



Solartech Genius®

Installation Manual
Rev. 01/2005



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1. THE COMPANY

After the installation of several units of production trough the world, the Solco Industries Pty, Ltd. (Australia) together with Portuguese investors have implanted in Portugal a manufacturer of **SOLCO SOLARTECH Genius** systems for the European Market and other countries.

This challenge is based on increasing new forms of clean energies exploitation, specially thermal solar energy, which has been an increasing motive of governmental concern.

Solco Europe developed solar units that answer to the necessary requirements for which the solar systems are conceived - to get hot water, through the solar energy, with the possible minimum of costs.

Constructed at a base of polymers and with a singular technology, the solar unit SOLCO SOLARTECH Genius, besides presenting a significant attractive price in relation to any another system, even those with fuels, offer a lifetime warranty against rust and corrosion and excuses any type of maintenance for long periods.

The SOLCO SOLARTECH Genius models have been tested by a variety of test facilities including the Plumbing Testing Laboratory and the Murdoch University Energy Research Institute (MUERI) in Western Australia to Australian Standards including AS3498, AS4234, AS2535.1 and AS2712.

Our Quality Assurance Program ensures that the manufacture of each SOLCO SOLARTECH Genius is controlled by procedures approved by Standards Australia's Quality Assurance Services. As a result of meeting these stringent test and quality requirements, the SOLCO SOLARTECH Genius has been awarded StandardsMark Certification 2733 to AS2712.

2. INTRODUCTION

Traditional solar water heaters consist of two separate items:

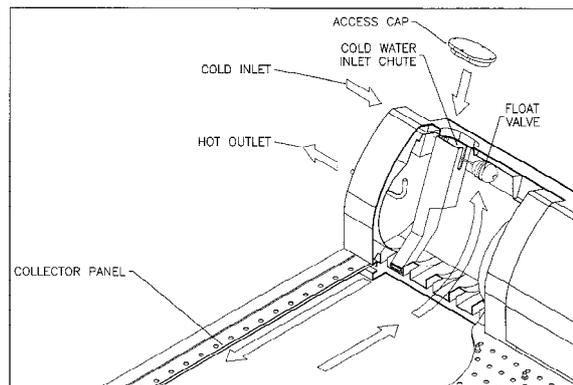
- (a) The collector panel 'collects' the radiant energy from the sun and transfers it in the form of heat to the water in the collector panel.
- (b) The hot water storage tank stores the water that has been heated in the collector panel.

The SOLCO SOLARTECH Genius is unique in that:

- (a) It utilises a fully flooded collector panel that contains no channels or pipes but instead provides a water-filled cavity over the complete collector area.
- (b) It utilises a design in which the collector panel and the storage tank are fabricated in a one-piece moulding - removing the need for joints, seals or gaskets all of which are a major potential source of leaks and corrosion

From your water supply, cold water is introduced into your solar unit that is installed on the roof of your home or workplace. Energy from the sun is then absorbed by the solar panels converting the sun's radiation into heat energy providing you with solar heated water.

The **SOLCO SOLARTECH Genius** operates as a "constant pressure" system. The main supply water is fed directly into the collector panel via a transfer chute located in the storage tank. This means that the SOLCO SOLARTECH Genius prevents cold water jetting into the storage tank and significantly reducing the temperature of the stored hot water. In independent tests, it was found that 85% of the capacity of the SOLCO SOLARTECH Genius could be drawn off before any



reduction in water temperature was measured. This is a lot more hot water than you would expect from any other similar sized conventional domestic hot water storage system including gas, electric or other solar units.

The SOLCO SOLARTECH Genius is an integrated single piece solar collector and storage tank formed from medium density polyethylene using a rotational molding process.

The storage tank is surrounded by polyurethane insulation that also acts as the structural body of the unit. Further insulation is obtained from styrene foam located underneath the collector panel. A high transmission impact resistant acrylic cover protects the collector plate and helps keep wind off the surface of the collector.

