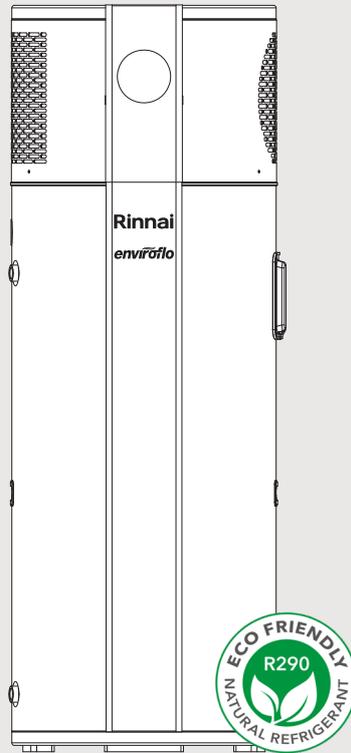


EHPS265VM



Enviroflo Hot Water Heat Pump

Installation guide

Rinnai

Important

This hot water system shall be installed in accordance with:

- Manufacturer's installation instructions

Current:

- AS/NZS 3000 Electrical Standards
- AS/NZS 3500 Plumbing and Drainage Standards
- AS/NZS 5149 Refrigerating Systems Operation
- AS/NZS 5125.1:2014 Heat Pump Water Heaters

Appliance must be installed, commissioned, serviced, and removed only by licensed tradespeople.

Not suitable as a spa or swimming pool heater.

Not suitable for hydronic applications.

Warning

Improper installation, adjustment, alteration, service, maintenance, and removal can cause property damage, personal injury or loss of life.

This system 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.

For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624).

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Important information

WARNING

Installation and service to be carried out by a licensed tradesperson.

DO NOT operate this system before reading the operation and installation information.

DO NOT place articles on or against this appliance.

DO NOT store chemicals or flammable materials near this appliance.

DO NOT operate with panels or covers removed from this appliance.

DO NOT activate heating elements unless full of water.

For safe operation this water heater is fitted with:

- A combination Temperature & Pressure Relief (TPR) Valve.
- One thermostat and one over-temperature control for each heating element.

Operation of the over-temperature cut-out indicates a possibly dangerous situation. It must only be reset by an authorised person after the appliance has been inspected and serviced as required.

DO NOT tamper or remove any of the safety devices noted above.

DO NOT operate this water heater unless all these devices are fitted and in working order.

TEMPERATURE AND PRESSURE RELIEF (TPR) VALVE

A TPR valve must be fitted. It must be installed in accordance with these instructions.

WARNING

The valve and drain pipe must never be sealed or blocked.

DO NOT supply heat to any fittings when making connections. Ensure all pipes are clean and free from any foreign matter before making connections. Check water leaks at all joints. Damage caused by leaking joints is not covered by warranty.

DO NOT build this appliance in such a way that it can not be easily serviced or replaced. Additional cost incurred by such installations is not covered by warranty.

MAKE SURE the cylinder is full of water before energising the system. Failing to do so can cause irreparable damage to the element and sensors.

UNIT HANDLING move and position the unit using the two handholds provided on either side of the cylinder section of the system.

R290 REFRIGERANT

This appliance uses R290 (propane) refrigerant, which is a flammable gas according to AS/NZS 5149 and **MUST** be handled by a refrigeration mechanic with an appropriate refrigerant handling license.



AS/NZS 60335.2.40

WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance must be installed as specified in this installation guide, without continuously operating ignition sources in the vicinity.

Do not pierce or burn.

Be aware that refrigerants may not contain an odour.

Electrical supply

Rinnai does not endorse the use of power supplies that supply clipped waveform AC power to the appliance and will not warrant any product connected to such a supply. Similarly if an appliance is supplied with an over-voltage / overcurrent supply, this is also not warrantable.

Voltage and frequency that matches the NZ legislative requirement for 230 V AC mains supply:

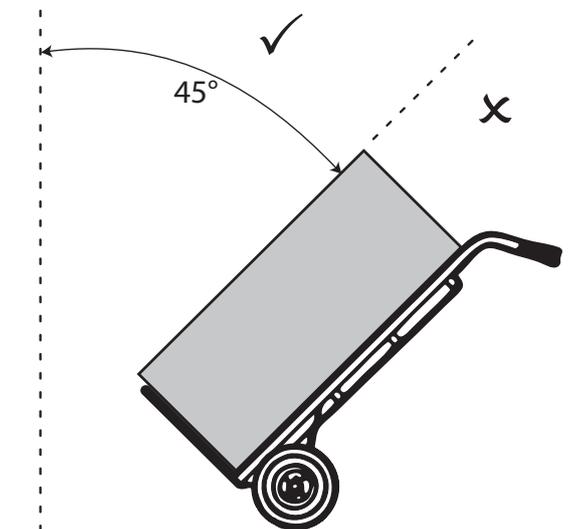
- Must be a standard 230 V nominal voltage
- Must be kept within 6% of that voltage, except for momentary fluctuations
- The frequency of electricity supplied must be maintained with 1.5% of 50 Hz, except for momentary fluctuations
- Must conform to a full sinusoidal AC waveform

Regardless of the means of that power generation, normal warranty provisions will apply. This means if your generator or inverter is able to provide power to the Enviroflo within the specification above, then the appliance will function correctly with a low chance of power supply related issues.

Handling and transportation

IMPORTANT

DO NOT tilt more than 45° from vertical



The refrigerant used in the heat pump (R290 Propane) is a flammable gas.

The appliance shall be stored and transported in an area without ignition sources (for example open flames, an operating gas appliance or an operating electric heater).

DO NOT pierce or burn.

Be aware that refrigerants may not contain an odour.

Compliance with AS/NZS 5149 MUST be observed while storing the appliance.

The Rinnai Enviroflo must be transported at an angle no greater than 45° from vertical. The compressor unit is located at the top of the heat pump and if tilted greater than 45°, the lubrication oil within the compressor can run down the mufflers. This will leave the compressor motor without sufficient lubrication and lead to the premature failure of the compressor unit. Tilting the system beyond 45° will also place undue strain on the compressor motor mouths and associated piping,

It is good practise to keep the compressor as upright as possible—returning the unit to a vertical position will allow the oil to properly flow back into the compressor motor.

Before you start

Unpack the appliance and components, and remove all transit packaging. Check for damage.

