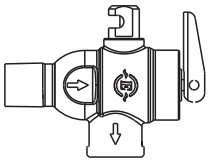
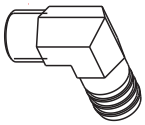
Hisense

USE AND INSTALLATION INSTRUCTIONS

Thank you very much for purchasing this Air Source Heat Pump. Please read this use and installation instructions carefully before installing and using this appliance and keep this manual for future reference.

Packing List

Accessory	Qty	Purpose
Operation Instruction 	1PC	Installation operation guide
TPR Valve 	1PC	Protect the the unit system
Hose Clamp 	2PC	For joint socket connection
Drainage Nozzle 	1PC	Discharge condensate water
Drain-pipe 	Φ19×1.3m	Discharge condensate water

Contents

⚠ WARNING

- Please make sure you have read safety precautions shown in the manual. This part provides quite important safe points for you and please operate it based on safety precautions.

1. Household electrical system must have a reliable ground connection.

2. Household electrical system must have a leakage protection device.
3. Do not dismantle any permanent instruction, label or parameter plate attached to the outside cover or any internal plate of heat pump.
4. Please ensure a dealer or professional person installs the device; Installer must have professional knowledge, any improper operation may cause fire, electric shock, injury or leakage etc..
5. Please obey the local electrical regulations to connect power supply.
6. When you need to remove or re-install heat pump, please ensure this is done by a professional licensed person.
7. Any self-transformation or repair is forbidden, improper repair may cause fire, electric shock, injury or leakage etc. must entrust professional licensed person to repair.
8. Earthing pole of power outlet must have a reliable connection, and rated current value should be not less than 20A. Outlet and power plug must be kept dry to prevent leakage, outlet and power plug must be well matched.
9. Due to possibility of water spatter, the installation height of power plug must be no less than 1.8m. Ensure power plug is installed away from water source. Ensure children can not touch power plug.
10. One way valve suitable to application must be installed near to cold water outlet.
11. In the state of energization and heating.
12. For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.
13. This appliance may deliver water at high temperature. For Australian installations, refer to the plumbing code of Australia(PCA), local requirements and installation instructions to determine if additional delivery temperature is required.
14. Australian installation shall conform to the Plumbing Code of Australia (PCA).
15. If the fixed appliance is not fitted with a power cord and plug, or is not fitted with other devices to disconnect the power cord (these devices must have contact separation at all poles and can be completely disconnected under overvoltage Class III conditions; All-pole disconnect switch), then the disconnect device must be incorporated into the fixed wiring according to the arrangement of wiring rules.

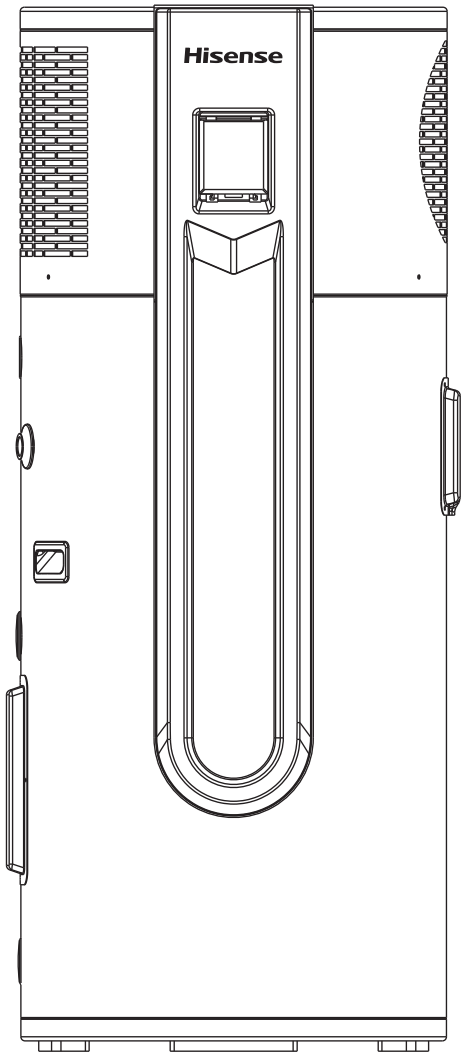
⚠ WARNING

16. This product must be installed outside only.
17. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
18. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
19. Do not pierce or burn.
20. Be aware that refrigerants may be odorless.
21. Maintenance should only be carried out as recommended by the supplier.
22. Ducts connected to electrical appliances must not contain ignition sources.
23. Appliances should be stored in a well-ventilated area with the room size corresponding to the designated operating room area.
24. The appliance shall be stored so as to prevent mechanical damage from occurring.
25. 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.
26. Children should be supervised to ensure that they do not play with the appliance.
27. If the power cord is damaged; it must be replaced by the manufacturer, its service agent or a similarly qualified person in order to avoid a hazard.
28. 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.

