



## Electric Water Heater



## Owner's Guide and Installation Instructions

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

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An electronic copy of these Owner's Guide and Installation Instructions can be downloaded from [solahart.com.au](http://solahart.com.au).

**PATENTS**

This water heater may be protected by one or more patents or registered designs in the names of Solahart Industries Pty Ltd or Rheem Australia Pty Ltd.

**TRADEMARKS**

® Registered trademark of Solahart Industries Pty Ltd or Rheem Australia Pty Ltd.  
TM Trademark of Solahart Industries Pty Ltd or Rheem Australia Pty Ltd.

Note: Every care has been taken to ensure the 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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## HOUSEHOLDER

This booklet contains important information about your new water heater, including terms of the Solahart warranty.

We recommend you read pages 7 to 23,  
and the terms of the Solahart warranty on pages 4 to 6.

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

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# **SOLAHART POWERSTORE ELECTRIC WATER HEATER WARRANTY - AUSTRALIA ONLY**

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## **ELECTRIC WATER HEATER MODELS 250E5X, 315E5X**

### **1. THE SOLAHART WARRANTY – GENERAL**

- 1.1 This warranty is given by Solahart Industries Pty Limited ABN 45 064 945 848 of 1 Alan Street, Rydalmere New South Wales.
- 1.2 Solahart offers national service through its Dealer network. Solahart will repair or replace components at the address of the water heater subject to the terms of the Solahart warranty. Solahart, in addition can provide preventative maintenance and advice on the operation of your water heater.
- 1.3 For details about this warranty, you can contact us on 1800 638 011.
- 1.4 The terms of this warranty and what is covered by it are set out in sections 2 and 3 and apply to water heaters manufactured from the 1st December 2020.
- 1.5 If a subsequent version of this warranty is published, the terms of that warranty and what is covered by it will apply to water heaters manufactured after the date specified in the subsequent version.

### **2. TERMS OF THE SOLAHART WARRANTY AND EXCLUSIONS TO IT**

- 2.1 Solahart may reject a claim under this warranty in its sole discretion if:
    - a) You do not arrange for a major service to be conducted on your water heater in the fifth year after installation, in accordance with Solahart's recommendation in the Owner's Guide and Installation Instructions; and
    - b) The fault giving rise to the warranty claim would have been detected and rectified during that major service.
  - 2.2 The decision of whether to repair or replace a faulty component is at Solahart's sole discretion. Solahart may use new, used, remanufactured or refurbished parts or products when repairing or replacing products under this warranty.
  - 2.3 If you require a call out and we find that the fault is not covered by the Solahart warranty, you are responsible for our standard call out charge. If you wish to have the relevant component repaired or replaced by Solahart, that service will be at your cost.
  - 2.4 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 Solahart warranty.
  - 2.5 Where the water heater is installed outside the boundaries of a metropolitan area as defined by Solahart or further than 30 km from a regional Solahart Dealer, the cost of transport, insurance and travelling between the nearest Solahart Dealer's premises and the installed site shall be the owner's responsibility.
  - 2.6 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.
  - 2.7 This warranty only applies to the original and genuine Solahart water heater in its original installed location and any genuine Solahart replacement parts.
  - 2.8 The Solahart 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.
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# SOLAHART POWERSTORE ELECTRIC WATER HEATER WARRANTY - AUSTRALIA ONLY

## ELECTRIC WATER HEATER MODELS 250E5X, 315E5X

- 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 the Solahart Dealer or a Solahart Accredited Service Agent.
- f) Faulty plumbing or faulty 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.

2.9 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims for:

- a) 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, and
- b) Loss or damage due to the water heater if it is not connected to or loses connectivity to the internet.

2.10 If the water heater is not sized to supply the hot water demand in accordance with the guidelines in Solahart's water heater literature, any resultant fault will not be covered by the Solahart warranty.

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

3.1 Solahart 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
<b>250E5X, 315E5X models</b>		
<b>All components</b>	Year 1	Repair and/or replacement of the faulty component, free of charge, including labour.
<b>All components</b> (if the water heater is installed in a single-family domestic dwelling)	Years 2 & 3	Repair and/or replacement of the faulty component, free of charge, including labour.
<b>The cylinder</b> (if the water heater is installed in a single-family domestic dwelling)	Years 4 to 10	Replacement cylinder, free of charge. Installation and repair labour costs are the responsibility of the owner.
<b>The cylinder</b> (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.

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# **SOLAHART POWERSTORE ELECTRIC WATER HEATER WARRANTY - AUSTRALIA ONLY**

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## **ELECTRIC WATER HEATER MODELS 250E5X, 315E5X**

### **4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY**

- 4.1 To be entitled to make a claim under this warranty you need to:
- a) Be the owner of the water heater or have consent of the owner to act on their behalf.
  - b) Contact Solahart 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:
- a) Does not have its original serial numbers or rating labels.
  - b) 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:
- a) Contact Solahart on 1800 638 011 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).
  - b) Solahart will arrange for the water heater to be tested and assessed on-site.
  - c) If Solahart determines that you have a valid warranty claim, Solahart 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 Solahart warranty (set out above) is in addition to any rights and remedies that you may have under the Australian Consumer Law.

### **7. REPAIR NOTICE UNDER THE AUSTRALIAN CONSUMER LAW**

- 7.1 Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the goods.

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# SAFETY, WARNINGS, INSTALLATION NOTES

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It is important you read the following **Safety and Warnings**, and **Relief Valves** information.

## SAFETY AND WARNINGS

- The water heater will operate until a water temperature of 70°C is reached inside of the cylinder under normal operation, and up to 80°C could be reached on occasion during periods of excess energy availability.

The E5X series 50°C limited water heater is temperature limited at the outlet. This is so the water temperature supplied from fixtures used primarily for personal hygiene does not exceed 50°C.

Refer to:

- **“Twin Element Operation”** on page 11, and
- **“How Hot Should The Water Be?”** on page 13, and
- **“Hotter Water Increases the Risk of Scald Injury”** on page 13, and
- **“Temperature Adjustment, Thermostats, Temperature Sensors”** on page 14.
- 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 or play with or at the water heater.
- 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 your nearest Solahart Dealer to arrange for an inspection.
- This water heater uses 220 V – 240 V a.c. power for the electrically operated components. The removal of the front covers will expose 220 V – 240 V a.c. wiring. They must only be removed by a qualified person. Do not operate the water heater with the covers removed.
- This water heater is supplied with thermostats, over-temperature cut-outs, temperature sensors and a combination temperature pressure relief valve. The E5X series water heater also has a temperature limiting 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.

**The Solahart 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.**

- **DANGER:** The operation of the over-temperature cut-out on a thermostat indicates a possibly dangerous situation. If the over-temperature cut-out operates, it must not be reset and the water heater must be serviced by a qualified person.
- The lever on the temperature pressure relief valve and expansion control valve (if fitted) requires to be operated every six (6) months to clear any deposits and to ensure the valve and its drain line are not blocked.

Refer to:

- **“Relief Valves”** on page 8, and
- **“Minor Maintenance Every Six Months”** on page 16.
- For continued safety of this water heater it must be installed, operated and maintained in accordance with the Owner’s Guide and Installation Instructions.
- Servicing of a water heater must only be carried out by qualified personnel. Phone your nearest Solahart Dealer.
- Only a person qualified to install or service a water heater can drain the water heater, if this is required.
- Do not modify this water heater.

## RELIEF VALVES

### Temperature Pressure Relief Valve

This water heater incorporates a temperature pressure relief valve located near the top of the water heater. This valve is essential for the water heater's safe operation.

It is possible for the valve to discharge a quantity of water through the drain line during each heating period. This quantity should be equal to approximately 1/50 of the hot water used, as water expands by this volume when heated.

### Expansion Control Valve

In many areas, including South Australia, Western Australia and scaling water areas, it is mandatory an expansion control valve is fitted to the cold water line to the water heater.

The expansion control valve will discharge the quantity of water from its drain line during the heating period instead of the temperature pressure relief valve as it has a lower pressure rating.

### Valve Operation

Continuous leakage of water from either valve and its drain line may indicate a problem with the water heater. Refer to **“Temperature Pressure Relief Valve or Expansion Control Valve Running”** on page 22.

**⚠ Warning:** Never block the outlet of either valve or their drain lines for any reason. A relief valve drain must be left open to atmosphere, and be installed in a continuously downward direction.

In locations where water pipes are prone to freezing, the relief valve drain line must be insulated and not exceed 300 mm in length before discharging into a tundish through an air gap.

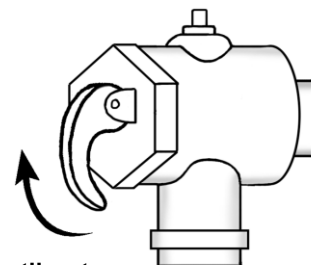
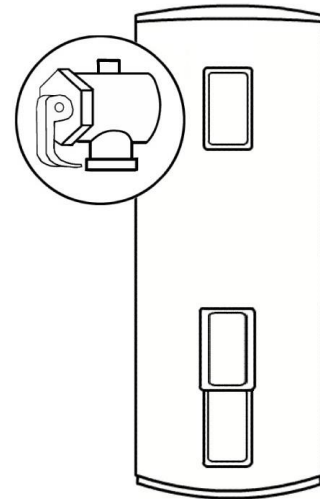
Operate the easing lever on the temperature pressure relief valve and expansion control valve once every six (6) months to clear any deposits and ensure the valve and its drain line are not blocked. **It is very important the lever is raised and lowered gently.** Refer to **“Minor Maintenance Every Six Months”** on page 16.

