

Owner's Guide and Installation Instructions



Solar Loline Gas Boosted Water Heater



Install a Rheem



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.

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



WARNING: Plumber – Be Aware

- The solar hot and solar cold pipes between the solar storage tank and the solar collectors **MUST BE** of copper. All compression fittings must use brass or copper olives.
- The full length of the solar hot and solar cold pipes **MUST BE** insulated.

The insulation must:

- be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions

The specification of the chosen insulation material should be checked with the insulation manufacturer prior to installation as different materials may vary in temperature tolerance.

- be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4
- be weatherproof and UV resistant if exposed
- extend through any penetrations in the eaves, ceiling and roof
- cover valves and fittings in the solar hot and solar cold pipe work
- be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

Note: Failure to observe these requirements increases the risk of freeze damage.

Uninsulated pipe work, including concealed in cavities and roof spaces or where it may be in contact with a metal roof, may lead to freeze damage. There is NO WARRANTY for freeze damage if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions.

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 as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

- The insulated copper pipe work:
 - should be fixed at suitable locations to prevent or reduce the possibility of noise from water hammer and vibration from occurring
 - is not to be placed or installed in contact with plastic pipe work.

Likewise, plastic pipe work is not to be placed or installed in contact with the insulated copper pipe work after the solar circuit is installed.

- 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.
- 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. Due to the higher water temperatures generated under certain conditions in the solar collectors of this solar water heater, an additional effective back-flow prevention device also should be used as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.

Plumber: It is important to refer to and read in full the complete “Warning: Plumber – Be Aware” statement commencing on page 42.

PATENTS

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

TRADEMARKS


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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.

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The other pages are intended for the installer but may be of interest.

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 **Warning:** Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or a responsible officer. **DO NOT** leave this guide inside of the cover of the water heater, as it may interfere with the safe operation of the water heater or ignite when the water heater is turned on.

ABOUT YOUR WATER HEATER

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

MODEL TYPE

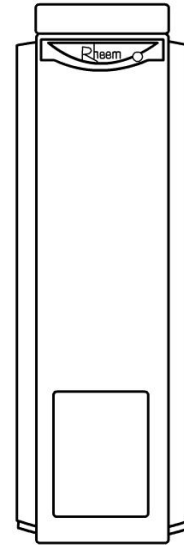
Your Rheem® Loline® open circuit solar water heater system is designed for the solar collectors to be roof mounted and the vitreous enamel lined solar storage tank to be remotely installed at ground level. The solar storage tank is suitable for outdoor installation only and can be installed with Rheem NPT 200 solar collectors. The system is not suitable for installation above 400 metres altitude.

The system has a level of freeze protection designed to guard the system against damage from freeze conditions (refer to “Freeze Protection” on page 8). The system must be installed with the full length of the solar hot and solar cold pipes insulated and power must be available at the solar control unit to offer protection against freeze damage (refer to “Pipe Work and Insulation” on page 9). Freeze conditions occur below 6°C.

The system has NO WARRANTY for freeze damage when installed above 400 metres altitude or if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions or if power is not available at the solar control unit (refer to “Terms of the Rheem Warranty” on page 59).

Note: The Rheem warranty against freeze damage applies only to systems installed in Australia.

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 32, 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.

SOLAR OPERATION

The operation of the circulator is controlled by the combination of:

- the hot sensor located at the outlet of the solar collectors.
The hot sensor measures the water temperature at the outlet of the solar collectors.
- the cold sensor located at the solar cold outlet at the base of the solar storage tank
The cold sensor measures the water temperature at the bottom of the solar storage tank.
- the differential controller located in the solar control unit.

Normal operation

As the sun heats the water in the solar collectors, the increase in temperature activates the circulator. The circulator switches on whenever the water in the solar collectors is hotter than the water in the solar storage tank. The circulator moves the hotter water from the solar collectors through the solar hot pipe to the solar storage tank and the cooler water from the solar storage tank is circulated to the solar collectors via the solar cold pipe to be heated by the sun's energy.

This process continues whilst solar energy is available and the water in the solar storage tank requires heating. The circulator will deactivate when the water temperature in the solar storage tank is around 70°C to 75°C. The water heater will then enter Over-temperature operation.

During normal operation if the amount of solar energy available reduces, such as when the sky becomes very cloudy or the sun becomes lower in the sky in the late afternoon, and the water no longer gains useable heat from the solar collectors, the circulator will deactivate. The water heater will then enter standby mode.

Over-temperature operation

The purpose of the Over-temperature operation is to reduce the amount of overheating or 'stagnation' of water in the solar collectors. When the water in the solar storage tank has reached 70°C to 75°C and the circulator has deactivated, the solar collectors will continue to gain heat while solar energy is still available.

If the water in the solar collectors stagnates and its temperature becomes very high, the circulator will activate for a short period to transfer this extra energy to the solar storage tank. The circulator will deactivate when the water temperature in the solar collectors decreases. This process will either repeat for a maximum of eight cycles or until the water temperature in the solar storage tank reaches around 75°C to 80°C or the hot sensor does not sense another increase in water temperature to a stagnation level after a cycle is completed, i.e. the solar energy available reduces.

Night Time Cooling operation

The purpose of Night Time Cooling operation is to rid the solar storage tank of excess solar energy gained by Over-temperature operation during that day. The desired water temperature in the solar storage tank is to be between 60°C to 70°C.

If the solar control unit has entered Over-temperature operation during the day, then after the water temperature in the solar collectors reduces later in the day or early evening, the circulator will activate. Water from the solar storage tank will circulate through the solar collectors and excess heat in the water will radiate from the solar collectors reducing the temperature of the water. The water will circulate for a period of time and until the water temperature in the solar storage tank is around 60°C to 70°C. The water heater will then enter standby mode.

Freeze Protection operation

The purpose of Freeze Protection operation is to prevent freezing of water in the solar collectors and solar pipe work in very cold conditions. The water in the solar collectors will cool during periods of no solar gain. In very cold conditions, such as overnight and very early in the morning before sunrise, the water temperature can approach freezing point.

If the hot sensor measures that the water temperature in the solar collectors is approaching freezing, the circulator will activate. Water from the solar storage tank, containing more energy than the water in the solar collectors, will circulate through the solar collectors keeping the water temperature above freezing point. The circulator will remain on for some minutes and until the hot sensor measures a water temperature at a safe level above freezing. When both of these conditions are met, the circulator will deactivate. The water heater will then enter standby mode.

This process will repeat whenever the hot sensor measures that the water temperature in the solar collectors is approaching freezing.

Refer to "[Freeze Protection](#)" on page 8 and "[Pipe Work and Insulation](#)" on page 9.

Standby mode

The water heater will be in Standby mode whenever conditions are not favourable for solar heating in Normal operation, and Over-temperature operation and Night Time Cooling are not required or have been completed, and conditions are not cold enough for or in-between Freeze Protection operation.

Solar Monitor LED operation

The LEDs on the Solar Monitor, located on the side of the solar control unit, operate to show the operational mode of the water heater. Refer also to “Solar Monitor” on page 10.

Mode	Green LED		Red LED
	power on* > 48 hours	power on* < 48 hours	
Normal operation	rapid pulse	3 flashes	off **
Over-temperature operation	rapid pulse	3 flashes	off, or solid then off
Night Time Cooling operation	rapid pulse	3 flashes	off
Freeze Protection operation	rapid pulse	3 flashes	off
Standby mode	solid	slow pulse	off

Notes

* Power from the GPO to the solar control unit.

** In Normal Operation the red LED may emit a rapid pulse for a short period of time under certain circumstances (refer to “Rapid Pulsing” on page 26).

GAS BOOSTING

Water stored in the solar storage tank can be heated by a gas burner located under the cylinder. The gas burner is for heating the water at times of low solar energy gain, such as during very cloudy or rainy weather, or during the colder months. The boost water temperature is determined by the gas control thermostat setting.

The gas burner is also controlled via a timer unit installed inside the house. It is recommended the timer be set to enable boosting between 3:30 PM and 6:30 PM. This will allow boosting of the water temperature before the main evening hot water usage period, but after the main solar heating period of the day. The timer unit has a manual “OVERRIDE” to allow boosting outside of the set hours (refer to “Timer Operation” on page 17).

Note: The gas burner will only light if the temperature of the water in the solar storage tank is below the gas control thermostat setting.

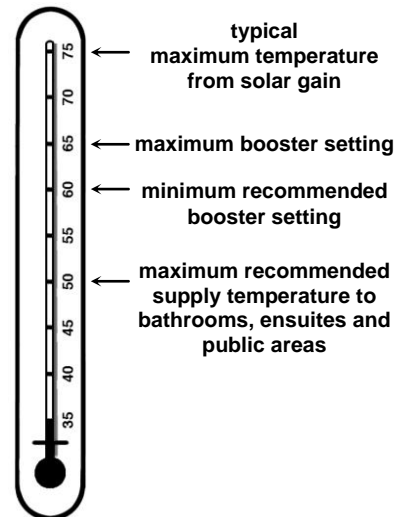
HOW HOT SHOULD THE WATER BE?

The solar control unit will circulate water through the solar collectors until a temperature of approximately 70°C to 80°C is reached. During periods of low solar energy gain, the water temperature can be boosted by the thermostatically controlled gas burner. The boosting is controlled by both the timer unit and the gas control thermostat.

The water heater features a user adjustable thermostat, which allows you to personally choose the most suitable boosting temperature for your hot water needs. Refer to “Temperature Adjustment” on page 7.

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

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the gas booster is energised for a sufficient period each day and the gas booster thermostat setting is 60°C or higher.



HOTTER WATER INCREASES THE RISK OF SCALD INJURY

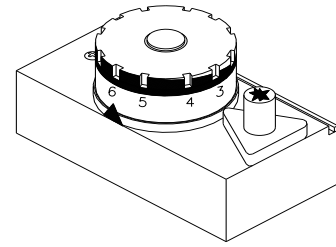
This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

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

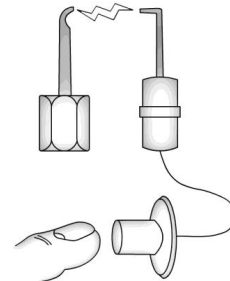
The temperature adjusting dial is on the gas valve, behind the access cover on the lower front of the water heater. A setting of '6' will normally provide a boosted water temperature of about 60°C. Each number represents a temperature difference of approximately 6°C.

To increase the boosted water temperature to 65°C, turn the gas control knob counter-clockwise to a setting of '7'. Refer to ["Hotter Water Increases the Risk of Scald Injury"](#) on page 6.



PIEZO IGNITION

The "Piezo" push button igniter makes lighting the pilot flame of your water heater very easy. Simply follow the instructions on the label attached to the back of the front access cover. There is no need for matches to light the water heater.



PILOT IGNITER

A permanent pilot flame burns to ignite the main burner automatically for boosting. Heat from the pilot is absorbed by the water.

PRECAUTIONS

Where damage to property can occur in the event of the water heater leaking, the water heater must be installed in a safe tray. Construction, installation and draining of a safe tray must comply with AS/NZS 3500.4 and all local codes and regulatory authority requirements.

The water heater must be maintained in accordance with the Owner's Guide and Installation Instructions. Refer to ["Regular Care"](#) on page 13 and to ["Anode Inspection and Replacement"](#) on page 22.

If this water heater is to be used where an uninterrupted hot water supply is necessary for your application or business you should ensure that you have back up redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater were to become inoperable for any reason. We recommend you seek advice from your plumber or specifier about your needs and building back up redundancy into your hot water supply system.

WARNING

This water heater is only intended to be operated by persons who have the experience or the knowledge and the capabilities to do so. This water heater is not intended to be operated by persons with reduced physical, sensory or mental capabilities i.e. the infirm, or by children. Children should be supervised to ensure they do not interfere with the water heater.

This water heater uses 240 V AC electrical power for operation of the control systems and the electrically operated components. The removal of the side access panel will expose 240 V wiring. It must only be removed by a qualified person.

Care should be taken not to touch any exposed pipe work or fittings connecting the solar storage tank and the solar collectors, as this may result in a burn injury. Very high temperature hot water and in some circumstances high temperature steam 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.

Note: Any exposed pipe work or fittings in the solar circuit should be attended to and covered with insulation. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

SAFETY

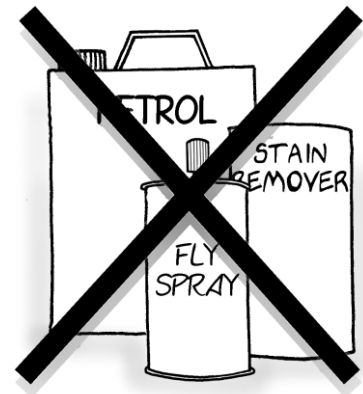
This water heater is supplied with a thermostat, an over-temperature cut-out, and a combination temperature pressure relief valve. These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order.

If the electrical conduit to the water heater is damaged, it must be replaced by a qualified person in order to avoid a hazard. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

⚠ Warning: For continued safety of this water heater it must be installed, operated and maintained in accordance with the Owner's Guide and Installation Instructions.

The Rheem warranty may not cover faults if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.

- Do not store **flammable or combustible materials** near the water heater. Flammable liquids (such as petrol), newspapers and similar articles must be kept well away from the water heater and the flue terminal.
- Do not use **aerosols, stain removers and household chemicals** near the water heater whilst it is working. Gases from some aerosol sprays, stain removers and household chemicals become corrosive when drawn into a flame.
- Do not store swimming pool chemicals, household cleaners, etc., near the water heater.
- Do not place anything on top of the water heater or in contact with the flue terminal.
- Do not use Propane / Butane gas mixtures in a Propane model. A Propane model is designed to operate on Propane only. The use of Propane / Butane mixture, such as automotive LPG fuel, in a Propane model is unsafe and can cause damage to the water heater.



FREEZE PROTECTION

The system has a level of freeze protection designed to guard the system against damage from freeze conditions. The system must be installed with the full length of the solar hot and solar cold pipes insulated and power must be available at the solar control unit to offer protection against freeze damage (refer to **"Pipe Work and Insulation"** on page 9). Freeze conditions occur below 6°C.

The anti freeze control is designed to recirculate a small amount of water from the solar storage tank through the solar pipe work and solar collectors during periods of low temperatures. This is to prevent the water inside the pipe work and collectors from freezing. It is essential the electrical circuit to the solar control unit is continually turned on if there is a risk of freezing. The Rheem warranty does not cover damage caused by freeze conditions when the electrical circuit to the solar control unit is turned off or interrupted.

A system has **NO WARRANTY** for freeze damage when installed above 400 metres altitude or if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions or if power is not available at the solar control unit (refer to **"Terms of the Rheem Warranty"** on page 59). **Note:** The Rheem warranty against freeze damage applies only to systems installed in Australia.

Notes:

- A system is not covered for freeze damage above 400 metres altitude by the Rheem warranty.
- The freeze protection system will be rendered inoperable if electrical power is not available at the solar control unit. Damage caused by freezing due to no power at the solar control unit, is not covered by the Rheem warranty.
- 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.
- Refer to **"Terms of the Rheem Warranty"** on page 59.

PIPE WORK AND INSULATION

The solar hot and solar cold pipe work between the solar storage tank and the solar collectors **MUST BE** of copper.

The full length of the solar hot and solar cold pipes **MUST BE** insulated. The insulation must:

- be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions
- be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4
- be weatherproof and UV resistant if exposed
- extend through any penetrations in the eaves, ceiling and roof
- cover valves and fittings in the solar hot and solar cold pipe work
- be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

Note: Failure of these requirements to be observed increases the risk of freeze damage.

Uninsulated pipe work, including concealed in cavities and roof spaces or where it may be in contact with a metal roof, may lead to freeze damage. There is **NO WARRANTY** for freeze damage if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions.

Note: Any exposed pipe work or fittings in the solar circuit should be attended to and covered with insulation. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

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 as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

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 42](#)).

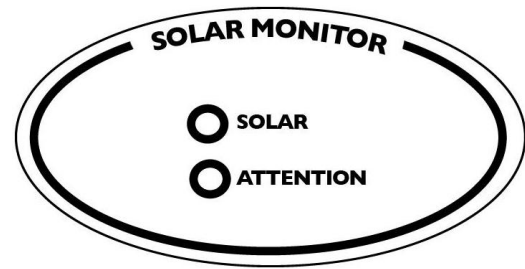
SOLAR MONITOR

A solar monitor is located on the side of the air duct and houses a green and a red LED.

