



**SANDEN**

Delivering Excellence

# Installation manual



## Sanden Heat Pump Water Heater with Natural Refrigerant (CO2)

Covering model numbers for residence

GAUS-160FQS

GAUS-250FQS

GAUS-300FQS

GAUS-315FQS

GAUS-315FQV

### Heat Pump Unit GAU-A45HPC

※This manual is for TO BE USED  
by the installing Dealer only.  
It is not an owner's manual.



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 not to play with the appliance.

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### PATENTS

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

### TRADE MARKS

® Registered trademark of Sanden 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 that may arise as a result of its application. No liability can be accepted for any consequences that may arise as a result of its application. Sanden is in a process of continuous improvement, therefore specifications may be different to those referenced in this manual – Please contact Sanden International or its distributors for the latest specifications at the time of installation.

## Introduction

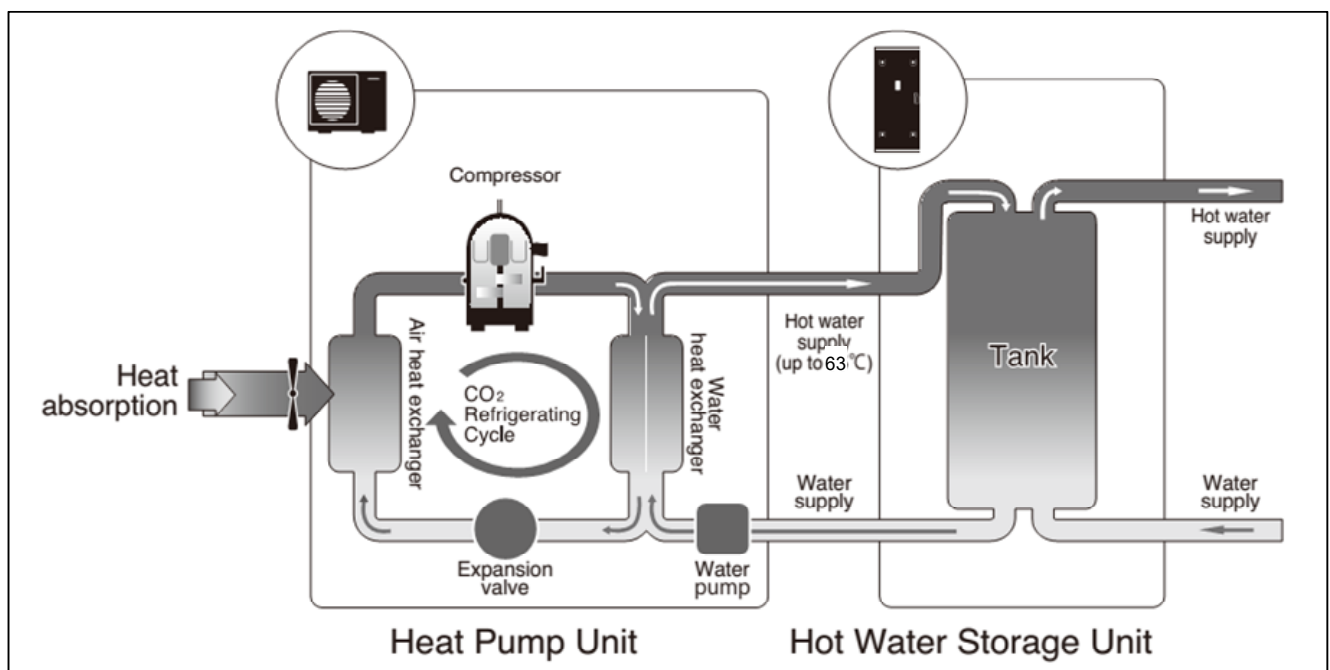
The Sanden Eco Hot water Heat Pump System has been designed using the latest refrigeration technology to remove the heat from the air to heat water. The refrigerant we use is CO<sub>2</sub> which does not contribute to global warming so it allows us to help keep a clean healthy earth for future generations.

We have also considered the power requirement. By using CO<sub>2</sub> as the refrigerant we have produced one of the most energy efficient units currently available. It's even more efficient when connected to off-peak power<sup>1</sup> and the noise level is so low it will operate unobtrusively throughout the night.

## How it works

The Sanden Eco Hot water Heat Pump System heats water by transferring the heat from the surrounding air to the water using a refrigerant. The refrigerant is heated by a heat exchanger that absorbs heat from the surrounding air (Figure 1).

**Figure 1: Heat Pump Water Heater System**



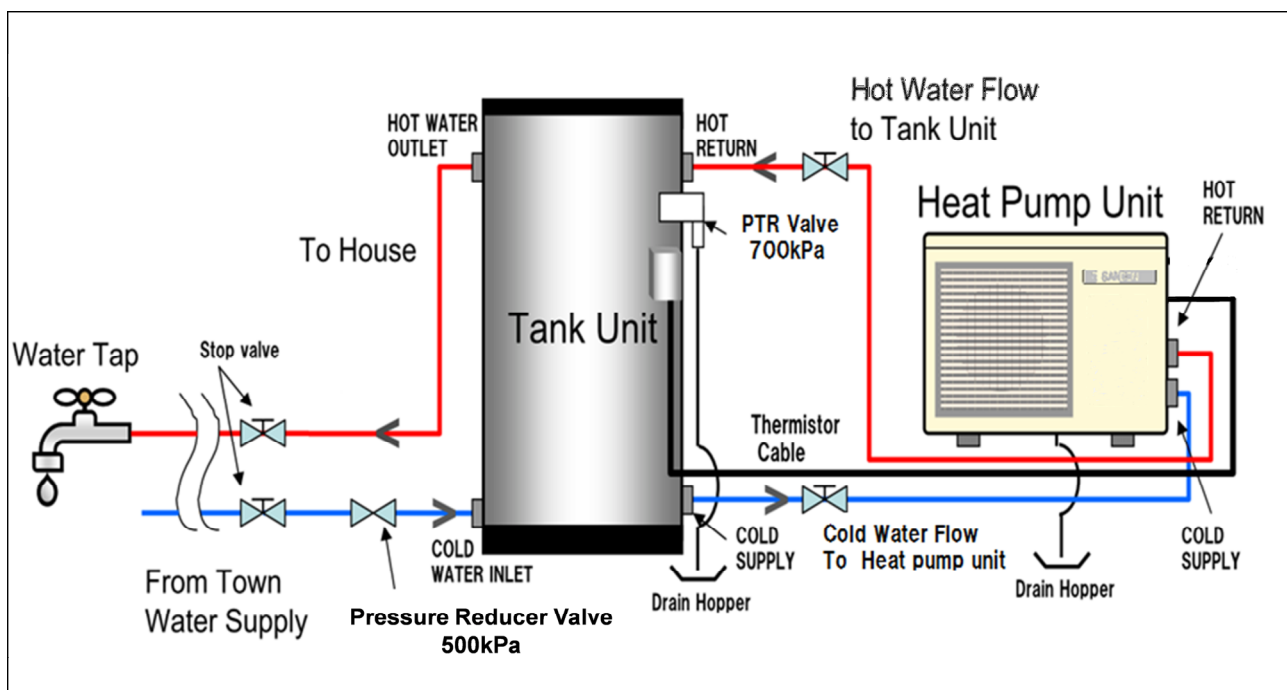
Note: Operating conditions may vary depending on the type of off peak tariff that is available in your area. The unit must have a minimum of 5 hours continuous power available at all time to allow the unit to operate without affecting reliability.

## Installation details

This Sanden Eco Hot water Heat Pump System must be installed by a licensed person in consideration of the following standards and regulations:

- AS/NZS3500 National plumbing and drainage code hot water supply systems – acceptable solutions
- HB 263-2004 Heated water systems plumbing industry commission
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand wiring rules)
- Notice to Victorian customers from the Victorian Plumbing Industry Commission. The *Victorian Building Act 1993* requires that this Heat Pump Water Heater System must be installed by a licensed person. Only a licensed person will provide a Compliance Certificate, showing that the work complies with all the relevant standards. Only a licensed person will have insurance protecting their workmanship for six years.
- The unit has been specifically designed for domestic hot water heating and is not suitable for any other purpose.
- 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.
- This system delivers hot water exceeding 50° C. Reference should be made to AS/NZ3500 and/or local regulations relating to the need for temperature tempering devices.
- 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. Failure to comply with the above conditions will void the warranty.