**⚠ Warning:** Water discharged from the temperature pressure relief valve drain line will be hot. Exercise care to avoid any splashing of water by standing clear of the drain line's point of discharge when operating either valve's easing lever.

**⚠ DANGER:** Failure to operate the easing lever on the relief valve once every six (6) months may result in the water heater cylinder failing, or under certain circumstances, exploding.

If water does not flow freely from the drain line when the lever is lifted, then the water heater must be checked. Phone your nearest Solahart Dealer to arrange for an inspection.

The temperature pressure relief valve should be replaced at intervals not exceeding five (5) years and the expansion control valve should be checked for performance or replaced at intervals not exceeding five (5) years. The checking of the valves performance or replacement should occur more frequently in areas where there is a high incidence of water deposits. Refer to **“Water Supplies”** on page 18.



lift until water  
flows from the  
drain line –  
lower gently

outlet /  
drain  
line



## INSTALLATION NOTES

This water heater must be installed:

- by a qualified person,
- in accordance with the installation instructions,
- in compliance with the Plumbing Code of Australia (PCA) and Plumbing Standard AS/NZS 3500.4,
  - This water heater is designed for either indoor or outdoor installation.
  - This water heater is intended to be permanently connected to the water mains and not connected by a hose-set. A braided flexible hose or semi-flexible connector may be used for connection to the water heater, where permitted by AS/NZS 3500.4.
- in compliance with the Australian / New Zealand Wiring Rules AS/NZS 3000,
  - An isolation switch must be installed at the switchboard in the electrical circuit to the water heater in accordance with the Wiring Rules, so the water heater can be switched off. Refer to “**Connections – Electrical**” on page 32.
  - The power supply wires are to be directly connected to the terminal block and earth tab connection, with no excess wire loops inside the front cover. The temperature rating of the power supply wires insulation must suit this application, or the wiring protected by insulating sleeving with an appropriate temperature rating if it can make contact with the internal storage cylinder. The temperature of the internal storage cylinder can reach 80°C on occasion.
- in compliance with all local codes and regulatory authority requirements.

Installation and commissioning requirements and details for the installing plumber and licensed electrical worker are contained on [pages 24 to 36](#).

### **Mains pressure water supply**

The water heater is designed to operate at mains pressure by connecting directly to the mains water supply.

The water heater is supplied with a temperature pressure relief valve with a pressure rating of 1000 kPa. If an expansion control valve has been installed on the cold water line to the water heater, this should have a pressure rating of 850 kPa.

The maximum mains water supply pressure for the water heater is 800 kPa if an expansion control valve is not installed, or 680 kPa if an expansion control valve is installed. If the mains supply pressure in your area exceeds these values, a pressure limiting valve must be installed.

The supply pressure should be greater than 350 kPa for true mains pressure operation to be achieved.

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## HOW YOUR WATER HEATER WORKS

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### ABOUT YOUR SOLAHART POWERSTORE

The Solahart PowerStore Grid Interactive water heater is a premium electric water heater designed to work in partnership with an external control device, the Energy Management Unit, in order to take advantage of special tariffs and rebates available from your electricity retailer and when installed with solar PV, use excess solar PV power production.

The amount of hot water stored in the Solahart PowerStore Grid Interactive water heater will be monitored using communication through the connected Energy Management Unit and heating times optimised to use electricity when utility grid supply is higher than customer demand. Hot water monitoring will also ensure sufficient heating is provided to ensure there is always a minimum amount of hot water stored to meet standard domestic needs during periods when customer demand for utility grid supply is high.

In addition, when installed with solar PV and an external Power Meter, the PowerStore Grid Interactive water heater is able to modify its power consumption to be similar to the excess solar PV generation, when the water it contains requires heating. Water is then heated at the expense of the surrendered solar feed-in tariff, rather than purchasing energy from the utility grid to perform the heating.

The Solahart PowerStore Grid Interactive water heater also has the ability to tell the Energy Management Unit and Power Meter the amount of hot water available at any time, enabling it to be used as a key component in a sophisticated home energy management system (HEMS) provided by a third party service provider. This would allow the water heater to use utility grid sourced power for additional water heating or to achieve safety and compliance requirements (when required) at the most economical electricity tariff available.

### SYSTEM OPERATION

The Solahart PowerStore Grid Interactive water heater operates as a staged power input water heater at times when utility grid supply is higher than demand or when there is excess solar PV power production. When excess power is detected and water heating is required, the water heater's controller module and the Energy Management Unit or Power Meter react enabling the water heater to operate at an equivalent power consumption.

A combination of the unique triple blade multi-stage heating unit design and electronic control enables staged input from 515 W to full power in ~500 W steps for the lower heating unit. This power control system allows the water heater to operate whenever smaller or larger amounts of excess solar PV power production or excess utility grid supply are detected and water heating is required.

The Solahart PowerStore Grid Interactive water heater has inbuilt protection against running low on hot water and will also maintain a fixed minimum water temperature as a safety and compliance requirement. During periods when there is no excess utility grid supply or excess power from solar PV generation and heating of the water is required, electricity from the utility grid will be used to ensure the availability of hot water, by using the top heating unit.

The water is heated to a temperature up to 70°C under normal operation from utility grid supplied electricity. On occasion if there is an excess of utility grid supplied electricity available, the Energy Management Unit may command the water heater to heat the water to a maximum of 80°C to make use of this excess electricity.

**Note:** If the water heater is installed without either the Energy Management Unit or Power Meter or connection to a home energy management system (HEMS), it will operate as a conventional twin element electric water heater. The water will be heated to 70°C. It won't be able to be part of an intelligent water heating system or take advantage of excess solar PV power production.

## TWIN ELEMENT OPERATION

This water heater has two heating units, each controlled by the temperature sensors and the control system. One heating unit is near the top of the water heater and the other at the base. The two heating units are wired for non-simultaneous operation, so only one heating unit can operate at a time.

- **Top heating unit**

The top heating unit has priority under normal operation to heat the water in the top portion of the tank.

When there is less than 40 litres of hot water in the tank, the top heating unit will energise to heat the top 50 litres to a temperature of 70°C using utility grid supplied electricity during normal operation.

- **Bottom heating unit**

The bottom heating unit is a triple blade multi-stage power input heating unit. It is activated under normal operation after the top heating unit has heated the water in the top portion of the tank.

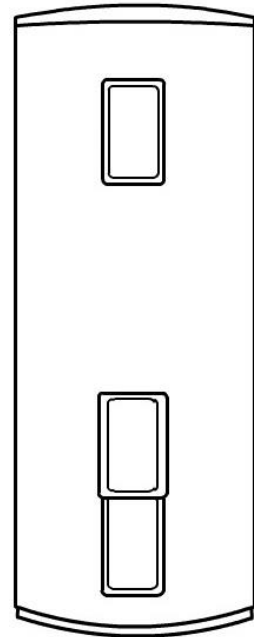
The bottom heating unit heats the water in the lower portion of the tank to a temperature of 70°C during normal operation, in response to a requirement from the electricity utility or during periods of excess solar PV power generation.

**Note:** AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This requirement is met if at least 90% of the stored water is heated to 60°C once every seven days. If this does not occur during normal operation, the water heater will enter Safety Compliance mode and use utility grid sourced electricity to satisfy this requirement with heating via the bottom heating unit.

- **Electrical connection**

The utility grid sourced power supply to the water heater must be a 24 hour Continuous / Domestic Time of Use type. A separately metered controlled load supply, i.e. Off-Peak / time controlled, is not suitable.

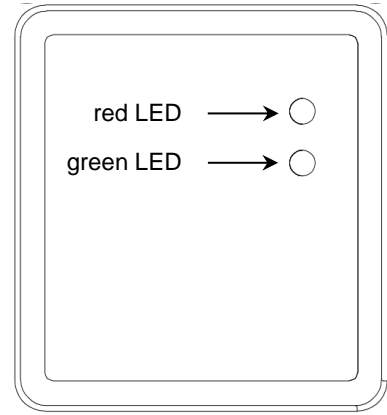
**NOTE: Power must be available to the heating units' circuit at all times for this water heater to operate as designed.**



**LED OPERATION**

The water heater has a green and red LED, housed on the front of the Controller Module on the lower front of the water heater. The LEDs indicate the operational status of the water heater.

- Green indicates normal operation
- Red indicates a fault



**LED interface**

**Types of LED Operation**

There are five (5) types of illumination the LEDs may provide. These are:

Illumination	Time	LEDs
Off	remains off	green and red LEDs
Solid	remains on	green and red LEDs
Standard flash	1 sec on, 1 sec off	green LED only
Fast blink flash	0.25 sec on, 0.25 sec off	green and red LEDs
Slow blink flash	0.25 sec on, 9.75 sec off	red LED only

**Green LED**

The green LED generally indicates various stages of normal operation.