The green LED, marked “Solar”, indicates the current operational mode of the solar water heater and the red LED, marked “Attention”, may indicate a potential fault mode.

The green LED will emit either a constant glow, a constant pulsing or a series of flashes, with a 2 second interval between each series.

The red LED will emit either a constant glow, a constant pulsing or a series of flashes with a 2 second interval between each series. A constant glow or pulsing does not necessarily mean there is a fault with the system. A series of flashes indicates there may be a particular fault condition with the system.



The modes are:

Flashes	Operational Modes	Flashes	Indicator or Fault Modes
solid green (remains on)	Standby mode	solid red (remains on)	Hot sensor temperature greater than 130°C
green slow pulse	Standby mode (power on for less than 48 hours)	red rapid pulse	Temperature rise across collector greater than 45°C (circulator at full speed)
green rapid pulse	Circulating water through collectors	3 x red	Hot sensor in collector – short circuit
3 x green	Circulating water through collectors (power on for less than 48 hours)	4 x red	Hot sensor in collector – open circuit
no green (remains off)	Power outage or call for service	5 x red	Cold sensor –short circuit
		6 x red	Cold sensor – open circuit

If the power supply to the solar control unit is on and the green LED is off or the red LED is flashing, this indicates there may be a fault with the water heater. The red LED may emit from three to six flashes in each series of flashes. A constant glow or pulsing of the red LED does not necessarily mean there is a fault with the system.

Notes:

- If the system is in standby mode with the green LED emitting either a constant glow or slow pulsing flashes (circulator is off) and the solar storage tank is full of hot water, the red LED may simultaneously emit a constant glow if solar radiation is still being received by the solar collectors. This does not indicate a fault. The red LED will go out when the temperature in the solar collectors decreases.
- During periods of high solar radiation and the circulator activates after having been off (the green LED will emit either a rapid pulse or a series of three flashes), it is possible the red LED may simultaneously emit a rapid pulse for a period of up to ten (10) minutes. This does not indicate a fault.

If the red LED continues to emit a rapid pulse for longer than ten (10) minutes, or emits a series of flashes, then count the number of flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

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 pipe work 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.

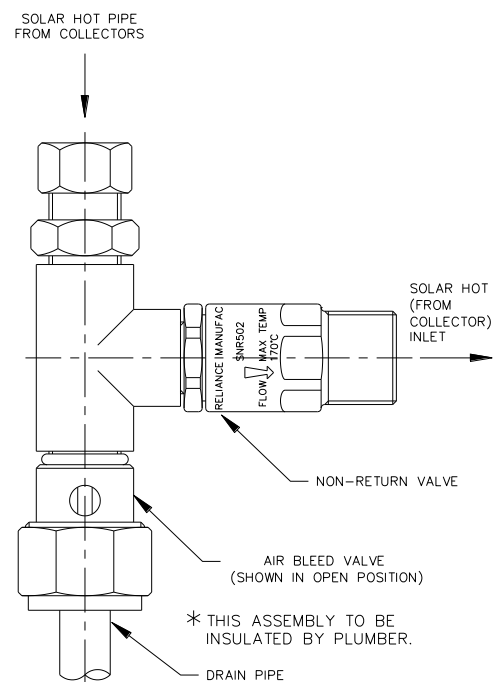
⚠ Warning: It is important bleeding of the collector circuit be conducted early in the morning, within three hours of sunrise, when the sun is low in the sky. The water temperature inside the solar collectors is lower as the solar collectors would not have had a chance to gain as much heat as later in the day. Bleeding the collector circuit at a time later than this can result in the discharge of high temperature water and in some circumstances, high temperature steam.

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: Stand well aside of the air bleed valve drain pipe discharge point and exercise care to avoid any splashing of water, as water or in some circumstances steam 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:

- Shut down the gas control (refer to [“Close Down Procedure”](#) on page 56).
- Close the gas isolation valve at the inlet to the gas control.
- Switch off the electrical supply at the isolating switch to the water heater (refer to note below).
- Close the cold water isolation valve at the inlet to the water heater.

Notes:

- The freeze protection system will be rendered inoperable if electrical power is not available at the solar control unit. Damage caused by freezing due to no power at the solar control unit is not covered by the Rheem warranty. Refer to [“Terms of the Rheem Warranty”](#) on page 59.
- If there is a risk of freezing, the electrical supply to the solar control unit should not be switched off unless the solar collectors and solar flow and return pipe work 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 11).
- If the electrical supply to the water heater has been switched off, switch on the electrical supply at the isolating switch.

The isolating switch must be switched on for the solar control unit to operate and solar gain to be achieved.

- Open the gas isolation valve fully at the inlet to the gas control.
- Light the water heater (refer to [“Lighting the Water Heater”](#) on page 54).
- Ensure the timer is programmed (refer to [“Timer Operation”](#) on page 17).

GOING ON HOLIDAYS

If you are going on holiday for more than a few days the thermostat can be set to its lowest setting (‘1’) to conserve energy. Alternatively, the timer can be set so the burner will not activate during the period you are away (refer to [“Timer Operation”](#) on page 17). If it is necessary to turn off the water heater, refer to [“To Turn Off The Water Heater”](#) on page 11. Also if the system is not used for a period in excess of two (2) weeks it is recommended the solar collectors be covered.

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

Installation requirements are [shown on page 37](#). The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, AS/NZS 3000, AS 5601 or AS/NZS 5601.1 and all local codes and regulatory authority requirements.

In New Zealand, the installation must also conform with NZS 5261 and Clause G12 of the New Zealand Building Code.

The timer is not weatherproof and must be installed indoors.

Refer also to [“Pipe Work and Insulation”](#) on page 9.

VICTORIAN CUSTOMERS

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.

DOES THE WATER CHEMISTRY AFFECT THE WATER HEATER?

The water heater is suitable for most public water supplies, however some water chemistries may have detrimental effects on the water heater, the solar collectors, components and fittings. Refer to [“Water Supplies”](#) on page 21.

If you are in a known harsh water area or you are not sure of your water chemistry, have your water checked against the conditions [described on pages 21 to 23](#).

HOW LONG WILL THE WATER HEATER LAST?

The water heater is supported by a manufacturer’s warranty ([refer to page 59](#)). There are a number of factors that will affect the length of service the water heater will provide. These include but are not limited to the water chemistry, the water pressure, the water temperature (inlet and outlet) and the water usage pattern. Refer to [“Precautions”](#) on page 7.

REGULAR CARE

MINOR SIX MONTH MAINTENANCE

It is recommended minor maintenance be performed every six months by the dwelling occupant.

The minor maintenance includes:

- Operate the easing lever on the temperature pressure relief valve. It is very important you raise and lower the lever gently. Refer to “[Temperature Pressure Relief Valve](#)” on page 15.

⚠ Warning: Exercise care to avoid any splashing of water, as water discharged from the drain line will be hot. Stand clear of the drain line’s point of discharge when operating the valve’s lever.

- Operate the easing lever on the expansion control valve (if fitted). It is very important you raise and lower the lever gently. Refer to “[Expansion Control Valve](#)” on page 15.
- Check the drain line from the safe tray (if one is installed) is not blocked.
- Check the status of the LEDs. The green LED should be illuminated (either solid, pulsing or flashing). The red LED should be off. Refer to “[Solar Monitor](#)” on page 10 and “[Household Maintenance Around the Solar Storage Tank](#)” on page 16.

It is important to ensure the solar controller and circulator are operating correctly, particularly at the onset of the colder winter season. Solar gain will not be achieved and the freeze protection system will be rendered inoperative if the solar controller or circulator are not operating.

ANNUAL SERVICE

For safe and efficient operation, it is recommended an annual service be conducted on the water heater.

⚠ Warning: Servicing of a water heater must only be carried out by a qualified person. Phone Rheem Service or their nearest Accredited Service Agent.

Note: The annual service and routine replacement of any components, if required, are not included in the Rheem warranty. A charge will be made for this work. Only genuine replacement parts should be used on this water heater.

The annual service includes the following actions:

- Inspect and flush the temperature pressure relief valve.
- Inspect and flush the expansion control valve (if fitted).
- Check and if necessary adjust the inlet gas pressure.
- Check the piezo igniter, gas control and thermocouple.
- Check the operation of and clean the pilot light and main burner.
- Check the solar control unit for correct operation.
- Check the timer and its setting(s).
- Flush and bleed the solar collectors.
- Clean the collector glass.
- Check the insulation on the solar hot and solar cold pipes. If required, insulate exposed pipe work and repair or replace degraded insulation.
- Visually check the unit for any potential problems.
- Inspect all connections.
- Check the drain line from the safe tray (if one is installed) is not blocked.

Note: If the solar storage tank is drained during this service, then when refilled at the completion of the service, it will take some time for the water to be heated by solar gain. The ‘MAN’ override button on the timer can be pressed which will lead to the activation of the main burner if faster heating is required.

MAJOR FIVE YEAR SERVICE

It is recommended a major five year service be conducted on the water heater.

⚠ Warning: Servicing of a water heater must only be carried out by a qualified person. Phone Rheem Service or their nearest Accredited Service Agent.

Note: The five year service and routine replacement of any components, such as the anode and relief valves, are not included in the Rheem warranty. A charge will be made for this work. Only genuine replacement parts should be used on this water heater.

The major service includes the following actions:

- Replace the temperature pressure relief valve.
- Inspect and flush the expansion control valve (if fitted). If required, replace the valve.
- Inspect and if required, replace the anode.

If the anode is not replaced, it should be replaced within three years of this service (refer to “[Anode Inspection and Replacement](#)” on page 22).

- Check and if necessary adjust the inlet gas pressure.
- Check the piezo igniter, gas control and thermocouple.
- Check the operation of and clean the pilot light and main burner.
- Check the solar control unit for correct operation.
- Check the timer and its setting(s).
- Flush and bleed the solar collectors.
- Clean the collector glass.
- Check the insulation on the solar hot and solar cold pipes. If required, insulate exposed pipe work and repair or replace degraded insulation.
- Visually check the unit for any potential problems.
- Inspect all connections.
- Check the drain line from the safe tray (if one is installed) is not blocked.

Note: If the solar storage tank is drained during this service, then when refilled at the completion of the service, it will take some time for the water to be heated by solar gain. The ‘MAN’ override button on the timer can be pressed which will lead to the activation of the main burner if faster heating is required.

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 25).

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

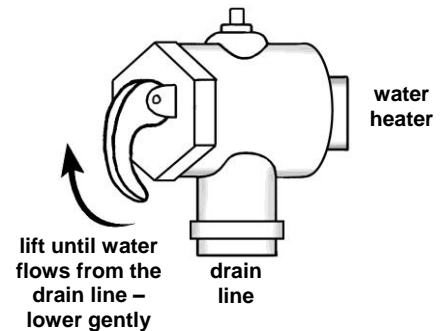
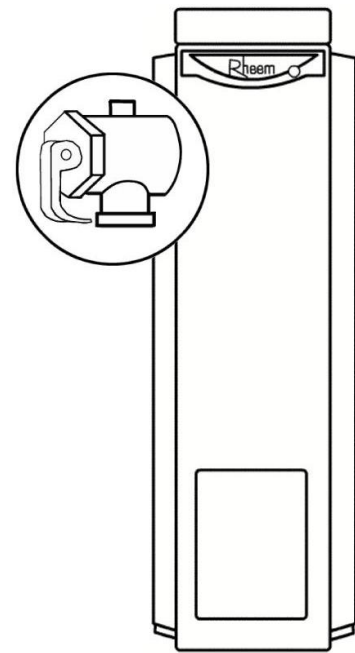
Operate the easing lever on the temperature pressure relief valve once every six months. **It is very important you raise and lower the lever gently.**

⚠ Warning: Failure to do this may result in the water heater cylinder failing.

⚠ Warning: Exercise care to avoid any splashing of water, as water discharged from the drain line will be hot. Stand clear of the drain line’s point of discharge when operating the valve’s lever.

If water does not flow freely from the drain line when the lever is lifted, then the water heater must be checked. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

The temperature pressure relief valve should be 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 21).



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.

Rheem solar collectors have passed the AS/NZS 2712 requirements for resistance to hailstone damage, so it is not normally necessary to fit a guard to a collector. Stone Guards are available to provide a level of protection to the collectors against vandalism or accidental damage. Refer to your local Solar Distributor for details.

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.

⚠ Warning: It is important flushing of the solar collectors be conducted early in the morning, within three hours of sunrise, when the sun is low in the sky. The water temperature inside the solar collectors is lower as the solar collectors would not have had a chance to gain as much heat as later in the day. Flushing the solar collectors at a time later than this can result in the discharge of high temperature water and in some circumstances, high temperature steam.

To flush the solar collectors:

- Open a hot water tap and allow the water to run for five (5) minutes prior to flushing the solar collectors.
- 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 collectors 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 11, 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.

HOUSEHOLD MAINTENANCE AROUND THE SOLAR STORAGE TANK

Care should be taken when conducting general household maintenance, such as lawn mowing and grass cutting, around the solar storage tank. Careless use of devices such as a whipper snipper could damage or cut a sensor lead or the electrical cable.

If a sensor lead or the electrical cable is damaged or cut, solar contribution may not be achieved and the freeze protection system may be rendered inoperative. In addition, if the electrical cable has been damaged or cut, wiring may be exposed leading to a dangerous situation.

TIMER OPERATION

FUNCTIONS OF THE TIMER

The timer is an accurate, electronic device which allows up to six (6) ON-OFF periods to be set per day. It is recommended only one (1) period per day be programmed into the timer. This will be sufficient for most installations. The timer is not weatherproof and must be installed indoors. It is recommended the timer be located in the kitchen or laundry or other location easily seen by the householder.

DAY Press this button to select the actual day switching operations.
Switching programme options and their order of appearance on the screen are:

Select seven days a week: 'MO TU WE TH FR SA SU' will be displayed.

Select one day only: The selected day only will be displayed, i.e.,
'MO' (Monday), 'TU' (Tuesday), 'WE' (Wednesday),
'TH' (Thursday), 'FR' (Friday), 'SA' (Saturday),
'SU' (Sunday).

Select Monday to Friday only: 'MO TU WE TH FR' will be displayed.

Select Saturday and Sunday only: 'SA SU' will be displayed.

Select Monday to Saturday only: 'MO TU WE TH FR SA' will be displayed.

Note: The DAY button will only operate in conjunction with the time and program buttons.

PROG Press this button once to activate the program function. It allows the "ON" and "OFF" times to be set and the "DAY" selection to be made.

TIME Press this button to set the current day and time and to complete the programming operation.

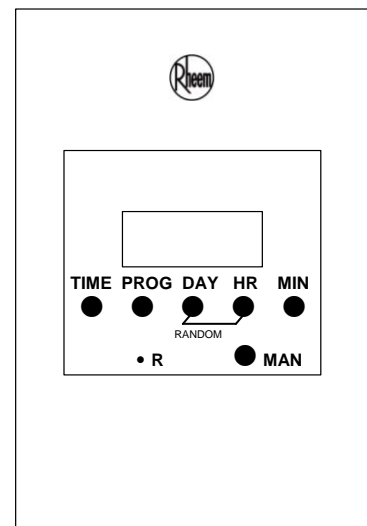
HR Press this button to set the hours.

MIN Press this button to set the minutes.

MAN Press this button to turn the "OVERRIDE" function on or off.

R Press this button to delete all programmed information from the memory.

Note: Each press of a button will advance the setting by one increment. Pressing a button continuously will scroll through the settings.



The function of the timer is to enable the gas burner to automatically boost the stored water temperature, if required, due to low solar energy gain during the day. This will ensure the solar storage tank is full of hot water for the evening hot water requirements.

Warning: The timer is not waterproof. Do not splash the timer with water.

BATTERY BACKUP

The timer has an inbuilt rechargeable battery. If a power failure occurs, the rechargeable battery will maintain the memory of the timer, avoiding the loss of any set programs.

Note: The rechargeable battery may be run down at the time of installation. Connecting to mains power will recharge the battery.

RECOMMENDED TIMER ON/OFF SETTING

It is recommended the timer be set to enable a boosting period of three hours, with the end of the period to coincide with the commencement of the evening hot water usage. A suggested boosting period is between 3:30 PM (15:30 Hours) and 6:30 PM (18:30 Hours), however the boosting period should be set to suit the hot water usage of the household.

