

Owner's Guide and Installation Instructions



Air Sourced Split Heat Pump Water Heater MPs Series



Install a Rheem

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

PATENTS

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

TRADE MARKS

® Registered trademark of Rheem Australia Pty Ltd.
™ Trademark of Rheem Australia Pty Ltd.

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.

CONTENTS

HOUSEHOLDER – We recommend you read pages 4 to 19.

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

About Your Water Heater.....	4
Regular Care	11
Water Supplies.....	13
Save A Service Call	15
Installation.....	20
Heat Pump And Tank Assembly	27
Connections – Plumbing	39
Connections – Electrical.....	42
Commissioning.....	44
Draining The Water Heater	46
Warranty	47

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

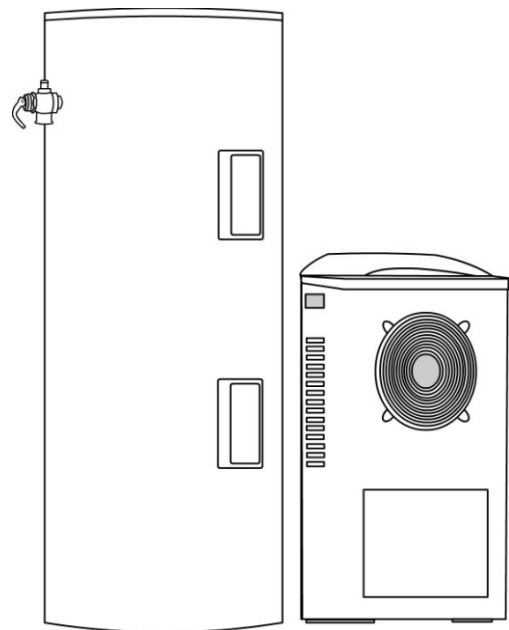
Your Rheem® air sourced split heat pump storage tank is suitable for indoor or outdoor installation and the heat pump module designed for outdoor installation only. The model you have chosen is a 561 series model. This water heater is recommended for connection to a 24 hour per day power supply.

A Rheem heat pump water heater consumes less energy than an electric water heater. The impact on an electricity account will depend on the tariff arrangement of the water heater replaced and where you live. Contact your energy provider for more information on tariff arrangements and cost comparisons.

The air sourced heat pump water heater has a Rheemglas® vitreous enamel lined steel cylinder. The heat pump module's evaporator absorbs heat from the surrounding air and transfers this heat into the water in the storage tank.

When hot water is drawn off and cold water enters the tank, the thermostat activates a fan, a compressor and a circulator. The fan draws outside air in through the air inlet louvres at the side and rear of the heat pump module and the pump circulates water from the bottom of the storage tank through a heat exchanger. Heat is absorbed from the air by an evaporator and transferred into the water through the heat exchanger. The resulting cold air is then discharged through the air outlet grille back to atmosphere and the heated water is circulated back into the storage tank. This process continues while heating is required until the water in the storage tank reaches a temperature of 60°C.

Even on cloudy or cold days, heat is drawn from the surrounding air. The heat pump will operate when the ambient air temperature is between a minimum of 3°C to 5°C and maximum of 45°C to 55°C. The booster heating unit will operate when the ambient air temperature is outside of this temperature range, if heating is required. The efficiency of the water heater increases as the surrounding ambient air temperature increases within the operating range of the heat pump.



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

ELECTRIC BOOSTING

Ice may begin to form on the evaporator reducing the heat pump efficiency, when the ambient air temperature falls below 7°C and the heat pump has been operating for an extended period. At ambient air temperatures below 3°C to 5°C, the water heater deactivates the heat pump operation and switches to the booster heating unit. During this period the evaporator will defrost if necessary.

At ambient air temperature above 45°C to 55°C, the water heater deactivates the heat pump operation and switches to the booster heating unit.

The water inside the tank will be heated to a temperature of 60°C by the electric booster heating unit if heating is required. The temperature setting of the sensor controlling the booster heating unit is not adjustable and is set at 60°C.

The boost capacity of the booster heating unit in a 325 litre storage tank is 180 litres.

Note: The boost capacity of a low watts density or other than a 2.4 kW or 3.6 kW heating unit, if used, is 100 litres.

FREEZE PROTECTION

The water heater has a freeze protection system. The freeze protection system will protect the water heater from damage, by preventing ice forming in the waterways of the water heater, in the event of freezing conditions occurring.

If the ambient air temperature falls below 4°C and the heat pump module is not operating, the system will operate the circulator periodically. During this freeze protection cycle, the circulator will operate for three (3) minutes and then rest for fifteen (15) minutes, before the cycle is recommenced. Water is circulated from the storage tank through the heat pump circuit, to prevent freezing in the connecting pipe work and heat pump module.

⚠ Warning: In areas where the ambient air temperature may fall below 0°C, power must be available to the water heater at all times to prevent freezing in the heat pump circuit.

The system must be installed with the heat pump circuit hot and cold pipes fully insulated with closed cell polymer insulation with a minimum thickness of 13 mm. Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The water heater has NO WARRANTY for freeze damage if the heat pump circuit hot and cold pipes are not suitably insulated or if power is unavailable at the water heater.

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 22**, 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 heat pump circulator and heat pump system to operate effectively.

HOW HOT SHOULD THE WATER BE?

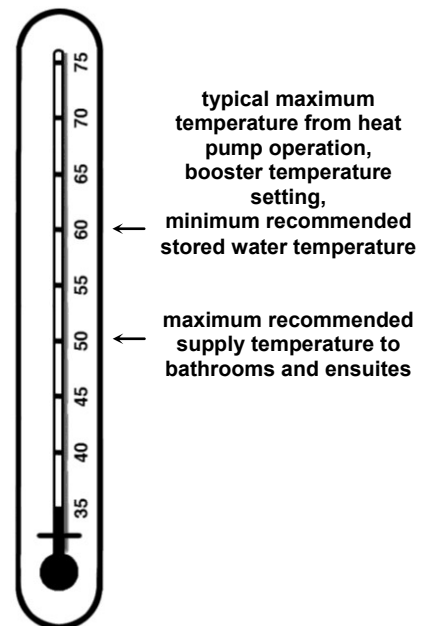
The system controls (compressor, evaporator and fan) will operate until a water temperature of 60°C is reached. If the ambient air temperature is outside of the heat pump's operating range, the water temperature is boosted automatically to 60°C by the electric booster heating unit, if heating is required.

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

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 thermostats controlling the heat pump and the booster heating unit are factory set and not adjustable.

⚠ 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 access cover(s) will expose 240 volt wiring. They must only be removed by a qualified person.

- 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 are corrosive to the materials used in the heat pump system.
- Do not store swimming pool chemicals, household cleaners, etc., near the water heater.
- Ensure the air flow, air inlet louvres and outlet grille are not obstructed in any way at any time.

SAFETY

This water heater is supplied with a thermostat, two over-temperature energy cut-outs 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.

The operation of the over-temperature cut-out on the 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.

If the electrical supply 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.

OPERATING MODE MONITOR

An operating mode monitor is located on the front of the heat pump module and houses a green and a red LED.

The green LED, marked "NORMAL", indicates the current operating mode of the heat pump water heater and the red LED, marked "ATTENTION", indicates a fault mode.

The green LED will emit either a constant glow or a series of flashes, with a 2 second interval between each series. A series of long green flashes may also be emitted.

The red LED will emit a series of flashes, with a 2 second interval between each series, only if there is a particular fault condition with the system.



The operating modes are:

Flashes	Operating Modes
solid green (remains on)	Standby mode – water is hot
1 x green	Call for heating received – system checks performed Note: unit may wait and continue flashing until compressor has cooled from its last operation
2 x green	Circulator commences circulation
3 x green	Heat pump operation – compressor and fan running
4 x green	Defrost mode – circulator operates for three (3) minutes
long green	Heating unit on – ambient air temperature below 3°C to 5°C or above 45°C to 55°C
no green (remains off)	No power at the water heater or a possible fault condition Refer to notes below before calling for service

Notes:

- **Power must be available at the water heater and to the heat pump for the LEDs to glow or flash.**
- When power is turned on or reconnected to the water heater, the red LED will emit a solid glow for three (3) seconds and then extinguish. This is normal operation and does not indicate a fault. The LED display will then return to the current operational status.
- If there is power to the water heater and the green LED is off or the red LED is flashing, this indicates there may be a fault condition with the water heater. The red LED may emit up to nine flashes in each series of flashes. Refer to "**Possible fault condition**" on page 8.
- **Time controlled power supply**
If the water heater is connected to a time controlled power supply, then during periods of no power supply at the water heater the LEDs will be off.

This is not a fault condition, but a result of no power being available to energise the LEDs.

The green LED will recommence glowing or flashing when power is available again at the water heater.

- **Possible fault condition**

There may be a fault condition with the water heater if either:

- there is power available at the water heater and the green LED is off

Before phoning to arrange a service inspection due to the green LED being off, refer to “**Heat Pump Is Not Operating**” on page 16 in the “Save A Service Call” section of this Owner’s Guide.

or

- the red LED is flashing – the red LED may emit up to nine flashes in each series of flashes

The fault condition which led to the red LED flashing may be cleared after the backup heating cycle by the booster heating unit has completed and the red LED has gone out. If the red LED has gone out, when heating is next required the green LED will flash and the heat pump will commence to operate. If the heat pump stops operating and the red LED recommences to flash, a service call may be required.

Before phoning to arrange a service inspection due to the red LED flashing, refer to “**Heat Pump Is Not Operating**” on page 16 in the “Save A Service Call” section of this Owner’s Guide.

TIMER CONTROL

A timer can be installed in the electrical circuit to the water heater. The timer must be weatherproof if it is installed outdoors. The suitability of connection to less than a 24 hour per day power supply is subject to hot water load, location and climate.

It may be desirable for the water heater not to operate between certain hours, such as during the peak period when connected to a Time of Use electricity supply due to a more expensive tariff rate applying.

A timer will affect the operating times of both the heat pump circuit and the booster heating unit.

Notes:

- This water heater is recommended for connection to a 24 hour per day power supply. If there is a risk of freezing conditions, the electrical supply to the water heater should not be switched off, otherwise damage could result (refer to “**Freeze Protection**” on page 5).
- A 325 model water heater is not suitable to be connected to a power supply of less than 16 hours per day. At least 8 hours of power connection should be available during daylight hours.

TO TURN OFF THE WATER HEATER

If you plan to be away from home, we recommend you leave the water heater switched on in the event of freezing conditions occurring.

If it is necessary to turn off the water heater:

- Switch off the electrical supply at the isolating switch to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.

Note: If there is a risk of freezing conditions, the electrical supply to the water heater should not be switched off, otherwise damage could result (refer to “**Freeze Protection**” on page 5).

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 isolating switch to the water heater.

Note: When power is turned on or reconnected to the water heater, the red LED will emit a solid glow for three (3) seconds and then extinguish. This is normal operation and does not indicate a fault. The LED display will then return to the current operational status.

The water heater may take up to forty five (45) minutes to commence operating when the power supply is switched on. The heat pump will only operate when power is available at the water heater, the water in the storage tank requires heating, the heat pump compressor is cool and the ambient air temperature is within the heat pump's operating temperature range of between a minimum of 3°C to 5°C and a maximum of 45°C to 55°C. If the ambient temperature is outside of this range, the water heater will commence heating with the booster heating unit.

