



# **Installation and Owner's Manual**

## **Solar Water Heater**

### **SP4002 Split System**

**This manual uses the following conventions and symbols to highlight points of note throughout the manual.**



**Read this manual before you start to use this equipment.**



#### **SAFETY WARNING!**

**The manual contains important safety instructions.**



#### **WARNING!**

**Failure to follow the instructions in this manual can cause serious injury and or equipment failure.**



#### **GENERAL NOTICE**

**This water heater must be installed and serviced by an authorised person.**

**PACK CONTENTS**

Your SolarPower Solar Water Heater is supplied with the following components:

SP4002 Series Parts List		
Item No.	Qty	Description
1	1	SP4002 400L storage tank, (with pump attached)
2	2	SP225 solar collector
3	2	2610mm (L) x 38mm (W) x 25mm (H) x 1.6mm (T) Upper mounting rail – 3 units required for Cyclone areas
4	1	Accessory bag - contains brackets, screws and assorted plumbing fittings for full panel fit off.
5	1	Installation & Owner's Manual.

**Please check to make sure all these components are included with the kit.**

**If any of the above listed components are missing or incomplete, please contact your local distributor.**

# 1. INSTALLATION – SOLAR COLLECTORS

## PREFACE:

Approximate roof area required:

2 Collectors are 2.8m wide x 2.4m high. (88kgs total, filled with water)

3 Collectors are 4m wide x 2.4m high. (132kgs total, filled with water)

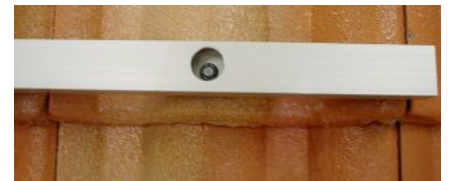


**NOTE: Ensure the mounting surface is strong enough to support the collectors. Most roofs can support the panels, but if unsure consult a structural engineer.**

**ONLY QUALIFIED TRADESPERSONS SHOULD INSTALL THESE COLLECTORS. GLAZING CANNOT BE REPLACED ONSITE.**

## FRAME INSTALLATION:

- 1) Select a suitable place to install the lower mounting rail on the roof, align panel location as high as possible on the roof.
- 2) Locate lower rail and mark the lower 4 bolt positions on the rail. The bolts are positioned to line up with the peaks of the tin or tile profile. DO NOT drill in the troughs of the roofing material.
- 3) Drill the 4 bolt positions on the top of the rail using a 16-20mm metal cutting hole saw, leaving a 5mm pilot hole through the bottom of the rail.
- 4) Using the drilled rail as a guide mark and drill the roof material with a 5mm pilot hole. This may not be needed for tin roofs, as the screws supplied are self tapping.
- 5) For tile roofs drill the tiles using a 12-14mm concrete drill bit, paying careful attention for any cracking in the tiles. Replace any cracked tiles with a new tile before continuing.
- 6) Once the holes have been drilled place a fill the hole with silicon sealant, and apply a 6mm bead around hole.
- 7) Apply silicon into the drilled hole then insert the Aluminium spacer tube into the hole. This is not required for a tin roof.
- 8) Position the mounting rail and insert the screws through the rail and into the roof batten, place a rubber washer as a seal, then evenly tighten the screws. For Tile roofs the Aluminium spacer will act as a stop. Do not over tighten and break a tile.



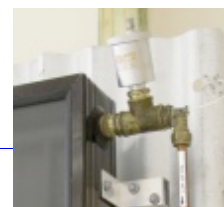
**NOTE: ensure a rubber sealing washer is placed between the rail and the roof surface for each screw hole, to provide adequate sealing of the screw hole from water ingress. Use adequate amounts of silicon sealant into the holes before placing the screws in the holes.**

- 9) After the two mounting rails have been fixed to the roof, fix a set of side brackets on each of the rails. Then lift the first panel into place and fix that panels other side brackets to the rails. Once this

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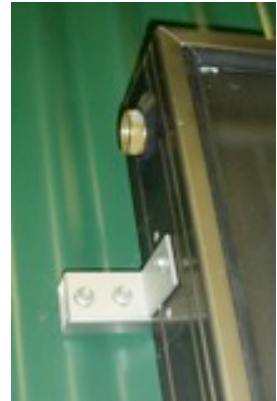
Revision: 9h Issued: 01 August 2008



has been done you can then lift the 2<sup>nd</sup> panel and using the barrell unions fix it to the rails. To finish screw the final side brackets into place. The panels are now secure.

- 10) Follow instructions 2-8 for the other rails. A total of two rails are required for non cyclone areas, and a total of 3 rails are required for cyclone rated areas.
- 11) Connect them as shown in the diagram, remembering to use Teflon tape or approved liquid sealant on all plumbing joints. Always use two spanners to tighten panel fittings, and do not exert any torque on the panels.

**NOTE: WATER FLOW THROUGH PANELS - the water inlet from the pump must be connected to the lower header pipe of the array. Ensure that the water exits the panels from the top header pipe, diagonally opposite from the inlet and returns to the "Solar Return" on the tank. The pipe work to the panels must also allow full drainage of the panels. THE INLET PIPE TO THE PANELS MUST BE RUN DOWN THE ROOF TO ALLOW FULL DRAINAGE OF THE PANELS, AND TO ALLOW FOR PRIMARY FROST PROTECTION.**



- 12) Install the air bleed valve onto the outlet of the panels at the top left corner of the panels.