Note: The timer uses a 24 hour clock.

This three hour boosting period is sufficient to allow the gas burner to heat up the entire contents of the solar storage tank through a 50°C temperature rise. This may be necessary during periods of very low solar energy gain through the solar collectors, such as during constant rain or extremely cloudy weather, particularly in winter when the incoming cold water temperature is lower. This period will also provide a sufficient heat up time for the gas booster to operate, if required, to satisfy the requirements of AS 3498.

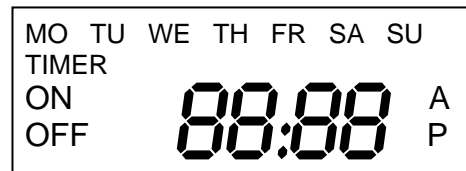
Note: The times given are for local standard time. When daylight saving time applies, you may consider resetting the timer accordingly.

RESET THE TIMER

It is recommended the timer be reset before commencing the initial programming. This will delete any set programs.

- Press the “R” (reset) button gently to reset the timer. Use a non-metallic object like a wooden or plastic toothpick.

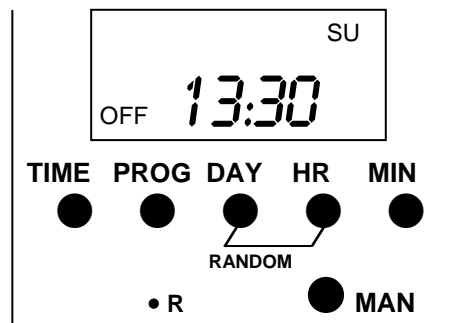
Warning: Do not use a sharp metal object as this may pierce the protective membrane and an electric shock may result.



Note: When the “R” (reset) button is pressed, the entire screen is illuminated and all programs, including the current time, are deleted from the timer’s memory.

TO SET THE TIME

- Press and hold the “TIME” button.
- Press the “DAY” button to select the current day.
- Press the “HR” button to select the current hour (**Note:** 24 hour clock).
- Press the “MIN” button to select the current minute.
- Release the 'TIME' button.
- The current time is now set.



Example: Setting the current time as Sunday at half past one in the afternoon i.e. 1:30 PM.

TO SET ON/OFF TIMES

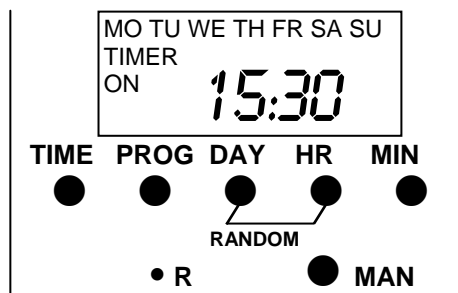
To set “ON” time

- Press and release the “PROG” button
 If the timer has been reset, then “TIMER – ON”, “-- : --” and “MO TU WE TH FR SA SU” will be displayed on the screen.
 If the timer has not been reset, then the current “ON” time program will be displayed on the screen.
- Press the “DAY” button to select the days of operation. Refer to “Functions of the Timer” on page 17.

The selected days will be displayed on the screen.

Note: There is no need to make an adjustment to the “DAY” display if “MO TU WE TH FR SA SU” is displayed on the screen and it is desired to set the timer function for seven day operation.

- Press the “HR” button to select the “hour on” time (Note: 24 hour clock).
- Press the “MIN” button to select the “minute on” time.



Example: Setting the “ON” time as 3:30 PM (15:30 hours) for seven day a week boosting.

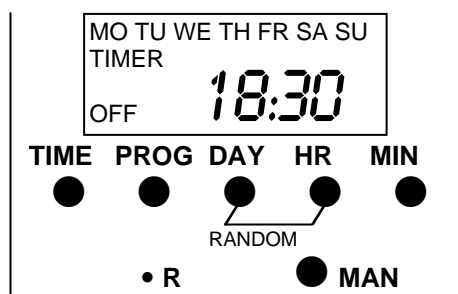
To set “OFF” time

- Press and release the “PROG” button.
 If the timer has been reset, then “TIMER – OFF”, “-- : --” and “MO TU WE TH FR SA SU” will be displayed on the screen.
 If the timer has not been reset, then the current “OFF” time program will be displayed on the screen.
- Press the “DAY” button to select the days of operation. Refer to “Functions of the Timer” on page 17.

The selected days will be displayed on the screen.

Note: There is no need to make an adjustment to the “DAY” display if “MO TU WE TH FR SA SU” is displayed on the screen and it is desired to set the timer function for seven day operation.

- Press the “HR” button to select the “hour off” time (Note: 24 hour clock).
- Press the “MIN” button to select the “minute off” time.



Example: Setting the “OFF” time as 6:30 PM (18:30 hours) for seven day a week boosting.

Note: Six (6) “ON” and “OFF” times are available and each can be set by following the above procedure. It is recommended only one “ON” and “OFF” time is set.

- Press and release the “TIME” button to exit the program mode. The current time is displayed. The timer is now programmed to operate.

Note: The program automatically sets after approximately two minutes if the “TIME” button is not pressed.

Note: If the timer is not set with an ON-OFF period, the solar water heater will not boost automatically. If the “MAN” button is pressed to activate the manual boosting “OVERRIDE” function and an ON-OFF period has not been set, the solar water heater will remain in boosting mode until the “MAN” button is pressed again to deactivate the manual boosting “OVERRIDE” function (refer to “Manual Boosting – “OVERRIDE” Function” on page 20). During this time, only minimal solar gain may be achieved.

MANUAL BOOSTING – “OVERRIDE” FUNCTION

The timer also has an “OVERRIDE” function to allow for boosting the temperature of the water in the solar storage tank, outside of the set hours.

- To activate manual boosting, press the “MAN” button once.

The word “ON” appears in the display.

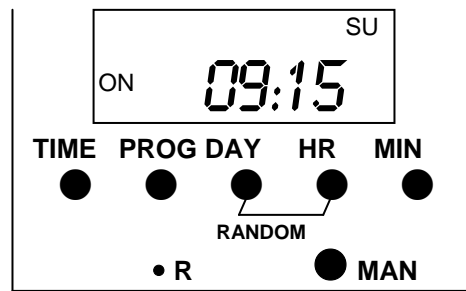
- When the water has been heated to the temperature setting of the gas control, the gas burner will automatically extinguish.

- To deactivate the manual boosting, press the “MAN” button once.

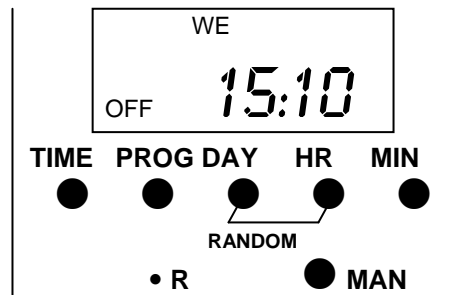
The word “OFF” appears in the display.

Note: This is necessary to prevent further boosting of the water temperature, whenever hot water is used. This could potentially reduce the solar gain for one day.

- If the “OVERRIDE” function is not manually deactivated, it will automatically be deactivated at the end of the next timer set boost period.



Example: The Manual Boosting “Override” function “ON” at quarter past nine on Sunday morning.



Example: The Manual Boosting “Override” function “OFF” at ten past three on a Wednesday afternoon.

CAUTION – “RANDOM” FUNCTION

The timer features a “RANDOM” function setting, indicated by the word “TIMER” flashing in the display. The “RANDOM” function will cause the timer to switch ON and OFF completely at random, regardless of any set programmes. If the “RANDOM” function is inadvertently set, press the “DAY” and “HR” buttons simultaneously to deactivate (the word “TIMER” disappears from the display).

Note: It is recommended the “RANDOM” function **never be used**.

WATER SUPPLIES

This water heater must be installed in accordance with this advice to be covered by the Rheem warranty.

This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and / or life expectancy. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority. This water heater should only be connected to a water supply which complies with these guidelines for the Rheem warranty to apply.

CHANGE OF WATER SUPPLY

The changing or alternating from one water supply to another can have a detrimental effect on the operation and / or life expectation of a water heater cylinder, a temperature pressure relief valve and a solar collector in a direct solar water heater system.

Where there is a changeover from one water supply to another, e.g. a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought from the supplier or it should be tested to ensure the water supply meets the requirements given in these guidelines for the Rheem warranty to apply.

ANODE

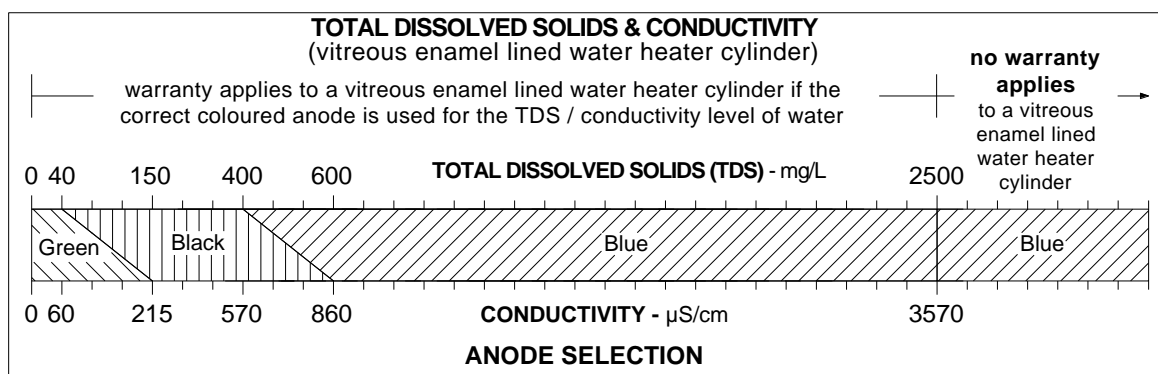
The vitreous enamel lined cylinder of the water heater is only covered by the Rheem warranty when the total dissolved solids (TDS) content in the water is less than 2500 mg/L and when the correct colour coded anode is used. If an incorrect colour coded anode is used in the water heater, any resultant faults will not be covered by the Rheem warranty. In addition, the use of an incorrect colour coded anode may shorten the life of the water heater cylinder.

The correct colour coded anode must be selected and fitted to the water heater in accordance with the following advice and the [Anode Selection chart](#) on page 21 for the Rheem warranty to apply to the water heater cylinder.

Total Dissolved Solids	Anode colour code
0 – 40 mg/L	Green
40 – 150 mg/L	Green or Black
150 – 400 mg/L	Black
400 – 600 mg/L	Black or Blue
600 – 2500 mg/L	Blue
2500 mg/L +	Blue (no cylinder warranty)

The changing of an anode must be carried out by a qualified person.

Note: Some water analysis reports may state the conductivity of the water rather than the level of total dissolved solids. Conductivity, measured in microsiemens per centimetre ($\mu\text{S} / \text{cm}$), is directly proportional to the TDS content of the water. TDS, in mg / L, is approximately 70% of the conductivity in $\mu\text{S} / \text{cm}$.



ANODE INSPECTION AND REPLACEMENT

The anodes installed in a vitreous enamel lined steel water heater cylinder will slowly dissipate whilst protecting the cylinder. The life of the cylinder may be extended by replacing the anodes.

If the anodes are not replaced during a five year service (refer to [“Major Five Year Service”](#) on page 14) then the maximum time after installation when the anodes should be replaced for this water heater is 8 years.

For water supplies which are either softened, desalinated or where the water supply may alternate between a water tank and a reticulated public supply or another supply, it is recommended the anodes be replaced within 5 years of installation.

CAUTION

If the water supply has a TDS greater than 150 mg/L and a green anode has not been changed to a black anode, or if the TDS is greater than 600 mg/L and the anode has not been changed to a blue anode, there is the possibility the anode may become overactive and hydrogen gas could accumulate in the top of the water heater during long periods of no use.

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, 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 very corrosive and the Rheem warranty does not apply to a solar collector in a direct solar water heater system.

In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface.

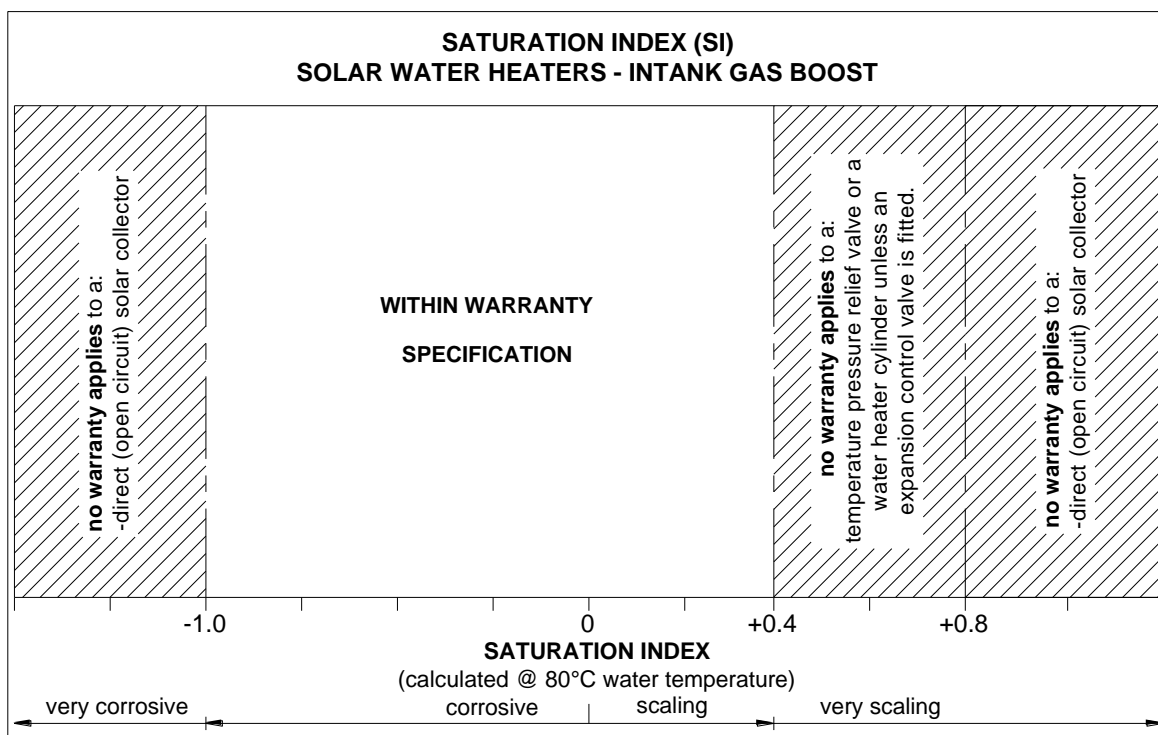
Where the saturation index exceeds $+0.40$, the water is very scaling. An expansion control valve must be fitted on the cold water line after the non-return valve to protect and for the Rheem warranty to apply to the temperature pressure relief valve and water heater cylinder. Solar collectors in a direct solar water heater system should be covered when the water heater is not intended to be used for more than two weeks.

Where the saturation index exceeds $+0.80$, the Rheem warranty does not apply to a solar collector in a direct solar water heater system.

Water which is scaling may be treated with a water softening device to reduce the saturation index of the water.

Refer to the [Saturation Index chart](#) on page 23.

Refer to the [cold water connection detail on page 45](#) for the position of the expansion control valve.



SUMMARY OF WATER CHEMISTRY ADVICE AFFECTING WARRANTY

The water heater, solar collectors and their components are not suitable for certain water chemistries. Those chemistries are listed below. If the water heater is connected at any time to a water supply with the following water chemistry, the Rheem warranty will not cover any resultant faults on the components listed below:

Water Chemistry

Total Dissolved Solids (TDS) > 2500 mg/L

Total Dissolved Solids (TDS) not suitable for anode type

Saturation Index (SI) < -1.0

Saturation Index (SI) > +0.4
(if an expansion control valve is not fitted)

Saturation Index (SI) > +0.8

Component

water heater cylinder

water heater cylinder

solar collector

water heater cylinder
temperature pressure relief valve

solar collector

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 timer and gas booster.

- **Insufficient sunlight**

Insufficient sunlight due to cloudy weather during hotter months or low solar energy contribution in colder months may mean you will need to activate the gas boosting more often (refer to [“Manual Boosting – Override Function”](#) on page 20).