Green LED	Operational Status
Off no illumination	There may be loss of power, or there may be a fault with the water heater.
Solid	Water is either fully heated or no power request has been received. No heating taking place.
Standard flash (continuous flashes)	Top or bottom heating unit operating.
Fast blink flash	Simultaneous with red LED fast blink flash: <ul style="list-style-type: none"> <li>• During start-up (&lt;30 seconds) – not a fault</li> <li>• During firmware update (&lt;30 seconds) – not a fault</li> <li>• If observed for more than 10 minutes, application firmware maybe corrupted – fault</li> </ul>

**Red LED**

The red LED generally indicates a fault with the water heater.

Red LED	Operational Status
Off (green LED solid or standard flash)	System okay – no fault. PLT network connected.
Solid	There is a fault with the water heater.
Fast blink flash	Simultaneous with green LED fast blink flash: <ul style="list-style-type: none"> <li>• During start-up (&lt;30 seconds) – not a fault</li> <li>• During firmware update (&lt;30 seconds) – not a fault</li> <li>• If observed for more than 10 minutes, application firmware maybe corrupted – fault</li> </ul>
Slow blink flash	Energy Management Unit or PLT network not detected

**Notes**

- If both LEDs are off, there may be a loss of power to the water heater. If there is power available, there may be a fault with the water heater. Phone your nearest Solahart Dealer to arrange for an inspection.
- If the red LED remains on with a solid illumination, there is a problem with the water heater. Phone your nearest Solahart Dealer to arrange for an inspection.
- If the red LED is illuminated with a slow blink flash and if an Energy Management Unit is installed, there may be a problem with the EMU or the water heater. Phone your nearest Solahart Dealer to arrange for an inspection.

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# ABOUT YOUR WATER HEATER

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## 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. This water heater complies with the Lead Free requirements of the National Construction Code Volume Three.

New, used, remanufactured or refurbished parts or products may be used to repair or replace parts or products which are part of this water heater system. Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired.

## MODEL TYPE

The Solahart® PowerStore Grid Interactive water heater is suitable for either indoor or outdoor installation. The water heater has two heating units (refer to “**Twin Element Operation**” on page 11). Water is stored in a vitreous enamel lined steel cylinder and heated by the electric immersion heating units. The control system, sensors and thermostats control the temperature of the water inside the cylinder and the source of the power supply.

An E5X series model is a 50°C limited water heater designed with a temperature limiting valve installed at the outlet of the cylinder to limit the water temperature delivered from the water heater. This is so the water temperature supplied to fixtures used primarily for personal hygiene does not exceed 50°C.

Automatic safety controls are fitted to the water heater to provide safe and efficient operation.

## HOW HOT SHOULD THE WATER BE?

The water heater’s control system allows the water to be heated to a minimum temperature of 60°C and a temperature of 70°C during normal operation. On occasion the water may heat to 80°C. These temperature settings cannot be adjusted.

An E5X series 50°C limited water heater is temperature limited at the outlet. This is so the water temperature supplied from fixtures used primarily for personal hygiene does not exceed 50°C.

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

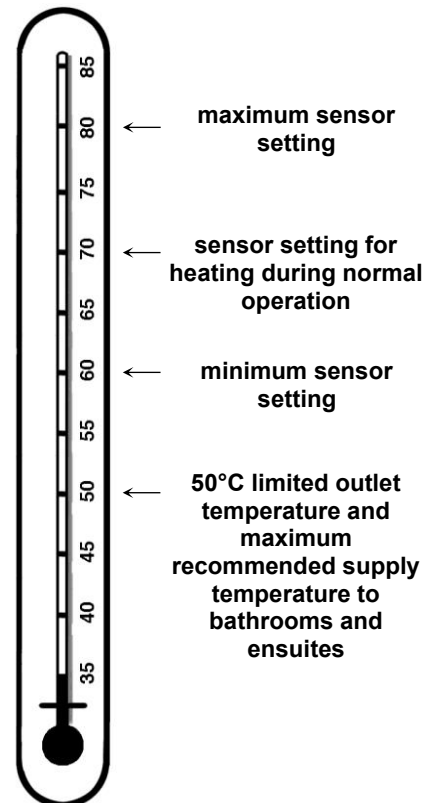
## HOTTER WATER INCREASES THE RISK OF SCALD INJURY

### E5X series – 50°C Limited Water Heater

An E5X series water heater delivers water not exceeding 50°C in accordance with AS 3498. The risk of scald injury will be reduced.

There is no need to fit a temperature limiting device to satisfy the requirements of the Plumbing Code of Australia if an E5X series 50°C limited water heater is installed and serving an application where 50°C is the maximum permissible hot water temperature at the outlet of a fixture used primarily for personal hygiene, such as in a bathroom or ensuite.

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.



### TEMPERATURE ADJUSTMENT, THERMOSTATS, TEMPERATURE SENSORS

The temperature sensors control the maximum water temperature in conjunction with the control system. Water is heated to either 70°C or 80°C depending on the mode of operation. These temperature settings are fixed and cannot be adjusted.

Power is only used when heating is required. There is no need to switch the water heater off when it is not in use, except when you are on an extended holiday.

Each thermostat and its protective over temperature cut out is mounted inside the front covers of the water heater. The thermostats act as a backup safety device to control the electricity supply to the heating unit. A 'fault' may result if a thermostat is adjusted from the factory setting. **The thermostats must not be adjusted or tampered with.**

**Note:** A service call to a PowerStore Grid Interactive water heater as a result of a thermostat having been adjusted will not be covered under the product warranty, and a service charge will be made for this call-out.

### 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 "[Maintenance Requirements](#)" on page 16 and to "[Anode Inspection and Replacement](#)" on page 19.

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 local Solahart Dealer or specifier about your needs and building back-up redundancy into your hot water supply system.

### TO TURN OFF THE WATER HEATER

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

If it is necessary to turn off the water heater:

- Switch off the electrical supply at the water heater isolating switch on the switchboard or at the isolating switch at the water heater (if installed).
- Close the cold water isolation valve at the inlet to the water heater.

### TO TURN ON THE WATER HEATER

- Open the cold water isolation valve fully on the cold water line to the water heater.
- Switch on the electrical supply at the water heater isolating switch on the switchboard and at the isolating switch at the water heater (if installed).

When the power is turned on, the green LED will commence to flash to indicate the water heater is heating.

### GOING ON HOLIDAY?

If you plan to be away from home for one or two nights, we suggest you leave the water heater switched on. However, if you plan to stay away more than a few nights, conserve energy by switching the water heater off at either the switchboard or isolating switch (if one is installed).

## **VICTORIAN CUSTOMERS**

Notice to Victorian Customers from the Victorian Building Authority. 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, its components and fittings. Refer to [“Water Supplies”](#) on page 18.

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 18 to 20](#).

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

The water heater is supported by a manufacturer’s warranty ([refer to page 4](#)). 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 14.

## **INTELLECTUAL PROPERTY**

On purchase, the Solahart water heater becomes your property, except for the intellectual property and any other proprietary rights in the firmware or software (“Software”) contained in or accessed through the water heater’s master control module. The Software is owned by Rheem Australia Pty Ltd and its licensors. You do not acquire any intellectual property or other proprietary rights in the Software, including without limitation, any rights in patents, inventions, improvements, designs, trademarks, trade secrets, or copyrights.

You are granted a non-exclusive, non-transferable right to run and use the Software and any updated versions that we or our licensor may provide to you, only in and as incorporated in your Solahart water heater and for the normal operation of the water heater. You do not have any rights to obtain future upgrades, updates, or supplements to any Software.

Certain components of the Software are provided under separate third party license terms (“Separately Licensed Code”) and your right to use such components is governed by such licence terms.

## **SOFTWARE UPDATES**

Solahart may, in its discretion, provide remote patches or upgrades to the firmware or software (“Software”) incorporated in your water heater, either directly or through a third party service provider. Remote upgrades will only be possible if your water heater is connected to the internet through an external control device. Solahart may also provide software or firmware upgrades during service call outs.

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## MAINTENANCE REQUIREMENTS

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### MINOR MAINTENANCE EVERY SIX MONTHS

It is recommended minor maintenance be performed every six (6) months. Minor maintenance can be performed by the dwelling occupant.

The minor maintenance includes:

- Operate the easing lever on the temperature pressure relief valve. **It is very important the lever is raised and lowered gently.** Refer to “**Relief Valves**” on page 8.

**⚠ Warning:** Water discharged from the temperature pressure relief valve drain line will be hot. Exercise care to avoid any splashing of water by standing clear of the drain line’s point of discharge when operating the valve’s easing lever.

- Operate the easing lever on the expansion control valve (if fitted). **It is very important the lever is raised and lowered gently.** Refer to “**Relief Valves**” on page 8.
- Check the performance of the temperature limiting valve.

Use a thermometer to measure the water temperature from the hot tap used primarily for personal hygiene nearest to the water heater. If the water temperature exceeds 50°C, phone your nearest Solahart Dealer to arrange for an inspection. Refer to “**Temperature Limiting Valve**” on page 17.

- Check the drain line from the safe tray (if one is installed) is not blocked.

### MAJOR SERVICE EVERY FIVE YEARS

It is recommended a major service be conducted on the water heater every five (5) years.

**⚠ Warning:** Servicing of a water heater must only be carried out by qualified personnel. Phone your nearest Solahart Dealer.