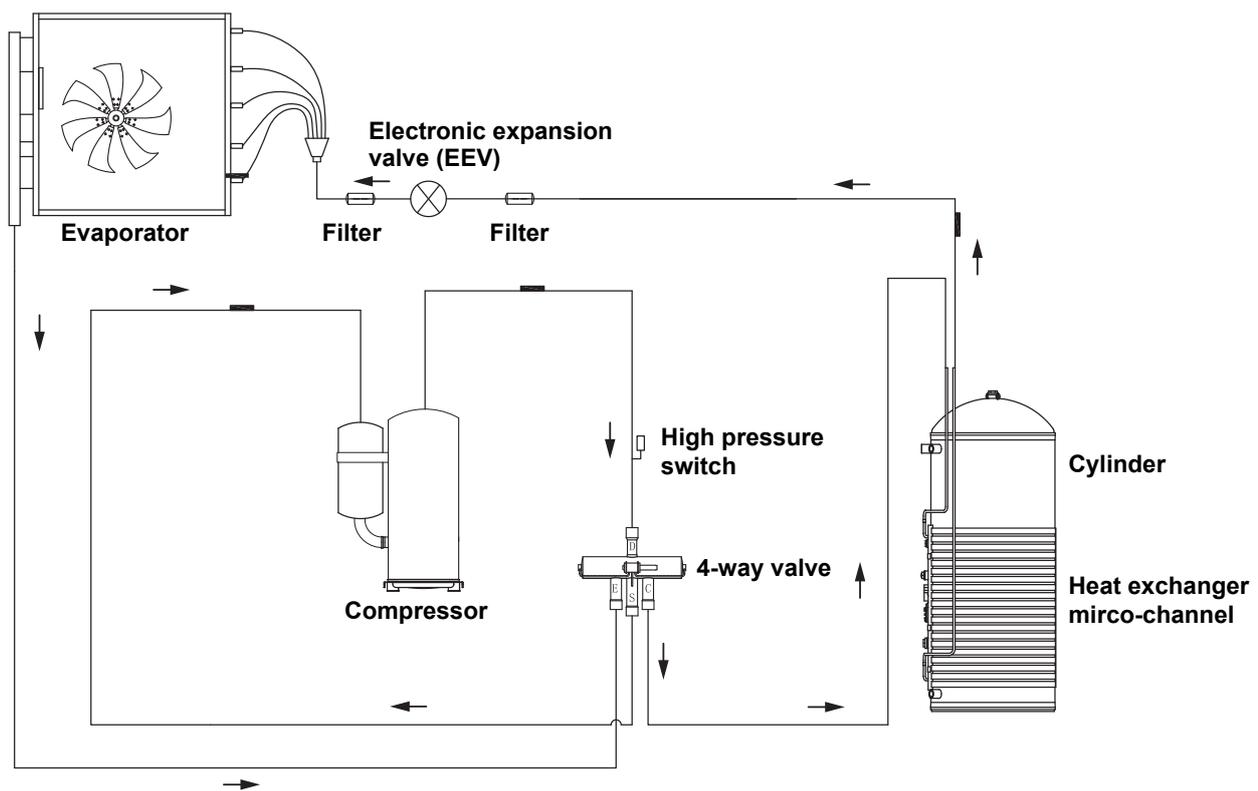
- DO NOT install any damaged items.
- Check all components have been supplied.

Read these instructions to get an overview of the steps required before starting the installation. Failure to follow these instructions could cause a malfunction of the appliance. This could result in serious injury and/or property damage.

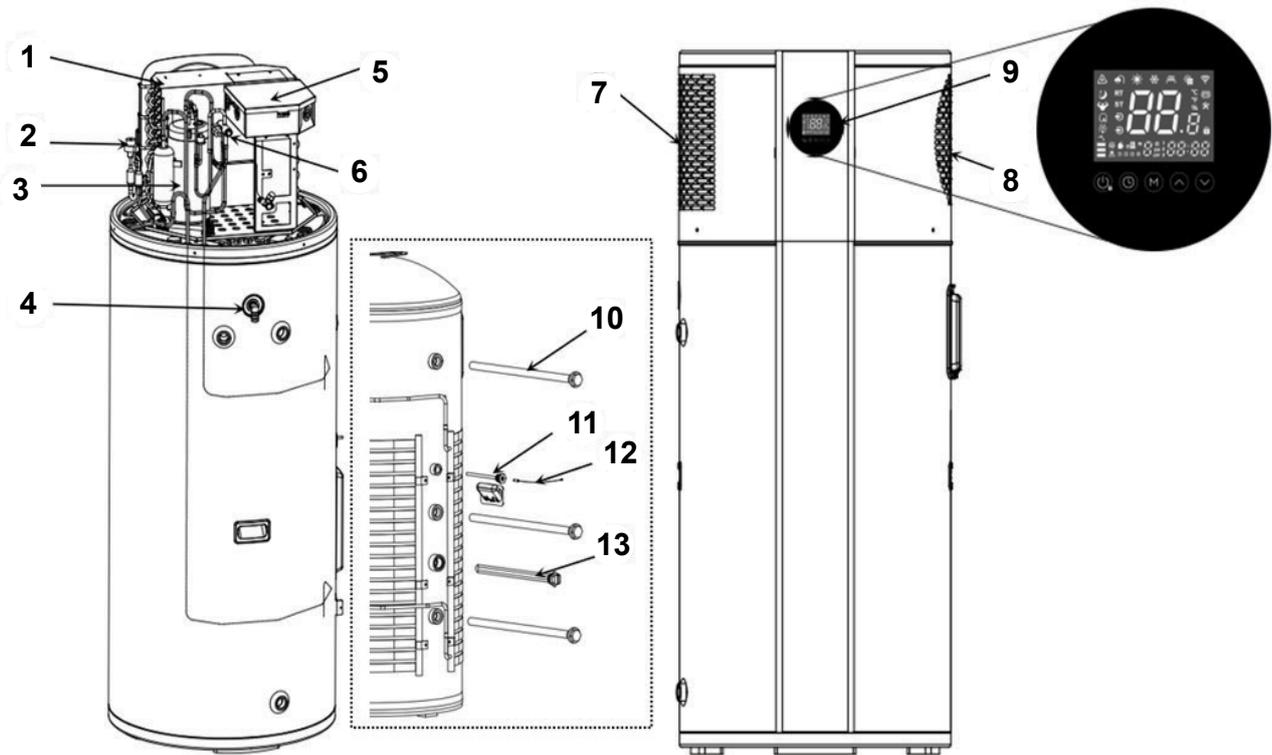
Operating principle

The heat pump includes a highly efficient micro-channel heat exchanger wrapped around the inner cylinder for thermal conductivity. A temperature sensor in the cylinder is used to control the heat pump operation to achieve a suitable cylinder temperature.

During the occasional times when the ambient weather conditions are not suitable for the heat pump to operate, the electric element will provide heating to ensure a continued supply of hot water.



Start-up protection	When the power is first turned on to the heat pump or power is cut then restored, the unit will not start for two minutes. This is to protect the compressor.
Defrost function	When the fan coil unit temperature reaches $-5\text{ }^{\circ}\text{C}$, the hot discharge bypass defrosting mode will operate for 15 minutes or until the evaporator temperature reaches $5\text{ }^{\circ}\text{C}$.
Protection systems	The heat pump has protection systems that will stop operation if: <ul style="list-style-type: none"> • Suction pressure drops due to refrigerant charge loss or air flow blockage • Over pressure (551 Psi), or over temperature ($100\text{ }^{\circ}\text{C}$) in the refrigerant system



1	Fan coil unit
2	Electronic expansion valve (EEV)
3	Compressor
4	TPR valve
5	Electrical box
6	Four way valve
7	Air intake
8	Air outlet (discharge air)
9	Display and control panel
10	Anode rod (x3)
11	Temperature sensor sleeve pipe
12	Water temperature sensor
13	Heating element

Specification



Product description

Designed and made in China, the Rinnai Enviroflo is designed primarily for outdoor installations. It may be possible to install internally if the proposed location is not an occupied space as defined by AS/NZS 5149, refer p.10 for more information.

