

REFRIGERANT CYCLING HEAT PUMP WATER HEATER USER MANUAL

MODEL NUMBERS:

Residential:

EE-HWS-RCHPOU/EE-HWS-RCHP-200
EE-HWS-RCHPOU/EE-HWS-RCHP-200E
EE-HWS-RCHPOU/EE-HWS-RCHP-300
EE-HWS-RCHPOU/EE-HWS-RCHP-300E

Commercial:

EE-HWS-RCHPOU/EE-HWS-RCHP-200-1
EE-HWS-RCHPOU/EE-HWS-RCHP-200E-1
EE-HWS-RCHPOU/EE-HWS-RCHP-300-1
EE-HWS-RCHPOU/EE-HWS-RCHP-300E-1

CONTENTS

SAFETY PRECAUTIONS	2-4
GENERAL INTRODUCTION	5-6
- Outdoor unit	5
- Water tank	5
- Specifications	6
BEFORE INSTALLATION	7-8
- Accessories	7
- Space for maintenance	8
INSTALLATION PROCEDURE	9-14
- Dimension sketch	9
- Drain hole position	10
- Pipe connection	11
- Vacuum drying	13
- Refrigerant charge	14
ELECTRICAL CONNECTION	15-17
- Power supply cords	15
- Water tank temperature sensor installation	16
- ODX & AUX power connection	16
- Dial code definitions	17
CHECK	18
OPERATION AND PERFORMANCES	19
MAINTENANCE	20-21
- Confirmation before running	20
- Troubleshooting	20
- After sales service	20
- Important refrigerant information	20
- Water quality limitation	21
ERROR CODE TABLE	22



Thank you for choosing Emerald Energy.

This leaflet contains important information on the correct installation and operation of your heat pump water heater.

POWER SUPPLY: 220V-240V/1N-50Hz

ENVIRONMENT TEMPERATURE: -15°C – 46°C

Working water temperature: Min inlet water temperature 5°C,
Max outlet Water Temperature 60°C.

1. SAFETY PRECAUTIONS

The precautions listed here are divided into the following types.

Meanings of DANGER, WARNING, CAUTION and NOTE symbols.

INFORMATION

- Read these instructions carefully before installation. Keep this manual for future reference.
- Improper installation of equipment or accessories may result in electric shock, short-circuit, leakage, fire or other damage to the equipment. Only use accessories made by the supplier, which are specifically designed for the equipment.
- All the activities described in this manual must be carried out by a licensed technician. Wear adequate personal protection equipment while installing the unit or carrying out maintenance activities.
- Contact Emerald for any further assistance.

DANGER

Indicates an imminently hazardous situation which if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

NOTE

Indicates situations that could only result in accidental equipment or property damage.

WARNING

For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.

WARNING

This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

DANGER

The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by a qualified person.

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.

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.

Before touching electric terminal parts, turn off power switch.

Do not touch the inner parts of the controller. Do not remove the front panel. Some parts inside are dangerous to touch, otherwise a machine malfunction may be caused.

When front panels are removed, live parts can be easily touched by accident.

Never leave the unit unattended during installation or servicing when the front panel is removed.

Do not touch water pipes during and immediately after operation as the pipes may be hot and could burn your hands. To avoid injury, give the piping time to return to normal temperature or be sure to wear protective gloves.

Do not touch any switch with wet fingers. Touching a switch with wet fingers can cause electrical shock.

Before touching electrical parts, turn off all applicable power to the unit.

WARNING

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

The discharge pipe of the pressure-relief device may produce water droplets and must remain open to the atmosphere.

The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.




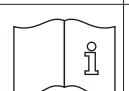
A discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in a frost-free environment.

For appliances equipped with additional heaters, there must be a minimum clearance of 3 meters from the appliance to any combustible surfaces.

The installation of the appliance shall conform to the Plumbing Code of Australia (PCA).

A creepage breaker must be installed adjacent to the power supply.

Explanation of symbols displayed on the unit

	WARNING	Indicates this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	Indicates the operation manual should be read carefully.
	CAUTION	Indicates a service personnel should be handling this equipment with reference to the installation manual
	CAUTION	Indicates information is available such as the operating manual or installation manual.

1. SAFETY PRECAUTIONS

Do not remove, cover, or obscure any permanent instructions, labels, or data labels located on the exterior or interior of the unit.

Only a qualified person should perform relocation, repair, and maintenance tasks on the unit and not attempt to do so yourself.

Electric connection work must comply with the instructions of the local power company and electric utility, as well as the manual.

Never use wiring and fuses with incorrect rated current as it can result in equipment failure and pose a fire hazard.

Do not insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.

Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.

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 that they do not play with the appliance.

Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face danger of death by suffocation.

Safely dispose of packing materials such as nails and other metal or wood parts that could cause injuries.

Ask your dealer or qualified personnel to perform installation work in accordance with this manual. Do not install the unit yourself. Improper installation could result in water leakage, electric shocks or fire.

Be sure to use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling from its mount.

Install the unit on a foundation that can withstand its weight. Insufficient physical strength may cause the equipment to fall and possible injury.

Perform specified installation work with full consideration of strong wind, hurricanes, or earthquakes. Improper installation work may result in accidents due to equipment falling.

Ensure that all electrical work is performed by qualified personnel in accordance with local laws and regulations and this manual, using a dedicated circuit. An inadequate capacity of the power supply circuit or improper electrical work could result in electrical shock or fire.

Be sure to install a ground fault circuit interrupter according to local laws and regulations. Failure to install a ground fault circuit interrupter may cause electric shocks and fire.

Make sure all wiring is secure. Use the specified wires and ensure that terminal connections or wires are protected from water and other adverse external forces. Incomplete connection or affixing may cause a fire.

When making the power supply connections, arrange the wires in such a way that the front panel can be securely fastened. If the front panel is not securely in place, the terminals may overheat, causing electrical shocks or fire.

After completing the installation work, check to make sure that there is no refrigerant leakage.

Avoid direct contact with any leaked refrigerant as it may cause severe frostbite. Do not handle the refrigerant pipes during or immediately after operation as they can be hot or cold, depending on the refrigerant flowing through them, the compressor, and other refrigerant cycle components. Touching the refrigerant pipes can cause burns or frostbite, so be sure to wait until they return to normal temperature or wear protective gloves if necessary.

Do not touch the internal parts (pump, backup heater, etc.) during and immediately after operation. Touching the internal parts can cause burns. To avoid injury, give the internal parts time to return to normal temperature or, if you must touch them, be sure to wear protective gloves.

Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

CAUTION

Make sure the earthing pole of the socket is well grounded and the power supply socket and plug are dry and connected securely.

Before cleaning, turn off the breaker or unplug the unit.

After prolonged use, inspect the unit's base and fittings for damage, as it may sink and cause injury if damaged.

Ensure the drain pipe is properly arranged for smooth draining, as improper drainage may result in building, furniture, and other items getting wet.

The unit must be grounded with a resistance that complies with local laws and regulations.

Do not connect the ground wire to gas or water pipes, lightning conductors or telephone ground wires.

Incomplete grounding may cause electric shocks.

- Gas pipes: Fire or an explosion might occur if the gas leaks.
- Water pipes: Hard vinyl tubes are not effective grounds.
- Lightning conductors or telephone ground wires: Electrical threshold may rise abnormally if struck by a lightning bolt.

The installation height of power supply should be over 1.8m, if there is any water spattered, separate the power supply from water.

Do not wash the unit. This may cause electric shocks or fire. The appliance must be installed in accordance with national wiring regulations. If the supply cord is damaged, it must be replaced by a qualified electrician.

