LOWENERGIE™
Quality Energy Saving Products

USER MANUAL

SOLAR WATER HEATER

☆Please read this manual before use ☆Retain it for future reference

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REMEMBER: SAFETY FIRST

TECHNICAL DATA & FEATURES

1. Solar Pool Heaters are eco-friendly and produce clean energy. They will not harm the environment and help to reduce carbon emissions.

2. Solar Pool Heating Systems can significantly increase the seasons of the year you can comfortably use your pool which adds real value to your pool and home.

3. Solar Pool heating can pay for itself in a very short period of time, depending on the system used and installation.

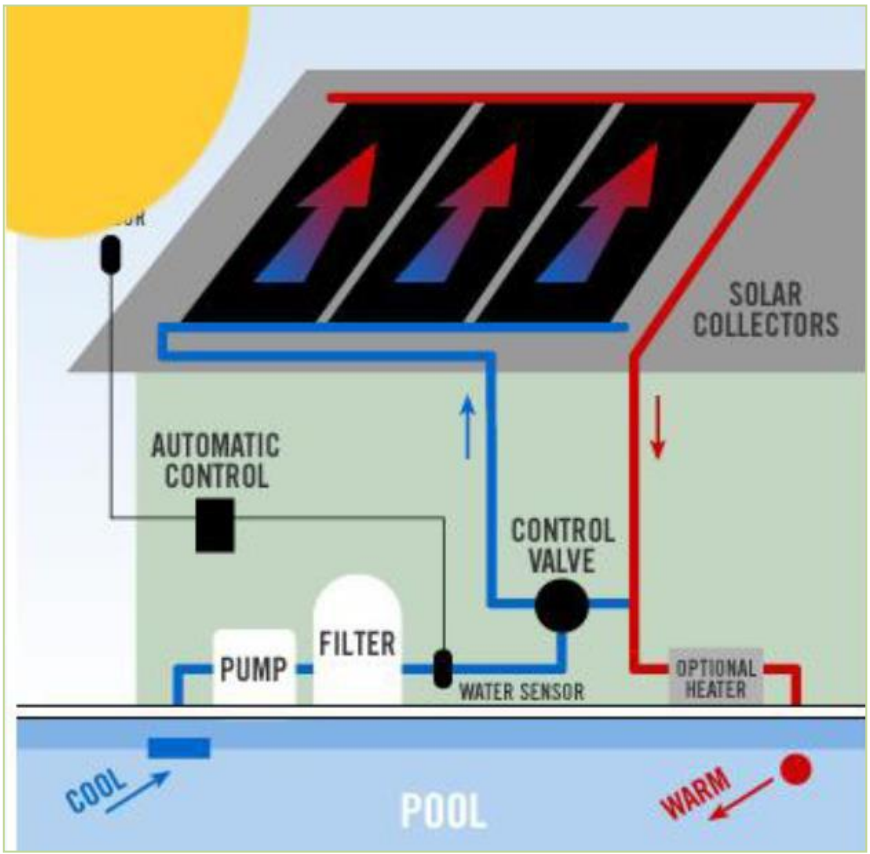
4. Solar Pool Heating Systems reduce your energy usage will give you real monetary savings every day.

5. Our Solar Panel collector is made from EPDM/NBR, which is virtually immune to ultraviolet radiation and ozone. It is also highly resistant to pool chemicals and harsh climate. Recommend minimum pool coverage is 75%, see installation guide below.

OPERATING PRINCIPLE

HOW DOES IT WORK?

1. Water is pumped from the spa or swimming pool through a multi tube solar collector.
2. The solar heat energy is collected by the absorber and is transferred to the water during its journey.
3. As the water passes through the solar collector it is warmed by the sun due to its dark material. Black colours readily absorb the heat from the sun, whilst white and silver metallic materials have the opposite effect by reflecting heat away.
4. Then the heated water is then returned to the pool and re-circulated.



