



*“Streamline Electric”*

**ELECTRIC BOOSTED  
SOLAR WATER HEATER  
OWNER’S MANUAL**

AND

WARRANTY / INSTALLATION INFORMATION



**WARNING: Plumber – Be Aware**

Use copper pipe ONLY. Plastic pipe MUST NOT be used. It is a requirement of a solar water heater installation that all pipe work be in copper and not plastic, due to the effects of high water temperatures and pressures.

Solahart Industries Pty Ltd  
ABN 45 064 945 848

*This water heater must be installed and serviced by an authorised person.  
Please leave this guide with the householder.*

**Notice to Victorian Customers from the  
Victorian Plumbing Industry Commission.**

**This water heater must be installed by a licensed person as required by the  
Victorian Building Act 1993.**

Only a licensed person will give you a Compliance Certificate, showing that the work complies with all the relevant standards. Only a licensed person will have insurance protecting their workmanship for 6 years. Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.



## **WARNING: Plumber – Be Aware**

- The solar hot and solar cold pipes between the solar storage tank and the solar collectors **MUST BE** of copper and fully insulated with closed cell polymer insulation or similar (minimum thickness 13 mm). Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. All compression fittings must use brass or copper olives.

**Note: Failure to observe this requirement increases the risk of freeze damage.**

- Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collectors under stagnation conditions. The solar collectors can generate extremely high water temperatures up to 150°C and high water pressure of 1000 kPa. Plastic pipe cannot withstand these temperatures and pressures and **MUST NOT** be used. Failure of plastic pipe can lead to the release of high temperature water and cause severe water damage and flooding. **Refer to Warning on page 27.**
- A non return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device.

### **PATENTS**

This water heater may be protected by one or more patents or registered designs.

® Registered trademark of Solahart Industries Pty Ltd or Rheem Australia Pty Ltd.  
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# CONTENTS

**HOUSEHOLDER – We recommend you read pages 4 to 16.**  
The other pages are intended for the installer but may be of interest.

<b>Introduction.....</b>	<b>4</b>
<b>About Your Water Heater .....</b>	<b>5</b>
<b>How Your Water Heater Works.....</b>	<b>9</b>
<b>Regular Care .....</b>	<b>12</b>
<b>Save A Service Call .....</b>	<b>14</b>
<b>Installation – Solar Storage Tank.....</b>	<b>17</b>
<b>Installation – Solar Control Unit.....</b>	<b>24</b>
<b>Installation – Solar Collectors .....</b>	<b>26</b>
<b>Connections – Plumbing.....</b>	<b>28</b>
<b>Connections – Electrical.....</b>	<b>31</b>
<b>Commissioning.....</b>	<b>33</b>
<b>Draining The Solar Collectors .....</b>	<b>34</b>
<b>Draining The Water Heater.....</b>	<b>35</b>
<b>Water Supplies.....</b>	<b>36</b>
<b>Warranty .....</b>	<b>37</b>
<b>Solahart Offices .....</b>	<b>40</b>

# INTRODUCTION

Congratulations on choosing a "STREAMLINE ELECTRIC" solar water heater. We are confident that your purchase will provide you many years of trouble free hot water.

All over the world, the Solahart name is synonymous with quality in water heating. From humble beginnings in the pioneering days of Western Australia, a reputation has been built up over nearly a century.

In 1905, two enterprising plumbers formed the company known as S. W. Hart, a name that was retained for over 70 years. Even in its early stages, S. W. Hart was involved in the manufacture of metal products for water storage and water heating. Since 1953, S. W. Hart, now Solahart Industries Pty Ltd, has been producing thermosyphon solar hot water systems, which is well over 40 years of hot water experience.

Solahart is the market leader in Australia and a dominant brand throughout the world. Our network of distributors covers over 70 countries in Europe, North America, Africa and Asia. In our home market of Australia, we offer the widest range of thermosyphon solar water heater products, along with the Streamline brand of active solar hot water systems and Synergy heat pump. Our product is positioned within the hot water market as a reliable, durable product with state of the art manufacturing technology.

It is with the above in mind that we at Solahart Industries Pty Ltd are confident that your purchase of the "STREAMLINE ELECTRIC" water heater will provide you reliable hot water with quality after sales service back up.

**Thankyou**

# ABOUT YOUR WATER HEATER

## MODEL TYPE

Congratulations for choosing a Solahart® water heater. Your Solahart Streamline® open circuit solar water heater is designed for the solar collectors to be roof mounted and the solar storage tank to be installed at ground level. The solar storage tank is suitable for either outdoor or indoor installation and can be installed with Solahart 'L' solar collectors.

Although the system has a level of freeze protection, designed to guard the system from unexpected frost conditions, the system is not recommended for installation in areas subject to frost or freeze conditions (refer to “Freeze Protection” on page 8). Freeze conditions occur below 6°C. The system has NO WARRANTY for freeze damage (refer to “Warranty Exclusions” on page 37).

If this water heater is installed as a solar preheater to an in-series water heater, then the electric booster heating unit will not be connected to a power supply and the references to the electric booster heating unit, thermostat and manual boosting controls in this Guide will not be applicable to the installation. For information relating to the function and operation of the in-series water heater, refer to the Owners Guide and Installation Instructions supplied with the water heater.

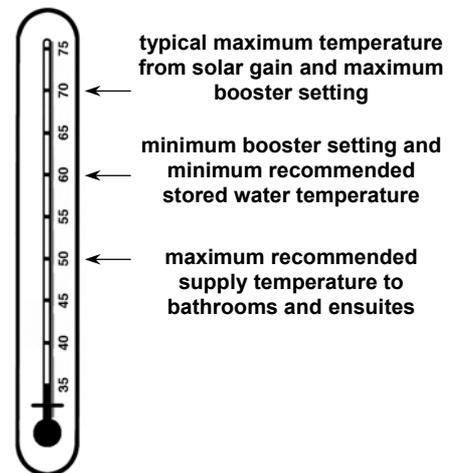
## HOW HOT SHOULD THE WATER BE?

The solar control unit will circulate water through the solar collectors until a temperature of approximately 70°C is reached.

During periods of low solar energy gain, the water temperature can be boosted by the thermostatically controlled electric booster heating unit. This may be operated manually or automatically depending on how it is wired. Refer to page 10 or check with your electrician. An in-series water heater will boost the water temperature automatically when required.

To meet the requirements of the National Plumbing Standard the temperature of the stored water must not be below 60°C.

Solahart recommends the thermostat is set at 60°C to maximise solar contribution.



## HOTTER WATER INCREASES THE RISK OF SCALD INJURY

This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

We recommend and it may also be required by regulations, that an approved temperature limiting device be fitted into the hot water pipe work to the bathroom and ensuite when this water heater is installed. This will keep the water temperature below 50°C at the bathroom and ensuite. The risk of scald injury will be reduced and still allow hotter water to the kitchen and laundry.

## TEMPERATURE ADJUSTMENT

The water heater features a tradesperson adjustable thermostat. This requires a licensed tradesperson to make any temperature adjustments. The thermostat has a maximum temperature setting of 70°C and a minimum temperature setting of 60°C.

We advise you have your electrician adjust the thermostat to the lowest setting which meets your needs, especially if there are young children or elderly people in the home. Refer to “Hotter Water Increases the Risk of Scald Injury” on page 5.

# ABOUT YOUR WATER HEATER

## 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 interfere with the water heater.

The removal of the front cover will expose 240 V wiring. It must only be removed by an authorised or qualified person.

Care should be taken not to touch the pipe work connecting the solar storage tank and the solar collectors. Very high temperature hot water can be generated by the solar collectors under certain conditions and flow through the pipe work from the solar collectors to the solar storage tank.

## SAFETY

This water heater is supplied with a thermostat, an over-temperature cut-out, and a combination temperature pressure relief valve. These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order.

If the power supply cord or plug to the solar control unit or the electrical conduit to the solar storage tank is damaged, it must be replaced by an authorised person in order to avoid a hazard. The power supply cord and plug must be replaced with a genuine replacement part available from Solahart. Phone your nearest Solahart Dealer to arrange for an inspection.

**The warranty can become void if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.**

## TO TURN OFF THE WATER HEATER

If you plan to be away from home for a few nights, we suggest you leave the water heater switched on.

If it is necessary to turn off the water heater:

- Switch off the electrical supply at the isolating switch to the solar storage tank.
- Switch off the electrical supply at the power outlet to the solar control unit (refer to note below).
- Close the cold water isolation valve at the inlet to the water heater.

**Note:** If there is a risk of freezing conditions, the electrical supply to the solar control unit should not be switched off unless the solar collectors are drained, otherwise damage could result (refer to “**Freeze Protection**” on page 8).

## TO TURN ON THE WATER HEATER

- Open the cold water isolation valve fully at the inlet to the water heater.
- If the solar collectors and solar hot and solar cold pipes have been drained, it will be necessary to bleed the collector circuit (refer to “**Bleeding the Solar Collectors**” on page 8).

If the electrical supply to the water heater has been switched off:

- Switch on the electrical supply at the power outlet to the solar control unit. The power outlet must be switched on for the solar control unit to operate and solar gain to be achieved.
- Switch on the electrical supply at the isolating switch to the solar storage tank.

# ABOUT YOUR WATER HEATER

## HOW DO I KNOW IF THE WATER HEATER IS INSTALLED CORRECTLY?

Installation requirements are **shown on pages 23 and 25**. The water heater must be installed by an authorised person and the installation must comply with National Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements. In New Zealand, the installation must conform with the New Zealand Building Code.

## PIPE WORK AND INSULATION

The solar hot and solar cold pipe work between the solar storage tank and the solar collectors and between the solar storage tank and in-series water heater (if one is installed) **MUST BE** of copper and fully insulated with closed cell polymer insulation or similar (minimum thickness 13 mm). The insulation must be weatherproof and UV resistant if exposed. The insulation is essential to assist in providing freeze protection, will offer corrosion protection to a metal roof against water runoff over the copper pipe, assist in avoiding accidental contact with the solar pipe work and also reduce pipe heat losses.

The insulation must be fitted up to the connections on both the solar collectors and the solar storage tank, as very high temperature water can flow from the solar collectors to the solar storage tank under certain conditions.

Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collectors under certain conditions (**refer to Warning on page 27**).

## DOES THE WATER QUALITY AFFECT THE WATER HEATER?

The water heater is suitable for most public water supplies, however some water qualities may have detrimental effects on the cylinder, solar collectors and fittings. **If you are in a known harsh water area you must read page 36**. If you are not sure, have your water quality checked against the conditions **described on page 36**.

## 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 Solahart water heater is supported by a comprehensive warranty (**refer to page 38**).

## ANODE PROTECTION

The anode(s) installed in your water heater will slowly dissipate whilst protecting the cylinder. The life of the water heater cylinder may be extended by arranging for an authorised person to inspect the anode(s) and replace if required.

The suggested time after installation when the anode(s) should be inspected is 8 years.

For softened water supplies or in areas of poor water quality, it is recommended the anode(s) be inspected 3 years earlier than shown (refer to **"Water Supplies"** on page 36).

# ABOUT YOUR WATER HEATER

## BLEEDING THE SOLAR COLLECTORS

It is necessary to purge air from the collector circuit:

- When the water heater is to be turned on and the solar collectors and solar hot and solar cold pipes have been drained.
- After maintenance has been conducted on the pipe work and air has entered the system.
- If the circulator appears not to be circulating water around the system.