- **Pilot flame alight?**

Check the pilot flame is burning by removing the access cover. Relight the pilot flame according to the lighting instructions (refer to [“Lighting the Water Heater”](#) on page 54).

- **Gas burner not operating**

Inspect the isolating switch (adjacent to the water heater or at the switch board marked “HOT WATER” or “WATER HEATER”) and ensure it is turned “ON”.

Note: Check the settings on the TIMER are sufficient to allow a full boosting cycle (refer to [“Recommended Timer On/Off Setting”](#) on page 18).

- **Green LED is off or red LED is flashing on Solar Monitor**

If the green LED is off or the red LED is flashing on the Solar Monitor label, there may be a problem with the solar water heater operation and solar gain is not being achieved. This will result in the gas booster operating to provide all of the hot water required.

Switch off the electrical supply at the isolating switch to the solar storage tank for a few seconds, then switch on again.

If the green LED remains off or the red LED recommences to flash, then count the number of flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

- **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 15).

- **Collector area is too small**

For most installations, the number of solar collectors recommended in Rheem 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 11).

- **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 fit 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 25.

- **Thermostat setting**
Ensure the thermostat setting is appropriate. You may choose to adjust the thermostat upwards to gain additional hot water capacity when boosting.

⚠ 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 guide in the sales literature and on the Rheem website (www.rheem.com.au) suggests 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. Ensure the booster is being used as advised. You will need to carefully plan your use of the gas burner and you may need to activate the gas boosting more often (refer to “[Manual Boosting – Override Function](#)” on page 20) to boost the water temperature on such occasions.

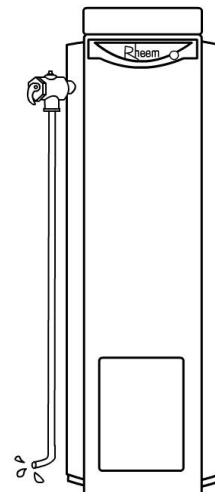
A lower water temperature may also be noticed in the morning if the gas boosting has not been used. This in particular may be experienced during periods of low solar energy gain, or if there has been heavy hot water usage the previous night.

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 15). 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.

⚠ Warning: 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 gas control **must** be turned off using the knob on top of the gas control thermostat (refer to “[Close Down Procedure](#)” on page 56). Phone Rheem Service or their nearest Accredited Service Agent to arrange for inspection.



EXPANSION CONTROL VALVE RUNNING

If an expansion control valve is fitted in the cold water line to the water heater ([refer to page 45](#)) 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.

GREEN LED IS NOT ILLUMINATED ON SOLAR MONITOR

Check the isolating switch for the solar control unit is switched on.

If the isolating switch for the solar control unit is switched on, switch off for a few seconds and then switch on again. If the green LED remains off there may be a fault with the water heater. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

RED LED ILLUMINATED ON SOLAR MONITOR

The illumination of the red LED does not necessarily mean there is a fault with the system. A constant glow or rapid pulsing of the red LED indicates an operational mode of the water heater.

Constant Glow

When the water heater has entered Over-temperature operation, the water in the solar collectors will continue to gain heat whilst solar energy is still available. The red LED will commence to emit a constant glow when sufficient solar energy has been received to activate the circulator. This indicates a build up in temperature of the water in the solar collectors and does not represent a fault. The red LED will stop glowing when the circulator has moved the excess energy from the solar collectors to the solar storage tank.

When eight Over-temperature cycles have been completed and if solar energy is still available, the red LED will emit a constant glow until either a reasonable quantity of hot water is drawn from a tap or the water in the solar collectors loses energy and cools as the available solar energy is reduced, such as when the sun becomes lower in the sky in the late afternoon / early evening or the sky becomes very cloudy.

Refer to “Over-temperature operation” on page 5.

Rapid Pulsing

During Normal operation the red LED will rapid pulse if the temperature difference between the hot sensor and cold sensor is high due to excess heat in the solar collectors. This may not represent a fault. The rapid pulsing of the red LED will cease as the water circulates transferring the excess heat from the solar collectors to the solar storage tank and the temperature difference between the hot sensor and cold sensor reduces. This should be within four (4) to five (5) minutes, but may take up to ten (10) minutes.

If the red LED continues to emit a rapid pulse for longer than ten (10) minutes, switch off the electrical supply at the power outlet to the solar control unit for a few seconds, then switch on again. If the red LED continues to emit a rapid pulse for longer than ten (10) minutes, phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

Series of Flashes

If the red LED is flashing this indicates there may be a fault with the water heater. The red LED may emit from three to six flashes in each series of flashes with a 2 second interval between each series.

If the red LED emits a series of flashes, switch off the electrical supply at the power outlet to the solar control unit for a few seconds, then switch on again. If the red LED illuminates again, then count the number of flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

CIRCULATOR OPERATES AT NIGHT

The circulator can operate during periods of no solar energy, usually at night, under two operational modes of the water heater. This is by design and does not indicate a fault.

Freeze Protection operation: The circulator will activate (green LED rapid pulse or 3 flashes) if the water temperature in the solar collectors approaches freezing point. This occurs in very cold conditions, such as overnight and very early in the morning before sunrise. The purpose of the Freeze Protection operation is to prevent freezing of water in the solar collectors and solar pipe work. The circulator will remain on for some minutes and until the hot sensor measures a water temperature at a safe level above freezing from the storage tank. This process will repeat whenever the water temperature in the solar collectors approaches freezing point. Refer to “Freeze Protection operation” on page 5.

Night Time Cooling operation: The circulator will activate (green LED rapid pulse or 3 flashes) if the water heater has entered Over-temperature operation during that day. This can occur during periods of higher solar energy or lower hot water usage. Excess solar energy gained will be dissipated through the solar collectors until the water temperature in the solar storage tank decreases to a desired 60°C to 70°C. The circulator may remain on for some time. Refer to “Night Time Cooling operation” on page 5.

NOISE FROM THE SOLAR COLLECTORS

During periods of higher solar radiation or lower hot water usage and the solar storage tank is full of hot water, the water heater may undergo Over-temperature operation (refer to “Over-temperature operation” on page 5). If this mode of operation has occurred and the circulator has deactivated, the water in the solar collectors will continue to gain heat and increase in pressure when solar radiation is still available.

When a hot tap is opened, this pressure is released and the high temperature water may turn to steam creating a sudden and loud rumbling noise and even a rattling or banging noise of the solar collectors against the roof cladding material. This results from the higher level of solar radiation and the water in the solar storage tank being at its maximum temperature and is not caused by a fault with the solar water heater.

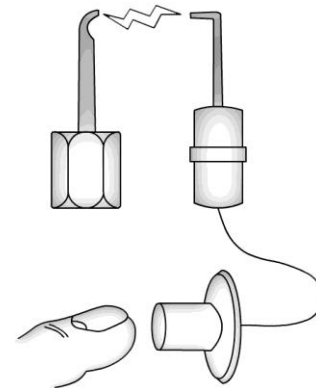
TIMER APPEARS TO BE FUNCTIONING INCORRECTLY

Check the following:

- Has the programming been set correctly?
Check the programmed “ON” and “OFF” times (refer to “Timer Operation” on page 17).
- Has the “R” (reset) button been inadvertently pressed?
Reprogram the timer.
- Has the timer been set to the “RANDOM” function?
Deactivate the “RANDOM” function (refer to “Caution - Random Function” on page 20).

CAN'T LIGHT THE PILOT FLAME

- **Is there gas to the water heater?**
Check the gas isolation valve on the gas supply line is open.
- **Is there a normal gas supply to the rest of the premises?**
Try lighting another gas appliance to check. If there is no gas, call the gas supplier.



WATER HEATER APPEARS TO BE LEAKING

When the water heater is first lit or after a large usage of hot water, condensation may form on the burner of the water heater. This is quite normal, especially in winter months and will dry off as the water is heated.

COLLECTOR GLASS

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

⚠ Warning: No attempt should be made to remove or replace broken collector glass.

The collector glass is not offered as a replacement part. Should the solar collector require replacement, contact Rheem Service or their nearest Accredited Service Agent.

HIGHER THAN EXPECTED GAS BILLS

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

- Is the relief valve running excessively?

Refer to **“Temperature Pressure Relief Valve Running”** on page 25.

- Is one outlet (especially the shower) using more hot water than you think?

Refer to **“Not Enough Hot Water”** on page 24.

- 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 gas. Replace faulty tap washers and have your plumber rectify any leaking pipe work.

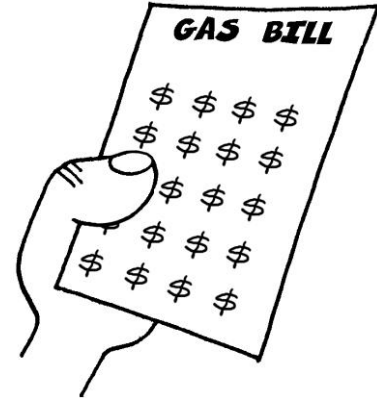
- Are you using the gas boosting properly?

Refer to **“Timer Operation”** on page 17.

- Has there been an increase in hot water usage?

An increase in hot water usage may result in an increase in booster operation.

- Has your water heating tariff rate been increased by your gas retailer since your previous account?



IF YOU HAVE CHECKED ALL THE FOREGOING AND STILL BELIEVE YOU NEED ASSISTANCE, PHONE RHEEM SERVICE OR THEIR NEAREST ACCREDITED SERVICE AGENT.

INSTALLATION - SYSTEM

**THIS WATER HEATER IS FOR OUTDOOR INSTALLATION ONLY.
THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING.
Check the water heater is suitable for the gas type available.
(refer to the rating label on the water heater)**

SOLAR COLLECTORS

The system is suitable for installation with Rheem NPT 200 solar collectors. In Australia, systems with NPT200 solar collectors are suitable for installation in all climate zones. Collectors installed at an orientation greater than 60° from the equator may require an additional collector to ensure adequate solar performance.

IMPORTANT NOTES

- Working on roofs is and should always be considered a hazardous activity, particularly early in the morning, late in the evening, when the roof is wet or during and after periods of rain.
- All work must be carried out in accordance with Local, State and Federal Occupational Safety, Health and Welfare Regulations. In particular, the requirements for safety whilst manual lifting, working at heights and on roofs.
- Installers must be competently trained in:
 - Height Hazard Assessment
 - Working at Height Procedures
 - Assessment / Use / Wearing of correct height safety equipment (harnesses etc.)
 - All other relevant safety factors specific to the installation and maintenance work to be compliant with suitable Occupational, Health and Safety Regulations / Codes.
- All relevant permits shall be obtained from the regulatory authorities before commencing work to install the solar hot water system.
- All work carried out must be performed by appropriately qualified tradespeople or be suitably supervised for trades assistant duties.
- Every care must be taken to protect and warn occupants of the building and the public from personal injury which may occur from falling tools, roof materials, fittings or any other hazards of a general nature.
- Advise the occupants of any inconvenience which may occur due to disconnection of existing water and electrical supplies.
- The connection, attachment, integration or general association of other equipment or parts which either directly or indirectly affect the operation or performance of this equipment could void the Rheem warranty.
- All packaging materials must be removed from the water heater prior to its installation. This includes the removal of the cardboard base of the carton from the underside of the water heater.

FREEZE PROTECTION

The system has a level of freeze protection designed to guard the system against damage from freeze conditions. The system must be installed with the full length of the solar hot and solar cold pipes insulated and power must be available at the solar control unit to offer protection against freeze damage (refer to **“Warning: Plumber Be Aware”** on page 42). Freeze conditions occur below 6°C.

A system has NO WARRANTY for freeze damage when installed above 400 metres altitude or if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions or if power is not available at the solar control unit (refer to **“Terms of the Rheem Warranty”** on page 59).

Note: The Rheem warranty against freeze damage applies only to systems installed in Australia.

INSTALLATION STANDARDS

The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, AS/NZS 3000, AS 5601 or AS/NZS 5601.1 and all local codes and regulatory authority requirements.

In New Zealand, the installation must also conform with NZS 5261 and Clause G12 of the New Zealand Building Code.

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

If this water heater is to be used where an uninterrupted hot water supply is necessary for the application or business, then there should be redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater was to become inoperable for any reason. We recommend you provide advice to the system owner about their needs and building backup redundancy into the hot water supply system.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the gas booster is energised for a sufficient period each day and the gas booster thermostat setting is 60°C or higher.

INSTALLATION – SOLAR STORAGE TANK

SOLAR WATER HEATER STORAGE TANK LOCATION

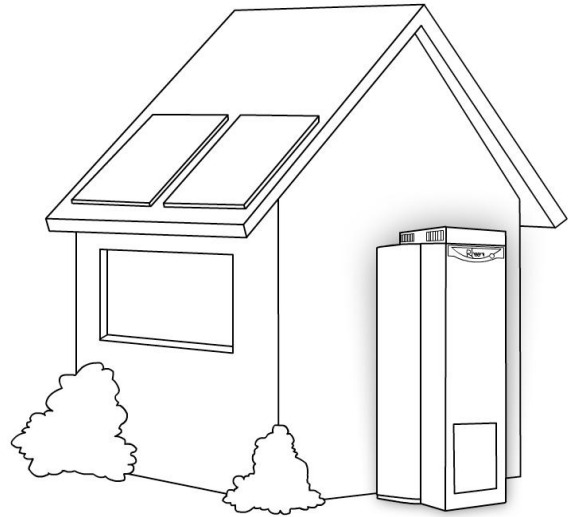
The solar storage tank should be installed close to the most frequently used outlet and its position chosen with safety and service in mind. Make sure people (particularly children) will not touch the flue outlet. The flue terminal must be clear of obstructions and shrubbery.

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 39 and to “Pipe Lengths” on page 41.

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 access covers and burner can be removed for service.

If possible leave headroom of one water heater height so the anode can be inspected or replaced. Remember you may have to remove the entire solar storage tank later for servicing.

The water heater must not be installed in an area with a corrosive atmosphere where chemicals are stored or where aerosol propellants are released. Remember the air may be safe to breathe, but when it goes through a flame, chemical changes take place which may attack the water heater.

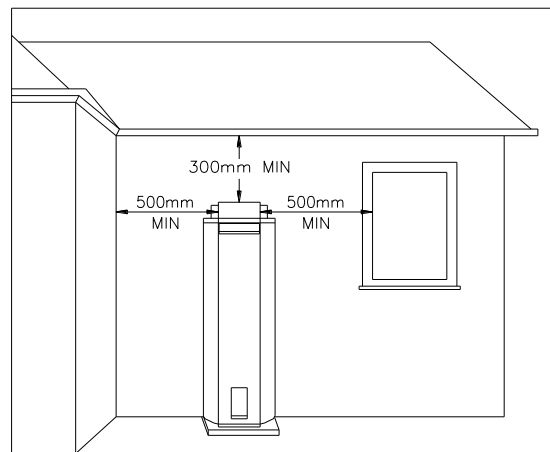


The solar storage tank is to be installed at ground level on a concrete or brick plinth or other fireproof base as approved by the local authority. The water heater must also stand vertically upright with the back of the water heater **against or within 25 mm of an external wall** or alternatively against a fireproof screen extending at least 500 mm above, below and either side the flue terminal. Failure to observe this precaution can cause problems in high wind areas. A secondary flue is not required.

The water heater must be located to ensure that the location of the flue terminal complies with the requirements of AS 5601 or AS/NZS 5601.1, as applicable under local regulations. As a guide the following requirements are extracted from the Gas Installations Standard. The distances are measured along the wall behind the water heater.

- At least 300 mm between the top of the flue terminal and the eaves.
- At least 500 mm between the flue terminal and the edge of any opening into the building, such as an openable door or window, measured horizontally* and vertically.
- At least 500 mm between the flue terminal and a return wall or external corner, measured horizontally*.
- At least 500 mm clear of any combustibles.

Note: * If these horizontal distances cannot be achieved, AS/NZS 5601.1 states an equivalent horizontal distance measured diagonally from the nearest discharge point of the flue terminal to the opening may be deemed to comply. Check with the local regulator.



