

THERMANN™

INSTALLER'S MANUAL

Thermann X Split Heat Pump

Installation Details
Warranty

Models

Tank Unit: TH160GLG, TH250GLG,
TH315GLG, TH400GLG

Heat Pump Unit: THP45

System Model: THP45x160,
THP45x250, THP45x315, THP45x400





Thermann Installer's Manual
Thermann X Split Heat Pump













CONTENTS

Important Safety Instructions	4
Introduction	6
Typical Installation Layout	7
Hot Water Flow & Return Applications	8-9
Installation Location	10
Installation Requirements	11
Piping Connections	12-13
Heat Pump Unit Piping & Installation	14
Electrical Connections	15
Electrical Installation	16
Bleeding Air from the System	17
Time and Block Out Setting	18-20
Maintenance Mode	21-22
Error Codes	23-26
System Maintenance	27
Technical Data - Heat Pump Unit	28-29
Technical Data - Tank	30
Wiring Diagram	31
Water Supply Quality	32
Warranty Policy	33
Commissioning Checklist	34












IMPORTANT SAFETY INSTRUCTIONS




 Warning	The column with this classification indicates “the extent of harm that includes the possibility of death or serious injury”.
 Caution	The column with this classification indicates “the extent of harm/ damage that includes the possibility of injury or damage to property.”

Warning

-  Do not open the heat pump unit cover.
-  Do not poke anything into the air inlet or outlet of the heat pump unit
-  Do not touch the tap while hot water is being supplied.
-  Check the water temperature before supplying any hot water or taking a shower.
-  Do not disassemble, repair or alter the product in any way.
-  Do not use any damaged, altered, or bundled power code.
-  Do not touch the PTR valve, drainage pipe, drain outlet or drain elbow when inspecting the PTR valve or while draining hot water.
-  Ensure the product is removed from any gas containers, source of fire and flammable substances.
-  For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.
-  System contains refrigerant under very high pressure. The system must be serviced by qualified persons only.
-  This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia(PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.
-  If the hot water system is not used for two weeks or more a quantity of highly flammable hydrogen gas may accumulate in the water heater. To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes or until discharge of gas ceases. Use a sink, basin, or bath outlet, but not a dishwasher, clothes washer, or other appliance.
During this procedure, there must be no smoking, open flame, or any electrical appliance operating nearby. If hydrogen is discharged through the tap, it will probably make an unusual sound as with air escaping.

Caution

-  Do not block the air inlet and outlet.
-  Do not climb or put anything on top of the heat pump unit.
-  Do not put anything susceptible to humidity under the heat pump unit.
-  Do not use the heat pump unit if the installation blocks have been damaged.
-  Ensure no animal or plant is placed directly in front of where air is blown from the heat pump unit.
-  In the case of any abnormality turn the earth leakage breaker to "OFF".
-  Select an installation place with consideration given to neighbours.
-  Remove any snow from the heat pump units after snowfalls.
-  Do not run the hot water directly into sink outlets etc.
-  Do not use the shower or any hot water for at least one minute after recovery from a power cut.
-  Do not install the unit anywhere it will be exposed to seawater.

	Indicates content requiring "attention".
	Indicates content that is prohibited.
	Indicates content with "instructions" that need to be fully followed.

WARNING

This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
 Children being supervised are not to play with the appliance.

WARRANTY

Thermann Split Heat Pump hot water units are covered by Reece for any cost of labour and parts in the event of a component failure due to any defects that may arise either from workmanship and/or faulty material. **Product must be installed by a licensed plumber**

The warranty commences on the date of installation :

RESIDENTIAL USE:

COMMERCIAL USE:

HEAT PUMP UNIT

TANK

PARTS & LABOUR

HEAT PUMP UNIT

TANK

PARTS & LABOUR



INTRODUCTION

The Thermann X Split Heat Pump is designed to efficiently and effectively heat water in domestic applications. This product is an external CO₂ Heat Pump water heater. These units are designed to be installed outside and as a kit (tank and heat pump unit).

Thermann X Split Heat Pump units are manufactured to have a factory output of 65°C as standard. Where connected directly to sanitary fixtures used primarily for the purposes of personal hygiene, it must be fitted with an approved tempering valve into the hot water piping to any bathroom and/or ensuite.

IMPORTANT NOTE: THIS HOT WATER UNIT IS NOT FOR POOL OR SPA HEATING

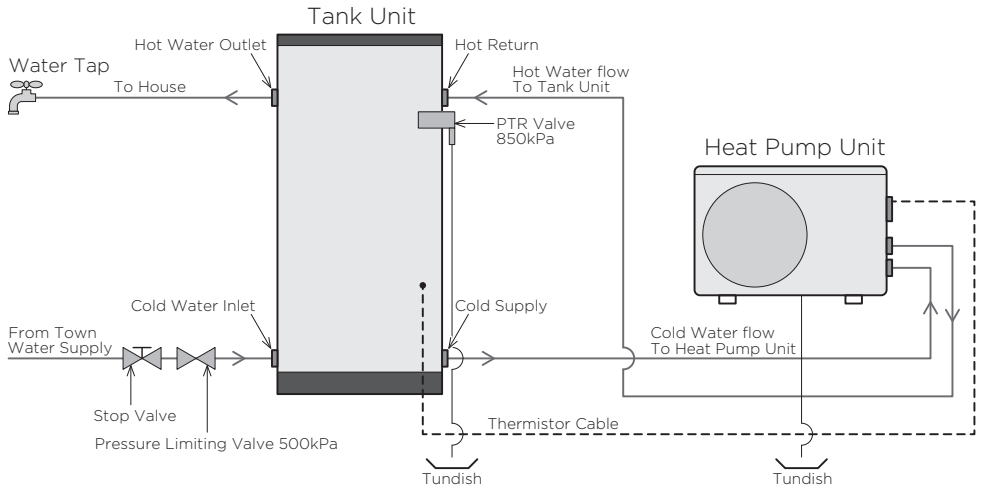
GENERAL

The Thermann X Split Heat Pump must be installed in accordance with the following:

- (1) Plumbing Code of Australia.
- (2) Installed to meet AS/NZS3500.4 National plumbing and drainage (part 4) code hot water supply systems - acceptable solutions.
- (3) Installed to meet HB 263-2004 Heated water systems plumbing industry commission
- (4) Installed to meet AS/NZS 3000 Electrical installations (known as the Australian/New Zealand wiring rules).
- (5) The unit has been specifically designed for domestic hot water heating and is not suitable for any other purpose. **If installed in a commercial application, then warranties will be reduced to 1 year for both Tank, Heat pump unit and parts and labour.**
- (6) The unit is designed to operate when connected to the town water supply with a maximum operating pressure of **500 kPa**. To ensure the mains pressure does not exceed this, a pressure-limiting device that complies with AS1357 must be connected to the town water supply line.
- (7) This system delivers hot water exceeding 50°C. Reference should be made to AS/NZ3500.4 and/or local regulations relating to the need for temperature tempering devices.
- (8) The unit must be stored and transported in an upright position. Failure to do so may render the unit faulty. Such failure is not covered under any warranty agreements.

INSTALLATION MUST BE CARRIED OUT ONLY BY AN AUTHORISED AND APPROPRIATELY LICENSED PERSON.