Polyethylene, the main component of the SOLCO SOLARTECH Genius, has several advantages:

1. It is inert – which means that nothing sticks to it or corrodes it. This means the polyethylene unit is 100% rust free.
2. It is flexible and can withstand both elevated and sub zero frost conditions.
3. The polyethylene in contact with water meets the Standards Australia requirements for direct contact with potable (drinking) water.
4. The material is U.V. stabilized and has an expected service life in excess of 15 years under extreme conditions of solar radiation.
5. Polyethylene is also used to mould the extremely tough and durable outer skin that covers the insulated storage tank.

3. INSTALLATION

There are a number of different ways the SOLCO SOLARTECH Genius can be used to make use of the sun's energy and save on power bills. Your SOLCO SOLARTECH Genius will have been installed in one of the following configurations:

- (1) Standard Installation with an electric booster.
- (2) Pre-Heater – The SOLCO SOLARTECH Genius can be linked to a fueled storage hot water system and used in a pre-heat configuration. The amount of energy collected from solar radiation results in an equivalent saving of fuel energy (gas, electricity or solid fuel).
- (3) Twin Hook Up – The SOLCO SOLARTECH Genius can be linked 'in parallel' to an electric or gas storage hot water system so that the householder can choose which system to use depending on the weather.
- (4) Wood-Burning Stove – The SOLCO SOLARTECH Genius can be used in conjunction with a coil fitted to a wood-burning stove.

3.1 SELECTING A POSITION

ORIENTATION : For optimum performance the SOLCO SOLARTECH Genius should be installed to face the equator. (South in the Northern Hemisphere and North in the Southern Hemisphere).

ALWAYS USE A COMPASS TO CHECK THE ORIENTATION.

- Deviation from the equator by up to 45 degrees east or west has little effect on the total annual solar contribution (approximately 4%).
- If it is necessary to face the SOLCO SOLARTECH Genius either 45 degrees east or west, then a slightly flatter (lower pitch) installation will give better performance.

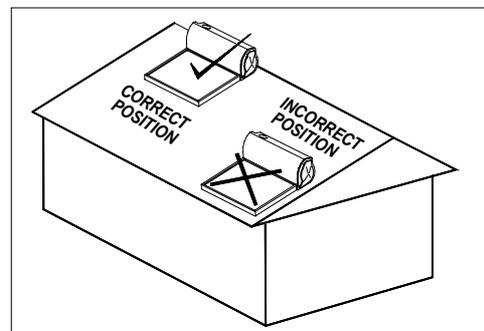
- Where local climatic conditions (such as cloud cover) commonly predominate in either the morning or afternoon, special corrections can be made. Where the cloud cover predominates in the afternoon, and it is not possible to face the equator, an easterly bias is preferred. In the case where cloud cover predominates in the morning and it is not possible to face the equator, a westerly bias is preferred.

INCLINATION: The recommended installation angle is between 20 and 30 degrees. The maximum possible angle of installation is 40 degrees and the minimum is 10 degrees. Where a solar water heater is to be installed on a roof having angles of inclination above 40 degrees, a mounting bracket must be used.

SHADE: Shade will directly affect the solar performance. For example, if the solar collector is in shadow for half the day during otherwise effective solar input, then at the end of that day only half the total possible energy will have been collected. This will show as lowered peak hot water temperature as well as a reduced quantity of hot water.

SHADING SHOULD BE AVOIDED WHEREVER POSSIBLE.

ROOF POSITION: The **SOLCO SOLARTECH Genius** should be positioned on the roof at the highest possible position. This provides the greatest head of water and consequently optimum flow.



3.2 GENERAL GUIDELINES

DO NOT UNDER ANY CIRCUMSTANCES EXPOSE THE SOLAR COLLECTORS TO SOLAR RADIATION WITHOUT THE COLLECTOR BEING COVERED OR WITHOUT THE UNIT BEING FILLED WITH WATER. FAILURE TO OBSERVE THESE INSTRUCTIONS WILL VOID THE WARRANTY.