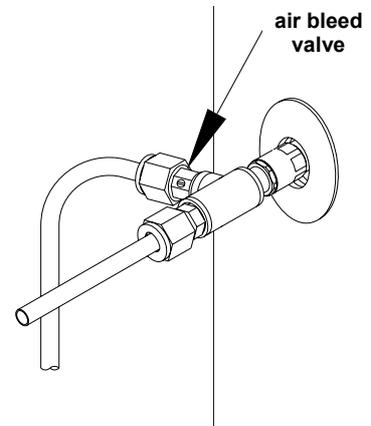
**⚠ Warning:** Bleeding the solar collectors should be conducted in the morning, within three hours of sunrise, when the water temperature inside the solar collectors is lower.

To purge air from the collector circuit:

- Ensure the water heater is full of water and all of the hot taps are turned off.
- Using a flat blade screwdriver, open the bleed valve (if it is not already open) fitted adjacent to the solar hot water (from collector) inlet of the solar storage tank (see diagram).
- The mains pressure will force water to flow from the tank and through the pipe work, expelling air from the collector circuit through the bleed valve. This is evidenced by spurting of water from the drain line connected to the bleed valve.

**⚠ Warning:** Exercise care to avoid any splashing of water, as water discharged from the solar collectors may be of a very high temperature.

- Close the bleed valve when water runs freely from the drain line.



## FREEZE PROTECTION

Although the system has a level of freeze protection, designed to guard the system from unexpected frost conditions, the system is not recommended for installation in areas subject to frost or freeze conditions. Freeze conditions occur below 6°C. The system has NO WARRANTY for freeze damage (refer to “[Warranty Exclusions](#)” on page 37).

The anti freeze control is designed to recirculate a small amount of water from the solar storage tank through the solar pipe work during periods of low temperatures. This is to prevent the water inside the pipe work from freezing. The solar hot and solar cold pipes must be fully insulated with closed cell polymer insulation (minimum thickness 13 mm) to offer protection against freeze damage. It is essential that the electrical circuit to the solar control unit is continually turned on if there is a risk of freezing. The solar warranty does not cover damage caused by freeze conditions.

### Notes:

- If it is necessary to switch the power off to the solar control unit and there is a risk of freezing, then it is necessary to have your plumber drain the solar collectors and solar flow and return pipe work.
- The freeze protection system will be rendered inoperable if electrical power is not available at the solar control unit.
- Pipe work between the solar collectors and solar storage tank must be insulated.
- The system is not covered for freeze damage.
- Refer to “[Warranty Exclusions](#)” on page 37.

# HOW YOUR WATER HEATER WORKS

The Solahart Streamline open circuit system has its vitreous enamel lined solar 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 circulator. The circulator then moves the water from the solar collectors through an insulated copper pipe to the solar storage tank. The 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 until the water in the solar storage tank reaches a temperature of approximately 70°C. Automatic safety controls are fitted to the water heater to provide safe and efficient operation.

## MAINS PRESSURE

The water heater is designed to operate at mains pressure by connecting directly to the mains water supply. If the mains supply pressure in your area exceeds that **shown on page 18**, a pressure limiting valve must be fitted. The supply pressure should be greater than 350 kPa for true mains pressure operation to be achieved. A minimum water supply pressure of 200 kPa is required to enable the solar circulator and solar circuit system to operate effectively.

## ELECTRIC BOOSTING

Water stored in the solar storage tank can be heated by an electric booster heating unit. The booster heating unit is for heating the water at times of low solar energy gain, such as during very cloudy or rainy weather, or during the winter months. The Streamline water heater is suitable for the heating unit to be connected to an Off-Peak electricity supply, but can be connected to an extended Off-Peak or continuous electricity supply.

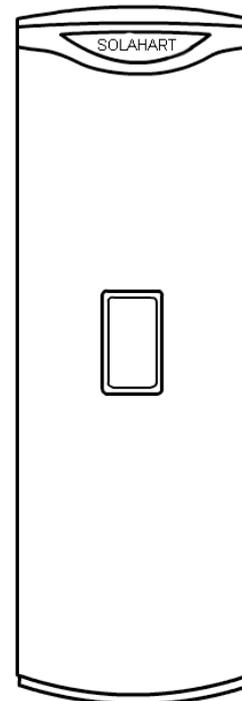
The booster heating unit is controlled by an electric thermostat. The thermostat and its over temperature energy cut out are mounted on the solar storage tank behind the front cover. The water temperature is automatically controlled to the thermostat setting when the booster heating unit is energised.

## MANUAL CONTROLS

An isolating switch is installed in your electrical meter box for your solar storage tank. Solahart recommends an additional manual isolating switch be installed in the power supply circuit to the solar storage tank. This booster switch should be installed in a convenient location such as the kitchen or laundry and will enable control of the electrical boosting during periods of poor solar gain.

A suitably rated single-pole **on / off switch** should be used to control a booster heating unit connected to an Off-Peak electricity supply. A booster heating unit connected to a continuous electricity supply should be controlled by either a suitably rated single pole on / off switch or **"One Shot Control"** switch.

The amount of water heated by the raised booster heating unit of your Streamline storage tank will be 285 litres (430 model), 200 litres (340 model) or 160 litres (270 model).



# HOW YOUR WATER HEATER WORKS

## MANUAL ON/OFF SWITCH

### a) Off-Peak (overnight) Tariff Connection

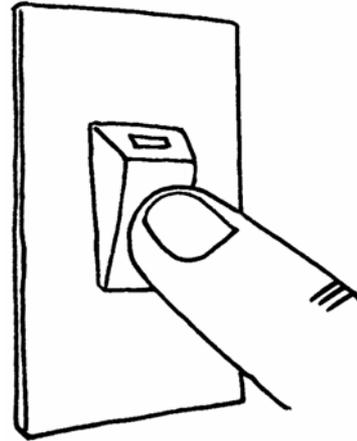
Most systems will be connected to an Off-Peak supply of electricity. Boosting will only occur overnight (usually between 11:00 PM and 6:00 AM). In the winter months many households will find it necessary to leave the booster switch ON. However, in some cases it may only be necessary to switch the booster switch ON every second night. This can be determined over a trial period. At other times, care should be taken not to leave the switch on during periods of no power, as solar savings will be reduced if the booster heating unit activates upon resumption of power.

### b) Extended Off-Peak (overnight and day) Tariff Connection

Operation is very similar to that suggested for continuous tariff, but it is important to be aware of the hours during which electricity is available so boosting, if required, can be adapted to suit. (Check with your local Electricity Supply Authority for hours of operation). Do not leave the booster switch on during daylight hours unless boosting is required, as solar savings will be reduced.

### c) Continuous Tariff Connection

Operate the booster switch to activate the auxiliary booster heating unit when the hot water falls below an acceptable temperature. The amount of water heated depends on your installation (refer to “Manual Controls” on page 9). It is important to ensure the booster switch is turned OFF after you have satisfied your hot water needs. Do not leave the booster switch ON in daylight hours because your solar savings will be reduced.

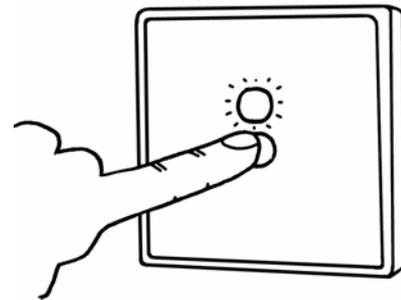


## “ONE SHOT CONTROL” SWITCH

The “One Shot Control” switch will help provide maximum savings with an electrically boosted solar water heater connected to a **continuous** electricity supply. Power must be available to the “One Shot Control” switch before the booster heating unit can be activated.

The switch has a push button operation and incorporates an indicator light. Refer to the manufacturer’s instructions supplied with the “One Shot Control” switch for information on how the indicator light arrangement works.

When you decide the hot water is below a usable temperature and additional hot water is required, press the control button. The booster heating unit will be turned “ON” if the water temperature is below the thermostat setting, then automatically turn “OFF” when the water temperature reaches the thermostat setting.



It is not necessary to activate the booster heating unit every time the light indicates that boosting may be required. The water may still be at a usable temperature for some purposes (e.g. showering) and you may not need to use hot water for some hours during which time the water may be heated by the sun.

**Remember, even on cloudy days your solar water heater can receive diffuse radiation, which will provide some heat to your stored water. On these days you will need to operate the booster heating unit only as desired. For summer operation it is recommended trial periods be undertaken to determine if it is necessary to turn the booster switch or one shot control ‘on’ at all.**

# HOW YOUR WATER HEATER WORKS

## GOING ON HOLIDAYS

If you plan to be away from home, conserve energy by switching the booster switch "OFF". It is not necessary to switch off the electrical supply at the power outlet to the solar control unit. Refer to "To Turn Off The Water Heater" on page 6. Also if the system is not used for a period in excess of two (2) weeks it is recommended the solar collectors be covered.

## REGULAR CARE

### TEMPERATURE PRESSURE RELIEF VALVE

This valve is near the top of the water heater and is essential for its safe operation. It is possible for the valve to release a little water through the drain line during each heating period. This occurs as the water is heated and expands by approximately 1/50 of its volume.

Continuous leakage of water from the valve and its drain line may indicate a problem with the water heater (refer to **“Temperature Pressure Relief Valve Running”** on page 15).

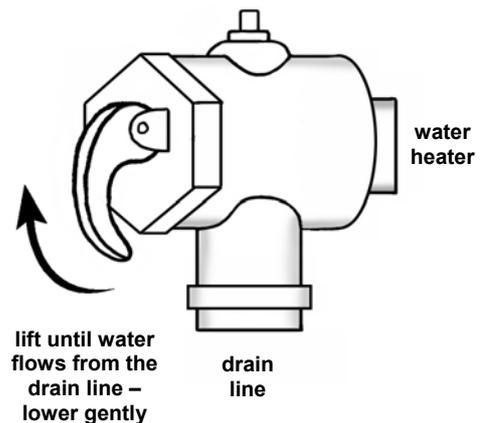
**⚠ Warning: Never block the outlet of this valve or its drain line for any reason.**

Operate the easing lever on the temperature pressure relief valve once every six months. **It is very important you raise and lower the lever gently.**

**⚠ DANGER:** Failure to do this may result in the water heater cylinder failing, or under certain circumstances, exploding.

If water does not flow freely from the drain line when the lever is lifted, then the water heater should be checked by your nearest Solahart Dealer.

The temperature pressure relief valve should be checked for performance or replaced at intervals not exceeding 5 years, or more frequently in areas where there is a high incidence of water deposits (refer to **“Water Supplies”** on page 36).



### EXPANSION CONTROL VALVE

In many areas, including South Australia, Western Australia and scaling water areas, an expansion control valve is fitted to the cold water line to the water heater. The expansion control valve may discharge a small quantity of water from its drain line during the heating period instead of the temperature pressure relief valve on the water heater.

Operate the easing lever on the expansion control valve once every six months. **It is very important you raise and lower the lever gently.** The expansion control valve should be checked for performance or replaced at intervals not exceeding 5 years, or more frequently in areas where there is a high incidence of water deposits.

### 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. If the collector glass becomes dirty, hose down or if the solar collectors are accessible, wash the collector glass with water and a soft brush when the solar collectors are cool. Have any trees trimmed which may shade the solar collectors.

# REGULAR CARE

## FLUSHING THE SOLAR COLLECTORS

It may be necessary to flush the solar collectors if there is sediment in the water supply. This should be conducted in the morning, within three hours of sunrise.

- Open a hot water tap and allow the water to run for five (5) minutes prior to flushing the solar collector(s).
- Close the hot tap.
- Wait a further five (5) minutes before attempting to flush the solar collectors.

This will assist in the transfer of any high temperature water in the solar collector(s) to the solar storage tank.

**⚠ Warning:** Exercise care, as water discharged from the solar collectors may be of a very high temperature.

- To flush the solar collectors, follow the procedure “**Bleeding the Solar Collectors**” on page 8, allowing the water to flow from the bleed valve drain line for five minutes before closing the bleed valve.