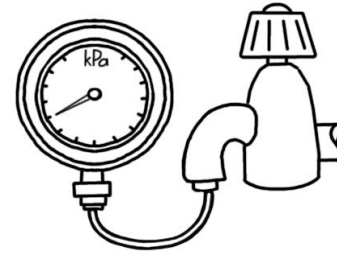
SAFE TRAY

Where damage to property can occur in the event of the water heater leaking, the water heater must be installed in a safe tray. Construction, installation and draining of a safe tray must comply with AS/NZS 3500.4 and all local codes and regulatory authority requirements. AS/NZS 3500.4 also has particular requirements when a safe tray must be installed.

MAINS WATER SUPPLY

Where the mains water supply pressure exceeds that shown in the table below, an approved pressure limiting valve is required and should be fitted as shown in the installation diagram (refer to diagram on page 45).

Model	260
Relief valve setting	1000 kPa
Expansion control valve setting *	850 kPa
Max. mains supply pressure	
With expansion control valve	680 kPa
Without expansion control valve	800 kPa
Min. mains supply pressure	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 and a minimum water supply pressure of 200 kPa at the water heater cannot be achieved, then a pressure pump system must be installed to allow the solar circuit system to operate. Care must be taken to avoid air locks. The cold water line from the supply tank should be adequately sized and fitted with a full flow gate valve or ball valve.

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.

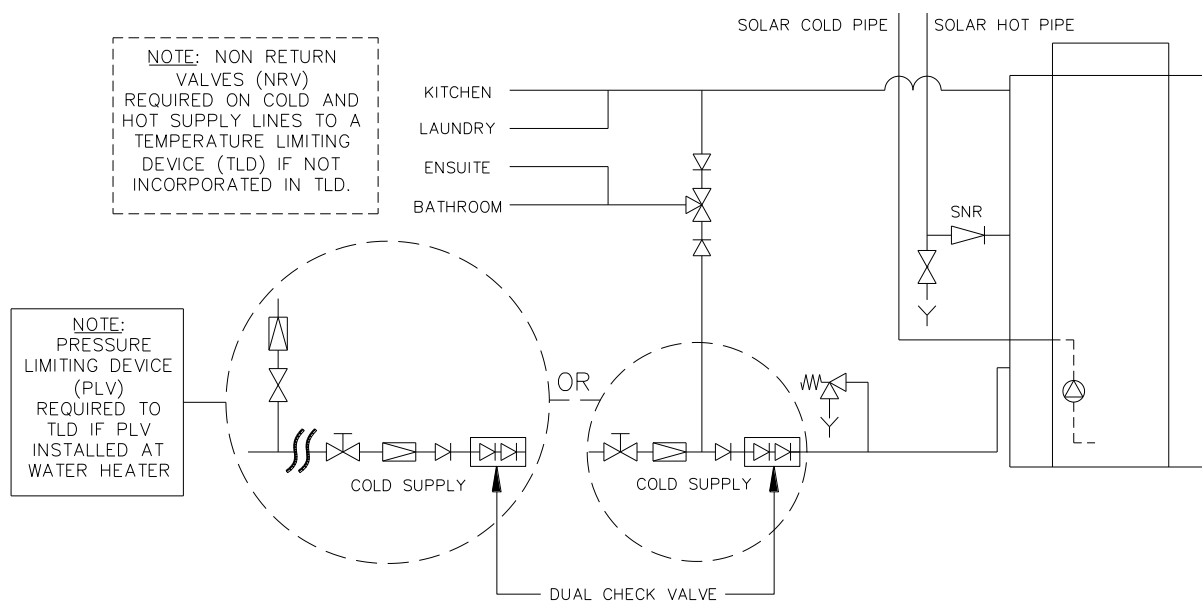
The temperature limiting device used with this solar water heater should have a specified ‘minimum temperature differential’ between the hot water inlet and the tempered water outlet of no greater than 10°C. Refer to the specifications of the temperature limiting device.

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. Due to the higher water temperatures generated under certain conditions in the solar collectors of this solar water heater, an additional effective back-flow prevention device also should be used as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.

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. Due to the higher water temperatures generated under certain conditions in the solar collectors of this solar water heater, an effective back-flow prevention device should be used as the second non return valve as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.

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

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 34](#).

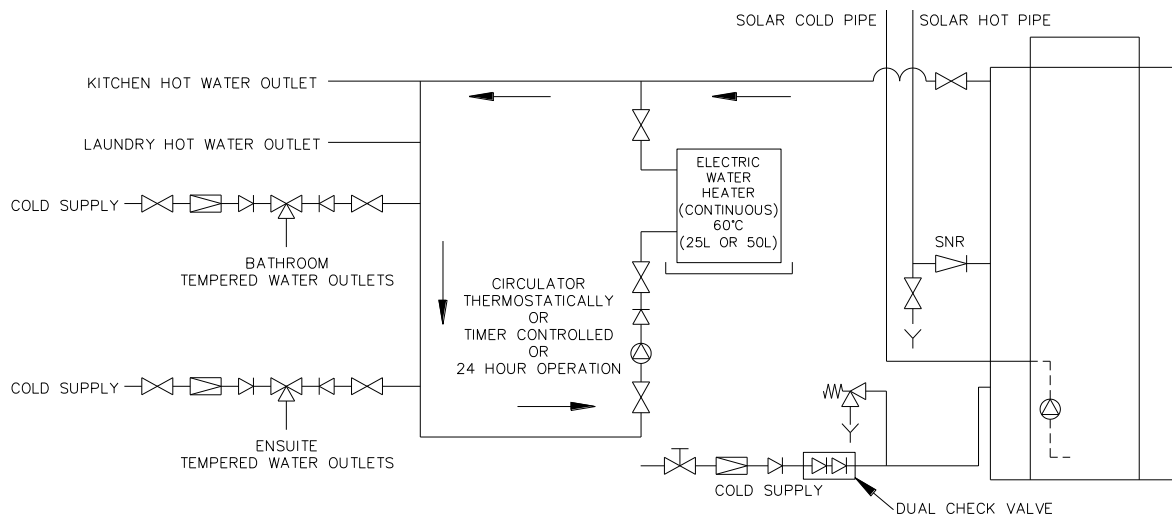
Temperature Limiting Device

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

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 full length of the solar hot and solar cold pipes between the solar storage tank and the solar collectors **MUST BE** insulated. Refer to “Warning: Plumber Be Aware” on page 42.

ANODE

The vitreous enamel lined cylinder of the water heater is only covered by the Rheem warranty when the total dissolved solids (TDS) content in the water is less than 2500 mg/L and when the correct colour coded anode is used. If an incorrect colour coded anode is used in the water heater, any resultant faults will not be covered by the Rheem warranty. In addition, the use of an incorrect colour coded anode may shorten the life of the water heater cylinder.

The correct colour coded anode for the water supply being used must be selected and fitted to the water heater for the Rheem warranty to apply to the water heater cylinder (refer to “Water Supplies” on page 21 and the Anode Selection chart on page 21). The black anode is typically fitted as standard.

Total Dissolved Solids	Anode colour code
0 – 40 mg/L	Green
40 – 150 mg/L	Green or Black
150 – 400 mg/L	Black
400 – 600 mg/L	Black or Blue
600 – 2500 mg/L	Blue
2500 mg/L +	Blue (no cylinder warranty)

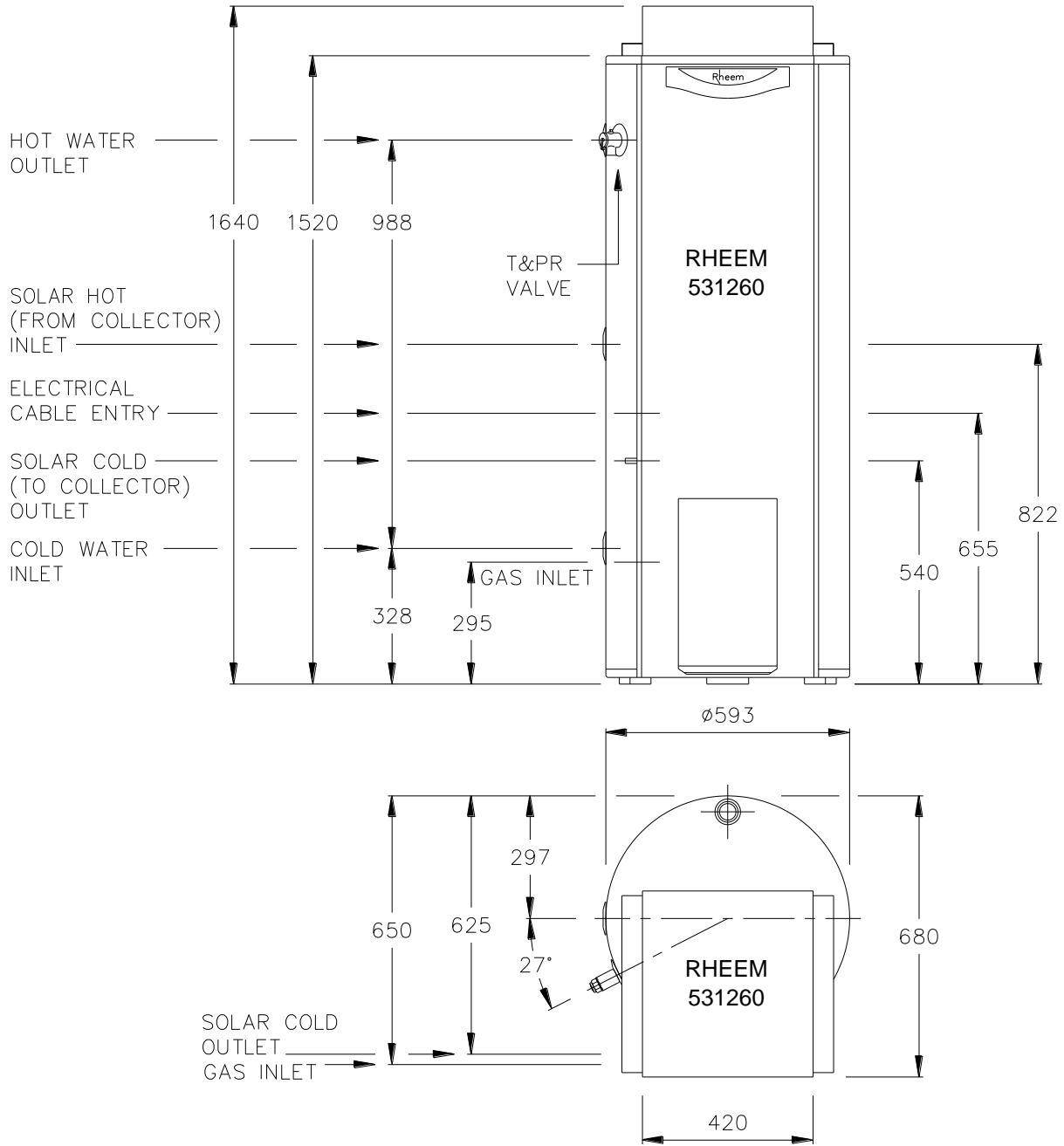
If the water supply has a TDS greater than 150 mg/L and a green anode has not been changed to a black anode, or if the TDS is greater than 600 mg/L and the anode has not been changed to a blue anode, there is the possibility the anode may become overactive and hydrogen gas could accumulate in the top 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 (refer to “Caution” on page 22).

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

Note: If the cylinder is damaged as a result of attaching pipe clips or saddles to the jacket, any resultant faults will not be covered by the Rheem warranty.

DIMENSIONS AND TECHNICAL DATA



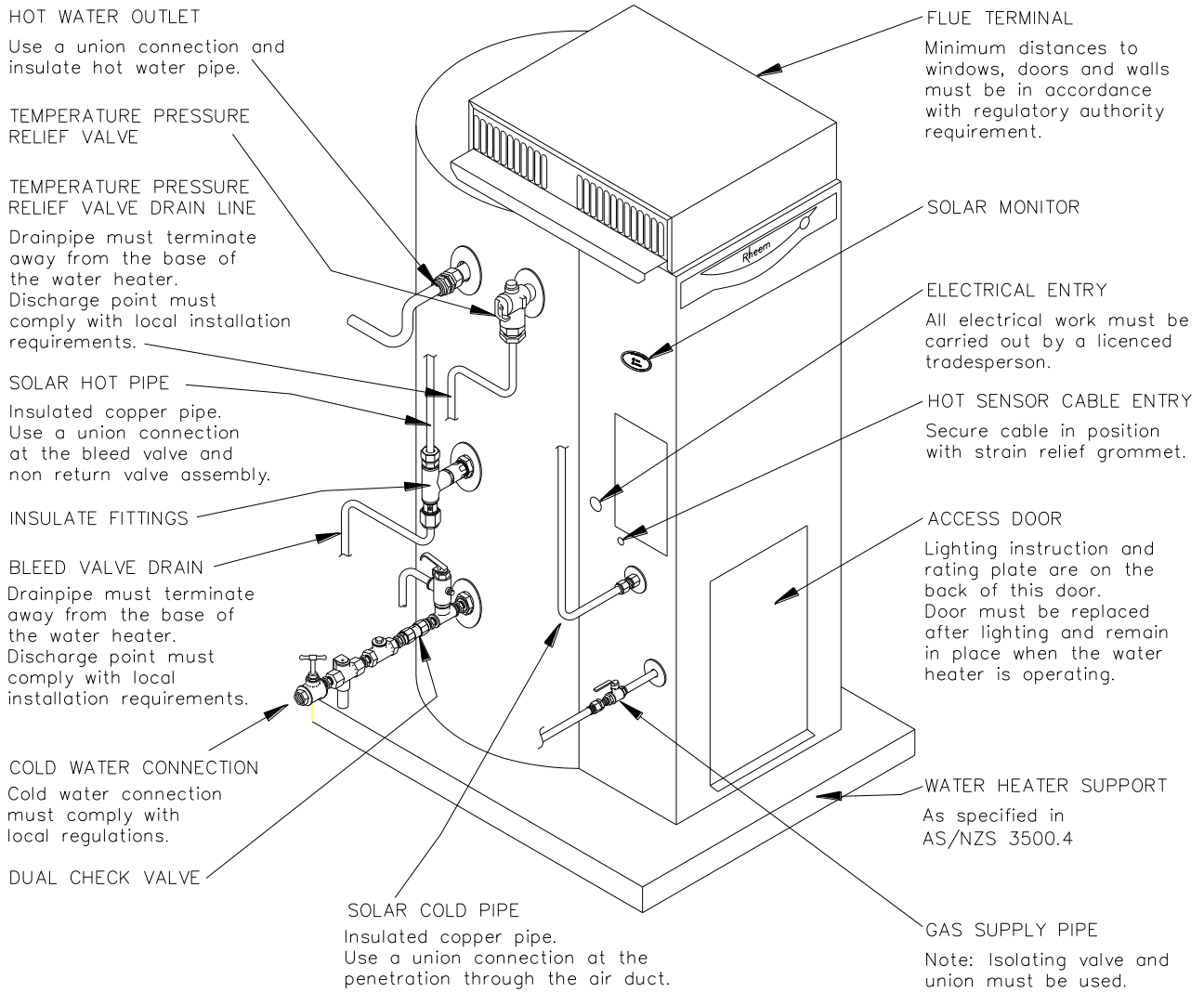
Model	531260	Mass (tank)	Empty	110 kg	Full	370 kg
Capacity & Boost	260 litres	Hourly Recovery (boost) (natural gas @ 50°C rise)	100 litres			

Gas Details	Hourly Gas Consumption (MJ)	Min. Gas Pressure (kPa)	Test Point Gas Pressure (kPa)	Max. Gas Pressure (kPa)
Natural	26	1.13	1.00	3.50
Propane	25	2.75	2.70	3.50
Butane	25	2.75	2.70	3.50