**Note:** The major service and routine replacement of any components, such as the anode and relief valve(s), are not included in the Solahart 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 limiting valve.
- 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 five (5) years of this service. Refer to “**Anode Inspection and Replacement**” on page 19.

- Check the electric heating units for excessive calcium build-up or corrosion and replace if necessary.
- 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:** The water heater may need to be drained during this service. After the completion of the service, the water heater will take some time to reheat the water.



**TEMPERATURE LIMITING VALVE**

An E5X series 50°C limited water heater is fitted with a temperature limiting valve at the outlet. The valve is set so the water temperature from the fixtures used primarily for personal hygiene does not exceed 50°C.

The valve should be checked for performance every twelve months. This can be performed by using a thermometer to measure the water temperature from the hot tap used primarily for personal hygiene nearest to the water heater. If the water being delivered is at a temperature exceeding 50°C, phone your nearest Solahart Dealer to arrange for an inspection.

The valve must be replaced at intervals not exceeding five (5) years, or more frequently in areas where there is a high incidence of water deposits (refer to **“Water Supplies”** on page 18). Failure to do this may result in water at a temperature up to 80°C being delivered at the hot tap, increasing the risk of scald injury.

# WATER SUPPLIES

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

## ANODE

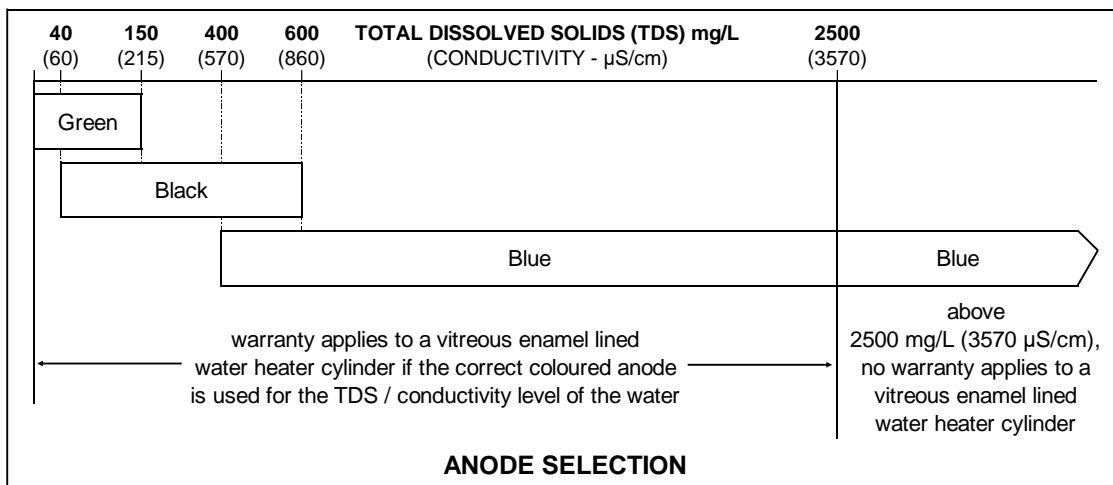
The vitreous enamel lined cylinder of the water heater is only covered by the Solahart warranty when the total dissolved solids (TDS) content in the water is less than 2500 mg/L and when the correct colour coded anode is used. If an incorrect colour coded anode is used in the water heater, any resultant faults will not be covered by the Solahart 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 18 for the Solahart 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 anode installed in your water heater will slowly dissipate whilst protecting the cylinder. The life of the cylinder may be extended by replacing the anode.

For water supplies which are either softened or desalinated, or where the water supply may alternate between a water tank and a reticulated public supply or another supply, or where there is a variable supply (e.g. from a bore or public reticulated supply from various water sources), the anode must be inspected (and replaced if there is any sign of depletion) within five (5) years of installation, and within every five (5) years thereafter.

For all water supplies, if the anode is not replaced during a major service (refer to “**Major Service Every Five Years**” on page 16) then in any event, the anode must be replaced at ten (10) years.

## 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. The saturation index figures stated are calculated using a water temperature of 80°C.

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 Solahart warranty does not apply to the copper sheathed heating unit.

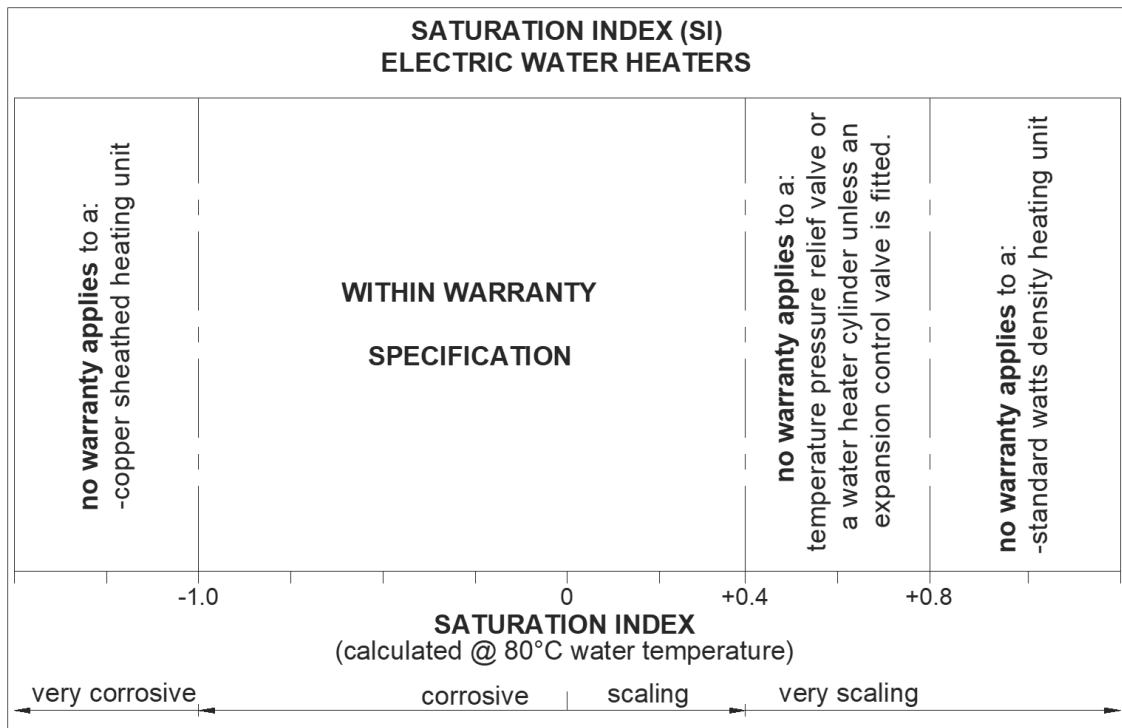
In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. Where the saturation index exceeds  $+0.40$ , the water is very scaling. An expansion control valve must be fitted on the cold water line after the non-return valve to protect and for the Solahart warranty to apply to the temperature pressure relief valve and water heater cylinder.

Where the saturation index exceeds  $+0.80$ , the Solahart warranty does not apply to a standard watts density heating unit. The bottom triple blade heating unit fitted as standard to this water heater is a low watts density type. The upper heating unit must be of a low watts density heating unit must be used for the Solahart warranty to apply to the heating unit.

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 20. Refer to the **cold water connection detail on page 29** for the position of the expansion control valve.

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



**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 heating unit.

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 Solahart warranty to apply.

**SUMMARY OF WATER CHEMISTRY ADVICE AFFECTING WARRANTY**

The water heater and its 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 Solahart warranty will not cover any resultant faults on the components listed below:

Water Chemistry	Component
Total Dissolved Solids (TDS) > 2500 mg/L	water heater cylinder
Total Dissolved Solids (TDS) not suitable for anode type	water heater cylinder
Saturation Index (SI) < -1.0	copper sheathed heating unit
Saturation Index (SI) > +0.4 (if expansion control valve is not fitted)	water heater cylinder temperature pressure relief valve
Saturation Index (SI) > +0.8	standard watts density heating unit

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## SAVE A SERVICE CALL

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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 the manufacture or failure of a part.

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

- **Is the electricity switched on?**

Inspect the isolating switch marked "HOT WATER" or "WATER HEATER" at the switchboard and the isolating switch (if one is installed) near the water heater and ensure they are turned on.

**Note:** Check the electricity supply to which the water heater is connected. The power supply must be a Continuous / Time of Use electricity supply.

Check the fuse or circuit breaker marked "HOT WATER" or "WATER HEATER" at the switchboard.

- **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. Have your plumber fit a flow control valve to each shower outlet to reduce water usage.

- **Water not hot enough**

The water temperature is limited from the outlet of an E5X series 50°C limited water heater. The water temperature from fixtures supplied from this outlet and used primarily for personal hygiene cannot be increased above 50°C.

You may also find that due to heavy hot water usage the water temperature may be lower than normally expected, due to insufficient heating time being allowed. You will need to carefully plan your use of the hot water on such occasions.

- **Relief valve running**

Is the relief valve discharging too much water?

Refer to "[Temperature Pressure Relief Valve or Expansion Control Valve Running](#)" on page 22.

- **Water heater size**

Do you have the correct size water heater for your requirements?