TYPICAL INSTALLATION LAYOUT



HOT WATER FLOW & RETURN APPLICATIONS

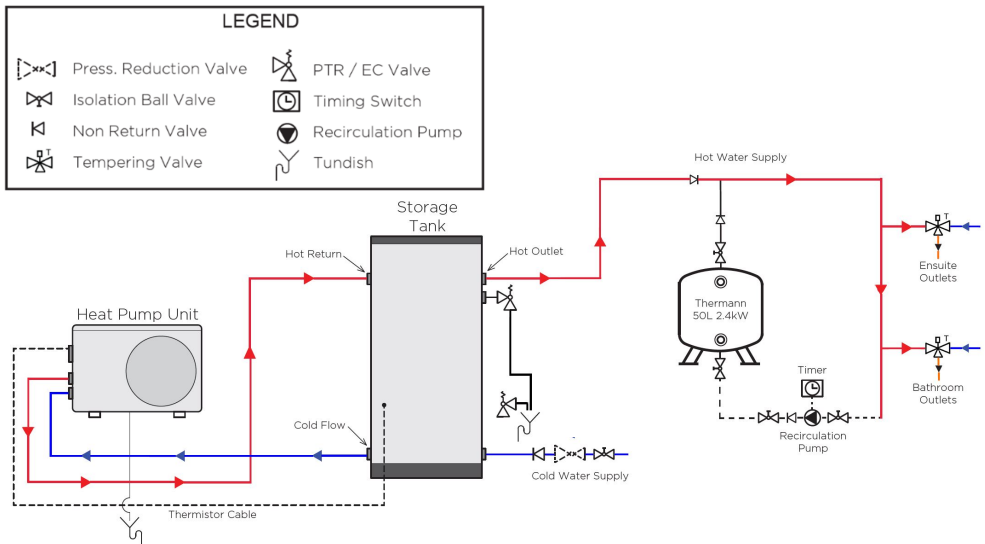
The Thermann X Split Heat Pump is not suitable to be installed as a standalone installation within a circulated hot water flow & return system (ring main) in a domestic hot water heating application.

If a circulated flow and return system is being used, it is necessary to install a secondary water heater (buffer tank) supplied from the heat pump water heater. The flow and return lines connect to the secondary water heater, not the heat pump storage tank. The secondary water heater makes up for the pipe heat loss in the flow and return system and must be able to provide a hot water outlet temperature at a minimum of 60°C and cannot return to the secondary water heater less than 55°C.

Note: The thermostat or preset outlet temperature of the secondary water heater must always be set to maintain a temperature at a minimum of 60°C in the hot water flow and return line, including making up pipe heat losses in the system.

Refer to the Installation Layout diagram shown below on how this is installed.

Note: Minimise the length of pipe work connecting the heat pump storage tank hot water outlet to the circulated hot water flow line to reduce the amount of dead water in the hot water system.



HOT WATER FLOW & RETURN APPLICATIONS (CONT.)

Temperature Limiting Devices

A temperature limiting device cannot be installed within the 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 domestic hot water heating application, 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 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 temperature limiting device closing completely and not delivering water at all, or the device failing. Under either condition, the operation and performance of the temperature limiting device cannot be guaranteed.

INSTALLATION LOCATION

- The tank unit should be located as close as possible to the most frequently used hot water outlet. The heat pump unit must be located outside and as close as practically possible to the tank, but not further than **15 metres** distance from it.
- Ensure sufficient clearance around the heat pump unit to allow air to circulate and provide adequate space for service maintenance of the unit (Figure 2). **Note: Poor ventilation may cause the unit to short cycle and this could increase power consumption by more than 10%.**
- Do not install the heat pump unit in a confined space or where intake and exhaust airflow is compromised.
- If the heat pump unit is installed facing a wall, exhaust air may stain the wall.
- There must be adequate space between the top of heat pump to allow for access to top controls for servicing. **Note: Avoid installing heat pump unit near bedroom windows.**
- The heat pump unit cannot be installed if there are obstacles such as walls in three or more directions around the heat pump unit (see below figure).

Figure: Minimum Installation Clearances

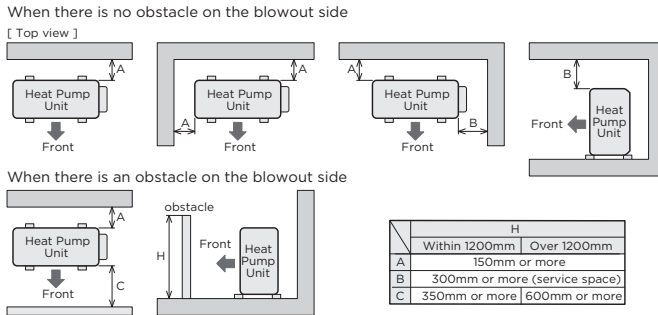
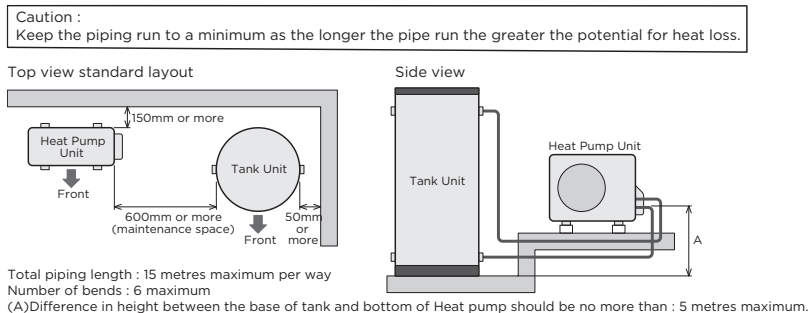


Figure: Restrictions on installation with the space between the tank unit and the heat pump unit



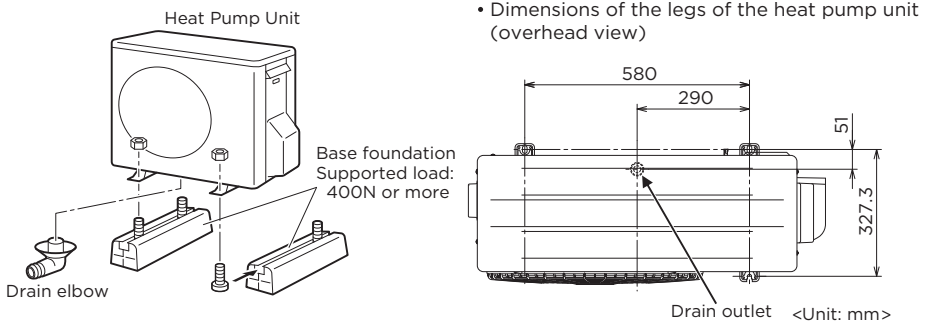
INSTALLATION REQUIREMENTS

- The power requirement for the system is a dedicated 20 amp circuit fitted with a circuit breaker. This circuit may be connected to continuous or OFF peak power. Installation of this system must be carried out only by a qualified installation technician (electrical and plumbing).
- The surface to which the heat pump unit is installed must be firm, preferably a concrete pad or block. If the surface is firm there is no need to fix the unit to a base surface, unless there is a likelihood of high wind or local vibration. Appropriate fixing devices should be used to secure both tank and heat pump unit.
- A pressure and temperature (PTR) valve is included in the installation kit of the tank unit. This is installed in a defined point near the top of the tank unit. The PTR valve must have a clear space where escaping steam or water can flow freely (refer AS/NZS 3500.4).
- The installation site must be well drained so that any water accumulating (such as local rain or pipe leakage) will drain away and not enter the heat pump unit and the tank unit.
- Local water pressure must be a **minimum of 200 kPa** to ensure efficient functioning.