Do not install the unit in the following places:

- Where there is mineral oil, oil spray (eg: kitchen) or vapors. Plastic parts may deteriorate, and cause them to come loose or water to leak.
- Where corrosive gases (such as sulfurous acid gas) are produced. Where corrosion of copper pipes or soldered parts may cause refrigerant to leak.
- Where there is machinery which emits electromagnetic waves. Electromagnetic waves can disturb the control system and cause equipment malfunction.
- Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the air or where volatile flammables such as paint thinner or gasoline are handled. These types of gases might cause a fire.
- Where the air contains high levels of salt such as near the ocean.
- Where voltage fluctuates a lot, such as in factories.
- In vehicles or vessels.
- Where acidic or alkaline vapors are present.
- Other special environments.

1. SAFETY PRECAUTIONS

This appliance can be used by children 8 years old and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they are supervised or given instruction on using the unit in a safe manner and understand the hazards involved. Children should not play with the unit. Cleaning and user maintenance should not be done by children without supervision.

Children should be supervised to ensure that they do not play with the appliance.

If the supply cord is damaged, it must be replaced by a qualified electrician.

Concerning disconnection incorporated in the fixed wiring should be in accordance with AS/NZS 3000.

DISPOSAL: 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 municipal waste, 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 substance can leak into the groundwater and get into the food chain, damaging your health and well-being.

The wiring must be performed by professional technicians in accordance with national wiring regulation and the circuit diagram in the electrical connection section of this manual. An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device (RCD) with the rating not exceeding 30mA shall be incorporated in the fixed wiring according to the national rule.

Confirm the safety of the installation area (walls, floors, etc.) without hidden dangers such as water, electricity, and gas.

Before installation, check whether the user's power supply meets the electrical installation requirements of unit (including reliable grounding, leakage, and wire diameter electrical load, etc.). If the electrical installation requirements of the product are not met, the installation of the product is prohibited until the product is rectified.

When installing multiple air conditioners in a centralized manner, please confirm the load balance of the three-phase power supply, and multiple units are prevented from being assembled into the same phase of the three-phase power supply.

Product installation should be fixed firmly. Take reinforcement measures, when necessary.

NOTE

The appliance is intended to be permanently connected to the water mains and not connected by a hose-set.

About Fluorinated Gasses

This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself. Compliance with national gas regulations shall be observed.

- Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- Product uninstallation and recycling must be performed by a certified technician.
- If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

CAUTION

Generally, the ambient air temperature of the unit must be above -15°C and below 43°C.

Install safety valve to water inlet, the largest torque of safety valve shouldn't be more than 80N.m.

Please make sure water tank is upright. Install in a location that can prevent unit toppling and falling (e.g. balcony or corner). Install the unit in an open space, to avoid being blown down by strong wind (especially in the are with strong wind), please fix water tank according to operation manual.

2. GENERAL INTRODUCTION

2.1 OUTDOOR UNIT

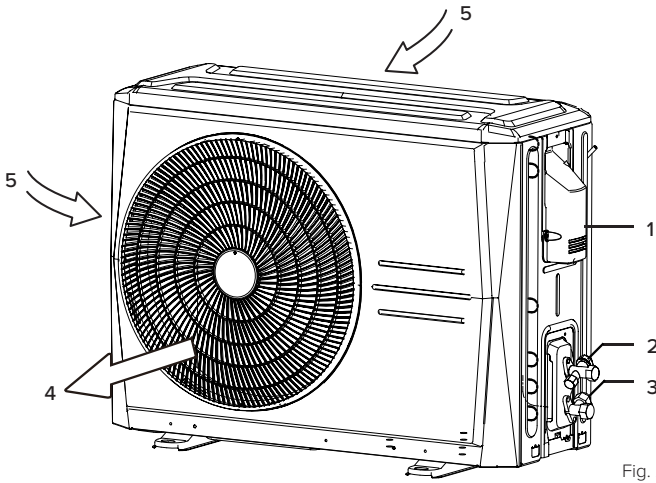


Fig. 2-1

No.	NAME
1	Power cord enclosure
2	High pressure valve
3	Low pressure valve
4	Air outlet
5	Air inlet

2.2 WATER TANK

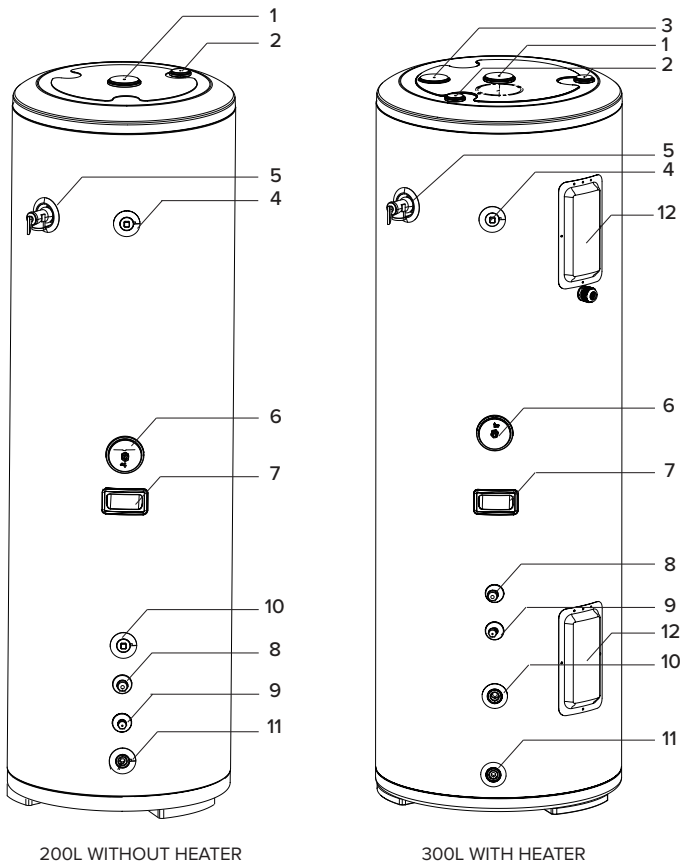


Fig. 2-2

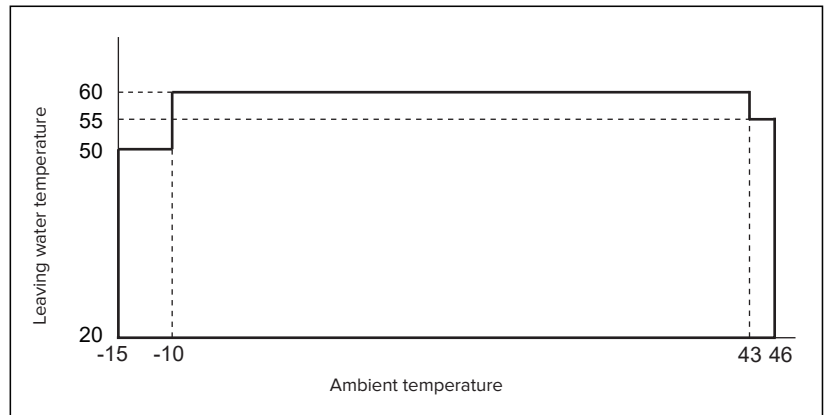
No.	NAME
1	Magnesium rod insertion port
2	Foam filling port
3	Reserved port
4	Water outlet
5	Temperature pressure safety valve
6	Water tank temperature sensor
7	Handle
8	Refrigerant gas pipe
9	Refrigerant liquid pipe
10	Water inlet
11	Drain outlet
12	Electric auxiliary heat