**NOTE: The air bleed valve needs to be commissioned and checked to ensure the valve top is opened and that when the pump operates the valve seals properly. This can be done by listening to the valve to ensure air is not entering the pipe work. Let the pump run for 3-5 minutes if air is still bubbling into the tank at this stage the valve is not sealing. Place the "Flow Control Disc" into the return line tank connection to prevent a venturi effect at the air valve. (This restrictor should be a 3-4 mm hole size)**



- 13) Mount the panel temperature sensor to the Air bleed T piece.
- 14) Drill a 10mm hole in the roof near the sensor and run the sensor leads through the hole drilled in the roof, once this is done seal the hole with silicon.
- 15) Use the terminal block to connect the ends of the sensor leads to the supplied cable, and run this wire down to the solar controller unit on the storage tank.

**NOTE: Do not use the same hole as the pipe work as movement of the pipes will case the cable to break or short circuit.**



- 16) Install the Solar Hot Pipe and Solar Cold Pipe to run between the storage tank and the collectors. Both pipes should be DN15 (1/2") copper pipe, with 13mm or thicker synthetic rubber insulation (Armaflex, Bradflex). All insulation should be protected from UV degradation by two thick coats of paint, or by covering with ductwork. Pre-lagged pipe (often green PVC or plastic insulation) is not suitable for thermal insulation purposes – only use foamed synthetic rubber insulation.

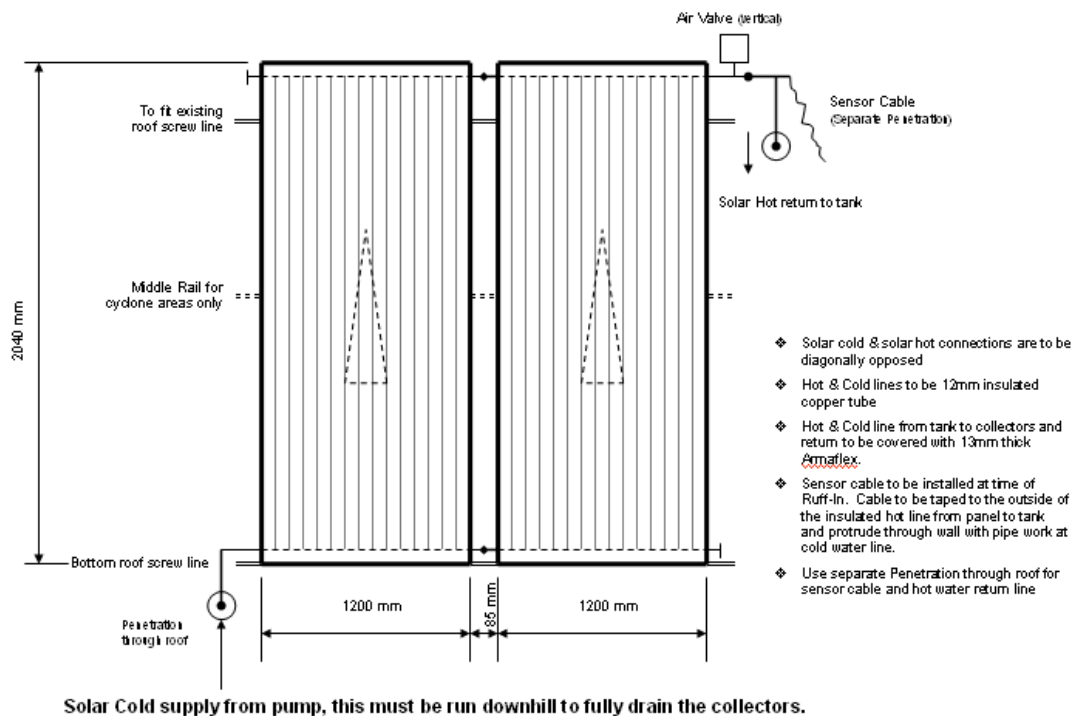
- 17) Connect the Solar Hot Pipe and Solar Cold Pipe to the heater and to the panels.

**NOTE: ensure that the water inlet from the system pump flow is to the lower left edge of the array, and that the water exits the panels diagonally opposite and through the sensor outlet fitting, and returns to the solar return on the tank.**

- 18) Upon completion of the water heater installation, check the panels and associated plumbing for leaks while the pump is operating. Leaks above the water line of the tank will suck air in, rather than leak water out. When checking for leaks, if you can hear air bubbling in the tank after the pump has been running for a while (more than 5mins), it is likely that air is leaking in somewhere in the piping.

## COLLECTOR INSTALLATION IN CYCLONE AREAS

The **SolarPower SP4002** is *SUITABLE* for installation in cyclonic locations when installed with an additional rail mounting and brackets to provide the required additional fixing to the roof frame. This ensures conformance with AS1170.2. Three mounting rails meet the requirement for a C3 rated area.



## 2. INSTALLATION – STORAGE TANK

### COMPLIANCE WITH STANDARDS



The installation must be performed by an Authorised Persons and comply with the requirements of AS/NZS 3500.4, AS/NZS 3000, and all local codes and regulatory authority requirements. It is recommended the solar storage tank be installed at ground or floor level. The water heater must stand vertically upright.

### SUITABILITY FOR INSTALLATION IN FROST AREAS

The system is suitable for installation in areas that experience sub-zero temperatures, it has an air bleed valve freeze protection system integrated into the system to prevent damage in the event of a light frost. Areas of known heavy frost or altitudes higher than 600 m above sea level are not suitable for this system.