NOTE:

The entire system is set up and fully functional when supplied. Once all the water and electric connections have been made, the system will operate automatically provided that mains power is available. The only adjustments required is the **current time setting** on the timer setting panel under the piping cover especially if the block out time setting is desired. See current time setting and block out time section on page 16 - 18.

Figure: Heat pump installation example and dimensions



- Attach the drain elbow to the drain opening located on the bottom of the heat pump unit. The drain elbow is included in the heat pump box.
- Attach a drain hose with a 16mm inner diameter to the drain elbow to guide the drained water to an appropriate drain.

PIPING CONNECTIONS

- All piping that connects to the water supply must be carried out by a licensed plumber.
- The water supplied to the system must comply with the drinking water quality standard. Use of water that does not comply with this standard could result in a malfunction of the system.
- The water source must have a min pressure of **200 kPa**
- A tundish must be installed under the drain outlet.
- This product cannot be connected to a solar water heater.
- The piping must be insulated using insulation with a thermal conductivity no greater than $0.035 \text{ W/m} \cdot \text{K}$ and minimum thickness of 15 mm.
- If the piping needs brazing, make sure that all flux and flux splatter is wiped away with a wet cloth.
- As the hot water supply pipe will expand and contract, use sleeves when passing it through concrete walls or slabs.
- With buried piping, a sheath pipe will need to be used that has had both ends sealed to avoid any rain penetration.
- Use only heat-resistant or corrosion resistant material to seal the pipe joints.
- Cutting and wrenching the piping material may result in oil and dust adhering to it. After fitting, clean the material with a mild detergent before doing any piping work and smooth the edges to remove any scratches and burrs. (After passing water through the system, verify whether any dust has accumulated on the filter of the taps and heat pump unit pipe.)
- When using sealing tape, ensure that no tape is sticking out of the thread.
- If any heat-resistant vinyl chloride pipes (such as HT pipe) are bonded together, pass water through them after the pipes have set to prevent any bond adhering to the filter or other parts.

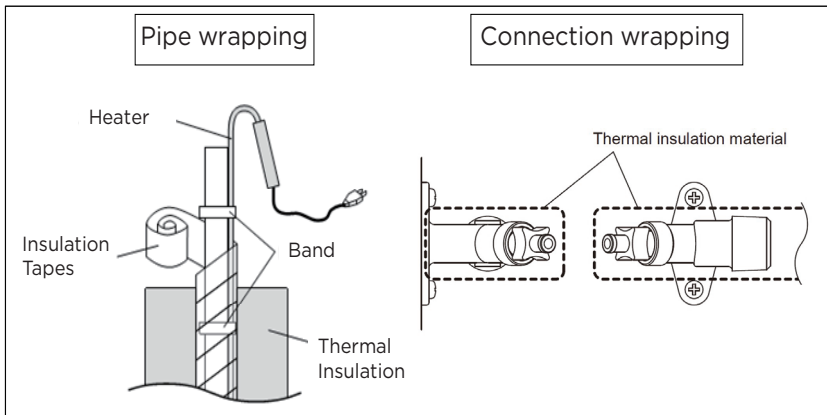
PIPING CONNECTIONS (CONT.)

FREEZE PROTECTION:

The piping will freeze if it is installed in a place exposed to wind and snow even after heat insulation work, or if the ambient temperature drops below 0 C. In areas where there is a risk of freezing, wrap a commercially available electric heater around pipes and valves to keep the heat sufficiently. If the heat retention is not sufficient, anti-freezing measures will not be effective.

- After completion of the piping, inspect the plumbing for any water leaks from the joints before installing freeze protection.
- Take preventive measures against freezing in the water supply piping and hot water supply piping of the tank.
- For commercially available electric heaters, follow the instructions and install the piping and valves correctly. The thermostat is especially important, so install it correctly.
- Ensure the freeze protection heaters are connected to a **24 hours continuous power supply**.
- It is important to fully explain the use and operation of the freeze protection heater to the customer.
- **When turning off the power, because the unit will not be in use, ALL water must be drained from the unit and piping.**

Figure: Insulation Locations

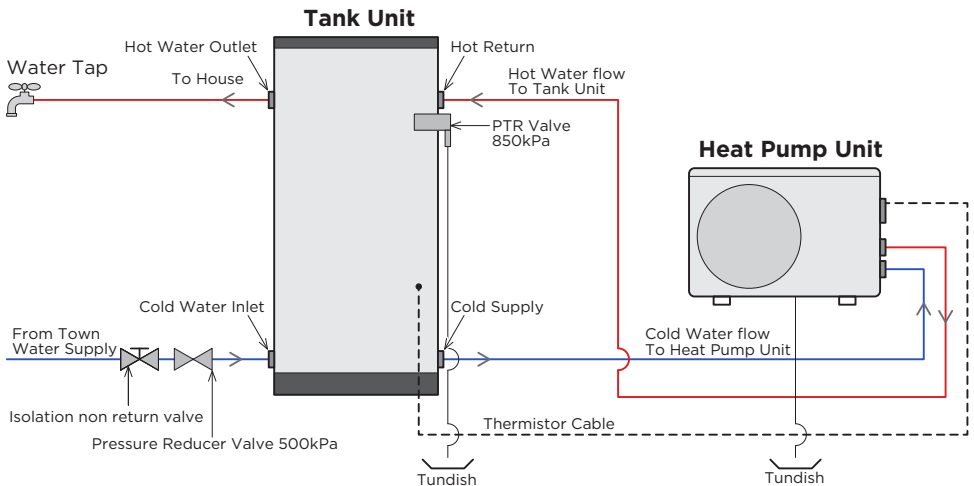


HEAT PUMP UNIT PIPING

- Connect one of heat pump pipes on the “COLD WATER” side of the heat pump unit and the “FLOW” side of the tank unit.
- Connect the other end of heat pump pipes on the “HOT WATER” side of the heat pump unit and the “SOLAR RTN” side of tank unit.
- Connect the water supply pipe to the “INLET” side of the tank unit.
- Connect the hot water supply pipe to the “OUTLET” side of the tank unit.
- Install the supplied PTR valve on the “PTRV” side of the tank unit.
- Pass water through the pipe to remove any dust inside before connecting the pipe.
- After all the piping connections are completed, pass water through the system.
- Remove the air from the system according to the instructions on page 15.
- Make sure all the necessary devices are mounted to the pipes as shown in diagram. If the heat pump unit piping is crushed or clogged or the air inside was not removed during the test operation, the temperature of the supplied hot water may become inconsistent.
- Pipework between the heat pump unit and the tank unit is to be 15mm (1/2”) copper pipes (both flow & return).

Note: Pipework must be insulated using material with a thermal conductivity of $0.035\text{W/m}\cdot\text{K}$ or a thickness of 15mm or more.

Figure: Hot and Cold Pipework



ELECTRICAL CONNECTIONS

- The power requirement for the system is a dedicated 20 amp circuit fitted with a circuit breaker.
- Fill the tank with water, check that water has come out from the drain plug and then turn on the power.