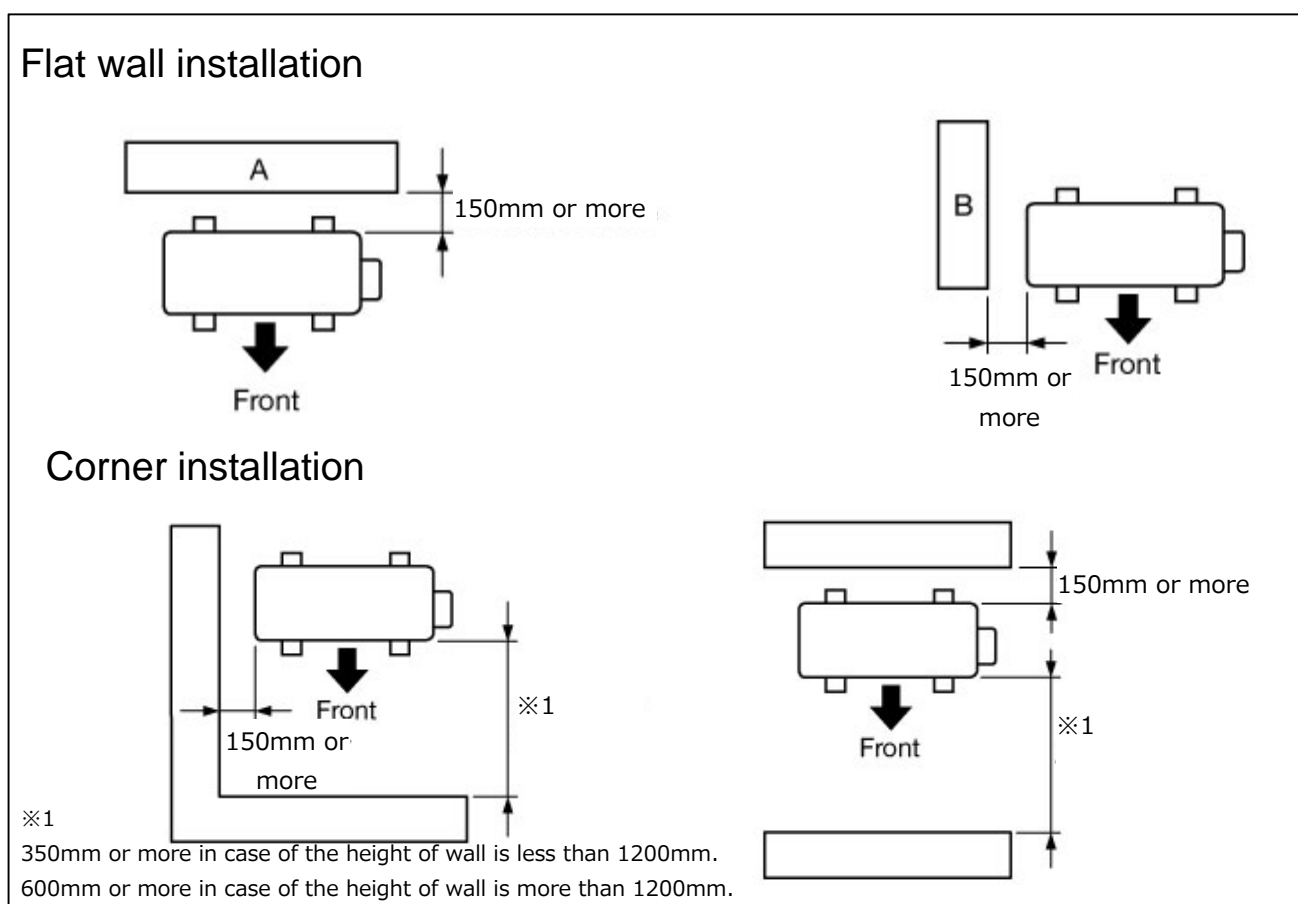
**Figure 2: Typical installation layout**



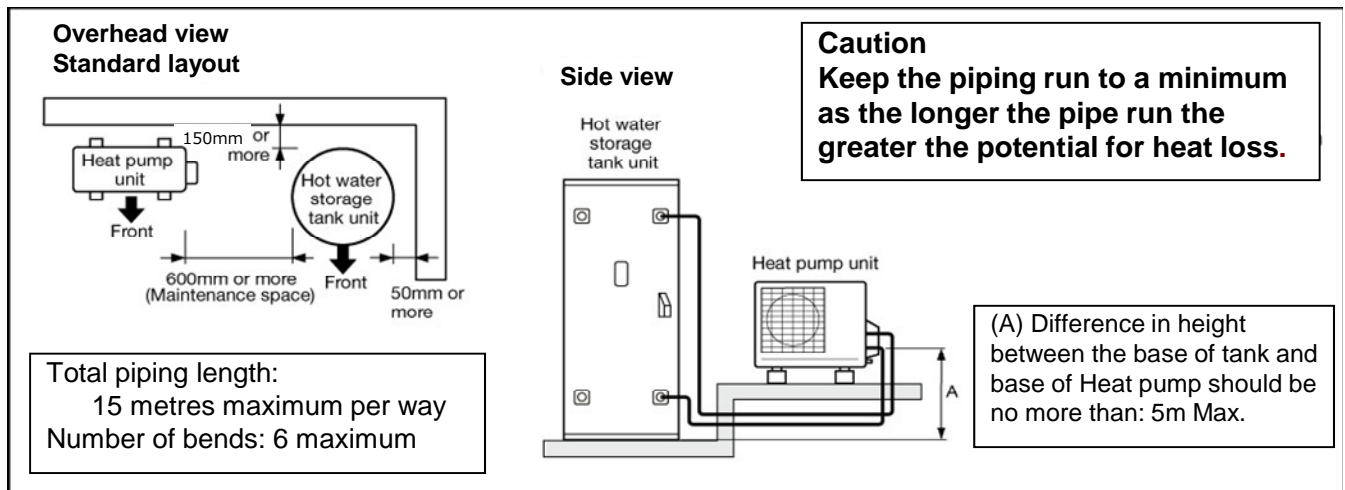
## Installation location

- The tank unit should be located as close as possible to the most frequently used hot water outlet such as a kitchen or bathroom. It may be located either outside or inside. The heat pump unit must be located outside and as close as practicable 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 3).
- Install the heat pump unit in an area which allows sufficient ventilation. Poor ventilation may cause the unit to short cycle and this could increase the power consumption by more than 10%.
- Do not install the heat pump unit in a confined space.
- If the heat pump unit is installed facing a wall, exhaust air may stain the wall.
- There must be adequate space between top of heat pump & anything above it to allow for access to top controls for servicing.

**Figure 3: Restrictions on where the heat pump unit can be installed (overhead view)**



**Figure 4: Restrictions on installation with the space between the tank unit and the heat pump unit**

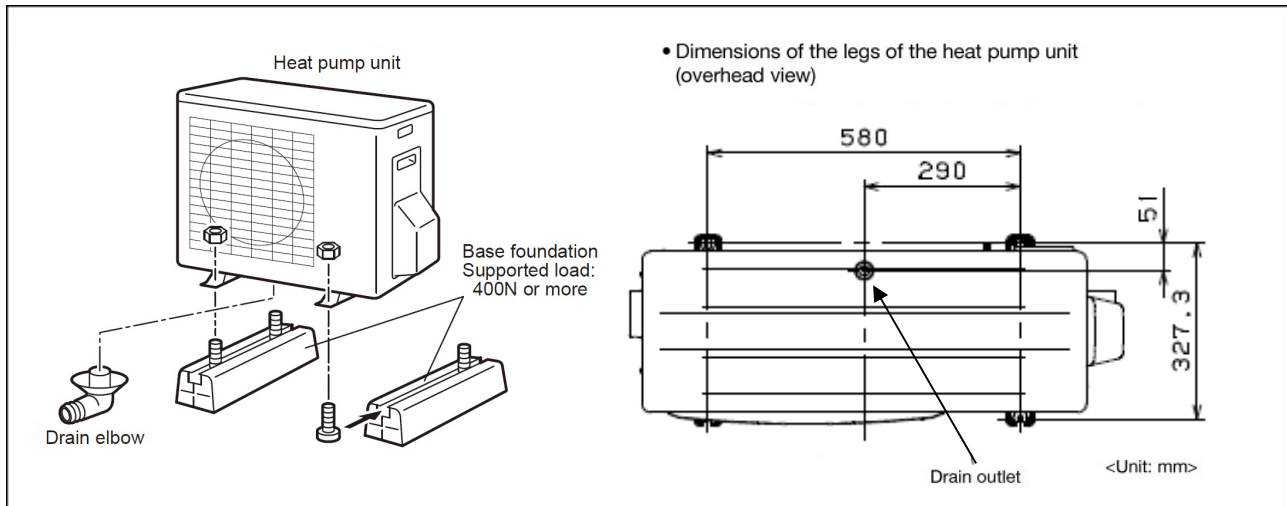


## Power requirement

- 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 and licensed installer. 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. If the heat pump unit and tank unit are fixed, appropriate fixing devices should be used.
- A pressure and temperature relief (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 (as per AS/NZS3500 plumbing code).
- 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 finds the right timing to run the water heating cycle automatically as long as the electricity is available. The only adjustment required is the current time setting on the timer setting panel under the top housing cover, especially if the block out time setting is desired. See current time setting and block out time section on page 16.

**Figure 5: 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 16mm of inner diameter to the drain elbow to guide the drained water to an appropriate drain