The following guidelines must be adhered to when installing a SOLCO SOLARTECH Genius:

- a) This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the device.
- b) A licensed electrician must connect power to the product. As this appliance is not provided with a supply cord and plug then the electrician must incorporate in the fixed wiring connection, according to the wiring rules, a means of disconnection from the supply having an air gap contact separation in all active (phase) conductors
- c) Plumbing connections are to be carried out by a licensed plumber. Installations must comply with all relevant local codes of practice and/or local authority requirements. In Australia and New Zealand, the relevant codes are AS3500.1.2 and AS3500.4.2.
- d) The product must be installed on an ***ADEQUATELY SUPPORTED AREA*** of the roof. The mass of the 200litre model when dry is 65kg and 265kg when filled with water. The mass of the 300litre model when dry is 105kg and 405kg when filled with water.

e) The overall dimensions of the products (excluding pipe work) are as shown below.

MODEL	WIDTH (mm)	LENGTH (mm)	HEIGHT (mm)
200litre	1660	1780	590
300litre	1770	2500	710

f) The product must be installed:

- In a location as close as possible to the most frequently used hot water outlet; or
- In a location as close as possible to the existing water heater in pre-heater configurations.
- In a position at least 2.5metre ABOVE the highest hot water outlet to be serviced in order to provide adequate flow.
- In a position selected so that maximum support is provided to the unit by roof trusses and rafters - always span two or more roof rafters with the width of the unit.

g) The product must be installed in an area that is **FREE OF SHADE ALL YEAR ROUND**.

h) The product is supplied complete with straps and fixing bolts to secure the unit to the roof.
CAUTION: THE FIXING STRAPS HAVE SHARP EDGES.

i) The tank and collector are manufactured from a non-metallic polyethylene resin. Consequently, the tank and collector will not corrode regardless of water quality. However, care must be taken to ensure that the method by which the fittings attached to the tank and collector are not interfered with. In addition, care must be taken to ensure that excessive strain is not applied to these fittings when making external connections.

j) Pay close attention to the following instructions noted on the Collector Panel of the SOLCO SOLARTECH Genius:
DO NOT REMOVE THE PROTECTIVE PAPER UNTIL THE UNIT IS FULLY INSTALLED AND FILLED WITH WATER.

THE PROTECTIVE PAPER COVERING MUST NOT BE EXPOSED TO DIRECT SUNLIGHT FOR ANY LONGER THAN 48 HOURS.

IMPORTANT NOTE: ANY FAILURE TO COMPLY WITH THESE INSTRUCTIONS WILL VOID THE WARRANTY.

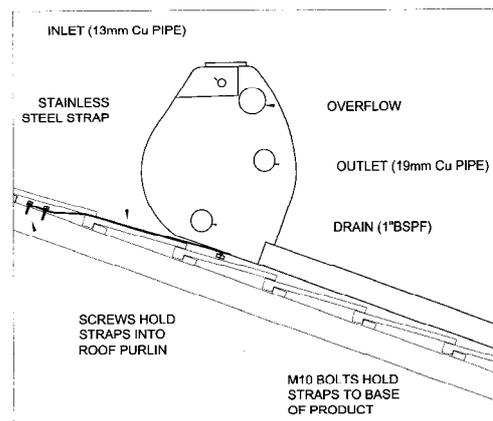
k) If the product is to be installed prior to connection of the home to a water supply, ensure the unit is filled with water before removing the protective paper. If the product is left unconnected for an extended period (14 days), regularly check (at 14-day intervals) that the product remains filled with water to avoid the loss of water through evaporation, causing damage to the collector. **DAMAGE TO THE COLLECTOR, RESULTING FROM FAILURE TO FOLLOW THESE INSTRUCTIONS, WILL NOT BE COVERED BY THE WARRANTY.**

3.3 FIXING TO A ROOF IN NON-CYCLONIC LOCATIONS

Direct Fixing To Roof - With Pitch

Select a position on the roof free of shade of at least 3 meters wide x 3 meters long.