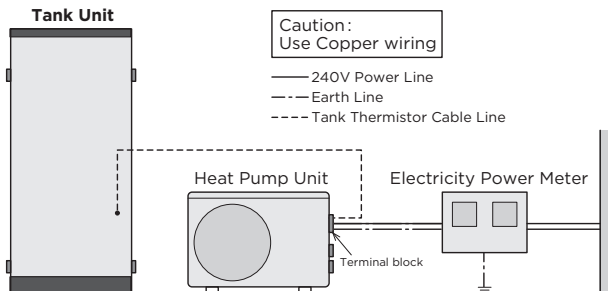
SYSTEM OPERATION IF CONNECTED TO CONTINUOUS POWER

- The system runs its water heating cycle once a day to fill up the storage tank unit with heated water.
- If the block out time function is selected (setting is covered in page 16-18) the unit will not operate during the block out times.
- The block out function is typically used on installations that have 'time of use' electricity tariffs. The water heating cycle operation starts automatically when the residual hot water in the tank unit decreases.
- The system will not run if the electrical power supply is cut off (i.e. if it is connected to off-peak power). However, the system will automatically start operation, once the electricity becomes available.

SYSTEM OPERATION IF CONNECTED TO OFF-PEAK ELECTRICITY

- There are no special settings for the off-peak connection. The system will run once the power becomes available and the temperature in the tank drops below the set point of the tank thermistor. If connecting the unit to off peak ensure that the off-peak contract provides a minimum of 5 hours continuous power, as it can take at least four hours to fill the tank unit with hot water at installation. If the ambient temperature is lower than 10°C this can be longer.
- If the unit is connected to off peak power and hot water consumption has been exceptionally high, then hot water may not be available until the next power supply cycle.
- Daily frequency and amount of hot water consumption may also affect the duration of the heating cycle operation.
- Select the electrical supply mode that best suits the customer's hot water consumption. The type of off-peak connection may need to be changed if hot water supply is not maintained as required

Figure: Outline of electrical system connections



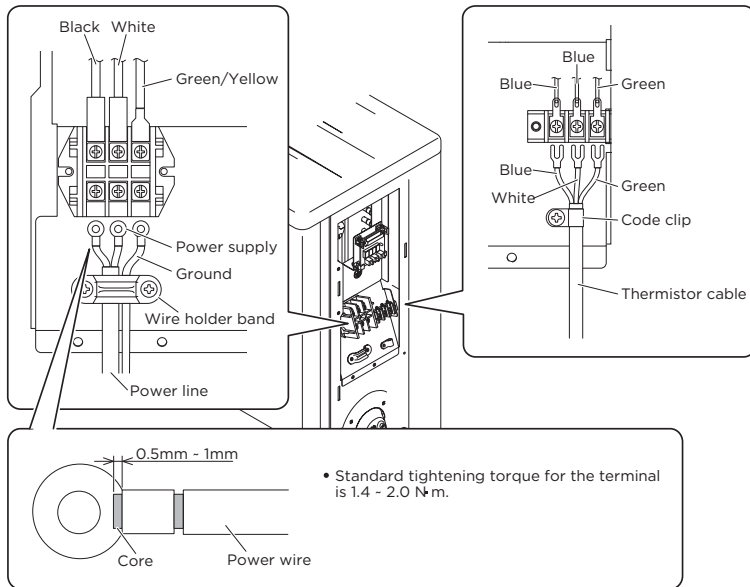
ELECTRICAL INSTALLATION

CONNECTING POWER SUPPLY AND THERMISTOR CABLE

1. Remove the piping cover
2. Connect the power supply line to the terminal block.
3. Fix the power supply line with the wire holder band.
4. Connect the thermistor cable line to the terminal block.
5. Hold the thermistor cable with the code clip.
6. Attach the piping cover back on the heat pump unit
7. Loosen gland nut on the lower sensor connection port of the tank.
8. Put gland nut over probe and insert probe into bottom sensor location. Ensure it is pushed in all the way.
9. Tighten gland nut over probe so it is secure and cannot be removed.

Note: If tank sensor does not reach the edge of the tank sensor connection port, temperature may not be able to be detected, causing an error or continuous operation. If the 2m sensor cable is not long enough, you will need a 15m sensor cable.

Figure: Connect power cables



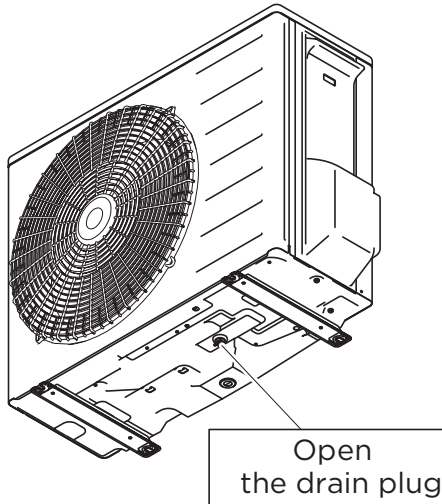
INSTALLATION MUST BE CARRIED OUT BY AN AUTHORISED AND LICENSED PERSON.

BLEEDING AIR FROM SYSTEM

The following steps must be taken to ensure all air is removed from the system. Incorrect removal of air may cause the water temperature to vary and may cause an error fault

1. Plumb pipes to the tank unit and the heat pump unit.
2. Push up the lever on the PTR valve to open, and fill the tank unit with water.
3. Confirm that the water comes out of the PTR valve and then close the lever.
4. Open the water drain plug on the heat pump unit.
5. Close the plug after no air is seen in the water.
6. Supply the power to the heat pump unit.
7. Display shows "1200" then "Clock setting mode" is started with operating "Air Removing process" at the same time. In case finish time setting or nothing is operated for 1 minute, "Clock setting mode" is terminated and "APon" will be displayed on the monitor.
8. "Air Removing process" will be done in 5 minutes.
9. Once it's finished, current time will be shown on monitor.
10. Open the hot water faucets in the home to remove air.
11. Close the hot water faucets in the home after no air is seen in the water.

Note: If air removing mode is not completed, the system will not start the heating cycle.



TIME AND BLOCK OUT SETTING

CURRENT TIME SETTING

This product contains a built-in clock as part of the water heating cycle logic and refers to the current time. It is necessary to set the clock before starting to use the product. The current time can be set in the 'Clock Setting Mode' as described below

Note :

There is no need to adjust the time setting for the daylight saving period. Even if the installation is conducted during the daylight saving period, the clock setting to the ordinary time (not daylight saving time) is preferable.

1. Switching to Clock Setting Mode

Press the "Enter" key in the Clock Display Mode to switch to the Clock Setting Mode. Time Display starts flashing once the mode is switched.

2. Confirming Time Setting

After the clock is adjusted to the current time, press the Enter key to confirm the setting. The time display stops flashing and comes on once the setting is finished.

Setting the Clock

The time setting can be adjusted by pressing "▲" and "▼" keys. Fast forward and rewind are available by pressing and holding down either "▲" and "▼" key.