The Rinnai Enviroflo is factory preset to 'Standard' mode—continually heating water to 60 °C.

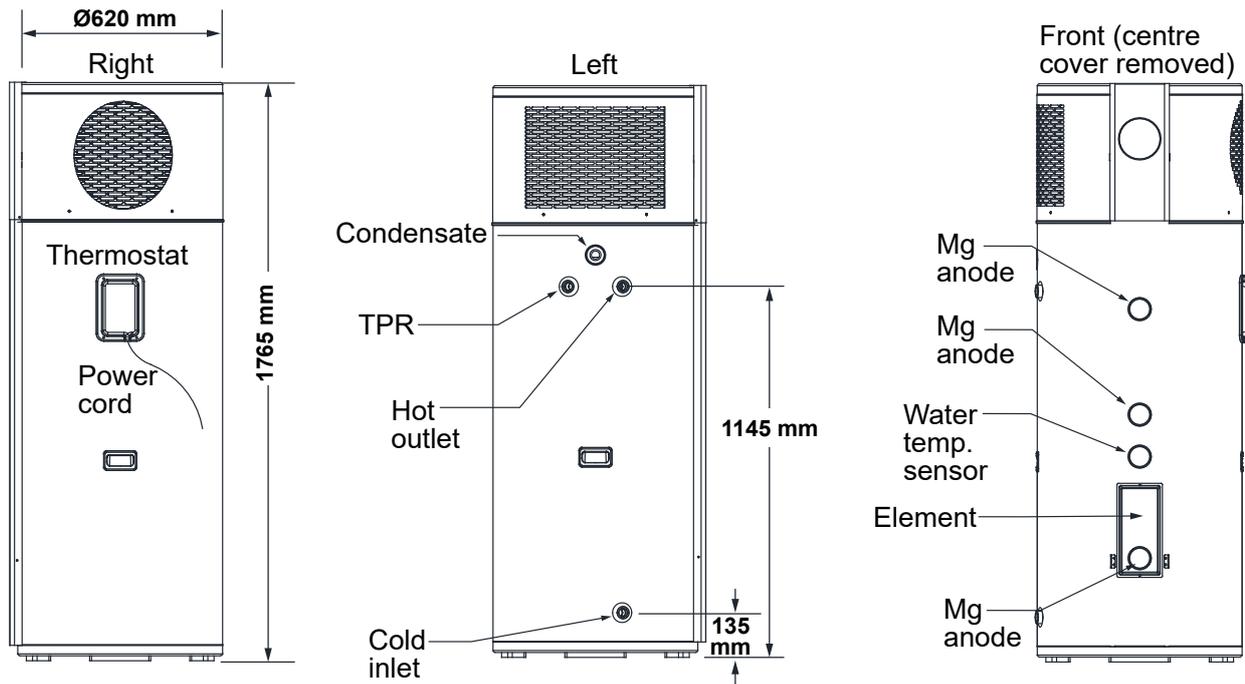
Scope of use

Designed for residential applications only. Must be installed in a location complying with clearances stated on p.12 and located as close as practicable to the most frequently used hot water outlets to reduce the delay for hot water delivery.

Not suitable as a spa or swimming pool heater, or for hydronic applications. Hard or acidic water will need to be treated to use this product, refer water quality p.17.

Ambient temperature limits (for heat pump operation, element will operate outside these limits)	-5 °C to +43 °C
Outlet water temperature	STAN: 60 °C, ECO 55 °C, HYB 65 °C, ELE 65 °C
Storage capacity	265 L
Maximum valve pressure settings:	
<ul style="list-style-type: none"> • TPR (supplied) • Cold water expansion valve • Pressure limiting valve 	<ul style="list-style-type: none"> • 850 kPa / 46 kW • 500 kPa • 500 kPa
Coefficient of performance (COP) W/W	3.66 (19 °C ambient, heating from 19-55 °C (36 ° rise))
Rated heat pump output	3.6 kW
Rated heat pump input	1.1 kW
Rated input electric element	2.1 kW
Total maximum input	2.1 kW (to be wired by installer)
Max. energy output	4.5 kW
Backup element rating	2.1 kW
IP rating	IP24 ¹
Sound pressure level at 1 m	46 dB(A) ²
Power supply	230-240 V 50 Hz (comes with a 3.2 m power cord)
Max. current	10 A (15 A plug fitted), use a 20 A dedicated circuit breaker
Weights	Net system weight - approx. 120 kg, Gross system weight - approx. 134 kg, 400 kg (filled)
Refrigeration type / mass (kg)	R-290 / 380 g, refrigeration classification A3 flammable
Refrigerant circuit max. pressure	3000 kPa
Refrigerant compressor oil / charge	ISO VG 32 Ester / 500 cm ³
¹ Protected against solid objects over 12mm, e.g. fingers. 4 = Protected against water splashed from all directions, limited ingress permitted.	
² Sound pressure level measured at 1 m distance from the water heater in a free field. Appliance operated in standard mode (60 °C) at an ambient temperature of 19 °C)	

Dimensions (mm)



Connections

- Hot outlet / cold inlet $\frac{3}{4}$ " RP (20 mm)
- TPR $\frac{3}{4}$ " RP (20 mm)
- Condensate 19 mm tapered connection

Hot water recovery rate

Hot water recovery rate = 60 L/h (19 °C ambient, heating from 19-55 °C (36 ° rise))

Location



As the heat pump contains flammable refrigerant, ensure the installation location complies with the requirements of AS/NZS 5149. DO NOT install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause a fire.

The system should be placed as close as practicable to the most frequently used hot water outlet point or points to minimise the delay time for hot water delivery. For installations where the distance between the heat pump and the outlets is considerable, a flow and return system can be used to reduce the waiting time for hot water delivery.

Enviroflo is designed primarily for outdoor installations. It may be possible to install the system internally if the proposed location is **not an occupied space** as defined by AS/NZS 5149. An extract has been provided below for those that do not have access to this standard. The unit **MUST NOT** be installed in roof spaces.

3.2.6

occupied space

space in a building bounded by walls, floors, and ceilings and which is occupied for a significant period by persons.

Note 1 to entry: Where the spaces around the apparent occupied space are, by construction or design, not airtight with respect to the occupied space, these can be considered as part of the occupied space, e.g. false ceiling voids, crawl ways, ducts, movable partitions, and doors with transfer grilles.

The Enviroflo, by the above definition, would not be suitable for installation into an attached garage.

Examples of an unoccupied space:

- Adequately ventilated plant room
- Adequately ventilated shed



Internally installed units will need adequate ventilation as the appliance has a cooling effect on the installed space, operating noise should also be considered.

Internal installation must also meet the following:

- Minimum room volume of 55 m³ per unit
- Good ventilation (i.e. minimum 280 L/s per unit)
- Away from any ignition sources or corrosive environments

Avoid installing:

- Directly below an opening window, the system discharges a large volume of cold air from the top of the unit.



- In areas where the air inlet and outlets could get blocked / clogged.
- In highly planted areas where falling leaves and other debris could block the air vents or potentially damage the unit.
- In areas with multiple structures, for example fences, concrete walls, retaining walls, screens etc unless these are well ventilated to let the cold air escape.

