

# **EcoOnline™**

## **Solar Pump Kit Manual**

**Installation & User Manual - Revised 23/04/2017**



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## Contents






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2	Key Terms.....	3
3	Warranties .....	4
4	Safety Requirements.....	4
5	Included System Components .....	5
6	Solar PV Panel Mounting .....	5
7	Pump and Solar PV Panel Test .....	6
8	Pump Mounting .....	7
9	Attaching and Mounting the Strainer/Filter .....	8
10	Pump Plumbing .....	10
11	By-Pass Line for Pump Heights Greater than 3 Meters .....	11
12	Maintenance and Operating Instructions .....	12
13	Trouble Shooting.....	12

## 2 Key Terms

Congratulations on the purchase of your EcoOnline™ Solar Pump. Please print this manual out and keep it for your reference. Please take the time to read the entire manual before starting any work. Particular attention should be given to text contained in the following key terms.

Please note EcoOnline has a strong product safety policy; do not install products without reading safety guidelines in the manual. Please report any product safety issues or near misses to [info@EcoOnline.com.au](mailto:info@EcoOnline.com.au) no matter how trivial.

 DANGER	Indicates a <b>SAFETY</b> issue that <b>is likely to</b> cause injury or death if the user does not follow the instructions.
 WARNING	Indicates a <b>SAFETY</b> issue that <b>may</b> cause injury or death if the user does not follow the instructions.
 CAUTION	Indicates a <b>SAFETY</b> issue that <b>may</b> cause injury or property damage if the user does not follow the instructions
 Read Carefully	Refers to <b>critically important</b> information related to the <b>correct functioning</b> of the system.
 Tip	Refers to useful information for the <b>optimal operation</b> of the system

### 3 Warranties

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EcoOnline™ offers the following Warranties

- 1 year limited Warranty on pumps
- 20 year limited Warranty on all Motech Cell solar PV panels

See EcoOnline.com.au [Terms and Conditions](#) page for further details.

### 4 Safety Requirements

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WARNING

Do not combine this solar pump kit with a thermal solar collector to heat water that is not been effectively treated with an anti-bacteria agent due to the **risk of Legionella bacteria growth**.



WARNING

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



WARNING

Be mindful of Legionella bacteria growth for water fountain applications. **Do not oversize power** (higher power will lead to warmer water). **Do not use pump in such a way so as to create a fine inhalable mist.**



CAUTION

This pump is not recommended for potable water (drinking water) application. For applications involving fish we recommend the pump be run in a bucket of water to flush out any excess grease prior to installation.



CAUTION

Building regulations vary from state to state and **MUST** override any instructions supplied in this manual. It is the responsibility of the purchaser/installer to check that installations comply with any relevant state laws and regulations.



Read Carefully





The EcoOnline™ Solar Pump is not self-priming. The pump must be flood primed by installing below the waterline of the water to be pumped.



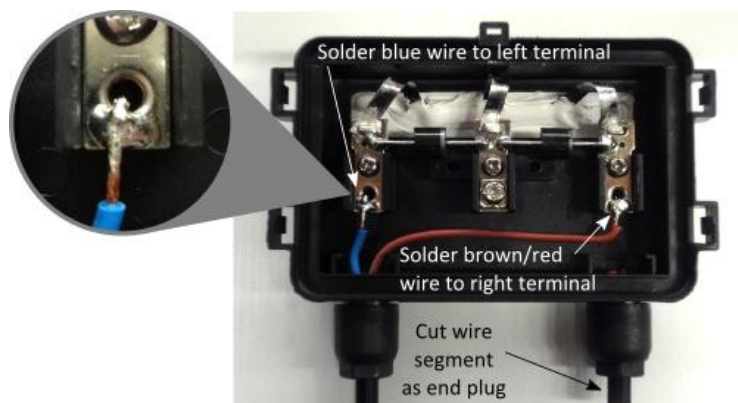
Read Carefully

An inline strainer/filter **MUST** be used where there is a chance of dirt or debris making its way into the pump.

