Pumps for the Future

REEFE™ SOLAR PUMP KIT USER MANUAL

Model No.: RSFB1600

1. OVERVIEW

Figure 1

1) The solar pump is designed for outdoor or indoor fountain use, and is powered by a solar panel. In order to make the pump work by solar energy, the solar panel needs to be placed in the sunlight with its solar cells facing the sun as much as possible.
2) The power supply to the pump is provided by a battery which is charged by the solar panel, so that the pump is capable of working at night and on overcast day.
3) The pump has the build-in function of dry-run protection. The dry-run protection function is provided by two sensor points on one side of the pump housing (see Figure 1).
The pump works if both of the points are submerged in water. If either or both points emerge out of water, the pump stops working.
4) The pump flow rate can be adjusted by the flow valve (refer to Figure 1).
5) The performance of the pump depends on the sunlight intensity and the orientation of the solar panel.
6) The latest DC brushless motor technology is used in the manufacture of these pumps, so that the pump has high efficiency and long service life.

2. COMPONENTS

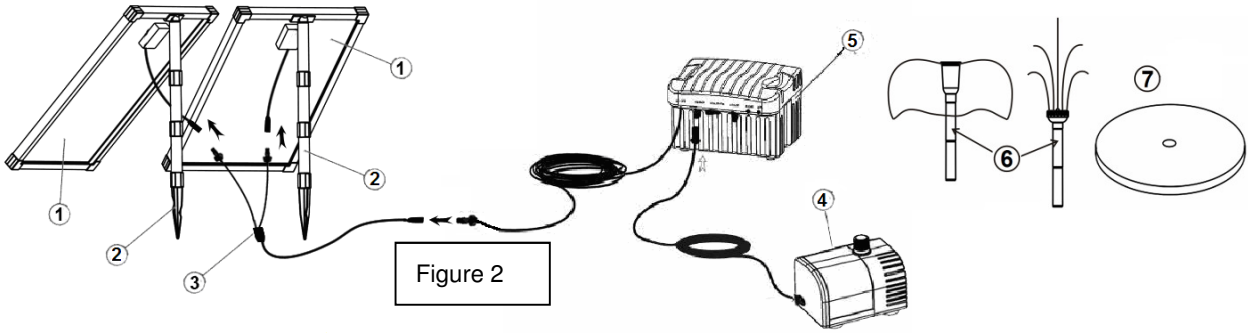


Figure 2

1)Solar panel 2)Ground spike 3) "Y" connector 4)Pump 5)Battery back-up 6) Nozzles and extension tubes 7)Floating pad