### WATER TEMPERATURE TOO HIGH

An E5X series 50°C limited water heater is fitted with a temperature limiting valve set to limit the water temperature delivered from the water heater. This is so the water temperature from the fixtures used primarily for personal hygiene does not exceed 50°C. If water is being delivered from a fixture used primarily for personal hygiene at a temperature exceeding 50°C, phone your nearest Solahart Dealer to arrange for an inspection. Care must be taken by all householders when using hot water until the valve is serviced or replaced.

**LED OPERATION**

Refer to “LED Operation” on page 12 for further information on the types of flashes the LEDs produce.

- **Both LEDs are Off (no illumination)**  
If both LEDs remain off, check there is a power supply to the water heater.

Refer to “Is the electricity switched on?” on page 21.

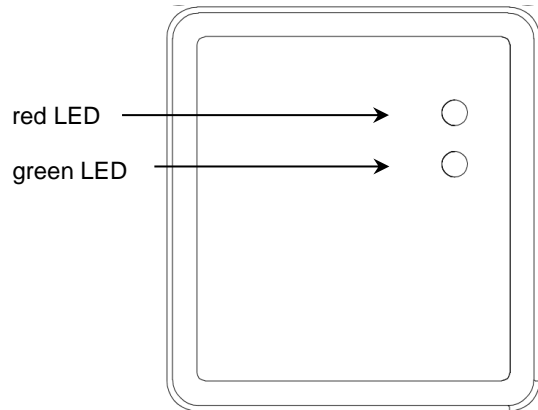
If there is power available, there may be a problem with the water heater. Phone your nearest Solahart Dealer to arrange for an inspection.

- **Red LED is Solid (constant illumination)**  
If the red LED remains on with a solid illumination, there is a problem with the water heater.

Phone your nearest Solahart Dealer to arrange for an inspection.

- **Red LED is illuminating with a Slow Blink Flash (once every ten (10) seconds)**  
If the red LED is illuminated with a slow blink flash, the water heater may not be detecting the Energy Management Unit or PLT network.

If an Energy Management Unit is installed, there may be a problem with the EMU or the water heater. Phone your nearest Solahart Dealer to arrange for an inspection.



**LED interface**

**TEMPERATURE PRESSURE RELIEF VALVE OR EXPANSION CONTROL VALVE RUNNING**

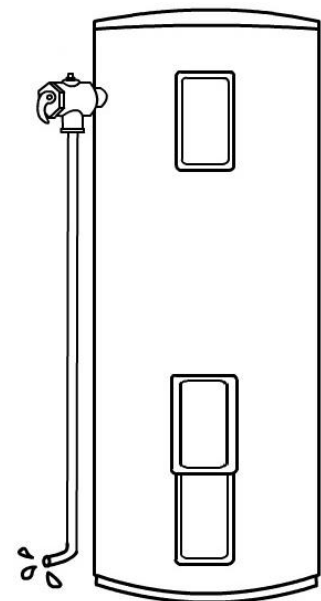
- **Normal Operation**  
It is normal and desirable the temperature pressure relief valve or expansion control valve (if fitted) allows a quantity of water to escape during the heating cycle. This quantity should be equal to approximately 1/50 of the hot water used, as water expands by this volume when heated. However, if it discharges more than a bucket full of water in 24 hours, there may be another problem.

The expansion control valve (if fitted) will discharge water instead of the temperature pressure relief valve as it has a lower pressure rating. A benefit is that energy is conserved as the discharged water is cooler. This valve is installed in the cold water line to the water heater (refer to the [cold water connection diagram](#) on page 29).

- **Continuous dribble**  
Try gently raising the easing lever on the relief valve for a few seconds (refer to “Relief Valves” on page 8). 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 from the temperature pressure relief valve until water heater is cold - then stops until water reheats**  
The water heater **must** be switched off at the switchboard. Phone your nearest Solahart Dealer to arrange for an inspection.



**HIGHER THAN EXPECTED ELECTRICITY BILLS**

Should you at any time, feel your electricity bill is higher than expected, we suggest you check the following points:

- Is the relief valve running excessively?

Refer to “Temperature Pressure Relief Valve or Expansion Control Valve Running” on page 22.

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

Refer to “Not Enough Hot Water” on page 21.

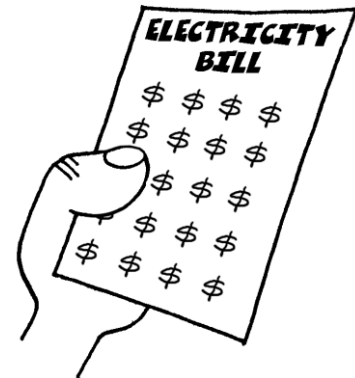
- Is there a leaking hot water pipe, dripping hot water tap, etc?

Even a small leak will waste a surprising quantity of hot water and electricity. Replace faulty tap washers, and have your plumber rectify any leaking pipe work.

- Has there been an increase in hot water usage?

An increase in hot water usage will result in an increase in water heater operation.

- Has your water heating tariff rate been increased by your electricity retailer since your previous bill?

**ELECTRICITY TARIFFS**

The electricity tariff to which your water heater is connected will determine the overall operating cost of the system. It is important you are aware of this tariff, i.e. Domestic / Continuous Time of Use supply.

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

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# INSTALLATION

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## THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING

### INSTALLATION STANDARDS

The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with the Plumbing Code of Australia (PCA), Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements.

### E5X series

This water heater delivers water not exceeding 50°C, in accordance with AS 3498.

**⚠ Warning:** This water heater must only be installed in accordance with the acceptable plumbing configurations specified in these installation instructions. Failure to do so may result in conditions where delivery temperature control is inadequate. Refer to “**Hot Water Delivery**” on page 26.

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.

### 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 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 was to become inoperable for any reason. We recommend you provide advice to the system owner about their needs and building back-up redundancy into the hot water supply system.

### Notes

- If the water heater is installed without the external Energy Management Unit, then it will operate as a conventional twin element electric water heater only. It will not be able to be part of an intelligent water heating system or take advantage of excess solar PV power production.
- If the water heater is installed on a property that has export limiting capability of the solar PV power production, then it must be connected to a home energy management system (HEMS) for it to operate using excess solar PV power production.

### WATER HEATER LOCATION

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

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

You must be able to read the information on the rating plate. If possible leave headroom of one water heater height so the anode can be inspected or replaced. Remember you may have to take the entire water heater out later for servicing. Remember all local authorities have regulations about putting water heaters into roof spaces.





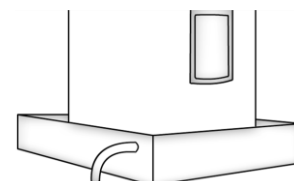
The water heater is to be installed at ground or floor level and must stand vertically upright on a stable base as acceptable to local authorities. The base of the water heater is made of corrosion resistant material, and it may be placed directly in contact with the supporting surface. It is not necessary to allow for free air circulation under the base of the water heater.

**Note:** The water heater should not be placed in direct contact with a concrete surface that is less than two months old and not fully cured as this may attack the metal coating of the water heater base. A moisture barrier should be used between the two surfaces in this instance.

The water heater must not be installed in an area with a corrosive atmosphere where chemicals are stored or where aerosol propellants are released, as exposure to the corrosive atmosphere may attack the materials used in the water heater.

**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.

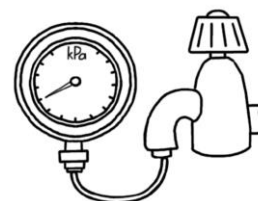


**MAINS WATER SUPPLY**

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 **cold water connection diagram** on page 29.

Model	250, 315
Temperature pressure relief valve setting	1000 kPa
Expansion control valve setting*	850 kPa
Maximum mains supply pressure	
With expansion control valve	680 kPa
Without expansion control valve	800 kPa

\* Expansion control valve not supplied with water heater



**TANK WATER SUPPLY**

If the water heater is supplied with water from a tank supply and a pressure pump system is not installed, then the bottom of the supply tank must be at least 1 m above the highest point of the hot water plumbing system, including the water heater. Care must be taken to avoid air locks. The cold water line to the water heater should be adequately sized and fitted with a full flow gate valve or ball valve.

**ANODE**

The vitreous enamel lined cylinder of the water heater is only covered by the Solahart 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 Solahart 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 Solahart warranty to apply to the water heater cylinder (refer to **“Water Supplies”** on page 18 and the **Anode Selection table** on page 18). The black anode is typically fitted as standard.

If an incorrect anode is used, there is also 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 19).

**HOT WATER DELIVERY**

**E5X series – 50°C Limited Water Heater**

An E5X series water heater delivers water not exceeding 50°C in accordance with AS 3498. The risk of scald injury will be reduced.

There is no need to fit a temperature limiting device to satisfy the requirements of the Plumbing Code of Australia if an E5X series 50°C limited water heater is installed and serving an application where 50°C is the maximum permissible hot water temperature at the outlet of a fixture or appliance used primarily for personal hygiene, such as in a bathroom or ensuite.

**CIRCULATED HOT WATER FLOW AND RETURN SYSTEM**

An E5X series water heater cannot be installed as part of a circulated hot water flow and return system in a building.