When the heat pump is operating, the system will switch to the booster heating unit if the detected ambient air temperature is outside the operating temperature range of between a minimum of 3°C to 5°C and a maximum of 45°C to 55°C.

The system will switch back to heat pump operation from the booster heating unit if the detected ambient air temperature has moved back within the heat pump's operating temperature range.

Note: The heat pump may not turn on immediately after either having just completed a heating cycle and more hot water is drawn from the water heater or power is shut down to the compressor, either during or at the end of a heating cycle. The heat pump will wait until the compressor has cooled down and the conditions for start up are favourable in order to protect the compressor from damage. This will be a minimum of forty five (45) minutes and may take up to ninety (90) minutes from the last heating cycle.

GOING ON HOLIDAYS

If you plan to be away from home, we recommend you leave the water heater switched on in the event of freezing conditions occurring (refer to "[Freeze Protection](#)" on page 5). If it is necessary to turn off the water heater, refer to "[To Turn Off The Water Heater](#)" on page 8.

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 11 and to "[Anode Inspection and Replacement](#)" on page 13.

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.

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

Installation requirements are [shown on pages 20 to 25](#). 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 and all local codes and regulatory authority requirements.

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

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, its components and fittings. Refer to “[Water Supplies](#)” on page 13.

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 13 to 14](#).

HOW LONG WILL THE WATER HEATER LAST?

The water heater is supported by a manufacturer’s warranty ([refer to page 47](#)). 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 9.

ENVIRONMENT

At the end of the service life of the heat pump water heater and prior to the water heater being disposed of, a person qualified to work with refrigerants must recover the refrigerant from within the sealed system. The refrigerant must not be vented to atmosphere. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

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 12.

⚠ 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 12.
- Check the drain line from the safe tray (if one is installed) is not blocked.

MAJOR FIVE YEAR SERVICE

It is recommended a major five year service be conducted on the water heater. The service must be conducted 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 valve(s), are not included in the Rheem warranty. A charge will be made for this work.

The major service includes:

- 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 13).

- Check the electric heating unit for excessive calcium build up or corrosion and replace if necessary.
- Check and inspect the heat pump module for operation.
- Visually check the unit for any potential problems.
- Inspect all connections.
- Check the condensate drain.
- 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. Depending upon the power supply connection, hot water may not be available until the next day.

HEAT PUMP SYSTEM

It is recommended the evaporator and refrigeration system is checked every five years. In particularly dusty environments, it may be necessary to have the heat pump system checked and cleaned of dust and residue on a more regular basis.

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 18).

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

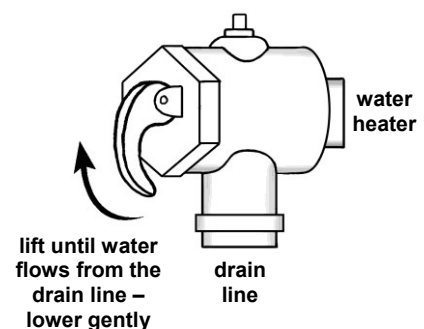
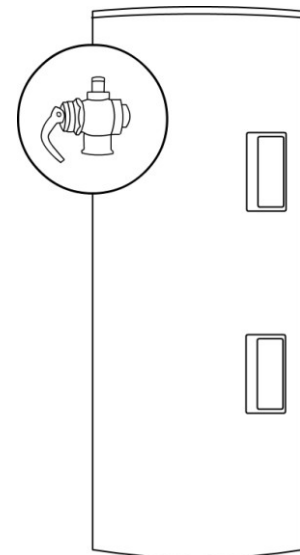
Operate the easing lever on the temperature pressure relief valve once every six months. **It is very important you raise and lower the lever gently.**

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

⚠ 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 13).

**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.

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 number of components in this water heater.

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 storage tank.

The correct colour coded anode is as shown in the following table:

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 anodes 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.

If the anode is not replaced during a five year service (refer to “Major Five Year Service” on page 11) then the maximum time after installation when the anode 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 anode 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. In areas where this is likely to occur, the installer should instruct the householder on how to dissipate the gas safely.

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

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

SATURATION INDEX

The saturation index (SI) is used as a measure of the water's corrosive or scaling properties.

Where the saturation index is less than -1.0 , the water is very corrosive and the Rheem warranty does not apply to the water heater. In a corrosive water supply, the water can attack copper parts and cause them to fail.

Where the saturation index exceeds $+0.40$, the water is very scaling and the Rheem warranty does not apply to the water heater.

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

CHLORIDE AND PH

Where the chloride level exceeds 250 mg/L the Rheem warranty does not apply to the water heater. In a high chloride water supply, the water can corrode stainless steel parts and cause them to fail.

Where the pH is less than 6.0 the Rheem warranty does not apply to the water heater. pH is a measure of whether the water is alkaline or acid. In an acidic water supply, the water can attack stainless steel parts and cause them to fail.

Water with a pH less than 6.0 may be treated to raise the pH. The water supply from a rainwater tank in a metropolitan area is likely to be corrosive due to the dissolution of atmospheric contaminants.

SUMMARY OF WATER CHEMISTRY ADVICE AFFECTING WARRANTY

The water heater is 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:

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) > $+0.4$
Chloride > 250 mg/L
pH < 6.0

Component

water heater cylinder
water heater cylinder
water heater
water heater
water heater
water heater

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)

- **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) at the water heater and ensure they are turned on.

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

- **Is a timer installed?**

If a timer has been installed, ensure sufficient time has been allowed to reheat the storage tank.

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

- **Heat pump fault**

Has the heat pump developed a fault and the red LED is flashing?

The heat pump will not operate and the water heater will switch to backup heating mode using the booster heating unit.

Refer to “[Heat Pump Is Not Operating](#)” on page 16.

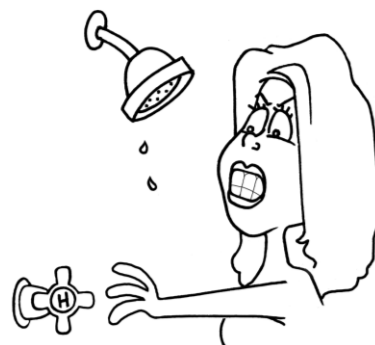
- **Temperature pressure relief valve running**

Is the relief valve discharging too much water?

Refer to “[Temperature Pressure Relief Valve Running](#)” on page 18.

- **Water heater size**

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



WATER NOT HOT ENOUGH

You may 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.

WATER TOO HOT

The water heater during heat pump operation and booster heating mode will heat the water to a temperature of 60°C. If a heat pump component has developed a fault condition, the heat pump will not operate and the water heater will switch to backup heating mode to ensure a supply of hot water.

In backup heating mode, the booster heating unit will operate if heating of the water is required, regardless of the ambient air temperature. The water heater, during backup heating mode will heat the water to a temperature of either 60°C or 70°C, depending upon the fault condition.

The red LED will flash to indicate the fault mode that has occurred. Refer to “[Heat Pump Is Not Operating](#)” on page 16.

HEAT PUMP IS NOT OPERATING

There must be power available at the water heater and to the heat pump for the heat pump to operate and for the LEDs to glow or flash.

- **Time controlled power supply (no power at the water heater)**

If the water heater is connected to a time controlled power supply, then during periods of no power supply at the water heater the LEDs will be off.

This is not a fault condition, but a result of no power being available to energise the LEDs.

The green LED will recommence glowing or flashing when power is available again at the water heater.

- **Heat pump operating range**

The heat pump's operating range is between an ambient air temperature of a minimum of 3°C to 5°C and a maximum of 45°C to 55°C. The heat pump will not operate for extended periods when the ambient air temperature is outside the heat pump's operating range.

Heating will switch to the booster heating unit in booster heating mode (long green flash) instead. The water will be heated to 60°C during these periods.

The green LED will glow (standby mode – water is hot) when the booster heating unit completes the booster heating mode cycle.

- **Thermal cut out activated**

Has the thermal cut out activated and the red LED is flashing a series of single flashes?

The refrigeration circuit is protected by a thermal sensor located on the compressor. This will activate a thermal cut out in the event of thermal surges or excessive heat in the refrigeration system.

If the thermal cut out has activated, the red LED will flash a fault mode of a series of single flashes and the heat pump will not operate. The water heater will switch to backup heating mode using the booster heating unit to ensure a supply of hot water. In backup heating mode, the water will be heated to a temperature of 70°C if the thermal cut out has been activated.

The thermal cut out will automatically reset itself when the booster heating unit has completed one heating cycle and the compressor cools down.

Refer to "[Backup heating mode and series of red flashes](#)" on page 16.

- **Heat pump fault condition**

If the heat pump has developed a fault condition, the heat pump will not operate and the red LED will flash a fault mode of a series of one (1) to nine (9) flashes.

If a series of two (2) flashes occurs, the heat pump will not switch to backup heating mode. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

If a single flash or a series of three (3) to nine (9) flashes occurs, the water heater will switch to backup heating mode to ensure a supply of hot water. In backup heating mode, the water will be heated to a temperature of either 60°C or 70°C.

Refer to "[Backup heating mode and series of red flashes](#)" on page 16.

- **Backup heating mode and series of red flashes**

During the backup heating mode by the booster heating unit, caused by either the thermal cut out activating or a heat pump fault condition, the red LED will emit a series of flashes.

Fault Mode – 2 red LED flashes

If a series of two (2) flashes occurs, the heat pump will not switch to backup heating mode. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

Fault Mode – 4, 5, 9 red LED flashes

In backup heating mode with a fault mode of either a four (4), five (5) or nine (9) series of red flashes, the water is heated to a temperature of 60°C. At the completion of a heating cycle by the booster heating unit, the red LED will continue to flash, the green LED will commence to glow or flash, the heat pump will not operate and the water heater will continue to operate in backup heating mode whenever heating is required, until the electrical supply to the water heater is switched off and on again.

The fault mode is recorded to the heat pump controller's memory. The Defrost Mode of the water heater will be able to operate during these fault modes.

If the electrical supply is switched off either at the isolating switch to the water heater or by a time controlled power supply, the red LED will go out. When the electrical supply is switched on again, the red LED will recommence to flash the fault mode for thirty (30) seconds. At the end of the thirty (30) second period and depending upon the fault condition, the red LED may stop flashing and the green LED will commence to glow or flash.

If the red LED stops flashing and the green LED commences to glow or flash, the water heater has reset the fault condition and switched back to normal operation. The heat pump will commence to operate when heating is next required. Refer to "[Heat Pump Start Up After Backup Heating Mode](#)" on page 17.

If the red LED continues to flash after thirty (30) seconds, the fault condition which led to the red LED flashing has not cleared and there may be a problem with the heat pump. Count the number of red flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

Fault Mode – 1, 3, 6, 7 red LED flashes

In backup heating mode with a fault mode of either a one (1), three (3), six (6) or seven (7) series of red flashes, the water is heated to a temperature of 70°C. At the completion of a heating cycle by the booster heating unit, the thermostat controlling the booster heating unit opens circuit cutting power to the heat pump causing the red LED to go out. The fault condition which led to the red LED flashing may be cleared when the backup heating cycle has completed.