The above shows a more sophisticated roof mounted system, but solar pool heating can also be used simply at ground level

THE LOCATION

1. The solar collector should be orientated facing sun for maximum efficiency. Ideally 30 degrees above horizontal and facing south in the northern hemisphere.

2. Position the solar collector to achieve a minimum of 6 hours direct exposure to the sun every day which will optimize performance. Larger systems can compensate in non-ideal installations.

OPTIONAL ACCESSORIES

Optional accessories**:** Booster Pump/Solar Controller/Non return valve/diverter valve/control valve/water sensor/filter.

BOX PARTS LIST

The solar heating system is supplied in 1m² or 4m² boxes.

1) Solar panel roll
2) Manifold connector pipes, 2 pcs.
3) 2 pcs of end cap, attached to the manifolds
4) 2 pcs of water in/out pipe connectors

ACCESSORIES INCLUDED

Article No.	Pictures
Water Pipe Input&Output	
Jubilee Clips	
Rubber gaskets	

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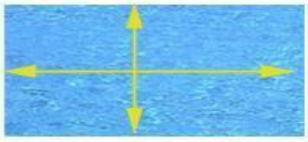
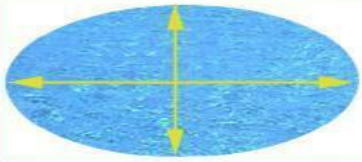
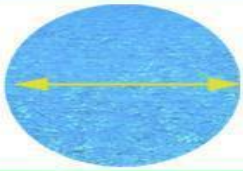
INSTALLATION GUIDE

INSTALL & MEASUREMENT

The solar collector can be installed almost anywhere on the roof of your house, garage, porch, shed, pergola or directly on your lawn. Additional fixings maybe required. Ensure the solar collector water circulation tubes are not damaged during fixing. If the solar collector is mounted directly onto your lawn on a seasonal basis when your pool is in use, you may wish to lift if slightly above the grass as it does get very warm and can scorch the grass.

Calculate how solar collector mats you will require:

		
Rectangle Pool Pool length x Pool width	Oval Pool Pool length x Pool width x 90%	Round Pool Pool diameter x Pool diameter x 79%

Recommended minimum panel coverage is 75%

Calculation Example (Larger Pools) : A Rectangular pool of 8m in length x 4m in width x 1.5m in average depth, coverage required:-

1. Calculated your pool water volume i.e. 8m in length x 4m in width x 1.5m in depth= Pool volume 48 m3
2. Recommended minimum panel coverage is 75% = 36 m2
3. So you would require 9 pcs of the 4m² collector mats (36 divide by 4) to cover a 48 m3 pool

Calculation Example (Children's Play Pools) : Circular pool, 8 foot diameter (2.44M diameter). pool diameter X pool diameter X average depth.

1. Calculated your pool water volume i.e. 2.44M x 2.44M x 0.5m in depth X 0.79 = Pool volume 2.35m3
2. Recommended minimum panel coverage is 75% = 1.76 m2.
3. So you would require two 1m² solar collectors

In both of the above installation:-

- Solar collector panels should be orientated to face south
- Direct sunlight for a minimum of 6 hours every day.
- Larger solar collectors can compensate non ideal installations.