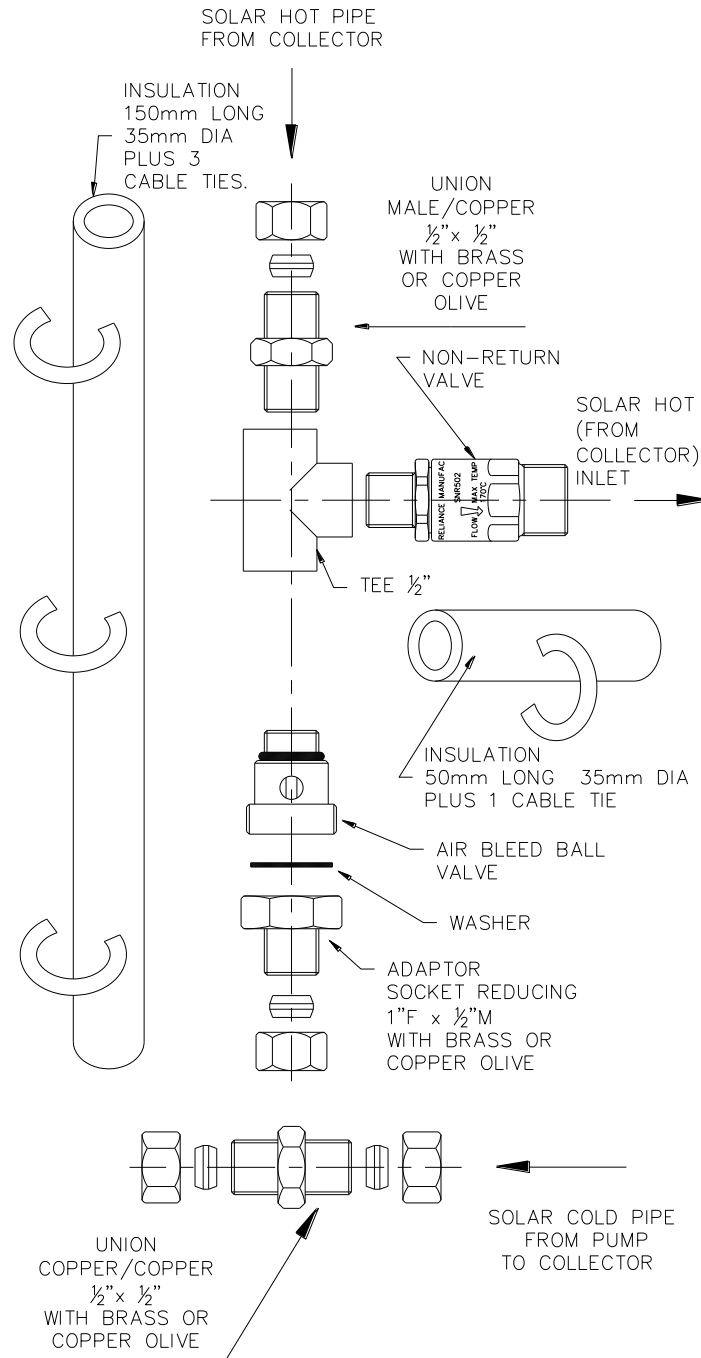
Model numbers: N = Natural, P = Propane, B = Butane. Letter N, P or B is included in the model number, e.g. 531260N0, to denote gas type.

Technical data is subject to change.

TYPICAL INSTALLATION – OUTDOOR LOCATION



ASSEMBLY OF SOLAR HOT AND SOLAR COLD PIPE CONNECTIONS



- Use thread sealing tape or approved thread sealant.
- All olive compression fittings must use brass or copper olives.
- Ensure air bleed valve is open when filling collectors.
- Insulate the air bleed valve and 3 way tee assembly connected to the solar hot pipe with the 150 mm long x 35 mm diam insulation and the solar non return valve at the solar hot (from collector) inlet of the solar storage tank with the 50 mm long x 35 mm diam insulation. Secure the insulation with the cable ties supplied.

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 31 and to “Pipe Lengths” on page 41.

The solar collectors must be installed in a shade free position. The surrounding vicinity should be checked for higher buildings or trees which may cause shade at other times of the year and for small trees which may grow and shade the solar collectors in the future.

Sufficient space should be left around the solar collectors to allow for safe service access.

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.

ROOF STRENGTH

The installer must ensure the structural integrity of the building is not compromised by the solar water heater installation and the roof structure is suitable to carry the full weight of the solar collectors and frame (if one is installed). If in any doubt of the construction or the condition of the roof, the roof should be suitably strengthened. Consult a structural engineer. Each solar collector and its fittings weighs approximately 43 kg when full of water.

ORIENTATION OF SOLAR COLLECTORS

To help maximise system performance, solar collectors should be installed with an optimum orientation facing true north (in the southern hemisphere) or true south (in the northern hemisphere). Always check for true north or true south using a compass or other suitable device.

The solar performance of a system reduces as the orientation of the collectors moves away from the optimum orientation, resulting in the need for increased boosting to supply the same hot water load. Solar collectors facing up to 45° from the optimum orientation will receive about 4% to 5% less total solar radiation.

However, the optimum orientation of solar collectors is not always practical or achievable. Solar collectors may be installed up to 90° from the optimum orientation. Where the orientation is greater than 60° from the optimum, an additional solar collector may be installed to make up for the reduction in solar performance. This option should be discussed with the system owner. If this option is neither possible nor acceptable to the system owner, then the system owner needs to be made aware of, understand and accept that increased boosting may be required to meet their hot water requirements.

Refer to “Solar Collectors” on page 29 for additional information on the selection of type of solar collectors for this system.

INCLINATION OF SOLAR COLLECTORS

To help maximise system performance, solar collectors should be installed with an optimum inclination. This is equal to 90% to 100% of the local latitude angle when collectors are oriented within 60° of true north or true south, and between 10° and 20° when the collectors are oriented between 60° and 90° from the optimum orientation.

Generally, improved summer performance is obtained from an angle of inclination less than the optimum angle and improved winter performance is obtained by an angle of inclination greater than the optimum angle. If the angle of inclination varies by 20° from the optimum angle, the solar collectors will receive about 10% less total annual solar radiation. The [latitude of some Australian cities](#) are listed on page 40.

However, the optimum inclination of solar collectors is not always practical or achievable. Solar collectors may be installed at the roof angle for simplicity of installation and appearance, but must never be flat for a solar Loline direct water heater installation. Although the solar collectors can be installed with an inclination of less than 10°, this is not advised.

The risks include:

- the collector glass not 'self cleaning', leading to dirty collector glass reducing solar performance,
- condensation on the underside of the glass taking longer to clear,
- condensation droplets falling onto the absorber plate potentially causing discolouration.

The collector kit is suitable for installations with an inclination of up to 30°. Where the solar collectors are installed at inclinations greater than 30°, a With Pitch frame is necessary. Refer to your local Solar Distributor for details.

A Variable Pitch frame can be installed to increase the angle of inclination of the collectors used in a solar Loline water heater installation. This type of frame should be used if the roof pitch either varies by more than 20° from the optimum angle.

The use of a Variable Pitch frame should be discussed with the system owner. If this option is neither possible nor acceptable to the system owner, then the system owner needs to be made aware of, understand and accept that increased boosting may be required to meet their hot water requirements.

CYCLONIC OR HIGH WIND AREAS

For an installation of solar collectors on a pitched roof in a cyclonic or high wind area, a suitable With Pitch frame is required. Refer to your local Solar Distributor for details.

The installation of these solar collectors on a suitable frame, subject to the frame’s design criteria not being exceeded:

- is suitable for installation in geographic locations up to and within Wind Region D (With Pitch frame) or up to and within Wind Region C (Variable Pitch frame), as defined in the Building Code of Australia, Australian / New Zealand Standard AS/NZS 1170.2:2002 and the Australian Standard AS 4055-2006, or equivalent location, and
- provides an acceptable method of installation where it is necessary to satisfy the requirements of the Building Code of Australia and AS/NZS 3500.4 Clause 6.5.3.4 for high wind areas, or equivalent requirements.

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

PIPE LENGTHS

The solar hot and solar cold pipes between the solar storage tank and the solar collectors shall:

- be of bendable grade or hard drawn copper tube.
Annealed or soft copper shall not to be used.
- have a continuous fall from the solar collectors to the solar storage tank. Horizontal runs of pipe work are acceptable and may be installed.
- not exceed the maximum recommended combined lengths as specified in the table.

Maximum recommended total combined pipe length (solar cold + solar hot) and number of 90° bends				
Pipe Size	1 or 2 Collectors		3 Collectors	
	Pipe Length	90° Bends	Pipe Length	90° Bends
DN15	40 metres	20	30 metres	20
DN20	NR	NR	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.

Notes:

- It is important to connect the solar cold and solar hot pipes to the correct connections at the solar collector and at the solar storage tank.
- The solar cold pipe connects to the bottom of the solar collector and may connect to either the left or right hand side. The solar hot pipe must connect to the top of the solar collector diagonally opposite to the solar cold pipe connection.
- The hot sensor connection is at the solar hot outlet where the solar hot pipe connects to the solar collector.
- Refer to “Warning: Plumber – Be Aware” on page 42.

It is essential for these requirements to be followed for the system to operate correctly and efficiently. Solar pipe work which is oversized, or is too long, or does not have a continuous fall can result in a reduction in performance or the system not operating effectively.



WARNING: Plumber – Be Aware

- The solar hot and solar cold pipes between the solar storage tank and the solar collectors **MUST BE** of copper. All compression fittings must use brass or copper olives.
- The full length of the solar hot and solar cold pipes **MUST BE** insulated.

The insulation must:

- be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions

The specification of the chosen insulation material should be checked with the insulation manufacturer prior to installation as different materials may vary in temperature tolerance.

- be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4
- be weatherproof and UV resistant if exposed
- extend through any penetrations in the eaves, ceiling and roof
- cover valves and fittings in the solar hot and solar cold pipe work
- be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

Note: Failure to observe these requirements increases the risk of freeze damage.

Uninsulated pipe work, including concealed in cavities and roof spaces or where it may be in contact with a metal roof, may lead to freeze damage. There is **NO WARRANTY** for freeze damage if the solar hot and solar cold pipes are not insulated in accordance with the installation instructions.

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 as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

- The insulated copper pipe work:
 - should be fixed at suitable locations to prevent or reduce the possibility of noise from water hammer and vibration from occurring
 - is not to be placed or installed in contact with plastic pipe work.

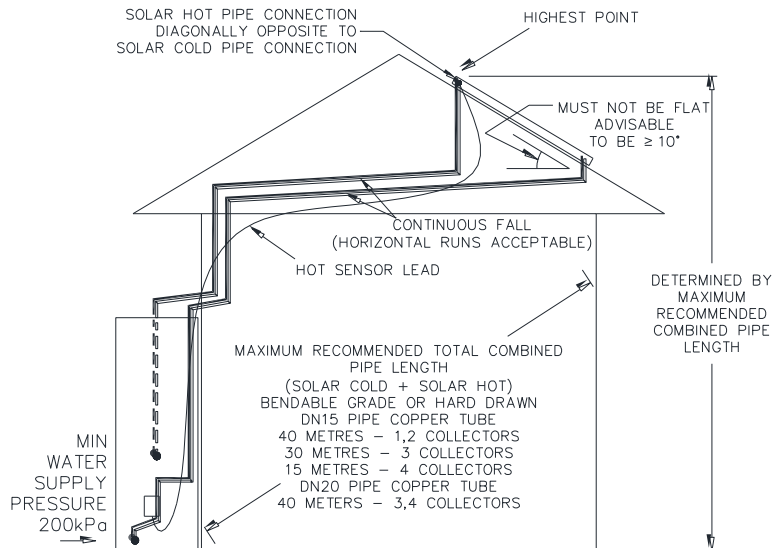
Likewise, plastic pipe work is not to be placed or installed in contact with the insulated copper pipe work after the solar circuit is installed.

- 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.
- The solar hot outlet and hot sensor connection is to be the highest point of the system. 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. There **must be a continuous fall** in the pipe work between the solar collectors and solar storage tank. Horizontal runs of pipe work are acceptable and may be installed.
- 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. Due to the higher water temperatures generated under certain conditions in the solar collectors of this solar water heater, an additional effective back-flow prevention device also should be used as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve model N7150, as being suitable for this application.
- The pressure applied to the solar circuit and solar collectors during a pressure test of a direct open circuit system **MUST NOT** exceed 1000 kPa, otherwise damage may result to the solar collectors. Refer to “**Pressure Testing**” on page 43.

Maximum height to collectors

The maximum height of a solar Loline 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.



NOTES:

- PIPE WORK MUST HAVE A CONTINUOUS FALL BETWEEN SOLAR COLLECTORS AND SOLAR STORAGE TANK. HORIZONTAL PIPE RUNS ARE ACCEPTABLE.
- PIPE WORK MUST BE OF BENDABLE GRADE OR HARD DRAWN COPPER TUBE. ANNEALED OR SOFT COPPER SHALL NOT BE USED.
- MINIMUM WATER SUPPLY PRESSURE TO INSTALLATION MUST BE 200kPa.
- INSTALL HOT SENSOR LEAD WITH INSULATED SOLAR PIPES DURING CONSTRUCTION FOR NEW HOMES.
- PRESSURE TESTING OF SOLAR COLLECTORS AND SOLAR CIRCUIT MUST NOT EXCEED 1000KPa.

Direct Open Circuit Solar – Pipe Work Installation Requirements

Pressure Testing

The solar water heater, including the collector circuit and solar collectors, is to be isolated during the testing and commissioning of the heated water reticulation system in a building, in accordance with Clause 11.1 and 11.3 (a) of AS/NZS 3500.4.

It may be necessary to pressure test the collector circuit to comply with codes and regulatory authority requirements or on other occasions where the solar collectors and solar cold and solar hot pipe work are installed prior to the solar storage tank, such as on a building site.

Direct Open Collector Circuit

⚠ Warning: The pressure applied to the solar circuit and solar collectors during a pressure test of a direct open circuit system **MUST NOT** exceed 1000 kPa where NPT200 solar collectors are installed, otherwise damage may result to the solar collectors.

Direct Open System

If the solar collectors, solar pipe work and solar storage tank are installed and commissioned together, then the flooding of the collector circuit with water under mains pressure and checking for leaks during the commissioning procedure can be substituted for the pressure testing of the collector circuit.

CONNECTIONS – PLUMBING

All plumbing work must be carried out by a qualified person and in accordance with the requirements of the Standard AS/NZS 3500.4, and all local codes and regulatory authority requirements. In New Zealand, the installation must conform with Clause G12 of the New Zealand Building Code.

All gas work must be carried out by a qualified person and in compliance with the Standard AS 5601 or AS/NZS 5601.1, as applicable under local regulations, and all local codes and regulatory authority requirements. In New Zealand, the installation must also conform with NZS 5261, as applicable under local regulations.

⚠ Warning: Certain types of plastic pipe, such as Poly-butylene pipe, are not suitable to be used as a hot water pipe between:

- this water heater and a temperature limiting device, and
- this water heater and a hot water outlet if a temperature limiting device is not installed.

This water heater can produce water at a temperature and pressure which can exceed the performance limits of these types of pipe. This may result in pipe failure leading to severe water damage to the property. If one of these types of plastic pipe is used as a hot water pipe in the property, then a temperature limiting device must be installed between the water heater and this pipe work.

Note: The solar storage tank of 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 connect the return line after the solar storage tank and prior to the in-series water heater supplied from the solar water heater. Refer to [“Circulated Hot Water Flow and Return System”](#) on page 34.

CONNECTION SIZES

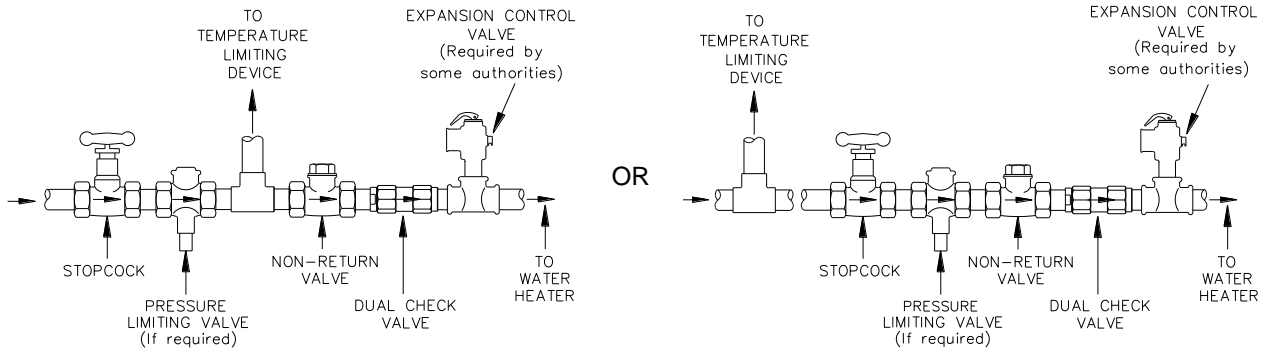
- Hot water connection: RP $\frac{3}{4}$ /20
- Cold water connection: DN20 compression fitting (cold water inlet of tank: RP $\frac{3}{4}$ /20).
- Solar hot (from collector) connection: DN15 compression fitting. (solar hot water inlet of tank: RP $\frac{3}{4}$ /20).
- Solar cold (to collector) connection: DN15 compression fitting.
- Relief valve connection: RP $\frac{1}{2}$ /15.
- Gas inlet: RP $\frac{1}{2}$ /15.
- Bleed valve connection: G1.0B.