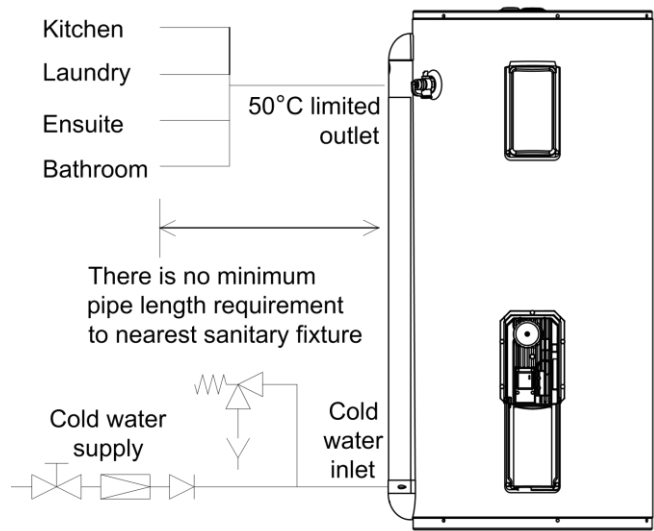
**REDUCING HEAT LOSSES**

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.

**SADDLING PIPE WORK**

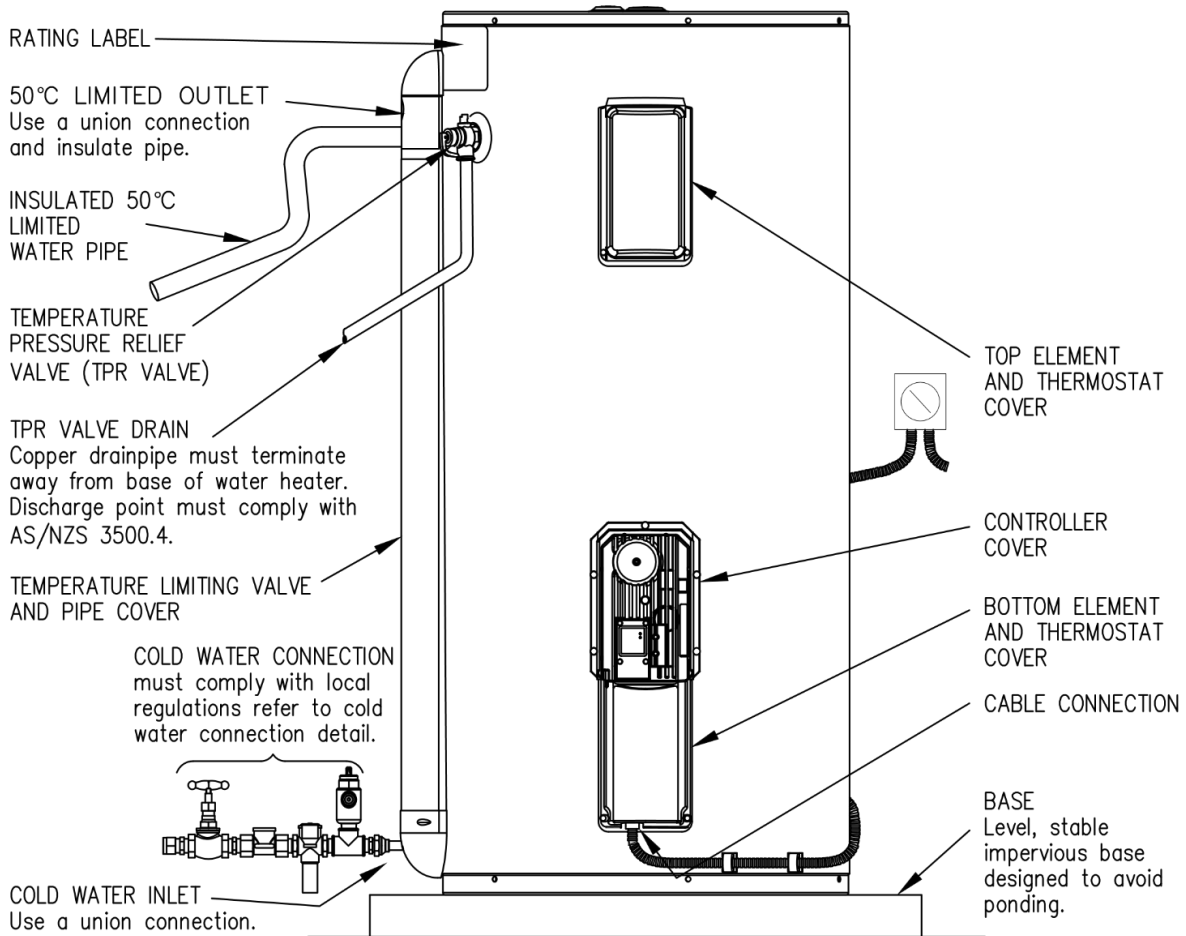
To prevent damage to the cylinder when attaching pipe clips or saddles to the water heater jacket, we recommend the use of self-drilling screws with a maximum length of 13 mm. Should pre-drilling be required, extreme caution must be observed when penetrating the jacket of the water heater.

**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 Solahart warranty.**

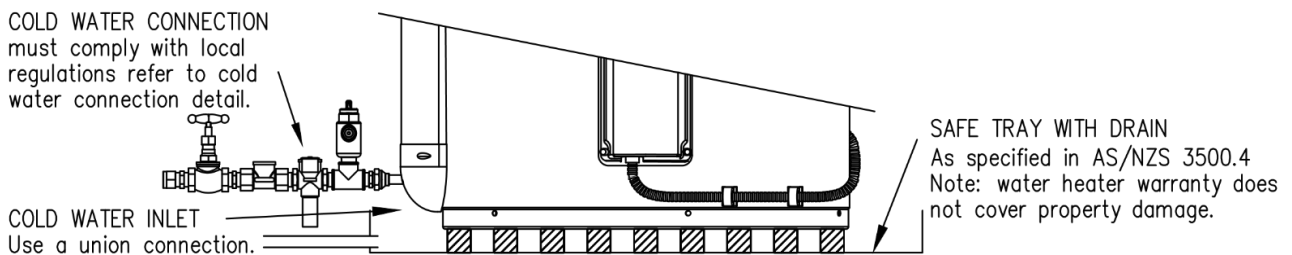


**Temperature Zone – 50°C Limited Water Heater  
E5X Series**

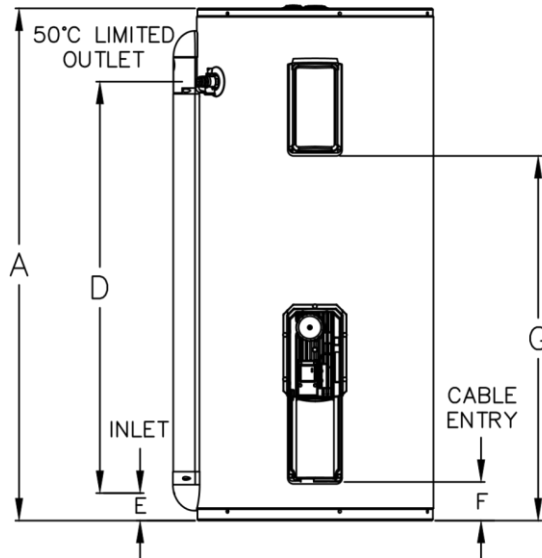
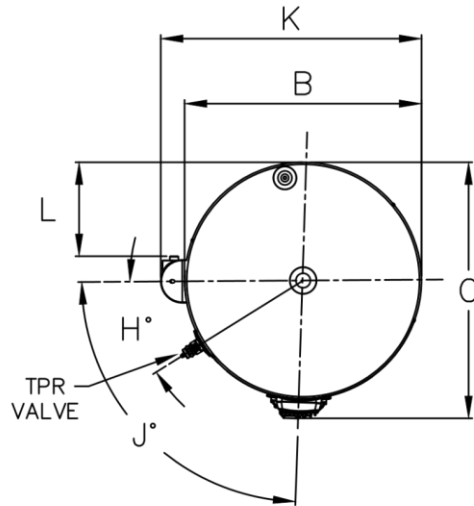
**TYPICAL INSTALLATION – OUTDOOR LOCATION – E5X SERIES**



**TYPICAL INSTALLATION – INDOOR LOCATION – E5X SERIES**



**DIMENSIONS AND TECHNICAL DATA**



**E5X Series**

Model	Hot Water Delivery Rating	Top Element Capacity	Bottom Element Capacity	TPR Valve Rating	Weight Cartoned	Weight Full
250E5X	250 litres	50 litres	250 litres	1000 kPa	83 kg	353 kg
315E5X	315 litres	50 litres	315 litres	1000 kPa	98 kg	426 kg

Dimensions (mm)	A	B	C	D	E	F	G	H	J	K	L	M
250E5X	1396	640	705	1109	73	103	988	32°	88°	705	262	92°
315E5X	1640	640	705	1317	113	103	1228	32°	88°	705	262	92°

This model is suitable for either indoor or outdoor installation.  
 This model has the water connections and a TPR valve fitting on the left hand side.  
 Technical data is subject to change.

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## CONNECTIONS – PLUMBING

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All plumbing work must be carried out by a qualified person and in accordance with the Standard AS/NZS 3500.4 and all local codes and regulatory authority requirements.

### CONNECTION SIZES

	E5X Series
• 50°C limited outlet connection	G 3/4 B
• Cold water connection	G 3/4 B
• Relief valve connection	Rp 1/2

### WATER INLET AND OUTLET

The E5X series water heaters have a cold and a 50°C limited outlet connection on the left hand side only.