## Piping Connections

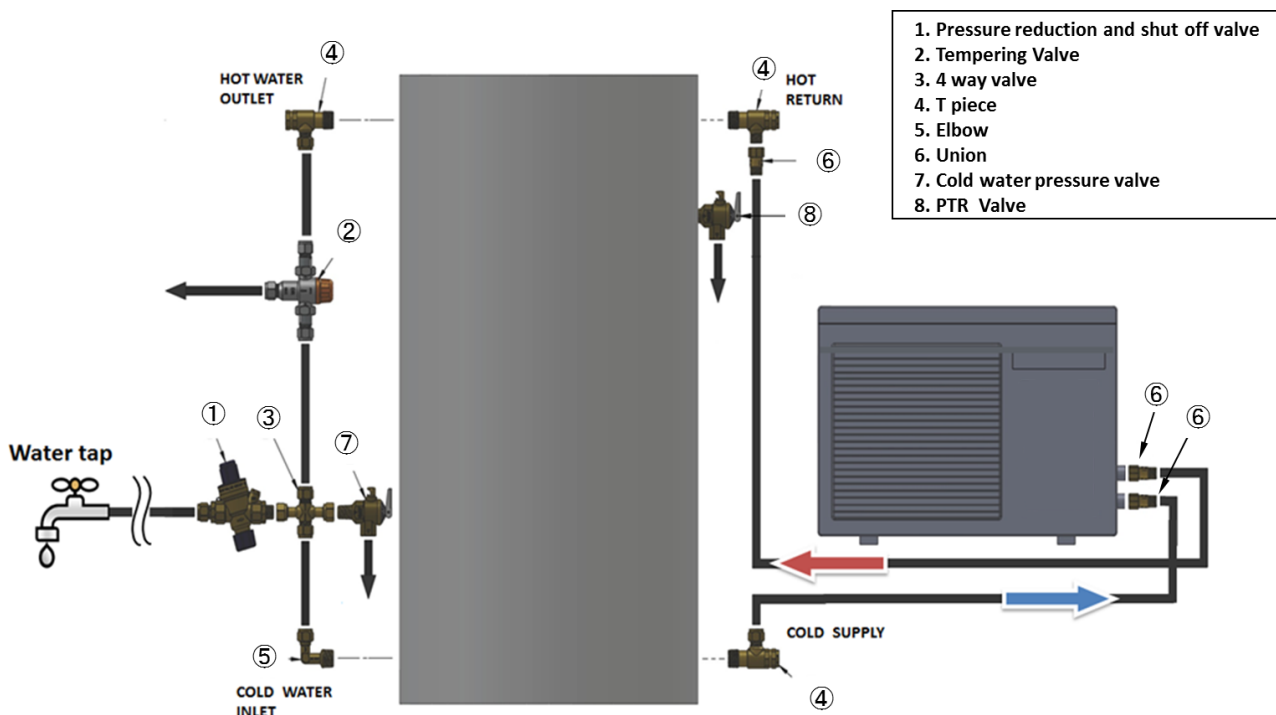
- All piping that connects to the water supply **must** be carried out by a licensed plumber.
- The water supplied to the system must comply with the drinking water quality standard. Use of water that does not comply with this standard could result in a malfunction of the system.
- The water source **must** have a pressure of 200 kPa or higher.
- A drain hopper must be installed under the drain outlet.
- A drain trap must be installed over the drain pipe if water is to be drained to a drain ditch. If a drain trap is not installed, gas could flow out and cause severe corrosion and malfunction of the heat pump unit.
- This product cannot be connected to a solar water heater.
- The piping must be insulated using insulation having a thermal conductivity no greater than 0.04 W/m.K and minimum thickness of 25 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 and corrosive-resistant material to seal the pipe joints.
- Cutting and wrenching the piping material may result in oil and dust adhering to it. After processing, 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 it 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.

- Follow the manufacturer's instruction manual for the type of bond, amount to be applied, curing time, and other specifications. If any bond or flux has entered the tank unit and the hot water has a chemical/acrid smell take the following countermeasures:
  - a) After heating the water in the tank unit, drain it and clean inside the tank unit. Fill the tank unit with 100 litres of water and exchange twice.
  - b) Clean or change the filter.
  - c) Fill up the tank unit.
  - d) Drain water from the relief valve for one to two minutes.
  - e) Run water from all the hot water supply taps in the house for about ten minutes to clean inside the pipes.

## Heat pump unit piping

- Connect the heat pump unit cold supply to the tank unit fitting marked Cold supply.
- Connect the heat pump unit hot return to the tank unit fitting marked Hot return.
- Connect the mains water supply to the lower fitting on the tank unit marked Cold Water Inlet.
- Connect the hot water supply pipe to the top of the tank unit marked Hot Water Outlet.
- Install the supplied PTR valve to the fitting on the tank unit marked PTR valve.
- 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.
- Close the stop valves (four places) and detach the filter on the cold supply connector of the heat pump unit to confirm there is no object that blocks the filter. Clean the filter if any blockage.
- Remove the air from the system according to the instructions on page 9.
- 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.

**Figure 6: System piping**

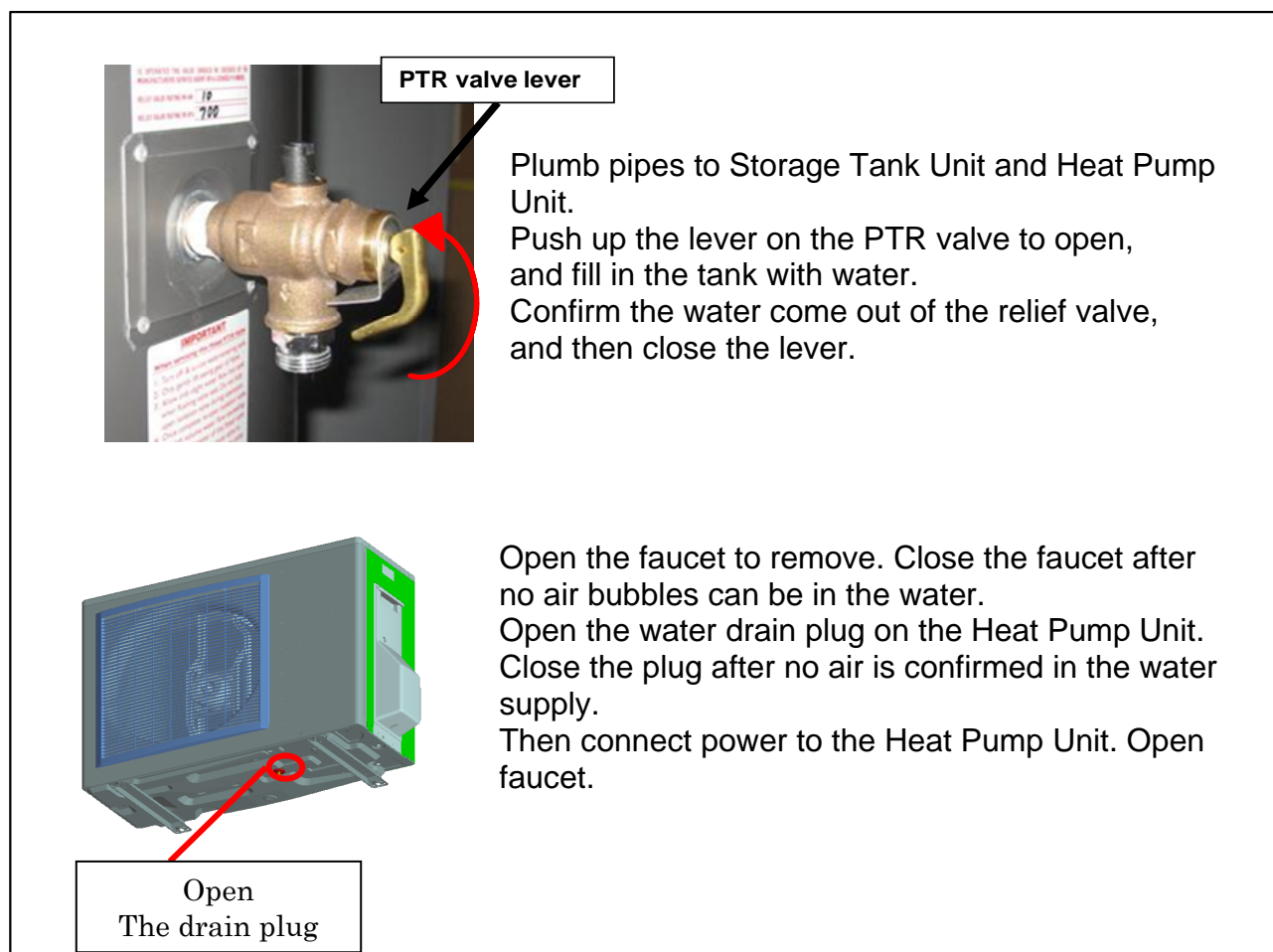




## Removing air from the system

- 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.
- Plumb pipes to the tank unit and the heat pump unit.
- Push up the lever on the PTR valve to open, and fill the tank unit with water.
- Confirm that the water comes out of the relief valve and then close the lever.
- Open the hot water taps in the home to remove air.
- Close the hot water taps in the home after no air is confirmed in the water.
- Open the water drain plug on the heat pump unit.
- Close the plug after no air is confirmed in the water.
- Connect the power to the heat pump unit.
- Air removing process (Refer to figure 13)
  1. Switching to Air Removing Mode  
Long press the “Up” and “Down” keys to switch to the “Heat Setting Mode”.
  2. Press the “Up” or “Down” keys to switch to the “Air Removing Mode” and press the “Enter” key. Press the “Up” keys again to display “On”, then press the “Enter” key.  
It will automatically go back to the clock display mode than 5 minutes.
- Open the hot water taps in the home to remove air.
- Close the hot water taps in the home after no air is confirmed in the water.