The Enviroflo can be installed in coastal locations, but not immediately facing salt spray or prevailing winds. It needs some form of shelter otherwise salt will quickly clog the system.

Noise



Ensure that the installation location complies with local noise regulations regarding neighbouring properties. The location must consider noise impact on living areas. Avoid positioning near bedrooms or neighbours bedrooms. Although the running noise level is low it can be expected that the heat pump will run during the night. The timer function can be used to limit operating hours if noise is a concern.

- Avoid placing the unit less than 3 m from a neighbour's window (windows are less soundproof than walls, and they can be opened), or door other than a garage door or shed.
- Avoid placing the unit near boundary lines.



- DO NOT place any objects on top of the unit, this could cause excessive vibration and increase noise levels.

Orientation



The heat pump is designed for open air operation, requiring sufficient air supply to maintain operating efficiency.

The air inlet and outlet of the heat pump must be positioned away from prevailing winds and must be provided with sufficient clearances as shown on the next page.

Consideration to the orientation of the control interface is important as the homeowner / end user will need adequate room to view and interface with the control pad.

Accessibility



The heat pump MUST be installed in a vertically upright position. All components must be accessible without the use of a ladder or scaffold.

Ensure the pressure and TPR valve, and any access covers have sufficient clearances and are accessible for service and removal. The information on the rating plates MUST also be readable.

Base requirements

The heat pump must be installed on a level and stable base capable of withstanding the weight of a full system, refer weight on p.8. The structure must not shift.

Where there is potential of damage occurring from leaking water, a suitable safe tray (overflow tray) and drain must be installed in accordance with AS 3500.4.

Snow zone locations

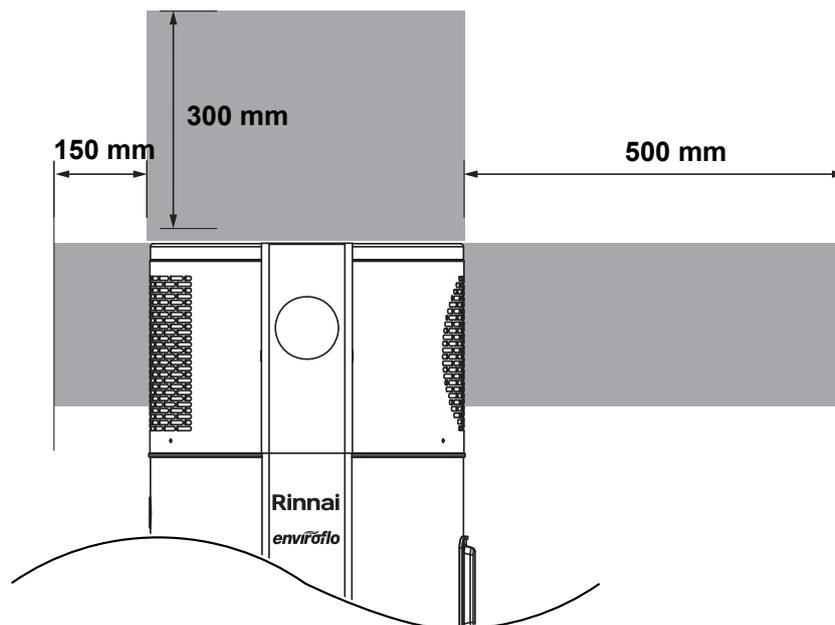
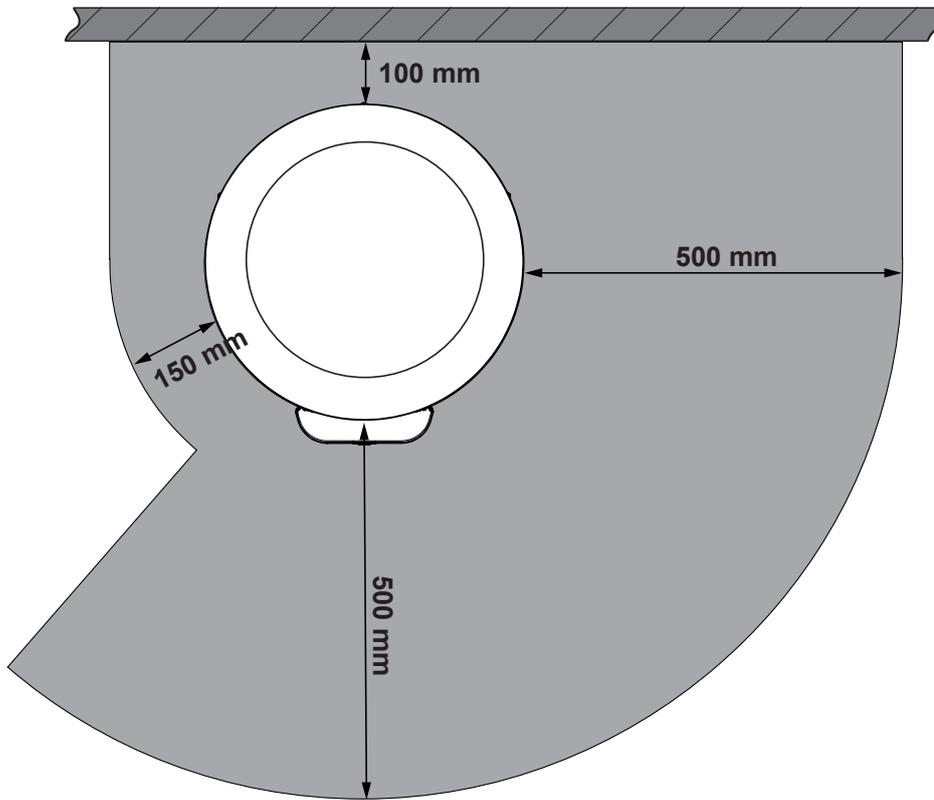


In areas where heavy snowfalls are expected, ensure the unit has snowfall protection over the top of the air outlet. Ensure that the minimum clearances listed on the following page are adhered to.

Clearances (mm)

Allow 600 mm minimum clearance on the fan discharge side and 150 mm minimum clearance on the fan suction side to allow for sufficient air flow through the fan.

Allow 300 mm minimum vertical clearance and 500 mm front clearance for service access. The 500 mm front clearance is required to service the horizontal anodes.



Connections and plumbing arrangement

The cylinder component of the system must be installed in accordance with G12/AS1, and AS/NZS 3500.4:2018. For service and maintenance, please allow sufficient room for access to covers and valves. All hot water pipe work should be insulated with polythene foam or equivalent insulation to optimise performance and energy efficiency. This includes all water fittings.

All hot water supply parts must comply with AS/NZS 3500.4 and G12/AS1.

For an appliance intended to be permanently connected to the water mains and not connected by a hose set.



- The valve or drain valve outlet pipe must not be sealed or blocked.
- Do not drain onto grass or garden beds.
- Valves with pressure ratings other than those listed in this manual must not be used.
- A discharge pipe connected to the pressure relief device is to be installed in a continually downwards direction and in a frost free environment.



Inlet port (cold water from mains)

Cold water inlet 20 mm connection. A drain off tap or line must be fitted to the inlet of the water heater.