CAUTION :

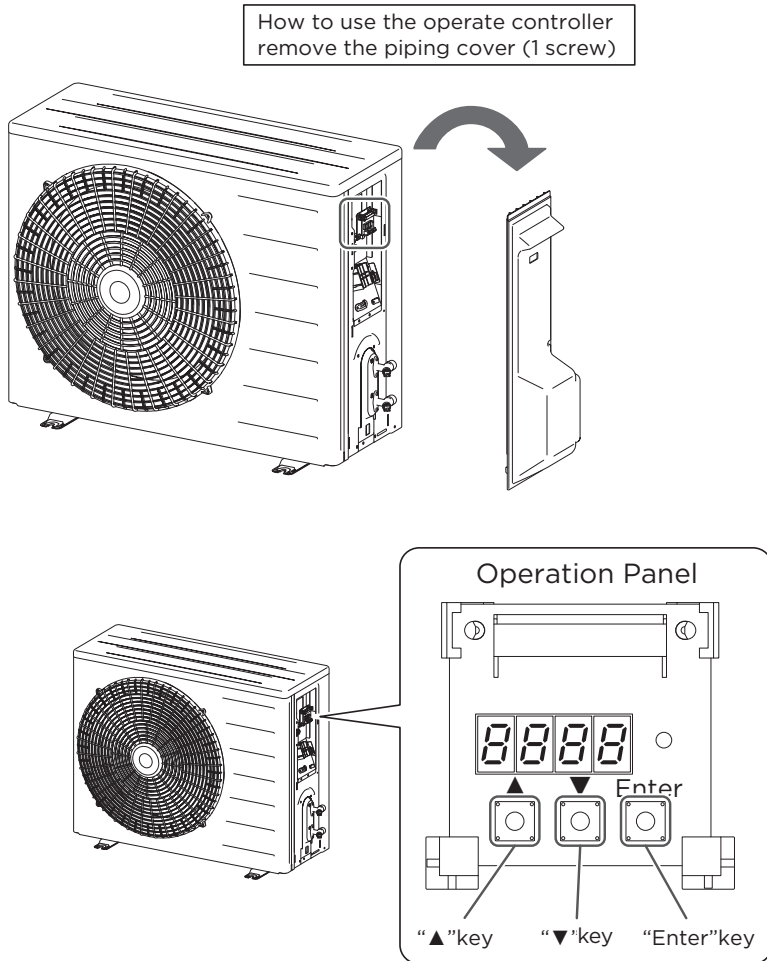
The setting automatically goes back to the Clock Display Mode when no panel operation is performed for more than 60 seconds in the Clock Setting Mode. If this occurs, changes made will not be reflected to the setting. Depending on the set time, the system will start its heating cycle.

Note :

If no buttons are pressed on the panel for more than 60 seconds, the display goes into sleep mode and the panel is blank except for the operation status light. Sleep Mode is turned off when any button is pressed. "▲", "▼" or "Enter" key is pressed.

TIME AND BLOCK OUT SETTING (CONT.)

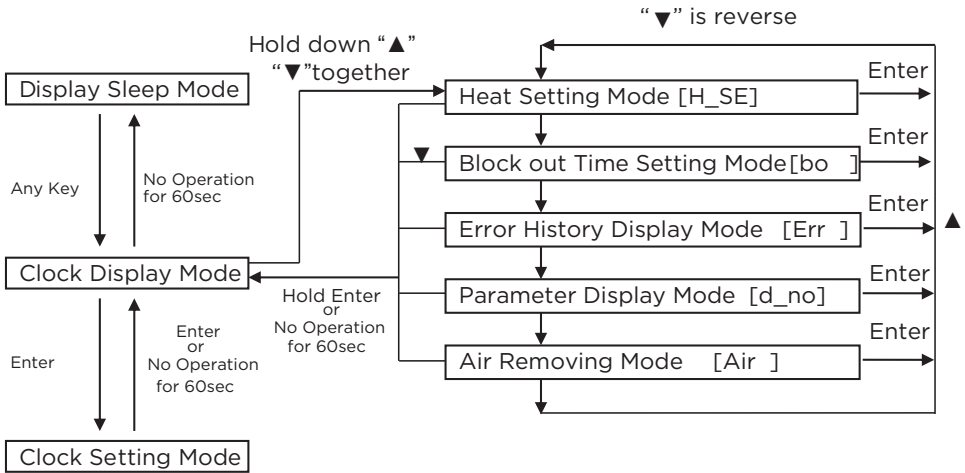
Figure: How to operate the controller



MAINTENANCE MODE

HOW TO SWITCH TO MAINTENANCE MODE

Press and hold down▲and▼keys together in the clock display mode to go to the maintenance mode. After the mode is switched, press the Enter key to select a mode from the five modes described above. To exit the maintenance mode, press and hold the Enter key, or leave for more than 60 seconds with no panel operation.



MAINTENANCE MODE (CONT)

Heat setting mode

- Set the heating mode to either ON (Unit Runs) or OFF (Unit cannot operate). Press Enter one more time to access, then use ▼/▲ arrow keys to toggle between Heat On and Heat Off. Press Enter to confirm choice. To bypass the Heat Setting simply press ▲ key to access the next parameter in the mode.

Block out time setting mode

- Set the block out time (Time of use) (see page 18)

Error history display mode

- Check the history of any errors that may have occurred Enter into Maintenance Mode, press ▲ key to access Error History then press Enter to access. This records 8 errors that have occurred on the system, this can be used for troubleshooting after an error code has been cleared by cycling the power to the unit. The most recent error code is displayed first, previous error codes can be seen by pressing the ▼ key. To bypass the Error History simply press ▲ key to access the next parameter in the Maintenance menu.

Parameter display mode

- Enter into Maintenance Mode and press ▲ key to access Parameter Display then press Enter to access. This displays all of the values currently measured by the unit's temperature sensors, this can be used for troubleshooting and general unit performance questions. When first entering this mode the display will cycle between no00 and the actual data value ****, to access the other data points use ▼ key. To bypass the Parameter Display, simply press ▲ key to return the first option mode in the Maintenance Mode. To exit Maintenance Mode, hold Enter key or do not press any key for 60 seconds and control will default to sleep mode and revert to the current time display when awoken.

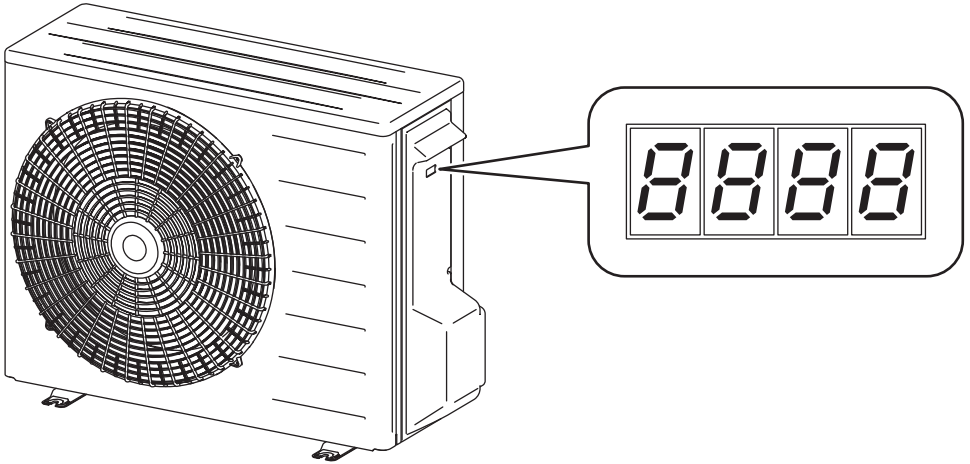
Air removing mode

- Enter into Maintenance Mode and press ▲ key to access Air Removing Mode then press Enter to access. In this mode the pump will run for 5 minutes to bleed air from inside of piping.

ERROR CODES

When an error has occurred, an error code is displayed on the LED display. The panel does not turn to the display sleep mode while the error code is shown.