1. Measurement

Model	Weight(kg)	Dimension(D×H,mm)	Power supply	Water connection size
AHS-210HF4GHB	120	Φ620×1518	220V/ 50Hz/ 1 phase	3/4”
AHS-270HF4GHB	140	Φ620×1838	220V/ 50Hz/ 1 phase	3/4”

2. External appearance



3. Features

All in one heat pump for sanitary hot water :

3.1 Has complete isolation between water and electricity, without electric shock possibilities.

3.2 No fuel tubes and storage, no potential danger from oil leakage, fire, explosion, etc..

3.3 No cross contamination potential, the condenser coil is an external coil wrapped around the stainless tank, it does not come in contact with water directly.

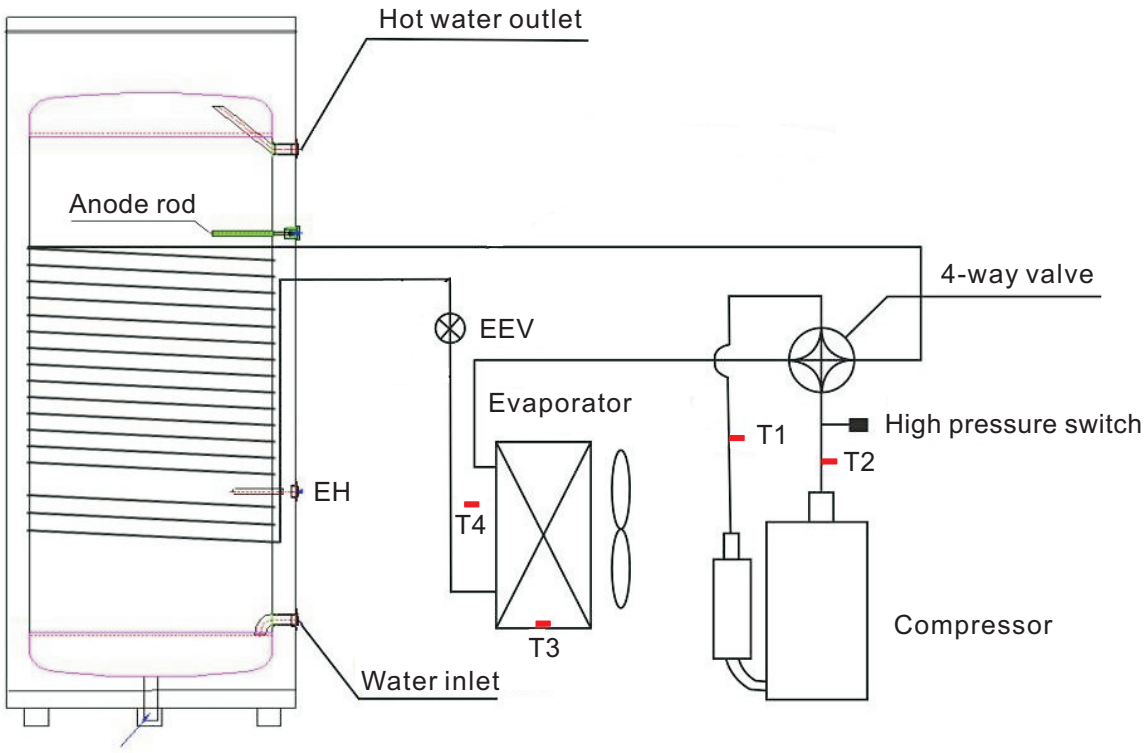
3.4 The maximum outlet water temperature is 75ºC. The system ensures the water is heated stably and quickly with innovative heating methods combining electric heating and heat pump heating.

3.5 Automatic start-up and shutdown, automatic defrosting by revising refrigerant cycle.

3.6 According to heat pump principles, the unit absorbs heat from outdoor air and transfers heat to water with a thermal efficiency of approximately 4.17 (Under the condition A20/15ºC W15/55 ºC).

3.7 The unit will operate within the temperature range from -7 ºC to 43 ºC. The unit is not affected by night, cloudy sky, rain or snowy weather.