**Figure 7: Air removing process**



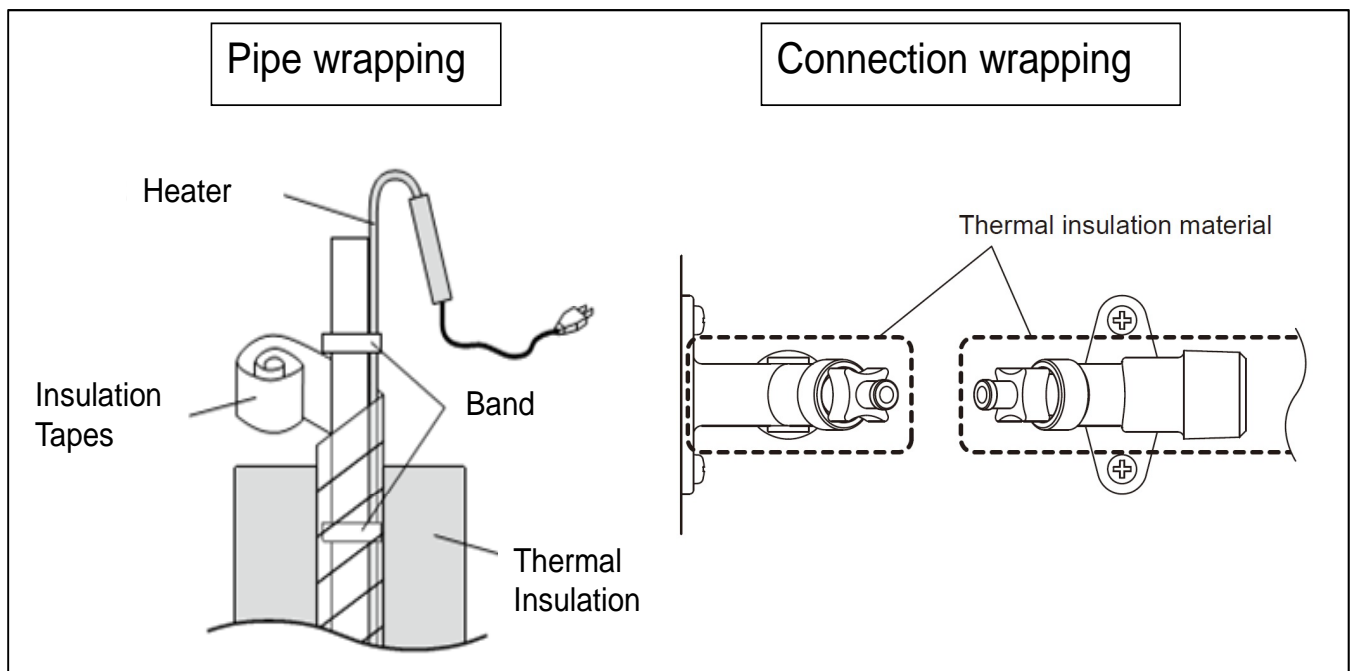
## Freeze protection

- Even if the pipes have been insulated, the piping can freeze if the surrounding temperature gets below zero. This could cause damage to the equipment and piping so make sure the appropriate freeze protection measures are taken.
- Follow the instructions in the installation manual provided with the freeze protection heater.
- After completion of the piping work inspect the plumbing for any water leaks from the joints before carrying out freeze protection.
- Wrap the freeze protection heater up to the water connectors of the main unit.
- Ensure the freeze protection heaters are connected to 24 hours continuous power supply.
- It is important to fully explain how to use and operate the freeze protection heater to the customer.
- When turning off the power because the unit will not be in use, any water must be removed from the unit and piping.



Note: A heater that checks the outside temperature may not detect the temperature of the piping correctly. It is important to use a heater that directly detects the piping temperature.

**Figure 8: Details on wrapping thermal insulation around the piping connector**



## Electrical connections

- Electrical installation should be done only by a licensed electrician who carries out the work according to the relevant regulations for electrical safety and wiring.
- Follow the wiring rules for the breaker rating and the thickness of the electrical wiring.
- Verify that the tank unit is full of water and the water stop cocks are open before turning on the power.

## System operation if connected to continuous power

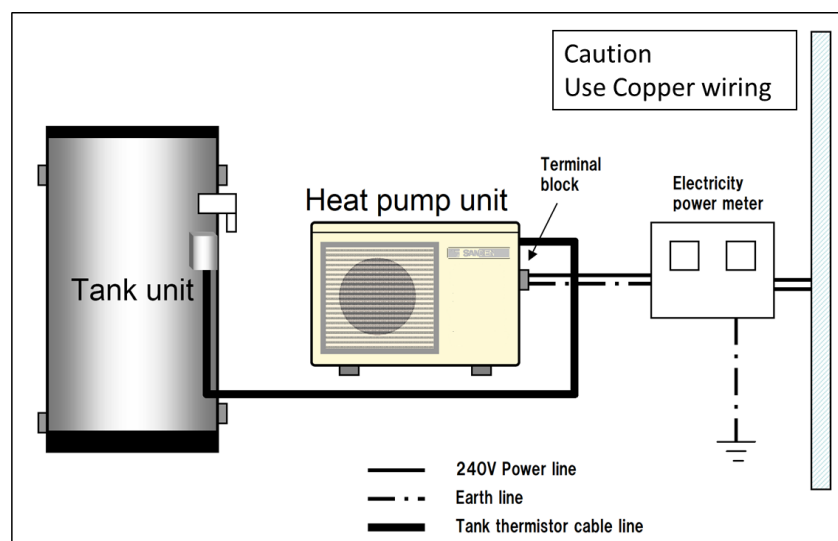
- The system runs its water heating cycle once a day to fill up the storage tank unit with heated water.
- If the block out time function is selected (setting is covered on page 16) the unit will not operate during the block out times – this function is typically used on installations that have time 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. 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 tariff 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 is exceptionally high, 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 9: Outline of electrical system connections**



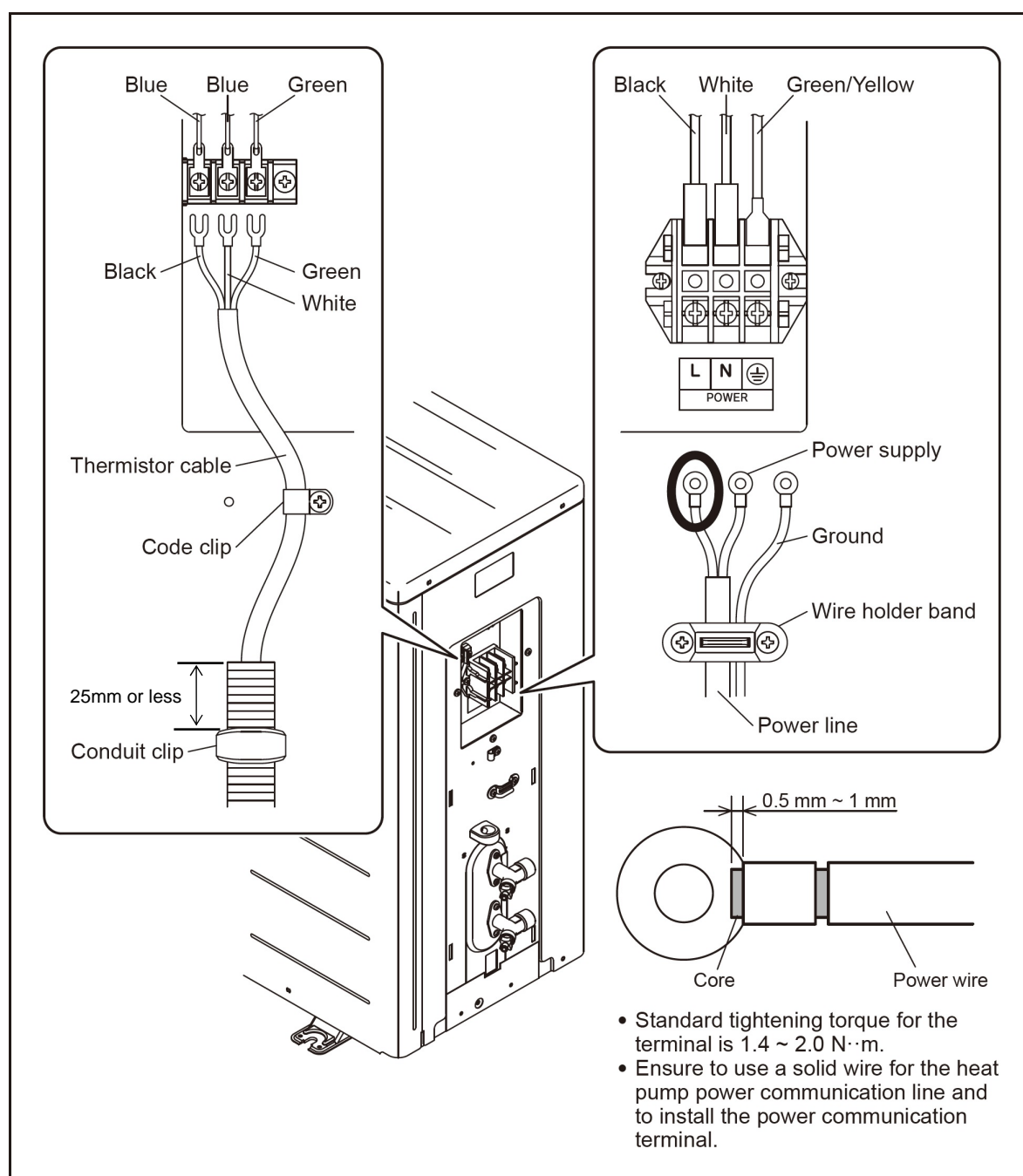
## How to connect power line and thermistor cable

Please note :

Electrical installation should only be done by a licensed electrician

- Remove the piping cover and screw clamp fitting.
- Connect the power supply line to the terminal block.
- Hold the power supply line below the terminal block with the screw clamp fitting.
- Connect the thermistor cable line to the terminal block.
- Fix the thermistor cable with the code clip and conduit clip.
- Attach the piping cover back on the heat pump unit.