The fault mode is recorded to the heat pump controller's memory. The Defrost Mode of the water heater will not be able to operate during these fault modes, either during backup heating mode by the booster heating unit or after the thermostat opens circuit cutting power to the heat pump.

Both LEDs will remain off for an extended period of time until the water temperature in the top of the water heater drops to below 62°C and the thermostat closes circuit reinstating power to the heat pump.

The red LED will recommence to flash the fault mode for thirty (30) seconds. At the end of the thirty (30) second period, the green LED will commence to glow or flash. The heat pump will commence to operate when heating is next required. Refer to "[Heat Pump Start Up After Backup Heating Mode](#)" on page 17.

Heat Pump Start Up After Backup Heating Mode

The green LED will glow (standby mode – water is hot) if the water temperature in the lower part of the water heater is 50°C or more.

The green LED will flash if the water temperature in the lower part of the water heater is less than 50°C.

Note: If the green LED is glowing, then to check whether there may be problem with the heat pump, open a hot tap and allow to run for ten to fifteen minutes. This will draw cold water into the lower part of the water heater and the green LED will commence to flash. Close the hot tap when the green LED commences to flash.

The heat pump will commence to operate when the green LED is flashing.

If the heat pump stops operating and the red LED recommences to flash, the fault condition which led to the red LED flashing may not have cleared and there may be a problem with the heat pump. Count the number of red flashes and phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

Note: If the ambient air temperature is outside of the heat pump's operating range, the water heater may switch to the booster heating unit (long green flash) after three (3) minutes of heat pump operation to heat the water in booster heating mode.

The fault mode is cleared from the heat pump controller's memory after the water heater successfully completes a full heat up cycle using the heat pump.

- **Green LED is off**

There may be a fault condition with the heat pump if there is power available at the water heater and the green LED is off. Before phoning to arrange a service inspection:

- inspect the isolating switch marked “HOT WATER” or “WATER HEATER” at the switchboard and the isolating switch (if one is installed) at the water heater and ensure they are turned on
- check the fuse marked “HOT WATER” or “WATER HEATER” at the switchboard
- if a timer has been installed, check the time settings
- check the power supply tariff the water heater is connected to confirm power should be available to the water heater.

Refer also to “**Thermal cut out activated**” on page 16 and to “**Heat pump fault condition**” on page 16.

If the green LED is off and one of these conditions is not the cause, phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

TEMPERATURE PRESSURE RELIEF VALVE RUNNING

- **Normal Operation**

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

- **Continuous dribble**

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

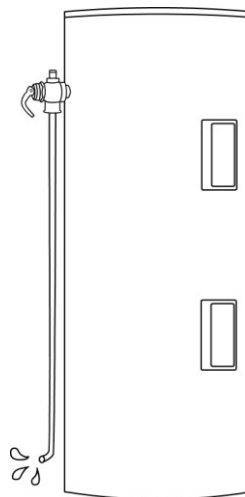
- **Steady flows for long periods (often at night)**

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 water heater **must** be switched off at the isolating switch or switchboard. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.



EXPANSION CONTROL VALVE RUNNING

If an expansion control valve is fitted in the cold water line to the water heater (refer to page 39) 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.

HIGHER THAN EXPECTED ELECTRICITY BILLS

With the installation of your air sourced split heat pump water heater, maximum electrical energy savings can be achieved. Should you at any time, feel your electricity account is higher than expected, we suggest you check the following points:

- Is the water heater operating in backup heating mode with the red LED flashing?

If there is a fault condition with the heat pump system, the water heater will default to backup heating mode to ensure a supply of hot water. Check to see if the red LED is flashing as this will indicate there may be a fault with the system.

Refer to “[Heat Pump Is Not Operating](#)” on page 16.

- Is the relief valve running excessively?

Refer to “[Temperature Pressure Relief Valve Running](#)” on page 18.

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

Refer to “[Not Enough Hot Water](#)” on page 15.

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

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

- Has there been an increase in hot water usage?

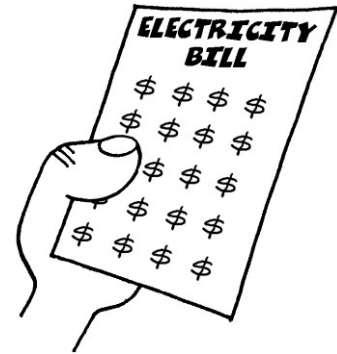
An increase in hot water usage will result in an increase in heat pump operation.

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

- Is the heat pump water heater on the same tariff as the water heater replaced?

The impact on an electricity account will depend upon the tariff arrangement of the water heater replaced and where you live. Contact your energy provider for more information on tariff arrangements and cost comparisons.

- Prolonged periods of use when the ambient air temperature is outside of the heat pumps operating range will increase the amount of boosting and increase running costs.



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

INSTALLATION

THE HEAT PUMP MODULE OF THIS WATER HEATER IS FOR OUTDOOR INSTALLATION ONLY. 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 Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements.

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

Victorian Installers

Notice to Victorian Installers from the Victorian Plumbing Industry Commission if this solar water heater is installed in a new Class 1 dwelling in the State of Victoria. The system model number is to be recorded on the Certificate of Compliance. It is also a requirement to provide the householder with permanent documentation recording the system model number exactly as it is shown in the 'List of systems capable of complying with the regulations' published by Sustainability Victoria (see www.sustainability.vic.gov.au). This documentation may be in the form of an indelible label adhered to the solar storage tank, or other suitable form placed in an accessible location, such as the meter box, for later inspection.

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.

This water heater is recommended for connection to a 24 hour per day power supply.

A Rheem heat pump water heater consumes less energy than an electric water heater. The impact on an electricity account will depend on the tariff arrangement of the water heater replaced and the installation location. Contact the energy provider for more information on tariff arrangements and cost comparisons.

STORAGE TANK AND HEAT PUMP MODULE

The heat pump water heater is made of two main components, the storage tank and the heat pump module. For transport and handling (weight) purposes both items are shipped separately. The water heater must not be operated until both components are installed and the interconnecting pipe work and wiring complete. Refer to "[Heat Pump and Tank Assembly](#)" on page 27.

Take care when handling the heat pump module. The jacket of the heat pump module needs to be handled gently so as not to cause damage.

Care must be taken during transportation and handling. Do not lay the heat pump module down and do not tilt the heat pump module more than 30° from the vertical. This will displace the compressor lubricating oil. If the heat pump module has been tilted more than 30° from the vertical during handling, it will need one hour to drain back before the power to the water heater can be switched on, otherwise damage to the compressor may result.

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.

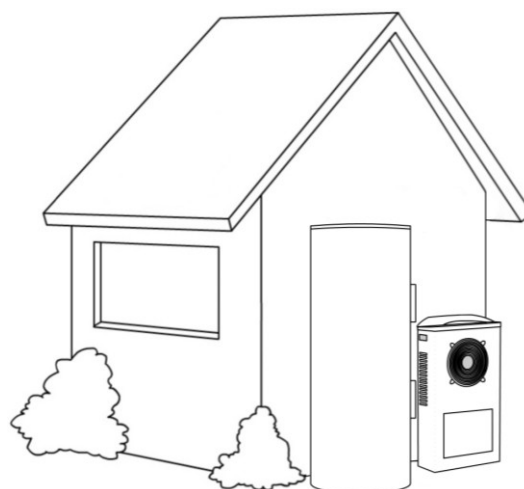
WATER HEATER LOCATION

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

The heat pump module is suitable for outdoor installation only. The heat pump module's position is to be chosen with noise, safety and service in mind. Make sure people (particularly children) will not accidentally touch the air inlet louvres and outlet grille and that they are clear of obstructions and shrubbery.

It is advisable to install the heat pump module away from bedroom or living room windows as the system components can generate a level of noise whilst they are operating. Consider the location in relation to neighbours' bedrooms and living room windows.

Clearance must be allowed for servicing of both the storage tank and heat pump module. They both must be accessible without the use of a ladder or scaffold. Make sure the storage tank's temperature pressure relief valve lever is accessible and the front covers, thermostat and booster heating unit and the heat pump module's top and front cover and system controls can be removed for service.



You must be able to read the information on the rating plates of both the storage tank and the heat pump module. If possible leave headroom of one water heater height above the storage tank so the anode can be inspected or replaced. Remember you may have to remove the storage tank or heat pump module later for servicing.

It is recommended the storage tank and heat pump module be installed at ground or floor level and must stand vertically upright, supported by a level slab or solid base. The base of the storage tank 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 storage tank.

Note: The storage tank 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 storage tank base. A moisture barrier should be used between the two surfaces in this instance.

The heat pump module must be installed against a wall and on a level slab or solid base with a minimum size of 600 mm wide x 600 mm deep. The heat pump module must be secured using the wall bracket and four feet brackets provided. Refer to [“Heat Pump and Tank Installation”](#) on page 27.

A clearance of at least 300 mm is required perpendicular from both the side air inlet louvres and the outlet grille to any wall or obstruction. Refer to the [dimensions diagram](#) on page 26.

The heat pump storage tank and heat pump module must be installed within four (4) metres of each other. The heat pump flow and return pipes connecting the heat pump storage tank to the heat pump module must not exceed four (4) metres in length each and must not contain more than 4 x 90° bends each. All changes in direction of the pipe work must be made using bends. The pipe work should not contain elbows.

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 the chemicals may attack the materials used in the heat pump system.

Remember all local authorities have regulations about putting water heaters into roof spaces.

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 as to when a safe tray must be installed.

FREEZE PROTECTION

The water heater has a freeze protection system. The freeze protection system will protect the water heater from damage, by preventing ice forming in the waterways of the water heater, in the event of freezing conditions occurring.

If the ambient air temperature falls below 4°C and the heat pump module is not operating, the system will operate the circulator periodically. During this freeze protection cycle, the circulator will operate for three (3) minutes and then rest for fifteen (15) minutes, before the cycle is recommenced. Water is circulated from the storage tank through the heat pump circuit, to prevent freezing in the connecting pipe work and heat pump module.

⚠ Warning: In areas where the ambient air temperature may fall below 0°C, power must be available to the water heater at all times to prevent freezing in the heat pump circuit.

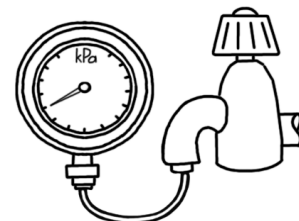
The system must be installed with the heat pump circuit hot and cold pipes fully insulated with closed cell polymer insulation with a minimum thickness of 13 mm. Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The water heater has NO WARRANTY for freeze damage if the heat pump circuit hot and cold pipes are not suitably insulated or if power is unavailable at the water heater.

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 39).

Model	325
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.



A minimum water supply pressure of 200 kPa is required to enable the heat pump circulator and heat pump system to operate effectively.

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 heat pump circulator to operate and avoid air locks in the circuit. 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.

PURGING AIR FROM THE SYSTEM

The water heater system must be purged of air prior to operation, using the manual air bleed valve supplied on the storage tank. Failure to bleed the air out of the connecting pipe work and heat pump module will result in non-operation of the circulator and failure of the heat pump to operate due to overheating.