Figure: Error code display



After a component is replaced or the inspection is completed, turn the breaker on/off several times to confirm the error does not re-occur.

NOTE:

After a component is replaced or the inspection is completed, turn the unit on/off several times to confirm the error does not re-occur.

If the corrective action does not solve the error problem, a malfunction of the PCB is highly likely

ERROR CODE LIST (CONT.)

Error Code	Error Contents	Corrective Action
U0	Refrigerant leakage error	<ul style="list-style-type: none"> - Measure resistance of each thermistors. - Measure resistance of coil of expansion valve to check open or short circuit. - Replace the main PCB or heat pump.
E1	Main PCB error	<ul style="list-style-type: none"> - Replace the main PCB.
E2, L7	Control PCB error	<ul style="list-style-type: none"> - Replace the control PCB.
F5	Communication error between main PCB to control PCB	<ul style="list-style-type: none"> - Check the communication connector on the main PCB and control PCB. - Replace the main PCB or control PCB.
E8	High inlet current error	<ul style="list-style-type: none"> - Check the installation location. - Check the supply voltage. - Replace the main PCB or heat pump.
H8	Current error	<ul style="list-style-type: none"> - Replace the main PCB.
L4	High temperature of module error	<ul style="list-style-type: none"> - Check the installation location. - Remove foreign objects from the evaporator coil (e.g. fallen leaves, grass, snow) - Check the fan motor is not flowing by dirt. - Replace the main PCB or fan motor.
L5	High outlet current error	<ul style="list-style-type: none"> - Measure resistance of the discharged thermistor. - Measure resistance of coil of expansion valve to check open or short circuit. - Replace the main PCB or heat pump.
P4	Module temperature thermistor error	<ul style="list-style-type: none"> - Replace the main PCB.
U2	High voltage error	<ul style="list-style-type: none"> - Check the supply voltage.

ERROR CODE LIST

Error Code	Error Contents	Corrective Action
H9	HP ambient (outdoor) temperature thermistor error	<ul style="list-style-type: none"> - Check the thermistor connectors on the main PCB or control PCB in the heat pump unit for any disconnect, fall-off, wire breakage or short circuit. - Measure resistance of the thermistor indicated by the error code.
HC	HP water outlet (outgoing) temperature thermistor error	
J3	HP discharge temperature thermistor error	
J5	HP suction temperature thermistor error	
J6	HP defrost temperature thermistor error	
J8	HP water inlet (return) temperature thermistor error	
H7	Tank temperature thermistor error	<ul style="list-style-type: none"> - Check the thermistor cable on the terminal block in the heat pump unit for any disconnect, fall-off, wire breakage or short circuit. - Measure resistance of the thermistor indicated by the error code.
E6	Compressor booting error	<ul style="list-style-type: none"> - Check the compressor connector. - Replace the main PCB or heat pump.
H6	Compressor revolution error	<ul style="list-style-type: none"> -Check the supply voltage. -Measure resistance of each thermistor. -Measure resistance of coil of expansion valve to check open or short circuit. -Replace the PCB or heat pump.

ERROR CODE LIST (CONT.)

Error Code	Error Contents	Corrective Action
HJ	Water circuit error	<ul style="list-style-type: none"> - Check the inlet water valve. - Check for any piping bend, blocking, kink or frozen. - Measure resistance of each thermistor. - Measure resistance of coil of expansion valve to check open or short circuit. - Replace the main PCB or heat pump.
EC	High water outlet error	<ul style="list-style-type: none"> - Check the water circuit is not flowing by air, dirt or scaling. - If the water circulation pump is not working, replace the pump. - Measure resistance of water outlet (outgoing) thermistor. - Replace the main PCB.
E9	Water circulation pump error	<ul style="list-style-type: none"> - Check the water is full fill in the tank. - If the water circulation pump is not working, replace the pump. - Check the revolution of pump by controller. If the revolution is low, replace the pump. - Replace the main PCB
E7	Fan motor locked	<ul style="list-style-type: none"> - Remove foreign objects around the fan motor. - Check the fan motor connections on the main PCB. - Replace the main PCB.
F3	Discharge temperature error	<ul style="list-style-type: none"> - Measure resistance of the discharged thermistor. - Replace the main PCB or heat pump.

SYSTEM MAINTENANCE

Regular servicing will help to extend the life of the water heater, and keep it operating safely and efficiently. Your water heater warranty is not conditional on completing the regular servicing recommended in this manual.

Six Month Service:

This service may be carried out by the owner.

1. Stand clear of the Pressure & Temperature Relief (PTR) Valve drain pipe outlet.
2. Open the PTR Valve for approximately 10 seconds by lifting the easing lever on the valve. Confirm water discharges to waste through the drain pipe.
3. Lower the easing lever gently and check it closes correctly.

Other than this, personally inspecting or servicing any part of your water heater is not recommended

Five Year Service (All Water Heaters):

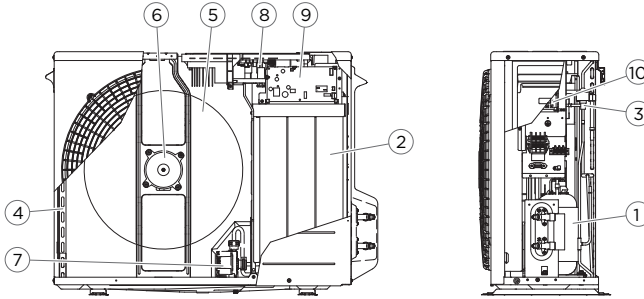
This service should only be carried out by a licensed tradesperson. In locations where the water has Total Dissolved Solids (TDS) exceeding 600 mg/L, this service is recommended every 3 years.

The service should include the following:

- Replace the PTR Valve.
- Replace the anode
- Drain and flush the water heater

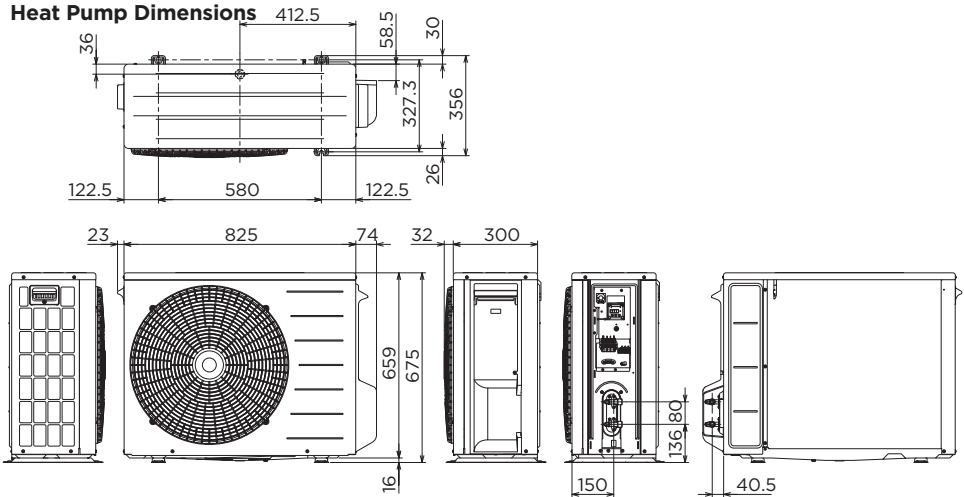
TECHNICAL DATA - HEAT PUMP UNIT

Exploded Diagram of Heat Pump Unit



1	COMPRESSOR	6	FAN MOTOR
2	WATER HEAT EXCHANGER	7	CIRCULATION PUMP
3	EXPANSION VALVE	8	MAIN PCB
4	EVAPORATOR	9	CONTROL PCB
5	FAN	10	OPERATION PCB