**NOTE: THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING.**

### LOCATION



Whether located outdoor or indoor, the solar water heater storage tank should be installed close to the most frequently used hot water outlet (typically the shower) and its position chosen with safety and service in mind. The panels should be located as close as possible to the storage tank.

### CLEARANCES

Allow adequate room to work with tools. A minimum of 25mm clearance around the water heater is required. An additional 30mm is required for relief valve removal, 80mm for access cover removal and 400mm for element removal. You should be able to read the information on the rating plate and all informative labelling.

Adequate provision must be made to dispose of any water escaping from heater or adjacent plumbing that might result in damage to property.

The water heater must be connected in such a way that:

- both the electrical covers are accessible to a service agent.
- space is allowed for the removal of the heating element.
- the pump is accessible for servicing.
- or complete removal of the unit if necessary.

### CONFINED SPACES

If the thermostat fails the unit may produce excessive steam.

It is strongly recommended that the heater should be installed in a well-ventilated space to avoid condensation build up.

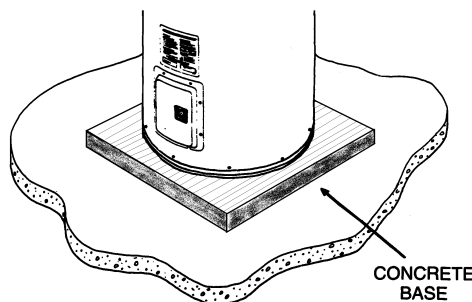
If installed in confined areas, make provision for Service Access.

Vent safely to open air and carry hot water overflow pipework to drain.



### FOUNDATION

To ensure adequate ventilation, position the unit on an approved support base on a concrete slab (See figure below).

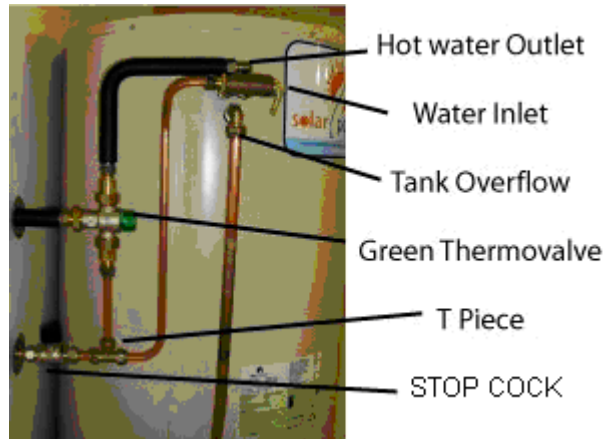


**Figure 1 Suitable Water Heater Foundation**

Alternative forms of water heater bases are acceptable providing they allow for adequate ventilation. Attention is drawn to the weight of the water heater tank when full (approx 460kgs) and installer should ensure that the base and footings are substantial enough to avoid subsidence etc.

## SAFE TRAY

It is a requirement of the National Plumbing Code AS/NZS3500.4.2 that new water heaters be installed in a safe tray where in the event of a leak, property may be damaged. Installation of such trays must comply with Clause 4.4 and Sub-Clauses 1 to 5 of the abovementioned Code.



**Figure 2 Outlet Plumbing Configuration**

## HOT WATER DELIVERY

This heater supplies water at a temperature exceeding 50°C. We recommend a tempering valve be fitted between the water heater and the outlets in bathrooms and ensuites to comply with the water temperature requirements of AS 3500.4 (refer to diagram above).

## WATER PRESSURE

Test incoming water pressure with a gauge. If the pressure exceeds 1100kPa, an approved pressure limiting valve limiting pressure to a minimum of 600kPa is required and should be fitted as shown in the installation diagram, Figure 4.

Pressure limiting valves are not supplied with Water Heaters.

## PUMP LIMITS

The SP 4002 system has a head limit of 6 meters. A different model pump (available from SOLARPOWER) will be required to maintain water flow through the solar collectors for heads greater than 6 meters.

## TANK WATER SUPPLY

SolarPower water heaters are not recommended for use with a tank water supply, unless a pressure pump has been fitted. Minimum supply pressure should be no less than 350kPa.

Should pressure be less than 350kPa a non-restricted HPNR valve may be required.

## BOOSTER HEATING UNIT

The booster heating unit provides boosted hot water during periods of low solar gain or high hot water use. The recommended installation is for the electric element to be connected to a continuous electrical tariff. Other configurations of wiring the booster element are not recommended and may affect overall system performance and will not be covered by the warranty.

## SADDLING – PIPE WORK

To prevent damage to the cylinder when attaching pipe clips or saddles to the water heater jacket, we recommend the use of self-drilling screws with a maximum length of 12mm. Should pre drilling be required extreme caution must be observed when penetrating the jacket of the water heater – the inner tank is thin copper sheet and a drill will penetrate it easily.

**Note: Damage to the cylinder as a result of saddling to the jacket will void the warranty.**

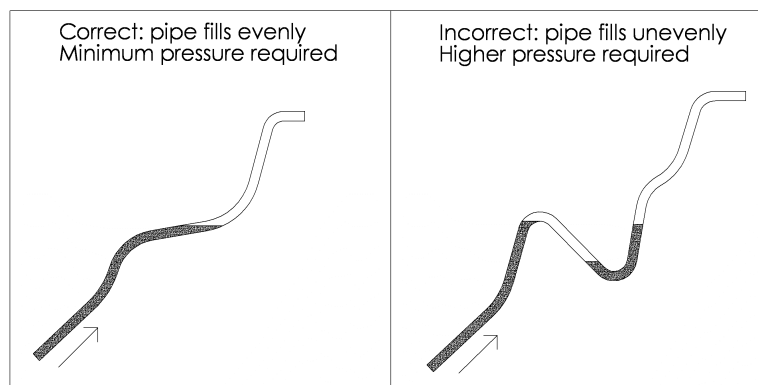
## SOLAR PLUMBING CONNECTIONS

To connect the solar cold pipe on the storage tank.

