emerald

User guide and installation manual

Hot Water Heat Pump All-In-One Select

HPA1-S220, HPA1-S220E
HPA1-S270, HPA1-S270E

IMPORTANT NOTICE

Please read this manual before installing the product and retain for future use. Not following the instructions may result in the product not functioning as intended.

Installer reference code*

Installer information

Installer company:

Contact number:

Installer full name:

Install date:

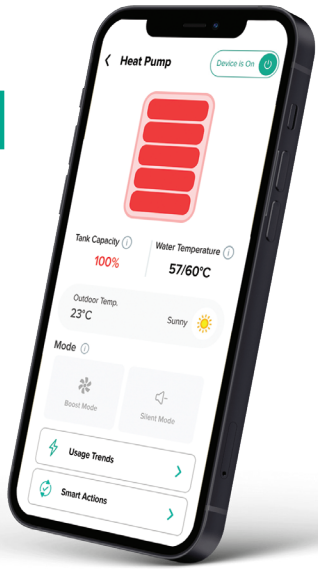
Notes:

*Installer Reference Code is used by the customer while pairing to link the heat pump to the installer company.

User guide

Important notice: Please read and keep this manual carefully before installing this product. Failure to do so may result in the product not working according to its design.

Welcome to your Emerald hot water heat pump



The Emerald heat pump and Emerald App offer advanced hot water heating.

Engineered to minimise its environmental impact, your Emerald heat pump utilises R290, a natural and non-toxic refrigerant with minimal environmental harm. R290 has zero Ozone Depletion Potential (ODP) and an extremely low Global Warming Potential (GWP) of 3.

Emerald hot water heat pump's can save up to 75% on your hot water costs while enjoying efficient and eco-friendly hot water heating.

Unlike standard electric water heaters, Emerald heat pumps leverage advanced technology to extract heat from the air, delivering exceptional energy and cost savings.

GET IT ON Google Play

Download on the App Store

Registering your warranty gives you more from Emerald

- Priority customer support.
- Tips and advice to maximise savings with your Emerald heat pump.
- Exclusive product updates and promotions.
- Peace of mind knowing your hot water heat pump is protected.

Visit emerald.com.au/warranty and follow the instructions to complete the warranty registration.

Register now

Important things to remember

There are a few key points to remember to help keep your heat pump running smoothly.

Allow your heat pump to breathe.

Your heat pump needs air to work properly and heat your hot water. If you block or restrict the air around your heat pump, it won't work as well.

Please don't put items next to your heat pump that can get in the way of the air it needs.

A routine clean for your heat pump.

For the best performance of your heat pump, we suggest regular cleaning to prevent the accumulation of dirt and leaves that could impact its operation.

Servicing your heat pump.

For best efficiency, we recommend servicing your heat pump. As with other electrical appliances servicing can identify and resolve issues that could affect your heating system.

Convenient control with Emerald App

Emerald App provides you with convenient control and monitoring capabilities for your heat pump hot water system.

Monitor electricity consumption

View information on your heat pump hot water systems electricity usage.

Real-time hot water temperature

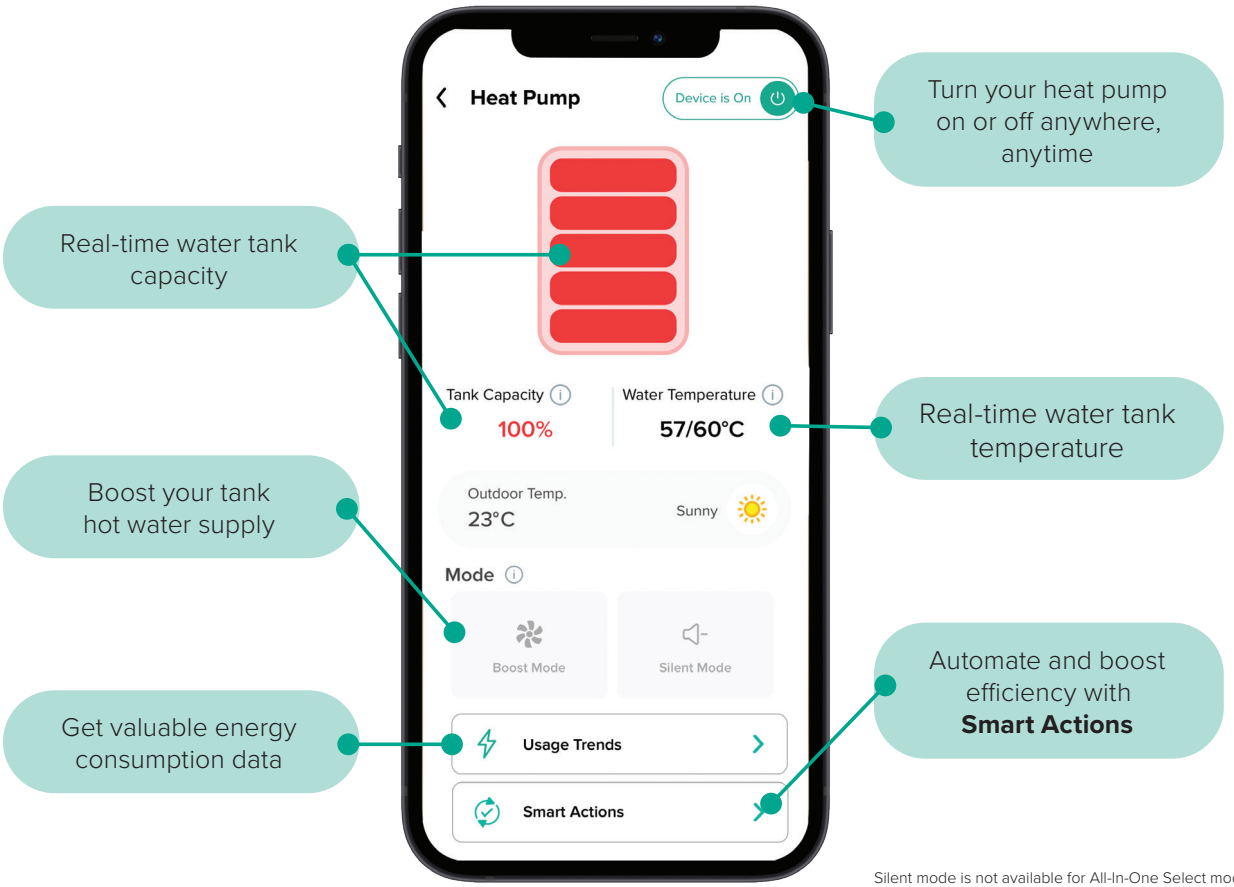
Access real-time temperature data of your hot water, ensuring you always know the current status.

Remote control anywhere, anytime

Enjoy the flexibility of remotely controlling your heat pump, allowing you to turn it on or off from anywhere via your mobile phone.

Hot water when you need it

Activate the Boost feature to speed up the heating process of your hot water tank when you need it to be ready quickly.



Silent mode is not available for All-In-One Select models.

Smart Actions to help save even more.

What are Smart Actions?

Smart Actions is a feature designed to automate temperature control. It allows you to set specific rules for your heat pump, enabling it to adjust temperature settings based on your preferences.

How do Smart Actions work?

Smart Actions will maintain your preferred temperature while saving you energy and money according to your preferences.

How can you save with Smart Actions?

Efficiency, Convenience and Control

Smart Actions enhance the energy efficiency of your heat pump by automating its behavior, leading to lower energy consumption and reduced bills. These actions simplify your routine by maintaining the hot water temperature at your desired level without constant adjustments, offering convenience while conserving energy. Additionally, you enjoy personalised control, allowing you to tailor the heat pump settings for optimal operation times and minimising energy waste, enhancing your overall experience.

Examples of Smart Actions

Solar Soaker

Leverage excess solar energy by setting your heat pump to automatically turn on when your solar panels are generating surplus power. This allows you to heat your hot water using free solar energy.

Set Schedules to Heat Your Water

Set your schedules so that your system will only turn on during your off-peak electricity times - saving you money on your electricity bills.

Set up a Smart Action in 3 easy steps

1. In the Emerald app, click Smart Actions.
2. Create and name your new Smart Action. Select a 'Trigger' that you want to activate your system e.g. 'Schedule'.
3. Set the 'Action'. This is the device you wish to be activated by the trigger - in this case, it would be your Heat Pump.

For support visit: emerald.com.au/support

GET IT ON Google Play

Download on the App Store

Wi-Fi pairing

Wi-Fi pairing your heat pump

Wi-Fi pairing steps

1. Download Emerald App and log in or create a new account.
2. Tap the (+) button on the app's home screen select "Add Product."
3. Choose between Bluetooth mode (recommended) or AP mode for device pairing.
4. Connect your mobile device to a 2.4GHz Wi-Fi network using the correct password.
5. Ensure the Heat Pump is powered on and the controller's display is active.
6 Follow the in-app instructions to activate Pairing Mode on the Heat Pump based on the chosen mode.

TOP TIP: Ensure child lock is turned off by holding the power button for 5 seconds. (1)

7. Confirm the Wi-Fi symbol is flashing on the Heat Pump's display. (2)

8. Return to the app and follow the on-screen prompts to complete the pairing process.

9. Select the correct model number and scan the heat pump's serial number using the app.

10. Enter the installation date.

Your Heat Pump should now be paired and available for you to access via Emerald App.