HOT WATER DELIVERY

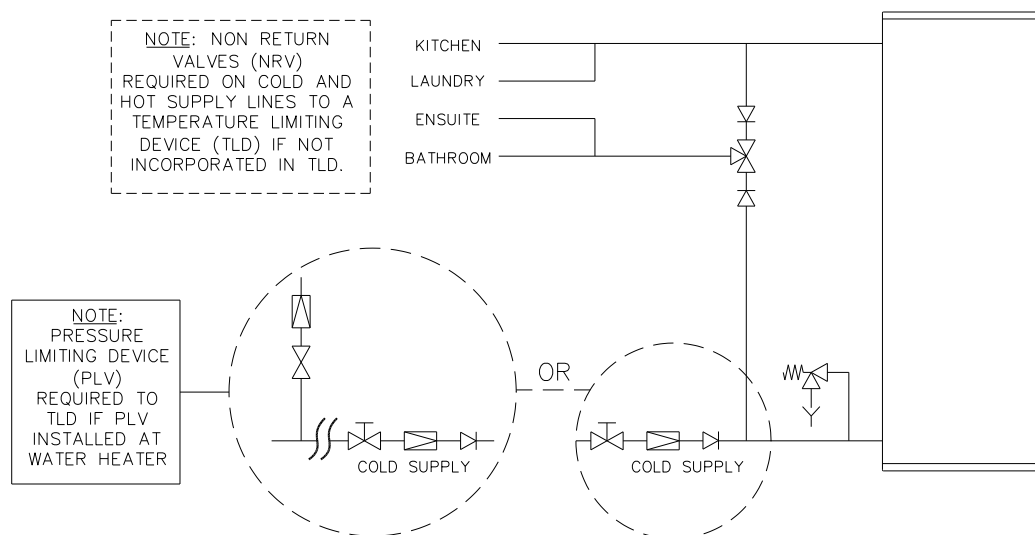
This water heater can deliver water at temperatures which can cause scalding.

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 a heat pump 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 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, pressure limiting valve and non return valve to the water heater. 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 water heater.

If a pressure limiting valve is installed on the cold water line to the 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 561 series heat pump water heater should not be installed as part of a circulated hot water flow and return system in a building.

If a circulated flow and return system is required, it is necessary to bypass the heat pump water heater and install a secondary water heater connected to the hot water flow and return line and supplied from the heat pump 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 24](#).

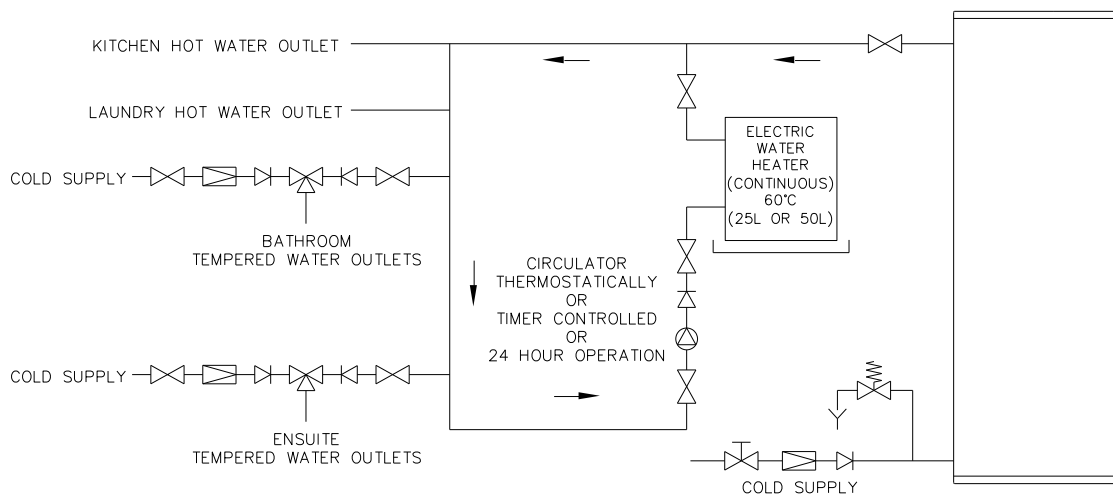
Temperature Limiting Device

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.



NOTE: A PLV IS REQUIRED TO BE INSTALLED ON THE COLD SUPPLY LINE TO THE TEMPERING VALVE IF A PLV IS INSTALLED ON THE COLD SUPPLY LINE TO THE WATER HEATER.

Circulated Hot Water Flow and Return System – Heat Pump 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 pipe work between the storage tank and the heat pump module must be fully insulated with closed cell polymer insulation or similar of a minimum thickness of 13 mm. Thicker insulation may be required to comply with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the storage tank and the heat pump module.

ANODE TYPES

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 storage tank. The black anode is typically fitted as standard (refer to "Anode" on page 13).

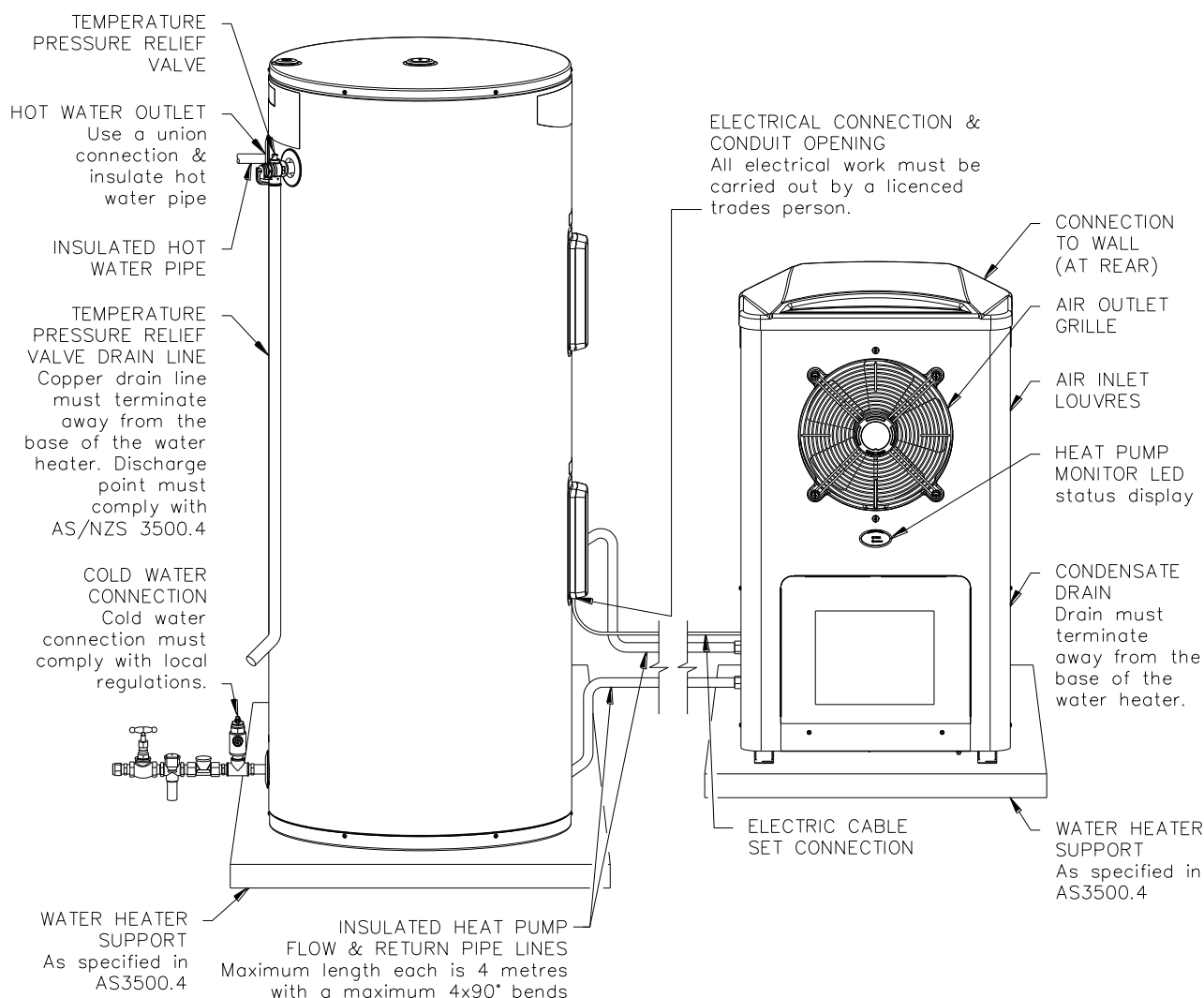
If an incorrect anode is used, there is also the possibility the anode may become overactive and hydrogen gas could accumulate in the top of the water heater during long periods of no use. In areas where this is likely to occur, the installer should instruct the householder on how to dissipate the gas safely (refer to "Caution" on page 14).

SADDLING - PIPE WORK

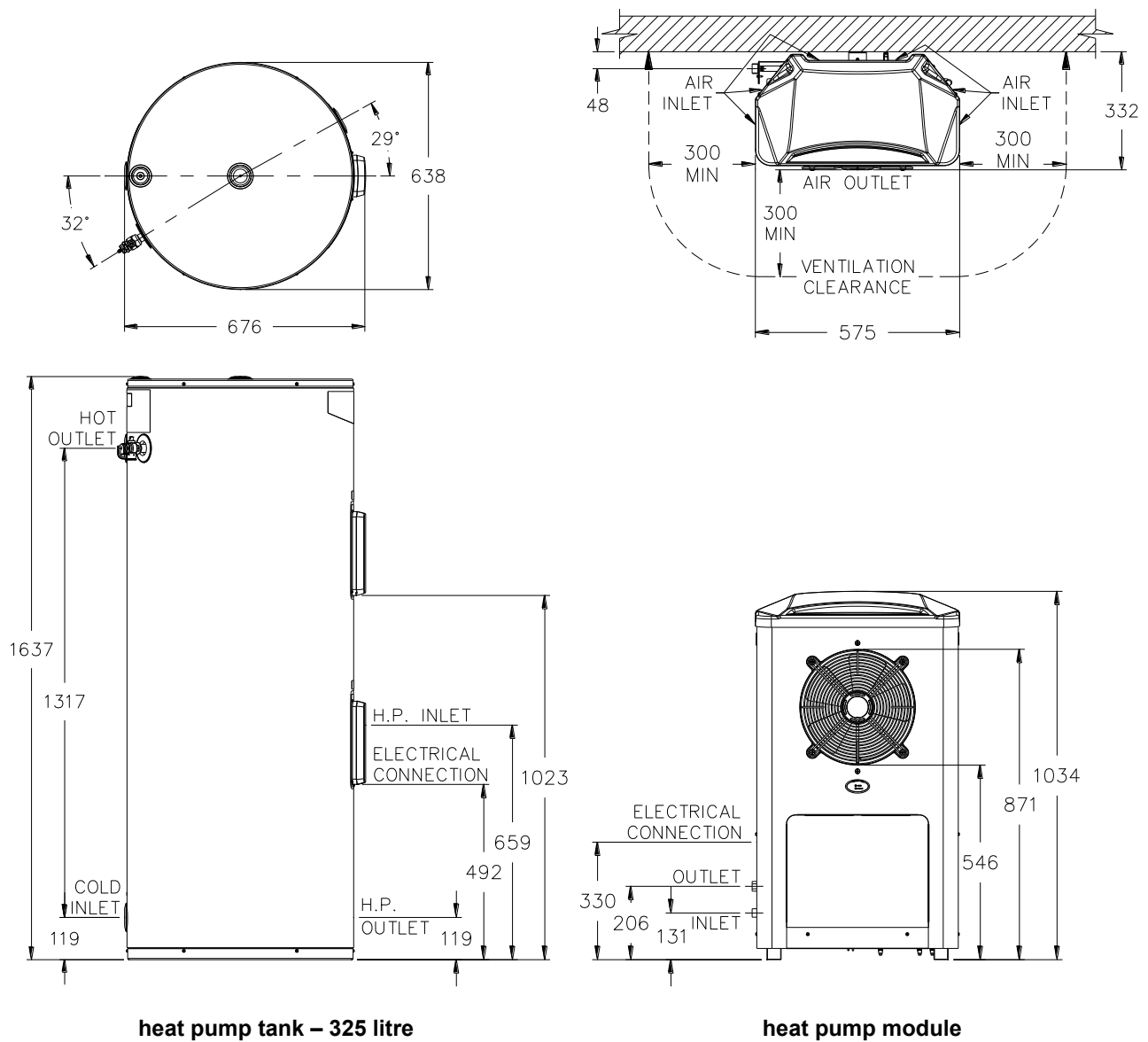
To prevent damage to the cylinder when attaching pipe clips or saddles to the water heater jacket, we recommend the use of self-drilling screws with a maximum length of 13 mm. Should pre drilling be required, extreme caution must be observed when penetrating the jacket of the water heater.