The unit is supplied with four x 10mm metric thread x 1.5mm pitch (M10) fixing nuts cast into the base. These are used to fix the unit to the roof using the fixing straps supplied with the unit along with the four M10x140mm bolts.



Fixing to Tiled Roofs

- Select a clear area of roof at least 3 meters wide x 3 meters long. Remove the row of roof tiles above the position of the unit to expose the rafters.
- Move the unit into position.
- Secure the straps to the unit using the M10 bolts supplied.
- Screw the straps provided to the rafters.
- Replace the tiles previously removed.

Fixing to Cement or Metal Sheet Roofs

- Select a clear area of roof at least 3 meters wide x 3 meters long.
- Avoid locating the storage tank across the middle of a sheet.
- Secure the straps to the unit in the same manner as for tiled roofs.
- Fix the straps through the peak of the roof sheets into a purlin below using self-tapping screws (metal sheet) or coach bolts (cement sheet).

FIXING TO A ROOF IN CYCLONIC LOCATIONS

The SOLCO SOLARTECH Genius is ***NOT SUITABLE*** for installation in cyclonic locations unless installed with a bracket that ensures conformance with AS 1170.2. Please contact your SOLCO SOLARTECH Genius dealer if such a bracket is required.

3.4 PLUMBING CONNECTIONS

Once fixed in place, plumbing connections can be made to the SOLCO SOLARTECH Genius. The inlet to the SOLCO SOLARTECH Genius is a 15mm compression fitting. The outlet is a 20mm compression fitting. Care must be exercised to ensure that connecting pipe-work does not strain the connections on the SOLCO SOLARTECH Genius.

Hot Water Connection: As the hot water flow from the SOLCO SOLARTECH Genius relies on constant pressure, it is recommended that the hot water plumbing be constructed as far as possible from 19mm copper tube, 20mm cross-linked polyethylene tube (Auspex) or 22mm polybutylene tube. If the unit is to be installed on a house in which 13mm diameter tube is already in place then:

- The tube from the product to the point of connection in the existing plumbing must be of the diameter and type listed above;
- The point of connection must be as close as possible to the maximum number of hot water outlets.

Cold Water Connection The cold-water connection can be made to the unit in 13mm diameter tube in locations where the static supply pressure exceeds 350kPa/50psi (i.e. town water). Where lower cold water supply pressures exist larger diameter tube is likely to be required.

Overflow The Overflow must not be blocked. A pipe smaller than DN40 may ***not*** be fitted to the Overflow (ref. AS3500.1.2 Clause 8.5.6.1).

Tempering Valves: The performance of a hot water supply system is governed by the standards AS3500.4.1 and AS3500.4.2. For those installations where a tempering valve is required by these standards, then a valve such as the TVA50HP (GREEN CAP) manufactured by RMC should be fitted. Where a HFK (Hi Flow Kit) is installed, then the tempering valve must be fitted after the HFK. Where a HFK is not fitted, then a regulating device (such as a Syr 312-20 from RMC) may need to be fitted to the cold-water inlet to the tempering valve to avoid a large differential pressure between the hot and the cold water supplies. In all cases the non-return valves provided with the tempering valve

must be fitted to the valve. Failure to fit the non-return valves may cause the SOLCO SOLARTECH Genius to overflow.

3.5 ELECTRICAL CONNECTIONS

The SOLCO SOLARTECH Genius is fitted with an electrical booster coupled to an adjustable thermostat for control of water temperature and a thermal over-temperature cut out switch. The location of components and wiring are outlined below. It is recommended that the thermostat be set to 60°C.

Specifications: To gain access to the electrical components, remove the fixing screws retaining the molded end cap to expose the electric immersion element and wiring. The element is rated at 2.4kW for a 240 VAC/50HZ electrical supply. The element requires a 10amp single-phase electrical supply. Install an isolating switch in the meter box to completely isolate the electrical connections for servicing. Ensure that all wiring is in accordance with local codes and practices and is waterproofed in metal or PVC conduits with waterproof fittings.