Pairing troubleshooting tips

If you are having trouble pairing the Heat Pump, please check the following:

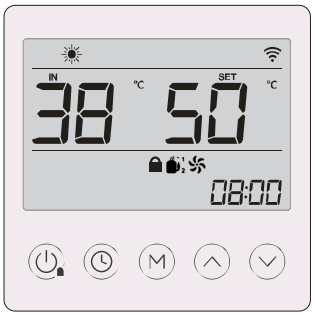
- Ensure your mobile device is connected to a 2.4GHz Wi-Fi network.
- Ensure Wi-Fi password is correct as sometimes 2.4GHz password can be different.
- If possible, move your Wi-Fi router close to your heat pump. Alternatively, set up a Wi-Fi extender to increase signal strength.

TIP: Device will time out after 2 minutes. Even if Wi-Fi icon is still flashing, it is recommended you follow the below steps to put device back into pairing mode.
Press the button + or depending on pairing mode.

Need assistance?
Visit online troubleshooting customer support.
emerald.com.au/contact

Controller instructions

Button instructions



POWER ON
- Sun is visible on screen.

STANDBY
- Screen is on but sun is not visible

POWER OFF
- Screen is blank.

	On/Off Button	• Press button for 3 seconds to unlock the controller. • Press button for 2 seconds to turn ON/OFF system. • Press button to return to main control panel screen from any other screen settings.
M	Running Mode	• When the system is turned on press button to select different running modes.
	Up and Down	• Press UP or DOWN button for 3 seconds to open the system's running conditions. • Under Timer or Clock setting status, press the UP or DOWN button to adjust setting value
	Clock and Timer Setting	• Press button once to enter the real clock setting. • Press button for 3 seconds to enter/exit the timer settings. • Under timer settings, press button once to switch the timer setting value from "hour" to "minute". • Under timer settings, press and hold button for 3 seconds to cancel the current timer setting.

Icon instructions

Symbol	Status	Description
	Visible on screen	System is in standard mode
+	Visible on screen	System is in boost mode
	Visible on screen	System is in defrost
	Visible on screen	Service required
	Visible on screen	Compressor is running
	Visible on screen	Fan motor is running
	Visible on screen	Electric heating element is on for heating (only for the models with element)
	Flashing	Sterilisation (legionella control)
RT	Visible on screen	Current water temperature in the tank
88.8	Visible on screen	Display actual water temperature, set water temperature, and fault code
°C	Visible on screen	Showing current Celsius temperature
88:88	Visible on screen	Real clock time
	Visible on screen	Timer is on
ON	Visible on screen	Timer function is activated
OFF	Visible on screen	Timer function is deactivated
1	Visible on screen / Not visible on screen	Timing period 1 set / Timer period 1 not set
2	Visible on screen / Not visible on screen	Timing period 2 set / Timer period 2 not set
3	Visible on screen / Not visible on screen	Timing period 3 set / Timer period 3 not set
	Visible on screen	The controller is locked
	Visible on screen / Flashing	The Wi-Fi is connected / Wi-Fi is searching for connection
	Visible on screen	Timer setting on Monday, Tuesday, Wednesday, etc
	Visible on screen	Factory Mode
STAN	Flashing	Standard mode
BOOS	Flashing	Boost mode
ELE	Flashing	Electric heating element mode

Controller instructions

Operation instructions

Controller lock and unlock

- In the locked state, press the button for 5 seconds, control panel will beep once, then the control panel is unlocked.
- The control panel locks automatically when no operation has been detected for 60 second.

Select running mode

Standard Mode

- Under this mode, the + **STAN** icon lights up (**STAN** will flash).
- The set temperature is locked to ensure maximum hot water capacity.
- Heat pump will cycle (Turn OFF/ON) based on maintaining the target water temperature.

Boost Mode (non-element)

- Press the button to select Boost mode. Under this mode, the + icons light up (**BOOS** will flash).
- Target water temperature will raise to 70°C for a high water storage capacity.
- This is a one-shot function and will return to standard mode after one cycle or 24 hours.

Boost Mode (element)

- Press the button to select Boost mode. Under this mode, the + + icons light up (**BOOS** will flash).
- Target water temperature will raise to 70°C for a high water storage capacity.
- In Boost mode, the heat pump will run with a larger heating capacity.
- If the target water temperature ≤60°C, both the heat pump and electric heating element work simultaneously during the entire heating cycle to heat the tank faster.
- This is a one-shot function and will return to standard mode after one cycle or 24 hour.

Element Mode (element system only)

- If the heat pump fails or is selected to Element mode, only the electric heating element heats the water to setting point.
- Control panel will beep intermittently and have an icon on the control panel screen.

Real time clock setting

1. On the control panel, press the button once to enter the real-time clock setting.
2. On initial set-up, date will need to be set on real time clock e.g. “YYYY”, “MM”, “DD”.
3. Press the button once, and the “hour” will flash. To set the hour of the real-time clock, press the or buttons.
4. After setting the hour, press the button again, the “minute” will flash. To set the minute of the real-time clock, press the or buttons.
5. Press the button again to confirm the current clock setting and return to the main control panel screen.

Timer setting

1. Press the button for 3 seconds to begin setting your timer. You can set 3 different ON/OFF time periods.
2. Press the or buttons to interact with the control panel timer settings.
3. The “1” symbol and “hour” of the timer will be visible. Press the or buttons, to set the “hour” in which you want the system to turn ON.
4. Press the button again, the “minute” of the timer will be visible. Press the or buttons to set the minutes of the system “1” timer.
5. Press the button again to enter the OFF setting of system “1” timer, this is the time the system will turn OFF.
6. Press the button to complete the System “1” timer. The heat pump can have two more system timers (2 and 3). Press the button to exit the timer settings and return to the main control panel screen.
7. If the ON and OFF times are set at the same value for system “2” and “3” timers, system “1” timer will override system “2” and “3” timers.
8. After setting all three system timers in the timer settings, press the button to confirm the current set value and return to the main control panel screen.
9. The system does not need to have all three timers active.
10. The main control panel screen will show a number (1,2,3) next to your real-time clock, indicating which timer is currently active and what operation status it is currently in (ON/OFF)
11. To deactivate a system timer, access the system timer settings. Press the button to navigate through each system timer (1,2,3). Press the button for 3 seconds to deactivate the system timer currently shown on the control panel. The control panel will return to the main interface once completed.

Weekly timer

1. Press the button once shortly, the systems real-time clock will be flashing. Press the button for 3 seconds to enter weekly timer.
2. The weekly timer settings can be changed by pressing the or button.
3. Weekly timer will turn your system on once per week on the allocated day that has been set on the control panel.
4. To deactivate the weekly timer, press the button once, the systems real-time clock will be flashing. Press the button for 3 seconds to cancel the weekly timer and return to the main control panel screen.

Memory function and other functions

1. The Control panel has a power-down memory function.
2. The control panel backlight will be on for 60 seconds before turning off if there is not further input.
3. In boost mode, only the current mode, water tank temperature, and time are displayed.

Forced defrosting

1. In the power-on state, press the + buttons for 5 seconds to enter the forced defrosting the icon lights up during forced defrosting.
2. When shutdown or forced defrosting reaches the set time or temperature, the system automatically exits forced defrosting and enters normal heating water status. The icon goes out during forced defrosting.

Silent mode is not available for All-In-One Select models.

Installation guide

Important notice: Please read and keep this manual carefully before installing this product. Failure to do so may result in the product not working according to its design.

Safety precautions

⚠ Installation and operation

- DO NOT install or operate this system before reading the manufacturer's instructions.
- This appliance must be installed, commissioned and serviced by an authorised person in accordance with all applicable local rules and regulations.
- Removing access covers and or water heating system components will expose 240V wiring and MUST only be removed by an authorised person.
- If the systems power supply is damaged, it MUST BE replaced by an authorised person in order to avoid a hazard. Take care not to touch the power connections or plugs with wet hands.
- This appliance is not intended for use 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 concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they DO NOT play with the appliance.
- For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.
- Care should be taken not to touch the pipe work as it may be HOT!
- DO NOT place articles on or against this appliance.
- DO NOT store chemicals or flammable materials near this appliance.
- DO NOT operate with collectors or covers removed from this appliance.
- DO NOT activate heat pump unless cylinder is full of water.
- Household electrics must have a reliable earth connection.
- This product must be protected with a residual current device of adequate rating.
- Do not interfere with any permanent instruction, labels or warning plate attached to the external cover of this heat pump.
- This product must be installed by qualified person in the mechanical and electrical industry.
- Always comply with local wiring regulations.
- Always engage with a trained professional to relocate this product after it has been professionally installed.
- Maintenance and repair work must only be undertaken by trained and qualified personnel.
- The electrical connection to this product must be via a 20A RCD/MCB or RCBO with a test button function.
- This appliance should never be used by children.
- Do not operate this heat pump in a wet room such as a bathroom or unless it is housed in a separate cupboard within that room.

A3 Installation and operation

- This appliance uses R290 (propane) refrigerant, which is a flammable gas class 3 according to AS 1677 and must be handled by a refrigeration mechanic with appropriate Australian refrigerant handling license.
- WARNING Risk of fire/flammable material. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.
- DO NOT store chemicals or flammable materials near this appliance.
- NEVER use a flammable spray such as hair spray, paint, etc near this unit as this may cause a fire.
- The appliance should not be stored or transported in an area with an ignition source (e.g. open flame).
- Do no pierce or burn the appliance.
- Be aware that the refrigerant may not cause an odour.
- Compliance with AS/NZS 5601 must be observed while storing the appliance.
- National and state regulations exist for the storage, transportation and handling of hazardous goods including flammable gasses. The maximum number of and configuration of the equipment permitted to be transported or stored together will be determined by the appliance regulations.

DANGER: Failure to operate the relief valve easing gear at least once every six months

may result in the water heater exploding. Continuous leakage of water from the valve may indicate a problem with the water heater.