## 5 Included System Components

			
Solar Pump	Solar Panel (if purchased)	Wire and connector set	PVC 316 Stainless Mesh Strainer (if purchased)

## 6 Solar PV Panel Mounting

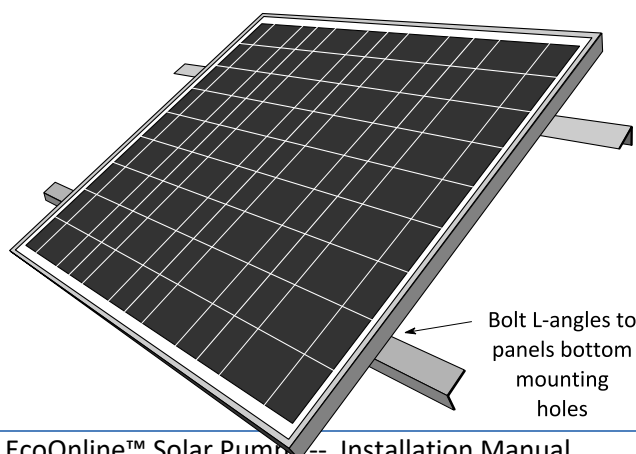


1) Before mounting the panel, you will need to thread the PVC wire into the junction box and solder the brown (or red) wire to the right-hand side, or positive terminal and the blue (or black) wire to the left hand side, or negative terminal. (Check for the **+** and **-** markers in the junction box). **We highly recommend** a plug (made from any cut wire) be used to weatherproof seal the other wire hole.



**WARNING**

Wires must be soldered to the terminal – if a loose or corroded connection develops over time it can create a resistive load which could melt or burn surrounding material, or cause a fire.



2) If mounting on a roof we recommend a 20-30mm air gap be used between the solar panel and roof structure. Aluminium angles (20-30mm) should be attached to the back of the solar panel for mounting purposes using the back

mounting holes. **Important: Wind loading should be considered.**



WARNING

**NEVER screw clamp solder tinned wires to the junction box terminals.** Soft solder can corrode, arch, melt and/or soften resulting in the cables falling out.

## 7 Pump and Solar PV Panel Test



Read Carefully

During the following test **DO NOT** allow the pump to run completely dry as this may damage the pump.



- 1) On a sunny day, fully submerge the pump in a container of water (Note: pump is fully submersible).
- 2) Firstly, place the solar PV panel away from sunlight and connect it to the pump using the electrical connector. Then move the panel gradually toward the sun, the pump should start in a few seconds.
- 4) Check that the pump is working; you should see a strong stream of water at the outlet end.
- 5) Familiarize yourself with the noise characteristics of a fully primed and partly primed pump. You will need to diagnose potential air locks in your pump. The safest way to do this is to splash air bubbles into the inlet while the inlet is still submersed. (Note, pump can run partly primed for a few seconds without damage.)

### 7.1 What if the pump won't start?



- 1) Check that there is sufficient sun and no shading on the panel.
- 2) Check that the panel is producing power (if a multimeter is not available, insert an old 50W halogen globe into the panels electrical connect – **do not do this in full sun, angle panel to sun to reduce power**).
- 3) Check that the wires in the connector aren't twisted internally and the positive and negative connections line up.
- 4) Check the polarity in the solar panel junction box, see section 6.
- 5) If it still won't start please contact us at [info@EcoOnline.com.au](mailto:info@EcoOnline.com.au) for technical support.



#### Tip

Sometimes an **air locked mode** can arise in the pump when a sufficiently large air bubble makes its way into the inlet of a working pump. In this state water cannot be pushed higher, nor can the column of water above the pump make its way back through the spinning rotor. In this mode the pump can run for a significant length of time without damage.

## 8 Pump Mounting



#### CAUTION

The pump should be supported such that there is a **minimum amount of stress on the pump's inlet and outlet piping. The pump body should not be suspended by its inlets and outlets without support.**