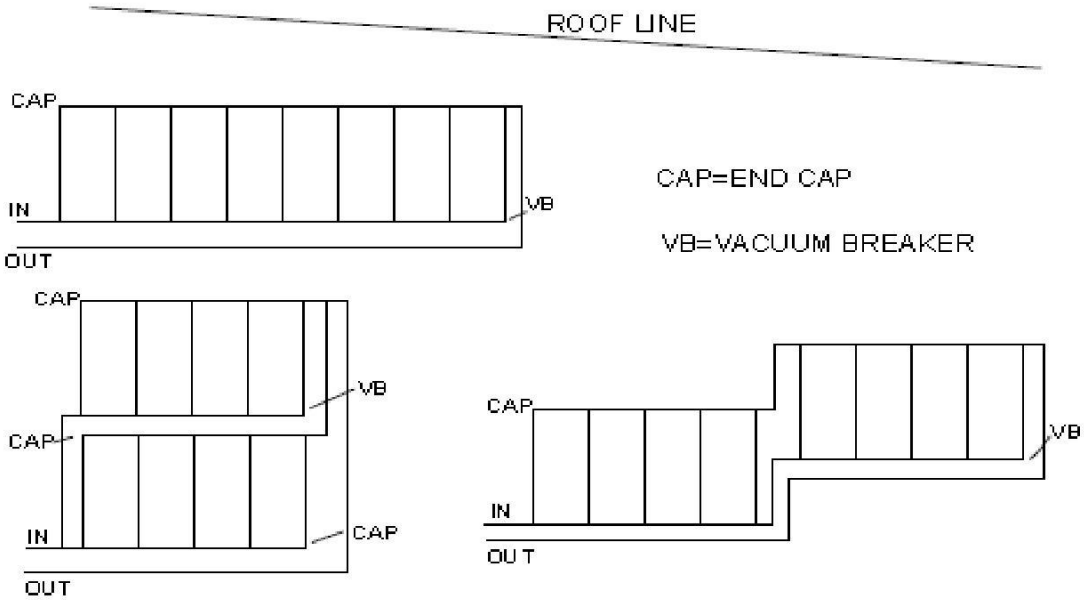
ATTACHED TO ROOF OPERATION

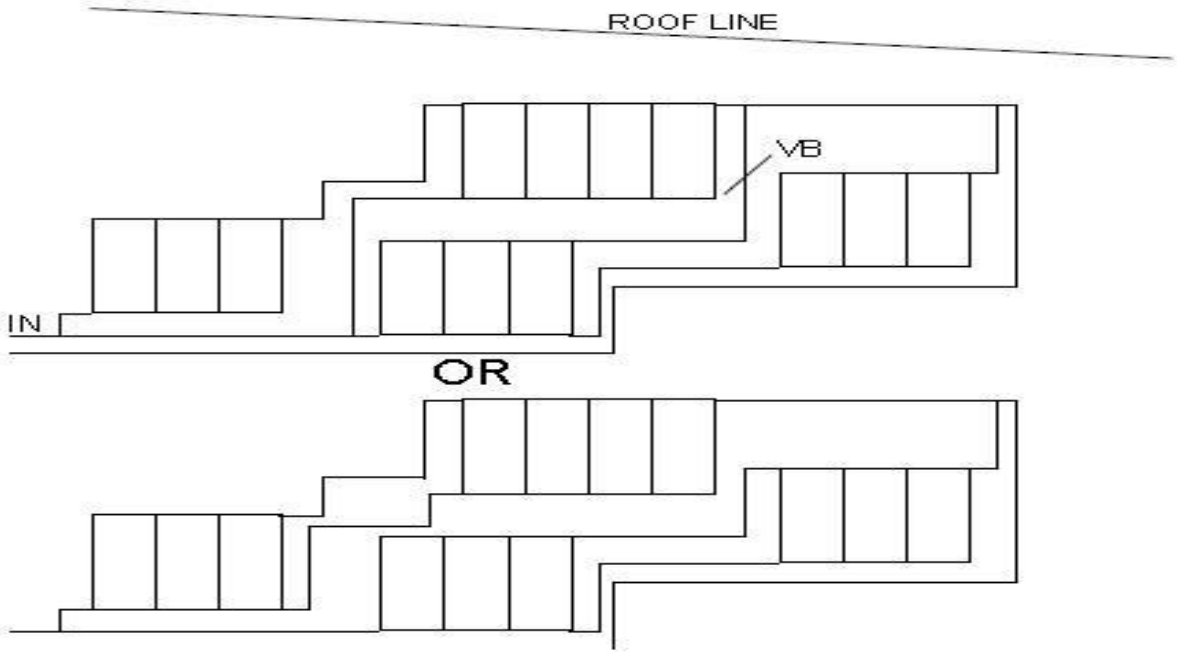
ROOF PLUMBING SCHEMES

Here are some typical roof plumbing configurations for conventional orientation. Remember to slope everything to allow water to drain from the bottom headers of the solar panels as well as the piping on the roof.