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.

TYPICAL INSTALLATION – OUTDOOR LOCATION



DIMENSIONS AND TECHNICAL DATA



System number		561 325
Tank model number		T561 325
Storage capacity	litres	325
Boost capacity*	litres	180
Weight tank empty	kg	88
Weight tank full	kg	413
Weight system full	kg	459

Heat pump module	180536
Maximum rated power input	3600 watts
Rated heat pump power input	800 watts
Booster heating unit rating	2400, 3600 watts
Refrigerant type	R134a
Refrigerant circuit pressure	3000 kPa
Weight heat pump module	46 kg

* The boost capacity of a low watts density or other than a 2.4 kW or 3.6 kW heating unit, if used, is 100 litres.
Technical data is subject to change.

HEAT PUMP AND TANK ASSEMBLY

STORAGE TANK AND HEAT PUMP MODULE

The heat pump water heater is made of two main components, the storage tank and the heat pump module. For transport and handling (weight) purposes both items are shipped separately. The water heater must not be operated until both components are installed, connected and purged of air.

Note: The heat pump flow and return pipes connecting the heat pump storage tank to the heat pump module must not exceed four (4) metres in length each and must not contain more than 4 x 90° bends each. All changes in direction of the pipe work must be made using bends. The pipe work should not contain elbows.

HEAT PUMP MODULE

The heat pump module is shipped in a box containing two hand holes to facilitate easy handling and lifting. The heat pump module must be installed against a wall and on a level slab or solid base with a minimum size of 600 mm wide x 600 mm deep. The heat pump module must be secured using the wall bracket and four feet brackets provided.

CAUTION: The heat pump module weighs approximately 46 kg. Use the hand holes provided in the sides of the packaging. Good lifting practice should be followed.

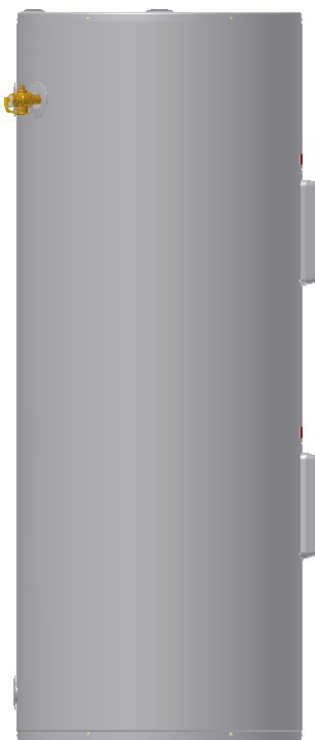
There are two flexible braided hoses provided inside the heat pump module. The flexible braided hoses are removed from the module and fixed to the outside of the heat pump module jacket using the brackets provided during the assembly procedure. The flow and return pipe work from the heat pump storage tank connects to these hoses.

A cable set housed in conduit is provided inside the heat pump module. The cable set is removed from the module and fixed to the outside of the heat pump jacket using the brackets provided during the assembly procedure. The cable set connects to the heat pump storage tank.

STORAGE TANK

The storage tank must be fully supported by a level slab or solid base. There are two water fittings located on the side of the storage tank to which the flow and return pipe work from the heat pump module is connected during the assembly procedure. The cable set from the heat pump module is also connected to the storage tank during the assembly procedure.

storage tank



heat pump module



KITS

There is a kit supplied with the heat pump storage tank (PN 290124) and a kit supplied with the heat pump module (PN 290123).

The components supplied in the kits are:

Part No	Kit Components and Description	Quantity
290124	Kit Installation Heat Pump Tank	
223607	Air bleed valve screw MPS HP	1 *
223606	Air bleed valve body MPS HP	1 *
087059	O ring BS004 (rubber gulf) – air bleed valve	1 *
088058	Tee fitting brass ½" screwed Rye 4023	1 *
088071	Non return (check) valve RMC ½" x ¾" SNR502	1 *
088063	Fitting union assembly ½" M x ½" C Rye 4910 – consisting of: 1 x ½" M x ½" C nipple 1 x ½" copper olive 1 x ½" compression nut	1 *
088188	Fitting union assembly ¾" M x ½" C Rye 4912 – consisting of: 1 x ¾" M x ½" C nipple 1 x ½" copper olive 1 x ½" compression nut	1
	Insulation pipe ID 35 x 13 x 150 long	1
	Cable tie nylon 250 mm x 4.8 mm black UV rated	2
	* Note: components 223607, 223606, 087059, 088058, 088071 and 088063 are supplied assembled as the air bleed valve assembly	

290123	Kit Installation Heat Pump Module Split	
126574	Installation instructions heat pump module split	1
126571	Easy start guide instructions heat pump module split	1
220522	Drain hose tube ½" ID x 380 long	1
080189	Hose spring clamp – ½" ID	1
052165	Saddle clamp	1
080021	Screw Phillips pan head No. 8 x 13 zinc plated black	2
108392	Bracket hose mount	1
108393	Bracket hose clamp	1
080059	Nut speed fasteners No. 6 1219	4
052160	Conduit clamp	1
080031	Screw Phillips pan head No 8 x 13	7
	Dynabolt Z passivated anchor 8 mm x 40 mm (M6)	4
108399	Bracket wall	1
	Wall plug 8 mm x 25 mm	1
080117	Screw button head 8G x 15 x 25 zinc plated	1
088189	Tube bush fitting connector ½" M x ½" OD reliance W120	2
	Cable tie black UV rated nylon 200 x 4.8 mm	4

ASSEMBLY AND INSTALLATION PROCEDURE

⚠ Warning: The heat pump must be assembled, plumbed, filled with water and purged of air prior to the power being switched on.

The following procedure is to be followed to install the heat pump module in position and connect to the heat pump storage tank.

1. **Heat Pump Storage Tank:** Remove all packaging including the carton base from the storage tank and position in its intended location, supported by a level slab or solid base.

The cold and hot water connections may be on either the left or right hand side, and should be parallel to the wall.

The heat pump flow and return connections are on the opposite side of the heat pump storage tank to the cold and hot water connections. The heat pump storage tank should be orientated so these connections face the location of the heat pump module. This will allow for an easier and neater installation of the heat pump flow and return pipe work.

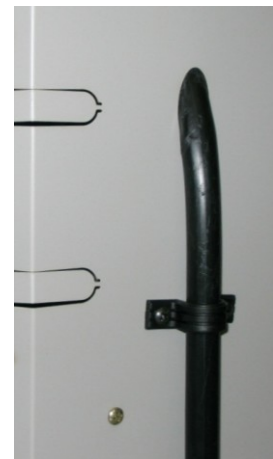
2. **Heat Pump Module:** Remove all packaging including the carton base from the heat pump module.
 - Set aside the carton liner piece marked “(DO NOT REMOVE)” as this contains the template which is required to locate the position of the holes to be drilled to connect the heat pump module bracket to the wall and the heat pump feet to the supporting base.
 - Remove the heat pump module’s rear access panel from the carton liner and set aside.
3. **Kit Bag and Cable Set:** Through the opening at the rear of the heat pump module:
 - Remove the kit bag and set aside
 - Withdraw the cable set and the two flexible braided hoses.
4. **Drain Hose:** Retrieve the drain hose, hose clamp, saddle and two black screws from the kit bag.
 - Feed the hose through the penetration on the side of the heat pump module
 - Slip the hose clamp over the upper end of the hose within the heat pump module
 - Push the hose over the spigot on the condensate tray located below the evaporator
 - Secure the hose to the spigot with the hose clamp
 - Extend the hose away from the base of the heat pump module using standard 12 mm irrigation fittings
 - Secure the hose to the side of the heat pump module with the saddle, using the two black screws.



feed hose through penetration



Step 4
secure hose to the spigot



secure hose with saddle

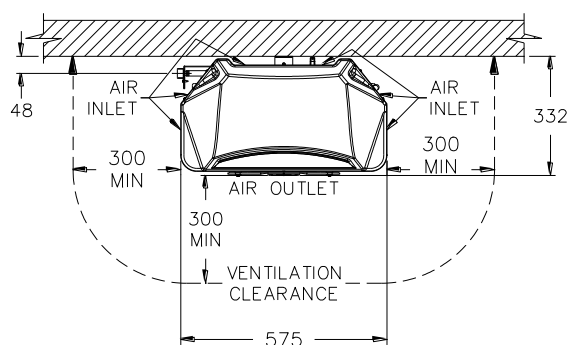
5. **Heat Pump Module Location:** Select the location for the heat pump module.

The heat pump module must be positioned such that there is a clearance of at least 300 mm perpendicular from the air inlet louvres and the outlet grilles.

The heat pump module must be installed against a wall and on a level slab or solid base with a minimum size of 600 mm wide x 600 mm deep.

The heat pump flow and return lines connecting the heat pump storage tank to the heat pump module must not exceed four (4) metres in length each and must not contain more than 4 x 90° bends each. All changes in direction of the pipe work must be made using bends. The pipe work should not contain elbows.

- Ensure the cable set reaches the storage tank with sufficient length to enable it to be saddle clamped to the wall.
- Ensure the maximum length of the heat pump flow and return pipe work and the maximum number of 90° bends will not be exceeded.