Heat Pump Dimensions



(With the piping cover removed)

Unit : mm

TECHNICAL DATA - HEAT PUMP UNIT

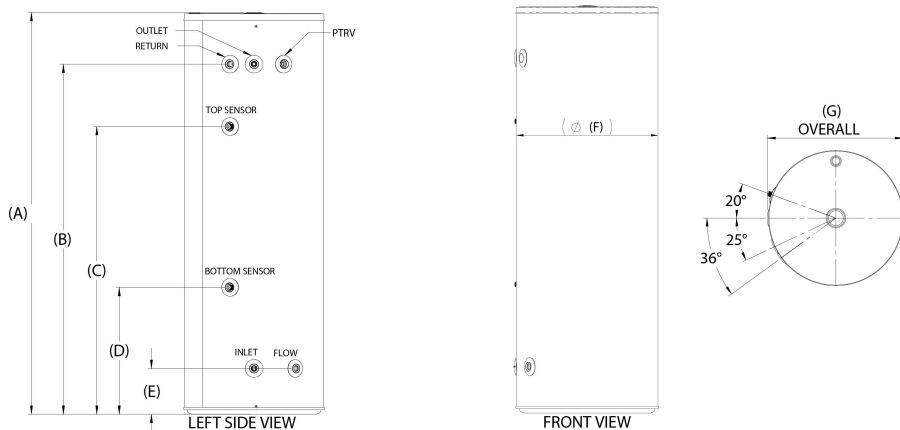
PERFORMANCE DATA

SPECIFICATION	Unit	Data
Power-supply voltage	V	240
Power frequency	Hz	50
Installable outside air temperature	°C	-10 - 43
Product weight	kg	48
Refrigerant type	-	R744 (CO ₂)
Refrigerant weight	g	690
Design pressure (High/Low)	MPa	14/9
Rated capacity	kW	4.5
Max.capacity	kW	6.0
Max.power input	kW	2.5
Max.current	A	11
Setting outlet water	°C	65
Protection rating	-	IPX4
Max.operating water pressure	kPa	850
Noise Level ❄	dB(A)	37
Tank thermistor ON temperature	°C	37
Tank thermistor OFF temperature	°C	57
Installation height difference between the tank and HP	m	Max 5
Piping length between the tank and HP	m	Max 15
Number of bends between the tank and HP	-	Max 6
Allowable water hardness	mg/L	Max 200
Allowable water pH	-	6.5 - 8.0
Circuit breaker size	A	20

❄ Dry bulb 19°C, Wet bulb 15.1°C Inlet water 15°C, Outlet water 65°C

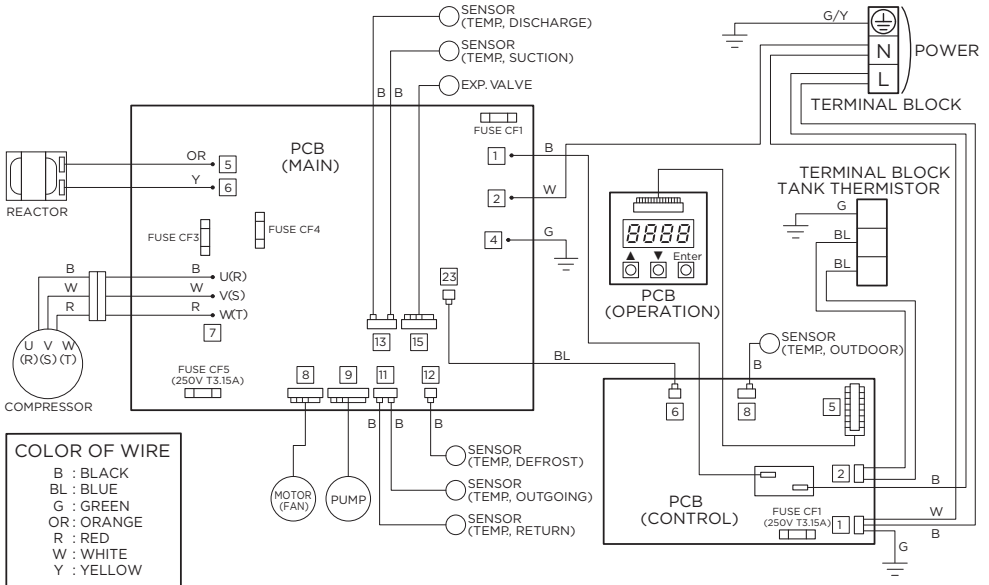
TECHNICAL DATA - TANK

Tank Specifications



SPECIFICATION				
Model	160L	250L	315L	400L
Total Volume	163L	259L	323L	420L
Tank Unit Weight (Empty)	59kg	71kg	92kg	116kg
PTRV Pressure Pump	850kPa	850kPa	850kPa	850kPa
Sensor Level on Tank	68%	69%	69%	69%
Height (A)	1318mm	1444mm	1762mm	1704mm
Hot Water Outlet (B) PTR Valve (B) Heat Pump Return (B)	1099mm	1217mm	1535mm	1452mm
Top Sensor (C)	936mm	997mm	1263mm	1215mm
Bottom Sensor (D)	439mm	463mm	555mm	561mm
Heat Pump Flow & Cold Inlet (E)	190mm	201mm	201mm	226mm
Cylinder Diameter (F)	528mm	613mm	613mm	701mm
Overall Diameter (G)	540mm	623mm	624mm	712mm

WIRING DIAGRAM



COLOR OF WIRE
 B : BLACK
 BL : BLUE
 G : GREEN
 OR : ORANGE
 R : RED
 W : WHITE
 Y : YELLOW

⚠ WARNING !

⚡ Electric Shock !

Warning when you fix electric components !

- Don't touch electrically charged parts, as electric shock may occur even if they are switched off.
- Be sure to wait at least 5 min. after turning off the power.

⚠ Caution ⚡ Electric Shock High Voltage

- Do not touch any part of the electric circuit (including the wiring of thermistor and others), as it has high voltage against the ground.
- Pay attention not to damage the insulated wire when you tighten the screw, as the exposed wire may cause electric shock or malfunction.
- Do not ground the oscilloscope when you operate. You might destroy it. Also do not touch any metal part of the oscilloscope while operating.

How to detach locking terminal
 Pull off while pressing the locking lever.

Locking lever

WATER SUPPLY QUALITY

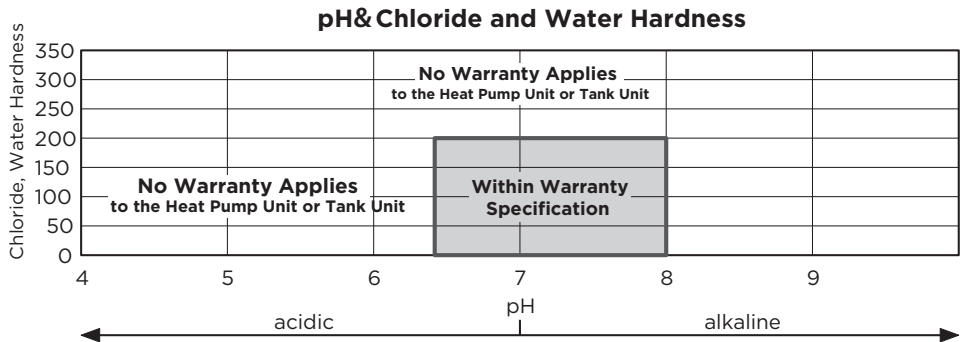
CHLORIDE, WATER HARDNESS AND PH

In high chloride water supply areas, the water can corrode some parts and cause them to fail. Where the chloride level exceeds 200 mg/litre or Water Hardness level exceeds 200 mg/litre, **warranty does not apply** to the heat pump unit and tank unit. pH is a measure of whether the water is alkaline or acidic. In an acidic water supply, the water can corrode some parts and cause them to fail.