On sideways installations you don't have to do that. The tubing can freeze solid with water in it and the air doesn't get trapped in the upper corner like it can on conventionally oriented systems as shown below.

The roof line is a horizontal line on the roof. In other words tilt everything so the piping and bottom headers will drain by gravity. Co-incidentally that means the top headers will allow air to rise up and out of them naturally.

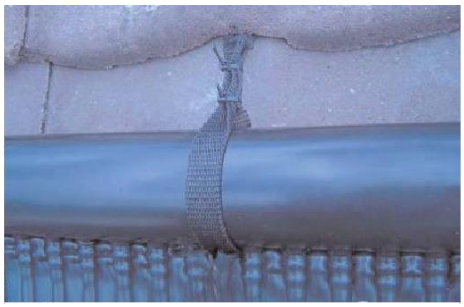




Step1. Roll out the Pre-fixed Solar heating systems evenly on your roof, we suggest applying silicone adhesive between the roof and the solar panel roll, especially in area which could be subject high winds

Step2. Fixing the Pre-fixed Solar heating systems

Top Strap.

	Fixing about 50cm long Nylon Strap into top header kits only, every section is 66 cm only, then attach small binder to every Nylon Strap.

Pipe Saddles

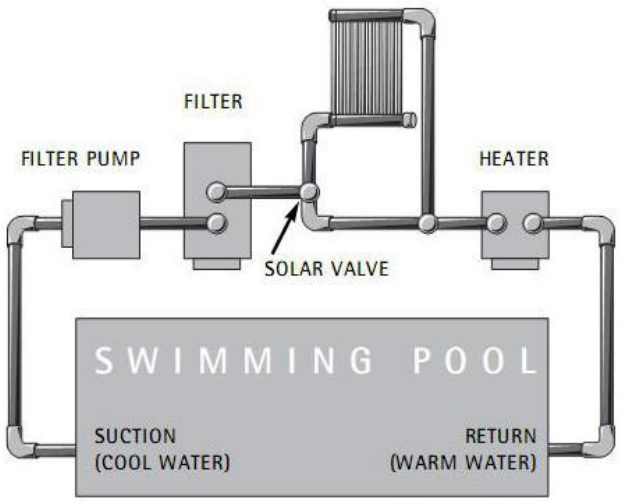
	Installing pipe saddles to the roof to hold top and end of each header kits, assemble and clip the header kits assembly into place.

Cross Strap

Cross Strap 4'' (10cm) from end, and every 36"(91cm) up thereafter.
Put slight tension on the crossing strap, in order to allow for expansion.