If the water pressure exceeds the rated pressure, a pressure reducing valve is to be fitted to the installation.

Insulate all water pipes and connections to prevent freezing.

Condensate: During normal operation, condensation occurs in the heat pump as air across the evaporator is cooled. In high humidity locations a large volume of condensate can be generated, this needs to be plumbed into a condensate drain and gully trap—19 mm tapered connection (clear flexible PVC drain hose).

TPR valve, 46 kW capacity

The supplied TPR valve must be installed to ensure safe operation. Failure to do so can potentially cause injury and damage the unit.

The TPR valve should be connected to a vertical discharge pipe that enables water to flow downwards at all times. The TPR discharge pipe outlet should be positioned such that the outlet hot water cannot cause injury to persons or damage to the building.

Safe tray

Where there is potential of damage occurring from a leaking system, a suitably drained safe tray is fitted as per AS/NZS 3500.4:2015 5.4 and G12/AS1 6.11.3.

Pipe work

It is the installer's responsibility to adequately size the distribution pipe work in a property to ensure sufficient performance from all outlet fittings. Water pipe sizing should be performed in accordance with AS/NZS 3500.4 and/or G12/AS1. Pipe sizing and valve selection must be performed to allow for the water supply pressure.

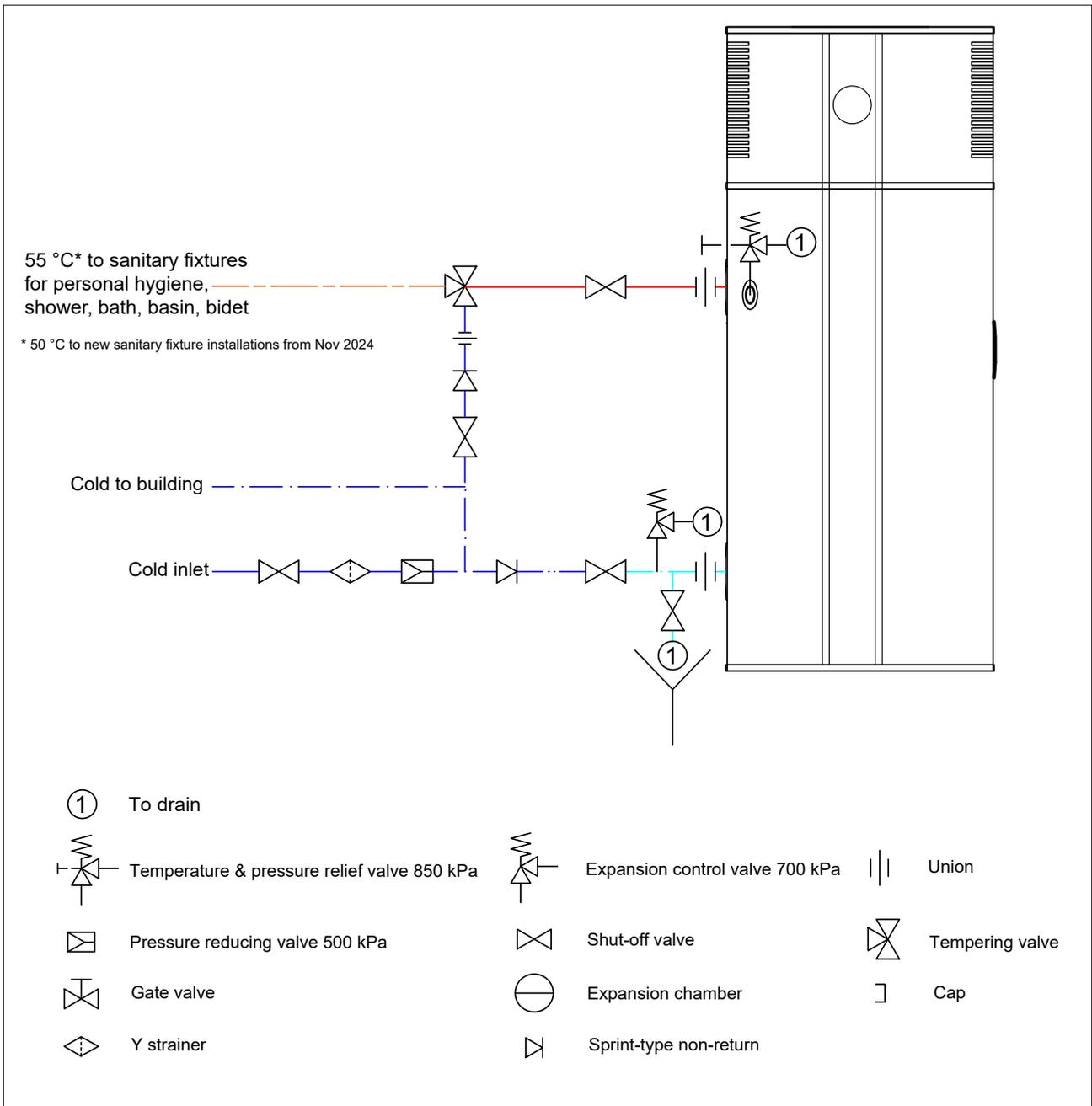
DO NOT drill anything into the water heater, this could damage critical components and cause corrosion.

Seismic constraint - cylinder component of the system

NZBC B1.3.2 requires building elements (including *storage water heaters*) to be adequately supported including support against earthquake forces.

Each of the following is an acceptable solution to B1.3.2 for an Enviroflo water heater installation.

	Acceptable solution	Clause or referenced standard	Section of referenced document
1	G12/AS1	6.11.4 Structural Support: Figure 14	
2	G12/AS3	AS/NZS 3500.4:2021: Figure 5.4.4	
3	G12/AS3	AS/NZS 3500.4:2021: Section 5.5.4	NZS 4607, Section 202: Fig.1 / Table 1

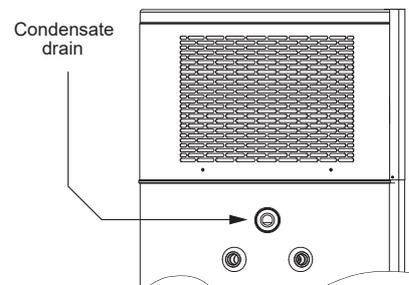


Ensure a strainer is installed. If not, debris could block the non-return valve. This will stop the flow and cause the heat pump to stop operating.

Condensate drain line

A condensate drain line is required to be fitted to carry discharge clear of the water heater. The condensate drain line should not be connected to the TPR drain line, but can exit to the same point.

Drain lines must not exceed 9 m in length.



Storage and delivery temperatures

Storage temperature



To meet the New Zealand Building Code requirement¹ to disinfect water for legionella bacteria, the system has an auto disinfection cycle. If the water temperature is < 70 °C over a 7-day period, the heat pump (with electric element on) will start disinfection. During disinfection, the symbol will flash for two seconds then light up, water will be heated up to 70 °C and maintained at 65-70 °C for at least 30 mins. After 30 minutes it will exit disinfection. If the water cannot reach 70 °C the heat pump will run in disinfection mode for two hours then exit.



WARNING

- The access cover to the element and the thermostat must only be removed by an electrician or other suitably qualified tradesperson.
- Thermostat settings must only be adjusted by an electrician or other suitably qualified tradesperson.