#### Read Carefully

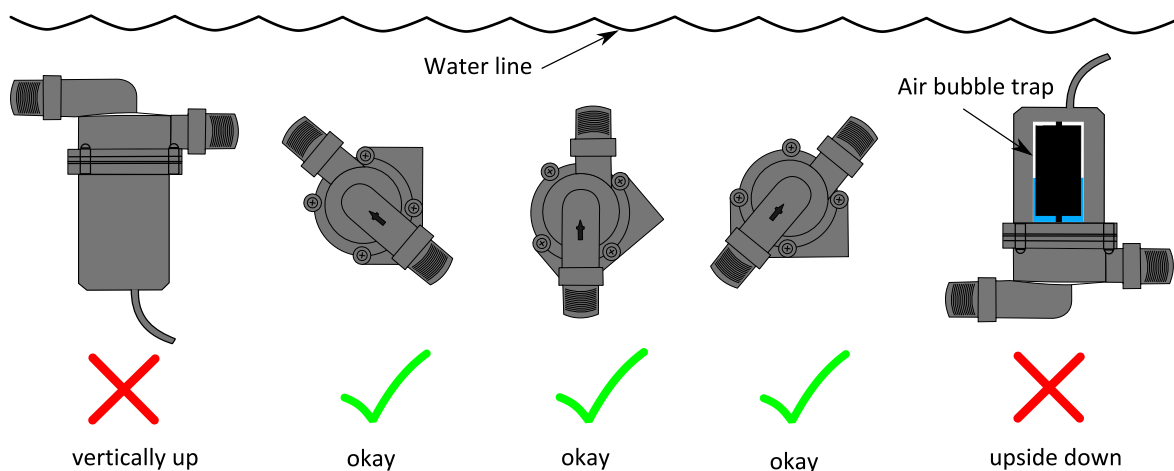
The pump should be installed in a way which allows **easy access dismantling for maintenance.** Connection of the pipe work to the pump should permit the **removal of the pump without the need to cut the pipe work.**



#### Read Carefully

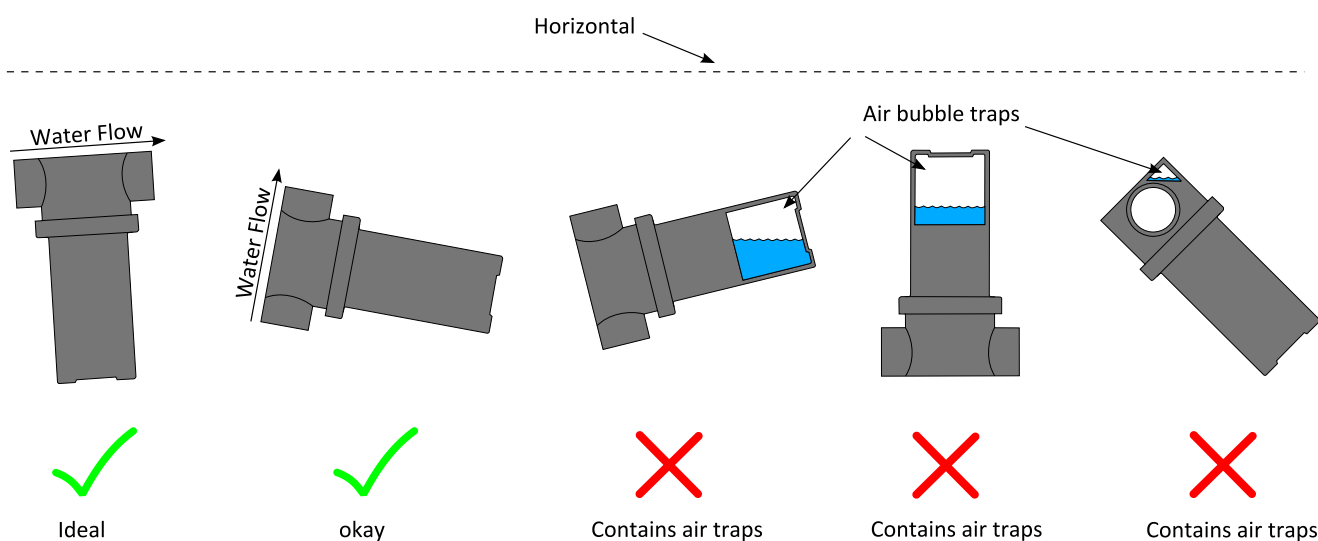
Make sure all lines are flushed clean with water before connecting pumps. If the water environment contains debris ALWAYS use an inline filter with a rating of 360 Microns or smaller.

### 8.1 Allowed Mounted Pump Orientation



## 9 Attaching and Mounting the Strainer/Filter

### 9.1 Allowed Mounted Strainer Orientations



CAUTION

The pump and strainer must be mounted so that they both automatically flood prime without needing to force water through. This is critical as small ever present air bubbles can build up in air pockets. A pump can become air-locked and be damaged if a sufficiently large air bubble is released while the pump is working under pressure.