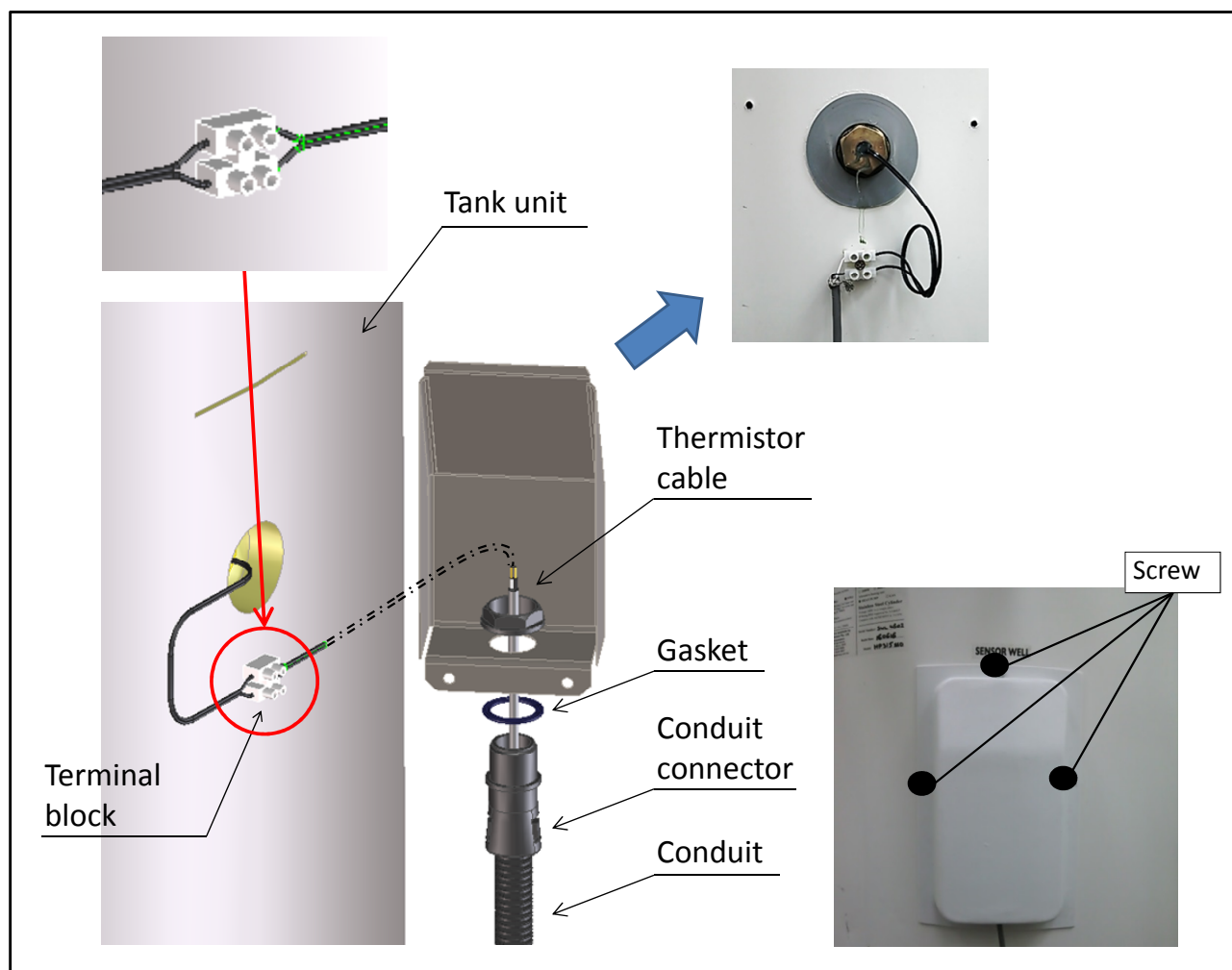
**Figure 10: Connect power cables**



## How to connect tank unit thermistor cable

- The terminal block & sensor cover are attached to the tank. Use a hex driver or socket to remove screws & sensor cover.
- Cut the thermistor cable and conduit to the required lengths. The thermistor cable and conduit length are designed to cover the maximum allowable distance between the tank unit and heat pump unit (four meters). If the units are located closer than four meters the thermistor cable and conduit may be cut to the desirable length (Figure 11).
- Reveal the grey cable inside the black conduit. Expose the 2 thermistor wires (black & white).  
Note that wires from thermistor in tank are black & black.
- Strip the 2 wires ready for the terminal block & remove the fine mesh shield (or tape over).
- Place the wires into the terminal block (in either direction), tighten screws & pull wires to make sure they're firm in the block.
- Please put the terminal block cover back onto the tank unit and tighten the screws.
- Fit a 15mm saddle on conduit where it enters base of cover to prevent conduit being removed from box.
- Cable ties the conduit to the hot line coming to the tank from side of heat pump unit.

**Figure 11: Connect tank unit thermistor cable**



## Time setting and block out time setting

### Current time setting

As part of the water heating cycle the system references the time on the controller. The system operates at its optimal design if the clock is set before starting to use the product, however if the clock is not set the unit will still operate. The current time can be set in the Clock Setting Mode as described below. (Refer to figure 13)

#### **\*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, setting the clock 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. Setting the Clock

The time setting can be adjusted by pressing “Up” and “Down” keys. Fast forward and rewind are available by pressing and holding down a key.

3. 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.

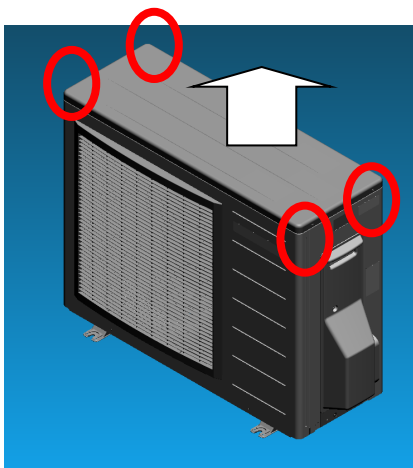
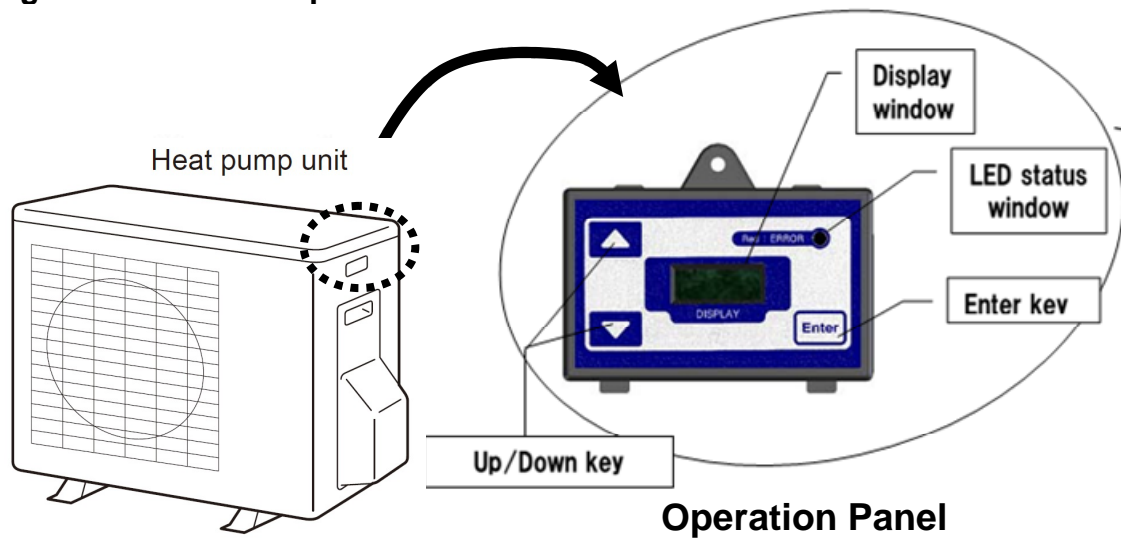
#### **\*Caution**

The display 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. If the clock setting is rewound to a time that is earlier than the time when a heating cycle is triggered, the system will start the heating cycle.

#### **\*Note**

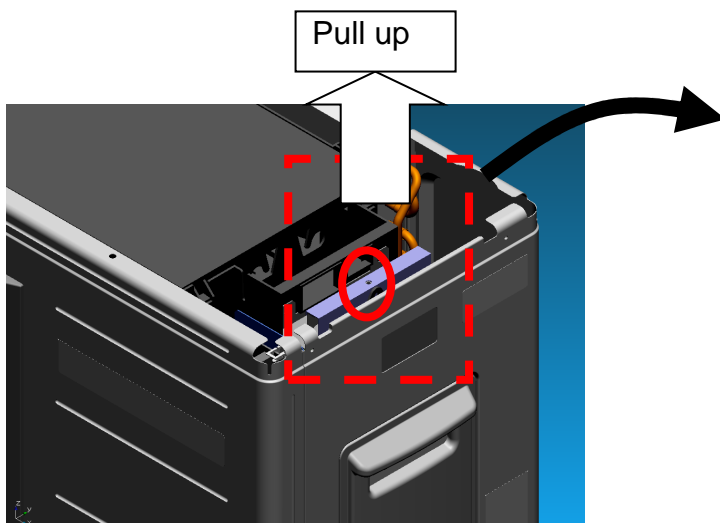
**When no panel operation is performed for more than 60 seconds the display is switched to the Display Sleep Mode and turns off. Display Sleep Mode is cancelled when Up, Down or Enter key is pressed.**

**Figure 12 How to operate the controller**



**How to remove the operation panel**

- 1.Remove Top Panel (4 screws)
- 2.Remove the screw
- 3.Pull up Operation Panel



**Operation Panel**

## Block out time setting mode

This mode is used to set the block out time that blocks the heat pump unit operation within the setting time. Block out times are used if the customer has a time of use tariff.

### Change the mode

Press and hold down Up and Down keys together in the clock display mode to go to the block out time setting mode. Once the mode is changed, 'bo' and '00XX' (00 = start time, XX = end time) are displayed. (Initial setting = 00 o'clock for both start and end)

### Adjust set block out start time

Press Up or Down key and '00' (start time) in '00XX' starts flashing and 'XX' (end time) illuminates. Now the block out start time can be adjusted. Setting can be performed only in hour increments, not in minutes.