2. GENERAL INTRODUCTION

2.3 SPECIFICATIONS

	MODEL NUMBER		EE-HWS-RCHP-200	EE-HWS-RCHP-200E	EE-HWS-RCHP-300	EE-HWS-RCHP-300E	
			EE-HWS-RCHP-200-1	EE-HWS-RCHP-200E-1	EE-HWS-RCHP-300-1	EE-HWS-RCHP-300E-1	
GENERAL	Ambient temperature	°C	-15~46				
	Leaving water temperature	°C	20~63				
	Heating	Capacity	W	2600			
		Input	W	1000			
		STC values		33(Zone3) / 36(Zone4)	33(Zone3) / 36(Zone4)	32(Zone3) / 35(Zone4)	32(Zone3) / 35(Zone4)
	Hot water yield	m³/h	0.044' / 0.056²				
	Refrigerant piping	Refrigerant piping	mm(inch)	Ø6.35 / Ø1/4'			
		Gas side	mm(inch)	Ø9.52 / Ø3/8'			
		Max. height difference	m	10			
		Max. refrigerant pipe length	m	20			
Design pressure	MPa	3					
OUTDOOR UNIT	Outdoor unit power supply	V/N/Hz	220-240/1/50				
	Max. current	A	4.4	13.5	4.4	13.5	
	Compressor	Type	Rotary				
	Fan	Type	AC				
		Air flow (H/L)	m³/h	1250/769			
	Air side heat exchanger	Type	Hydraulic aluminum fin + Inner grooved copper tube				
	Throttle	Type	Electric expansion valve				
	Outdoor sound pressure level	dB(A)	54				
	Dimension	Unit dimension (L*W*H)	mm	804*327*555			
		Packing dimension (L*W*H)	mm	845*390*610			
		Net weight	kg	29			
		Gross weight	kg	32			
	Refrigerant	Type		R134a			
Charged volume		g	900				
INDOOR UNIT	Tank volume	L	200	200	300	300	
	Electric heater	Capacity	kW	/	2	/	2
		Power supply	V/N/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
	Dimension	Unit dimension(W*D*H)	mm	505*505*1665	505*505*1665	580*580*1735	580*580*1735
		Packing dimension(W*D*H)	mm	1775*635*590	1775*635*590	1835*690*670	1835*690*670
		Net weight	kg	73	73	96	96
		Gross weight	kg	83	83	108	108

Ambient temperature	Leaving water temperature
-15~-10	50
-10~43	60
43~46	55



3. BEFORE INSTALLATION

3.1 ACCESSORIES

	<p>Flexible hose (pair) 2 x 2.5m refrigerant piping (6.35mm & 9.52mm)</p>	<p>Single bend copper tails and lagging c/w 15mm connections</p>
<p>Tempering valve c/w cover</p>	<p>2 x Connector (15 male*15 screw)</p>	
<p>TPR valve fitting 15mm</p>	<p>1 x 15mm copper straights</p>	
<p>ELECTRICAL</p>	<p>3 x 15mm copper bends</p>	<p>Electrical circuit breaker, 20A</p>
	<p>Electrical - RCBO enclosure</p>	<p>Electrical - single phase isolator 20A</p>

Table 3-1

3. BEFORE INSTALLATION

3.2 SPACE FOR MAINTENANCE

NOTE

It is necessary to reserve enough installation and maintenance space during installation according to the following figures.

3.2.1 OUTDOOR UNIT INSTALLATION AND MAINTENANCE SPACE.

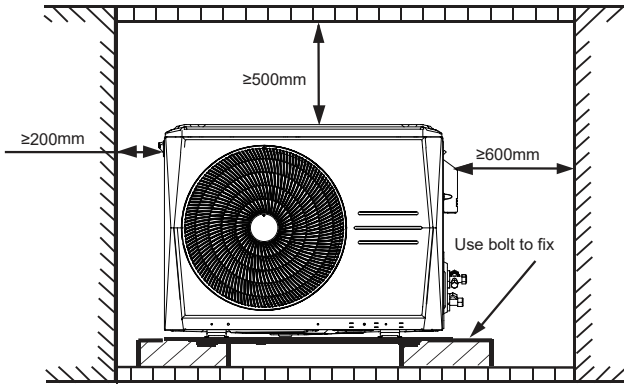


Fig. 3-1

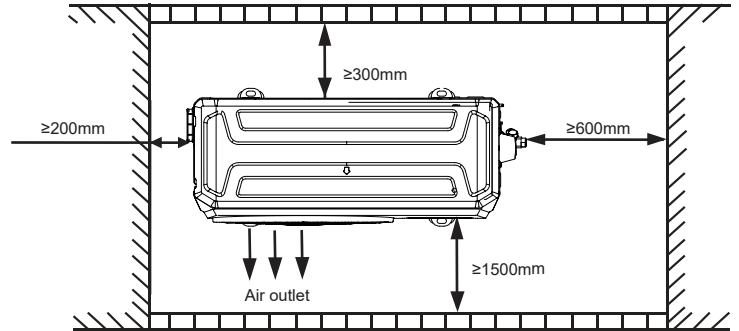


Fig. 3-2

3.2.2 WATER TANK INSTALLATION AND MAINTENANCE SPACE.

NOTE

If the water tank is completely installed outdoors, a rain shelter can be installed.

When the water tank is installed outdoors, the distance between the water tank and the fence should not be less than 200mm.

When the water tank is installed indoors, the distance between the water tank and the wall should not be less than 600mm.

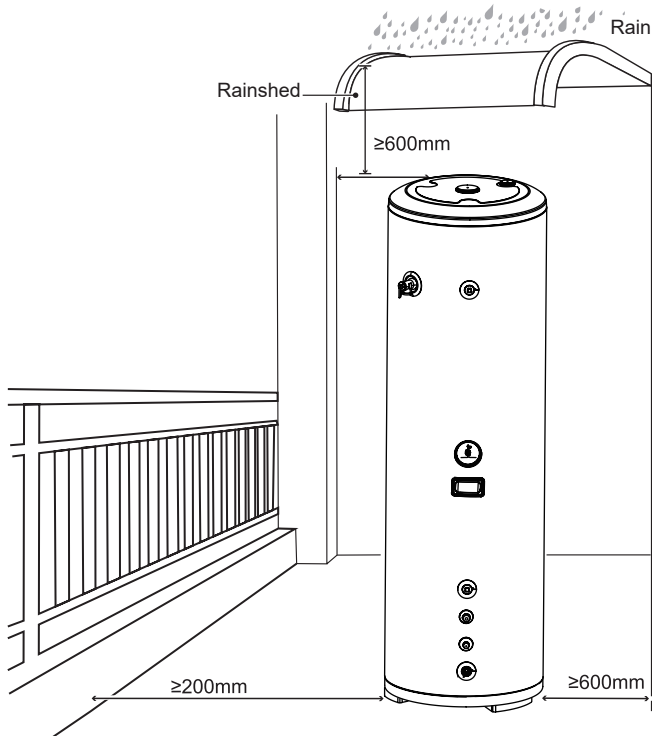


Fig. 3-3

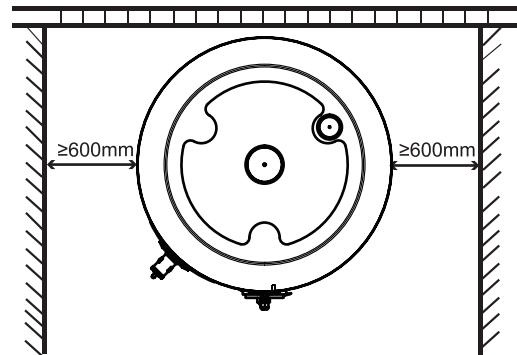


Fig. 3-4

4. INSTALLATION PROCEDURE

NOTE

This heat pump unit must be installed, repaired or moved only by an authorised installer or technician.

When installing the heat pump, it is important to locate it in an area that is not exposed to direct sunlight or other sources of heat. If this is not possible, a cover should be added to protect the unit from direct sunlight.

When installing on a roof, make sure it is a flat surface that can handle the weight of the unit.

Make sure to securely install the unit to avoid any abnormal noise or vibration.

Remove obstacles nearby. A narrow circulation space may influence the performance of the unit.