Hot water temperatures

NZBC G12.3.6 states that “Where hot water is provided to sanitary fixtures and sanitary appliances, used for personal hygiene, it must be delivered at a temperature that avoids the likelihood of scalding.”

In order to prevent scalding the delivered hot water temperature at any sanitary fixture used for personal hygiene shall not exceed:

- 45 °C for early childhood centres, schools, aged care, institutions for people with psychiatric or physical disabilities, hospitals; and
- 55 °C for all other buildings² (Note: AS/NZS 3500.4 which is cited in G12/VM1 has a maximum temperature of 50 °C).

Sanitary fixtures used for personal hygiene includes showers, baths, hand basins and bidets.

In kitchens and laundries, heated water must be delivered to fixtures and appliances at flow rates and temperatures which are adequate for the correct functioning of those fixtures and appliances. The temperature required may be greater than 55 °C.

To comply with these requirements, a temperature limiting device, such as a tempering or thermostatic mixing valve will be required on standard residential installations.

Manual disinfection

The system can also be placed into a manual disinfection cycle. When the controller is in the normal display mode and the heat pump is ON, press the On/Off and down buttons together for more than five seconds. The heating element symbol will flash for two seconds, then light up and the water will be heated up to 70 °C and maintained at 65-70 °C. After 30 minutes it will exit disinfection. If the water cannot reach 70 °C, the system will run in disinfection mode for two hours then exit.

If the water temperature is ≥ 70 °C, then disinfection will not start.

¹ Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

² 50 °C to new sanitary fixtures from November 2024

Water quality

Water chemistry has a direct impact on hot water heaters, affecting corrosion protection measures, or causing scale buildup.

Water quality MUST:

1. Meet the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and the Aesthetic Values for Drinking Water Notice 2022, or the water standards as statutorily defined at the time; AND
2. Be within the limits shown in the table below.

Water quality outside these limits will void this warranty.

Water quality and impurity limits

TDS (Total Dissolved Solids)	<600 mg/L	Manganese	<0.01 mg/L
Total Hardness CaCO₃	<200 mg/L	Sodium	<150 mg/L
Alkalinity	150-200 mg/L	Iron	<0.1 mg/L
Dissolved (free) CO₂	<25 mg/L	Sulphate	<100 mg/L
pH	6.8-7.5	Nitrate	<11 mg/L
Chlorides	<150 mg/L	Alkalinity/Sulphate ratio	>1
Free Chlorine	<1 mg/L	LSI¹	-1.0-0.8 @20 °C

¹ Langelier Saturation index—scaling potential of water

Water quality warranty guidelines

Filtration

Where there is discolouration, debris, or silt present in the water, an inline filter must be fitted into the water supply to protect the copper in the system from corrosion, and wear on the circulating pump. Particulates and deposits in hot water systems are corrosive to copper and stainless steel and can lead to premature pitting. The filters must be periodically replaced to maintain the integrity of the system.

Stagnation

Leaving water stagnant in the system will promote corrosion. It is recommended that systems, if not in use, are flushed on an eight week cycle.

Bore and tank water

Bore and tank water supplies should be considered to be corrosive and should be tested prior to using the system. Bore and tank water must meet the water quality parameters stated in the above table.

Electrical supply and connections

The electrical connection must be carried out by a qualified person in accordance with the latest version of AS/NZS 3000 Wiring Rules.

The heat pump is fitted with a 3.2 m power cord and a 15 A plug. It must be connected to an independent, fused AC 230 V 50 Hz power supply with an isolating switch installed at the switch board, which shall effectively isolate all active supply conductors from the circuit. Ensure the isolating switch complies with AS/NZS 3000:2018 4.8.2.3 *Isolating Switch*.

- Household wiring to the system must be capable of withstanding the appliance load.
- Fixed wiring must be protected from contact with the internal surfaces of the system.

DO NOT turn on the power supply to the appliance until it has been filled with water and a satisfactory insulation (Megger) test has been performed.



Conducting installation (Megger) tests

When conducting an insulation test using a Megger on this appliance, observe the following:



This appliance contains electronic components, when performing insulation tests (550 V) this **MUST ONLY** be conducted across the active terminal to earth and then across the neutral terminal to earth.

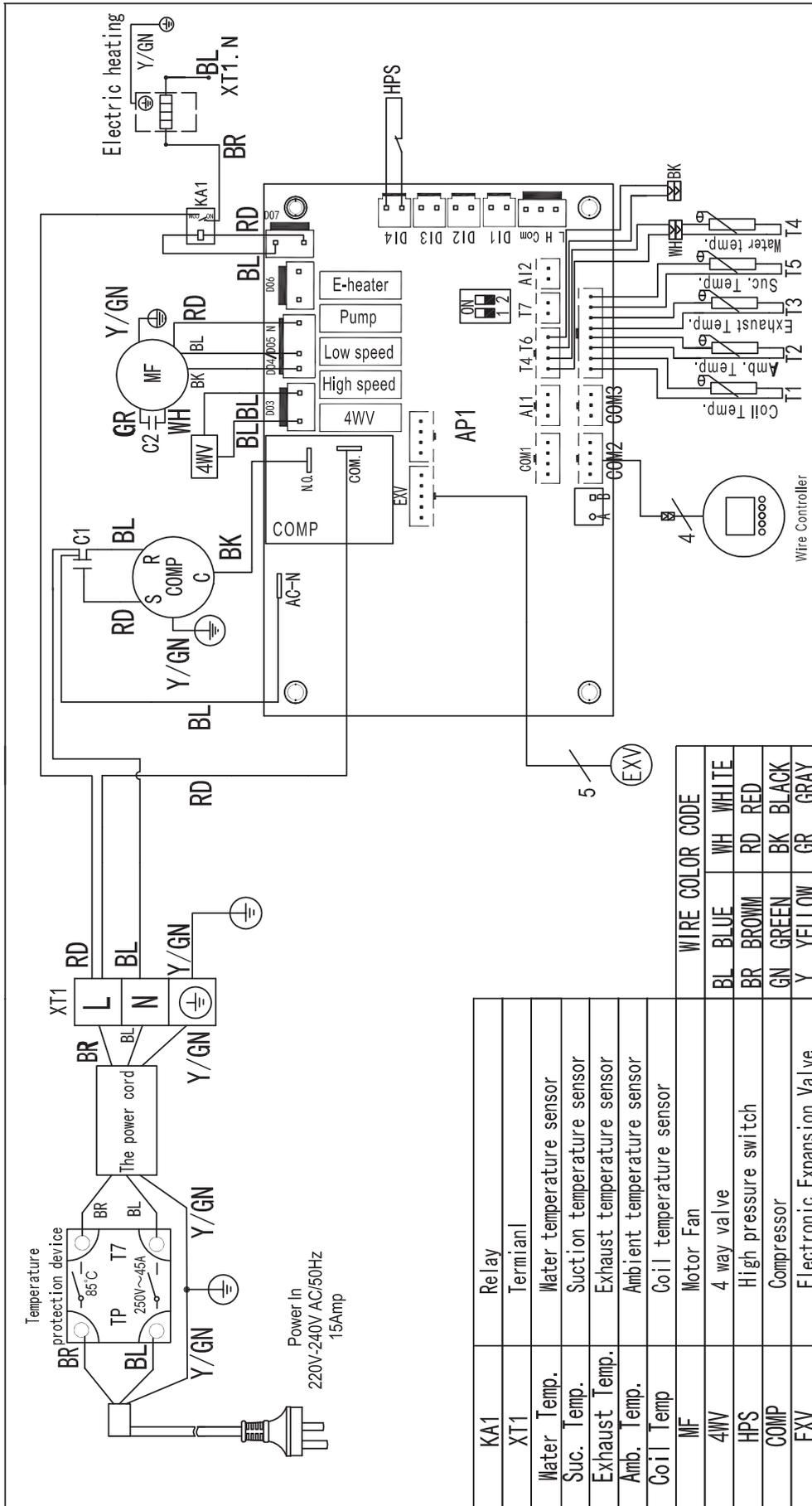
Tests between the active to neutral terminals **MUST NOT** be performed as this will damage the electronic components.