### Set block out start time

Press the Enter key to set the desired time setting. After the start time is set, the start time display stops flashing. The end time display starts flashing at the same time.

### Adjust block out end time

Set to the desired end time by using Up and Down keys. Setting can be performed only in hour increments, not in minutes.

### Set block out end time

Press enter key to adjust the desired time setting. After the end time is set, the start time and end time are displayed for two seconds, then it starts to display 'bo' and '00XX' (00 = start time, XX = end time) by turns.

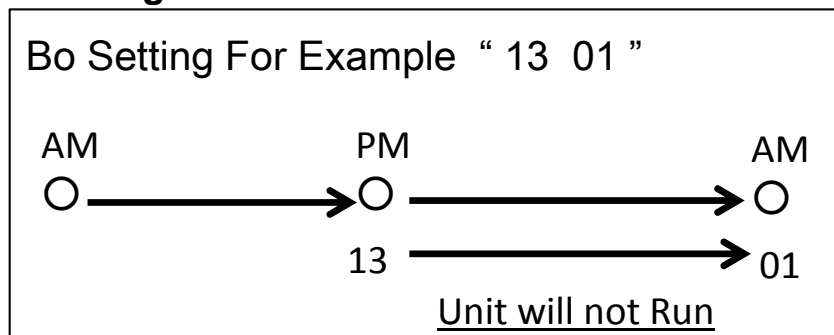
### Go back to clock display mode

Hold down Enter key to go back to the clock display mode. It will automatically go back to the clock display mode when no panel operation is performed for more than 60 seconds. Block out time setting mode cannot be set unless the end time setting is confirmed.

### Cancel block out setting

To cancel the block out setting, set both start and end times to '00'. Setting to other than '00' (01 ~ 23) will be interpreted as a setting error and the end time will flash. Make sure to set both times to '00' when cancelling the block out time setting

## ※Example setting





## Maintenance Mode

Maintenance mode is a function to check the heat pump unit status and to check and perform other settings. It should generally be assumed that the owner does not operate this function. The following modes can be found in the maintenance mode.

Heat setting mode

Set the heating mode

Block out time setting mode

Set the block out time

Error history display mode

Check the history of any errors that may have occurred.

Parameter display mode

Check the values measured by the thermistor.

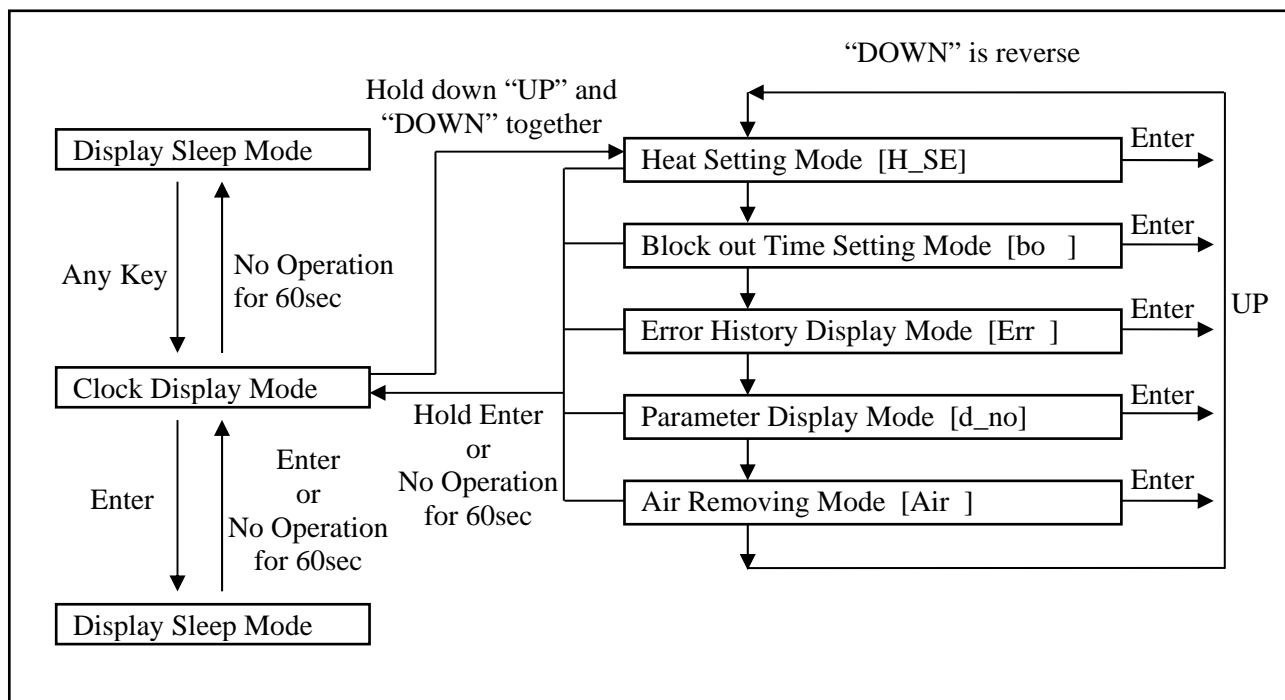
Air removing mode

Set the air removing mode

## How to switch to Maintenance Mode

Press and hold down Up and Down 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 finish the maintenance mode, press and hold down the Enter key, or leave for more than 60 seconds with no panel operation.

**Figure 13 Maintenance mode diagram**



## Error Codes

When an error has occurred, a red LED on the operation panel turns on and 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 14 Error Code example**



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.

Below is the list of the error codes. If the corrective action does not solve the error problem, a malfunction of the PCB valve is highly likely.

Error code	Error contents	Corrective action
H9	HP ambient temperature thermistor error	<ul style="list-style-type: none"> <li>- 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.</li> <li>- Measure resistance of the thermistor indicated by the error code.</li> </ul>
HC	HP water outlet temperature thermistor error	
J3	HP discharge temperature thermistor error	
J5	HP suction temperature thermistor error	
J6	HP Heat exchanger temperature thermistor error	
J8	HP water inlet temperature thermistor error	<ul style="list-style-type: none"> <li>- Check the thermistor cable on the terminal block in the heat pump unit for any disconnect, fall-off, wire breakage or short circuit.</li> <li>- Measure resistance of the thermistor indicated by the error code.</li> </ul>
H7	Tank temperature thermistor error	
E6	Compressor booting error	<ul style="list-style-type: none"> <li>- Check the compressor connector.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
H6	Compressor revolution error	<ul style="list-style-type: none"> <li>- Check the supply voltage.</li> <li>- Measure resistance of each thermistors.</li> <li>- Measure resistance of coil of expansion vale to check open or short circuit.</li> <li>- Replace the PCB or heat pump.</li> </ul>

U0	Refrigerant leakage error	<ul style="list-style-type: none"> <li>- Measure resistance of each thermistors.</li> <li>- Measure resistance of coil of expansion vale to check open or short circuit.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
E1	Main PCB error	<ul style="list-style-type: none"> <li>- Replace the main PCB.</li> </ul>
E2 L7	Control PCB error	<ul style="list-style-type: none"> <li>- Replace the control PCB.</li> </ul>
F5	Communication error between main PCB to control PCB	<ul style="list-style-type: none"> <li>- Check the communication connector on the main PCB and control PCB.</li> <li>- Replace the main PCB or control PCB.</li> </ul>
E8	High inlet current error	<ul style="list-style-type: none"> <li>- Check the installation location.</li> <li>- Check the supply voltage.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
H8	Current error	<ul style="list-style-type: none"> <li>- Replace the main PCB.</li> </ul>
L4	High temperature of module error	<ul style="list-style-type: none"> <li>- Check the installation location.</li> <li>- Remove foreign objects from the evaporator coil (e.g. fallen leaves, grass, snow)</li> <li>- Check the Fan motor is not flowing by dirt.</li> <li>- Replace the main PCB or fan motor.</li> </ul>
L5	High outlet current error	<ul style="list-style-type: none"> <li>- Measure resistance of the discharged thermistor.</li> <li>- Measure resistance of coil of expansion vale to check open or short circuit.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
P4	Module temperature thermistor error	<ul style="list-style-type: none"> <li>- Replace the main PCB.</li> </ul>
U2	High voltage error	<ul style="list-style-type: none"> <li>- Check the supply voltage.</li> </ul>
HJ	Water circuit error	<ul style="list-style-type: none"> <li>- Check the inlet water valve.</li> <li>- Check for any piping bend, blocking, kink or frozen.</li> <li>- Measure resistance of each Thermistor.</li> <li>- Measure resistance of coil of expansion vale to check open or short circuit.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
EC	High water outlet error	<ul style="list-style-type: none"> <li>- Check the water circuit is not flowing by air, dirt or scaling.</li> <li>- If the water circulation pump is not working, replace the pump.</li> <li>- Measure resistance of water outlet thermistor.</li> <li>- Replace the main PCB.</li> </ul>
E9	Water pump error	<ul style="list-style-type: none"> <li>- Check the water is full fill in the Tank.</li> <li>- If the water circulation pump is not working, replace the pump.</li> <li>- Check the revolution of pump by controller. If the revolution is low, replace the pump.</li> <li>- Replace the main PCB</li> </ul>
E7	Fan motor locked	<ul style="list-style-type: none"> <li>- Remove foreign objects around the fan motor.</li> <li>- Check the fan motor connectors on the main PCB.</li> <li>- Replace the main PCB.</li> </ul>

F3	Discharged temperature error	<ul style="list-style-type: none"> <li>- Measure resistance of the discharged thermistor.</li> <li>- Replace the main PCB or heat pump.</li> </ul>
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Notes:

1. 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.
2. If the corrective actions above do not solve the error problem, a malfunction of the PCB is highly likely.