3. ASSEMBLING

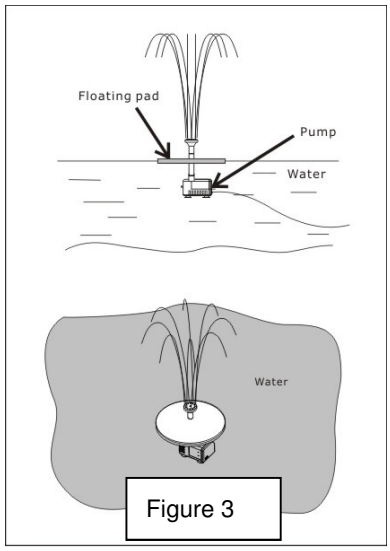


Figure 3

1) Unpack all components carefully.
2) Open the top cover of the battery pack and connect the loose wire to the positive terminal (RED). This is done for safety in transportation.
3) Connect the two solar panels and the battery back-up through the "Y" connector, as shown in Figure 2 above, and then tighten the connection nut. Install the two solar panels in a sunny place on the ground spikes, adjust the angle to face the solar panels toward the sun.
4) Attach the pump plug to the "Output" socket of the battery back-up, and also tighten the connection nut. (see Figure 4)
5) For a waterfall feature, fit suitable pipework to the pump outlet.
6) For the application of creating a fountain spray, please follow the steps below:
   a) Fit a nozzle and extension tubes to the top of the pump outlet, the nozzle can produce 2 different jet shapes.
   b) Fit the floating pad, if desired, onto the pump extension tube and then place the floating pad supported pump on the water (refer to Figure 3).
   c) It is best to keep the pump off the pond base to avoid drawing pond waste into the pump, otherwise it may lead to blockage in the pump.
7) Ensure you keep the pump fully underwater when the pump is in operation.
8) Turn the "On/Off" switch on the battery to the "On" position. The "G-normal/R-low" status LED on the battery shows green. The solar pump starts to operate. **The pump may not work and the "G-normal/R-low" status LED may show red when the battery operates for the first time, since the battery may lose its energy in transit. It just needs to be charged for 2 to 3 hours in the sunshine by facing the solar panel towards the sunlight, then the status LED shows green and the pump starts to work.**
9) The pump will automatically stop running when the battery is discharged to its low voltage limit, and the "G-normal/R-low" status LED shows red in the meantime.
10) The "G-normal/R-low" status LED stays in red before the battery is recharged to its starting voltage. After recharged to its starting voltage, the battery shall continue to be charged for an extra half hour with the status LED flashing red-green twice every 10 seconds. Then the pump automatically operates and the status LED shows green again.
11) To change pump performance, the output voltage can be adjusted in the range of 12V-24V through the potentiometer knob. (Figure 4)
12) The "Timer on/Timer off" switch switches the pump running mode between "intermittent mode" and "continuous mode". In the "intermittent mode" (i.e., "Timer On"), a built-in timer is enabled to run the pump 15 minutes per hour to save energy. This is especially useful in winter or on cloudy days. In the "continuous mode" (i.e., "Timer Off"), the built-in timer is disabled and the pump shall run continuously.
13) The "Charge" yellow LED indicator lightens when the battery is being charged, otherwise the LED indicator shuts off.

NOTE WELL: The run time at night is variable according to these factors: sunlight hours & strength, voltage setting (potentiometer), timer setting.

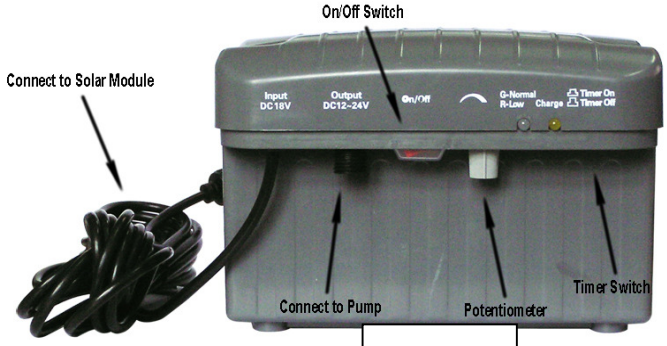


Figure 4

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 when the battery is fully charged.

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

4. CAUTIONS

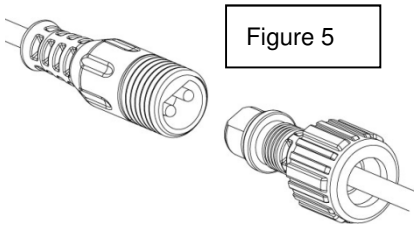


Figure 5

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 Figure 5. Don't insert the plug with reverse polarity by using force.
4) Operate the pump in water only (never above 40℃), keep it away from flammable liquids.
5) Do not operate it in any area classified as hazardous.
6) Do not leave the battery back-up in direct sunlight; do not submerge 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. Clean it only with a damp soft cloth.