Insulation test results of between 100 k Ω and 660 k Ω are normal for this appliance.

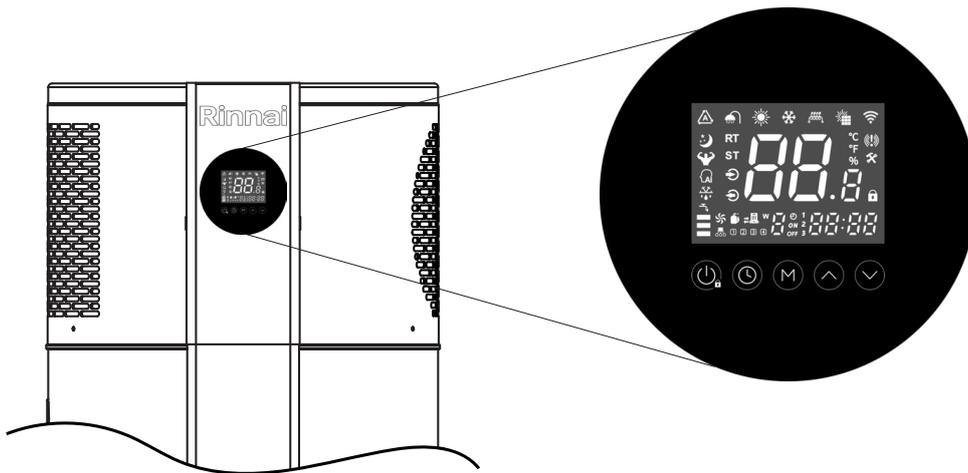
In accordance with AS/NZS 3000 an insulation test with a result less than 1 M Ω is permitted where the appliance is approved to a standard applicable to that class of appliance.

This appliance is categorised and certified as a 'stationary Class 1 motor operated appliance' and therefore satisfies the requirements of AS/NZS 60335.2.40 for leakage current and electrical strength. As such, this appliance complies with the insulation resistance requirements of AS/NZS 3000.

Wiring diagram



Controller interface



On/Off

- On/Off button, hold for one second.
- Return button
- Escape button
- Lock / unlock button, hold for five seconds (will beep)

When the controller is in the normal display and there is no button operation for more than 60 seconds, it will automatically lock.



Clock

- Setting the clock, press and it will enter clock setting, then press again to switch between hours and minutes. Refer to p.23 for more information.
- Setting the timer, press and hold for three seconds. To cancel, press and hold for three seconds. Refer to p.23 for more information.



Mode

Press the On/Off button for five seconds to unlock the screen. Press the On/Off button again, the shower symbol should be displayed. Ensure this is displayed before pressing the M button.

- Press the M button to show the existing operation (will display for eight seconds before it disappears).
- Press the M button to cycle through the different modes.



You can change the settings in each of the modes by using the up and down buttons.

Important

If the shower icon is not displayed when pressing 'M', the menu settings can be accessed. DO NOT adjust anything here as this can affect how your unit performs. Escape this menu by pressing the On/Off button to return to the home screen.



Press either button to change the temperature setting value, or change the hour / minute values when in the Mode or Clock settings.



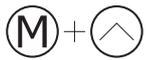
Up / Down

Water temperature setting

Unlock the controller, press the up or down buttons to increase or decrease the water temperature settings.

Button combinations

Buttons can also be used in combination for additional functions:



When the heat pump is running and in heating mode, press and hold for three seconds to turn On/Off boost mode (i.e. turn off electric element).



When the heat pump is running, press and hold for five seconds to enter (and exit) forced defrost.

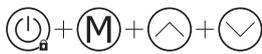


When power is on the heat pump, press the two buttons and hold for five seconds to enter into ventilation mode. To run in high speed, press the two keys for three seconds. To run in low speed, press the two keys again for three seconds. To exit this mode press and hold the keys again for three seconds.

When the heat pump is not running, press the two buttons and hold for ten seconds to enter refrigerant recovery, press the On/Off button to exit.



Press the three keys and hold for five seconds to turn ON/OFF disinfection cycle.



Within five minutes of powering on, and without the heat pump running, press the four keys and hold for five seconds to restore factory settings.

Controller LED icons

Symbol	Function	Meaning when lit	Meaning when flashing
	Heating mode	Heating mode active	
	Heating element	Heating element active	1s - boost mode 2s - disinfection mode
	Wi-Fi	Wi-Fi connected	
RT	Real water temperature	Displays actual temp.	
ST	Set water temperature	Displays set temp.	
	Defrosting	Defrosting active	Refrigerant recovery mode active
	Maintenance reminder	Maintenance required	
	Error warning	Error present	
	Screen locked	Screen lock active	
	Compressor running	Compressor active	
	High fan speed	High fan speed active	
	Low fan speed	Low fan speed active	
	Timer	Timer active	

Modes of operation

Mode number	Mode	Controller display	Default water set temp.	Setting range	Explanation
01	Standard	SE:AH	60 °C	15~60 °C	Factory preset mode, only the heat pump operates. Restart temp. difference ¹ is 10 °C.
02	Economy	E:CO	55 °C	15~60 °C	Only the heat pump operates. Restart temp. difference ¹ is 10 °C.
03	Hybrid	HY:b	65 °C	15~70 °C	Heat pump runs until the water temperature reaches 60 °C. When this temperature is reached the heat pump stops running. The electric heating element will then continue heating the water until it reaches the set temperature (if set higher than 60 °C). In this mode the default water temperature setting is 65 °C, and the restart temperature difference ¹ is 10 °C.
04	Electric	E:LE	65 °C	15~70 °C	Heating element mode, only the electric heating element will work to heat the water. Restart temperature difference ¹ is 10 °C.

Boost

The heat pump and cylinder element heat the water to the set temperature, in a one off boost so as to heat the water as quickly as possible.

When the controller is in normal display mode and the heat pump is ON, press M and the down buttons together for more than three seconds to enable boost mode. The heating element symbol will flash for one second then stay on. When the set temperature is reached, the heating element will turn off.

Forced defrost

When the controller is in the normal display and the heat pump is ON, press the M and down buttons together for more than five seconds to activate or deactivate the 'Forced Defrost' function. The defrost symbol will display with 'Forced Defrost' is on.