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.

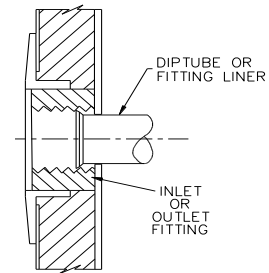
An isolation valve and non return valve must be used on the cold water line to the water heater. A non-return valve must be fitted on the cold water supply to this water heater in compliance with Clause 5.9.1 of AS/NZS 3500.4. Due to the higher temperatures generated by solar water heaters, an additional effective back-flow prevention device also should be fitted as an extra safeguard. Valve manufacturer RMC recommends Dual Check Valve No N7150, as being suitable for this application.

An acceptable arrangement is shown in the diagram. Refer also to [“Hot Water Delivery”](#) on page 33 and to [“Mains Water Supply”](#) on page 32. The plumbing arrangements for the solar hot and solar cold pipes are shown on page 38.



A disconnection union must always be provided at the cold water inlet, solar cold water outlet, solar hot water inlet and hot water outlet on the water heater to allow for disconnection of the water heater.

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.



The solar cold pipe connects to the DN15 pipe protruding from the side of the air duct on the solar storage tank. Use the compression fitting supplied. The solar hot pipe connects to the raised inlet located above the cold water inlet and below the hot water outlet (refer to **“Assembly of Solar Hot and Solar Cold Pipe Connections”** diagram on page 38).

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.

TEMPERATURE PRESSURE RELIEF VALVE

The temperature pressure relief valve is shipped behind the front access cover of the solar storage tank. 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 37) leaving the valve outlet pointing downwards. Do not use a wrench on the valve body - use the spanner flats provided. A copper drain line must be fitted to the temperature pressure relief valve (refer to **“Relief Valve Drain”** on page 46).

The valve must be insulated with closed cell polymer insulation or similar (minimum thickness 9 mm) and the insulation installed so as not to impede the operation of the valve. 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 required if the saturation index is greater than +0.4 (refer to **“Water Supplies”** on page 21).

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 45). A copper drain line must be fitted to the expansion control valve (refer to **“Relief Valve Drain”** on page 46).

The valve must be insulated with closed cell polymer insulation or similar (minimum thickness 9 mm) and the insulation installed so as not to impede the operation of the valve. The insulation must be weatherproof and UV resistant if exposed.

RELIEF VALVE DRAIN

DN15 copper drain lines must be fitted to the temperature pressure relief valve and expansion control valve (if one is installed). Connect the drain lines to the valves using disconnection unions. The drain line from the valve to the point of discharge should be as short as possible, have a continuous fall all the way from the water heater to the discharge outlet and have no tap, valves or other restrictions in the pipe work.

A drain line from a relief valve must comply with the requirements of AS/NZS 3500.4.

A drain line must be no longer than 9 metres with no more than three bends greater than 45° before discharging at an outlet or air break. The maximum length of 9 metres for a drain line is reduced by 1 metre for each additional bend required of greater than 45°, up to a maximum of three additional bends. Where the distance to the point of final discharge exceeds this length, the drain line can discharge into a tundish.

Subject to local regulatory authority approval, the drain lines from the temperature pressure relief valve and expansion control valve from an individual water heater may be interconnected.

The outlet of a drain line must be in such a position that flow out of the pipe can be easily seen, but arranged so discharge will not cause injury, damage or nuisance. The termination point of a drain line must comply with the requirements of AS/NZS 3500.4. Drain lines must not discharge into a safe tray.

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

If a drain line discharges into a tundish, the drain line from the tundish must be not less than DN20. The drain line from a tundish must meet the same requirements as for a drain line from a relief valve.

⚠ 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.

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 control unit. 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 and even very high temperature steam can be generated 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.

⚠ Warning: The solar collectors can generate very high temperature water and even very high temperature steam can be generated under certain conditions when the bleed valve is opened. It is strongly recommended pipe work downstream of the bleed valve be capable of carrying water exceeding 93°C. Failure to observe this precaution may result in damage to pipe work and property.

GAS INLET

The gas connection is made through the left hand side near the access panel to the gas control. The pipe work must be cleared of foreign matter before connection and purged before attempting to light the water heater. An isolation valve and disconnection union must be installed to allow servicing and removal of the solar storage tank.

Note: Refer to the Gas Installations Standard AS 5601 or AS/NZS 5601.1 for the correct method of sizing the gas supply pipe to the water heater. The pipe size selection must take into account the gas input of this water heater ([refer to table](#) on page 36) as well as all of the other gas appliances in the premises.

⚠ Warning: Always isolate the water heater before pressure testing the gas supply system. Disconnect the water heater after the isolating cock to prevent the risk of serious damage to the gas control. The Rheem warranty does not cover damage of any nature resulting from failure to observe this precaution. Refer to rating label for gas types and pressures.

Caution: Care is necessary when tightening fittings into the gas valve. The gas valve casting may crack if the fittings are over tightened. Cracked valve castings are not covered under the Rheem warranty. Damaged valves must be replaced.

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 all local codes and regulatory authority requirements.

SOLAR STORAGE TANK

The water heater must be directly connected to a 240 V 50 Hz mains power supply. The continuous power supply to the solar control unit and the timer must be on the same circuit. A weatherproof double pole isolating switch must be installed adjacent to and accessible from the solar storage tank, in accordance with AS 5601 or AS/NZS 5601.1 as applicable under local regulations.

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, ensuring there are no excess wire loops inside of the cover.

The terminal block on the solar storage tank has two active connections. One active wire (marked “A”) is required for the operation of the solar control unit and one active wire (marked “TIMER A”) is required for the operation of the gas boosting system. The gas boosting system is switched by the timer.

Note:

- It is essential the active to the solar control unit is not switched by the timer.
- The timer is not weatherproof and must be installed indoors. It is recommended the timer be located in the kitchen or laundry or other location easily seen by the householder.

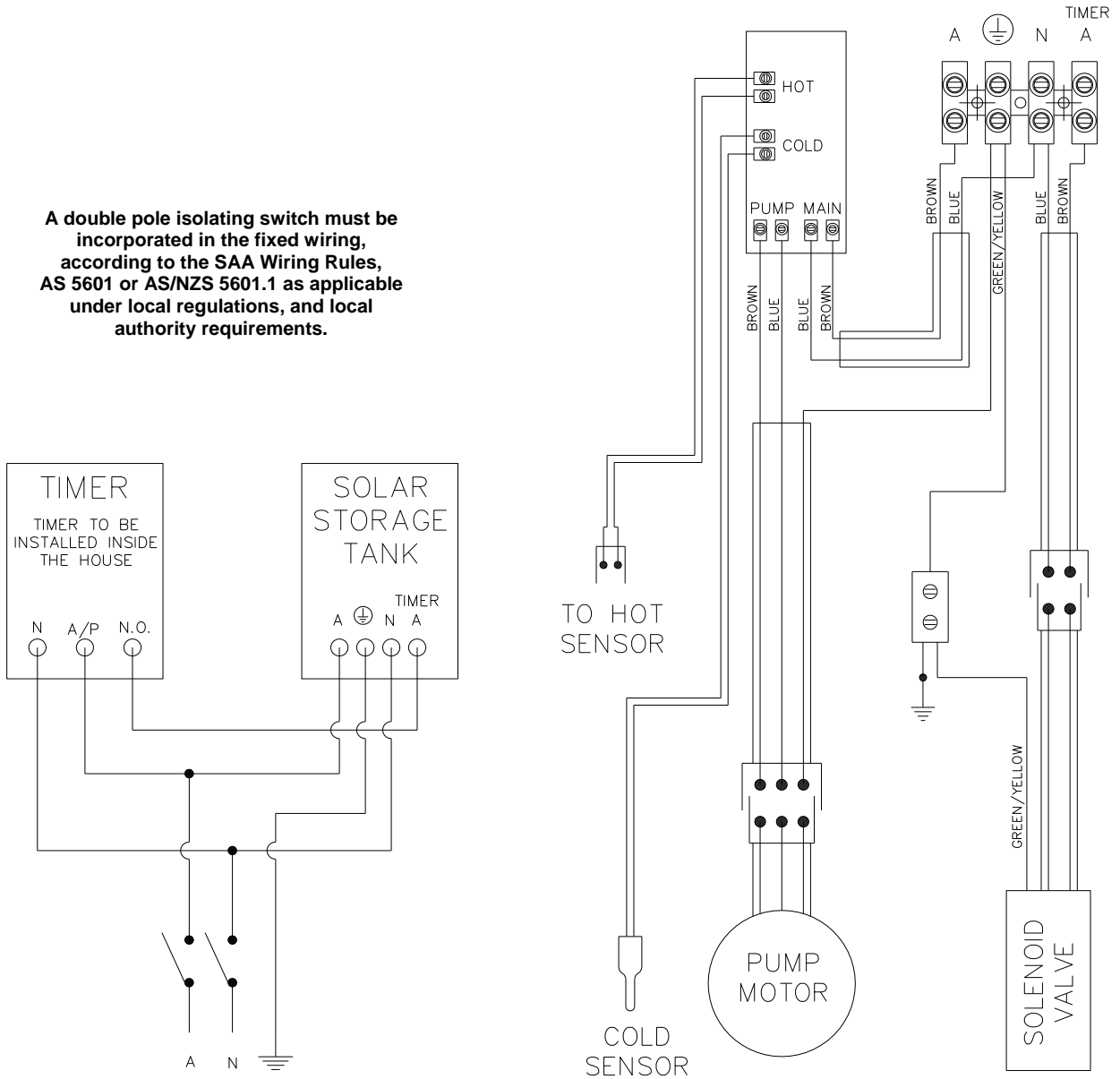
Connect the hot sensor lead from the solar collectors, through the hole in the side of the air duct, to the hot sensor cable connector adjacent to the terminal block. Fit the strain relief grommet over the hot sensor lead and secure at the hole in the air duct.

The power consumption of the water heater is:

Component	Power Consumption	Comments
Solar controls	14 watts	Constant load 4 Watts differential controller 6 Watts solenoid valve 4 Watts timer
Solar circulator	36 Watts 30 Watts	Maximum load at solar heating cycle start up Average load during the solar heating cycle

The water heater will only operate on a sine wave at 50 Hz. Devices generating a square wave cannot be used to supply power to the water heater.

A double pole isolating switch must be incorporated in the fixed wiring, according to the SAA Wiring Rules, AS 5601 or AS/NZS 5601.1 as applicable under local regulations, and local authority requirements.



Circuit Diagram – Water Heater

COMMISSIONING

TO FILL AND TURN ON THE WATER HEATER

The power supply to the water heater must not be switched on and the gas pilot or burner must not be lit 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 51.

- Switch on the electrical supply at the isolating switch to the water heater.

The isolating switch must be switched on for the solar control unit to operate and solar gain to be achieved.

Refer to "[Solar Controller Operation at Start-Up](#)" on page 52.

Note: The solar control unit automatically controls the flow rate through the collector circuit. This is achieved via the hot and cold sensors and differential controller programming providing control over the operation of the circulator. There is no provision for nor is adjustment to the solar control unit required.

- Program the timer (refer to "[Timer Operation](#)" on page 17).

It is recommended the timer be set to enable a boosting period of three hours, with the end of period to coincide with the commencement of the evening hot water usage. A suggested boosting period is between 3:30 PM (15:30 Hours) and 6:30 PM (18:30 Hours), however the boosting period should be set to suit the hot water usage pattern of the household. Check with the householder.

Note: The timer uses a 24 hour clock.

This three hour boosting period is sufficient to allow the gas burner to heat up the entire contents of the solar storage tank through a 50°C temperature rise. This may be necessary during periods of very low solar energy gain through the solar collectors, such as during constant rain or extremely cloudy weather, particularly in winter when the incoming cold water temperature is lower. This period will also provide a sufficient heat up time for the gas booster to operate, if required, to satisfy the requirements of AS 3498.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the gas booster is energised for a sufficient period each day and the gas booster thermostat setting is 60°C or higher.

- If necessary, press the timer "MAN" button to activate the "OVERRIDE" function of the timer.
This will allow the gas control system to operate.
- Open the gas isolation valve fully.
- Check the gas pipe work for leaks.
- Light the water heater (refer to "[Lighting the Water Heater](#)" on page 54).
- When you are satisfied the main burner is operating correctly, press the timer "MAN" button to deactivate the timer.
The main burner will extinguish.
- Remove the packaging / covers from the solar collectors.

Explain to the householder or a responsible officer the functions and operation of the solar water heater and the timer.

⚠ Warning: Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or a responsible officer. **DO NOT** leave this guide inside of the cover of the water heater, as it may interfere with the safe operation of the water heater or ignite when the water heater is turned on.

GAS INLET PRESSURE

IMPORTANT – CHECK the gas supply pressure at the inlet to the water heater with the water heater and all other gas burning appliances in the premises operating (burners alight). The minimum gas supply pressure is:

Natural Gas	1.13 kPa	Propane	2.75 kPa	Butane	2.75 kPa
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If this minimum cannot be achieved, it may indicate the meter or the gas line to the water heater is undersized. It is important to ensure that an adequate gas supply pressure is available to the water heater when other gas burning appliances, on the same gas supply, are operating.

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:

- Shut down the gas control (refer to “Close Down Procedure” on page 56).
- Close the gas isolation valve at the inlet to the gas control.
- Switch off the electrical supply at the isolating switch to the water heater (refer to note below).
- Close the cold water isolation valve at the inlet to the water heater.

Notes:

- The freeze protection system will be rendered inoperable if electrical power is not available at the solar control unit. Damage caused by freezing due to no power at the solar control unit is not covered by the Rheem warranty.
- If there is a risk of freezing, then it is necessary to drain the solar collectors and solar collectors and solar flow and return pipe work (refer to “Draining the Solar Collectors” on page 57).
- Refer to “Terms of the Rheem Warranty” on page 59.

BLEEDING THE SOLAR COLLECTORS

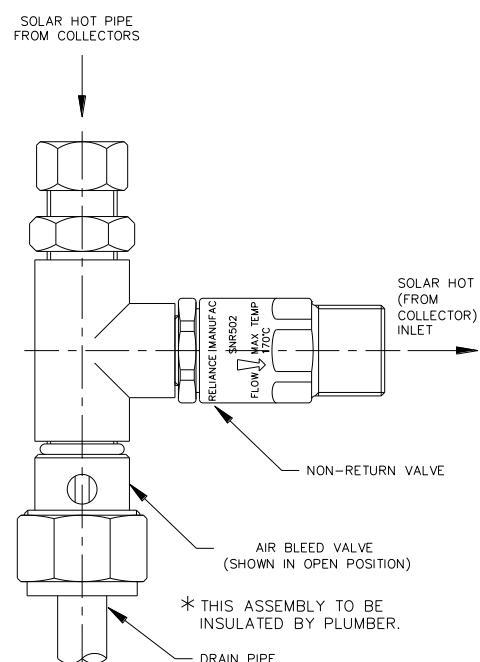
Upon completion of the installation, it is necessary to purge the air from the collector circuit.

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 (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, 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: Stand well aside of the air bleed valve drain pipe discharge point and exercise care to avoid any splashing of water, as water or in some circumstances steam discharged from the solar collectors may be of a very high temperature.

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



SOLAR CONTROLLER OPERATION AT START-UP

When the electrical supply is switched on to the solar control unit at start up:

- If there is no solar gain, the circulator will not activate and the green LED will emit a slow pulse.

The slow pulse indicates the circulator is not activated and the power to the solar control unit has been on for less than 48 hours.

- If there is solar gain, the circulator activates and the green LED will emit a series of three (3) flashes.

The three (3) flashes indicate the circulator is operating and power to the solar control unit has been on for less than 48 hours.