Place the unit as close to the water tank as possible, as long as the installation requirements are met.

When installing in a location near the sea or with strong winds, it is important to secure the unit against a wall, as shown in Figure 4-1, or to provide protection from the elements, to ensure its correct operation.

When installing the unit in a basement, interior room, or other confined space, be mindful of air discharge and circulation both inside and outside the unit. Ensure that the air flow is at least 1250m³/h.

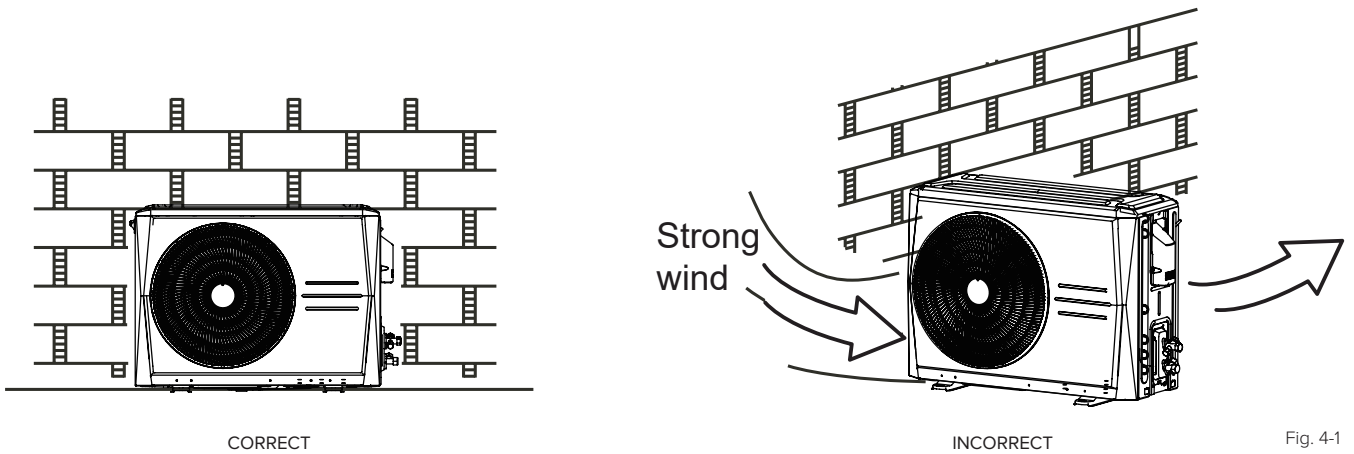


Fig. 4-1

4.1 DIMENSION SKETCH

4.1.1 OUTDOOR UNIT.

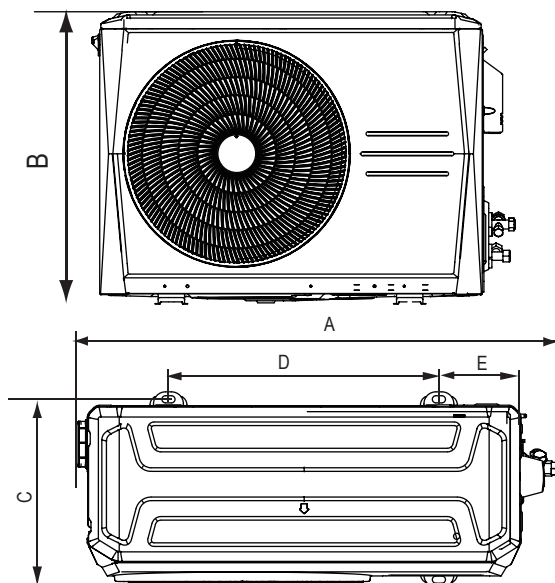


Fig. 4-2

DIMENSION AND MOUNTING DIMENSION				
A	B	C	D	E
803.6	554.9	311.6	452.4	137.5

Table 4-1

Please fix the four bases of the outdoor unit on the flat ground with bolts.

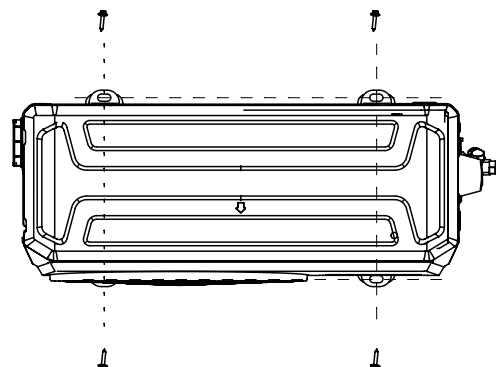


Fig. 4-3

4. INSTALLATION PROCEDURE

4.1.2 WATER TANK.

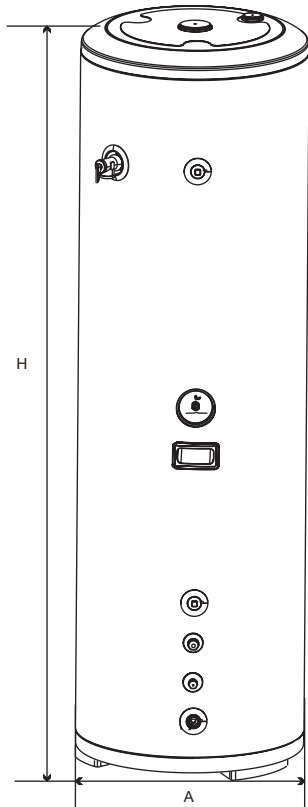


Fig. 4-4

DIMENSION	A	H
MODEL		
200L	505	1665
300L	580	1735

Table 4-2

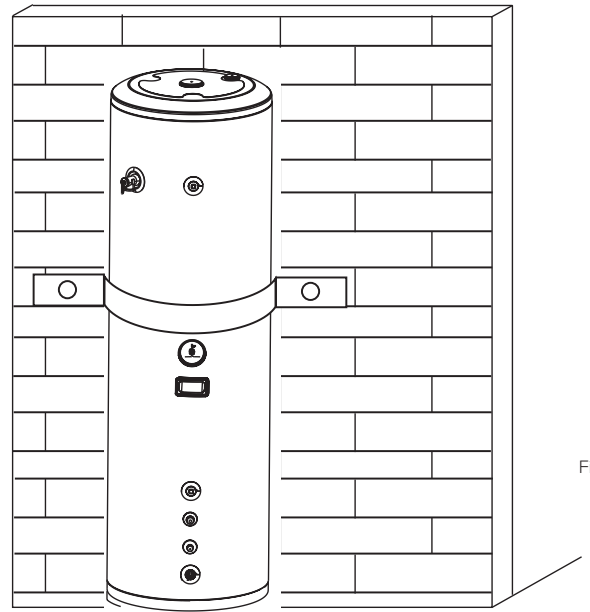


Fig. 4-5

Please install the water tank fixing strip as shown in the figure to ensure that the water tank is stably fixed.