It is recommended to flush the solar collectors every five years. This will assist in keeping the solar collectors, solar cold pipe and solar hot pipe clear of sediment.

## SAVE A SERVICE CALL

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.

### NOT ENOUGH HOT WATER (OR NO HOT WATER)

This can occur with new installations and is normally related to some misunderstandings as to the use of the booster heating unit.

- **Insufficient sunlight**

Insufficient sunlight due to cloudy weather during summer months or low solar energy contribution in winter months may mean you will need to switch on the booster heating unit more often.

- **Booster heating unit not operating**

Inspect the isolating switch marked “HOT WATER” or “WATER HEATER” at the switchboard and the booster switch (if one is installed) and ensure they are turned “ON”.

**Note:** Check the electricity supply to which the unit is connected. If on an Off-Peak or time controlled supply, remember heating hours are restricted (refer to “**Off-Peak Tariff**” on page 10).



Check the fuse marked “HOT WATER” or “WATER HEATER” at the switchboard.

- **Solar Control Unit**

Check the power outlet for the solar control unit is switched on.

- **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. Have the trees trimmed or the solar collectors relocated if the obstruction is permanent or clean the collector glass (refer to “**Collector Glass**” on page 12).

- **Collector area is too small**

For most installations, the number of solar collectors recommended in Solahart literature has been proven to provide the required solar energy to meet the average family needs. However, in some circumstances, it may be necessary to install an additional solar collector.

- **Air in collectors (no solar gain)**

It is possible under certain conditions, such as when the pipe work has been opened, that air may become trapped in the solar collectors. This will prevent the circulator from moving water around the collector circuit. The air will need to be purged from the solar collectors (refer to “**Bleeding The Solar Collectors**” on page 8).

- **Are you using more hot water than you think?**

Is one outlet (especially the shower) using more hot water than you think? Very often it is not realised the amount of hot water used, particularly when showering. Carefully review the family’s hot water usage. As you have installed an energy saving appliance, energy saving should also be practised in the home. Adjust your water usage pattern to take advantage of maximum solar gains. Have your plumber install a flow control valve to each shower outlet to reduce water usage.

- **Temperature pressure relief valve running**

Is the relief valve discharging too much water? (Refer to “**Temperature Pressure Relief Valve Running**” on page 15).

# SAVE A SERVICE CALL

- **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. Refer to “**Temperature Adjustment**” on page 5.

**⚠ Warning:** Hotter water increases the risk of scald injury.

- **Water heater size**

Do you have the correct size water heater for your requirements? The sizing guides in the sales literature and on the Solahart website ([www.solahart.com.au](http://www.solahart.com.au)) suggest average sizes that may be needed.

## WATER NOT HOT ENOUGH

You may find that due to heavy hot water usage or low solar energy gain the water temperature may be lower than normally expected. You will need to carefully plan your use of the booster heating unit to boost the water temperature on such occasions.

A lower water temperature may also be noticed in the morning when the booster heating unit has not been switched on overnight. This in particular may be experienced during periods of low solar energy gain, or if there has been heavy hot water usage the previous night.

## TEMPERATURE PRESSURE RELIEF VALVE RUNNING

- **Normal Operation**

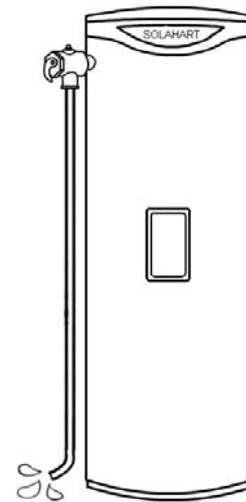
It is normal and desirable this valve allows a small quantity of water to escape during the heating cycle. However, if it discharges more than a bucket full of water in 24 hours, there may be another problem.

- **Continuous dribble**

Try gently raising the easing lever on the relief valve for a few seconds (refer to “**Temperature Pressure Relief Valve**” on page 12). This may dislodge a small particle 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.



**NEVER** replace the relief valve with one of a higher pressure rating.

- **Heavy flows of hot water until the water heater is cold - then stops until water reheats**

The water heater **must** be switched off at the isolating switch or switchboard. Phone your nearest Solahart Dealer to arrange for an inspection.

## EXPANSION CONTROL VALVE RUNNING

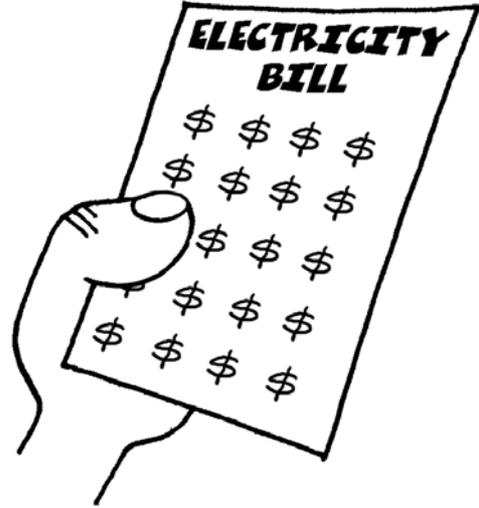
If an expansion control valve is fitted in the cold water line to the water heater (refer to page 28) it may discharge a small quantity of water instead of the temperature pressure relief valve on the water heater. The benefit is that energy is conserved as the discharged water is cooler.

# SAVE A SERVICE CALL

## 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? (Refer to **“Temperature Pressure Relief Valve Running”** on page 15).
- Is one outlet (especially the shower) using more hot water than you think? (Refer to **“Not Enough Hot Water”** on page 14).
- 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? (Refer to **“Manual On/Off Switch”** on page 10 and **“One Shot Control Switch”** on page 10).
- Consider recent changes to your hot water usage pattern and check if there has been any increase in tariffs since your previous account.



## ELECTRICITY TARIFFS

The electricity tariff to which your solar water heater is connected will play an important role in the overall effectiveness of the system. It is important you are aware of this tariff to enable you to take full advantage of the boosting period, i.e. Off-Peak (overnight) or time controlled, Extended Off-Peak (overnight and day) or extended time controlled, Domestic / Continuous. For types of tariffs, refer to **“Manual On/Off Switch”** on page 10.

## COLLECTOR GLASS

Warranty **DOES NOT** cover breakage of solar collector glass. Check your household insurance policy covers collector glass breakage.

**⚠ Warning:** Collector glass must not be replaced whilst the solar collector is on the roof.

The collector glass is not offered as a replacement part and no attempt should be made to remove it. Should the solar collector require replacement, contact your nearest Solahart Dealer.

**IF YOU HAVE CHECKED ALL THE FOREGOING AND STILL BELIEVE YOU NEED ASSISTANCE, CALL YOUR NEAREST SOLAHART DEALER.**

# INSTALLATION – SOLAR STORAGE TANK

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

The system can be installed with Solahart 'L' solar collectors.

Although the system has a level of freeze protection, designed to guard the system from unexpected frost conditions, the system is not recommended for installation in areas subject to frost or freeze conditions. Freeze conditions occur below 6°C. The solar hot and solar cold pipes must be fully insulated with closed cell polymer insulation (minimum thickness 13 mm) to offer protection against freeze damage. The system has **NO WARRANTY** for freeze damage (refer to **“Warranty Exclusions”** on page 37). Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4.

## SOLAR WATER HEATER STORAGE TANK LOCATION

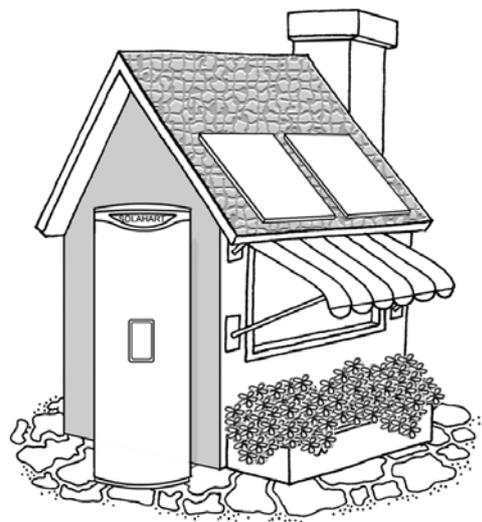
The solar storage tank is suitable for either outdoor or indoor installation. Whether located outdoor or indoor, the solar storage tank should be installed close to the most frequently used outlet and its position chosen with safety and service in mind.

Consideration must also be given to the position of the solar storage tank in relation to the solar collectors. There are limitations on the maximum length of the solar hot and solar cold pipes between the solar storage tank and the solar collectors. Refer to **“Solar Collector Location”** on page 26 and to **“Pipe Lengths”** on page 27.

Clearance must be allowed for servicing of the solar storage tank. The solar storage tank must be accessible without the use of a ladder or scaffold. Make sure the temperature pressure relief valve lever is accessible and the front cover, thermostat and booster heating unit can be removed for service.

You must be able to read the information on the rating plate. If possible leave headroom of one water heater length so the anode can be inspected or replaced. Remember you may have to remove the entire solar storage tank later for servicing.

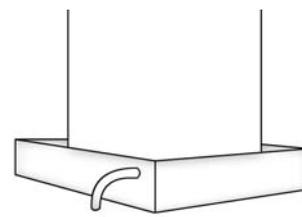
The installation must comply with the requirements of AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements. In New Zealand, the installation must conform with the New Zealand Building Code.



It is recommended the solar storage tank be installed at ground or floor level and must stand vertically upright. Remember all local authorities have regulations about putting water heaters into roof spaces.

## SAFE TRAY

It is a requirement of AS/NZS 3500.4 that for a new installation, a water heater be installed in a safe tray where in the event of a leak, property may otherwise be damaged. Construction, installation and draining of a safe tray must comply with the above mentioned Standard.

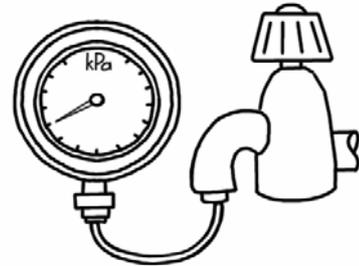


# INSTALLATION – SOLAR STORAGE TANK

## MAINS WATER SUPPLY

Where the mains water supply pressure exceeds that shown in the table, an approved pressure limiting valve is required and should be fitted as shown in the installation diagram (refer to diagram on page 28).

Model	270, 340, 430
Relief valve setting	1000 kPa
Expansion control valve setting *	850 kPa
<b>Max. mains supply pressure</b>	
With expansion control valve	680 kPa
Without expansion control valve	800 kPa
<b>Min. mains supply pressure</b>	200 kPa



\* Expansion control valve not supplied with the water heater.

## TANK WATER SUPPLY

If the water heater is supplied with water from a tank supply, then a pressure pump system is recommended to ensure a minimum water pressure of 200 kPa is achieved to allow the solar circuit system to operate. Take care to avoid air locks.

# INSTALLATION – SOLAR STORAGE TANK

## HOT WATER DELIVERY

This water heater can deliver water at temperatures which can cause scalding.