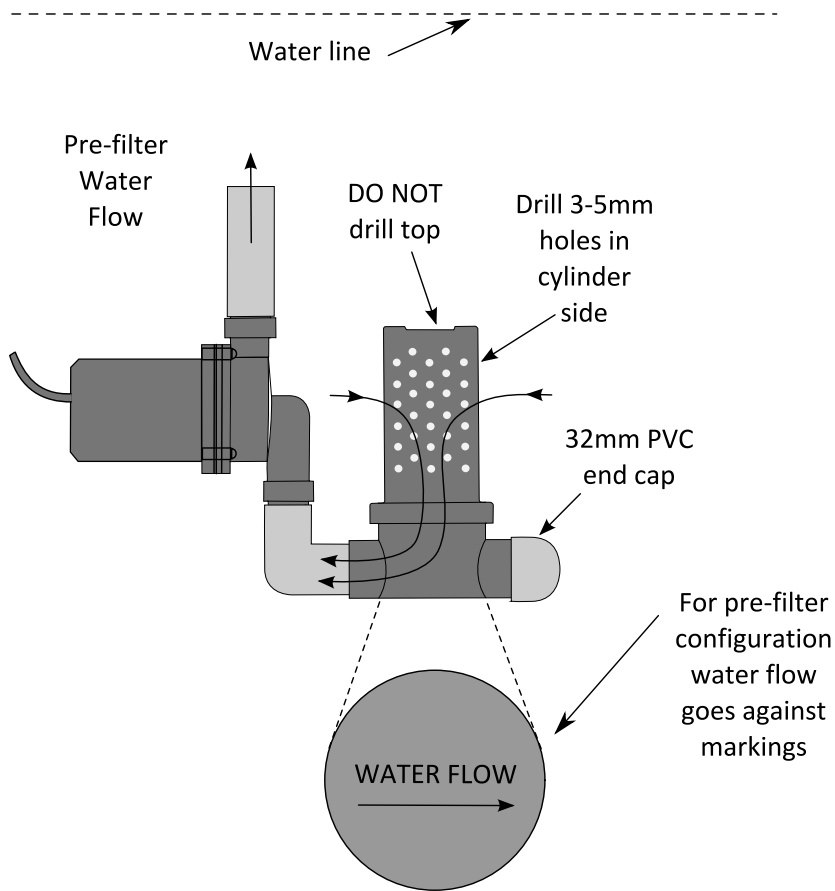


Read Carefully

The supplied inline strainer/filter can be used as a pre-strainer or as an in-line strainer. **Note when mounting the canister as a pre-strainer the water flow must be against the water flow arrow marked on the canister.**



## 9.2 Pre-Strainer Mounting Configuration



Before mounting the pre-filter you need to drill 3-5mm holes in the side of the cylinder (DO NOT drill top). The size of and number of these holes will depend on the application. The internal mesh will form a secondary filter. You may also require a pond sponge wrapped around the cylinder depending on the application. **Note water flow goes against the actual water flow markings on the filter for this configuration.**