Step 5
select location for heat pump module
and allow for at least 300 mm ventilation clearance

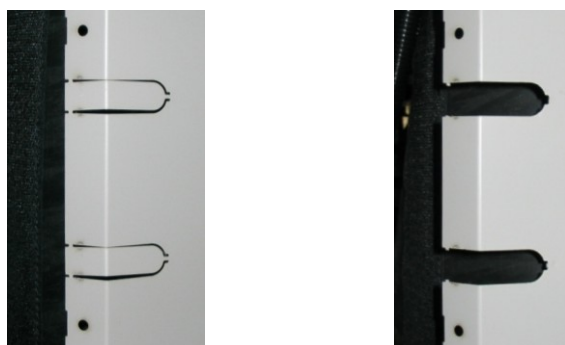
6. **Connection Side for Heat Pump Module:** Select which side, either the left or right hand side, of the heat pump module will be used to connect the heat pump flow and return lines to the flexible braided hoses.

It is recommended to select the side of the heat pump module which is closest to the heat pump storage tank. This will allow for an easier and neater installation of the heat pump flow and return pipe work.

The cable set should also be run from this side of the heat pump module to the heat pump storage tank.

7. **Hose Tabs:** Remove the two (2) tabs on the selected side of the heat pump module to accommodate the flexible braided hoses.

Pliers or tin snips may be required to remove the tabs.



Step 7 – remove the two hose tabs

8. **Hose Bracket Assembly:** Retrieve the hose mount angle and hose clamp brackets from the kit bag.

The hose mount angle bracket, when secured to the heat pump module, is to be angled away from the wall, with the 'hot' flexible braided hose in the top slot of the bracket.

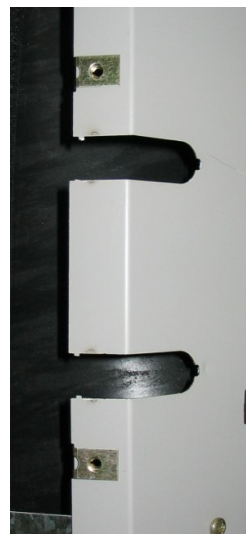
- Locate the black heat shrink area of the 'hot' flexible braided hose, marked with a red collar, into the top slot in the angle hose bracket.
- Locate the black heat shrink area of the 'cold' flexible braided hose, marked with a blue collar, into the bottom slot in the angle hose bracket.
- Fix the hose clamp bracket to the angle hose bracket, using a screw provided, to secure the flexible braided hoses in place.



Step 8
assemble hose mount angle and hose clamp brackets

9. **Speed Fasteners:** Retrieve the four (4) sheet metal speed fasteners from the kit bag.

- Clip one speed fastener over each of the four (4) holes, two (2) on either side of the rear access opening, in the heat pump module casing.



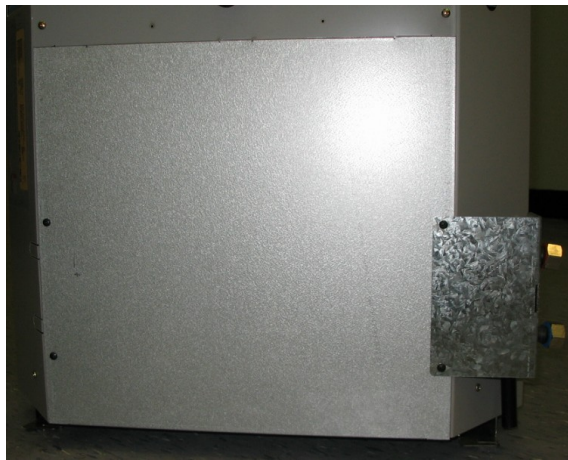
Step 9
clip speed fasteners to the heat pump module casing

10. **Rear Access Panel:** Retrieve the heat pump module's rear access panel.

- Loosely position the two flexible braided hoses attached to the hose bracket assembly in the two tab cut outs.

The 'hot' flexible braided hose, marked with a red collar, should be in the top tab cut out.

- Position the rear access panel over the opening in the rear of the heat pump module, with the panel located between the hose clamp assembly and heat pump module.
 - Locate the holes in the rear access panel over the holes and speed fasteners on the heat pump module and fix in position on the side opposite to the selected location of the flexible braided hoses, using two of the screws provided.
- Position the hose bracket assembly, locating over the two holes in the rear access panel and the two holes and speed fasteners on the heat pump module and fix in position, using two of the screws provided.



Step 10
fix rear access panel and hose bracket assembly to heat pump module

11. **Conduit Clamp:** Retrieve the conduit clamp from the kit bag and fix it to the pilot hole above the rear access panel on the side which will be closest to the heat pump storage tank, using a screw provided.

- Locate the cable set conduit in the conduit clamp and close the clamp.



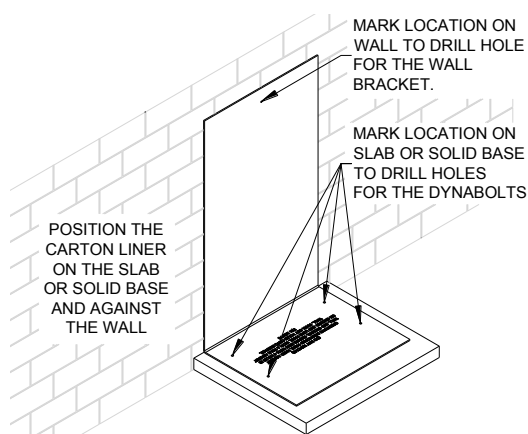
Step 11
fix conduit clamp to heat pump module and locate cable set conduit

12. **Slab or Solid Base:** Position the slab or solid base to support the heat pump module.

Note: The rear edge of the slab or solid base should be placed hard against or as close as practicable to the wall to enable sufficient area for the location of the rear dynabolt holes.

Ensure the base or solid base is level.

13. **Template:** Retrieve the heat pump module's carton liner piece, marked "(DO NOT REMOVE)", from the original packaging.
- Position the heat pump module template, in an L shape, against the wall and slab or solid base.
 - Mark the location on the slab or solid base, through the template, of the four (4) holes to be drilled for the dynabolts to secure the heat pump module to the slab or solid base.
 - Mark the location on the wall, through the template, of the hole to be drilled for the heat pump module bracket.
 - Remove the template.



Step 13
position template on the slab or solid base
and against the wall



Step 14
drill holes in slab or solid base
and insert dynabolts

14. **Dynabolts in Base:** Drill four (4) x 8 mm holes in the slab or solid base.
- Insert the four (4) x 8 mm (M6) dynabolts provided, into the slab or solid base.
- Ensure the collar of the dynabolt does not protrude above the surface of the slab or solid base.
- Position the dynabolt nuts so they are at least 5 mm above the slab, to allow the heat pump module's feet to slide into place against the bolts.
15. **Wall Bracket:** Drill a hole in the wall to receive a suitable anchor for the heat pump module wall bracket.
- Retrieve the heat pump wall bracket from the kit bag and fix to the wall using the 8 mm wall plug and 25 mm x 8 G screw, suitable for a masonry wall, provided. If this anchor is not suitable for the wall construction, then an alternative method of fixing to the wall will need to be used.
- Ensure the horizontal section of the wall bracket is below the vertical section.
16. **Wall Bracket Tab:** Fold out the wall bracket tab at the top of the upper rear panel of the heat pump module, using a pair of pliers.



Step 16
fold out wall bracket tab

17. **Position Heat Pump Module:** Position the heat pump module hard against the wall and slightly to the right of its final location.

- Slide the heat pump module to the left, so the slots in the feet of the heat pump module fit around the four (4) dynabolts.

Note: Ensure the feet of the heat pump module are flat and have not been bent up during handling, otherwise the dynabolt nuts may not be able to be fully tightened.

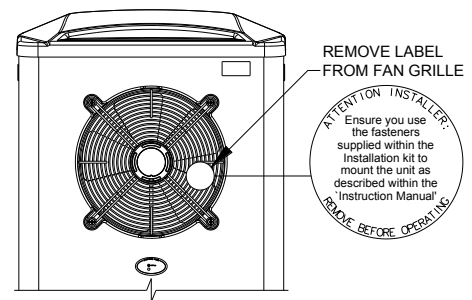
- Tighten the nuts on the dynabolts, securing the feet of the heat pump module to the slab or solid base.

18. **Wall Bracket Fixing:** Fix the wall bracket tab to the wall bracket, using a screw provided.

Ensure the wall bracket tab sits on top of the horizontal section of the wall bracket.



Step 18
fix wall bracket tab to wall bracket



Step 19
remove label from fan grille

19. **Remove Label:** Remove the label marked “Attention Installer” and “Remove Before Operating” from the fan grille.

This label must only be removed after the heat pump module has been securely fastened to both the slab or solid base and to the wall.

20. **Non Return and Air Bleed Valve Assembly:** Connect the non return and air bleed valve assembly provided to the heat pump hot flow connection, marked “FROM HEAT PUMP” on the heat pump storage tank.

The non return valve end of the assembly is screwed into the heat pump storage tank and the end of the hex nipple is exposed.

Ensure the air bleed valve spigot is pointing downwards.



Step 20
connect non return valve
and air bleed valve assembly

21. **Hex Nipple:** Fit the $\frac{3}{4}$ " x $\frac{1}{2}$ " hex nipple provided to the heat pump cold return connection, marked "TO HEAT PUMP" on the heat pump storage tank.
22. **Heat Pump Circuit:** Install the heat pump circuit flow and return pipes between the heat pump module and the heat pump storage tank.

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

All compression fittings must use brass or copper olives.

Either DN15 copper pipe or $\frac{1}{2}$ " cross linked polyethylene (PEX) pipe suitably rated for use with a hot water supply and pressures may be used.

- Connect one end of the hot water flow pipe to the $\frac{1}{2}$ " x $\frac{1}{2}$ " hex nipple on the non return and air bleed valve assembly at the heat pump storage tank, using a $\frac{1}{2}$ " compression nut and olive provided.
- Connect the other end of the hot water flow pipe to the flexible braided hose connection, marked with a red collar, at the heat pump module. A $\frac{1}{2}$ " male tube bush is provided for use with copper pipe.
- Connect one end of the cold water return pipe to the $\frac{3}{4}$ " x $\frac{1}{2}$ " hex nipple at the heat pump cold return connection on the heat pump storage tank, using a $\frac{1}{2}$ " compression nut and olive provided.
- Connect the other end of the pipe work to the flexible braided hose connection, marked with a blue collar, at the heat pump module. A $\frac{1}{2}$ " male tube bush is provided for use with copper pipe.
- Attach the insulated pipe work to the wall using pipe clips or saddles.
- Slit the 150 mm x 35 mm diameter insulation provided and insulate the non return and air bleed valve assembly, securing with the two cable ties provided.

Ensure the slit of the insulation is on the underside of the assembly and the air bleed valve spigot is accessible.