4.2 DRAIN HOLE POSITION

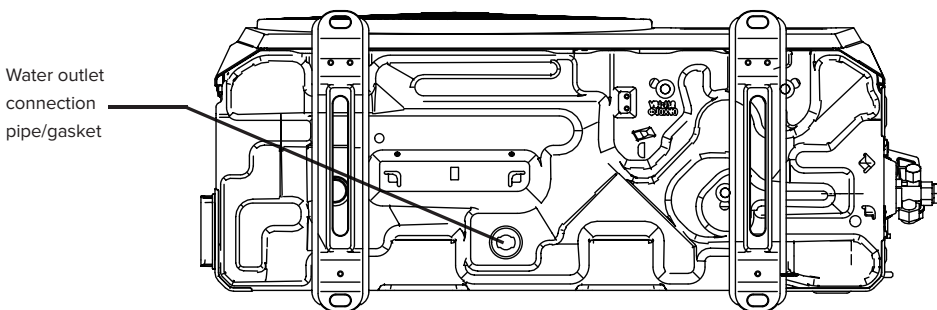


Fig. 4-6

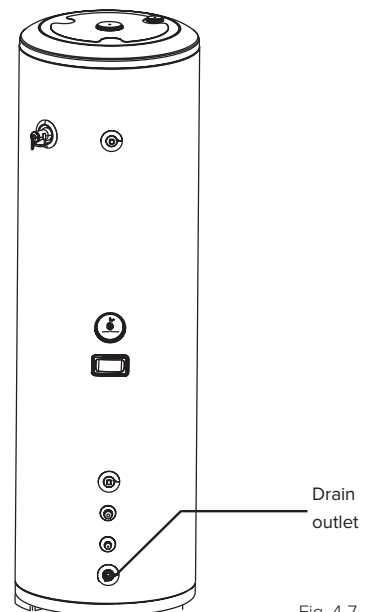


Fig. 4-7

4. INSTALLATION PROCEDURE

4.3 PIPE CONNECTION

4.3.1 UNIT CONNECTION SKETCH

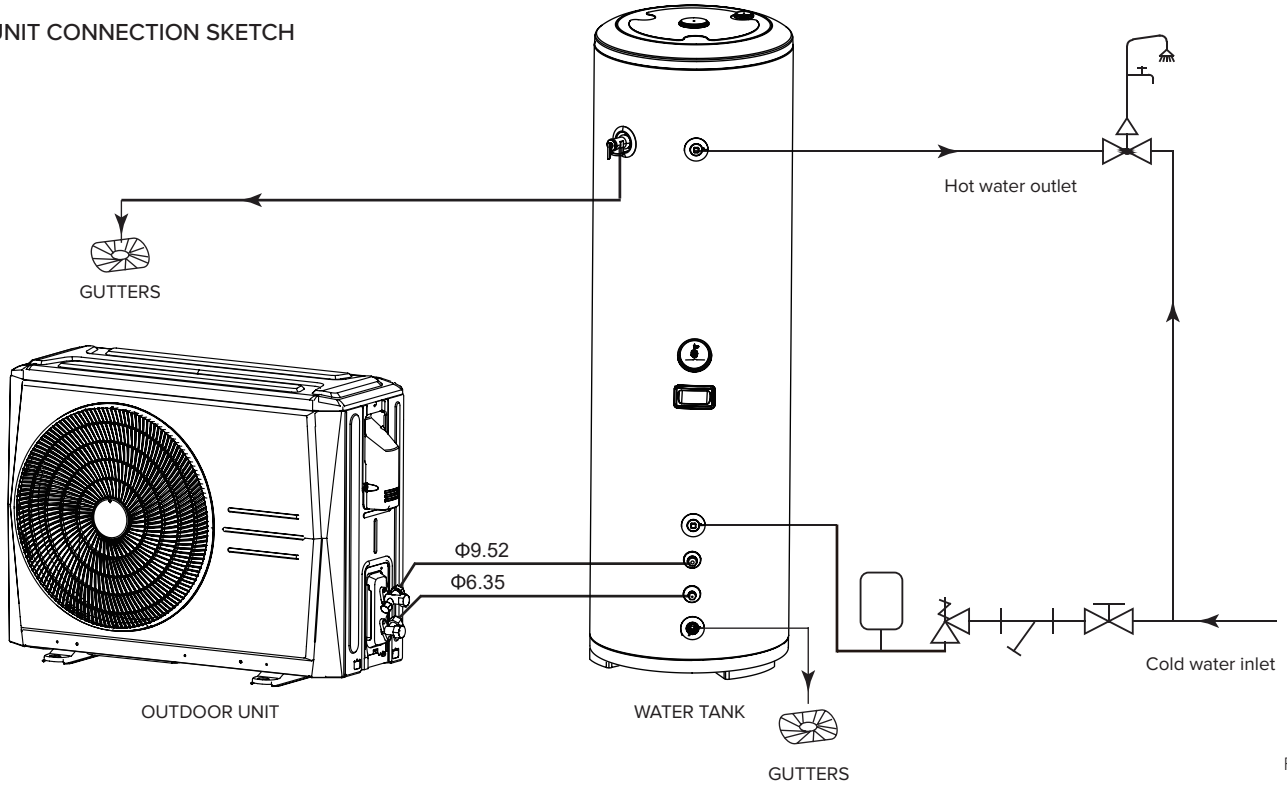


Fig. 4-8



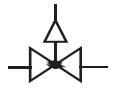


NAME	Water end user	Stop valve	Water mixing valve
ICON			
NAME	Safety valve (if required)	Gutter	
ICON			

Table 4-2

NOTE

The water tank temperature can be set from 20°C to 60°C.

The minimum water inlet pressure is not less than 150Pa, and the maximum is not more than 650Pa.

If the inlet water pressure is less than 150Pa, a pump should be installed at the water inlet.

To guarantee the safety usage of tank, a reducing valve should be installed in the water inlet pipe, if the water pressure exceeds 650Pa.

It is strongly recommended to use thread seal tape for sealing when connecting water pipes and valves.

4. INSTALLATION PROCEDURE

4.3 PIPE CONNECTION (CONTINUED)

4.3.2 PTR VALVE

The valve body unloading pressure is 850kPa, unloading temperature is 99°C, and the valve body opening energy value is 46kW, for more details refer to certificate No:WMK26608.

PTR valve is tightened with a 68N.m torque wrench. Apply sealant to the first 3 turns of screw thread before installation; After installation, the outlet of the drain pipe shall be installed face down, and the thread turns that are not screwed into the PTR valve shall be less than 3 turns.

Before filling the water tank, the PTR valve must be installed properly.

The PTR valve should be checked every 6 months to make sure that there is no restriction of the valve. Please beware of hot water from the valve. The drainage pipe should be well insulated in order to prevent water inside pipe from freezing in cold weather.

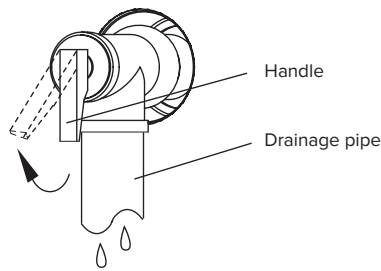


Fig. 4-9

4.3.3 STOP VALVE INSTRUCTION

In general, the shape of stop valve and names of each part are shown in Fig.4-10.

Effect of stop valve:

- Stop the system when the unit is working.
- When water tank connects with the outdoor unit, vacuum and add refrigerant through it.
- Stop the system and then recycle refrigerant to outdoor unit when maintaining.

Open and close the stop valve:

- Open: dismantle the bonnet by wrench and insert an *Allen key to spool, open the stop block anticlockwise and then tighten the bonnet.
- Close: use a wrench to dismantle the bonnet and insert an Allen key to spool, close the stop block clockwise and then tighten the bonnet.

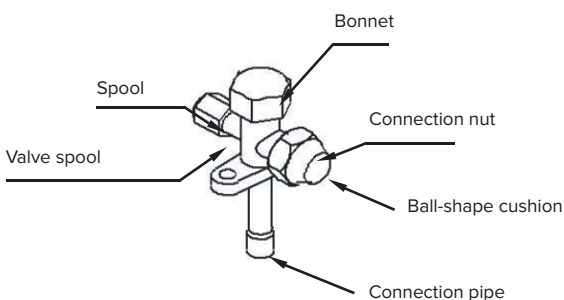


Fig. 4-10

⚠ CAUTION

Before water heater runs, please make sure every stop valve has been opened.

4.3.3 CONNECTION LENGTH OF OUTDOOR UNIT AND WATER TANK PIPE AND HEIGHT DIFFERENCE REQUIREMENTS:

MAX. LENGTH (m)	MAX. HEIGHT DIFFERENCE (m)	STANDARD LENGTH (m)	STANDARD HEIGHT DIFFERENCE (m)
20	10	2.5	0

Table 4-4

💡 NOTE

Do not let air, dust, or other impurities fall into the pipe system during installation.