5. CLEANING AND MAINTENANCE

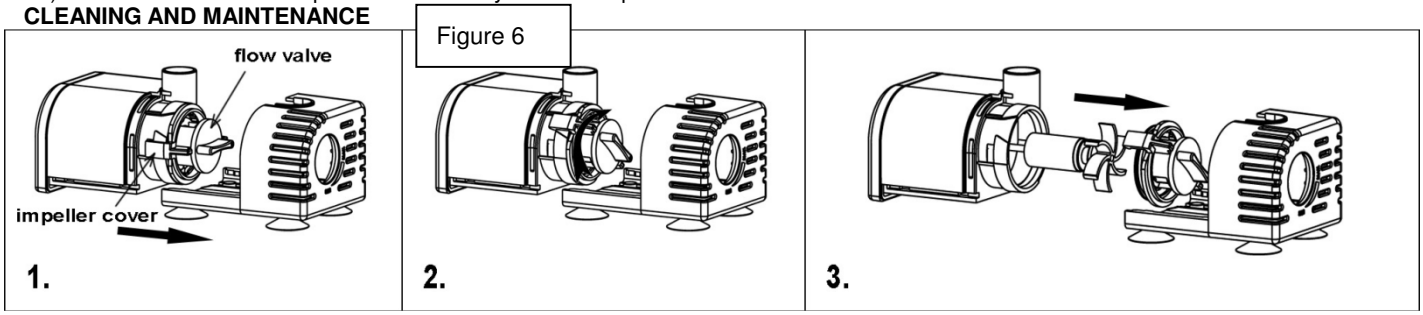


Figure 6

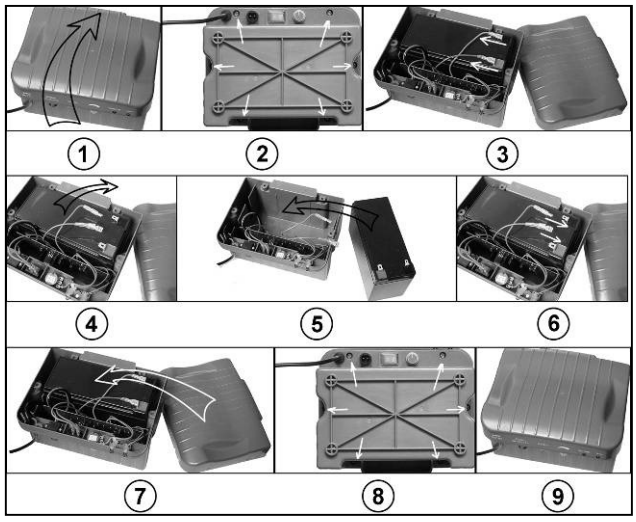
If the pump starts losing power or stops working after operating for a certain time, please clean the pump following the steps below (See the above figure)

1) Disconnect the pump from the battery.
2) Press on the bottom of the filter housing and slide the filter housing off the pump.
3) Turn the impeller cover together with flow valve, clockwise, and then carefully pull the impeller cover together with flow valve apart from the pump.
4) Remove the impeller from the pump, taking care not to break the ceramic shaft.
5) Wash every part to remove any build-up of sludge.
6) In the case of a build-up of lime-scale (calcium deposits) use a mild descaling solution, following the instructions provided for a "shower head"- we recommend RUBBEDIN DESCALE MAGIC – available form most Hardware's and Supermarkets.
7) Assemble the pump in reverse sequence.
8) Connect the pump to the battery.

***Be careful not to drop the ceramic shaft as it is fragile and breaks easily.**

6. TROUBLE SHOOTING

Figure 7



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

1) The timer switch is at "ON" position.
2) On cloudy or rainy days, the battery cannot get sufficient power supply during the daytime. The status LED stays in red, which means the battery is in low voltage condition and needs to be charged on a sunny day.
3) No connection—check the electrical connection between the solar panel and the battery station.
4) Make sure the pump is totally submerged in water.
5) Impeller is blocked—clean the pump as described in "**CLEANING AND MAINTENANCE**".
6) The storage battery inside the box may lose efficiency after 18 months and therefore needs to be replaced; this is not covered by the warranty as they are a "wearing part". Replace the battery following the steps shown by the photos on the right. Replacement batteries are sold at most electronic stores.

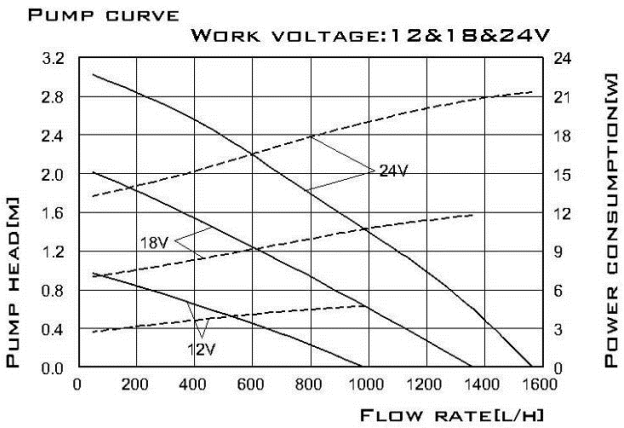
***Pump does operate but there is no water running through the pipes: clean the pipe and the filter to make sure the pipe is not blocked.**