4. Refrigerant circuit

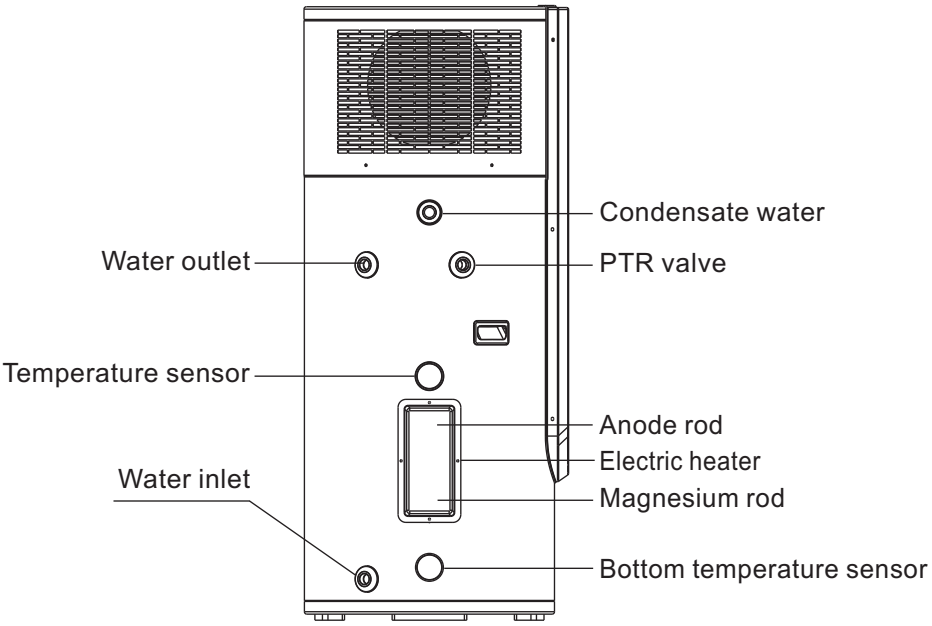


Compressor:Rotary, R290.
Evaporator: Copper tube and aluminum fin type heat ex-changer.
EXV: Electronic expansion valve, the opening is regulated according to the discharge air temperature of compressor.
Fan: Centrifugal fan with three speeds.
High Pressure Switch: When the discharge pressure of compressor is 3.0MPa or higher, protection switch will be triggered, then if the discharge pressure is below 2.4MPa, the protection switch will disengage.