DO NOT TURN ON THE POWER SUPPLY UNTIL THE STORAGE TANK IS COMPLETELY FILLED WITH WATER.

Control Thermostat: The control thermostat is mounted in the end of the storage tank with the sensing bulb located in a copper tube protruding into the tank. The thermostat is factory set to 60°C with an adjustable scale range from 10°C to 80°C. It is recommended that the thermostat not be set below 60°C.

Bonding: The cold water inlet pipe and the hot water outlet pipe are earthed in accordance with SAA wiring rules Clause 4.20.6.

DO NOT REMOVE THE EARTHING STRAP FROM THE INLET OR OUTLET PIPE.

3.7 FILLING UNIT AND FINAL TESTING

Once the cold water inlet and hot water outlet are connected, open a hot water outlet tap. Turn on the mains water supply and allow the system to fill until water flows from the open hot outlet tap. Turn the tap off.

- Check that the float valve shuts off when the water level is below the Overflow outlet. If water flows from the Overflow, adjust the float valve arm by bending the float valve down until the flow from the Overflow stops and the water level inside the tank is approximately 20-25mm below the bottom of the Overflow.
- Check all connections for leaks and adjust if necessary.
- Remove the protective paper cover from the collector cover plate ***ONLY WHEN THE SYSTEM IS FILLED WITH WATER.*** Failure to do so may result in the collector reaching temperatures well above 100°C causing major distortion of the panel. ***UNDER THESE CIRCUMSTANCES THE WARRANTY IS VOID.***
- The release-adhesive that holds the protective paper to the acrylic collector cover plate will degrade if exposed to solar radiation for an extended period of time, after which it is difficult to remove the paper. In situations where the system is installed prior to piped water supply becoming available, ***THE SYSTEM MUST STILL BE FILLED WITH WATER AND THE PROTECTIVE PAPER REMOVED.***

- If the product is to be installed prior to connection of the home to a water supply, ensure the unit is filled with water before removing the protective paper. If the product is left unconnected for an extended period (14 days), regularly check (at 14-day intervals) that the product remains filled with water to avoid the loss of water through evaporation, causing damage to the collector. ***DAMAGE TO THE COLLECTOR, RESULTING FROM FAILURE TO FOLLOW THESE INSTRUCTIONS, WILL NOT BE COVERED BY WARRANTY.***

4. BRACKETS – SIDE & AGAINST PITCH

Where there is no suitable position on which to mount the SOLCO SOLARTECH Genius directly on the roof, a bracket will be required and these are available as a kit from your SOLCO SOLARTECH Genius consultant. There are three configurations of brackets:

- a) side-pitch where the system needs to face in a direction perpendicular to the slope of the roof;
- b) against-pitch where the system needs to face in a direction opposite to the pitch of the roof or in the same direction as the roof;
- c) flat-roof where the system is to be place on a roof with a pitch of less than 10° or on a roof with a pitch greater than 40°.

5. HIGH FLOW KIT (HFK)

The standard SOLCO SOLARTECH Genius operates as a constant pressure system. When installed correctly, the standard SOLCO SOLARTECH Genius should provide flow rates of between 5 to 10 litres per minute.

Some customers may: -

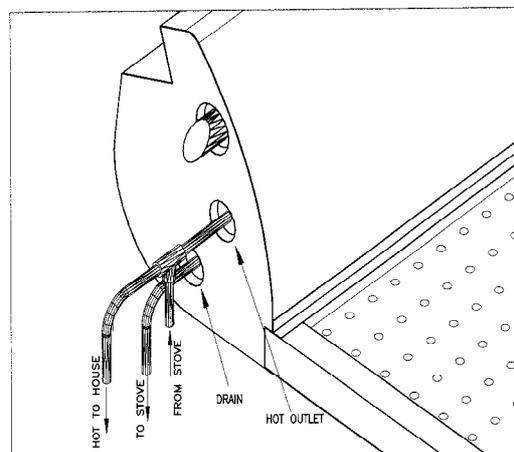
- Require a higher flow rate than 5 – 10 litres per minute;
- Have existing house plumbing that restricts the constant pressure system.