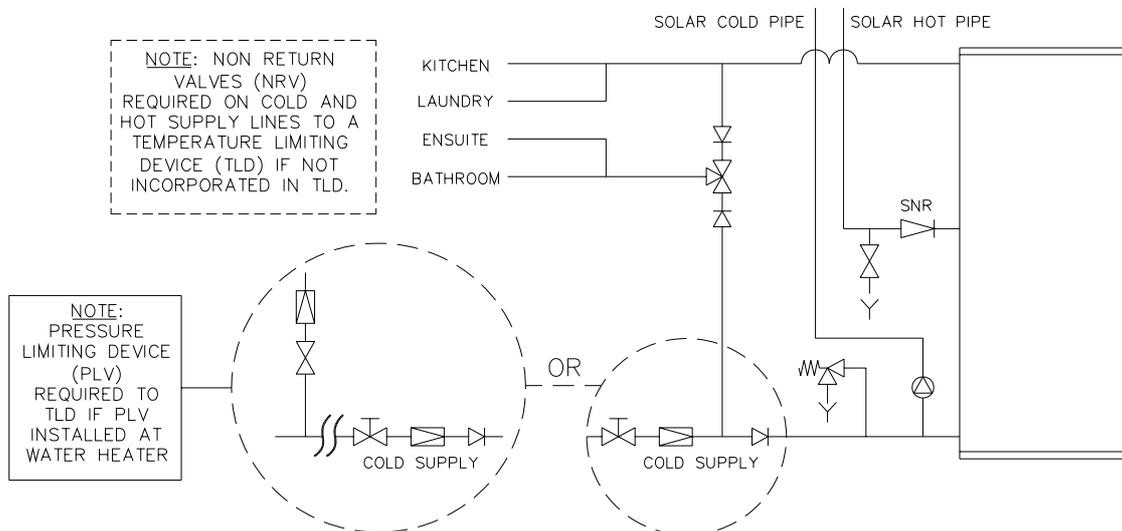
It is necessary and we recommend that a temperature limiting device be fitted between the water heater and the hot water outlets in any ablution area such as a bathroom or ensuite, to reduce the risk of scalding. The installing plumber may have a legal obligation to ensure the installation of this water heater meets the delivery water temperature requirements of AS/NZS 3500.4 so that scalding water temperatures are not delivered to a bathroom, ensuite or other ablution area.

Where a temperature limiting device is installed adjacent to the solar water heater, the cold water line to the temperature limiting device can be branched off the cold water line either before or after the isolation valve and pressure limiting valve to the solar storage tank, but it **MUST BE** before the non return valve. If an expansion control valve is required, it must always be installed **after** the non return valve and be the last valve prior to the solar storage tank.

**⚠ Warning:** A non return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device.

If a combination isolation valve and non return valve (duo or trio valve) is installed on the cold water line to the solar water heater and the cold water line to the temperature limiting device branches off after this valve, then a second non return valve must be installed between the cold water branch and the solar storage tank.

If a pressure limiting valve is installed on the cold water line to the solar water heater and the cold water line to a temperature limiting device branches off before this valve or from another cold water line in the premises, then a pressure limiting valve of an equal pressure setting may be required prior to the temperature limiting device.



**Two Temperature Zones Using a Temperature Limiting Device**

# INSTALLATION – SOLAR STORAGE TANK

## CIRCULATED HOT WATER FLOW AND RETURN SYSTEM

A solar water heater should not be installed as part of a circulated hot water flow and return system in a building. The benefits of solar gain will be significantly reduced and energy gained from the sun lost through the pipe work.

If a circulated flow and return system is required, it is necessary to bypass the solar water heater and install a secondary water heater connected to the hot water flow and return line and supplied from the solar water heater. The secondary water heater must be a storage water heater able to provide a hot water outlet temperature of at least 60°C. **Note:** The thermostat must always be set to at least 60°C. Refer to the [diagram on page 20](#).

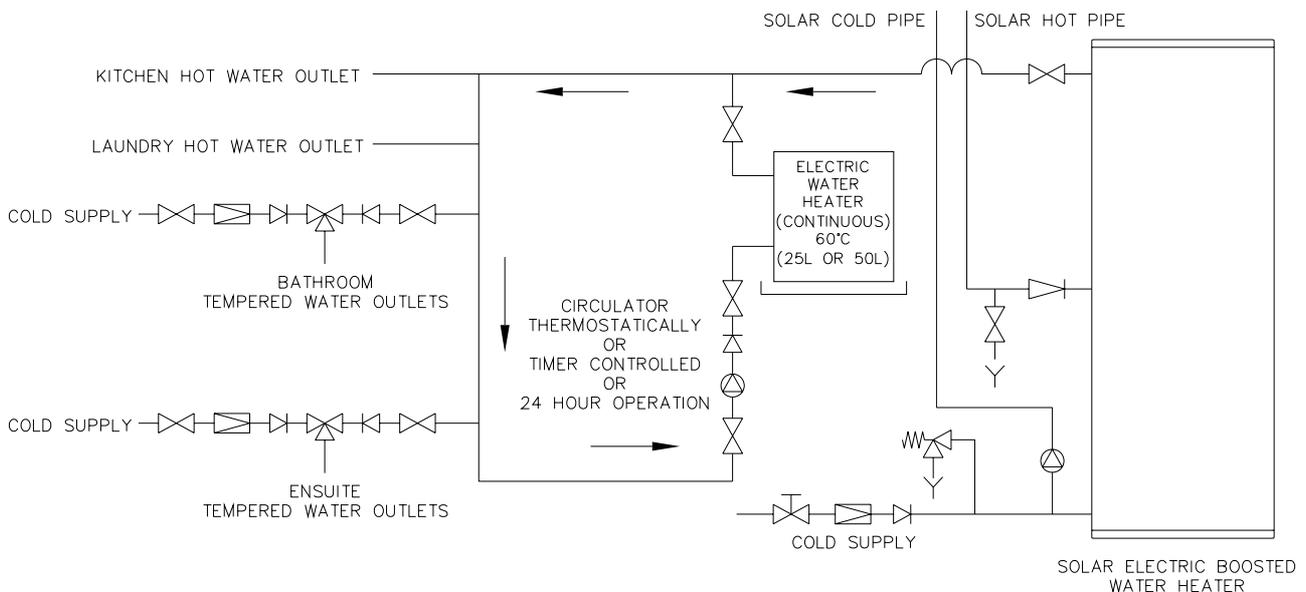
## Temperature Limiting Device

A temperature limiting device cannot be installed in circulated hot water flow and return pipe work. The tempered water from a temperature limiting device cannot be circulated. Where a circulated hot water flow and return system is required in a building, a temperature limiting device can only be installed on a dead leg, branching off the circulated hot water flow and return pipe.

If circulated tempered water were to be returned back to the water heater, depending on the location of the return line connection on the water supply line to the water heater, then either:

- water will be supplied to the cold water inlet of the temperature limiting device at a temperature exceeding the maximum recommended water supply temperature, or
- when the hot taps are closed no water will be supplied to the cold water inlet of the temperature limiting device whilst hot water will continue to be supplied to the hot water inlet of the temperature limiting device.

These conditions may result in either water at a temperature exceeding the requirements of AS/NZS 3500.4 being delivered to the hot water outlets in the ablution areas, or the device closing completely and not delivering water at all, or the device failing. Under either condition, the operation and performance of the device cannot be guaranteed.



**Circulated Hot Water Flow and Return System – Solar Water Heater**

# INSTALLATION – SOLAR STORAGE TANK

## REDUCING HEAT LOSSES

The cold water line to and the hot water line from the water heater must be insulated in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed.

The pipe work between the solar storage tank and the solar collectors must be fully insulated with closed cell polymer insulation or similar (minimum thickness 13 mm). Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the solar storage tank and the solar collectors.

## ANODE TYPES

The correct anode type for the water supply being used must be fitted in the water heater (refer to “Water Supplies” on page 36). The black anode is fitted as standard.

Total Dissolved Solids in water supply to the water heater	Anode colour code
0 – 40 mg/L	Green
40 – 600 mg/L	Black
600 – 2500 mg/L	Blue

## 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 12 mm. Should pre drilling be required, extreme caution must be observed when penetrating the jacket of the water heater.

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

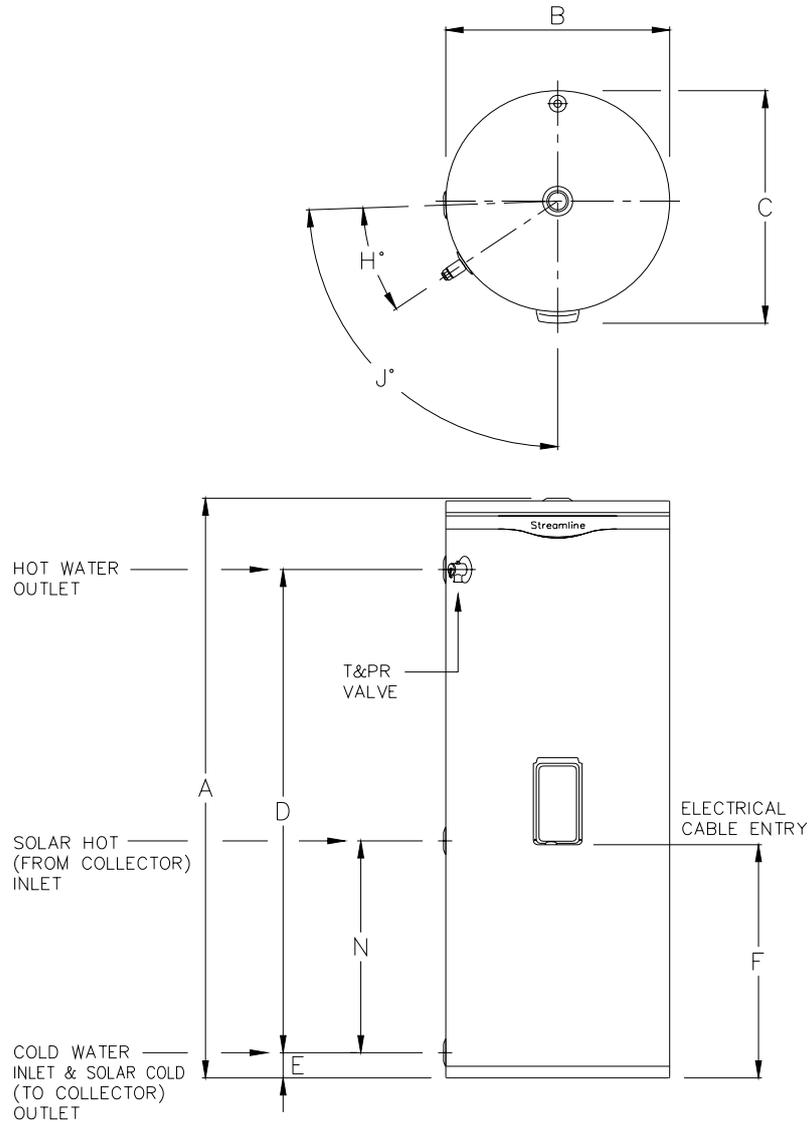
## BOOSTER HEATING UNIT

The booster heating unit provides hot water during periods of low solar gain. This can be connected to either an Off-Peak (overnight), Extended Off-Peak (overnight and day) electricity supply or a continuous electricity supply. Boosting can be controlled via a user operated manual switch. Refer to “Manual Controls” on page 31.

If this water heater is installed as a solar preheater to an in-series water heater, then the booster heating unit does not need to be connected to a power supply.