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- Connect the “Solar Cold” pipe to the nipple on the outlet side of the pump using the compression nut and copper olive provided. This pipe will run to the bottom of the collector array.
- The “Solar Cold” Pipe will carry water from the tank up to the panels for heating. It is very important that this pipe runs continuously upwards or horizontally from the outlet of the pump to the inlet of the panels. If the pipe runs downwards, water will sit in the gooseneck formed by the pipe and cause extra resistance to the pump – as shown in the diagram below, this may cause the solar water to not circulate to the panels.



**Figure 3 Solar Pipe Installation**

To connect the solar hot pipe to the solar storage tank:

- Connect the “Solar Hot” pipe to the heater using the compression elbow supplied. This pipe will run from the top of the collector array (diagonally opposite the panel inlet fitting) down to the tank. A compression fitting and brass or copper olive is recommended. Pay attention to Fit the “Flow Control Disc” at the tank.
- The “Solar Hot” Pipe must run continuously downwards or horizontally from the panels to the tank – the reason for this is given in the section above and figure 6.

**2 Storey Homes** in some installations may require the fitting of a non return valve in the solar line after the pump. SolarPower recommends the installation of a ½ inch swing check valve in the solar pump line to prevent the backflow of air from the panels into the pump which can cause cavitation of the pump the next time it starts. Dual spring check valves are not to be installed as the pump does not have enough force to flow through the valve. Note that the fitment of the incorrect valve in frost prone areas can cause damage to the panels. Please call SolarPower if you have any questions 07 3274 0774.

## NOTES ON PLUMBING

- Flush out all piping after installation
- DO NOT use thread tape on compression fittings.
- Copper olives must be used on all compression fittings.
- DO NOT use plastic pipe work between the tank and collectors.



## SOLAR CONTROL UNIT

The solar control unit is mounted on the side of the solar storage tank, behind the lower of the two covers and is powered internally from the solar water heater.

## 3. CONNECTIONS – PLUMBING

### CONNECTION SIZES

- Hot water outlet: ½” Copper compression fitting with copper olive.
- Cold water inlet: ½” Compression fitting (supplied) with copper olive.
- Solar hot (from collectors) connection: ½” Compression fitting (supplied)
- Solar cold (to collectors) connection: ½” Compression fitting (supplied)
- Overflow outlet: ¾” Copper
- Vent pipe: ½” Copper
- Pump Inlet and Outlet Fittings: 1 ¼” BSP (connections already supplied)
- Solar Panel Fittings: ¾” BSP Barrel Unions (connections already supplied)



## **INLET/OUTLET CONNECTIONS**

To allow for disconnection of the water heater a barrel union must always be provided at the cold water inlet, solar hot water inlet and hot water outlet on the water heater to allow for disconnection of the water heater. The pipe work must be cleared of foreign matter before connection. All pipe fittings must be assembled using two spanners – do not exert excessive amounts of torque on the pipes or water heater fittings.

## PIPE SIZES

The “Solar Cold” and “Solar Hot” pipes between the solar storage tank and the solar collectors should be DN15 **Copper Pipe Only**. The cold water pipe to the water heater should be the same size or larger than the hot water line from the water heater. For best results, choose the most suitable pipe size for each individual application. Refer to the relevant plumbing regulations.

DO NOT USE PLASTIC PIPE WORK BETWEEN COLLECTORS AND TANK.



**NOTE:** The “Solar Cold” and “Solar Hot” pipes between the solar storage tank and the solar collectors **must be** of copper and fully insulated with Bradflex / Armaflex insulation or similar (minimum thickness 13 mm). Plastic pipe **must not** be used, as it will not withstand the temperature of the water generated by the solar collectors under certain conditions.

## OVERFLOW OUTLET PIPE

A drain pipe should be fitted to the overflow outlet to carry the discharge clear of the water heater. Connect the drain line to the overflow outlet using a compression union or similar – **never** braze/solder to any fittings on the water heater. The pipe work from the overflow outlet to the drain should be as short as possible, and fall all the way from the water heater with no restrictions. The outlet of the drain pipe must be in such a position that flow out of the pipe can be easily seen, but arranged so hot water discharge will not cause injury, damage or nuisance.



**SAFETY WARNING:** As the function of the overflow outlet pipe is to discharge high temperature water under certain conditions, it is strongly recommended the pipe work downstream of the relief valve be capable of carrying water exceeding 95°C. Failure to observe this precaution may result in damage to pipe work and property. Should this pipe become obstructed (eg. squashed, kinked or blocked), then the water heater may be damaged due to internal pressure.

## 4. CONNECTIONS – ELECTRICAL



**NOTE:** Power must not be turned on until the solar storage tank is filled with water, and electrical circuits are found to be satisfactory. The water heater is designed for a 20 Amp 240 V 50Hz power supply.