Where this is the case, the SOLCO SOLARTECH Genius can be provided with or upgraded to a HIGH FLOW KIT (HFK), which will on average double the rate of flow that would be generated by the standard SOLCO SOLARTECH Genius in the same situation.

6. CONNECTION TO WOODSTOVES

The SOLCO SOLARTECH Genius is open-vented and consequently ideally suited to connection to a heat exchanger (variously referred to as a coil or a wetback) in a wood-fired stove. As the operation of such a heat exchanger relies on thermo-syphon, it is vital that a number of simple guidelines be followed:

- The tubing between the exchanger and the solar system must be ***at least*** 20mm diameter.
- The length of tubing should be kept to a minimum. In other words, the location of the solar system should be as close as possible to the stove as is permitted by other factors such as the roof orientation and the location of 'wet areas' such as the bathrooms, the kitchen and the laundry.
- The tube returning from the heat exchange outlet (the outlet being the higher connection at the back of the stove) to the solar system should not at any location be at less than a 30° angle to the horizontal plane.



The tubing from the heat exchanger to the solar system is connected as shown in the diagram. A kit containing the fittings required to make these connections is available from your SOLCO SOLARTECH Genius consultant.

7. THE PERFORMANCE OF YOUR SOLCO SOLARTECH Genius

SOLCO SOLARTECH Genius is ideally suited to take advantage of solar energy. With the average family's hot water usage around 150 litres per day, you can expect to have up to 80% of your annual hot water requirements met by your SOLCO SOLARTECH Genius.

Solar panels operate by converting the sun's radiation to heat energy. In other words, you should not expect to receive free solar heated water on rainy, dull or overcast days. As a general rule, on clear sunny days with high levels of radiation your SOLCO SOLARTECH Genius will operate at approximately twice the maximum daily outside air temperature. For example, on a clear day with air temperature of 25°C your water will be heated to approximately 50°C.

On **high solar radiation days** your electric booster or other supplementary heating system should be switched OFF particularly during summer. Due to its construction and design, the SOLCO SOLARTECH Genius will not boil during prolonged periods of hot weather.

On **medium solar radiation days**, when it is cloudy or overcast, the electric booster or other supplementary heating system may need to be switched on. The electric booster should be left on for approximately 3 hours without hot water usage to generate maximum stored hot water capacity and the most efficient operation.

On **low solar radiation days**, it is recommended that the electric booster, which is thermostatically controlled and factory set at 60°C, should be left on. Alternatively, if your SOLCO SOLARTECH Genius is connected to another supplementary heating source, for example a wood burning stove, this will need to be used.

NOTE: When you leave your electric booster switched on, it heats the water in the solar unit whenever it falls below 60°C. Should you not wish to leave the booster ON, then prior to requiring hot water, the electric booster should be left on for approximately 3 hours without hot water usage to generate the maximum stored volume of hot water.

To deliver the maximum benefit from solar energy it may be necessary for you to modify your hot water usage times.

- Only draw off large amounts of hot water at night if there is no further requirement for hot water first thing in the morning.
- If heavy hot water demand is made during the evening hours, the booster will need to be used if you require hot water first thing the following morning.
- Schedule heavy usage of hot water e.g. clothes washing as close as possible to the middle of the day. Of course, cold-water laundry can be done at anytime throughout the day.

BOOSTER OPERATION: The electric booster unit provides supplementary heat to the water held in the storage tank of the SOLCO SOLARTECH Genius during periods of low radiation and/or heavy hot water demand.

The temperature control thermostat in the SOLCO SOLARTECH Genius is factory set to 60°C. The thermostat ensures that the electrical booster only operates when the temperature of the water in the tank drops below 60°C. As soon as the temperature rises above 60°C the booster element automatically switches off (switching on again should the water temperature fall below 60°C). The temperature control thermostat in the SOLCO SOLARTECH Genius is adjustable from 20°C to 80°C. Authorities recommend that the thermostat not be set below 55°C.