No warranty applies to the heat pump unit and tank unit where the pH is less than 6.5 or more than 8. The water supply from a rainwater tank unit in a metropolitan area is likely to be corrosive due to the dissolution of atmospheric contaminants.

Water with a pH less than 6.5 may be treated to raise the pH. It is recommended that an analysis of the water from a rainwater tank be conducted before connecting this type of water supply to the system.

Figure 12 Water Hardness



CHANGE OF WATER SUPPLY

Changing, or alternating, from one water supply to another can have a detrimental effect on the operation and/or life expectancy of the water tank unit cylinder, PTR valve, water heating circulation and the water heat exchanger in the system. Where there is a changeover from one water supply to another, for example, a rainwater tank 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 the water should be tested to ensure it meets the warranty requirements in this installation manual.

WARRANTY POLICY

All Thermann water heaters must be installed in accordance with manufacturer's installation instructions and in accordance with local regulations, building codes and AS/NZS 3000, AS/NZS 3500.4 and AS/NZS 5601.

Where a component may have failed under warranty and is replaced, the component replaced will only be covered by the warranty for the balance of the appliance warranty period.

Water quality must be within limits specified in table below.

pH	6.5 to 8.0
Sodium	Up to 150 mg/litre or ppm
TDS (Total Dissolved Solids)	Up to 600 mg/litre or ppm
Chlorides	Up to 300 mg/litre or ppm
Iron	Up to 1 mg/litre or ppm
Magnesium	Up to 10 mg/litre or ppm
Alkalinity (as CaCO ₃)	Up to 200 mg/litre or ppm
Dissolved (free) CO ₂	Up to 25 mg/litre or ppm
Total Hardness CaCO ₃	Up to 200 mg/litre or ppm

WARRANTY TERMS

Thermann Split Heat Pump hot water systems are covered by Reece for any cost of labour and parts in the event of a component failure due to any defects that may arise either from workmanship and/or faulty material.

The warranty commences on the date of installation:

Domestic

Heat Pump Unit: 6 years

Tank: 10 years

Parts & Labour: 2 years parts & labour

Commercial

All components: 1 year

Parts & labour: 1 year

Additional Information

If your Thermann heat pump was purchased and installed from 1st July 2023 through the SOLAR Victoria - SOLAR HOMES program, your Thermann Heat Pump is warranted for five years on all components.

COMMISSIONING CHECKLIST

TASK LIST		Tick Box
Installation condition and installation work	Are waterproofing and drainage works carried out on the installation floor?	
	Is the tank installed firmly and horizontally?	
	Is the tank firmly installed and free of rattles?	
	Is the construction work sufficient to withstand the weight of the tank when full of water?	
	Do you have enough space to install the tank and heat pump unit?	
	Are there any flammable hazardous materials in the vicinity? Are there any corrosive gases in the vicinity?	
	Is the heat pump unit securely installed?	
	Do you have the service space needed for inspection and repair?	
	Are there any scratches, deformation, or stains on the exterior?	
	Does the heat pump unit come with a tank thermistor shield wire, installation instructions, and a drain elbow?	
	Is the tank thermistor installed in the tank with the tip of the thermistor touching the tip of the tube?	
After installing the tank thermistor, did you tighten the holder to make sure it would not come loose?		
Pipework	Do you use tap water for water supply? (Do not use groundwater, well water, or hot spring water.)	
	Have you inspected the piping for leaks and confirmed that there are no leaks?	
	Are there any water leaks from the water supply piping, hot water supply piping, or other piping connections?	
	Is the main water valve installed in the proper position?	
	Are the drainage pipes heat resistant to temperatures exceeding 65°C?	
	Is the heat insulation work of the piping properly done?	
	Is the freezing prevention work being done properly (for areas where there is a risk of freezing)?	
	Does the drain hose lead to the drainage path?	
	Slowly open and close the lever of the PTRV to see if the water release and shutoff are normal.	
	When the PTRV lever is raised and the drain plug is opened, does the drain pipe overflow?	
Have you attached the drain elbow to the bottom plate of the heat pump unit? Also, is a drain hose attached to the end of the elbow to lead to the drainage path?		
Are you sure about the drainage work?		
Electrical Work	Have you checked the operation of the earth leakage circuit breaker?	
	Are you sure you're grounded?	
	Are the power supply wires securely connected and fixed so that no external force is transmitted to the terminal block connection?	
	Is the tank thermistor shield wire securely connected to the heat pump?	
Trial Run	Is the main water valve open?	
	Did you loosen the pump drain plug and bleed the air before turning on the power (after the tank is full of water)?	
	After turning on the power, did you set the current time on the operation board?	
	Did you complete the air bleeding test run without any problems or abnormalities?	
If there are times when you don't want to run the unit according to the power contract, have you set them on the operation board?		
Others	Is the flow rate from the shower sufficient?	
	Is the piping cover securely closed?	
	If there is a winter period between the completion of the trial run and the handover to the customer, do you keep the power on?	
	Have you explained to the customer how to use the product according to the installation manual?	
	Have you handed the owner's manual to the customer?	

CONSIDERING A SERVICE CALL?

It is recommended that the following points be reviewed before making a service call:

No Hot Water:

- If you have a heat pump water heater, ensure that the power supply circuit breaker has not “tripped”. If your water heater is on a timed tariff such as off-peak, ensure this is operating correctly.

High Electricity Bills or Insufficient Hot Water:

- Often the hot water usage of showers, washing machines and dishwashers can be under estimated. Review these appliances to determine if your daily usage is greater than the capability of your water heater.
- If necessary check the shower flow rates with a bucket, measuring the amount of water used over that period of time. If it is not possible to adjust water usage patterns, an inexpensive flow control valve can easily be fitted to the shower outlet.
- Do you have the correct size water heater for your requirements? Sizing details are available from your local Reece branch.

- Is there a leaking hot water pipe or dripping hot water tap? A small leak can waste a large quantity of hot water. Replace faulty tap washers and have your plumber rectify any leaking pipe work.
- Is the Pressure & Temperature Relief Valve discharging too much water? See below.

Continuous Trickle of Water from Pressure & Temperature Relief (PTR) Valve:

This is most likely due to a build up of foreign matter. In this case, try gently raising the easing lever on the PTR Valve for a few seconds, then release gently. This may dislodge a small particle of foreign matter and rectify the fault.

Water Discharge from PTR Valve:

It is not unusual for a small quantity of water to discharge during the heating of water in your storage tank. The amount of discharge will depend on hot water usage and size of the storage tank. As a guide, it will discharge about 2% of the volume of the water heated. Continuous leakage of water from the PTR Valve may indicate a problem with the water heater. Turn off or shut down the water heater and contact Customer Service.