### 1. Booster Element Power

The solar storage tank with an electric booster element is designed for connection to a 240V AC mains power supply with an isolating switch installed at the switchboard. A 20 mm flexible conduit is required to protect the cable entering the tank. The conduit is to be connected to the unit with a 20 mm gland. There is a wiring diagram inside the upper electrical cover, showing how to connect power to the booster element and thermostat components.

### BOOSTER ELEMENT WIRING

The system is designed to operate most cost efficiently on the continuous tariff. Other forms of Electrical connections may result in unintended operation of the system.

#### A. STANDARD WIRING CONFIGURATION

Electrical installation of the solar storage tank with circuit breaker only. Recommended for all installations and is the factory default wiring as supplied.

### 2. Roof Sensor Connection

The roof sensor cable is to be installed along with the solar pipe work and is connected to the controller board located in the storage tank. The sensor cable is run through the cable gland in the storage tank case and secured with a cable tie to provide cable strain relief and then connected to the terminals on the solar controller circuit board marked “Collect.” Polarity of the sensor is not important.

Tighten the cable tie to ensure the sensor leads cannot come close to the 240V connections on the other side of the board, even if loose.

This sensor must be connected for operation of the pump.

The LED light on the control board will flash twice per second indicating a Fault if this wire is not connected and will cause the pump to not operate.

The status LED output provides a visual indication of the operating status of the controller:

LED mostly on - Idle, pump off \*\*

1 short flash - Pump running

2 short flashes - Sensor fault, pump off

\*\* As this LED output is shared with the communications output, when the LED is on continuously, there will be a short blink every 2 seconds. This small perturbation lasts for approximately 31ms.

Temperature – Deg C	-5	0	5	<b>25</b>	40	60	80	100	110
Resistance - K Ohms	42.49	32.75	25.45	<b>10</b>	5.32	2.49	1.26	0.682	0.513

This chart outlines the resistance of temperature probes and may be used to check for correct operation of the probes. See the controller manual for full details on controller operation.



**NOTE: DO NOT run the sensor wire through the same hole in the roof material as the pipe work, as this will lead to the cable being damaged from the pipe movement in the hole and will cause short circuits or failure of the temperature sensing.**

## 5. COMMISSIONING

### TO FILL AND TURN ON THE WATER HEATER

**NOTE:** The power supply to the solar storage tank and solar control unit **MUST NOT** be switched on until the water heater is filled with water.



- Once cold water has been connected to the inlet of the water heater, pull the lever on the valve open to fill the tank. When water comes out of the overflow outlet pipe, gently close the valve. Allowing the valve to slam shut may damage the valve seat – this is not covered under the warranty.
- Open all of the hot water taps in the house in turn, allowing any air in the lines out. It is important that this is done before the heater has had time to warm up, as the air bubbles can cause spurting from the taps. Also check the Solar piping for leaks, leaks will significantly decrease the performance of the heater.
- Check pump speed is set to HIGH for a two story house and MEDIUM for a single story house.
- Complete SolarPower Installation Report Sheet and return to SolarPower for the REC's Claim to be approved.
- Switch on the electrical supply at the circuit breaker to prove the flow to the solar storage tank.



**NOTE:** The Installation Report form needs to be returned to SOLARPOWER Pty Ltd to qualify for the REC's Rebate.

### TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premise is vacant, then:

- Close the cold water isolation valve at the inlet to the water heater.
- Switch off the electrical supply at the circuit breaker to the storage tank.

# HOME OWNER USER GUIDELINES

## 1. ABOUT YOUR HEATER

### MODEL DESCRIPTION SP4002

The SolarPower split system solar water heater model SP4002 has a copper heat exchange storage tank installed at ground or floor level, remotely from the solar collectors. As the sun heats the water in the solar collectors the increase in temperature activates the water circulator. The water circulator switches on whenever the water in the solar collectors is hotter than the water in the tank. Cooler water from the solar storage tank is circulated to the solar collectors to be heated by the sun's energy. This process continues while solar energy is available and will stop if the water in the panels gets cooler than the water in the tank or if the storage tank reaches its maximum set point.

The solar storage tank is suitable for either outdoor or indoor installation. This system is not suitable for installation in areas that experience sub-zero temperatures, but does offer a basic freeze protection for the panels. If you need assistance determining whether your area is suitable for this water heater, please contact your local SolarPower service agent.

### MAINS PRESSURE LIMITS



The water heater is designed to operate at mains pressure by connecting directly to the mains water supply. If the mains supply pressure exceeds 1100kPa, a pressure-limiting valve must be fitted before the inlet of the heater, rated at 600kPa.

### HOW HOT SHOULD THE WATER BE?

When operated in a domestic situation the system's outlet temperature should be between 50°C and 80°C. During periods of low solar energy gain, the water temperature can be boosted by the thermostatically controlled electric booster heating unit.



The water heater features a tradesperson adjustable thermostat. This requires a licensed tradesperson to make any temperature adjustments. The thermostat is located inside the upper electrical cover.

**SAFETY WARNING:** Ensure all sources of electricity are disconnected from the unit before removing either of the electrical covers. For reasons of safety and economy we advise you adjust the thermostat to the lowest setting which meets your needs. Not only will a lower thermostat setting increase the amount of solar energy collected, but it will also reduce the chances of scalding in houses not equipped with tempered hot water.

### HOTTER WATER INCREASES THE RISK OF SCALD INJURY

We recommend, and it may also be required by regulations, that an approved temperature limiting device be fitted into the hot water piping to all bathrooms and ensuites. This will keep the hot water temperature below 50°C at those outlets. The risk of scald injury will be reduced and still allow hotter water to the kitchen and laundry.