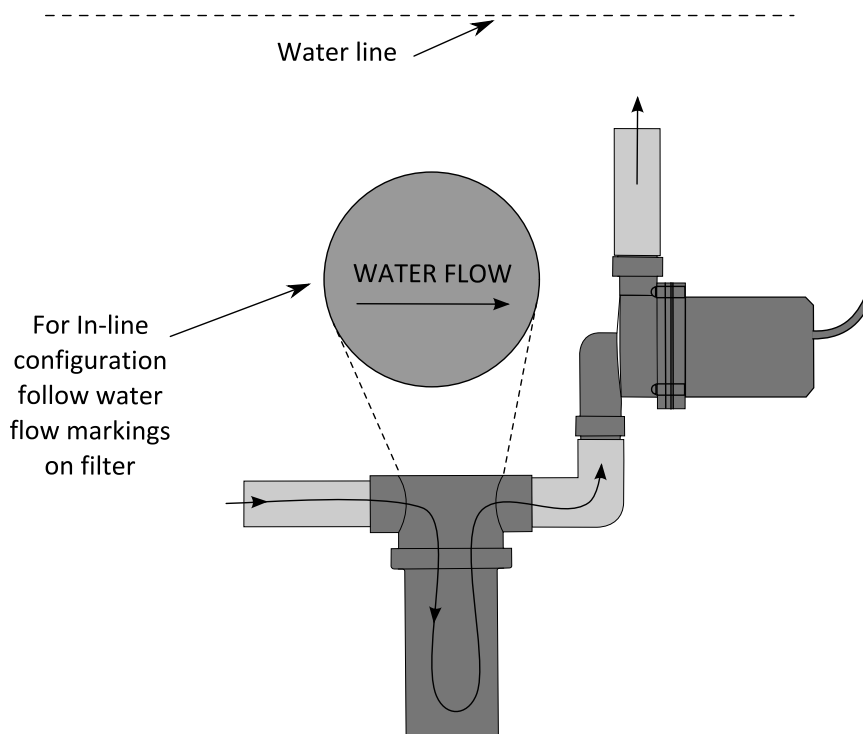


### Tip

Warm the filter cylinder in 40°C water to soften and prevent cracking during drilling.

A 25mm PVC end cap can be inserted on the end of the filter.

## 9.3 In-line Strainer Mounting Configurations



In this configuration it is critical that the filter canister is oriented in an allowable orientation (see above). The filter must be able to self purge air pockets else there may result an air lock in the pump. When mounting in a pond a pre-strainer sponge is also be connected to the filter inlet as a secondary filter. If required.

## 10 Pump Plumbing

For non-chlorinated water applications we recommend PE lines and air tight compressions for all plumbing on the suction side of the pump. If there is any chance of flush back through the pump in the reverse direction then airtight fitting should also be used on the outlet side of the pump.



CAUTION

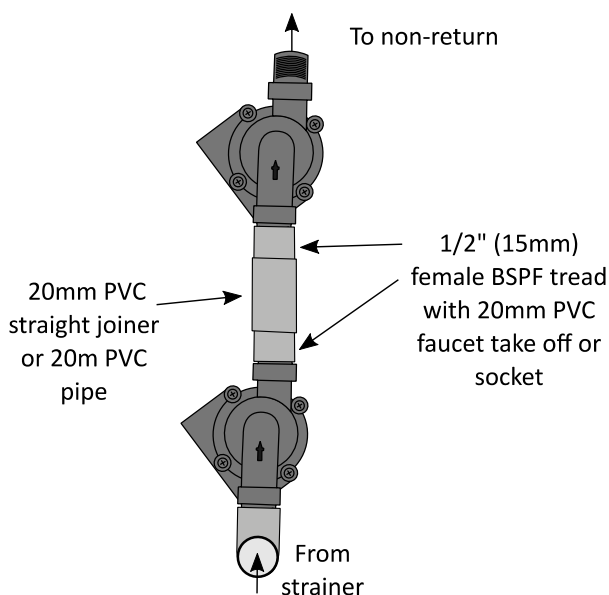
Do not over-tighten pump head thread fittings. Always use Teflon tape. Fittings should be hand tightened only until resistance is felt, after an extra ½ turn will seal perfectly.



CAUTION

Never carry the pump by the electric supply cable as this may damage the pump and make it unsafe.

## 11 Dual In-Line Pumps



If your system came with dual pumps you can plumb them in as shown a. For such dual pumps you'll also need to purchase 3 extra PVC bits; you can use 2 faucet take offs with a 20mm straight joiner or 2 faucet sockets with a 20mm PVC pipe for the interconnector between the pumps.