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 an approved thread sealant such as Teflon tape on all sealing threads.

An isolation valve and non-return valve must be installed on the cold water line to the water heater. An acceptable arrangement is shown in the diagram. Refer also to “[Hot Water Delivery](#)” on page 26 and to “[Mains Water Supply](#)” on page 25.

A disconnection union must always be provided at the cold water inlet and 50°C limited outlet or hot water outlet on the water heater to allow for disconnection of the water heater.

**⚠ Warning:** To prevent malfunction of the temperature limiting valve, connecting pipe work must not be inserted deeper than 15 mm into the outlet connection of an E5X series water heater.

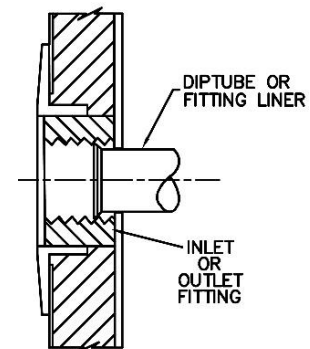
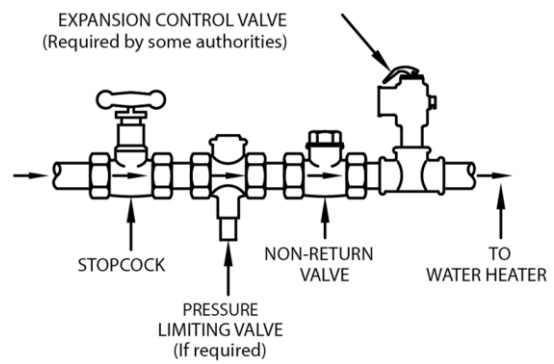
This water heater has either a fitting liner or plastic dip tube in the inlet and outlet fittings (see diagram). These must be in place for the water heater to function properly. Do not remove or damage them by using heat nearby. They will be pushed into the correct position as the fitting is screwed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

This water heater is intended to be permanently connected to the water mains and not connected by a hose-set. A braided flexible hose or semi-flexible connector may be used for connection to the water heater, where permitted by AS/NZS 3500.4.

### 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 in a plastic bag attached to the water heater. 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.

To fit the relief valve:

- Seal the thread with an approved thread sealant such as Teflon tape - never hemp. Make sure tape does not hang over the end of the thread.
- Hand tighten the valve into the opening marked "Relief Valve" (refer to the [installation diagram](#) on page 27).
- Using a spanner engaged on the valve's spanner flats and applying medium pressure to tighten, turn the relief valve an additional ½ to 1 ½ turns to secure and make the joint water tight, leaving the valve drain pointing downwards.

**⚠ Warning:** Do not use a pipe wrench or poor fitting tool on the valve body nor over tighten the valve, as this could damage the valve and prevent safe operation.

- Operate the easing lever on the valve to check the smooth operation of the valve plunger. It is very important the lever is raised and lowered gently. The lever should move smoothly and without undue force.
- If the lever cannot be moved or is jerky in its movement, then the valve has been damaged and must be replaced.
- A copper drain line must be fitted to the temperature pressure relief valve (refer to ["Relief Valve Drain"](#) on page 31).
- 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 18).

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 the [cold water connection diagram](#) on page 29). A copper drain line must be fitted to the expansion control valve (refer to ["Relief Valve Drain"](#) on page 31).

The valve, if installed within 500 mm of the water heater, 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) to carry the discharge clear of the water heater. 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 nine (9) metres with no more than three bends greater than 45° before discharging at an outlet or air break. The maximum length of nine (9) metres for a drain line is reduced by one (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.

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## CONNECTIONS – ELECTRICAL

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**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 edition of the Wiring Rules AS/NZS 3000 in force in the state or territory at the time of installation, and all local codes and regulatory authority requirements.

### WATER HEATER

The water heater must be directly connected to a 220 V - 240 V a.c. 50 Hz mains power supply with an isolating switch installed at the switchboard.

The Wiring Rules AS/NZS 3000:2018 requires a second and lockable isolating switch be installed adjacent to but not on or attached to the water heater, and a residual current device (RCD) installed in the electrical circuit to the water heater. The second and lockable isolating switch and RCD may not be required if the installation of this water heater is considered a repair under Clause 1.9.3.2 of the Wiring Rules, i.e., the installation of the water heater tank is a straight change-over with a straight disconnect / reconnect of the wiring and where there is no modification to the electrical wiring of the final subcircuit or no increase in electrical load above the circuit capacity.

Total Rating Per Heating Unit	Total Current @ 240 V a.c.	Staged Ratings of Triple Blade Heating Unit		
3600 Watts	15 Amps	515 Watts	1030 Watts	2055 Watts

The power supply must be a Continuous / Domestic Time of Use type. A separately metered controlled load supply, i.e. Off-Peak / time controlled, is not suitable. Check with the local electricity supply authority as to their requirements. A home management system will provide the maximum financial savings by supplying utility grid sourced power at cheaper tariff times when additional heating is required. Discuss the power supply requirements with the householder.

A flexible 20 mm conduit is required for the electrical cable to the water heater. The conduit is to be connected to the unit with a 20 mm terminator. Connect the power supply wires directly to the terminal block and earth tab connection, ensuring there are no excess wire loops inside the front cover. The temperature rating of the power supply wires insulation must suit this application, or the wiring protected by insulating sleeving with an appropriate temperature rating if it can make contact with the internal storage cylinder. The temperature of the internal storage cylinder can reach 80°C on occasion.

**Note:** If the water heater is installed on a property that has export limiting capability of the solar PV power production, then it must be connected to a home energy management system (HEMS) for it to operate using excess solar PV power production.

### SENSOR AND THERMOSTAT SETTINGS

The temperature sensors control the maximum water temperature in conjunction with the control system. Water is heated to either 70°C or 80°C depending on the mode of operation. These temperature settings are fixed and cannot be adjusted.

The thermostats act as a backup safety device to control the electricity supply to the heating unit. Their primary purpose is to disconnect the electricity supply to the heating unit in the event of a sensor or control system failure that results in power continuing to be supplied to a heating unit after the designed temperature setting has been achieved. Their secondary purpose is to provide an over-temperature cut-out function if required. The thermostats are installed with a temperature setting of 80°C. **They must not be adjusted.**

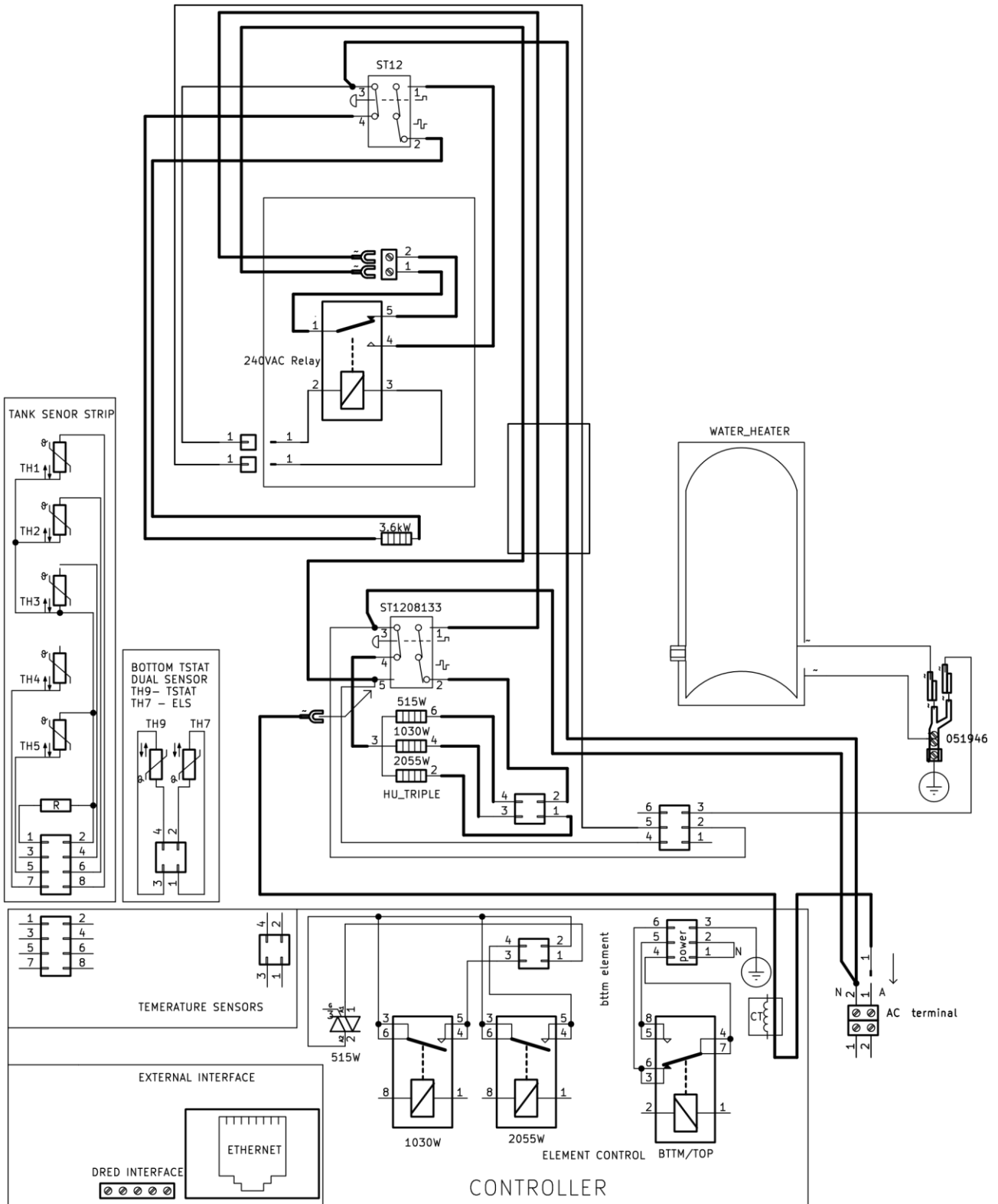


**EXTERNAL CONTROL DEVICE**

An external control device, the Energy Management Unit, must be installed for this water heater to operate as a variable power water heater and take advantage of special tariffs and rebates from the consumer's electricity utility. An external Power Meter is also required to take advantage of excess power generated by a solar PV system. The Energy Management Unit is installed remote from the water heater. The external Power Meter is wired directly to the switchboard. The Energy Management Unit and Power Meter communicate with the controller module on the water heater. Refer to the installation instructions provided with the Energy Management Unit and external Power Meter for details of their installation.