# INSTALLATION – SOLAR STORAGE TANK

## DIMENSIONS AND TECHNICAL DATA



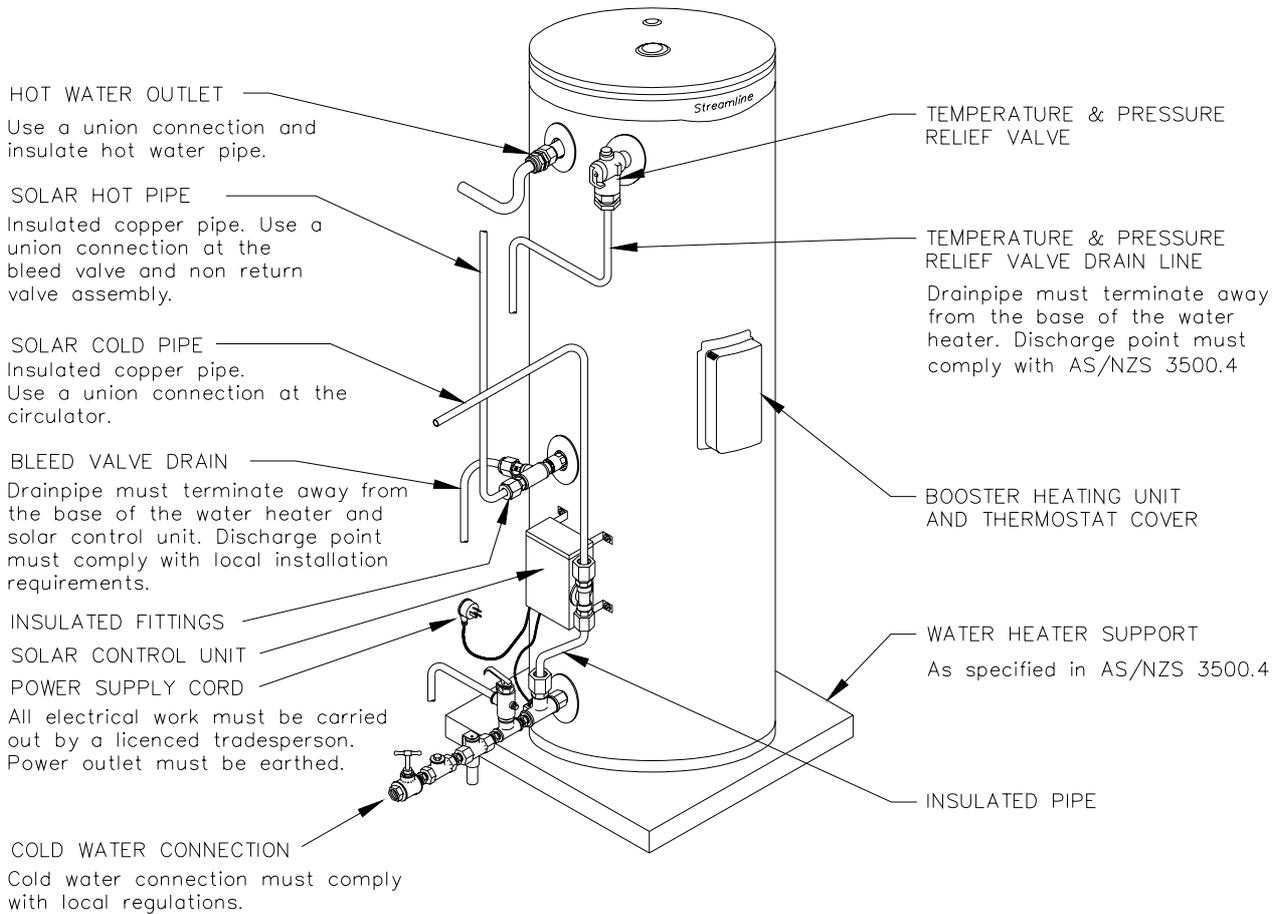
Model	Capacity	Tank Mass (kg)	
		Empty	Full
270 SLV	270 litres	70	340
340 SLV	325 litres	87	412
430 SLV	410 litres	111	521

Dimensions (mm)	A	B	C	D	E	F	H	J	N
270 SLV	1395	640	680	1117	73	556	32°	88°	499
340 SLV	1640	640	680	1357	73	623	32°	88°	561
430 SLV	1840	690	730	1519	81	533	30°	82°	417

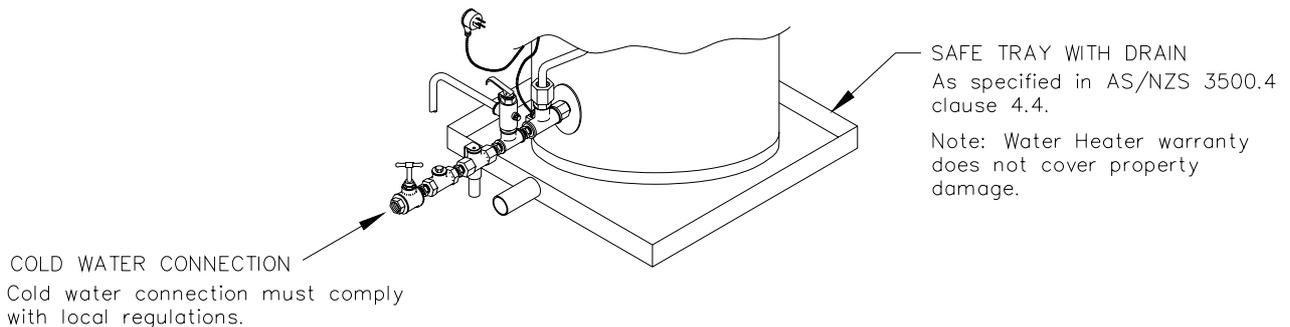
Specifications are subject to change with ongoing product improvements.

# INSTALLATION – SOLAR STORAGE TANK

## TYPICAL INSTALLATION – OUTDOOR LOCATION



## TYPICAL INSTALLATION – INDOOR LOCATION



# INSTALLATION – SOLAR CONTROL UNIT

The solar control unit is designed to be mounted on the side of the solar storage tank, with its location in between and offset from the cold water inlet and solar hot water inlet. The solar control unit, supplied with a 1.8 metre power cord, requires a 240 V general power outlet (GPO) located within 1.2 metres of its installation. The GPO must have a continuous power supply originating from a circuit other than the water heater circuit. The GPO is required to be weatherproof if installed outdoors (refer to “**Connections – Electrical**” on page 31).

**Note:** Care must be taken when mounting the solar control unit to the side of the solar storage tank. Damage to the cylinder as a result of mounting the solar control unit to the jacket will void the warranty (refer to “**Saddling - Pipe Work**” on page 21).

## SOLAR STORAGE TANK WITH RAISED SOLAR HOT INLET

To connect the solar cold pipe and mount the solar control unit on a Streamline storage tank with a raised solar hot inlet (and raised heating unit):

Numbers in parentheses refer to items on diagram on page 25.

- Assemble a ½” x ½” hex nipple (1) into the branch outlet of the 4 way tee (2) (ensure the compression end of the nipple is exposed) and the ½” x ¾” hex nipple (3) in the end of the 4 way tee, so that when the assembly is fitted to the cold water inlet of the solar storage tank, the compression nipple (1) is orientated vertically upwards and the cold sensor housing is orientated to the rear of the solar storage tank. Fit the assembly to the cold water inlet of the solar storage tank.
- Connect the DN15 preformed pipe (4) to the branch tee connection, using the compression nut (5) and olive (6) provided.
- Fit a ½” x ½” hex nipple (1) to the **outlet** of the circulator (7) mounted in the solar control unit (8) (ensure the compression end of the nipple is exposed).
- Locate the solar control unit (8) by connecting the DN15 preformed pipe (4) to the nipple on the **inlet** of the circulator (7) using the compression nut (5) and olive (6) provided.
- Secure the solar control unit (8) to the solar storage tank using the four screws (9) provided.
- Connect the solar cold pipe (to the collector) to the nipple (1) on the outlet side of the circulator (7) using the compression nut (5) and olive (6) provided.
- Insert the cold sensor probe (10) into the cold sensor housing on the 4 way tee (2), ensuring the ‘O’ ring is in position on the probe. Lock it into position with the locking washer and clip provided.
- Connect the hot sensor lead (from the solar collector installation) to the hot sensor cable connector at the underside of the solar control unit (8).
- Insulate the preformed pipe (4) with the 280 mm long x 12 mm diam insulation (12) and secure with the cable ties (14) provided.

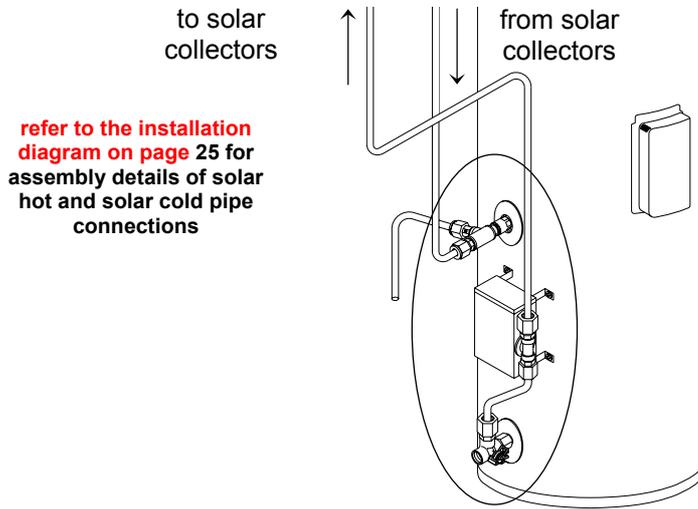
To connect the solar hot pipe to the solar storage tank:

- Fit the air bleed valve and non return valve assembly (11) to the solar hot water inlet of the solar storage tank. Ensure the bleed valve outlet is pointing downwards at 45° to the rear of the solar storage tank, away from the solar control unit (8).
- Connect a copper drain line to the bleed valve (refer to “**Bleed Valve Drain**” on page 30), using the compression nut and olive provided.
- Fit a ½” x ½” hex nipple (1) to the end (inlet) of the air bleed valve and non return valve assembly (11) (ensure the compression end of the nipple is exposed).
- Connect the solar hot pipe (from the collector) to the nipple (1) on the air bleed valve and non return valve assembly (11) using the compression nut (5) and olive (6) provided.

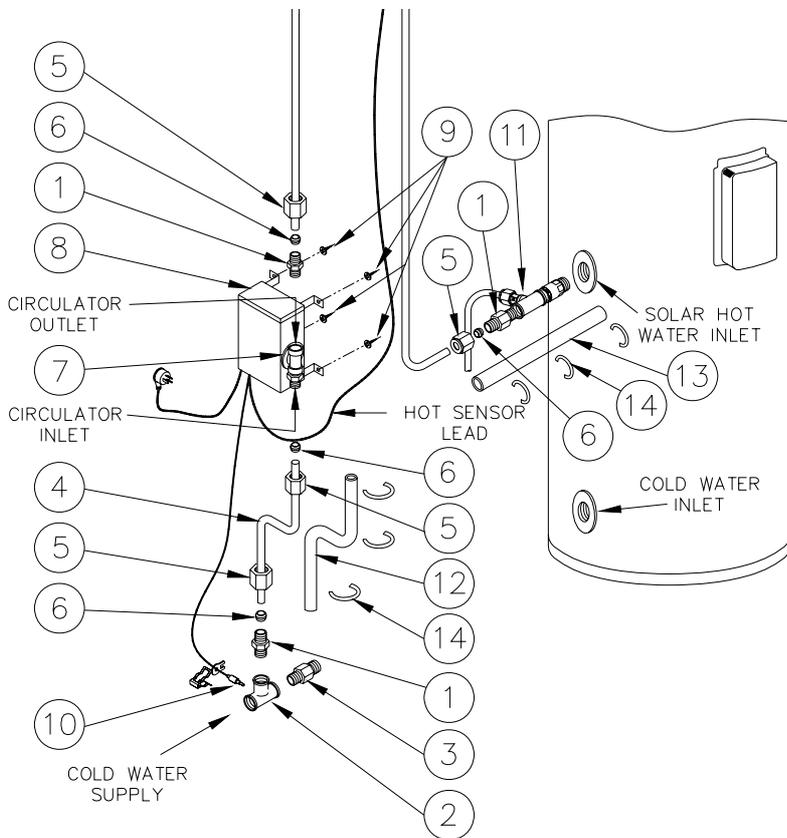
# INSTALLATION – SOLAR CONTROL UNIT

- Insulate the air bleed valve and non return valve assembly (11), from the solar hot pipe to the solar hot water inlet of the solar storage tank, with the 150 mm long x 35 mm diam insulation (13) and secure with the cable ties (14) provided.