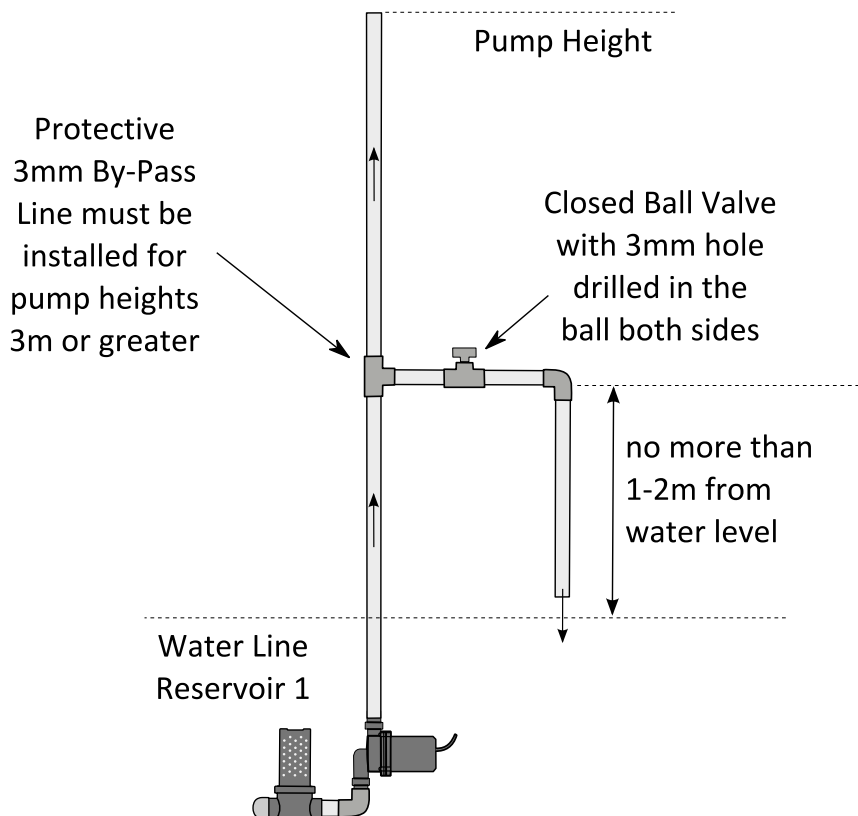
## 12 By-Pass Line for Pump Heights Greater than 3 Meters per Pump



### WARNING

A protective 3mm by-pass line (15) must be installed for **total** pump heights greater than 3m (or 6m for dual in-line pumps). The **total** pump height includes any air locks in the system that the pump must overcome. The by-pass line should be placed at not more than 1-2m pump height.

**Why?** Solar power is an intermittent power supply. In part sun the pump will not be supplied with sufficient power to reach a certain pump height. This will result a working pump with no water flow which can eventually overheat a pump.



## 13 Maintenance and Operating Instructions



WARNING

Important: before carrying out any system maintenance you **MUST** check for any manual updates and download the latest installation manual from [www.EcoOnline.com.au/downloads](http://www.EcoOnline.com.au/downloads)

The inline filter should be cleaned regularly. The pump can be dismantled and ceramic rotor shaft regreased once per year. Care should be taken during dismantling as the pump contains small polymer washers on the rotor shaft.



WARNING

Fatigued, weathered, loose and/or corroded wiring or electrical connections poses a fire risk even at low voltage. The systems wiring should be checked periodically for any wear, cracking resulting from UV damage of insulation on wiring and corrosion of any solder or controller connections. Any effected parts should be replaced at the first sign of damage.



WARNING

Never run a 12-24V cable near or in the same compartment or conduit as other 240V cables due to the chance of mistaking the two cables at some later point in time during installation or servicing.

## 14 Trouble Shooting

Problem	Cause	Solution
Pump is running smoothly but no water is coming out of the outlet. (Please note, in the morning and evenings when the sun is not strong this can arise and is normal)	<ul style="list-style-type: none"><li>* The pump configuration may be undersized</li><li>* Morning light is not strong enough to reach the pump height</li></ul>	<ul style="list-style-type: none"><li>* Check for blockages</li><li>* Wait for 11am-3am sun</li><li>* There maybe U bends air traps in the plumbing lines which are adding to the pump height, these should be removed.</li><li>* Failing these points a stronger pump may be required.</li></ul>
Pump is running loudly	Air bubbles making their way through the pump	Wait a few seconds for the pump to clear any air bubbles. If it continues, disconnect immediately, check for air leaks in the suction line, and then reprime the system.
The solar panel is in full sun and is connected to the pump however the pump is not working.	Potential faulty pump or solar panel or rotor blockage in the pump	<ul style="list-style-type: none"><li>* Check the power of PV panel first by inserting a standard (GX5.3 base) 12V Halogen globe into the connector pins.</li><li>* Check the pump by connecting to a <b>18VDC</b> battery</li><li>* Check pin polarity, if the pump is new and still not working then have the pump exchanged. If the pump has been exposed to potential particles in the water the rotor could be blocked - disassemble the pump slowly on a clean table (take note of the assembly) clean any blockages.</li></ul>