### SAFETY WARNING

This water heater is not intended to be operated, adjusted or tampered with by young children or infirm persons. Young children should be supervised to ensure they do not play with the water heater.

## **DOES THE WATER QUALITY AFFECT THE WATER HEATER?**

The water heater is not recommended for connection to a bore water supply. Many such sources contain contaminants harmful to the copper heat exchanger coil. If the heater is connected to bore supply against SolarPower recommendation, warranty does not apply. See details on warranty page.

## **HOW LONG WILL THE WATER HEATER LAST?**

There are a number of factors that will affect the length of service the water heater will provide. These include the water quality, the water pressure, temperature (inlet and outlet) and the water usage pattern. However, your SolarPower water heater is supported by a limited 5 year warranty (refer to warranty page included).

## **IS ANODE PROTECTION REQUIRED?**

Vitreous Enamel lined displacement storage tank water heaters use an anode to provide protection from corrosion on the steel walls of the tank. Because your SolarPower water heater tank is made from 100% copper, it will not rapidly corrode and does not require an anode. Hence, no anode replacement is needed with your SolarPower water heater.

### **Notes :**

- Pipe work between the solar collectors and solar storage tank **MUST** be insulated with the specified material, or better.
- The system is not covered under warranty for freeze damage in areas that experience sub-zero temperatures.
- Refer to Conditions on Warranty sheet.

## **2. FAULTS & SERVICE**

Check the items below before making a service call. You will be charged for attending to any condition or fault that is not related to manufacture or failure of a part.

### **▪ Booster heating unit not operating**

Inspect the isolating switch marked “HOT WATER” in the meter box and ensure it is turned “ON”. Check the electrical tariff to which the unit is connected. If the unit is connected to an Off Peak tariff, remember heating hours are restricted

### **▪ Collectors shaded**

If trees or other objects shade the solar collectors or if the glass is dirty, the effectiveness of the solar collectors will be greatly reduced. Clean the collector glass, trim trees or relocate the solar collectors if the obstruction is permanent.

### **▪ Are you using more hot water than you think?**

Is one outlet (especially the shower) using more hot water than you think? Carefully review the family’s hot water usage. It is a good idea to restrict the amount of hot water used by simply fitting an inexpensive water saver shower rose. Conventional shower roses can require up to 20L/min of flow to spray properly, but a large amount of this water is wasted. Water saver shower roses can operate with as little as 6L/min of flow and most people will still be comfortable with 9L/min or less of shower flow.

### **▪ Pressure relief and non-return valve running**

Is the overflow outlet on the heater leaking water constantly? The heater’s valve may be not functioning correctly. Note that leaking from the overflow is normal for the first couple of days of operation, or until the heater reaches its maximum service temperature.

### **▪ Thermostat setting**

Ensure the thermostat setting is appropriate. You may choose to have your electrician adjust the thermostat upwards to gain additional hot water capacity when boosting.

### **▪ Tempering Valve Malfunctions**

Have your plumber check to make sure your tempering valve is calibrated and is functioning correctly – this can cause the water from your taps to be cool, even though there is plenty of heat available in the water heater.

## ▪ WATER FLOWING FROM THE OVERFLOW OUTLET

### **Normal Operation**

It is normal that the overflow pipe will leak water for the first couple of days of the unit's operation. This is caused by the expansion of the tank water, and should stop after the heater has reached maximum operating temperature. The tank may also leak small amounts of water in summer, when the hot weather will cause the tank to reach higher temperatures.

### **Continuous dribble**

Try gently raising the easing lever on the relief valve for a few seconds this may dislodge any trapped particles of foreign matter and clear the fault. **Release the lever gently.**

### **Steady flows for long period (often at night)**

This may indicate the mains water pressure sometimes rises above the designed pressure of the water heater. Ask your installing plumber to fit a pressure limiting valve.

## ▪ VENT PIPE LEAKING WATER

If the vent pipe is leaking water, it may be that your overflow outlet pipe is blocked. Ensure that the overflow outlet pipe is not damaged, and disconnect any plumbing from the overflow outlet to see if it is blocked.

## • HIGH ELECTRICITY BILLS

With the installation of your new solar hot water system, maximum electrical energy savings can be achieved with careful planning of hot water usage. Should you at any time, feel your electricity account is too high, we suggest you check the following points:

- Is the relief valve running excessively?
- Are you using more hot water than you think?
- Is there a leaking hot water pipe, dripping hot water tap etc? Even a small leak will waste a surprising quantity of hot water and energy. Replace faulty tap washers, and have your plumber rectify any leaking pipe work.
- Are you using the booster heating unit properly?
- Consider recent changes to your hot water usage pattern and check if there has been any increase in tariffs since your previous account.
- Does the system have the correct foam insulation installed on the pipe work? Incorrect insulation can waste solar energy and lead to excess electrical use at times of high water use.