**Note:** Use thread sealing tape or an approved thread sealant on all fittings.



**Solar Storage Tank with Solar Control Unit**



### SUPPLIED IN SOLAR CONTROL UNIT KIT

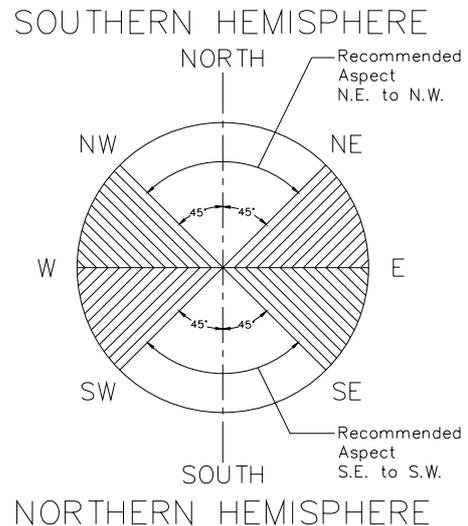
1. Hex nipple 1/2" X 1/2"
2. 4 way tee
3. Hex nipple 1/2" x 3/4"
4. Preformed pipe DN15
5. Compression nut
6. Olive
7. Circulator
8. Solar control unit
9. Screws
10. Cold sensor probe
11. Air bleed valve and non return valve assembly
12. Insulation 280 mm long x 12 mm diam
13. Insulation 150 mm long x 35 mm diam
14. Cable tie

# INSTALLATION – SOLAR COLLECTORS

## SOLAR COLLECTOR LOCATION

Consideration must be given to the position of the solar collectors in relation to the solar storage tank. There are limitations on the maximum length of the solar hot and solar cold pipes between the solar storage tank and the solar collectors. Refer to “Solar Storage Tank Location” on page 17 and to “Pipe Lengths” on page 27.

- The solar collectors must be installed in a shade free position.
- The solar collectors are to be installed facing toward the equator (i.e. north facing in the southern hemisphere and south facing in the northern hemisphere). Where this orientation is not practical, a system facing up to 45° from the equator will have its efficiency reduced by approximately 5%.
- Inclination of the solar collectors should be approximately equal to 90% of the local latitude angle. The **latitudes of some Australian cities** are listed on page 26. Solar collectors may be installed at the roof angle for simplicity of installation and appearance, but must never be flat. If the roof angle varies by 15° from the correct angle, efficiency will be reduced by 10%.
- For an installation on a roof with a pitch less than 10°, a Variable Pitch stand is required. Refer to your local Solar Distributor for details.
- For an installation at right angles to (across) the roof pitch, a Flat Roof stand and an Across Pitch kit are both required. Refer to your local Solar Distributor for details.
- For an installation opposite to (against) the roof pitch, a Flat Roof stand and an Against Pitch kit are both required. Refer to your local Solar Distributor for details.
- The collector kit is suitable for installations with an inclination of up to 45°. Where the solar collectors are installed at inclinations greater than 45°, special roof fixings may be necessary. Refer to your local Solar Distributor for details.
- The roof must be suitable to take the mass of the solar collectors. Each solar collector and its fittings weighs approximately 40 kg when full of water.
- The installation must comply with the requirements of AS/NZS 3500.4 and all local codes and regulatory authority requirements.
- Refer to the installation instructions supplied with the collector kit for details on the installation of the solar collectors.



## LATITUDE OF SOME AUSTRALIAN CITIES

Adelaide	35°S	Cairns	17°S	Hobart	42°S	Port Hedland	20°S
Alice Springs	24°S	Canberra	35°S	Mildura	34°S	Rockhampton	24°S
Brisbane	27°S	Darwin	12°S	Melbourne	38°S	Sydney	34°S
Broken Hill	31°S	Geraldton	28°S	Perth	32°S	Townsville	19°S

# INSTALLATION – SOLAR COLLECTORS

## PIPE LENGTHS

The maximum recommended combined length of the solar cold and solar hot pipes with bends is:

Maximum recommended total pipe length and number of 90° bends						
Pipe Size	1 or 2 Collectors		3 Collectors		4 Collectors	
	Pipe Length	90° Bends	Pipe Length	90° Bends	Pipe Length	90° Bends
DN15	40 metres	20	30 metres	20	15 metres	20
DN20	NR	NR	40 metres	20	40 metres	20

For each additional 90° bend, reduce the maximum total pipe length by 0.5 metres.

For each additional metre of pipe length, reduce the number of 90° bends by two.

Note: One 90° elbow is equal to two 90° bends.

NR – not recommended.

The solar hot and solar cold pipes between the solar storage tank and the solar collectors should be a minimum DN15.

### Maximum height to collectors

The maximum height of a solar Streamline installation, from the solar controller (circulator) to the top of the solar collectors, is determined by the maximum recommended total pipe length for the system and the water supply pressure.

The maximum recommended total pipe length of the solar circuit should not be exceeded and a minimum water supply pressure of 200 kPa should be available at the inlet to the system, otherwise the system performance may be reduced or the solar circuit may not be purged of air during the commissioning of the system.



## WARNING: Plumber – Be Aware

- The solar hot and solar cold pipes between the solar storage tank and the solar collectors **MUST BE** of copper and fully insulated with closed cell polymer insulation or similar (minimum thickness 13 mm). Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. All compression fittings must use brass or copper olives.

**Note: Failure to observe this requirement increases the risk of freeze damage.**

The insulation is essential to assist in providing freeze protection, will offer corrosion protection to a metal roof against water runoff over the copper pipe, assist in avoiding accidental contact with the solar pipe work and also reduce pipe heat losses.

- The insulation must be **fitted up to the connections on both the solar collectors and the solar storage tank**, as very high temperature water can flow from the solar collectors to the solar storage tank under certain conditions.
- Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collectors under stagnation conditions. The solar collectors can generate extremely high water temperatures up to 150°C and high water pressure of 1000 kPa. Plastic pipe cannot withstand these temperatures and pressures and **MUST NOT** be used. Failure of plastic pipe can lead to the release of high temperature water and cause severe water damage and flooding.
- There **must be a continuous fall** in the pipe work between the solar collectors and solar storage tank. The highest point of the solar cold pipe and solar hot pipe must be where they connect to the solar collectors, to avoid the possibility of air locks occurring in the system.

# CONNECTIONS – PLUMBING

## CONNECTION SIZES

- Hot water connection: RP $\frac{3}{4}$ /20.
- Cold water connection: RP $\frac{1}{2}$ /15.  
(cold water inlet to tank: RP $\frac{3}{4}$ /20).
- Solar hot (from collector) connection: DN15 compression fitting.  
(solar hot inlet to tank: RP $\frac{3}{4}$ /20).
- Solar cold (to collector) connection: DN15 compression fitting.
- Relief valve connection: RP $\frac{1}{2}$ /15.
- Bleed valve connection: G1.0B.

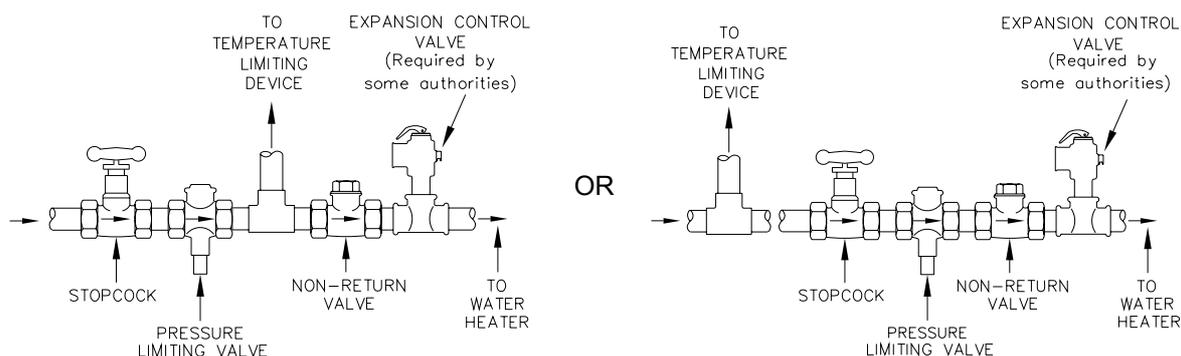
All plumbing work must be carried out by a qualified person and in accordance with the National Plumbing Code AS/NZS 3500.4 and local authority requirements.

**Note:** The solar water heater should not be installed as part of a circulated hot water flow and return system in a building. The benefits of solar gain will be significantly reduced and energy gained from the sun lost through the pipe work. If a circulated flow and return system is required, it is necessary to bypass the solar water heater and install a secondary water heater supplied from the solar water heater and connected to the hot water flow and return line.

## WATER INLET AND OUTLET

All pipe work must be cleared of foreign matter before connection and purged before attempting to operate the water heater. All olive compression fittings must use brass or copper olives. Use thread sealing tape or approved thread sealant on all fittings.

An isolation valve and non return valve must be installed on the cold water line to the water heater. Use the arrangement shown in the diagram. Refer also to “Hot Water Delivery” on page 19.

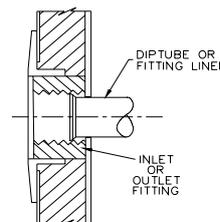


The plumbing arrangements for the cold water inlet and solar hot and solar cold pipes are shown on page 25.

A disconnection 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.

## CONNECTIONS – PLUMBING

This water heater has either a plastic dip tube or fitting liner in the inlet and outlet fittings (see diagram). These must be in place for the water heater to function properly. Do not remove or damage them by using heat nearby. They will be pushed into the correct position as the fitting is screwed in.



### PIPE SIZES

To achieve true mains pressure operation, the cold water line to the water heater should be the same size or bigger than the hot water line from the water heater.

The pipe sizing for hot water supply systems should be carried out by persons competent to do so, choosing the most suitable pipe size for each individual application. Reference to the technical specifications of the water heater and local regulatory authority requirements must be made.

### IN-SERIES WATER HEATER (IF INSTALLED)

The pipe work between the solar storage tank and an in-series water heater has a minimum recommended pipe size of DN20, **MUST BE** of copper and be fully insulated in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the solar storage tank and the in-series water heater. An isolation valve must be installed on the water line to the in-series water heater.

### RELIEF VALVE

The temperature pressure relief valve is shipped either under the top flap of the water heater carton or behind the front cover. The temperature pressure relief valve must be fitted before the water heater is operated. Before fitting the relief valve, make sure the probe has not been bent. Seal the thread with Teflon tape - never hemp. Make sure the tape does not hang over the end of the thread.

Screw the valve into the correct opening ([refer to the installation diagram on page 23](#)) leaving the valve outlet pointing downwards. Do not use a wrench on the valve body - use the spanner flats provided.

### RELIEF VALVE DRAIN

A copper drain line must be fitted to the relief valve to carry the discharge clear of the water heater. Connect the drain line to the relief valve using a disconnection union. The pipe work from the relief valve to the drain should be as short as possible and fall all the way from the water heater with no restrictions. It should have no more than three right angle bends in it. Use DN15 pipe. The outlet of the drain line must be in such a position that flow out of the pipe can be easily seen ([refer to AS/NZS 3500.4](#)) - but arranged so hot water discharge will not cause injury, damage or nuisance. The drain line must discharge at an outlet or air break not more than 9 metres from the relief valve.

In locations where water pipes are prone to freezing, the drain line must be insulated and not exceed 300 mm in length. In this instance, the drain line is to discharge into a tundish through an air gap of between 75 mm and 150 mm.

**⚠ Warning:** As the function of the temperature pressure relief valve on this water heater 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 93°C. Failure to observe this precaution may result in damage to pipe work and property.