The PowerStore water heater's controller module is capable of communications using the power line telecommunications (PLT) protocol. It is not necessary to hard wire to the water heater an Energy Management Unit or Power Meter that is PLT capable and protocol compliant with the PowerStore water heater.

WIRING DIAGRAM



Top thermostat – setting

80°C

Bottom thermostat – setting

80°C.

**Electrical Circuit for Twin Element Variable Power Water Heater  
Robertshaw “ST” Thermostats**

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# COMMISSIONING

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## TO FILL AND TURN ON THE WATER HEATER

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.

- 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.
- Inspect for leaks at the temperature pressure relief valve connection to the water heater.

If a leak is detected, close the cold water isolation valve fully and relieve pressure from the water heater by either operating the easing lever on the temperature pressure relief valve or opening a hot tap. Remove the valve and all of its thread sealant from the threads of the valve. Reapply new thread sealant and refit the valve. Refer to the procedure in **“Temperature Pressure Relief Valve”** on page 30.

- Operate the easing lever on the temperature pressure relief valve to check the smooth operation of the valve plunger and that water discharges freely from the drain line. It is very important the lever is raised and lowered gently. The lever should move smoothly and without undue force.

If the lever cannot be moved or is jerky in its movement, then the valve has been damaged and must be replaced.

- Switch on the electrical supply at the water heater isolating switch on the switchboard and at the isolating switch at the water heater (if installed).
- Check the status of the LEDs on the front of the Controller Module on the lower front of the water heater.

When the power is turned on, the green LED will commence to flash to indicate the water heater is heating.

If an Energy Management Unit has not been installed, the red LED will commence to slow blink flash.

**Note:** Refer to **“LED Operation”** on page 12 for further information on the LED operation.

The temperature limiting valve on an E5X series water heater is factory set to provide 50°C hot water at the outlet. If it is necessary to adjust the outlet temperature of an E5X series water heater, refer to **“Outlet Temperature Compensation Adjustment”** on page 36.

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

Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or a responsible officer.

## TO TURN OFF THE WATER HEATER

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

- Switch off the electrical supply at the water heater isolating switch on the switchboard and at the isolating switch at the water heater (if installed).
- Close the cold water isolation valve at the inlet to the water heater.

## OUTLET TEMPERATURE COMPENSATION ADJUSTMENT

The maximum outlet temperature of an E5X series 50°C limited water heater may be adjusted to compensate for temperature losses in the pipe work between the water heater outlet and fixtures used primarily for personal hygiene. This adjustment may only be made by a plumber.

**⚠ Warning:** After adjustment of the temperature limiting valve, the water temperature **MUST NOT** exceed 50°C from the first tap in the pipe work after the water heater and used for personal hygiene, such as in a bathroom or ensuite.

To adjust the maximum outlet temperature:

- Ensure the temperature of the water in the water heater is up to at least 65°C.

The temperature of the water can be measured at the temperature pressure relief valve drain discharge point. Do not measure this temperature from a hot tap

- Operate the easing lever on the temperature pressure relief valve and place the thermometer in the flow of water from the relief valve drain line.
- Remove the upper plastic casing and insulation covering the pipe work on the side of the water heater, by removing the three (3) retaining screws, to expose the temperature limiting valve.
- Locate the first hot tap in the hot water pipe work after the water heater used for personal hygiene.

- Turn on the hot tap fully to achieve maximum flow.
- Using a thermometer, measure the temperature of the water from the tap, until the temperature stops increasing.

If the water temperature is below 50°C the maximum outlet temperature of the outlet can be adjusted upwards.

- Turn the adjusting knob on the temperature limiting valve counter-clockwise (down away from the water heater), using a 6 mm Allen key.

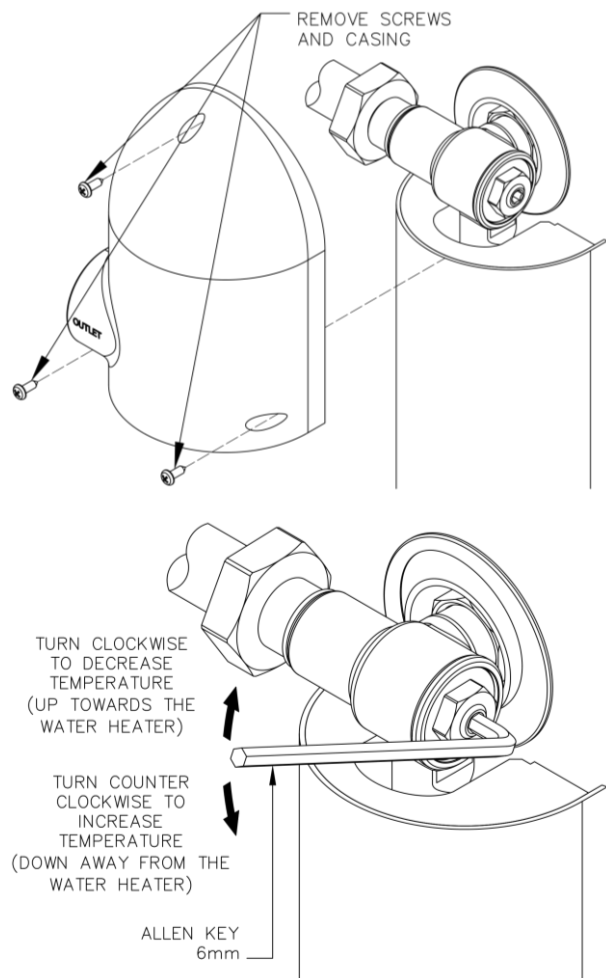
Turning the adjusting knob counter-clockwise (down away from the water heater) increases the outlet water temperature, turning it clockwise (up towards the water heater) decreases the outlet water temperature.

- Repeat the water temperature measurement from the same hot tap.
- Further adjust the temperature limiting valve as required, turning the adjusting knob either counter-clockwise (down away from the water heater) or clockwise (up towards the water heater) to increase or decrease the outlet water temperature, until an acceptable water temperature not exceeding 50°C is measured at the same hot tap.

**Note:** The valve has a stop point for the maximum outlet water temperature adjustment. The outlet water temperature cannot be increased beyond this point. It is possible that, depending upon valve tolerances and the pipe work design, 50°C water temperature may not be attainable at the hot tap.

The valve does not have a stop point for the minimum outlet water temperature adjustment. If adjusted too far, the adjustment screw will disengage and a water leak will result. If this occurs, turn the adjustment screw counter-clockwise (down away from the water heater) to re-engage with the valve and stop the leak.


- Turn off the hot tap.
- Replace the insulation and plastic casing to cover the temperature limiting valve and pipe work on the side of the water heater and secure using the three (3) retaining screws.



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## DRAINING THE WATER HEATER

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

To drain the water heater:

- Turn off the water heater (refer to “**To Turn Off The Water Heater**” on page 35).
- Close all hot water taps.
- Operate the relief valve lever - do not let the lever snap back or you will damage the valve seat. **It is very important the lever is raised and lowered gently.**

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

- Undo the union at the cold water inlet to the water heater and attach a hose to the water heater side of the union.

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

- Open the relief valve by holding the lever in the raised position.

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

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# SOLAHART OFFICES

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## International Headquarters

**Solahart Industries Pty Ltd**  
(ABN 45 064 945 848)

Registered and Head Office  
1 Alan Street  
Rydalmere, New South Wales, 2116  
Australia

Postal Address:  
PO Box 7508  
Silverwater, New South Wales, 2128  
Australia

Principal Manufacturing Facility  
55 Brodie Street  
Rydalmere, New South Wales, 2116  
Australia

[www.solahart.com.au](http://www.solahart.com.au)

## Australia

For SERVICE Telephone - **1800 638 011**  
or your nearest Solahart Dealer

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

## International Sales

Telephone International Sales:  
**+ 61 8 9351 4600**

Facsimile International Sales:  
**+ 61 8 9351 4698**

Email:  
**solahart@solahart.com.au**

Web:  
**www.solahart.com**