⚠ Warning

- Risk of fire/flammable material. If the refrigerant is leaking, switch off the unit at the mains and contact the service agent.
- DO NOT store chemicals or flammable materials near this appliance.
- NEVER use a flammable spray such as hair spray, paint, etc near this unit as it may cause fire.
- Avoid risk of injury from contact with refrigerant if you notice a leak.
- If you suspect the refrigerant is leaking then Do not smoke or operate electrical equipment.
- End of life recycling: The refrigerant must not enter the atmosphere. Only have the refrigerant removed by qualified professional.

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.

Refrigerant safety precautions

⚠ Warning

- The following applies to R290 refrigerant systems.
- Prior to work on systems containing flammable refrigerants, safety checks are necessary to minimise the risk of ignition.

For repair of the refrigerating system, the following precautions should be complied with prior to conducting work on the system.

Work should be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapor being present while the work is being performed.

All maintenance staff and others working in the local area should be instructed on the nature of work being carried out. Work in confined spaces should be avoided. The area around the workspace should be sectioned off. Ensure that the area is safe through control of flammable materials.

The area should be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. the equipment should be non-sparking, adequately sealed or intrinsically safe. If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment should be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a refrigeration system which may expose any pipe that contains or has contained flammable refrigerant should use any sources of ignition in such a manner that it may lead to the risk of fires or explosions.

All possible ignition sources, including lighted cigarettes, should be kept sufficiently far away from the site of installation, repair, removal and disposal, during which flammable refrigerant can possibly be released into the surrounding space.

Prior to work, the area around the equipment should be checked to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs should be displayed.

Ensure that the area is in the open or adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation should continue during the work. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

For any change of the electrical components, they should be fit for the intended purpose and comply with the correct specifications.

Always follow the manufacturer’s maintenance and service guidelines. In case of any doubt, consult the manufacturer’s technical department for assistance.

The following checks should be applied to installations using flammable refrigerants:

- The charge size should depend on the size of the room within which refrigerant containing components are installed;
- The ventilation machinery and outlets should operate adequately and not be obstructed;
- If an indirect refrigerating circuit is used, the secondary circuit should be checked for any refrigerant;
- Marking to the equipment should remain visible and legible. Illegible markings and signs should be corrected;
- Refrigeration pipes or components should be installed in positions where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.
- Repair and maintenance of electrical components should include initial safety checks and component inspection procedures. In the event of a fault that could compromise safety, no power supply should be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution should be used. This should be reported to the owner of the equipment to give advises to all parties involved.

Initial safety checks should include the following:

- Capacitors should be discharged in a safe manner to avoid possibility of sparking;
- No live electrical components and wiring should be exposed while charging, recovering or purging the system;
- The earth bonding should be continuous.

During repairs of sealed components, all power supplies should be disconnected from the equipment where work is in progress prior to any removal of sealed covers or other components. If it is absolutely necessary to keep a power supply connected with the equipment during servicing, a permanent leak detection should be performed at the most critical point to avoid a potential hazard.

Particular attention should be paid to the following to ensure that the casing is not altered in such a way that the level of protection is affected by working on electrical components. This includes damage to cables, an excessive number of connections, terminals not compliance with original specifications, damage to seals, and incorrect fitting of glands.

Ensure that seals or sealing materials have not degraded in such a manner that they no longer serve for the purpose of preventing the ingress of flammable atmospheres. Parts for replacement should be in accordance with the manufacturer’s specifications.

Do not apply any permanent inductive or capacitance loads that exceed the permissible voltage or current of the equipment in use to the circuit.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus should be provided with the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere due to a leak.

Check and ensure that cabling is free from wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check should also take into account the effects of ageing or continual vibration from sources such as compressors or fans.

When breaking into the refrigerant circuit for repair – or for any other purpose – follow the conventional procedures. However, it is important to follow the best practice.

Refrigerant safety precautions

Since flammability is a consideration, the following procedure should be adhered to:

- Remove the refrigerant;
- Purge the circuit with inert gas;
- Evacuate;
- Purge the circuit again with inert gas;
- Open the circuit by cutting or brazing.

The refrigerant should be recovered into correct recovery cylinders. The system should be “flushed” with OFN to guarantee the unit safety. This process may need to be repeated several times. Compressed air or oxygen should not be used for this task.

Flushing should be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved before venting to the atmosphere and pulling down to a vacuum. This process should be repeated until no refrigerant exists in the system. When the final OFN charge is used, the system should be vented down to the atmospheric pressure so that the work can start.

This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and adequate ventilation is available.

Ensure that contamination of different refrigerants does not occur when using charging equipment.

Hoses or lines should be as short as possible to minimise the amount of refrigerant contained in them.

Prior to recharging the system, it should be pressure tested with OFN.

DD.12 Decommissioning:

Before this procedure starts, it is necessary for the technician to be completely familiar with the equipment and all its details. It is recommended that all refrigerants be recovered safely. Prior to the task, an oil and refrigerant sample should be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Be familiar with the equipment and its operation.

b) Isolate the system electrically.

c) Before attempting the procedure, ensure that:

- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- The recovery equipment and cylinders should conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that the cylinders are situated on the scales before recovery.

g) Start the recovery machine and operate it in accordance with manufacturer's instructions.

h) Do not overfill the cylinders. (No more than 80 % of volume for liquid charge).

i) Do not exceed the maximum working pressure of the cylinders, even temporarily.

j) When the cylinders have been filled correctly, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant should not be charged into another refrigeration system unless it has been cleaned and checked.

Equipment should be labeled stating that it has been de-commissioned and emptied of refrigerant. The label should be dated and signed. Ensure that the equipment is provided with a label stating the existence of flammable refrigerant in the equipment.

When removing refrigerant from a system, either for servicing or de-commissioning, it is recommended that all refrigerants be removed safely. Always transfer refrigerant into appropriate cylinders. Ensure that a correct number of cylinders are available for supporting the total system charge. All cylinders to be used should be designated forthe recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). The cylinders should be complete with pressure relief valves and associated shut-off valves in good working conditions. Empty recovery cylinders should be evacuated and, if possible, cooled down before recovery occurs.

The recovery equipment should be in good working conditions with a set of instructions concerning the equipment that is at hand and should be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales should be available and work properly. Hoses should be complete with leak-free disconnect couplings and work properly.

Before using the recovery machine, check and ensure that it is in satisfactory working conditions and has been properly maintained, and that all associated electrical components are sealed to prevent ignition in the event of a refrigerant leak. Consult the manufacturer if in in case of any doubt.

The recovered refrigerant should be returned to the refrigerant supplier in correct recovery cylinders, with the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If any compressor or compressor oils is to be removed, ensure that it has been evacuated to an acceptable level to ensure that flammable refrigerant does not remain within the lubricant. The evacuation process should be carried out prior to returning the compressor to the supplier.
To accelerate this process, you can only heat the compressor body with an electric heater. Draining oil from the system should ensure the safety.

WARNING: Disconnect the appliance from its power source during servicing and parts replacement.

These units are partial unit air conditioners, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

Refrigerant safety precautions

Leak detection

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants. Electronic leak detectors should be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment should be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant. Leak detection equipment should be set at a percentage of the LFL of the refrigerant and should be calibrated to be suitable for the refrigerant employed, with the appropriate percentage of gas (25% maximum) confirmed. Leak detection fluids should be suitable for most refrigerants but the use of detergents containing chlorine should be avoided as the chlorine may react with the refrigerant and corrode the copper pipes. If a leak is suspected, all naked flames should be removed or extinguished.

If a leakage of refrigerant is found and brazing is required, all of the refrigerant should be recovered from the system, or isolated (by means of shut off valves) in a part of the system that is far from the leak. The system should be purged with oxygen free nitrogen (OFN) both before and during the brazing process.

Disposal

This equipment uses flammable refrigerants. The disposal of the equipment must comply with national regulations.

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

- Do not dispose of electrical appliances as unsorted municipal waste, and use separate collection facilities.
- Contact your local government for information regarding the collection systems available.

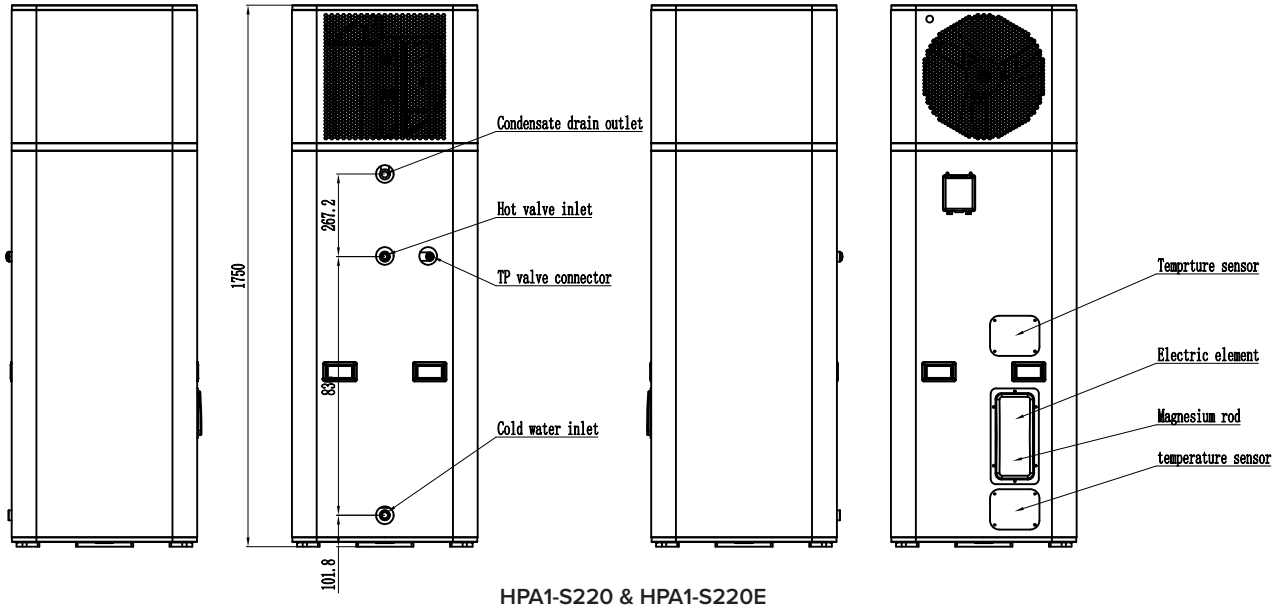
If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