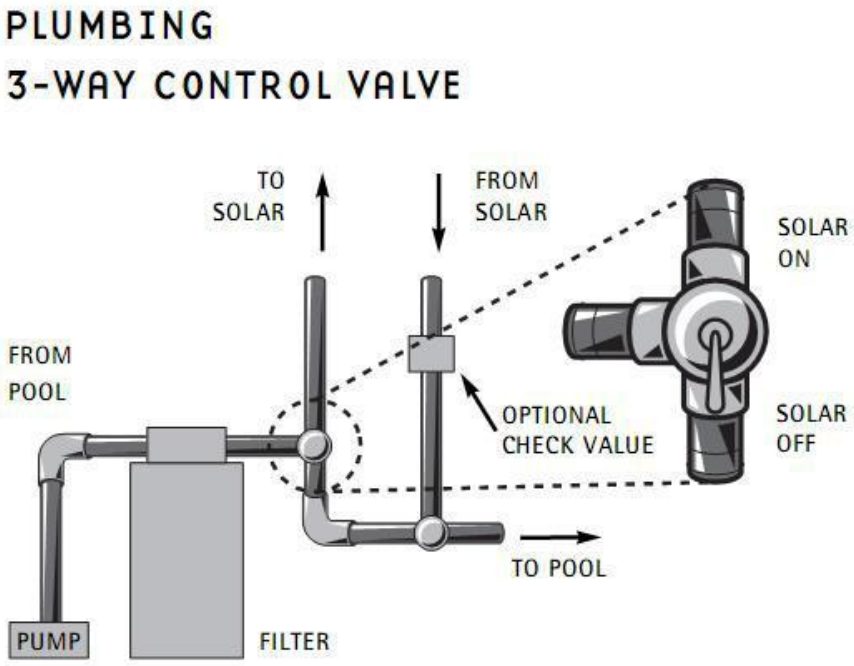
Installation Overview

Your solar pool heater will likely need to be connected into your existing pumps, controls and pool filtration system, in a similar way to the layout below. Control over the water circulation through the solar collector is required so that the pump can be turned off at night. The solar collector will absorb heat from the sun during the day, but is will act to cool the pool if water circulation is maintained through the solar collector at night. You may wish to consider a small solar photoelectric panel connected to a solar water circulation pump so that when the sun goes down, or goes behind a cloud, there is then no electricity generation to power pumped water circulation through the solar collector.

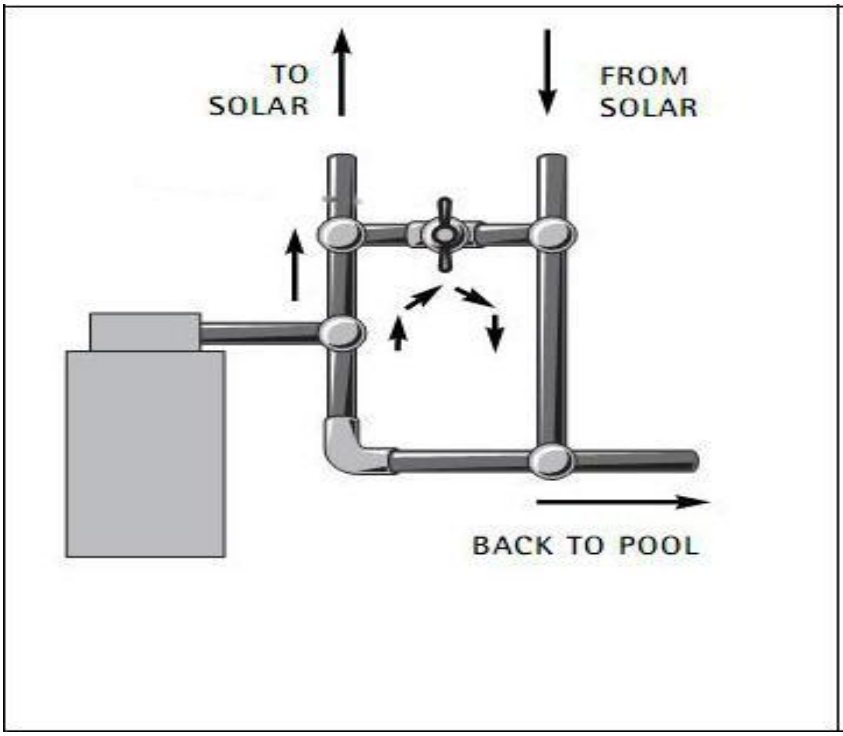


Follow manufactures instructions to install automatic control panel, motorised valve and control sensors where required (supplied by others)

3-Way Control Valve



High Pressure Solution as to solar pool heater mat. A working pressure of 1—2 bar will be ok.



If pressure is too high through solar heating systems, in-stall a Ball Valve be - tween the feed and return lines.

MAINTENANCE AND TROUBLESHOOTING

1. Leak In The Solar Panel Collector:

Due to puncture or bird damage, cut out the damaged section of tube (approx,5mm either side of the hole), then insert splicing barbs as below.

Step 1

The rubber that joins the tubes together to form the solar matting needs to be cut away either side of the tubing (approximately 2cm) using a pair of scissors. Be careful not to cut into the water circulation tubing!