The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.

Keep the connecting pipe dry, and do not let moisture in during installation.

When connecting copper pipe, please wrap it with thermal insulation material.

4. INSTALLATION PROCEDURE

4.4 VACUUM DRYING

4.4.1 PURPOSE

Vacuum drying should be performed in order to remove moisture and non-condensable gases from the system. Removing moisture prevents ice formation and oxidization of copper piping or other internal components. The presence of ice particles in the system would cause abnormal operation, whilst particles of oxidized copper can cause compressor damage. The presence of non-condensable gases in the system would lead to pressure fluctuations and poor heat exchange performance.

4.4.2 PROCEDURE

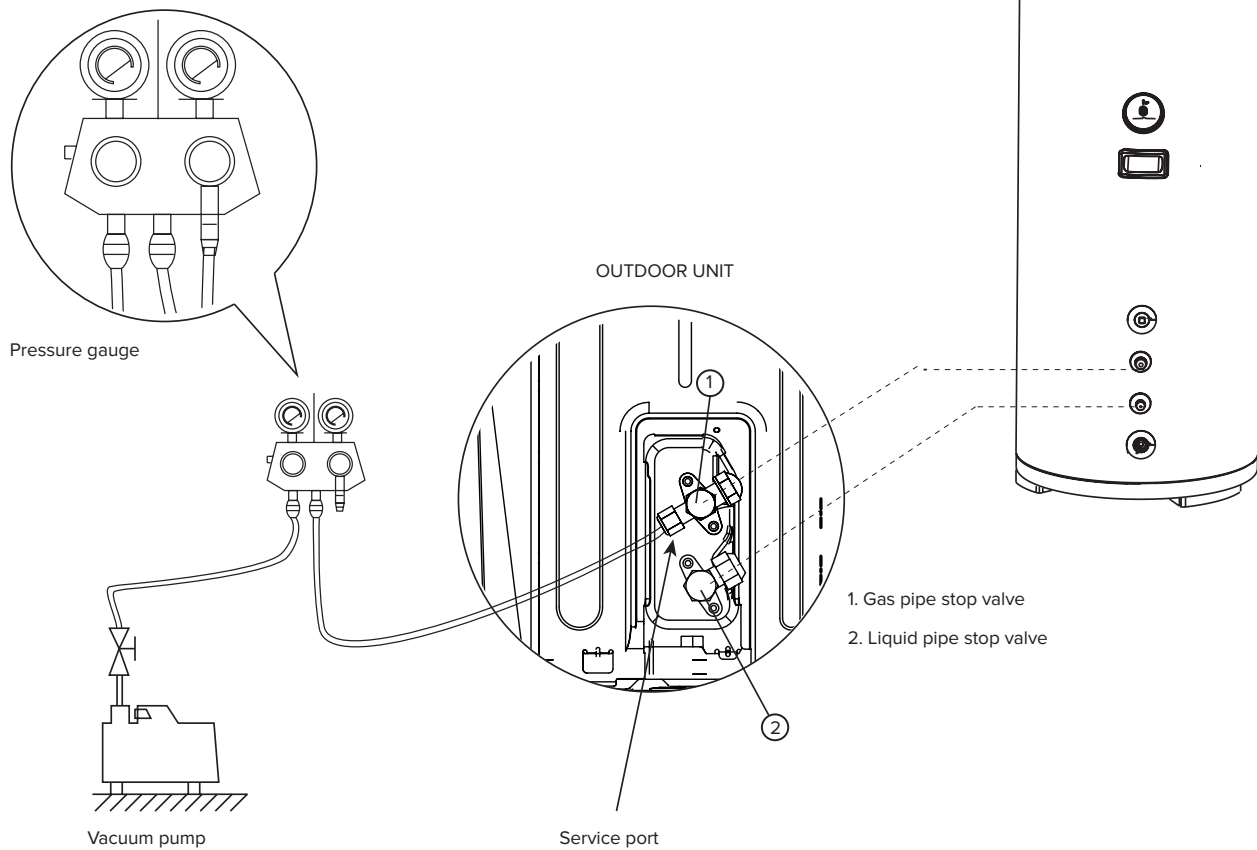


Fig. 4-11

4. INSTALLATION PROCEDURE

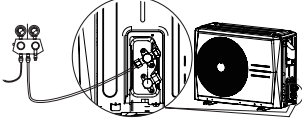
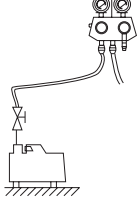
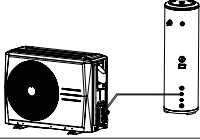
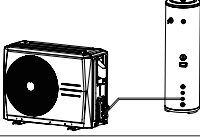
ITEM	DESCRIPTION	IMAGE	NOTE
1	Connect the (low pressure side) hose of a pressure gauge to the outdoor unit gas pipe stop valve.		Before performing vacuum drying, make sure that all the outdoor unit stop valves are firmly closed.
2	Connect the hose to the vacuum pump.		1. Mixing of pump lubricant with compressor oil could cause compressor malfunction and a one-way valve should therefore be used to prevent vacuum pump lubricant seeping into the piping system. 2. Using a vacuum pump with a discharge in excess of 4L/s and a precision level of 0.02mmHg is recommended.
3	Connect the outdoor unit gas pipe stop valve to water tank gas pipe.		
4	Connect the outdoor unit liquid pipe stop valve to water tank liquid pipe.		
5	Start the vacuum pump and then open the pressure gauge valves to start vacuum the system.		
6	After 15-20 minutes, close the pressure gauge valves.		
7	After a further 5 to 10 minutes check the pressure gauge. If the gauge has returned to zero, check for leakages in the refrigerant piping. If the gauge is no change, then vacuum drying is OK.		
8	Re-open the pressure gauge valves and continue vacuum drying for at least 20 minutes and until a pressure difference of 756mmHg or more has been achieved. Once the pressure difference of at least 756mmHg has been achieved, continue vacuum drying for 20 minutes.		
9	Close the pressure gauge valves and then stop the vacuum pump.		
10	After 1 hour, check the pressure gauge. If the pressure in the piping has not increased, the procedure is finished. If the pressure has increased, check for leakages.		After vacuum drying, keep the hoses connected to the pressure gauge and to the outdoor unit stop valves, in preparation for refrigerant charging

Table 4-5

4.5 REFRIGERANT CHARGE

Pipe length is 2~20m.

If the pipe length is less than 10m, there is no need to add additional refrigerant charge.

If the pipe length is more than 10m, adding additional refrigerant charge is necessary, and the rule is 20g/m for the additional pipe.

5. ELECTRICAL CONNECTION

CAUTION

The heat pump must have a separate power supply with the correct rated voltage.

The external power supply to the heat pump should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.

The wiring work should be done by qualified persons according to circuit drawing.

A leakage protector should be installed according to the National Standard concerning electrical appliance.

An all-pole disconnection device which has at least 3mm separation distance in contact points should be installed.

Power supply cords and signal wires should be arranged properly. Separate strong current wire and weak current wire, meanwhile they can't contact with connection pipe and valve.

Power supply with a leakage protector should be installed in a water-proof place inside the room.

Don't do cross connection between 2 wires and signal wires must be shielded.

When power supply cord parallels with controlling wire, please put the wires to corresponding wire pipe and leave proper space between wires.

When selecting power supply cords, please refer to the National Standard and this manual, power supply used outdoor should not lighter than NO.57 wire in IEC 60245.

If power supply cord is damaged, to avoid danger, it must be replaced by professional person.