WARNING: Risk of fire

General information

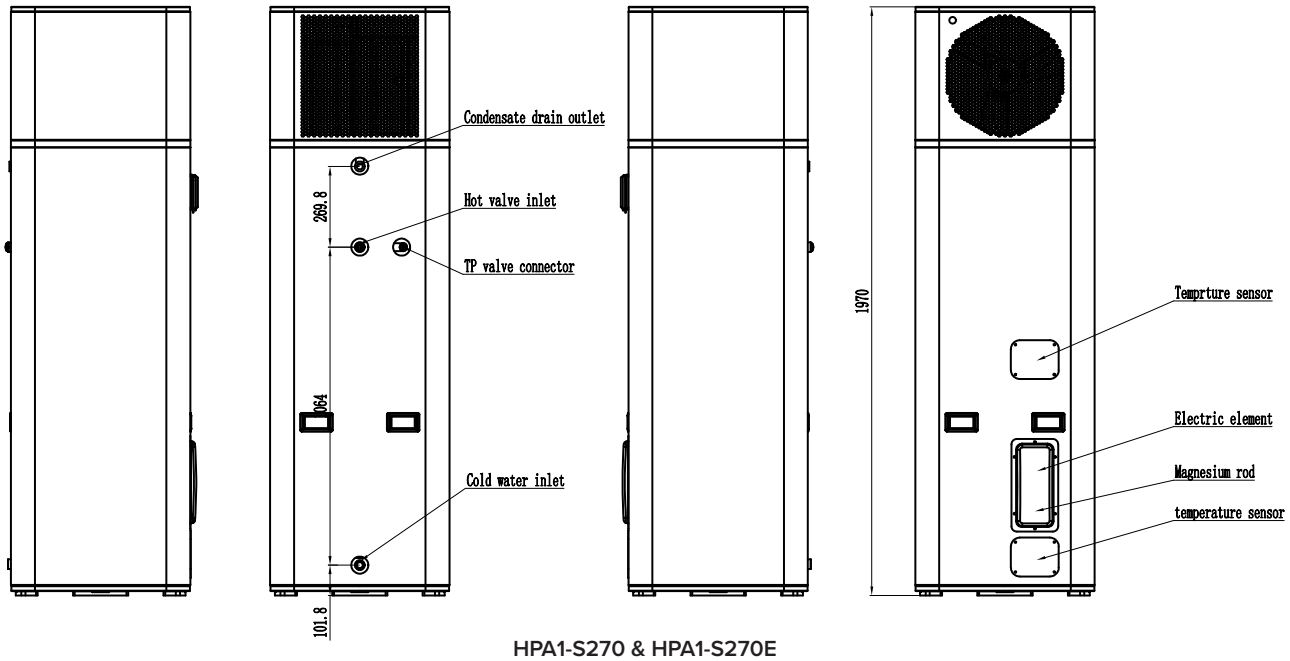
Measurements

Model	Weight(kg)	Dimension (mm)	Power supply
HPA1-S220	118	600×600×1750	220V-240V/ 50Hz
HPA1-S220E	118	600×600×1750	220V-240V/ 50Hz
HPA1-S270	132	600×600×1970	220V-240V/ 50Hz
HPA1-S270E	132	600×600×1970	220V-240V/ 50Hz



HPA1-S220 & HPA1-S220E

(The electric heating element is not included in HPA1-S220)

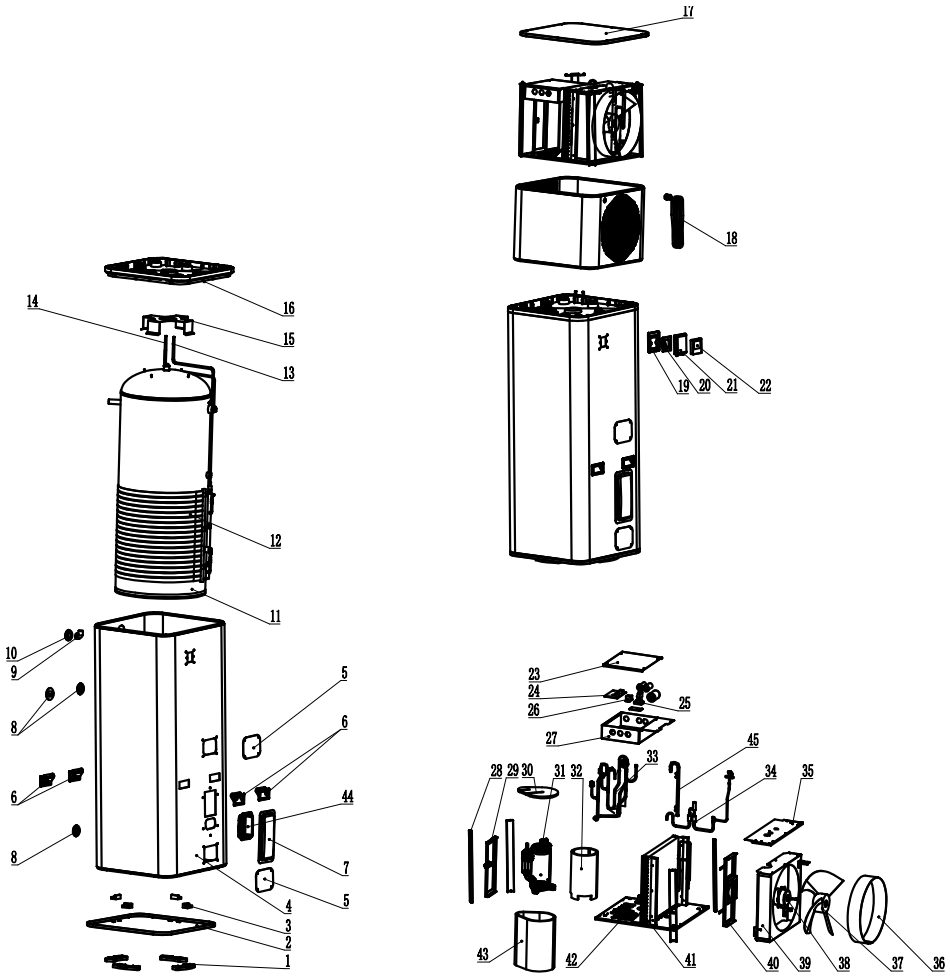


HPA1-S270 & HPA1-S270E

(The electric heating element is not included in HPA1-S270)

General information

Components



No.	Description	Qty	Remark
1	Feet	4	Pp
2	Bottom tray	1	Galvanised plate
3	Position block	4	Pp
4	Outer casing	1	Galvanised plate
5	Electric heater cover	2	Galvanised plate
6	Hand grip	4	ABS
7	Electric heater cover	1	Galvanised plate
8	Decorative cover	3	PVC
9	Condensate drainage port	1	PVC
10	Decorative cover	1	ABS
11	Enamel tank	1	
12	Microchannel heat exchanger	1	Aluminum alloy
13	Microchannel inlet	1	TP2M
14	Microchannel outlet	1	TP2M
15	Bottom bracket	1	Galvanised plate
16	Condensate tray	1	ABS
17	Top lid	1	Galvanised plate
18	Power cable	1	
19	Sealing pad	1	Silicone
20	Controller cover	1	PVC
21	Waterproof box	1	PVC
22	Controller	1	

23	Electric box cover	1	Galvanised plate
24	Main board	1	
25	Terminal block	1	
26	Relay	1	
27	Electric box	1	Galvanised plate
28	Top cover support plate	4	
29	Electrical box bracket	1	Galvanised plate
30	Compressor silencer cotton cover	1	PET+PVC
31	Compressor	1	
32	Compressor silencer cotton	1	PET+PVC
33	4-way valve pipeline assembly	1	TP2M
34	EEV assembly	1	TP2M
35	Fan box cover	1	Galvanised plate
36	Sealing sponge	1	Sponge
37	Fan blade	1	ASG
38	Fan motor	1	
39	Fan box assemly	1	Galvanised plate
40	Fan motor bracket	1	Galvanised plate
41	Evaporator	1	
42	Chassis welding assembly	1	Galvanised plate
43	Compressor silencer cotton	1	PET+PVC
44	Thermostat waterproof box	1	ABS
45	Gas collecting pipe assembly	1	TP2M

*The electric heating element is not included in HPA1-S220 & HPA1-S270

Installation

All Emerald heat pumps are designed for installation by a licensed plumber in accordance with standards set out in AS/NZS 3500.2 “National Plumbing and Drainage Code Hot Water Supply Systems - Acceptable Solutions”.