## Water Supply Quality

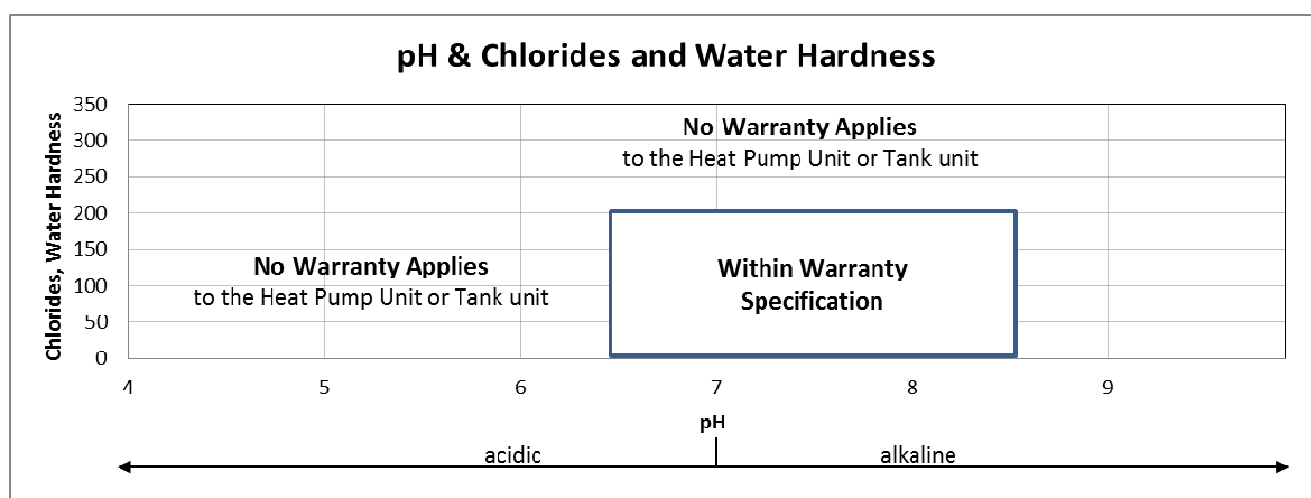
### Chloride, Water Hardness and pH

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 acid. In an acidic water supply, the water can attack the 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 8.5. 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 15**

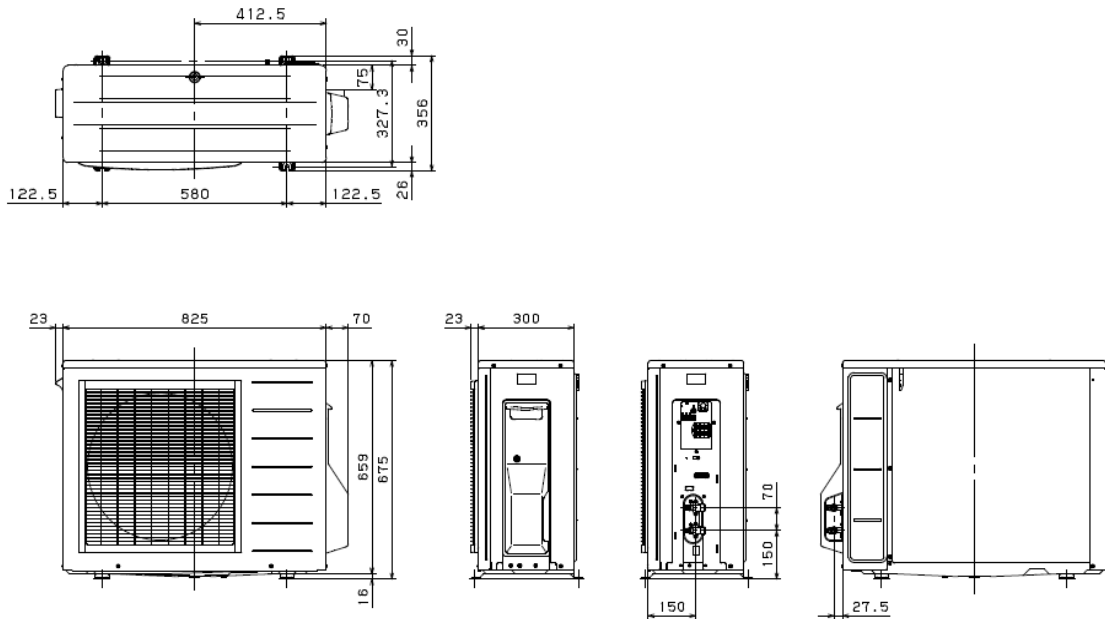


## Change of water supply

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 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.

## Technical data

### Heat pump Unit Dimension



Unit: mm

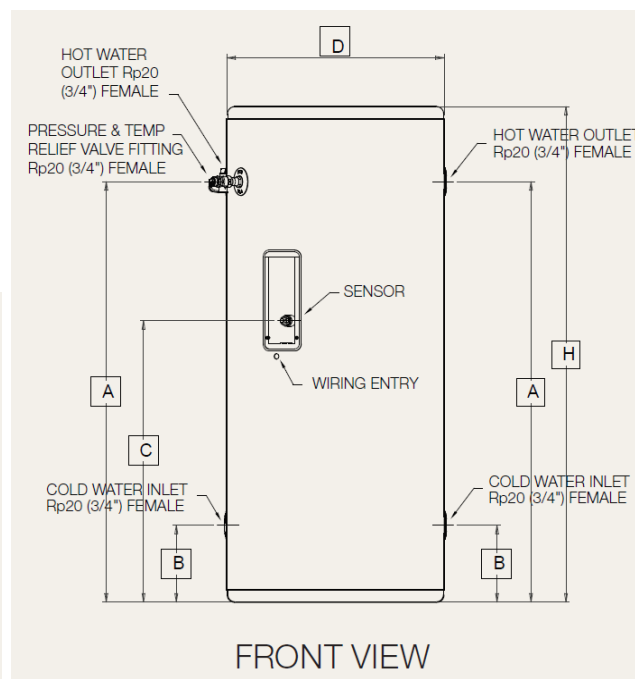
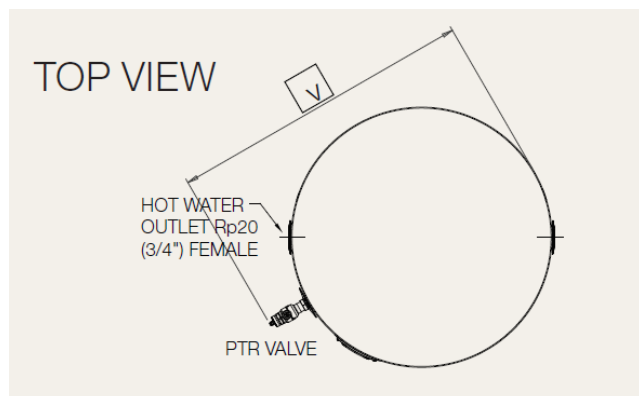
### Specification

Refrigerant type	R744 (CO <sub>2</sub> )
Mass volume	740 g
Setting Outlet water temp	63 °C
Product weight	49 kg
MAX HEAT OUTPUT	6.0 kW
MAX RATED POWER INPUT	2.3 kW
Circuit Breaker Size	20A
Design Pressure (High/Low)	14/9 MPa
Protection Raining Class	IPX4
MAX Operating water Pressure	700 kPa

## Hot water storage tank unit

REFER Drawing provided with tank

Model No.	GAUS-160FQS	GAUS250FQS	GAUS-300FQS	GAUS-315FQS	GAUS-315FQV
<b>H</b> Height	970mm	1428mm	1891mm	1748mm	1626mm
<b>A</b> Hot Water Outlet & PTR Valve	753mm	1212mm	1693mm	1531mm	1432mm
<b>C</b> Sensor Port	249mm	708mm	1086mm	1027mm	1111mm
<b>B</b> Cold Water Inlet / Heat Pump Flow	223mm	222mm	208mm	221mm	115mm
<b>D</b> Diameter	621mm	621mm	580mm	621mm	638mm
Weight	29kg	45kg	50kg	55kg	90kg
Storage Capacity	160L	250L	300L	315L	315L
Inner Tank	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Vitreous Enamel
<b>Water Connections &amp; Settings</b>					
	700(kPa)	700(kPa)	700(kPa)	700(kPa)	700(kPa)
Expansion Control Valve Setting (ECV) (kPa)	600(kPa)	600(kPa)	600(kPa)	600(kPa)	600(kPa)
<b>Maximum Mains Pressure Settings</b>					
With ECV	500(kPa)	500(kPa)	500(kPa)	500(kPa)	500(kPa)
Inlet Water Operating Pressure	500(kPa)	500(kPa)	500(kPa)	500(kPa)	500(kPa)
Adjustable Tempering Valve	1400(kPa)	1400(kPa)	1400(kPa)	1400(kPa)	1400(kPa)
Hot and Cold Connection	Rp 20 (3/4") Female	Rp 20 (3/4") Female	Rp 20 (3/4") Female	Rp 20 (3/4") Female	Rp 20 (3/4") Female
Watermark Licence No.	WM-022333	WM-022333	WM-022333	WM-022333	WM-022333
Colour	Surfmist & Ironstone Ends	Surfmist & Ironstone Ends	Surfmist & Ironstone Ends	Surfmist & Ironstone Ends	Surfmist & Ironstone Ends
Country of Manufacture	Australia	Australia	Australia	Australia	Australia
Warranty	15 Years Prorata (Excludes WA)	15 Years Prorata (Excludes WA)	15 Years Prorata (Excludes WA)	15 Years Prorata (Excludes WA)	5 Years (WA only) 10 Years Prorata (all other states)