**NOTE: IF YOU HAVE CHECKED ALL THE FOREGOING AND STILL BELIEVE YOU NEED ASSISTANCE, CALL SOLARPOWER PTY LTD ON 07-3274 0774.**

## ▪ COLLECTOR GLASS

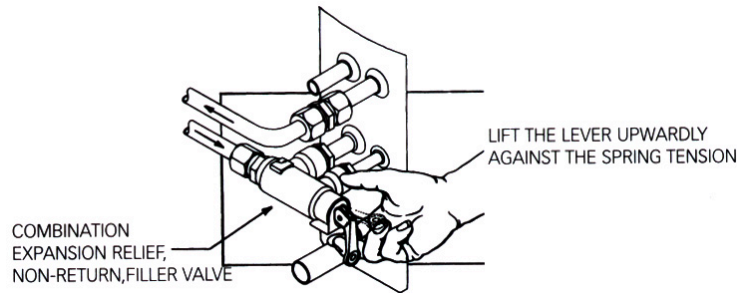
SolarPower **WARRANTY** DOES NOT cover breakage of solar collector glass. Check your household insurance policy to ensure that the policy covers collector glass breakage. In the event of the Collectors glass being broken a new collector will need to be installed.

## 3. MAINTENANCE REQUIREMENTS

### ▪ PRESSURE RELIEF AND NON RETURN VALVE

This valve is at the top of the water heater and is essential for its reliable operation. During periods after hot water has been drawn off, water in the coil is trapped between the tap and the non-return valve. This water heats up through the transfer of heat from water in the tank and expands. The relief valve redirects this excess into the tank, assisting with topping up. The inlet side of the valve may be supplied restricted or unrestricted to provide different flow rates.





**Figure 5 Topping up The Tank**



**NOTE:** The owner should operate the easing lever on the valve once every six months. When the lever is lifted, you should hear the sound of water spilling into the tank. Hold the lever up until water runs out of the overflow pipe. Gently let the handle down on the valve, as suddenly releasing may damage the valve seat. **It is a good idea to do this check every time you receive your electricity bill.** In areas where there is a high incidence of water deposits the temperature and pressure relief valve should be checked for performance or replaced at intervals not exceeding 5 years or more frequently.

#### ▪ **OVERFLOW OUTLET AND VENT PIPE**

It is important that the overflow outlet and vent pipe are free from blockages and restrictions. If the overflow outlet is connected to a pipe, regularly make sure that it has not been crushed or kinked. In most cases the vent pipe should not be connected to any pipe work. If both of these fittings are blocked, the tank may build up pressure and cause damage or injury. The overflow pipe must be installed to meet local plumbing codes.



#### **SAFETY WARNING**

This water heater is supplied with tempering valve, thermostat and a pressure relief and non-return valve. These devices must not be tampered with or removed. The water heater must not be operated unless both of these devices are fitted and are in working order.



The **WARRANTY** can become void if relief valve or thermostat is tampered with or if the installation is not in accordance with these instructions.

#### ▪ **SOLAR COLLECTOR GLASS**

Ensure the glass on your solar collectors is free of dust, salt spray or any other matter, which may reduce the effectiveness of the solar collectors. Hose or wash the collector glass with water and a soft brush when the solar collectors are cool. Outdoor window cleaning products work well on the collector glass, and may be used to clean the collectors from the ground. Regularly trim any trees that may shade the solar collectors.

## **4. DRAINING THE WATER HEATER**



**SAFETY WARNING:** Before draining the system ensure you will not be scalded by the hot water in the system. (Water temperatures are likely to be well above 50 deg C.)

- Switch off the electrical supply at the isolating switch to the solar storage tank and at the power outlet for the solar control unit.
- Unscrew the water heater drain fitting, sliding the temperature probe out until water flows freely.
- If it is necessary to run the water away from the heater (eg. if the tank is indoors), the wires to the temperature probe can be unscrewed from the controller circuit, and reconnected later, allowed the probe to be removed from the drain fitting.
- Ensure the heater is refilled with water before reconnecting electrical power.

## **5. WATER SUPPLIES ANALYSIS**

Your SolarPower solar water heater is manufactured to suit the water conditions of most Australian metropolitan supplies. However, there are some known water supplies which can have detrimental



effects on the water heater and its operation and/or life expectancy. If you are unsure of your water quality, you can obtain information from your local water supply authority.

WARRANTY of this product is VOID where the product is installed in areas where corrosive water is present or has been present in the product in the time span of the warranty. This product should only be connected to a potable water supply.

Water that is corrosive to copper is typically associated with some bore water supplies of water not treated by water authorities to ensure against copper corrosion. Corrosive water for copper can result in premature failure of the product through hot water copper pitting corrosion where small holes develop in the inner tank or copper coil and the product eventually leaks.

The following criteria shall be met under the terms of the Warranty to ensure that water is not corrosive or scaling to copper.

1. pH is greater than 7.0 ( $\text{pH} > 7.0$ )
2. Bicarbonate to sulphate ratio is greater than 2:1 ( $>2:1$ )
3. Langelier Saturation Index (LSI) is greater than negative 1 and less than plus 0.8 ( $-1 < \text{LSI} < 0.8$ )

It is known that the following geographical locations provide water that does not always concur with the above criteria and installation in these areas voids the warranty. Locations include suburbs supplied by Redland Water, Wellington Point, Thornlands, Thorneside, Cleveland, Redland Bay, Point Lookout, Ormiston, Mount Cotton, Alexandra Hills, Victoria Point, Birkdale, Capalaba, And Morton Bay islands) and Bundaberg, Moore Park, Bargara and Yeppoon.

Notwithstanding the foregoing comment, this does not imply or infer in any way that the water mentioned in the above locations does not meet drinking water requirements and is safe to drink.