- The circulator will operate at full speed for approximately fifteen (15) seconds.

After fifteen (15) seconds, the solar controller will commence to pulse the circulator to reduce the flow rate through the collector circuit. This will increase the temperature rise across the solar collectors and assist in maximising the system efficiency for the available solar energy. It is normal operation for the circulator to experience a pulsing effect.

- The red LED may emit a rapid pulse for a short period (whilst the green LED is emitting a series of three (3) flashes), particularly if the solar collectors were left uncovered during the final stages of the installation and commissioning procedure.

This indicates a temperature difference between the hot sensor and cold sensor of greater than 45°C and does not represent a fault code. This is the result of a build-up of heat and increase in water temperature in the solar collectors prior to the switching on of the electrical supply to the solar control unit.

The rapid pulsing of the red LED will cease as the water circulates and the heat is dissipated from the solar collectors. This should be within four (4) to five (5) minutes of start up, but may take up to ten (10) minutes.

Whilst the red LED is emitting a rapid pulse, the circulator will operate at full speed. After the red LED has extinguished, the solar controller will commence to pulse the circulator to reduce the flow rate through the collector circuit.

If the red LED does continue to emit a rapid pulse for longer than ten (10) minutes, this may indicate water is not circulating through the solar collectors and solar circuit:

- switch off the electrical supply at the power outlet to the solar control unit
- repeat the procedure to bleed the solar collectors
- switch on the electrical supply at the power outlet to the solar control unit.

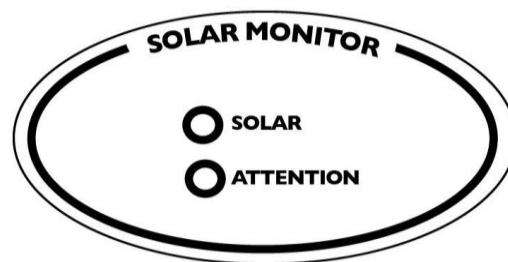
DIAGNOSTIC FEATURES OF THE SOLAR CONTROLLER

A solar monitor is located on the side of the air duct and houses a green and a red LED.

The green LED, marked "Solar", indicates the current operational mode of the solar water heater and the red LED, marked "Attention", may indicate a potential fault mode.

The green LED will emit either a constant glow, a constant pulsing or a series of flashes, with a 2 second interval between each series.

The red LED will emit either a constant glow, a constant pulsing or a series of flashes with a 2 second interval between each series. A constant glow or pulsing does not necessarily mean there is a fault with the system. A series of flashes indicates there may be a particular fault condition with the system.



The modes are:

Flashes	Operational Modes	Flashes	Indicator or Fault Modes
solid green (remains on)	Standby mode	solid red (remains on)	Hot sensor temperature greater than 130°C
green slow pulse	Standby mode (power on for less than 48 hours)	red rapid pulse	Temperature rise across collector greater than 45°C (circulator at full speed)
green rapid pulse	Circulating water through collectors	3 x red	Hot sensor in collector – short circuit
3 x green	Circulating water through collectors (power on for less than 48 hours)	4 x red	Hot sensor in collector – open circuit
no green (remains off)	Power outage or call for service	5 x red	Cold sensor –short circuit
		6 x red	Cold sensor – open circuit


If the power supply to the solar control unit is on and the green LED is off or the red LED is flashing, this indicates there may be a fault with the water heater. The red LED may emit from three to six flashes in each series of flashes. A constant glow or pulsing of the red LED does not necessarily mean there is a fault with the system.

Note: During periods of high solar radiation and if the circulator activates after having been off, such as during start up if the solar collectors have not been covered, it is possible the red LED may emit a rapid pulse for a period of up to ten (10) minutes. This does not indicate a fault. Refer to [“Solar Controller Operation at Start-Up”](#) on page 52 for the possible green and red LED pulsing sequence during start up procedure.

If the red LED continues to emit a rapid pulse for longer than ten (10) minutes, or emits a series of flashes, then count the number of flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

LIGHTING THE WATER HEATER

FOR YOUR SAFETY READ BEFORE LIGHTING

 **Warning:** This gas water heater is designed to operate reliably and safely as long as the operating instructions are followed **exactly**. You must comply with these lighting instructions at every stage.

Make sure the water heater is filled with water and the water supply is on, otherwise serious damage to the vitreous enamel cylinder lining and plastic components may occur.

The installer must check all gas connections for leaks, gas supply pressure and test point pressure (refer rating label). Remove the access cover at the front of the water heater to access the gas thermostat.

Note: The main burner will only light when the word “ON” appears on the timer.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the gas booster is energised for a sufficient period each day and the gas booster thermostat setting is 60°C or higher.

SAFETY INFORMATION

- A. This water heater is equipped with an igniter button which lights the pilot. When lighting the pilot follow these instructions exactly.
- B. **Before lighting** ensure there is no smell of gas around or in the vicinity of the water heater and the burner opening. Be sure to smell next to ground level as some gases can settle there.
- C. What to do if you smell gas.

Do not try to light the water heater.


If the gas smell is throughout the area, turn the gas control knob clockwise to the “●” (off) position and then turn off the isolation valve on the gas line to the water heater. Leave the area and call Rheem Service or their nearest Accredited Service Agent or a qualified service technician.

- D. Use only your hand to turn the gas control knob, never use tools. If the control knob will not turn by hand, don't try to repair it, contact Rheem Service or their nearest Accredited Service Agent or a qualified service technician. Force or attempted repair may cause a fire or explosion.
- E. Do not attempt to operate this water heater if it has been damaged. Contact Rheem Service or their nearest Accredited Service Agent or a qualified service technician.

LIGHTING INSTRUCTIONS

Using the gas control light the water heater as follows:

1. **Stop**, read the **safety information** on page 54.
2. Remove the front access cover.
3. Turn the gas control knob fully clockwise to the “●” (off) position.
4. Wait five (5) minutes so any build up of unburnt gas can escape. If you then smell gas, stop and follow “C” in the safety information. If you do not smell gas, proceed to step 5.
5. Turn the knob to the “★” (pilot) position.
6. Depress the knob fully (until star disappears below housing) and after 30 seconds, whilst keeping the knob depressed, repeatedly press the igniter button (for up to 40 seconds) until the pilot flame ignites.

 **Warning:** Keep your face clear of the combustion chamber opening while pressing the igniter.

Note: It is not possible to depress the knob fully if the gas control has activated its safety shut-off feature. In this case, wait 60 seconds for the gas control to reset.

7. Keep the knob depressed for 20 seconds after the pilot flame lights.
8. Release the knob and check the pilot is still alight. The pilot can be checked by looking through the large opening below the gas control.
9. If the pilot has failed to light or has not remained alight, turn the gas control knob to the “●” (off) position. Wait five (5) minutes for any unburnt gas to escape and then begin again at step 5.

 **Warning:** Failure to wait five (5) minutes may result in a fire or explosion.

10. When the pilot flame remains alight with the gas control knob released, turn the knob anticlockwise to the setting of “6”. This will give a water temperature of about 60°C.

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

11. Refer to **“Temperature Adjustment”** on page 7, if further adjustment is required.
12. Replace securely the front access cover.

The main burner will now automatically ignite during the set timer period when heating is required and extinguish when the water has been heated to the set temperature. If the main burner does not light at the selected setting, the water may already be at the selected temperature.

Note: Never press the igniter button while the top knob is in a numbered position.

TEST THE WATER HEATER AFTER INSTALLATION

- The operation of the water heater must be thoroughly checked by the installer.
- The burner flame must light smoothly and quickly from the pilot flame, and must go out quietly and completely.
- The main burner flame must be stable, although slight lifting at the front edge of the burner is acceptable when the burner is cold.
- The main burner flame should be blue, with a clearly defined inner cone - luminous yellow or "floating" flames are not acceptable, and must be corrected by opening the air shutter (refer to "Air Shutter" on page 56).
- Check the test point pressure and compare with the rating label. The pressure regulator is not adjustable and if the test point pressure is not within 5% of the specified value, contact Rheem Service or their nearest Accredited Service Agent.
- If unable to get the water heater working properly, contact your nearest Rheem Service or their nearest Accredited Service Agent.
- When satisfied everything is working properly instruct the user in the correct method of operation.

AIR SHUTTER

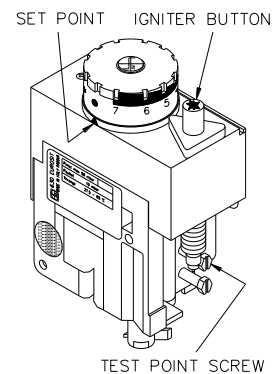
The air shutter is a hinged flap in the burner aeration tube. It may require adjustment on installation.

- For a Propane and Butane model, the air shutter should be fully open.
- The shutter is held in place by a screw on the side of the burner aeration tube.

Note: A Natural gas model does not have an air shutter.

CLOSE DOWN PROCEDURE

1. Turn the gas control knob to the "★" position (pilot). This setting will leave the pilot flame alight however the main burner will not be able to light.
2. Turn the gas control knob to the "●" (off) position. This setting shuts the gas control down completely.



DRAINING THE SOLAR COLLECTORS

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

- Cover the solar collectors with an opaque material.
- Open a hot water tap and allow the water to run for five minutes immediately prior to draining the solar collectors.

This will assist in the transfer of any high temperature water in the solar collectors to the solar storage tank.

- Close the hot water tap.
- Turn off the water heater (refer to [“To Turn Off the Water Heater”](#) on page 51).
- Using a flat bladed screw driver, open the bleed valve fitted adjacent to the solar hot water inlet of the water heater ([refer to diagram on page 51](#)).

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

- Undo the compression fitting at the side of the air duct of the solar storage tank 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 solar storage tank and tighten the compression fitting.
- Close the bleed valve.

DRAINING THE WATER HEATER

To drain the water heater:

- Cover the solar collectors with an opaque material.
- 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 collectors to the solar storage tank.

- Close the hot water tap.
- Turn off the water heater (refer to [“To Turn Off The Water Heater”](#) on page 51).
- 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.

- Attach a hose to the spout of the draincock. Let the other end of the hose go to a drain.
- Open the draincock using the handle.

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

- Operate the relief valve again.

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

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RHEEM SOLAR LOLINE WATER HEATER WARRANTY – AUSTRALIA ONLY –

SOLAR LOLINE WATER HEATER MODELS 531260

1. THE RHEEM WARRANTY – GENERAL

- 1.1 This warranty is given by Rheem Australia Pty Limited ABN 21 098 823 511 of 1 Alan Street, Rydalmere New South Wales.
- 1.2 Rheem offer a trained and qualified national service network who will repair or replace components at the address of the water heater subject to the terms of the Rheem warranty. Rheem Service, in addition can provide preventative maintenance and advice on the operation of your water heater. The Rheem Service contact number is available 7 days a week on 131031 with Service personnel available to take your call from 8am to 8pm daily (hours subject to change).
- 1.3 For details about this warranty, you can contact us on 131031 or by email at warrantyenquiry@rheem.com.au (not for service bookings).
- 1.4 The terms of this warranty are set out in section 2 and apply to water heaters manufactured after 1st October 2012.
- 1.5 If a subsequent version of this warranty is published, the terms of that warranty will apply to water heaters manufactured after the date specified in the subsequent version.

2. TERMS OF THE RHEEM WARRANTY AND EXCLUSIONS TO IT

- 2.1 The decision of whether to repair or replace a faulty component is at Rheem's sole discretion.
 - 2.2 If you require a call out and we find that the fault is not covered by the Rheem warranty, you are responsible for our standard call out charge. If you wish to have the relevant component repaired or replaced by Rheem, that service will be at your cost.
 - 2.3 Where a failed component or cylinder is replaced under this warranty, the balance of the original warranty period will remain effective. The replacement does not carry a new Rheem warranty.
 - 2.4 Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem or further than 25 km from either a regional Rheem branch office or an Accredited Rheem Service Agent's office, the cost of transport, insurance and travelling between the nearest branch office or Rheem Accredited Service Agent's office and the installed site shall be the owner's responsibility.
 - 2.5 Where the water heater is installed in a position that does not allow safe or ready access, the cost of that access, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility. In other words, the cost of dismantling or removing cupboards, doors or walls and the cost of any special equipment to bring the water heater to floor or ground level or to a serviceable position is not covered by this warranty.
 - 2.6 This warranty only applies to the original and genuine Rheem water heater in its original installed location and any genuine Rheem replacement parts.
 - 2.7 The Rheem warranty does not cover faults that are a result of:
 - a) Accidental damage to the water heater or any component (for example: (i) Acts of God such as floods, storms, fires, lightning strikes and the like; and (ii) third party acts or omissions).
 - b) Misuse or abnormal use of the water heater.
 - c) Installation not in accordance with the Owner's Guide and Installation Instructions or with relevant statutory and local requirements in the State or Territory in which the water heater is installed.
 - d) Connection at any time to a water supply that does not comply with the water supply guidelines as outlined in the Owner's Guide and Installation Instructions.
 - e) Repairs, attempts to repair or modifications to the water heater by a person other than Rheem Service or a Rheem Accredited Service Agent.
 - f) Faulty plumbing, gas or power supply.
 - g) Failure to maintain the water heater in accordance with the Owner's Guide and Installation Instructions.
 - h) Transport damage.
 - i) Fair wear and tear from adverse conditions (for example, corrosion).
 - j) Cosmetic defects.
 - k) Breakage of collector glass for any reason including hail damage (we suggest that the collector glass be covered by your home insurance policy).
 - l) Ice formation in the waterways of a water heater system incorporating a freeze protection system where the electricity supply has been switched off or has failed or where it is installed at an altitude more than 400 metres above sea level.
 - 2.8 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims for damage to furniture, carpet, 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.
 - 2.9 If the water heater is not sized to supply the hot water demand in accordance with the guidelines in the Rheem water heater literature, any resultant fault will not be covered by the Rheem warranty.
-

RHEEM SOLAR LOLINE WATER HEATER WARRANTY – AUSTRALIA ONLY –

SOLAR LOLINE WATER HEATER MODELS 531260

3. WHAT IS COVERED BY THE RHEEM WARRANTY FOR THE WATER HEATERS DETAILED IN THIS DOCUMENT

3.1 Rheem will repair or replace a faulty component of your water heater if it fails to operate in accordance with its specifications as follows:

What components are covered	The period from the date of installation in which the fault must appear in order to be covered	What coverage you receive
All components	Year 1	Repair and/or replacement of the faulty component, free of charge, including labour.
The cylinder (if the water heater is installed in a single-family domestic dwelling)	Years 2 & 3	Repair and / or replacement of the cylinder, free of charge, including labour.
	Years 4 & 5	Replacement cylinder, free of charge. Installation and repair labour costs are the responsibility of the owner.
The cylinder (if the water heater is <u>not</u> installed in a single-family domestic dwelling)	Years 2 & 3	Replacement cylinder, free of charge. Installation and repair labour costs are the responsibility of the owner.
The solar collector (all installations)	Years 2 to 5	Replacement solar collector, free of charge. Installation and repair labour costs are the responsibility of the owner.

4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY

- 4.1 To be entitled to make a claim under this warranty you need to:
- Be the owner of the water heater or have consent of the owner to act on their behalf.
 - Contact Rheem Service without undue delay after detection of the defect and, in any event, within the applicable warranty period.
- 4.2 You are not entitled to make a claim under this warranty if your water heater:
- Does not have its original serial numbers or rating labels.
 - Is not installed in Australia.

5. HOW TO MAKE A CLAIM UNDER THIS WARRANTY

- 5.1 If you wish to make a claim under this warranty, you need to:
- Contact Rheem on 131031 and provide owner's details, address of the water heater, a contact number and date of installation of the water heater or if that's unavailable, the date of manufacture and serial number (from the rating label on the water heater).
 - Rheem will arrange for the water heater to be tested and assessed on-site.
 - If Rheem determines that you have a valid warranty claim, Rheem will repair or replace the water heater in accordance with this warranty.
- 5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

6. THE AUSTRALIAN CONSUMER LAW

- 6.1 Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
- 6.2 The Rheem warranty (set out above) is in addition to any rights and remedies that you may have under the Australian Consumer Law.

RHEEM AUSTRALIA PTY LTD, A.B.N. 21 098 823 511, www.rheem.com.au
For Service Telephone 131 031 AUSTRALIA or 0800 657 335 NEW ZEALAND