If you use all your hot water in the evening then it will not be possible to have hot water in the morning, as the sun has not been able to heat the water. This is when you will need to use the booster and the most effective way is to leave your booster on in conjunction with a **time clock**. If the water is hot enough the thermostat will take over and turn off the booster. That means that even if the **time clock** tries to turn the booster on it will not work if you already have sufficient hot water. If there is not sufficient hot water the **time clock** will turn on the booster until the water is hot enough and then the thermostat will turn it off again. The booster is not working for the period that the **time clock** is set for, but only for long enough to give you sufficient hot water – this may be only 10 minutes!

We recommend that you have a **time clock** installed to automatically control the use of your electric booster. If you would like to have a time clock installed with your SOLCO SOLARTECH Genius, then contact your **SOLCO SOLARTECH Genius** consultant.

POWER CONSUMPTION The electrical booster element requires a 10amp single-phase 240VAC electrical supply and is rated at 2.4kW.

To calculate the running cost of the SOLCO SOLARTECH Genius booster simply multiply the energy used – 2.4kW by the standard electricity charge.

FOR EXAMPLE:

If your power charge rate is 12.75 cents per kilowatt hour (kWh)			
2.4kW	x	12.75 cents/kWh	= 30.60 cents per hours
<i>Solartech Electric Booster Rating</i>		<i>Power Charge Rate</i>	<i>Power Cost</i>

Therefore the SOLCO SOLARTECH Genius electric booster costs 30.60 cents per hour to use based on a charge rate of 12.75 cents per kilowatt-hour.

This is 30.60 cents per hour for the time the booster is actually engaged in heating the water i.e. when the water temperature falls below the thermostat set point of 60°C, not 30.60 cents per hour for all the time you have the booster switched on.

The bottom line is: That the more hot water used on days when boosting is required, the longer the electrical element will be operating and using electricity at a rate of 2.4kW.

The SOLCO SOLARTECH Genius electrical booster is very economical to run and is designed to make maximum use of the available solar radiation. On days when it is cloudy or overcast your solar unit will still obtain some energy from the sun. While this energy is not enough to sufficiently heat the water to your desired hot water temperature, it does act as a pre-heater and assists your electric booster to heat the water. This means that the booster is operating for the shortest time possible.

TREES: In a short period of time yours or your neighbour’s trees can grow to a height that may place your SOLCO SOLARTECH Genius in shadow for part of the day. Annually prune and cut any trees or shrubs that shade the system. If not trimmed back this will result in reduced performance, and in winter months especially will necessitate increased booster usage.

BUILDING & STRUCTURES: Your SOLCO SOLARTECH Genius consultant will have informed the plumber of the most suitable location on your roof for the SOLCO SOLARTECH Genius. If you are experiencing shading from newly erected buildings or other structures that exceeds 10% of the solar collection area, relocation of the SOLCO SOLARTECH Genius may be required. Contact your SOLCO SOLARTECH Genius consultant if you believe that this is the case.

As with all water heaters, we recommend that you do not drink or cook with the hot water from your SOLCO SOLARTECH Genius solar hot water system.

8. MAINTENANCE

Because of its unique construction, the SOLCO SOLARTECH Genius is virtually maintenance free.

There is no sacrificial anode that requires periodic replacement, and no joints, gaskets or seals to leak, also the SOLCO SOLARTECH Genius is completely corrosion proof and is unaffected by harsh water quality. The tank contains a long service float valve for maximum durability. Should replacement be required please contact your SOLCO SOLARTECH Genius consultant.

In the unlikely event that a flying object causes the collector cover-plate to crack, then the replacement of the cover-plate should be completed with caution. The cover-plate is an acrylic sheet with many times the impact resistance of the same thickness of glass. However, the removal of the cover-plate may still expose sharp and jagged edges requiring the sheet to be handled with caution and disposed of carefully.