Choose a suitable location

- This device should be installed outdoors. If used indoors the appliance must be placed, operated, and stored in a room with the minimum indoor installation requirements.
- Please ensure there is adequate space for installation and maintenance. It is recommended a head height of 300mm is required.
- The product is to be installed in a dry and free from humidity location.
- Support surface must be flat (horizontal angle must not be more than 2°), and can hold the products weight when filled with water. Please refer to the technical data sheet for the products weight.
- Please select a suitable location for the exhaust air vent to the outside. Always insulate the exhaust air ducting to avoid condensation when operational.
- Please ensure there is access to the removal front panel for maintenance.
- Always allow extra room for pipe connections and power cables.
- Always refrain from installing on a surface with loose coverings as the product may make a vibrating noise when operating.
- The areas containing toxic gases or mineral oils are not recommended as suitable installation locations of the product.

A3 The Emerald All-In-One series uses a flammable gas, therefore:

- The appliance should not be stored or transported in an area with an ignition source
- Do no pierce or burn the appliance.
- Be aware that the refrigerant may not cause an odour.
- Compliance with AS/NZS 5601 must be observed while storing the appliance.

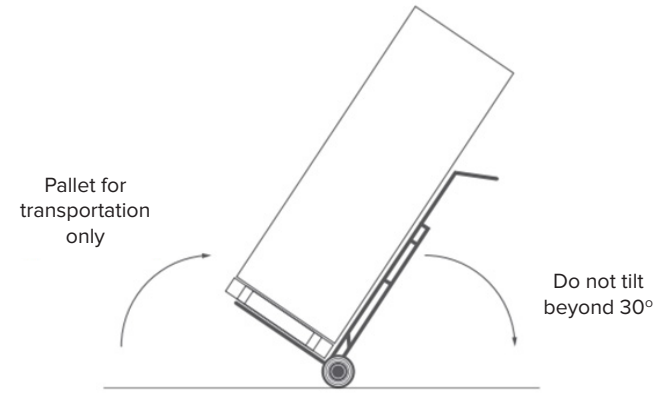
National and state regulations exist for the storage, transportation and handling of hazardous goods including flammable gasses. The maximum number of and configuration of the equipment permitted to be transported or stored together will be determined by the appliance regulations.

Warning

If the product is installed in a location where there is a possibility of frost, then all precautions must be taken to ensure all pipework is sufficiently insulated.

Transporting the heat pump

- Emerald heat pumps must be stored and transported in a near vertical position at all times with a tilt ratio of no more than 30°. Transporting or storing the unit in a horizontal position will void warranty.
- The system should always be transported in it's packaging.
- The weight of the package system is 126KG (HPA1-S220 and HPA1-S220E) and 141KG (HPA1-S270 & HPA1-S270E). The system must be handled by two people at all times to avoid unnecessary strain and damaged.
- Please note the outer casing of the unit is susceptible to denting and damage. Care and consideration should be taken into account when moving the unit as any marks caused by inappropriate handling are not deemed as defects and are not covered under warranty.



Minimum indoor installation requirements

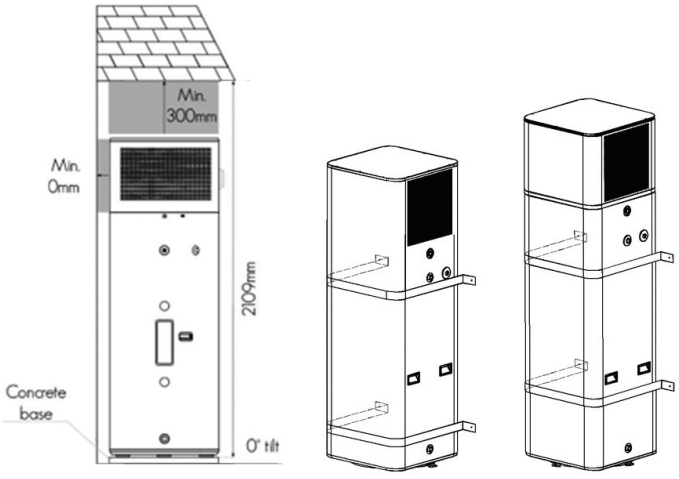
- The indoor area for heat pump installation should exceed the following sises:
  - 220L unit the area should be at least 51m2.
  - 270L unit, the area should be at least 84m2.
- If the heat pump must be installed in a smaller indoor space but is connected to an adjacent room, there must be a fixed open door connecting the rooms. A fixed open door cannot be closed under any circumstances.
- Place heat pumps a safe distance away from potential ignition sources or corrosive environments to prevent the risk of fire or damage.
- Consider the serviceability of the heat pump during installation, ensuring there is enough space for maintenance and repair tasks.
- Follow all relevant electrical and safety standards during.
- Regularly perform maintenance and inspections on both the heat pump and the ventilation system to ensure safe and efficient operation.
  Always remember installers must diligently adhere to all Australian standards. Our guidelines should be viewed as supplementary information and do not override established standards.

Installation

Installation of the heat pump

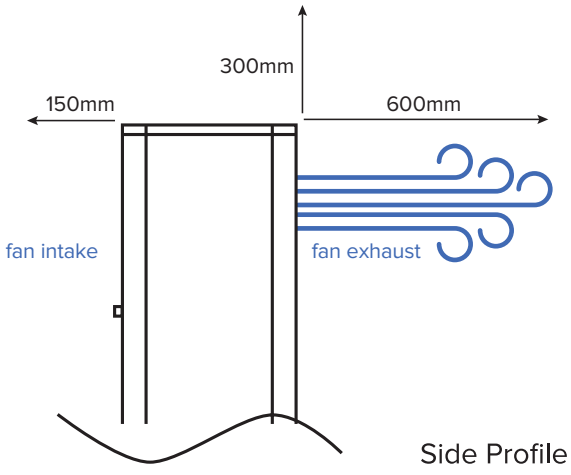
Base

- The unit should be installed on a concrete plinth or stable structure capable of sustaining weights in excess of 400kg. The supporting structure must not shift over time (due to water drainage etc.). A concrete base of at least 50mm thick or a well-seasoned hard-wood slat at least 25mm is required. If a concrete base paver is being used, a minimum dimension of 600mm x 600mm is required.
- Please ensure that all four feet are supported by the base being used otherwise warranties may be voided.
- Proper drainage should be observed for any overflow.
- When installed the unit must be completely vertical and level as to ensure that condensate can be properly drained. If the system is installed at a level with a tilt of more than 3 degrees, warranties may be voided.
- If property damage can occur due to water leakage, a safe tray (overflow tray) must be installed



Air flow

- This unit is designed for external operation only and requires a continuous supply of air to operate efficiently.
- Avoid installation in areas where falling debris such as leaves is prevalent as this may result in air vents being blocked or the unit being damaged.
- Avoid placing the system in locations with multiple walls or structures.
- Always maintain optimum perimeter from all structures.
- If installed under fixtures or home eves, there must be a minimum 300mm clearance between the top of the unit, 600mm on the right hand side of the system (when facing unit) and 150mm on the left hand side of the system (when facing system) (see section AIR FLOW). The unit must be installed a minimum of 150mm off your home's wall so that the entire unit can be accessed during any servicing work as well as to prevent circulation of cold air (see section 2.3 AIR FLOW). If the system cannot be properly serviced due to the system being installed outside of these specifications, the owner will be liable for the associated plumbing costs of draining and moving the system.
- The unit should be installed so that the control interface is accessible to users and that there is clear access to the electrical panel at the back of the system. Where incorrect installation has occurred warranties may be void or additional charges may be required to ensure that the system is compliant.

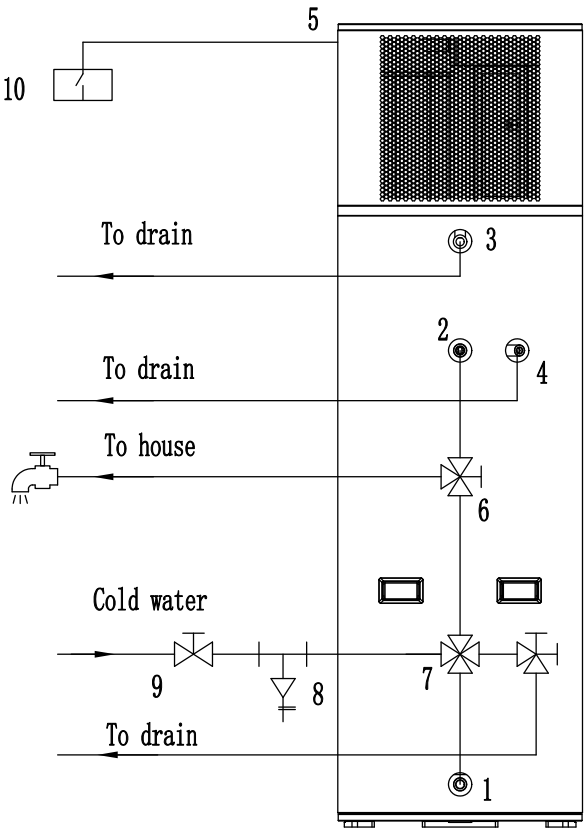


⚠ Warning

- The systems are designed for external use only with a minimum of 20m^3 of unobstructed space surrounding the unit.
- Location complies with the Requirements with the regards to the heat pump containing a flammable refrigerant.
- The electrical access point and display panel should always be accessible.

Plumbing connections

Plumbing connections



1	Cold water supply outlet (G 3/4" female thread)
2	Hot water outlet (G 3/4" female thread)
3	Condensing drainage Elbow*
4	TPR Valve* (G 1/2" female) (850k Pa) supplied
5	Electrical cable
6	Tempering valve (high performance recommended)
7	Expansion control valve (ECV)
8	Pressure limiting valve (500k Pa)
9	Non-return/Isolation valve
10	Isolation switch (hardwired into 10 amp circuit)
* Supplied with system	

Cold water supply outlet

- The cold water supply connection uses a G 3/4″ female thread.
- To connect the cold water supply, use a G 3/4″ socket.
- The cold water supply outlet can also serve as a drainage point for emptying the system.