**NOTE: WATER HEATERS NOT INSTALLED IN ACCORDANCE WITH THE ABOVE ADVICE WILL NOT BE COVERED BY THE SOLARPOWER WARRANTY.**

## **6. ELECTRIC BOOSTING**

Water stored in the storage tank is heated automatically by an electric booster heating unit. The booster element heats the water during very cloudy or rainy weather, during the winter months, or during periods of unusually high demand, such as when friends or relatives visit. The SolarPower Solar water heater is suitable for the heating unit to be connected to continuous electricity supply.

The booster heating unit is controlled by an electric thermostat. The thermostat and heating element are mounted on the solar storage tank inside the higher of the two covers. The boost water temperature is automatically controlled to the thermostat setting when the booster heating unit is energised.

The thermostat is tradesperson adjustable. It has a minimum temperature setting of 60°C and a recommended maximum temperature setting of 80°C. It can only be adjusted by an authorised person. Automatic safety controls are fitted to the water heater to provide safe and efficient operation. SolarPower recommends that the thermostat be set at 60 °C for the best efficiency.

The SolarPower Solar electric booster element will automatically heat the water in the tank.



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## FIVE YEAR WARRANTY PERIOD

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### **Model Number - SolarPower SP4002**

Manufactured and distributed by SOLARPOWER Pty Ltd

Please fill in the details hereunder and retain this warranty together with your purchase invoice, which must be presented when making a warranty claim.

**OWNER'S NAME:**

\_\_\_\_\_

**ADDRESS:**

\_\_\_\_\_

**SERIAL NO:**

\_\_\_\_\_

**INSTALLER'S NAME:**

\_\_\_\_\_

**DATE OF INSTALLATION:**

\_\_\_\_\_

**SIGNATURE OF INSTALLER:**

\_\_\_\_\_

This warranty does not exclude, limit or modify any warranty, condition or liability which is or may be implied or imposed on the Company by virtue of the Trade Practices Act, 1974, or any other statute, rule or regulation except for the extent to which the Company is lawfully entitled.

SolarPower warrants the **SP4002** SOLAR HOT WATER SYSTEM (hereinafter called the SYSTEM) against manufacturing defects, faulty materials and/or workmanship upon the following terms:

**A Twelve (12) Month Comprehensive Warranty from the date of completion of installation or if installation date is not known, two (2) weeks after the date of purchase:**

- Parts (Refer to warranty conditions and exclusions on reverse);
- Labour;
- Freight (refer paragraph three of the warranty conditions overleaf).

**For years two (2) to five (5)** a parts only guarantee, applicable after the expiration of the 12-month comprehensive warranty. (Installation, transport and labour costs will be charged to the owner).

This warranty applies to Residential Solar Hot Water systems installed on domestic housing only. The Company reserves the right to either repair or replace any part of the SYSTEM as required.

1. The warranty only applies where the SYSTEM has been installed and commissioned according to SOLARPOWER installation instructions and by an authorised SOLARPOWER installer or licensed plumber.
2. Free repair or replacement is provided within the metropolitan area of Australian capital cities as defined by SOLARPOWER within 30km of the city centre or a branch, office or accredited service agent. In other areas defective parts or SYSTEMS must be returned to the point of sale before replacement can be considered under the terms of the warranty. Freight and insurance charges for the transport of a defective and replacement SYSTEM or parts are payable by the owner.
3. Where a failed component or SYSTEM is replaced under warranty, the balance of the original warranty period shall remain effective. The replaced part or SYSTEM does not carry a new warranty.
4. The warranty only applies to the SYSTEM and does not cover any plumbing or electrical parts. The electrical element, the circulator pump and pump controller have a 12-month replacement warranty.
5. Warranty claims must include all details listed overleaf and should be made to the point of sale or to the company address listed below within one (1) month of the appearance of the defect.
6. This warranty does not cover the SYSTEM where it is found that the SYSTEM does not suffer a defect; where the complaint is related to solid matter lodging under valve seats; where there is a failure of water supplies, electrical supplies or the result of extreme water pressure or thermal input.
7. This warranty does not cover the SYSTEM where the SYSTEM is located in a position that does not comply with either the SolarPower installation instructions or the relevant statutory requirements and as a consequence there is a need for major dismantling or removal of doors, walls etc, or the use of special equipment to bring the SYSTEM to ground level.
8. This Warranty excludes the removal of scale formation in the waterways where the SYSTEM has been connected to a harsh water supply.
9. Subject to any statutory provisions to the contrary, this warranty excludes claims for damage to furniture, carpets, walls, foundations, or any other consequential loss either directly or indirectly due to leakage from the SYSTEM.
10. The collector glass cover-plate is not covered by this Warranty. Your household insurance policy should be extended to include breakage of the collector cover-plate glass.
11. This warranty excludes damage resulting from acts of God, fire, lightning, flood, earthquake, landslide, storm, hail, frost, wind or other adverse weather conditions
12. The warranty excludes damage resulting from misuse, faulty installation or repairs carried out by persons other than a SOLARPOWER accredited service agent or technician.
13. Water Quality, must meet the detailed description of the requirements for water quality as listed in the installation manual.

## **SolarPower Pipe Layout Drawing**

Hot Water out to House  
1600mm

Cold Water IN  
1300mm

Water Must Drain back From  
Panels, and have no  
downloops on piping!

Solar in from Panel  
900mm

Solar out to Panel  
650mm

All dimensions from Bottom of Tank.



**NOTE: 2 Storey homes may require a single check valve fitted after the pump on the solar cold line to prevent cavitation in the pump. DO NOT use dual check valves for this purpose as the pump will not have enough pressure to open the valve.**