¹ Restart temperature difference: The system will initiate a reheating cycle when the water temperature drops 10 °C below the set temperature.

Clock setting

1. Unlock display if the lock icon is showing—press the On/Off button for five seconds.
2. Press clock, the time will flash on the display.
3. Press clock icon, the hours will flash, adjust using the up and down buttons.
4. Press clock icon again, the minutes will flash, adjust using the up and down buttons.
5. Press clock to finish setting the time.



During the clock setting, if no button is pressed for one minute, the current clock setting will be confirmed and the system will go back to the home page.

Timers

Timers are used to turn the system on. In the normal day-to-day running of the heat pump timers would not need to be programmed as the system will modulate to maintain the set water temperature. However you may need to set a timer, if for example, you want the system to run at specific times, but be off at other times.



If setting timers, here's what you need to know:

- There are three on/off timer period settings.
- When the weekday function is enabled, the timer cycle is a weekly one, e.g. every Monday.
- When the weekday function is disabled, the timer cycle is over 24 hours, e.g. every day between 16:00-20:00.
- When setting a timer you will need to cycle through all three timer periods. If you only want one you can set the start and end times for timers 2 and 3 to be the same (timer will not be set).
- To enable/disable timers, press and hold the clock button for three seconds.

Timers only (without week day enabled)

Press and hold the clock button for three seconds. Timer 1 will display, follow the prompts to enter the on and off times. Complete for timers 2 and 3 if applicable. If not applicable make the 2 and 3 start times the same, those timers will not be set.

- If the start time of a certain working period is greater than the end time, the end time is considered to be the next day.



Week day function

Only enable the week day function if a weekly timer is going to be set.

1. Unlock display if the lock icon is showing—press the On/Off button for five seconds.
2. Press the clock icon, the time will flash on the display. Press the clock icon again, the hours will flash.
3. With the hours flashing, press and hold the clock button for three seconds until you hear a beep. The weekday function will show.
4. Use the up and down buttons to adjust. When the week function is displayed it will show as Monday: 1, Tuesday: 2, Sunday 7 etc.
5. If set correctly the display will show 'W' and the number corresponding to the day of the week.



Commissioning



Commissioning, filling and draining must only be carried out by an authorised person. Make sure the cylinder is full of water before energising the system. Failing to do this can cause irreparable damage to the element and sensors.

Filling the system

1. Open hot water tap at the sink.
2. Open the cold water isolation valve to the system. Allow the system to fill and the air to bleed through the tap.
3. Turn off the hot tap at the sink when water flows freely without any air bubbles or air bursts.
4. Check for leaks and rectify if detected.
5. Bleed any remaining air from the TPR.
6. Turn on power to the heat pump unit and wait for the circulation pump to turn on. Any remaining air will be bled from the automatic air vent. The heat pump will start after approximately five minutes.

To turn off the system

It may be necessary to turn off the system after installation and commissioning, for example during building activities or if the premises are vacant.

1. Switch off the electricity supply at the isolating switch to the system.
2. Close the water isolation valve at the inlet to the water heater.
3. Drain if there is a risk of freezing.

To drain the system

1. Turn off the system as above.
2. Open all the hot water taps.
3. Gently open the TPR valve, this will relieve pressure in the system.
4. Open the drain valve—make sure no damage/injury will occur from discharged water.
5. Open the TPR valve again. This allows air into the system and will result in the cylinder draining.

Operation sequence

When the heat pump turns on, the control system initiates and will check the unit's operating parameters. The controller will check on all sensors and pressure switches. If conditions are suitable (i.e. reading within the reasonable range) and there is enough energy available in the surrounding air, the fan and compressor will turn on. If not enough energy is detected in the ambient air then the controller calls for the booster heating element to run.

There will be an approximate two minute delay from the time the heat pump is switched on before the fan and compressor begin operating.

The unit is self-regulating so there are no internal adjustments to be made during commissioning. When the unit is operated for the first time, it runs through an initial heat up cycle, allow time for this to happen. Depending on the ambient conditions this can take several hours.

Once its first heat up cycle is complete, empty approximately 60 L of hot water from the tank through the TPR and then allow the water in the tank to reheat. Once the reheat is completed measure the water at the TPR outlet, the temperature will be approximately 60 °C

Approximately ten minutes after the system has been powered, and before leaving ensure the:

- Cylinder is full of water
- Piping and electrical wiring are all correct
- Earthing wire is installed properly
- Pipe insulation is completed
- Supply voltage complies with rated voltage
- Air intake and discharge are not obstructed
- System has been flushed through to ensure residual debris from the cylinder and installation process has been cleared. A good way to do this is by running the shower until the water runs clear.



If the system cannot be made to perform correctly please contact Rinnai.

Customer handover



Explain to the customer about the use, care, service and maintenance of the system, and ensure they understand the instructions. Make sure you leave this installation guide with them as it contains important information about their system.

Error codes - controller

Code	Error description	Possible causes
E05	High pressure protection	High pressure switch is broken / connection is loose.
E09	Communication fault	Signal wire connection loose or faulty . Strong magnetic field / PCB faulty.
E12	Exhaust temperature too high	Lack of refrigerant / system leak.
E14	Tank temperature sensor fault	Sensor fault / connection is loose.
E16	Coil temperature sensor fault	Sensor fault / connection is loose.
E18	Exhaust temperature sensor fault	Sensor fault / connection is loose.
E21	Ambient temperature sensor fault	Sensor fault / connection is loose.
E29	Suction temperature sensor fault	Sensor fault / connection is loose.

Controller LED flashing codes



The PCB controller through a sequence of flashing LED indicators can also identify possible faults with the system. As this requires removal of the wraparound cover and the electric box cover, and possible check of the refrigerant system, the information has been placed in the service manual. This work can only be carried out by qualified and trained service providers, as only those with the appropriate refrigerant handling license and A3 refrigerant awareness can work on the refrigeration circuit.

Run parameter query

With power on, press the up and down buttons together for three seconds to enter the parameter query menu. Press the up or down button to enter the parameter query state. The parameter number shows in the temperature display area, and the setting shows in the timing display area.

Press the On/Off button to exit any stage.

No	Name	Note
00	Fluorine cycle / water cycle system	0 = water cycle, 1= fluorine cycle
01	High pressure switch	0 = open, 1 = closed
02	Low pressure switch	0 = open, 1 = closed
03	Water flow switch	0 = open, 1 = closed
04	EEV open	Measured value
05	Coil temperature	Measured value
06	Ambient temperature	Measured value
07	Suction temperature	Measured value
08	Exhaust temperature	Measured value
09	Water inlet temperature (tank)	Measured value
10	Water outlet temperature	0 = off, 1 = on
11	Compressor	0 = off, 1 = on
12	4-way valve	0 = off, 1 = on
13	High fan speed	0 = off, 1 = on
14	Low fan speed	0 = off, 1 = on
15	Circulation pump	0 = off, 1 = on
16	Heating element	0 = off, 1 = on
17	Compressor working time before defrosting	Measured value
18	Link switch	0 = open, 1 = closed
19	Program code	Show the code
20	Dial switch	0 = open, 1 = closed
21	Dial switch	0 = open, 1 = closed
22	Phase detecting value	0 = ok, 3 = lack phase 4 = phase fault, 5 = no connection

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