Hot water connection

- The hot water supply connection also uses a G 3/4″ female thread.
- Connect the hot water supply using a G 3/4″ socket.
- To ensure thermal efficiency, insulate all hot water lines and connections with a minimum 13mm closed-cell insulation.
- All hot water supply components must be made of copper.

Condensate drain

- When heat is extracted from the atmosphere through evaporator coils, it generates condensation in the form of water. In places with higher humidity, this condensation occurs at a faster rate.
- To collect the water by-product, a condensate tray is placed at the base of the heat pump. Any surplus water from this tray is channeled through the condensate drain.
- The system comes with a pre-installed condensate drain connection elbow. It is essential to route the condensate into the nearest storm water drain using a drainage pipe. Failing to do so could lead to issues like termite attraction and the growth of algae and moss.
- Ensure that the condensate line is free of kinks, and since the water relies on gravity for flow, it should only run downward to facilitate unobstructed water flow.

Pressure and temperature relief valve (TPR)

- The system is supplied with a loose TPR valve appropriate to the pressure rating of the water heater tank. If the TPR valve is not present please contact your supplier. The valve rated capacity: 850kPa; 10kW; Set temperature: 93°C.
- The water temperature at the level of the temperature and pressure relief valve(s) of any unvented water heater or hot water storage tank shall not exceed 93°C under normal operating conditions.
- The supplied TPR valve must be installed at Point 4 in section Connection Dimensions and Components under the socket marked "RELIEF VALVE".
- The TPR valve must be insulated with a minimum 13mm closed coupled insulation, to minimize heat lost.
- The TPR should be positioned in a way that the drain line always points downward, and the discharge point remains open to the atmosphere.
- When connecting a discharge pipe to the pressure relief valve, make sure it runs continuously downward and is placed in a frost-free environment. Do not connect any pressure relief device to the condensate drain pipe, as water may drip from the pressure relief device's discharge pipe. This pipe should always be left open to the atmosphere. Additionally, regularly operate the pressure relief device to remove lime deposits and confirm it is not blocked.

Plumbing connections

Operating the TPR valve (frequency: every half year - replace if required)

It is recommended to operate the TPR valve periodically to ensure water flows freely. If water doesn't flow freely, the TPR valve will need to be replaced.

- Locate the TPR valve on the left hand side of the unit.
- Carefully release the valve using the lever and release some water from the tank.

NOTE: Water expelled may be extremely hot.

- If water flows freely the TPR appears to still be in a suitable working condition.
- If water does not flow freely it would appear the TPR valve is due for replacement.
- If the TPR valve needs replacing, please contact your plumber or our service team for further assistance.

Tempering valve

- The systems are automatically programmed to produce hot water in excess of 50°C. As such, in accordance with AS/NZS3500, it is mandatory that a Tempering Valve is installed.
- We recommend a high performance or solar rated tempering valve is used to ensure a more accurate hot water delivery temperature.
- If your previous hot water system did not have a tempering valve, you may notice a difference in the hot water temperature. This adjustment is both normal and legally mandated by new regulations. If you have any questions or concerns, please get in touch with your installer for assistance.

Expansion control valve (ECV)

- Please adhere to local regulations and requirements when considering the installation of an ECV. Note that this is optional with most councils.
- When installing an ECV, make sure that the diameter of the connecting pipe does not exceed that of the safety valve.
- Ensure that the drain is adequately sized to accommodate water runoff, even in situations where the safety valve has fully opened.
- The drain outlet should always remain open to the atmosphere and should not have any closing function.
- It is recommended that the ECV is rated at no more than 700kPa.

Pressure limiting valve (PLV)

- This water heater is supplied with a TPR valve rated at 850kPa and is designed for direct connection to mains water supply with a pressure not exceeding this rating.
- Should main pressure fluctuate above this rating, a pressure limiting device (AS1357) should be connected to Connection Dimensions and Components.

Non-return/Isolating valve

- It is compulsory that a non-returning/isolation valve is installed directly into the cold-water supply line feeding the system. This will allow the hot water system to be isolated from the rest of the homes water supply, making servicing, draining and replacing the unit easy. A hose-set must not be used to connect the system to water supply.
- The non-return/isolation valve can be combined with a PRV valve to form a duo valve.

Allowable min-max filling water pressure

Allowable min-max filling water pressure: Min 200KPA - Max 750KPA.

The demanded quality of water

- Poor-quality water contains higher levels of scale and sand and should be filtered.
- The water quality should be analysed before operating the system to measure the PH value, conductivity, Chloride ion concentration and sulphate ion concentration.
- The acceptable water quality standard is showed as below table.

PH value	Total hardness	Conductivity	Sulphate ion	Chlorine ion	Ammonia ion
7~8.5	< 50ppm	<200μV/cm(25°C)	None	< 50ppm	None
Sulfate ion	Silicon	Iron content	Sodium	Ca	
< 50ppm	< 50ppm	< 0.3ppm	No requirement	< 50ppm	

- Suggest the filter meshes is about 40 meshes.

Checking the anode and replacing if required (frequency: every half year - replace if required)

The anode is a crucial component that safeguards the inner lining of the hot water tank. Over time, it may degrade, reducing its protective capabilities. It is advisable to periodically inspect the anode for degradation and replace it if needed.

- Turn off the power, and turn off the cold water inlet valve.
- Open a hot water tap, and decrease the pressure of the inner container.
- Open the drain port, and exhaust the remaining water completely in the release about 20L water.
- Remove the top cover by removing the locking screw and rotating in a clockwise direction.
- Release the front casing, disconnect the display cable from the electrical compartment and put aside.
- Locate the anode position on the left hand side.
- Remove the anode cover by releasing the two screws.
- Unscrew the anode and lift directly up.
- Check for degradation.
- If still in suitable condition, refit ensuring an effective seal.
- If anode is in an unsuitable condition, replace with a new one, ensuring an effective seal.
- Reopen the cold water inlet valve.
- Open a hot water tap until hot water flows out, then turn off the hot water tap.
- Turn on the power to restart the unit.
- Now the unit can be used as normal.

Plumbing connections

Cleaning the inner tank and electric heating element

It is recommended to clean the inner tank and electric heating element regularly to maintain efficient performance.

- Turn off the power.
- Close the cold water inlet valve and open a hot water tap.
- Use a flexible pipe to connect the drain port to a suitable sewage drain. (Note: The min. heat resistance of the drain pipe must not be less than 93°C, if the drain pipe does not meet the requirement, please open the cold water inlet valve & open a hot water tap, until the temperature of the water is suitable for the drain pipe).
- Open the drain port of the water heater; drain out all the water in the inner tank. If it is needed, use water to wash the inner tank several times to clear the deposits.
- Close the drain port, re-fill the inner tank with water, and turn the power back on.

Water storage volume requirement

For a storage water heater, heat pump water heater or solar water heater, at least 90% of the stored water is heated to 60°C for at least one single period of not less than 32 min in each 7 day period.

⚠ Filling the system

Here are the steps to follow for filling and pressurising the system after it has been properly connected:

- Once the system is correctly connected, proceed to fill and pressurise the tank.
- Open the non-return valve on the cold-water inlet to begin filling the system with water. At the same time, ensure at least one hot water tap is open inside the property. While the system begins filling with water you will hear air being expelled from the open hot water tap. This is called "bleeding the system" and it ensures that no air pockets remain. Once water begins running out of the hot water tap, the system is completely bled and you can then turn the tap off.
- Always ensure that the tank is completely filled with water before connecting and activating the electricity supply.

⚠ **Warning**

Importance of proper installation

Installing the valves correctly is critical to ensure system efficiency, longevity and safety.
Improper installation may lead to pressure fluctuations, potential leaks and compromised performance.