Note to Plumbers: Should you need to disconnect the SOLCO SOLARTECH Genius for any reason, make sure that you isolate the incoming cold water to the unit and the outgoing hot water from the unit. Then drain out the water collected in the pipes prior to cutting them. This will prevent any unnecessary water leakage.

Before replacing the electrical booster element, isolate the unit from the incoming cold water supply. Isolate the power supply to the element **before** draining the water in the tank to a level below the element. Remove and replace the element. It is recommended that the element fixing bolts be tightened to a torque of 4Nm. Reconnect the cold water supply and subsequently the power supply to the element.

Should you be experiencing problems with your SOLCO SOLARTECH Genius, please check the Trouble Shooting section before requesting a service call.

9. TROUBLE SHOOTING GUIDE

PLEASE NOTE: All installations are made in accordance with the local plumbing and electrical codes applicable in your area.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Low hot water flow	(1) 'Water Saver' shower roses; (2) 'Flick' mixers or 1/4 Turn ceramic disc taps (3) Restricted or blocked strainers on tap outlets. (4) HFK pump is switched off.	(1) Remove restriction disks from showerhead or replace with non-restrictive showerhead. (2) This type of tap ware reduces hot water flow. (3) Remove strainer, remove restriction disk and/or clean strainer mesh. (4) Turn the switch (on the black electrical box of the pump) to the ON position (the "2 AUTO" position see P8)
No hot water flow	(1) Cold water supply valve closed (2) Float valve malfunction. (3) Air trapped in hot water pipe.	(1) Open valve. (2) Repair/Replace float valve (3) Fully bleed hot pipe to ensure that all air is expelled.
Pulsing hot water flow	(1) Float valve position is incorrectly set. (2) Pressure switch on cold water supply pump is set incorrectly.	(1) Reset float arm to provide water level 25mm below the overflow level. (2) Reset pressure switch.
Delay in flow when opening hot tap.	(1) Worn 'dome' type tap washer sticking in tap body. (2) Air trapped in hot water pipe.	(1) Replace washer with non-dome type. (2) Fully bleed hot pipe to ensure that all air is expelled.
Hot water temperature too low.	(1) Low solar gain. (2) Electric booster operation. (3) Excessive hot water usage.	(1) Low solar radiation due to cloud. (2) Shading of collector panels for all or part of the day. (3) Check for hot water leakage within the plumbing system. (1) Turn on booster switch/time switch. (2) Replace booster fuse. (3) Set thermostat to higher setting. (1) Reduce usage. (2) Install a further unit. (3) Check for hot water leakage within the plumbing system of the house.
Hot water temperature too high.	(1) Electric booster operation.	(1) Set thermostat to lower setting.

DRAINING THE SOLCO SOLARTECH Genius: If the unit needs to be drained of water, then please follow the steps listed below:

1. Turn off both the power supply at the main switch and the water supply to the unit.
2. Cover the collector panel completely so that it is fully shaded from all sunlight.
3. Remove the drain from the base of the collector (left hand side when looking at the tank from the collector).
4. As a safety measure the collector drain has a moulded-in seal located behind the drain plug. This seal must be removed to allow drainage. The seal is easily removed using a battery drill and a 10mm diameter bit. Caution must be exercised when removing the seal, as water will flow from the drain as the seal is removed. **USING MAINS POWER TOOLS COULD RESULT IN ELECTROCUTION.** In addition, the water in the collector panel may be hot. **EXERCISE CARE TO AVOID SCALDING.**
5. **DO NOT REMOVE THE COVER FROM THE COLLECTOR UNTIL THE UNIT IS RE-FILLED WITH WATER.**

CLEANING THE COLLECTOR COVER-PLATE: If the collector cover-plate is coated with dust and grime, this is best removed with warm water containing a gentle household detergent. The water can be applied to the panel with a soft cloth. Do not apply any solvents or abrasive materials to the cover-plate.