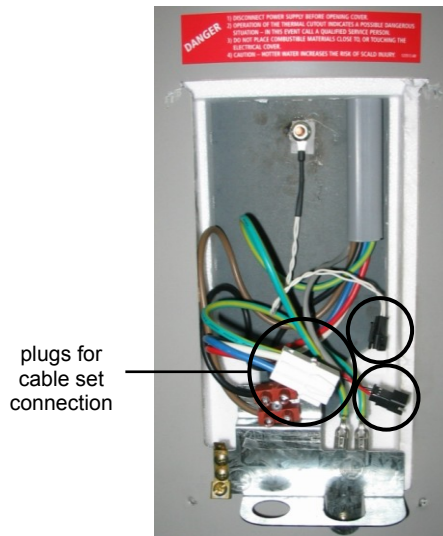
Step 22
connect insulated heat pump circuit pipe work to
heat pump module and heat pump storage tank

insulate non return valve
and air bleed valve assembly

23. **Lower Front Cover:** Remove the two screws securing the lower front cover to the storage tank.
- Remove the lower front cover from the heat pump storage tank.
 - Identify the three plugs to connect the three sockets from the heat pump module cable set.



remove lower front cover

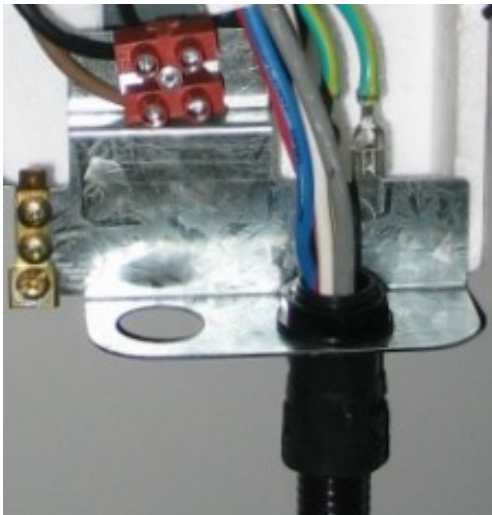


plugs for
cable set
connection

Step 23

identify three plugs for cable set connection

24. **Cable Set Connection:** Route the cable set from the heat pump module to the heat pump storage tank.
- Unscrew the gland nut from the gland on the cable set and insert the 3 plugs, wires and nut of the cable set through the hole on the right hand side of the electrical connection tab at the bottom of the lower front opening.
- It will be necessary to hold the gland nut at an angle to pass it through the hole in the electrical connection tab.
- Position the threaded end of the gland in the hole in the electrical connection tab and tighten the nut onto the gland to secure in position.
 - Connect the 3 plugs (4 pin, 3 pin and 2 pin) from the heat pump storage tank into the 3 sockets from the cable set.



secure gland to electrical connection tab



connect plugs to sockets

Step 24

25. **Cable Set Conduit:** Fix the conduit of the cable set to the wall using saddles, ensuring there is no loose play in the conduit between the heat pump storage tank and the heat pump module.

Alternatively, the conduit may be positioned against either of the insulated heat pump circuit flow and return pipes and secured with the cable ties provided.

- Coil up any excess conduit and neatly place behind the heat pump module.

26. **Mains Power Connection:** Connect the mains power supply wiring to the terminal block and earth connection inside of the lower front cover.

- Secure the conduit to the side of the storage tank with a saddle.

Refer to “[Connections – Electrical](#)” on page 42.

Note: The power supply to the water heater must not be switched on until the installation is complete, the water heater is filled with water, air has been purged from the heat pump circuit and a satisfactory megger reading is obtained.



Step 26
connect wiring

27. **Lower Front Cover:** Refit the lower front cover.

28. **Water Connections:** Connect the cold water supply and the hot water pipe work to the storage tank.

- Connect the temperature pressure relief valve and its drain line.

Refer to “[Connections – Plumbing](#)” on page 39.

29. **Water Supply:** Turn on the cold water supply and fill the water heater.

Refer to “[To Fill And Turn On The Water Heater](#)” on page 44.

It is important the heat pump circuit is purged of air, otherwise the system will not work effectively.

- Open all of the hot water taps in the house (don’t forget the shower).
- Connect a 6 mm diameter clear plastic hose to the spigot of the air bleed valve.

Let the other end of the hose go away from the work area where discharge will not cause a nuisance.

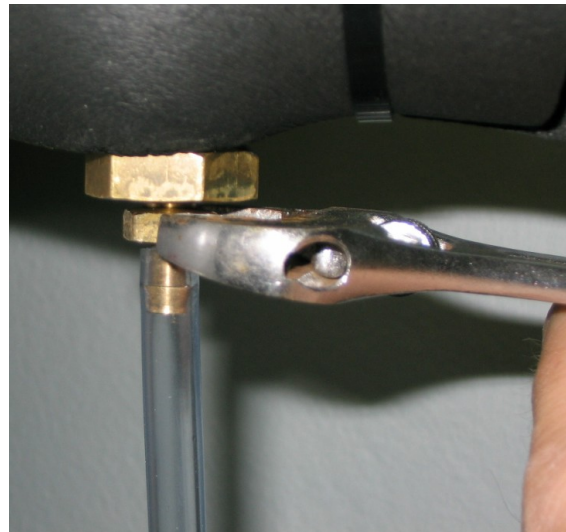
- Open the air bleed valve, using a 13 mm ($\frac{1}{2}$ ”) spanner.

Air will be purged from the heat pump circuit as the water heater fills with water.

- Open the cold water isolation valve fully to the water heater.
Air will be forced out of the taps.
- Close the air bleed valve when the air has been purged and water flows freely from the hose.
- Remove the hose from the spigot of the air bleed valve.
- Close each tap as water flows freely from it.
- Check the pipe work, inlet and outlet connections and the connection points for the flexible braided hoses for leaks.



connect hose to spigot



purge air through air bleed valve

Step 29

30. **Commissioning:** Refer to “[Commissioning](#)” on page 44.

CONNECTIONS – PLUMBING

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. In New Zealand, the installation must conform with Clause G12 of the New Zealand Building Code.

CONNECTION SIZES

- Hot water connection: RP $\frac{3}{4}$ /20.
- Cold water connection: RP $\frac{3}{4}$ /20.
- Heat pump circuit connections on storage tank: RP $\frac{1}{2}$ /15
- Heat pump circuit connections on heat pump module: RP $\frac{1}{2}$ /15
- Relief valve connection: RP $\frac{1}{2}$ /15.

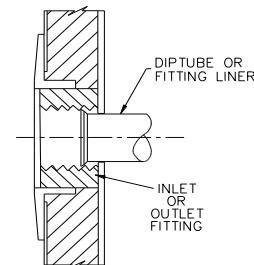
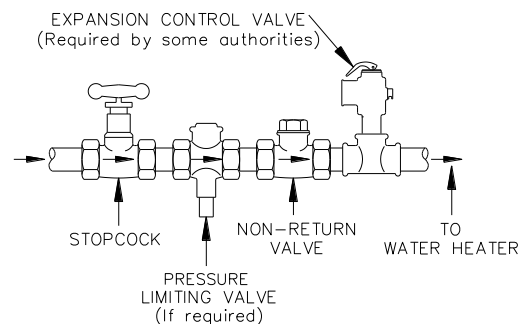
WATER INLET AND OUTLET

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

An isolation valve and non return valve must be installed on the cold water line to the water heater. An acceptable arrangement is shown in the diagram. Refer also to “[Hot Water Delivery](#)” on page 23 and to “[Mains Water Supply](#)” on page 22.

A disconnection union must always be provided at the cold 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.



HEAT PUMP CIRCUIT

The maximum length of the heat pump circuit flow and return lines connecting the storage tank to the heat pump module is four (4) metres each. They must not contain more than four (4) 90° each. Elbows must not be used in the heat pump circuit pipe work. The pipe work may be of DN15 copper or $\frac{1}{2}$ " cross linked polyethylene (PEX) pipe suitably rated for use with a hot water supply and pressures.

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

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 lower front cover of 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. 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 25](#)) leaving the valve drain 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 40](#)).

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 13](#)).

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 diagram on page 39](#)). A copper drain line must be fitted to the expansion control valve (refer to ["Relief Valve Drain" on page 40](#)).

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) 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 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.

CONDENSATE DRAIN

A drain line must be fitted to the heat pump module's condensate drain to carry the discharge clear of the heat pump module. The drain line can be extended using 12 mm rigid poly hose or conduit. The pipe work from the condensate drain should be as short as possible, and fall all the way from the water heater with no restrictions. It should have no more than three right angle bends in it. The outlet of the drain line must be in such a position that flow out of the pipe can be easily seen - but arranged so water discharge will not cause damage or nuisance.

The condensate drain line must not be connected to the relief valves drain lines but may discharge at the same point.

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.

MEGGER READING

When a megger test is conducted on this water heater, then the following should be noted.

⚠ Warning: This water heater contains electronic equipment and 500 V insulation tests must only be conducted between active and earth and between neutral and earth. An active to neutral test WILL damage the electronics.

An insulation test result of between 100 KΩ and 660 KΩ for this water heater is normal.

Typically the insulation resistance between live and earthed parts of an electrical installation should not be less than 1 MΩ. However AS/NZS 3000:2000 clause 6.3.3.3.2 'Results' states:

"The value of 1 MΩ may be reduced to:

- 0.01 MΩ for sheathed heating elements or appliances; or
- a value permitted in the Standard applicable to electrical equipment."

This model water heater is categorised as a 'stationary class 1 motor operated appliance' and has been tested to AS/NZS 3350.1:2002 clause 16 'Leakage current and electric strength' and has passed the requirements of this Standard. Therefore, this model water heater complies with the condition stated in AS/NZS 3000:2000 clause 6.3.3.3.2 (b).

ELECTRICAL CONNECTION

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.

The water heater must be directly connected to a 240 V AC 50 Hz mains power supply. The water heater must be on its own circuit with an isolating switch installed at the switchboard. A secondary isolating switch may be installed within reach of the water heater.

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.

This water heater is recommended for connection to a 24 hour per day power supply.

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.

Refer to steps 23 to 25 of the "Heat Pump and Tank" section for the electrical connection procedure of the heat pump module to the storage tank.

TIMER

A timer can be installed in the electrical circuit to the water heater. The timer must be weatherproof if it is installed outdoors. The suitability of connection to less than a 24 hour per day power supply is subject to hot water load, location and climate.

It may be desirable for the water heater not to operate between certain hours, such as during the peak period when connected to a Time of Use electricity supply due to a more expensive tariff rate applying.