Electrical connections

⚠ Warning

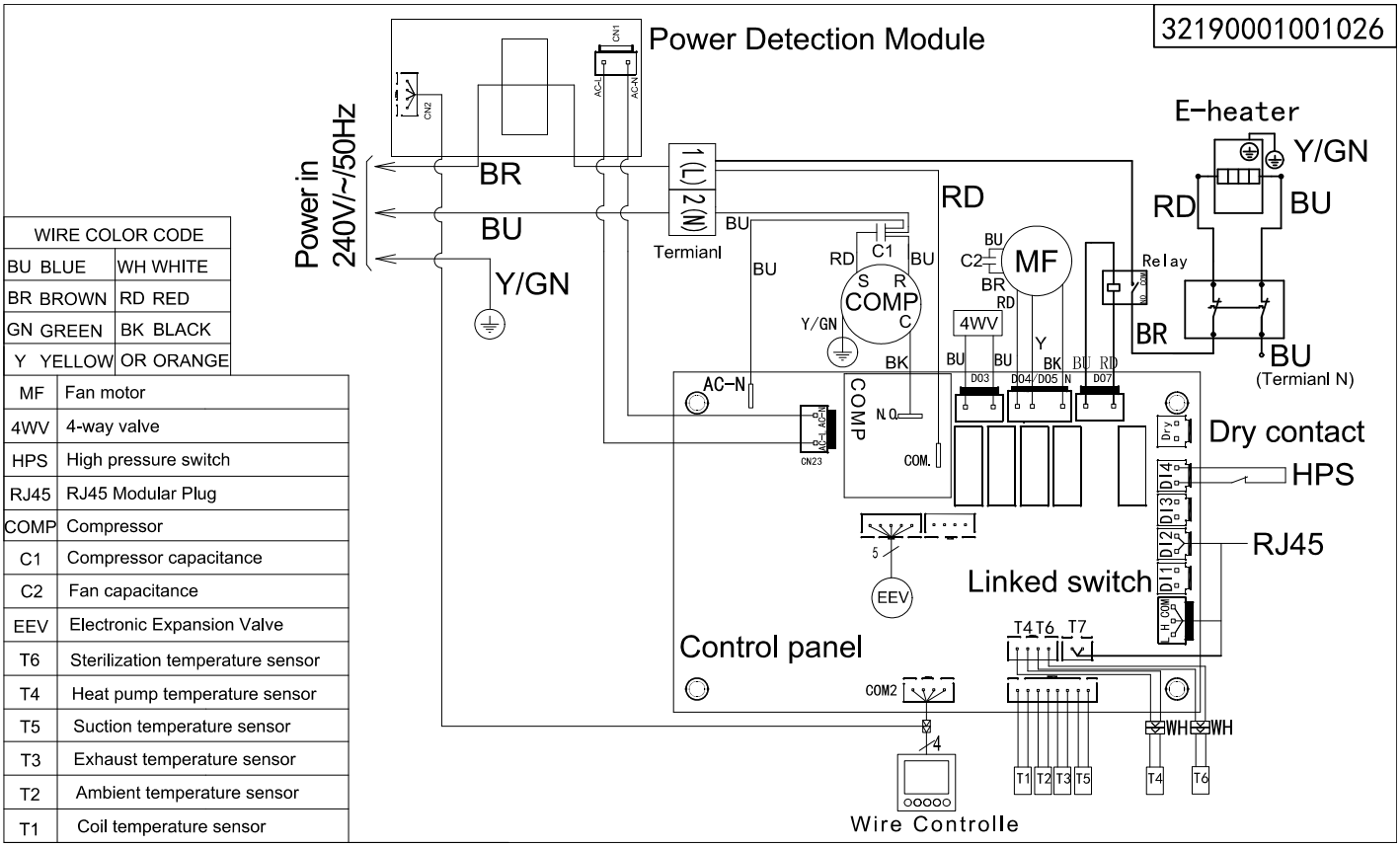
- The electrical connections must be completed by a qualified and trained professional
- The circuit must be connected to a reliable earth electrode connected to the consumer unit.
- The testing of the circuit and final connections are the responsibility of the trained installer.

Pre-connection and regulations

- When installing the heat pump, electrical work must adhere to local supply authority regulations and AS3000 standards.
- The power rating of the unit is set at 10 amps as such the mains power supplying the unit must have a 10 amp minimum circuit breaker fitted.
- Please note that this heat pump includes an over-temperature control cut-out. It is absolutely essential that the water heater is never operated without this safety device connected to the circuit. Any resetting or replacement of this device should only be undertaken by a qualified electrical contractor.
- According to AS/NZS 60335-1 Clause 7.12.2, a disconnection feature must be incorporated into the fixed wiring, following the wiring rules.
- Fuse: 260V, 16A.
- Unit power supply circuit must be ground, power supply wire and external grounding reliable connection, and the external grounding is effective.
- Wiring must be constructed by the professional installation technicians in accordance with the circuit diagram.
- Power line and signal line layout should be neat, reasonable, can not interfere with each other, but not with the connecting pipe and the valve body contact.
- The unit is not matching the power line, please supply specifications refer to provisions, does not allow the wires connecting.
- After all wiring construction is completed, please carefully check it before switch on the power supply.
- If the supply cord is damaged, it must be replaced by either the manufacturer, a service agent or similarly qualified person in order to avoid a hazard.

Electrical connections

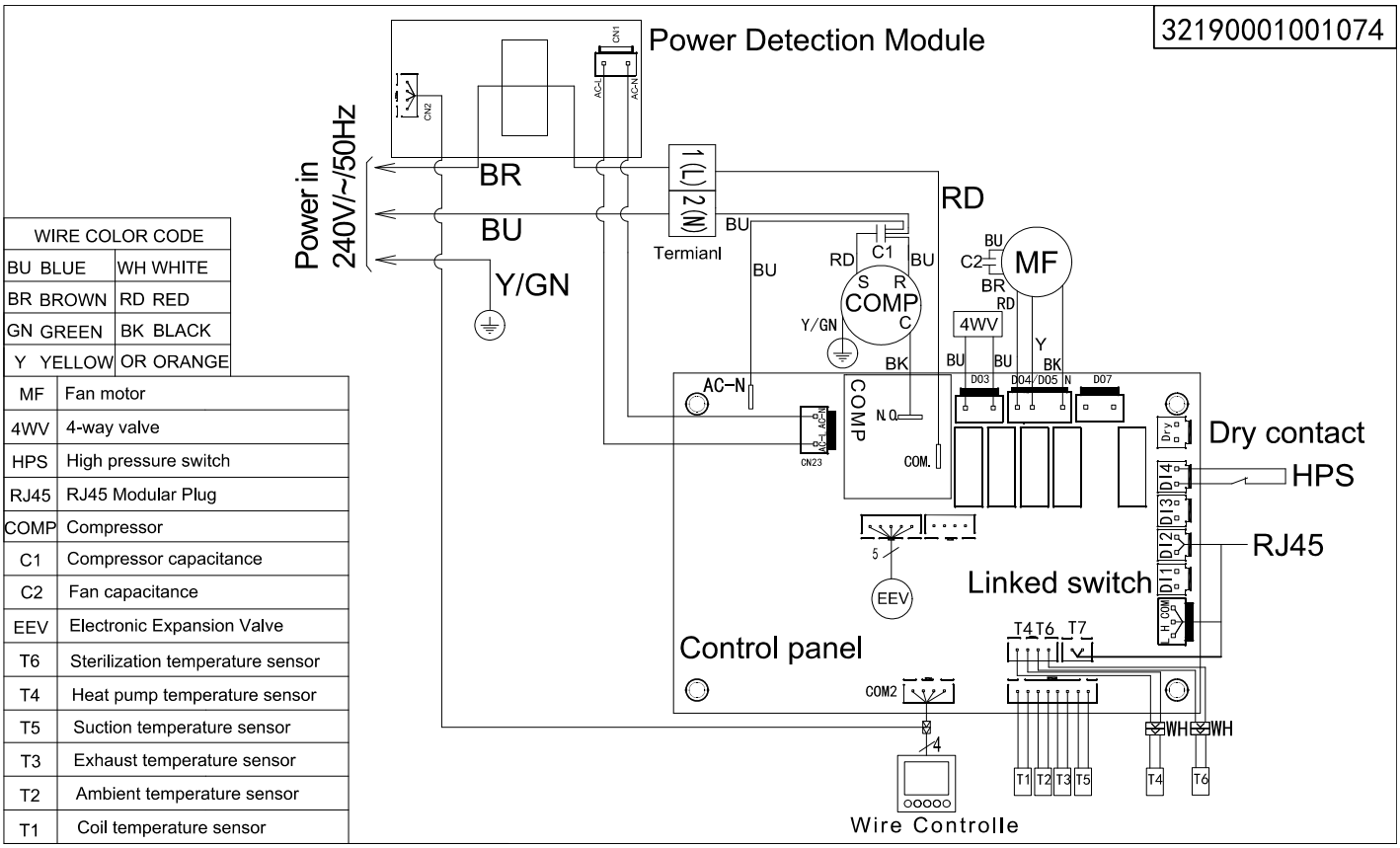
Wiring diagrams



WIRE COLOR CODE	
BU BLUE	WH WHITE
BR BROWN	RD RED
GN GREEN	BK BLACK
Y YELLOW	OR ORANGE

MF	Fan motor
4WV	4-way valve
HPS	High pressure switch
RJ45	RJ45 Modular Plug
COMP	Compressor
C1	Compressor capacitance
C2	Fan capacitance
EEV	Electronic Expansion Valve
T6	Sterilization temperature sensor
T4	Heat pump temperature sensor
T5	Suction temperature sensor
T3	Exhaust temperature sensor
T2	Ambient temperature sensor
T1	Coil temperature sensor

HPA1-S220E & HPA1-S270E



WIRE COLOR CODE	
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MF	Fan motor
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T6	Sterilization temperature sensor
T4	Heat pump temperature sensor
T5	Suction temperature sensor
T3	Exhaust temperature sensor
T2	Ambient temperature sensor
T1	Coil temperature sensor

HPA1-S220 & HPA1-S270

Controller instructions

Check heat pump system running readings

1. In the main interface, press the ⌃ or the ⌄ button for 3 seconds to enter the running status query interface. The controller will show the code number and corresponding running value.
2. Press the ⌃ or the ⌄ button to check different running readings.
3. See below table about running readings.