Do not turn on the power until the wiring has been checked thoroughly

5.1 POWER SUPPLY CORDS

5.1.1 SPECIFICATION OF POWER SUPPLY

ITEM MODEL	POWER	MINIMUM WIRE DIAMETER (MM ²) (MENTAL PIPE SYNTHETIC RESIN PIPE WIRE)		Manual switch (A)		LEAKAGE PROTECTOR	MAX E-HEATER POWER (W)
		LENGTH SUCCESSIVE LENGTH ≤30M	GROUND WIRE	CAPACITY	FUSE		
With AUX.	220-240V~ 50Hz	4	4	20	15	30mA below 0.1 sec	2100
Without AUX.		2.5	2.5				

Table 5-1

NOTE

Specifications of power wires above (outdoor unit power wire and power wire that connects with water tank): H07RN-F.
Power supply provided individually (not use power supply device).

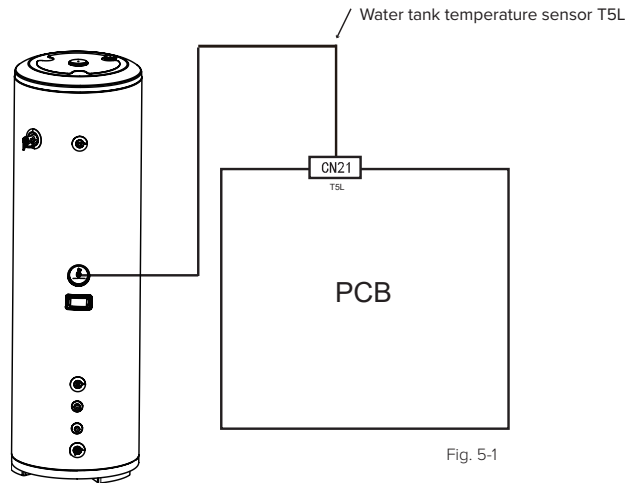
CAUTION

Wire diameter shown in the table above and successive length is the situation than voltage drop is in the range of 2%, when successive length is longer than the value shown in the table, please select wire diameter according to relative standards.

5. ELECTRICAL CONNECTION

5.2 WATER TANK TEMPERATURE SENSOR INSTALLATION

Connect the water tank temperature sensor wire connector to the outdoor unit T5L connector.

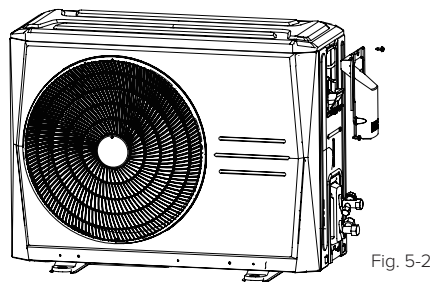


5.3 ODU & AUX. POWER CONNECTION

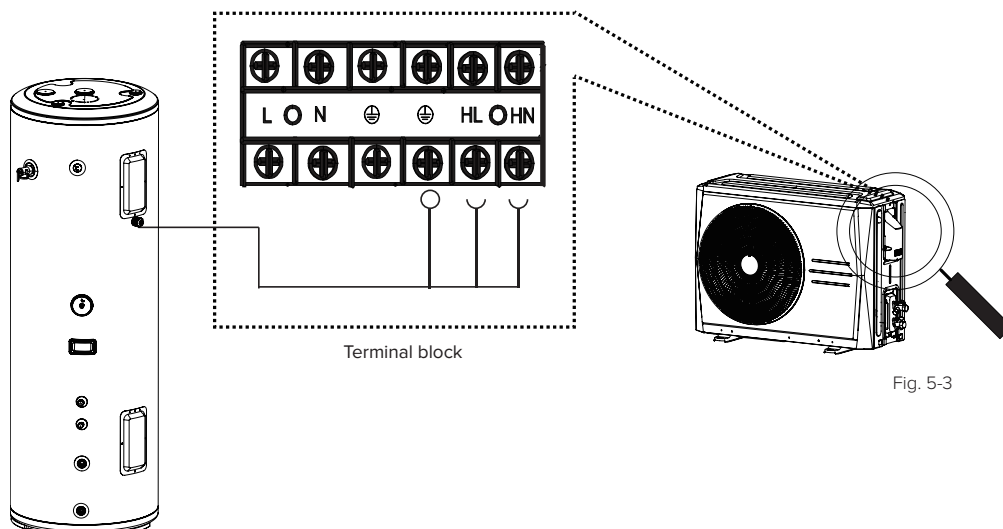
NOTE

If the water tank has the electric auxiliary heating (AUX.) function, please follow the steps below to connect the electric auxiliary heating power cord.

1. Remove the protective cover of the electric control box on the right side of the outdoor unit.

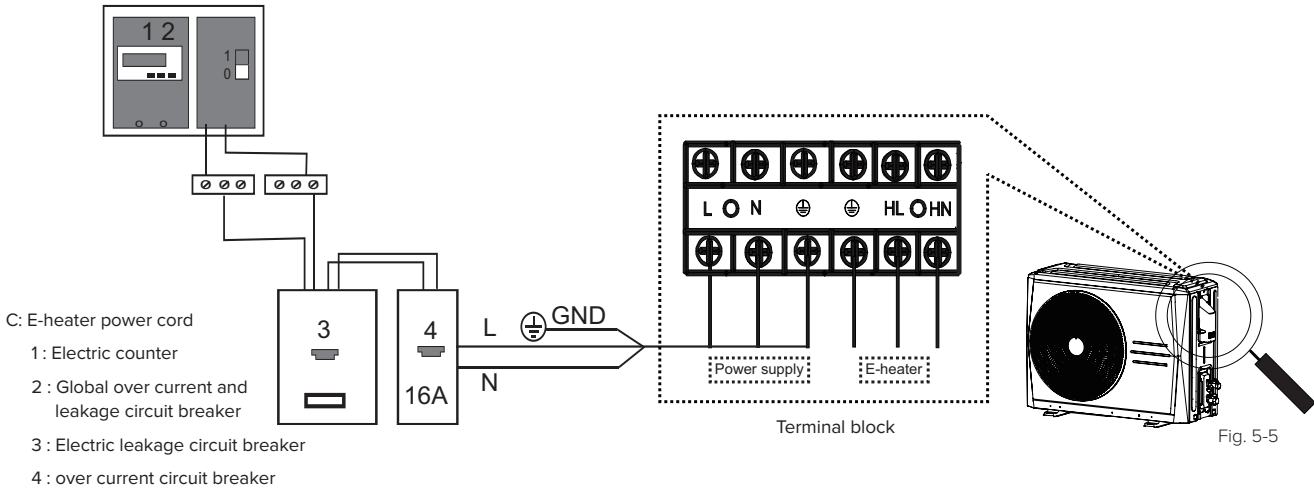


2. Connect the electric auxiliary heating power line on the water tank to the corresponding port on the terminal block.



5. ELECTRICAL CONNECTION

3. Outdoor unit power supply.



⚠ CAUTION

A leakage protector must be installed on power supply box outside the unit according to the figure above.
Power supply with leakage protector must be installed inside or installed in the place that can satisfy water-proof requirements.
This unit can be started only if it is grounded reliably.

5.4 DIAL CODE DEFINITIONS

NOTE

The picture shown is for reference only, actual product may vary.

▬ means 0, ▬ means 1.

S1-1		0	Default
		1	Reserve
S1-2		0	Without electric auxiliary heater
		1	With electric auxiliary heater
S1-3		0	Default
		1	Reserve
S2-1		0	Default
		1	Reserve
S2-2 S2-3		00	Default
		01	Reserve
		10	Reserve
		11	Reserve

Table 5-2

6. CHECK

NOTE

Before switching on the unit, read following recommendations:

When the installation and parameter setting are completed, cover all the sheet metal of the unit well.

The unit should be maintained by professionals.