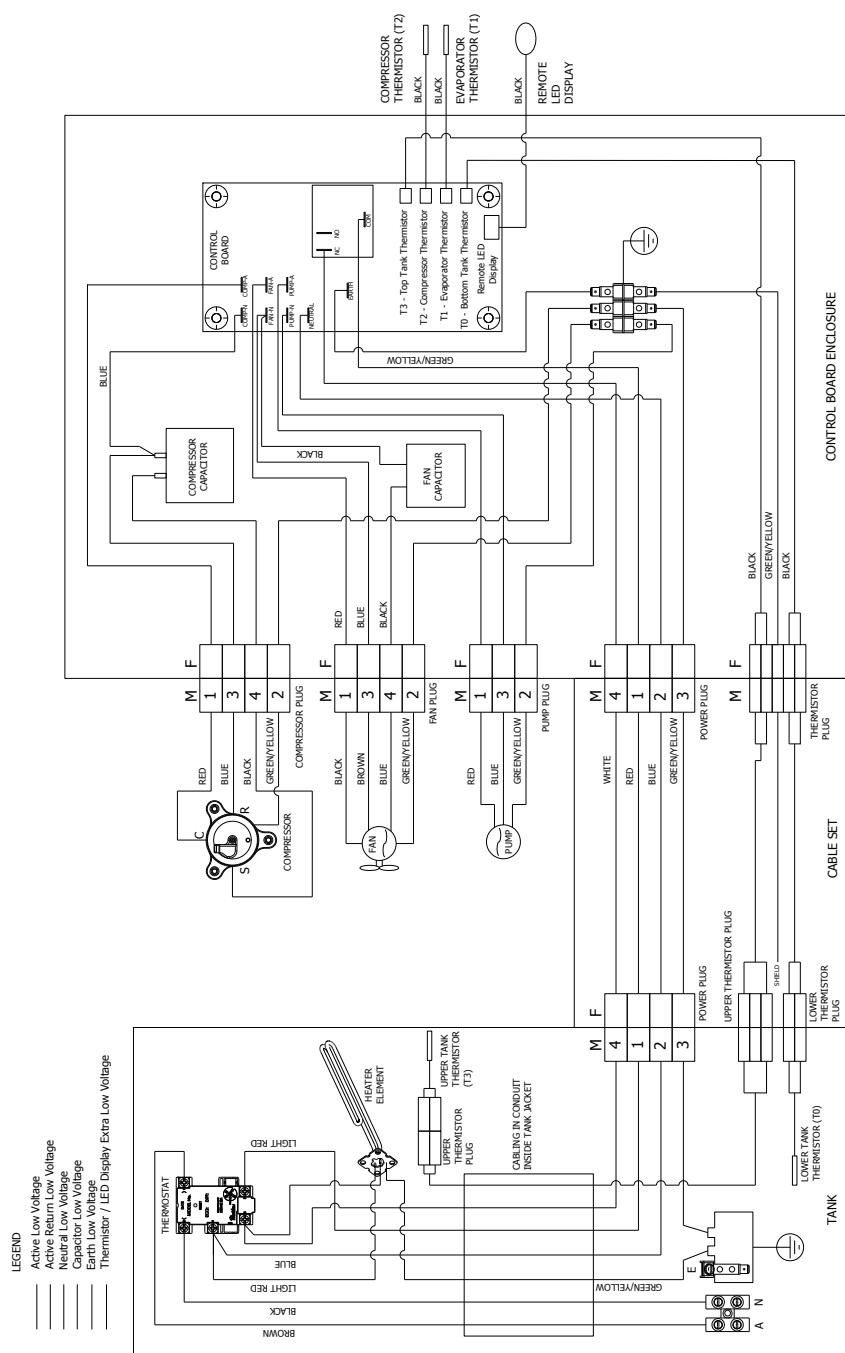
A timer will affect the operating times of both the heat pump circuit and the booster heating unit.

Notes:

- This water heater is recommended for connection to a 24 hour per day power supply. If there is a risk of freezing conditions, the electrical supply to the water heater should not be switched off, otherwise damage could result (refer to “Freeze Protection” on page 22).
- A 325 model water heater is not suitable to be connected to a power supply of less than 16 hours per day. At least 8 hours of power connection should be available during daylight hours.

BOOSTER HEATING UNIT AND THERMOSTAT SETTING

The water heater has a booster heating unit and thermostat. The booster heating unit will be automatically activated during periods when the ambient air temperature is outside the heat pump’s operating temperature range of between a minimum of 3°C to 5°C and maximum of 45°C to 55°C and heating of the water is required. The thermostat is not adjustable.

WIRING DIAGRAM**Electrical Circuit for Heat Pump – Robertshaw “ST” Thermostat**

COMMISSIONING

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, air has been purged from the system and a satisfactory megger reading is obtained.

- Open all of the hot water taps in the house (don't forget the shower).
- Connect a 6 mm diameter clear plastic hose to the spigot of the air bleed valve, located on the heat pump flow line at the connection to the storage tank.

Let the other end of the hose go away from the work area where discharge will not cause a nuisance.

- Open the air bleed valve, using a 13 mm ($\frac{1}{2}$ ") spanner.

Air will be purged from the heat pump circuit as the water heater fills with water.

- Open the cold water isolation valve fully to the water heater.

Air will be forced out of the taps.

- Close the air bleed valve when the air has been purged and water flows freely from the hose.
- Remove the hose from the spigot of the air bleed valve.
- Close each tap as water flows freely from it.
- Check the pipe work, inlet and outlet connections and the connection points for the flexible braided hoses for leaks.
- Switch on the electrical supply at the isolating switch to the water heater.
- Set the timer if one is installed.

Note: When power is turned on or reconnected to the water heater, the red LED will emit a solid glow for three (3) seconds and then extinguish. This is normal operation and does not indicate a fault. The LED display will then return to the current operational status.

Note: The water heater is preset in the factory to allow it to commence operating with either the heat pump or booster heating unit immediately power is turned on for the first time. If power is turned on and then off at its installation, the water heater may take up to forty five (45) minutes to commence operating when the power supply is switched on again.

The heat pump will only operate when power is available at the water heater, the water in the storage tank requires heating, the heat pump compressor is cool and the ambient air temperature is within the heat pump's operating temperature range of between a minimum of 3°C to 5°C and a maximum of 45°C to 55°C. If the ambient temperature is outside of this range, the water heater will commence heating with the booster heating unit.

When the heat pump is operating, the system will switch to the booster heating unit if the detected ambient air temperature is outside the operating temperature range of between a minimum of 3°C to 5°C and a maximum of 45°C to 55°C.

The system will switch back to heat pump operation from the booster heating unit if the detected ambient air temperature has moved back within the heat pump's operating temperature range.

Note: The heat pump may not turn on immediately after either having just completed a heating cycle and more hot water is drawn from the water heater or power is shut down to the compressor, either during or at the end of a heating cycle. The heat pump will wait until the compressor has cooled down and the conditions for start up are favourable in order to protect the compressor from damage. This will be a minimum of forty five (45) minutes and may take up to ninety (90) minutes from the last heating cycle.

It is important to wait for five (5) minutes after the heat pump has activated to ensure it continues to operate and is functioning correctly.

Explain to the householder or a responsible officer the functions and operation of the heat pump water heater. Upon completion of the installation and commissioning of the water heating system, leave this guide with the householder or a responsible officer.

TO TURN OFF THE WATER HEATER

We recommend you leave the water heater switched on in the event of freezing conditions occurring (refer to “Freeze Protection” on page 22).

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 are vacant, then:

- Switch off the electrical supply at the isolating switch to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.

Note: The freeze protection system will be rendered inoperable if electrical power is not available at the water heater. Damage caused by freezing due to the unavailability of power at the water heater is not covered by the Rheem warranty (refer to “Terms of the Rheem Warranty” on page 47). If the power has been switched off to the water heater and there is a risk of freezing, then it is necessary to drain the water heater (refer to “Draining The Water Heater” on page 46).

DIAGNOSTIC FEATURES OF THE HEAT PUMP CONTROLLER

An operating mode monitor is located on the front of the heat pump module and houses a green and a red LED.

The green LED, marked “NORMAL”, indicates the current operating mode of the heat pump water heater and the red LED, marked “ATTENTION”, indicates a fault mode.

The green LED will emit either a constant glow or a series of flashes, with a 2 second interval between each series. A series of long green flashes may also be emitted.

The red LED will emit a series of flashes, with a 2 second interval between each series, only if there is a particular fault condition within the system.



The Operating Modes are:

Flashes	Operating Modes
solid green (remains on)	Standby mode – water is hot
1 x green	Call for heating received – system checks performed Note: unit may wait and continue flashing until compressor has cooled from its last operation
2 x green	Circulator commences circulation
3 x green	Heat pump operation – compressor and fan running
4 x green	Defrost mode – circulator operates for three (3) minutes
long green	Heating unit on – ambient air temperature below 3°C to 5°C or above 45°C to 55°C
no green (remains off)	No power at the water heater or a possible fault condition Refer to notes below before calling for service

Flashes	Fault Modes
1 x red	Heating unit on compressor over temperature (possible circulator fault)
2 x red	Heating unit off compressor fault condition
3 x red	Heating unit on compressor cooling fault condition
4 x red	Heating unit on lower tank thermistor fault condition
5 x red	Heating unit on evaporator thermistor fault condition
6 x red	Heating unit on compressor thermistor fault condition
7 x red	Heating unit on upper tank thermistor fault condition
9 x red	Heating unit on compressor fault condition

Notes:

- **Power must be available at the water heater and to the heat pump for the LEDs to glow or flash.**
- There is no 8 x red flash fault mode code.
- When power is turned on or reconnected to the water heater, the red LED will emit a solid glow for three (3) seconds and then extinguish. This is normal operation and does not indicate a fault. The LED display will then return to the current operational status.
- If there is power to the water heater and the green LED is off or the red LED is flashing, this indicates there may be a fault condition with the water heater. The red LED may emit up to nine flashes in each series of flashes. Refer to **“Possible fault condition”** on page 46.
- **Time controlled power supply**
If the water heater is connected to a time controlled power supply, then during periods of no power supply at the water heater the LEDs will be off.

This is not a fault condition, but a result of no power being available to energise the LEDs.

The green LED will recommence glowing or flashing when power is available again at the water heater.

- **Possible fault condition**

There may be a fault condition with the water heater if either:

- there is power available at the water heater and the green LED is off

Before phoning to arrange a service inspection due to the green LED being off, refer to **“Heat Pump Is Not Operating”** on page 16 in the “Save A Service Call” section of this Owner’s Guide.


or

- the red LED is flashing – the red LED may emit up to nine flashes in each series of flashes

The fault condition which led to the red LED flashing may be cleared after the backup heating cycle by the booster heating unit has completed and the red LED has gone out. If the red LED has gone out, when heating is next required, the green LED will flash and the heat pump will commence to operate. If the heat pump stops operating and the red LED recommences to flash, a service call may be required.

Before phoning to arrange a service inspection due to the red LED flashing, refer to **“Heat Pump Is Not Operating”** on page 16 in the “Save A Service Call” section of this Owner’s Guide.

DRAINING THE WATER HEATER

 **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 45).
- Close all hot water taps.
- Operate the relief valve release lever - do not let the lever snap back or you will damage the valve seat.
Operating the lever will release the pressure in the water heater.
- Undo the union at the cold water inlet and attach a hose.

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

- Operate the relief valve again.

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

RHEEM HEAT PUMP WATER HEATER WARRANTY

- AUSTRALIA ONLY -

HEAT PUMP WATER HEATER MODEL 561325

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 131 031 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 131 031 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 January 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 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.
- 2.3 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.
- 2.4 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.
- 2.5 This warranty only applies to the original and genuine Rheem water heater in its original installed location and any genuine Rheem replacement parts.
- 2.6 If the water heater is not sized to supply the hot water demand in accordance with the guidelines in Rheem's water heater literature, any resultant fault will not be covered by the Rheem warranty.
- 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 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.
 - k) 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.
- 2.8 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.
- 2.9 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.

RHEEM HEAT PUMP WATER HEATER WARRANTY

- AUSTRALIA ONLY -

HEAT PUMP WATER HEATER MODEL 561325

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 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.
Sealed System* components (only if the water heater is installed in a single-family domestic dwelling)	Year 2	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 Sealed System includes components that carry refrigerant only, e.g. Compressor, Condenser, TX Valve, Receiver / Drier, Evaporator and associated pipe work.

- 3.2 If a government rebate has been received for the water heater, the duration of the protection afforded by this warranty may be greater than what is set out above. Please call 131 031 for details.

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