# CONNECTIONS – PLUMBING

## BLEED VALVE DRAIN

A copper drain line must be fitted to the bleed valve to carry the discharge clear of the water heater and solar controls. Connect the drain line to the bleed valve using a disconnection union. The pipe work from the bleed valve to the drain should be as short as possible and fall all the way from the valve with no restrictions. It should have no more than three right angle bends in it. Use DN15 pipe.

The outlet of the drain line must be in such a position that flow out of the pipe can be easily seen (refer to AS/NZS 3500.4) - but arranged so water discharge will not cause injury, damage, nuisance or splashing. The water discharged may be of a high temperature under certain conditions. The drain line must be fully insulated with closed cell polymer insulation or similar (minimum thickness 13 mm). The insulation must be weatherproof and UV resistant if exposed.

## EXPANSION CONTROL VALVE

Local regulations may make it mandatory to install an expansion control valve (ECV) in the cold water line to the water heater. In other areas, an ECV is not required unless the saturation index is greater than +0.4 (refer to “[Water Supplies](#)” on page 36). However, an ECV may be needed in a corrosive water area where there are sufficient quantities of silica dissolved in the water.

The expansion control valve must always be installed after the non return valve and be the last valve installed prior to the water heater ([refer to diagrams on page 28](#)). A copper drain line must be run separately from the drain of the relief valve.

# CONNECTIONS – ELECTRICAL

**The power supply to the water heater must not be switched on until the water heater is filled with water** and a satisfactory megger reading is obtained.

All electrical work and permanent wiring must be carried out by a qualified person and in accordance with the Wiring Rules AS/NZS 3000 and local authority requirements.

If this water heater is installed as a solar preheater to an in-series water heater, then the booster heating unit does not need to be connected to a power supply and the references to the booster heating unit, thermostat and manual controls are not applicable.

## **SOLAR STORAGE TANK**

The solar storage tank with an electric booster heating unit must be directly connected to a 240 V AC 50 Hz mains power supply with an isolating switch installed at the switchboard.

The power supply can be either an **Off-Peak (overnight)**, an **Extended Off-Peak (overnight and day)** or a **continuous** electricity supply. An Off-Peak (overnight) power supply will provide the maximum financial savings. Discuss the power supply requirements with the householder.

A flexible 20 mm conduit is required for the electrical cable to the solar storage tank. The conduit is to be connected to the unit with a 20 mm terminator. Connect the power supply wires directly to the terminal block and earth tab connection, ensuring there are no excess wire loops inside the front cover.

## **THERMOSTAT SETTING**

The thermostat is adjustable from 60°C to 70°C. The thermostat is adjusted by turning the adjuster anticlockwise to decrease the temperature setting and clockwise to increase the temperature setting. Only adjust the temperature setting when the isolating switch is switched off at the switchboard.

For reasons of safety and economy, we advise the thermostat be set at the lowest temperature that will provide sufficient hot water during periods when boosting is required. Solahart recommends the thermostat is set at 60°C to maximise solar contribution. Discuss the thermostat setting requirements with the householder.

## **SOLAR CONTROL UNIT**

The solar control unit, supplied with a 1.8 metre power cord, requires a switched 240 V AC 50 Hz general purpose outlet (GPO) to be located within 1.2 metres of the installation. The GPO must have a continuous power supply originating from a circuit other than the water heater circuit. The GPO is required to be weatherproof if installed outdoors.

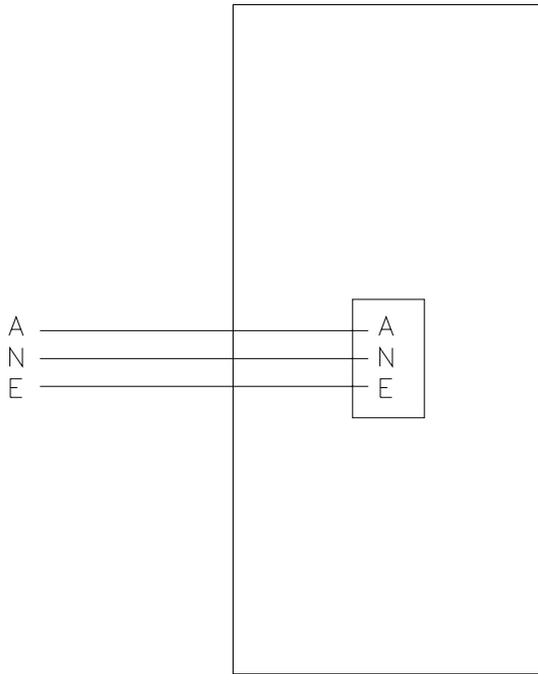
## **MANUAL CONTROLS**

Solahart recommends an additional manual isolating switch be installed in the power supply circuit to the solar storage tank. This booster switch is to be installed in a convenient location such as the kitchen or laundry and will enable the householder to control the electrical boosting during periods of poor solar gain.

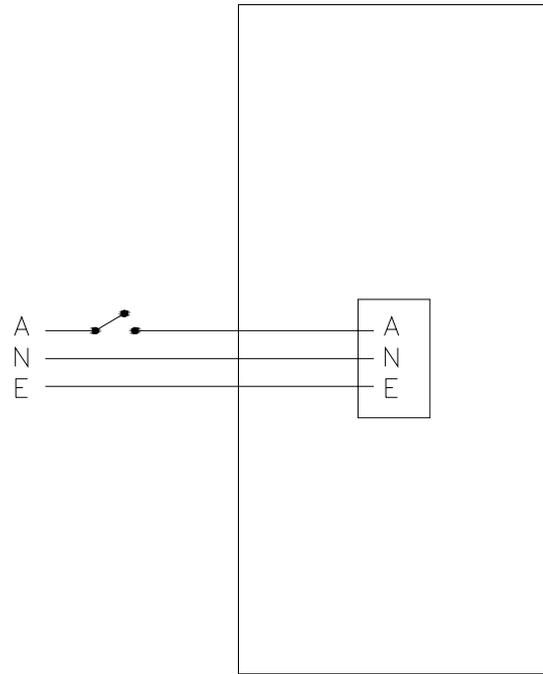
A suitably rated single-pole **on / off switch** should be used to control a booster heating unit connected to an Off-Peak electricity supply. A booster heating unit connected to a continuous electricity supply should be controlled by either a suitably rated single pole on / off switch or **“One Shot Control”** switch. Refer to the manufacturer’s instructions supplied with the switch for installation details. Discuss the manual switching arrangements with the householder.

# CONNECTIONS – ELECTRICAL

## BOOSTER SWITCH WIRING DIAGRAM



Electrical installation of the solar storage tank without a manual boosting switch



Electrical installation of the solar storage tank with a manual boosting switch

# COMMISSIONING

## TO FILL AND TURN ON THE WATER HEATER

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 and a satisfactory megger reading is obtained.

- Open all of the hot water taps in the house (don't forget the shower).
- Open the cold water isolation valve fully on the cold water line to the water heater. Air will be forced out of the taps.
- Close each tap as water flows freely from it. Check the pipe work for leaks.
- Bleed the solar collectors (refer to “**Bleeding the Solar Collectors**” on page 33).
- Plug in the solar control unit at the power outlet and switch on the electrical supply. The power outlet must be switched on for the solar control unit to operate and solar gain to be achieved.
- Switch on the electrical supply at the isolating switch to the solar storage tank.

Explain to the householder the functions and operation of the solar water heater. Upon completion of the installation and commissioning of the water heater, leave this guide with the householder.

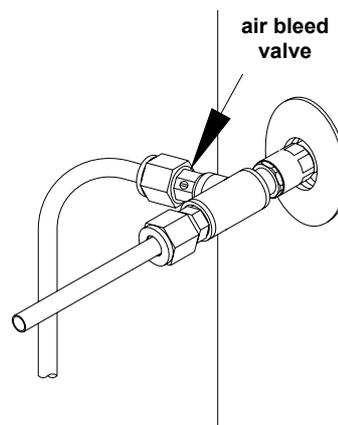
## BLEEDING THE SOLAR COLLECTORS

Upon completion of the installation, it is necessary to purge the air from the collector circuit. To purge air from the collector circuit:

- Ensure the water heater is full of water and all of the hot taps are turned off.
- Using a flat blade screwdriver, open the bleed valve fitted adjacent to the solar hot water inlet of the solar storage tank (see diagram).
- The mains pressure will force water to flow from the tank and through the pipe work, forcing air from the collector circuit through the bleed valve. This is evidenced by spurting of water from the drain line connected to the bleed valve.

**⚠ Warning:** Exercise care to avoid any splashing of water, as water discharged from the solar collectors may be of a very high temperature.

- Close the bleed valve when water runs freely from the drain line.



## 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 premises is vacant, then:

- Switch off the electrical supply at the isolating switch to the solar storage tank.
- Switch off the electrical supply at the power outlet to the solar control unit (refer to note below).
- Close the cold water isolation valve at the inlet to the water heater.

**Note:** The freeze protection system will be rendered inoperable if electrical power is not available. The system has NO WARRANTY for freeze damage (refer to “**Warranty Exclusions**” on page 37). If there is a risk of freezing, then it is necessary to drain the solar collectors and connecting pipe work (refer to “**Draining the Solar Collectors**” on page 34).

## DRAINING THE SOLAR COLLECTORS

To drain the solar collectors and the solar hot and solar cold pipe:

- Open a hot water tap and allow the water to run for five minutes immediately prior to draining the solar collector(s).

This will assist in the transfer of any high temperature water in the solar collector(s) to the solar storage tank.

- Close the hot water tap.

**⚠ Warning:** Exercise care, as water discharged from the solar collectors may be of a very high temperature.

- Turn off the water heater (refer to [“To Turn Off The Water Heater”](#) on page 33).
- Using a flat bladed screw driver, open the bleed valve fitted adjacent to the solar hot water inlet of the solar storage tank ([refer to diagram on page 33](#)).
- Undo the compression fitting at the top of the circulator (located at the side of the solar control unit) and disconnect the solar cold pipe.

Water will now drain from the solar collectors and the solar hot and solar cold pipes.

- When water stops flowing from the solar hot and solar cold pipes, reconnect the solar cold pipe to the circulator and tighten the compression fitting.
- Close the bleed valve.

## DRAINING THE WATER HEATER

To drain the water heater:

- Open a hot water tap and allow the water to run for five minutes immediately prior to draining the solar storage tank.

This will assist in the transfer of any high temperature water in the solar collector(s) to the solar storage tank.

- Close the hot water tap.

**⚠ Warning:** Exercise care, as water discharged from the solar storage tank may be of a very high temperature.

- Turn off the water heater (refer to [“To Turn Off The Water Heater”](#) on page 33).
- Operate the relief valve release lever - do not let the lever snap back or you will damage the valve seat.

Operating the lever will release the pressure in the water heater.

- Undo the union at the cold water inlet to the 4 way tee and attach a hose.

Let the other end of the hose go to a drain.

- Operate the relief valve again.

This will let air into the water heater and allow the water to drain through the hose.

# WATER SUPPLIES

Your 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. The water heater should only be connected to a potable water supply.

## ANODE

By using the correct colour coded anode this water heater can be used in areas where the total dissolved solids (TDS) content in the water is up to 2500 mg/L. In areas where the TDS exceeds 600 mg/L it is possible the black anode, which is the standard anode fitted to the water heater, may be excessively active. To alleviate this, the black anode should be replaced with one colour coded blue. Where the TDS of the water is less than 40 mg/L, such as when the water has been deionised or is from an alpine supply, a high potential anode, colour coded green, should be used. The changing of anodes must be carried out by a plumber or authorised service person.