7. TECHNICAL DATA AND PUMP CURVE

PERFORMANCE DATA

Peak Power of Solar Panel	20X2 W
Operation Voltage	12V-24 V
Battery Capacity	12V/7Ah
Maximum Water Lift Height	3.2 M (10.5 FT)
Maximum Flow Rate	1560 L/H (412.1 GPH)
Cable Length	5 M (16.4 FT)

- **ALL** Performance data is subject to change without notice, and is subject to the Solar Energy (Sunlight) available.



WARNING: This battery is a <u>SEALED LEAD ACID BATTERY</u>. 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 an approved recycling center. Contact your local council for further information.

WARNING: Condition of Warranty: This pump and battery pack MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.

WARNING: Do not attempt to open the sealed Battery unit. Serious bodily harm may occur including but not limited to blindness and poisoning and death.

SOLAR PUMPS 24 MONTH LIMITED WARRANTY CONDITIONS

1. Warranty covers only motor failure and manufacturing defects within a 24 month period from the original date of purchase for REEFE™ SOLAR PUMPS purchased and used in mainland Australia.

2. Faults arising due to: - Accidents, misuse, not following these instructions or power surges/spikes/brownouts will not be covered by this warranty

3. Warranty will be void if any tampering or removal of identification labels or electrical cables has occurred, or if pump is moved from the original place of installation or if any non-genuine parts have been fitted.

4. The costs of loss of livestock, damage to property, consequential losses or injury caused by the misuse or abuse or your installation of this appliance is not covered by this warranty. Also, consequential losses caused by faults or failure of this product (which are not reasonably foreseeable by RAMDEX INDUSTRIES to occur) are not covered by this warranty.

5. Faults caused by installation or improper servicing will not be covered. In addition defects stemming from insufficient maintenance are not covered.

6. Warranty is void if this pump is used for pumping anything other than fresh, clean water, or clean saltwater.

7. In the case of pump failure, you must:

1) Check the trouble shooting guide first.

2) Then call RAMDEX on 1300 726 339 and speak to the Warranty Department who will authorize repair or replacement OR you may return to the original place of purchase for replacement or refund.

8. For any warranty claim to be valid, an original proof of purchase must be supplied, or an acceptable substitute.

9. If an exact replacement is not possible the closest equivalent product will be supplied at Ramdex Industries discretion.

10. This product is guaranteed as fit for the purpose of use as stated on the outer packaging, and NO other use.

11. Condition of Warranty: This pump is not to be used as your sole water supply or for drinking water or for fire-fighting purposes.

12. Condition of Warranty: This pump MUST NOT be installed in any manner that if it were to leak that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.

13. This product is not intended for use by children or infirm persons. It is your responsibility to ensure, by way of supervision or isolation, that children or other infirm or irresponsible persons are not harmed by this product. The Sealed Battery unit is of LEAD ACID type and is EXPLOSIVE, and contains TOXIC CHEMICALS, no user repairable parts are included and the sealed unit must NOT be opened.

14. All installations must comply with the local Council, Shire, electrical and plumbing regulations in your area.

15. The sealed battery is a wearing part and is not covered under warranty except in the case of severe premature failure. The expected lifespan is 12 to 18 months.

16. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you (the purchaser) do not fall within the meaning of 'consumer' in the Australian Consumer Law some or all of the provisions of the Australian Consumer Law will not apply to you.

IMPORTANT NOTE: DO NOT use for anything other than clean, fresh or saltwater.

NOTE:

1. Save Power and the Environment refers to the fact that this product does not require mains power to operate. Note that this product has not been independently tested to verify the savings.

2. Performance figures are for the maximum performance in full mid-day summer sunlight and will vary according to the Solar Energy available; the pump may not operate at all when the Sun is obscured by clouds or dust. This Solar Pump does not operate during the night, except for Battery Back-up versions.