.
- 6) Make sure to keep the pump fully submerged in water when the pump is in operation.
- 7) Turn the "system On/Off" switch to the "ON" position. The SYSTEM LED indicator shows GREEN and the pump starts to operate. **The SYSTEM LED indicator is bicolor, it may show RED and the pump may not work when the battery operates for the first time, since the battery may lose its energy in the stock. It just needs to be charged for no more than one day in bright sunshine, then it shows green and the pump starts to work.**
- 8) The pump will automatically stop running while the battery is discharged to its low limit voltage, and the SYSTEM indicator shows RED in the meantime.
- 9) The SYSTEM indicator stays in RED before the battery is recharged to its normal voltage. While it rises to the normal voltage, the SYSTEM indicator will change to flashing RED-GREEN twice every 10 seconds. It will take another 2 hours before it changes to GREEN with pump starting to run at the same time.
- 10) The pump performances can be adjusted by the potentiometer, adjust the potentiometer to low position (**operating voltage is 12V**), the pump runs mildly with longer operating time, if adjust it to the high position (**operating voltage is 24V**), the pump runs robustly, and it will exhaust the battery capacity rapidly, so its operating time will be much shorter.
- 11) The "Timer On/Off" switches the pump running mode between "intermittent mode" and "continuous mode". In the "intermittent mode" (i.e., "Timer On"), a build-in timer is enabled to run the pump 10 minutes per hour periodically to save the energy, and it is especially useful in winter or on cloudy days. In the "continuous mode", the build-in timer is disabled and the pump shall run continuously. **This function is available only when the system LED indicator shows GREEN.**
- 12) The CHARGE yellow LED indicator lightens when the battery is being charged **no matter whether the system switch is ON or OFF**; otherwise the LED shuts off.
- 13) Turn the system switch to "Off" position, the pump won't work, the battery will still be charged in the daylight, and then the pump will have longer operating time when put it to work in the evenings or special festive occasion.

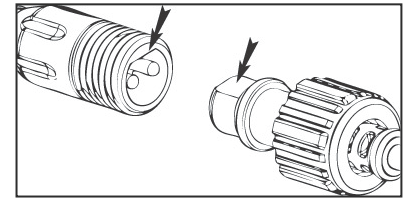


Note: * The battery will be always charged in the sunlight no matter whether the "On/Off" switch has been turned to "On" or "Off"! The system will automatically cut off the charging current while the battery is charged to its high voltage limit (fully charged).

* Adjusting the potentiometer of battery backup to reach a higher output voltage will get a better performance, however it will shorten the total pump operating time as the larger the working voltage of the pump is, the more power the pump will consume.

4. CAUTION

- 1) Any altering of the product itself or changing of the components voids warranty.
- 2) Do not connect the pump and the battery back-up to any AC power supply directly; it's designed ONLY for DC power.
- 3) All the connectors are protected against reverse polarity as shown in the right figure. Don't insert the plug with reverse polarity by using unnecessary force.
- 4) Operate the pump in water only (never above 40°C), especially keep it away from flammable liquids.
- 5) Do not leave this battery back-up in bad ambient environment.
- 6) Do not leave the battery back-up in direct blazing sunlight; do not dip it into water; do not expose it to extremes of heat or cold which can affect its service life. If possible place the battery in the shadow of the solar panel or your house or even a tree etc.
- 7) Do not strike the solar panel.
- 8) Do not let the pump run dry.



5. CLEANING AND MAINTENANCE



If the pump starts losing power or stops working after operating for a certain time, please clean the pump following the steps below (See the above figures for demonstration):

- 1) Disconnect the pump.
- 2) Pull the filter housing apart from the pump
- 3) Press on the bottom board and meanwhile slide it apart from the pump.
- 4) Turn the impeller cover counterclockwise to the end and then carefully open the impeller cover
- 5) Pull the impeller out of the pump
- 6) Wash every part to clean the debris.
- 7) Assemble the pump in reverse sequence.
- 8) Connect the pump.

***Be careful, never drop down the ceramic shaft while cleaning the impeller, it breaks easily.**

6. TROUBLE SHOOTING

*Pump does not operate even though the solar panel is in full sunlight, please check the possible failures below:

- 1) The timer switch is at "ON" position.
- 2) In cloudy or rainy days, the battery cannot get sufficient power supply during the daytime. The indicator stays in red, which means the battery is in low voltage, it needs to be charged in a sunny day.
- 3) No connection—check the electrical connection between the solar module and the battery station.
- 4) Impeller is blocked—to clean the pump as described in "CLEANING AND MAINTENANCE".
- 5) The storage battery inside the box may lose efficiency after a year and a half and therefore needs to be replaced. Replace the battery following the steps shown by the right photos.

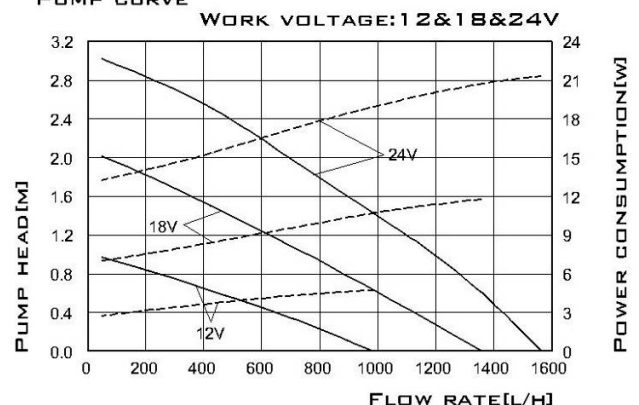
***Pump does operate but there is no water running through the tubes: Clear the tube and the filter to make sure the tube is through completely.**



7. TECHNICAL DATA AND PUMP CURVE

Peak Power of Solar Panel	20 W
Operation Voltage	12V-24 V
Maximum Water Lift Height	3.2 M (10.5 FT)
Rechargeable Battery Back-up	12V/7Ah
Maximum Flow Rate	1560 L/H (412.1 GPH)
Cable Length	5 M (16.4 FT)

PUMP CURVE



WARNING: Discharged batteries are still explosive and contain toxic chemicals. NEVER DISPOSE OF A BATTERY BY THROWING IT INTO THE TRASH, LANDFILL, INCINERATOR OR TRASH COMPACTOR. Take it to a service station or recycling center.