315L

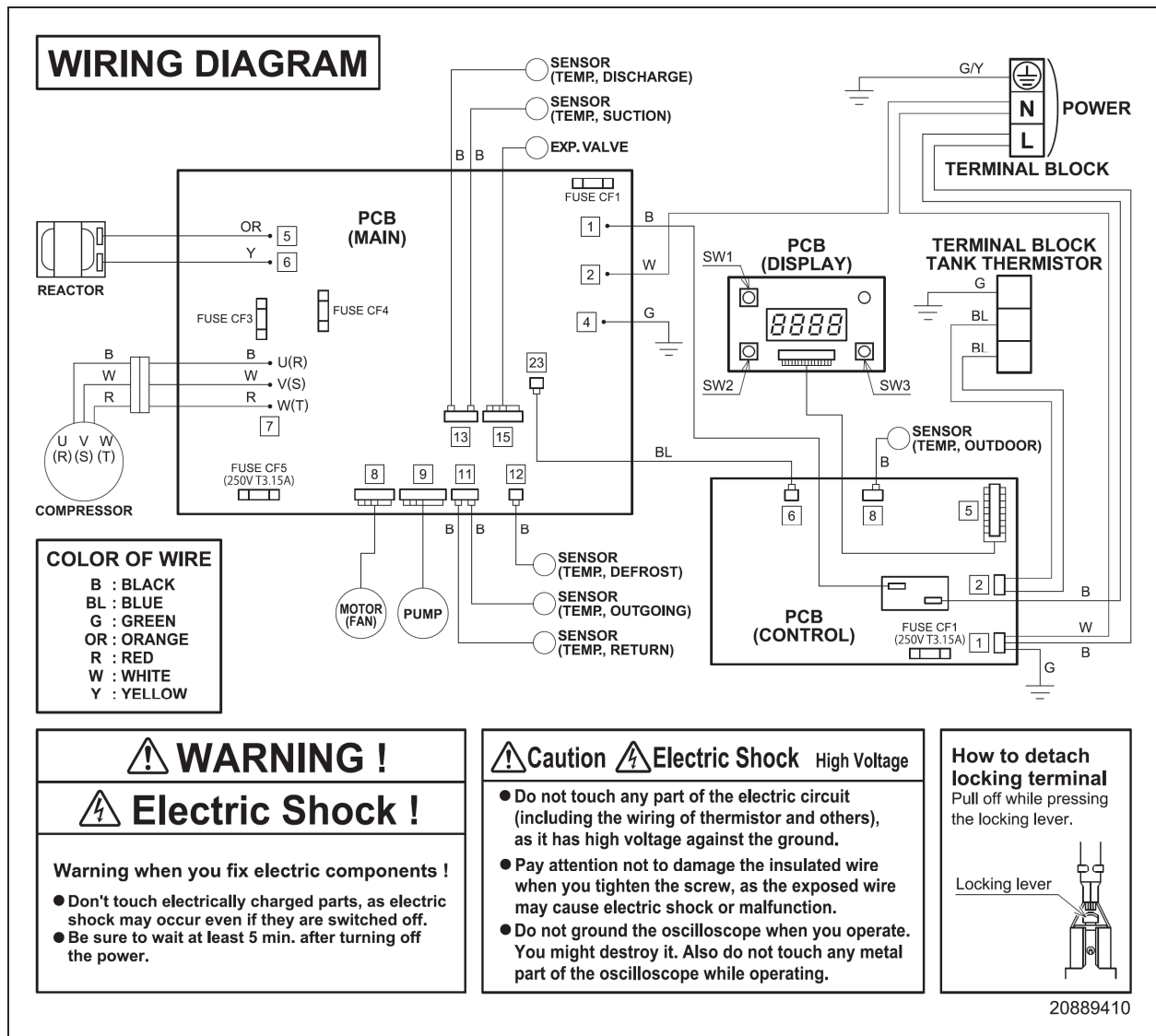
300L

250L

160L



# Wiring Diagram



# Warranty Policy

## **Warranty Conditions**

1. The Sanden Heat Pump Water Heater System must be installed in accordance with the installation instructions supplied with the Heat Pump Water Heater System and in accordance with all relevant statutory and local requirements of the state in which the water heater is installed.
2. Where a failed component or Heat Pump Water Heater System is replaced under warranty, the balance of the original warranty period will remain effective. The replaced part or Heat Pump Water Heater System does not carry a new warranty.
3. Where the Heat Pump Water Heater System is installed outside the boundaries of a metropolitan area as defined by Sanden or further than 25 kilometers from an accredited service agent, the cost of transport, insurance and travelling costs between the nearest accredited service agent's premises and the installed site shall be the owner's responsibility.
4. Where the Heat Pump Water Heater System is installed in a position that does not allow safe, ready access, the cost of accessing the site safely, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility.
5. The warranty only applies to the Heat Pump Water Heater System and original or genuine (company) component replacement parts and therefore does not cover any plumbing or electrical parts supplied by the installer and not an integral part of the Heat Pump Water Heater System. Such parts would include pressure limiting valve, isolation valves, non-return valves, electrical switches, pumps or fuses.
6. The Heat Pump Water Heater System must be sized to supply the hot water demand in accordance with the guidelines in the Sanden Heat Pump Water Heater System literature.

## **Warranty Exclusions**

1. Repair and replacement work will be carried out as set out in the Sanden Heat Pump Water Heater System warranty. However the following exclusions may void the warranty and may incur a service charge and/or cost of parts:
2. Accidental damage to the Heat Pump Water Heater System or any component, including: Acts of God, failure due to misuse, incorrect installation, attempts to repair the water heater other than by a Sanden accredited service agent or the Sanden service department.
3. Where it is found there is nothing wrong with the Heat Pump Water Heater System; where the complaint is related to excessive discharge from the temperature and/or the pressure relief valve due to high water pressure; where there is no flow of hot water due to faulty plumbing; where water leaks are related to plumbing and not the Heat Pump Water Heater System or its components; where there is a failure of electricity or water supplies; where the supply of electricity or water does not comply with relevant codes or acts.
4. Where the Heat Pump Water Heater System or its component has failed directly or indirectly as a result of excessive water pressure.
5. Overflow vent drain has not been installed or is blocked or corroded
6. Where the Heat Pump has rusted as a result of a corrosive atmosphere;
7. Where the unit fails to operate as a result of ice formation in the pipework to or from the Heat Pump Water Heater System.
8. Where the Heat Pump Water Heater System is located in a position that does not comply with the Heat Pump Water Heater System installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the Heat Pump Water Heater System to floor or ground level or to a serviceable position.

9. Repair and/or replacement of the Heat Pump Water Heater System due to scale formation in the waterways or the effects of either corrosive water or water with a high chloride or low pH level when the water heater has been connected to a scaling or corrosive water supply or a water supply with a high chloride or low pH level as outlined in the Owner's Manual and Installation Manual.
10. Warranty service is provided to the original owner of the equipment only.

Subject to any statutory provisions to the contrary, this warranty excludes any and all claims for damage to furniture, carpets, walls, foundations or any other consequential loss either directly or indirectly due to leakage from the Heat Pump Water Heater System, or due to leakage from fittings and/or pipework of metal, plastic or other materials caused by water temperature, workmanship or other modes of failure.

## Warranty Period

Subject to the Warranty Conditions and Exclusions stated above, your Sanden Heat Pump Water Heater System is warranted in a Residential application as follows:

**Heat pump unit –** Sanden warrants all parts labour on the SANDEN water heater system for a period of 6 (Six) years from date of installation.  
Labour costs are paid directly to the servicing contractor per the payment cost schedule published by Sanden and revised from time to time at Sanden's requirement.

**Tank unit –** Sanden warrants that the tank will be free from defects for 10 years at 100% replacement, and for a further 5 years under a pro-rated scale, culminating in warranty end after Fifteen years from date of installation

**In a Commercial or Industrial application the warranty period on both Heat Pump unit and Tank is reduced to 1 (One) year only with no Labour warranty**

**Warranty terms and conditions are subject to change without notice. Please refer to our website [www.sanden-hot-water.com.au](http://www.sanden-hot-water.com.au) for the latest updated Warranty information.**

## Post installation inspection checklist

On completion of the installation, inspect and check off each item in the charts on the following page. Once the inspection has been completed remove the inspection table and hand to the customer.

# Check sheet

## Safety items

Action	Completed
Fix the legs of the tank unit in place with anchor bolts if necessary.	
The floor has been properly waterproofed and properly drained.	
The earth leakage breaker can be turned off with the test button.	
Earth (ground) work is implemented.	
The tank unit is installed on a level sturdy surface.	
There are no gas containers or flammable materials anywhere near the unit.	
The wiring between the tank unit and the heat pump unit is properly connected.	

## Around units

Action	Completed
A concrete base block is installed (if necessary).	
An inspection space is retained in accordance with the installation manual	

## Around the piping

Action	Completed
A dedicated water supply/stop cock is mounted.	
The metal piping for the hot water supply has been properly insulated.	
There is no water leaking from the water supply/hot water supply and heat pump pipes.	
Pipe insulation Protection is provided.	
Union joints are used so that the parts can be easily removed.	
Piping is installed from the drain outlet and drain hopper to the drain ditch.	
The filter in the pressure-reducing valve is clean.	
Independent pipes, not a twin tube, are used for the heat pump unit pipes (insulated, UV stabilised)	
The drainage hose from the heat pump unit leads into the drain ditch.	
Pressure reduction valve (500kPa) has been fitted to the cold water supply of the unit	
During draining of the tank, unit water does not overflow from the drain ditch.	

Installed By..... Date.....

Inspected By ..... Date.....

[illegible]