Step 2

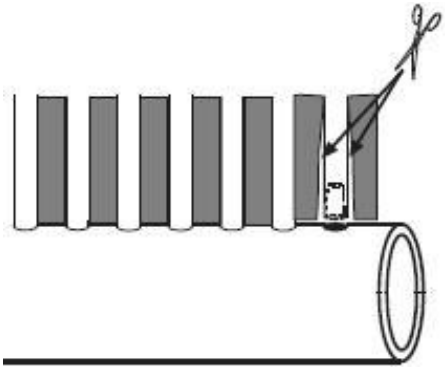
Insert a plastic repair tube (30mm x 6mm - provided) using lubricant into rubber tubing. Apply Cable Tie to either sided of the plastic repair tube.

The repair is now complete

2. Leak In The Solar Manifold Header:

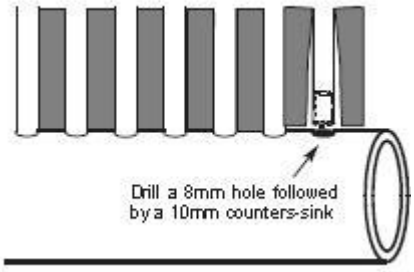
Step 1

The rubber that joins the tubes together to form the solar matting needs to be cut away either side of the tubing (approximately 10cm) using a pair of scissors. Be careful not to cut the tubing!.



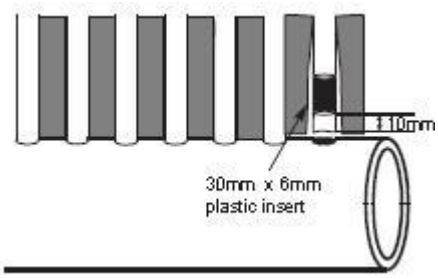
Step 2

Remove and discard broken or damaged nozzle from rubber tubing. Drill an 8mm hole into the existing nozzle hole (on header) to slightly enlarge it.



Step 3

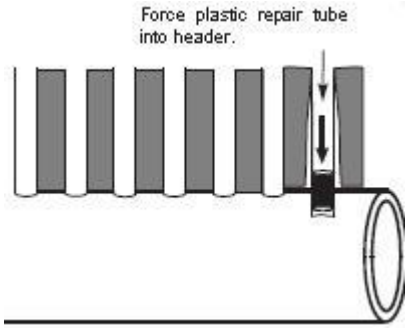
Insert a plastic repair tube (30mm x 6mm - provided) using lubricant into rubber tubing. Leave 10mm of rubber protruding from the end of the plastic tube.



Step 4

Stretch the rubber tube with the inserted repair nozzle and force it into the pre-drilled

hole (step 2). Use pliers and lubricant to do this. The objective is to force the plastic repair tube down the rubber tubing and create a seal against the sides of the pre-drilled hole!



The repair is now complete.

3. Broken Roof Strap:

Replace the broken roof straps.

4. Too much pressure in the booster pump

Install a 2-Way Ball Valve between the feed and return lines to reduce the water flow.

5. Low Winter Temperatures

In winter climates, prior to freezing temperature, solar panel, pipes and valves **must** be drained of all water, using blower or shop vac to blow out lines. Checking for loose lag bolts, leaves and debris, rotate valve half way and shut off power, after removing all water, remove the end caps.

6. Summer in High Temperature

In hot summer, water isn't circulating through the systems, the use of a drain down valve and one way check vale is necessary, it is important to remember that in prolonged periods inactivity, the solar heating systems must be DRY. Un-circulating water left in extreme heat over extended periods of time may become stagnant and promote bacterial growth.

INSTALLATION OF COLLECTION PIPES

Since we use sealing rings instead of glue for collecting pipe interface.
Pipe connector with sealing rings:

REMEMBER: SAFETY FIRST

Please ensure that all reasonable and practicable measures have been taken into consideration to control risks against all possible injuries arising from the installation of the solar heating systems.

Identify any potential hazard and implement a risk control strategy. Before you commence solar heating systems.