If the unit has failed or is in protection mode, the panel will show the relevant code. If multiple failures or protection modes occur, they will be displayed in the order they happened. To view the parameters of the unit, press the check button. The table below outlines the sequence of the check:

ITEM	DESCRIPTION	IMAGE
0	Normal display	"dF"—Defrosting "dC"—Refrigerant recovering "0"—When being shut down "—" Temperature of water tank— When operating or standby
1	Running mode	"3"—Water heating
2	Running air speed	"F0"—Shut down fan "F1"—Low speed "F3"—High speed
3	T3 temp. value	
4	T4 temp. value	
5	T5L temp. value	
6	Th temp. value	
7	Tp temp. value	
8	Current	
9	EEV opening degree	Actual opening=display value×8
10	T5s setting temperature	
11	Td setting auto start temp. of auxiliary E-heater	
12	Trdh setting booting return difference temp.	
13	The third to last error	
14	Penultimate error	
15	The last error	
16	Software version	Actual version
17	Check finished	Display"—"

Table 6-1

7. OPERATIONS AND PERFORMANCES

CAUTION

Cut off manual switch power when the unit fails. Do not restart until the issues have been resolved.

1. Characteristics of water heating - 3 minute protection

When restarting the unit after a short shutdown, there will be a 3 minute delay before it begins operation due to the self-protect function of the compressor.

2. During operation, if outdoor temperature is higher than normal, the fan motor will run at low air volume or stop running.

3. During heating operation, if frost accumulates on the unit, the defrosting function will activate automatically (lasting approximately 2-7 minutes) to maintain heating efficiency. During the defrosting operation, the fan motor will temporarily stop.

4. About protection device

- When the protection device is activated, the unit will stop, but the wire control's operating indicator will continue to blink.
- If the protection device is activated, the nixie indicator will display a corresponding malfunction code.
- The protection device will activate in the following scenarios:
 - a) Blockage of air inlet or outlet.
 - b) Voltage deviates outside the range of -10% to 10% of 230V (higher or lower)

5. Starting the unit after a prolonged downtime:

- If starting the unit after a prolonged period of disuse (such as the initial start-up), you may observe rust-tinged water flowing from the tap. This is normal and to be expected.

6. Power failure

- If there is a power failure while the unit is in use, stop all operations immediately.
- Upon restart after a power failure, the RUN indicator on the wire controller will blink slowly for several seconds to alert the user.

7. RCCB (Residual Current Circuit Breaker)

- The outdoor unit must be equipped with an RCCB. An RCCB must be installed between the user's power supply and the outdoor unit.
- If the unit fails to function, but there is no power failure, check the RCCB switches first.
- Before operating the RCCB, make sure that the user-installed switch is in the off position.

8. MAINTENANCE

8.1 CONFIRMATION BEFORE RUNNING

1. Make sure the wires are grounded
2. Turn on power supply switch for 12 hours before running.

8.2 TROUBLESHOOTING

Before requesting a service or repair check the following:

Non-mechanical malfunction

1. When heating water, it is normal for cold water to expand and cause some leakage from the valve. This is a safety feature, so do not attempt to block it.
 - If a significant amount of water is flowing, it indicates that the safety valve is not functioning properly.
2. Slow water heating in the tank
 - During winter, the low ambient temperature (around 0°C) can reduce the heating efficiency, causing a slower heating process.
 - If customer needs to use hot water, it is recommended to start the unit in advance.
3. Automatically starting or stopping.
 - The cause could be an incorrect setting of the timer.
4. If the heat pump is not working.
 - Verify if the power is turned on.
 - Check if the manual switch is in the on position.
 - Determine if the fuse has blown.
 - Confirm if the protection device has started (indicator lights).
 - Make sure the timer is set correctly (operation lamp is lit).
5. Low heating performance.
 - Check if the air outlet and inlet are obstructed.

CAUTION

If the following occurs stop operation, manually cut off the power supply, and contact the dealer or service center:

- Ineffective ON/OFF function.
- Frequent tripping of the fuse or RCCB.

Before leaving the heater unused for an extended period of time, please follow these steps:

- Empty the water from the tank and pipes and close all valve bodies.

After leaving the heater unused for an extended period of time, please check the following:

- Verify if the air inlet and outlet of the unit are obstructed and clean if necessary.
- Ensure that the water pipes and valves are not damaged or blocked.
- It is recommended to inspect the anode material every six months and replace it if it is exhausted.

8.3 AFTER SALES SERVICE

In case of malfunctions, please cut off the power switch and contact after-sales service centre or technical service department, for detailed information please refer to User Service Guide.

8.4 IMPORTANT REFRIGERANT INFORMATION

This product contains fluorinated gas and must not be released into the air.

Refrigerant type: R134a; Volume of GWP: 1430;
GWP=Global Warming Potential

FACTORY CHARGE	
Refrigerant/kg	tonnes CO ₂ equivalent
0.9	1.29

Table 8-1

NOTE

Frequency of Refrigerant Leak Inspections:

1. For equipment containing 5-50 tonnes of CO₂ equivalent of fluorinated greenhouse gases, checks must be done at least once a year, or every 24 months if a leakage detection system is installed.
2. For equipment containing 50-500 tonnes of CO₂ equivalent of fluorinated greenhouse gases, checks must be done at least every six months, or every 12 months if a leakage detection system is installed.
3. For equipment containing 500 tonnes or more of CO₂ equivalent of fluorinated greenhouse gases, checks must be done at least every three months, or every six months if a leakage detection system is installed.
4. Non-hermetically sealed equipment filled with fluorinated greenhouse gases can only be sold to the end user if the installation is performed by a certified technician.
5. Only certified technicians are authorized to perform installation, operation, and maintenance tasks.

8. MAINTENANCE

8.5 WATER QUALITY LIMITATIONS



NOTE

If the water quality does not meet the requirements in the table below, please contact the supplier for advice.

PH Value	Total Hardness	Electrical Conductivity
6.5-8.0	50ppm	<200 μ S/cm(25°C)
Sulphate Ion	Silicon	Iron Content
<50ppm	<30ppm	<0.3ppm
Sulfide Ion	Chloride Ion	Ammonia Ion
None	<50ppm	None
Sodium Ion	Calcium Ion	-
None	<50ppm	-

Table 8-2

TROUBLE SHOOTING

ERROR CODE	CAUSE
E2	Communication error
E4	Water tank temperature sensor error (T5L)
E5	ODU heat exchanger temperature sensor error (T3)
E6	ODU ambient temperature sensor error (T4)
E9	Suction temperature sensor error (Th)
EA	Discharge temperature sensor error (Tp)
EF	Clock chip error
HP	Smart Grid signal error
HC	E-heater error (Current is less than 2A when e-heater operating)
P1	High pressure protection
P2	Over load protection of fixed compressor
P4	High discharge temperature (Tp) protection
PA	Low water temperature protection
bA	The ambient temperature exceeds the declared range (not an error)
F2	Low super-heat of discharge protection
F6	Electric expansion valve joint fault
db	Anti-freezing operating (not an error) for some unit

Table 9-1

WARRANTY INFORMATION

Emerald Energy Pty Ltd warrants this heat pump to the original purchaser.

Emerald Energy Pty Ltd warrants each new heat pump is free from defects in material and workmanship under normal use and service from the date of purchase. 2 year labour warranty. 7 years warranty on the tank, and 5 years on the rest of the system. *Subject to terms and conditions.

This warranty does not cover damage resulting from accident, misuse or abuse or lack of reasonable care of the product.

In no case shall Emerald Energy Pty Ltd be liable for any incidental or consequential damages for breach of this or any other warranty express or implied whatsoever.

For full warranty details visit our website emerald-energy.com.au

Emerald Energy Pty Ltd

ABN 86 632 172 368

2/29 Mitchell Rd Brookvale NSW 2100

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