Code	Description	Description
0	Gas cycling/Water cycling	0=Water cycling 1=Gas cycling (default)
1	High pressure switch	0=Open 1=Close
2	Low pressure switch	Not applicable
3	Water flow switch	Not applicable
4	EEV opening	Detected by sensor
5	Evaporator coil temp.	Detected by sensor
6	Ambient temp.	Detected by sensor
7	Gas suction temp.	Detected by sensor
8	Gas exhaust temp.	Detected by sensor
9	Water temp.	Water temp. detected by sensor in the tank
10	Return water temp.	Not applicable
11	Compressor	0=Off 1=On
12	4 way valve	0=Off 1=On
13	High speed ventilation	0=Off 1=On
14	Low speed ventilation	0=Off 1=On
15	Circulation pump	0=Off 1=On
16	Electric heating element	0=Off 1=On
17	Accumulated compressor running time before defrost	
18	Linked switch	0=Open 1=Close
19	Program version No.	Default No.:0
20	Not assigned	
21	Not assigned	
22	Not assigned	
23	Not assigned	
24	CT clamp	0: Disconnected 1: Connected
25	System input voltage	1V
26	System input current	0.1A
27	System input power	W
28	Electricity consumption	kWh

Error code list

Error Code	Description
E05	High pressure switch failure
E09	Communication failure between controller and main board
E12	Gas exhaust temperature too high
E14	Water tank temperature sensor failure (heat pump)
E16	Evaporator coil temperature sensor failure
E18	Gas exhaust temperature sensor failure
E21	Ambient temperature sensor failure
E27	Water tank temperature sensor failure (element)
E29	Gas suction temperature sensor failure

Fault description	Cause
High pressure protection	1. Refrigerant over filling 2. Blockage or air mixed in the refrigerant 3. Pressure switch failure 4. Fan doesn't work normally
Gas exhaust temp protection	1. Sensor failure or sensor connection wire failure 2. Lack of refrigerant or air mixed in the refrigerant 3. EEV opening abnormal 4. Fan doesn't work normally
Coil temp sensor failure	1. Sensor failure or sensor connection wire failure 2. Main board failure
Ambient temp sensor failure	1. Sensor failure or sensor connection wire failure 2. Main board failure
Return water temp failure	1. Sensor failure or sensor connection wire failure 2. Main board failure
Exhaust temp sensor failure	1. Sensor failure or sensor connection wire failure 2. Main board failure
Outlet water temp sensor failure	1. Sensor failure or sensor connection wire failure 2. Main board failure
Gas return temp sensor failure	1. Sensor failure or sensor connection wire failure 2. Main board failure

Commissioning the system

Attention

- Open the valve of water system, and the valve of assistant tank, inject water inside the system, and exhaust air inside.
- Do adjustment after electrical safety inspection.
- After the power is switched on, start the test running of heat pump, to see if it can function well.
- Forced operation is forbidden, because it is very dangerous to work without protector.

Preparation before adjustment

- The system is installed correctly.
- Tubes and lines are putted in the right place.
- Accessories are installed.
- Ensure the smooth drainage.
- Ensure the perfect insulation.
- Correct connection of ground lead.
- The supply voltage can meet the requirement of rated voltage.
- Air inlet and outlet function can work well.
- Electrical leakage protector can work well.

Adjustment process

- Check if the switch of the line controller can work well.
- Check if the function keys of the line controller can work well.
- Check if the indicator light can work well.
- Check if the drainage system can work well.
- Check if the system can work well after starting up.
- Check if the water outlet temperature is acceptable.
- Check if there is vibration or abnormal sound when the system is functioning.
- Check if the wind, noise and condensate water produced by the system affect the environment around.
- Check if there is refrigerant leakage.
- If any fault occurs, please check the instructions first, to analyze and remove the fault.

Operation and maintenance

Personals shall possess professional knowledge or operate according to professionals from our company. To ensure the well functioning, the system shall be checked and maintained after a period of time. During the maintenance, please pay attention to some points below

- Control and protect the equipment, please do not adjust any settings discretely.
- Pay close attention to whether all the operation parameters is normal during system working.
- Regularly examine the reliability of the electrical components, change all the failed or unreliable components on time.
- There will be calcium oxidized or other mineral substance deposition on the surface of water heat ex-changer copper coil after long period of operation, which will influence the heat exchange performance and lead to high electrical consumption, discharge pressure increasing and air suction pressure drop, unit hot water volume produced is less. We can adopt formic acid, citric acid, acetic acid or other organic acid to clean.
- The dirt retention on the surface of evaporator fin should be blowed by more than 0.6Mpa compressor air, brushed by fine copper wire, or flushed by high pressurized water, usually one time per month; if too much dirt, we can use paintbrush dipping gasoline to clean.
- After long downtime, if we restart the equipment, we should make following preparations: examine and clean the equipment carefully, clean the water pipeline system, examine the water pump, and fasten all the wire connections.
- Replacement parts must use our company original accessories, can not be replaced by other similar accessories.

Refrigerant filling

Examine the refrigerant filling condition through reading the data of liquid level from display screen, also the air suction and exhaust pressure. If there is leakage or changing components of the refrigeration circulation system, we have to make air tightness examination first.

Leak detection and air tightness experiment

During leak detection and air tightness experiment, never let the refrigeration system filling oxygen, ethane or other flammable harmful gas, we can only adopt compressed air, fluoride or refrigerant for such experiment.

To remove the compressor, please follow the following steps

- Turn off the power supply
- Exhaust the refrigerant from the low pressure end, attention to reduce the exhaust speed, and avoid frozen oil leakage.
- Remove the compressor air suction and exhausting pipe.
- Remove the compressor power cables.
- Remove the compressor fixing screws.
- Remove the compressor.

Conduct regular maintenance according to the user manual instruction, to make sure the unit running in good condition.

- Fire prevention: if there is a fire, please turn off the power switch immediately, put out the fire using fire extinguisher.
- To prevent flammable gas: the unit working environment should stay away from gasoline, ethyl alcohol and other flammable materials, to avoid explosion accident.
- Malfunction: if malfunction occurs, should find out the reason, eliminate it and then reboot the unit. Never boot the unit forcibly if the malfunction has not been eliminated. If refrigerant leakage or frozen liquid leakage, please turn off all the power switch, if the unit can not stop buy controlling switch, please turn off the general power switch.
- Never short connect the wire for protection required device, or else, in case unit malfunction, it can not be protected normally and will damage the unit.

FAQs

What is the lifespan of an Emerald Heat Pump?

The life expectancy of an Emerald Heat Pump is 10-20 years.

Emerald systems are built to last.

To ensure this heat pump hot water system operates optimally and lasts longer, regularly clean the heat pump to prevent the accumulation of dirt and leaves that could impact its operation.

How can an Emerald Heat Pump save money?

Heat Pumps have an energy saving of up to 80% compared to electric and gas systems.

Heat pump hot water systems are more energy-efficient than traditional hot water systems. This is because they only uses electricity to operate the compressor and fan, rather than using electricity to directly heat the water using an electric element.

What is Legionella control?

To prevent Legionella bacteria growth heat pumps runs a weekly cleaning. This cycle heats the system to 60°C regardless of the system's current state or user preferences. It's a proactive measure to ensure thorough cleaning.

What is the kWh usage of an emerald heat pump?

The average kWh usage of an Emerald Heat Pump is 3-4 kWh per day (0.85 kW) compared to the kWh usage of a standard electric standard hot water system, which is 14-18 kWh per day (3.6 kW).

These figures are based on average usage and will vary depending on how often the system needs to heat large amounts of water in the tank.

Specifications

Emerald model (residential)		HPA1-S220E	HPA1-S220	HPA1-S270E	HPA1-S270
Power supply		220V~240V/50HZ/1Phase			
Water tank volume		220L	220L	270L	270L
Optional running modes		Standard / Boost / E-Heater	Standard / Boost	Standard / Boost / E-Heater	Standard / Boost
Electric heating element		1kW	N/A	1kW	N/A
Heating capacity	Standard mode (Heat pump only)	2.8kW	2.8kW	2.8kW	2.8kW
Rated input power		0.68kW	0.68kW	0.63kW	0.63kW
COP for heat pump		4.19	4.19	4.41	4.41
Recharge rate		58L/h	58L/h	58L/h	58L/h
Sound level at 1m		50dB(A)	50dB(A)	50dB(A)	50dB(A)
Heating capacity	Boost mode (Heat pump + Electric heater)	3.8kW	2.8kW	3.8kW	2.8kW
Rated input power		1.68kW	0.68kW	1.63kW	0.63kW
COP for heat pump		4.19	4.19	4.41	4.41
Recharge rate		79L/h	58L/h	79L/h	58L/h
Heating capacity	E-Heater mode (Electric heater only)	1.0kW	N/A	1.0kW	N/A
Rated input power		1.0kW	N/A	1.0kW	N/A
COP for heat pump		N/A	N/A	N/A	N/A
Recharge rate		21L/h	N/A	21L/h	N/A
Max current (under boost mode)		8.8A	4.7A	8.7A	4.5A
Refrigerant		R290 (350g)		R290 (450g)	
Compressor		GMCC (Toshiba JV) / Non-Inverter/ Rotary			
Fan motor		Non-DC Inverter			
Inner tank		Enamel / 2.5mm tank wall / 3.0mm dome			
Inner tank diameter		φ540mm			
Tank insulation		Polyurethane / 35mm-157mm			
Inner tank design		Concave			
Fan type		Axial			
Expansion valve		EEV			
Defrost		4-way valve			
Emerald APP		Available			
TPR valve		850kPa			
Rated outlet water temperature		60°C			
Max outlet water temperature (heat pump)		70°C			
Working range with element		-15°C-43°C			
Working range without element		-7°C-43°C			
IP class		IPX4			
Electric shock proof class		I			
Unpacked dimension		600mm*600mm*1750mm	600mm*600mm*1750mm	600mm*600mm*1970mm	600mm*600mm*1970mm
Packed dimension (outdoor unit)		650mm*680mm*1870mm	650mm*680mm*1870mm	650mm*680mm*2090mm	650mm*680mm*2090mm
Unpacked weight		118kg	118kg	132kg	132kg
Gross weight (outdoor unit)		126kg	126kg	141kg	141kg

*As per the AS/NZS 4234 modelling Standards the modes (Booster, E-Heater) are one-shot functions that will reset to Standard mode.
*Above test results are given based on the test condition ambient 20°C/15°C, Water from 15°C~55°C.
*Sound levels tested at 1 metre in a hemi-anechoic chamber.

Notes

Notes

After sales service

If your hot water heater can not operate normally, turn off the unit and cut off the power supply at immediately.

Contact your service center or technical department.

emerald.com.au/contact

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