## CAUTION

If your water supply has a TDS greater than 600 mg/L and the anode has not been changed to a blue one, there is the possibility hydrogen gas could accumulate in the top of the water heater during long periods of no use. In areas where this is likely to occur, the installer should instruct the householder on how to dissipate the gas safely.

If, under these conditions, the water heater has not been used for two or more weeks the following procedure should be carried out before using any electrical appliances (automatic washing machines and dishwashers) which are connected to the hot water supply.

The hydrogen, which is highly flammable, should be vented safely by opening a hot tap and allowing the water to flow. There should be no smoking or naked flame near the tap whilst it is turned on. Any hydrogen gas will be dissipated. This is indicated by an unusual spurting of the water from the tap. Once the water runs freely again, any hydrogen in the system will have been released.

## SATURATION INDEX

The saturation index is used as a measure of the water's corrosive or scaling properties. In a corrosive water supply, the water can attack copper parts and cause them to fail. Where the saturation index is less than  $-1.0$ , the water is corrosive and a corrosion resistant heating unit should be used and warranty does not apply to a solar collector.

In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. Where the saturation index exceeds  $+0.40$ , the water is scaling and an expansion control valve\* must be fitted on the cold water line after the non-return valve and the solar collectors should be covered when the water heater is not intended to be used for more than two weeks. Where the saturation index exceeds  $+0.80$ , a low watts density heating unit should be used and warranty does not apply to a solar collector unless a water softening device is installed.

Contact your nearest Solahart Dealer if a replacement heating unit is required.

Refer to the [cold water connection detail on page 28](#).

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

# **SOLAHART STREAMLINE, SYNERGY, GAS BOOSTER SOLAR WATER HEATER WARRANTY – AUSTRALIA ONLY**

## **WARRANTY CONDITIONS**

1. This warranty is applicable only to water heaters manufactured from 1<sup>st</sup> July 2006.
2. The water heater must be installed in accordance with the Solahart water heater installation instructions, supplied with the water heater, and in accordance with all relevant statutory and local requirements of the State in which the water heater is installed.
3. Where a failed component or water heater is replaced under warranty, the balance of the original warranty period will remain effective. The replaced part or water heater does not carry a new warranty.
4. Where the water heater is installed outside the boundaries of a metropolitan area as defined by Solahart or further than 30 km from a regional Solahart Dealer from whom the water heater was purchased, the cost of transport, insurance and travelling costs between the nearest Solahart Dealer's premises and the installed site shall be the owner's responsibility.
5. Where the water heater is installed in a position that does not allow safe, ready access, the cost of accessing the site safely, including the cost of additional materials handling and / or safety equipment, shall be the owner's responsibility.
6. The warranty only applies to the water heater and original or genuine (company) component replacement parts and therefore does not cover any plumbing or electrical parts supplied by the installer and not an integral part of the water heater, e.g. pressure limiting valve; isolation valves; non-return valves; electrical switches; pumps or fuse.
7. The water heater must be sized to supply the hot water demand in accordance with the guidelines in the Solahart water heater literature.

## **WARRANTY EXCLUSIONS**

1. REPAIR AND REPLACEMENT WORK WILL BE CARRIED OUT AS SET OUT IN THE SOLAHART WATER HEATER WARRANTY, HOWEVER THE FOLLOWING EXCLUSIONS MAY CAUSE THE WATER HEATER WARRANTY TO BECOME VOID AND MAY INCUR A SERVICE CHARGE AND / OR COST OF PARTS.
  - a) Accidental damage to the water heater or any component, including: Acts of God; failure due to misuse; incorrect installation; attempts to repair the water heater other than by the Solahart Dealer.
  - b) Where it is found there is nothing wrong with the water heater; where the complaint is related to excessive discharge from the temperature and / or pressure relief valve due to high water pressure; where the complaint is related to insufficient or incorrect fall in the pipe work preventing complete drain back of the closed circuit fluid of a Streamline closed circuit system; where there is no flow of hot water due to faulty plumbing; where water leaks are related to plumbing and not the water heater or water heater components; where there is a failure of gas, electricity or water supplies; where the supply of gas, electricity or water does not comply with relevant codes or acts.
  - c) Where the water heater or water heater component has failed directly or indirectly as a result of: excessive water pressure; excessive temperature and / or thermal input; blocked overflow / vent drain; corrosive atmosphere; non Solahart approved or incorrectly mixed closed circuit fluid being used; incorrect or insufficient filling of the closed circuit system with the closed circuit fluid; ice formation in the pipe work to or from the water heater.
  - d) Where the solar water heater or solar water heater component has failed directly or indirectly as a result of ice formation in the water ways of: a Streamline open circuit system; a Streamline closed circuit system where the system has not been installed in accordance with the water heater installation instructions; a Streamline closed circuit system due to non Solahart approved or incorrectly mixed closed circuit fluid being used; a Streamline closed circuit system where there is insufficient or incorrect fall in the pipe work preventing complete drain back of the closed circuit fluid.
  - e) Where the electronic instantaneous gas booster water heater or electronic instantaneous gas booster water heater component has failed directly or indirectly as a result of ice formation in the water ways of a water heater: where the water heater has not been installed in accordance with the water heater installation instructions; where the electricity has been switched off or has failed and the water heater has not been drained in accordance with the instructions; due to an ambient temperature below - 20°C (including wind chill factor).
  - f) Where the water heater is located in a position that does not comply with the Solahart water heater installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the water heater to floor or ground level or to a serviceable position.
  - g) Repair and / or replacement of the water heater due to scale formation in the waterways or the effects of either corrosive water or water with a high chloride or low pH level when the water heater has been connected to a scaling or corrosive water supply or a water supply with a high chloride or low pH level as outlined in the Owner's Guide and Installation Instructions booklet.
  - h) Breakage of collector glass for any reason including hail damage. (We suggest that the collector glass be covered by your home insurance policy).
2. SUBJECT TO ANY STATUTORY PROVISIONS TO THE CONTRARY, THIS WARRANTY EXCLUDES ANY AND ALL CLAIMS FOR DAMAGE TO FURNITURE, CARPETS, WALLS, FOUNDATIONS OR ANY OTHER CONSEQUENTIAL LOSS EITHER DIRECTLY OR INDIRECTLY DUE TO LEAKAGE FROM THE WATER HEATER, OR DUE TO LEAKAGE FROM FITTINGS AND / OR PIPE WORK OF METAL, PLASTIC OR OTHER MATERIALS CAUSED BY WATER TEMPERATURE, WORKMANSHIP OR OTHER MODES OF FAILURE.

# SOLAHART STREAMLINE, SYNERGY, GAS BOOSTER SOLAR WATER HEATER WARRANTY – AUSTRALIA ONLY

## WARRANTY

### Solahart will:

- a) Repair or, if necessary replace any Solahart water heater; or
- b) Replace any component (or, if necessary, arrange the installation of a new water heater), which falls within the Warranty Periods specified below, subject to the warranty conditions and exclusions.

Installation	Model	Period	Warranty
<b>All Components (from date of installation)</b>			
All installations	All models	Year 1	New component, solar collector or water heater (at Solahart's sole discretion), free of charge, including labour.**
<b>Sealed System *** (from date of installation)</b>			
Water heater installed in a "single-family domestic dwelling"	Synergy	Year 2	New sealed system component, free of charge, including labour.**
<b>Cylinder (from date of installation)</b>			
Water heater installed in a "single-family domestic dwelling"	Streamline, Streamline	Years 2 & 3	New water heater, free of charge, including labour.**
	Closed Circuit, Synergy	Years 4 & 5	New water heater, free of charge, with installation and labour costs being the responsibility of the owner.
Water heater installed in any other than a "single-family domestic dwelling"	Streamline, Streamline Closed Circuit, Synergy	Years 2 & 3	New water heater, free of charge, with installation and labour costs being the responsibility of the owner.
<b>Heat Exchanger Electronic Instantaneous Gas Booster (from date of installation)</b>			
Water heater installed in a "single-family domestic dwelling"	Streamline	Years 2 & 3	New heat exchanger, free of charge, including labour.**
	Closed Circuit	Years 4 & 5	New heat exchanger, free of charge, with installation and labour costs being the responsibility of the owner.
<b>Solar Collector (from date of installation)</b>			
Water heater installed in a "single-family domestic dwelling"	L J KF	Years 2 to 5	New solar collector, free of charge, with installation and labour costs being the responsibility of the owner.

### Notes:

\* Solahart is the supplier of Solahart electronic instantaneous solar gas booster water heaters, manufactured by Paloma Industries, a world leader in water heater technology and manufacture.

\*\* Refer to items 4 and 5 of warranty conditions.

\*\*\* The Sealed System includes components that carry refrigerant only, e.g. Compressor, Condenser, TX Valve, Receiver/Drier, Evaporator and associated pipe work.

Solahart reserves the right to transfer fully functional components from the defective water heater to the replacement water heater if required. The term "water heater" used in the Warranty, Warranty Conditions and Warranty Exclusions means the Solahart supplied water heater(s), solar storage tank(s), solar collector(s), kit(s) and components.

In addition to this warranty, the Trade Practices Act 1974 and similar laws in each state and territory provide the owner under certain circumstances with certain minimum statutory rights in relation to your Solahart water heater. This warranty must be read subject to that legislation and nothing in this warranty has the effect of excluding, restricting or modifying those rights.

Note: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences, which may arise as a result of its application.

## SOLAHART INSTALLATION & WARRANTY REPORT

**Dear Customer – To register your warranty please ensure the following information is correct then sign and return to our Solahart Industries Pty Ltd freepost address:**

Solahart Industries Pty Ltd  
 Reply Paid Perth 354  
 Welshpool, Western Australia 6106

### WARRANTY

Details and conditions of warranty are in the **“Water Heater Warranty”** section of this manual.

**Please complete all details below**

<b>Owner's Name</b>			
<b>Installation Address</b>			
<b>Suburb</b>		<b>State</b>	
<b>Country</b>		<b>Postcode</b>	
<b>Telephone</b>	<b>(H)</b>		<b>(W)</b>
<b>Solahart Dealership</b>		<b>Consultant</b>	

<b>Installer's Name</b>				<b>Installation Date</b>		
<b>Type of Installation</b> (please circle)	New	Solar to Solar	Tank Replacement	Other		
<b>Work Delivery Details</b>						

<b>System Model No</b>				<b>System Type</b>		
<b>Tank Model No</b>				<b>Tank Serial No</b>		
<b>Collector Model No</b>				<b>No of Collectors</b>		
<b>Collector Serial No's</b>	1)	2)	3)	4)		
<b>Booster Type</b> (please circle)	Electric continuous	Off Peak 1 (night)	Off Peak 2 (night & day)	In-Tank Gas Booster	In-Line Booster	Solar Preheat only
<b>Booster Control</b> (please circle)	None		Timer	Manual Switch		One Shot Control
<b>In-Line Booster</b> (if installed)	<b>Model No</b>			<b>Serial No</b>		
<b>Service's Due</b>	1)	2)	3)	4)		

If replacing a water heater, please give details

<b>Brand</b>		<b>Model No</b>		Electric	Gas
<b>If a Solahart unit</b>	Tank Serial No			Date of manufacture	
<b>Collector Serial No's</b>	1)	2)	3)	4)	

<b>Comments</b>					

<b>Installer Certification</b> – I certify this installation has been installed and tested in accordance with Solahart Industries Pty Ltd specifications					
<b>Signature:</b>	Installer		Customer		
<b>Date</b>					

White Copy: Head Office

Yellow Copy: Dealer

Blue Copy: Sales Office

Green Copy: Manual

# SOLAHART OFFICES

## International Headquarters

### Solahart Industries Pty Ltd

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or your nearest Solahart Dealer

For Sales Telephone - **1300 769 475**  
or your nearest Solahart Dealer