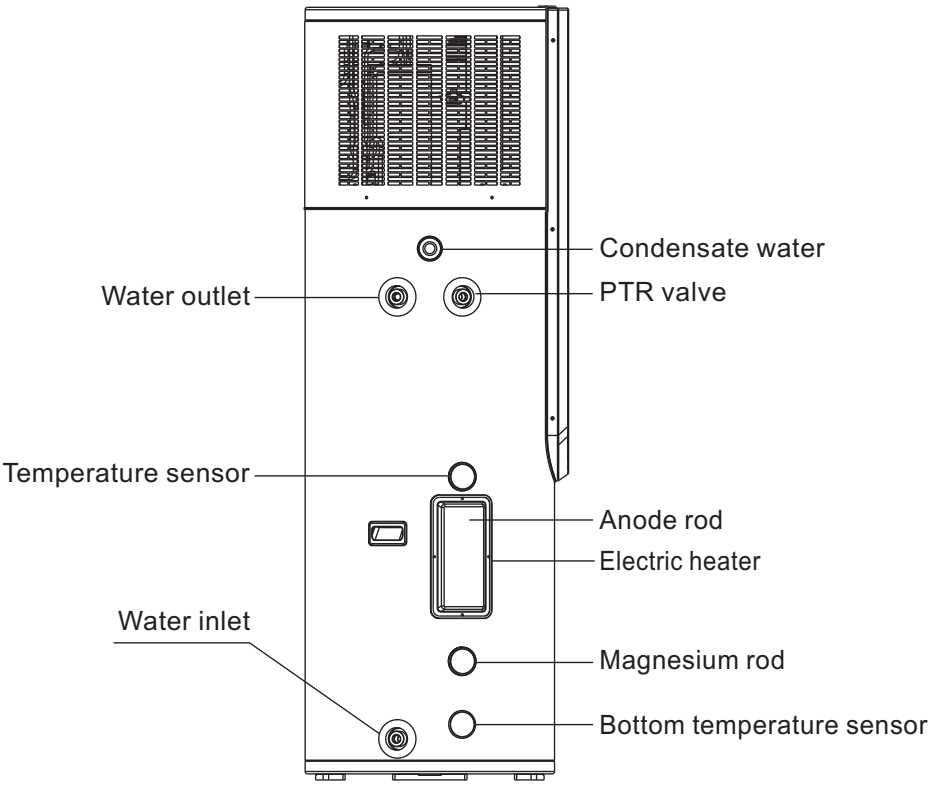
5. Specifications

Model	AHS-210HF4GHB	AHS-270HF4GHB
Power supply	220V～240V/50HZ	220V～240V/50HZ
Rated Input Power(Heat pump) (kW)	1.2	1.2
Rated Input Current(Heat pump) (A)	5.3	5.3
Rated Heating Capacity(Heat pump) (kW)	2.78	2.78
Rated Input Power(Resistance) (kW)	1.8	1.8
Rated Input Current(Resistance) (A)	7.5	7.5
Max Current(HP&Resistance) (A)	14	14
Rated Circuit Breaker (A)	≥16	≥16
Water tank volume (L)	210	270
Recovery Rates (lires per hour)	60	60
COP (A 20/15, W 15-55)	4.15	4.15
STC in zone 4	32	33
Refrigerant	R290/400g	R290/400g
Compressor	Rotary, R290	Rotary, R290
Expansion valve	EEV	EEV
Fan	Axial	Axial
Ventilation	Horizontal discharge	Horizontal discharge
Heat exchanger	Microchannel / Wrap around tank	Microchannel / Wrap around tank
Inner tank material	Enamel	Enamel
Inner tank thickness (mm)	Dome 3.0 / Wall 2.5	Dome 3.0 / Wall 2.5
Inner tank type	Concave	Concave
Insulation / thickness (mm)	Polyurethane / 40	Polyurethane / 40
Outer Casing	Galvanized painted sheet	Galvanized painted sheet
TPR valve (kPa)	850	850
Rated Outlet Water Temperature (℃)	60	60
Max Outlet Water Temperature (℃)	70	70
Working range with element (℃)	-15-43	-15-43
Working range without element (℃)	-7-43	-7-43
Anti Legionella	Water heated up to 60℃	Water heated up to 60℃
IP Class	IPX4	IPX4
Electric Shock Proof	I	I
Unpacked Dimension (outdoor unit) (mm)	Φ620×1518	Φ620×1838
Packed Dimension (outdoor unit) (mm)	700×700×1565	700×700×1885
Net Weight (kg)	104	118
Gross Weight (kg)	120	140

1. AHS-210HF4GHB



2. AHS-270HF4GHB



NOTE:

All the pictures in this manual are for explanation purposes only. They may be slightly different from the heat pump water heater you purchased (depending on the model). Please refer to the real sample instead of the pictures of this manual.

1. Choose a suitable location

1.1 Avoid installing this equipment indoors. If installed indoors, may cause overflow, noise or indoor temperature changes which can influence comfort, please ensure preventive measures are taken in advance.
1.2 Ensure sufficient space for installation and maintenance.
1.3 Inlet or outlet air must have no obstacles and be sheltered from strong winds.
1.4 Dry and ventilated place is most suitable.
1.5 Support surface must be flat(horizontal angle must not be more than 2°), and able to bear heat pump's weight. The surface shall not increase any noise or shock.
1.6 Ensure position where noise and exhaust air aren't immediately adjacent to neighbors' property.
1.7 The place has no leaking combustible air.
1.8 Easy access to install connection pipe and electrical parts.
1.9 If heat pump installed in metal parts of a building, electrical insulation must comply with technical standard on electrical equipment.

NOTE:

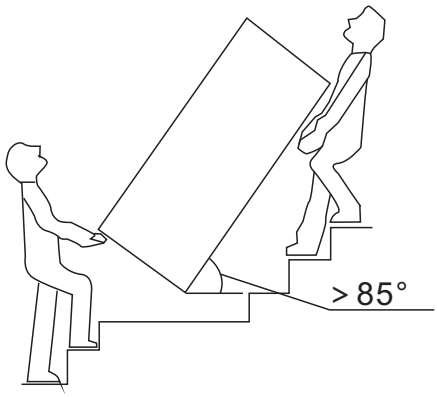
- In the region which the temperature is below 0 ºC, the heat pump must be installed indoor or other positions where it will not be frozen for purposes of protecting connection pipe.
- If used for those regions which the temperature is below 0 ºC, suitable measures must be taken to protect pipes if the heat pump is installed outdoors.
- Installation location that experiences high temperature or long-term exposure is prohibited, as it may decrease lifetime of the product.

Notes: If installed in the following places, machine errors may occur. If unavoidable, please consult your local authorized service point.

- The location contains mineral oil such as cutting oil.
- The location contains salt such as coastal areas.
- The location has corrosive fumes such as spa's, or where there is sulfur gas.
- The location has frequent changes to voltage and current.
- The location has strong movement, such as a car or cabin.
- Location with strong electromagnetic waves.
- Location where there is oil, gas or oil spatter such as kitchen.
- Location where the evaporation of acid or alkaline gas occurs.
- Other location where there is special conditions.

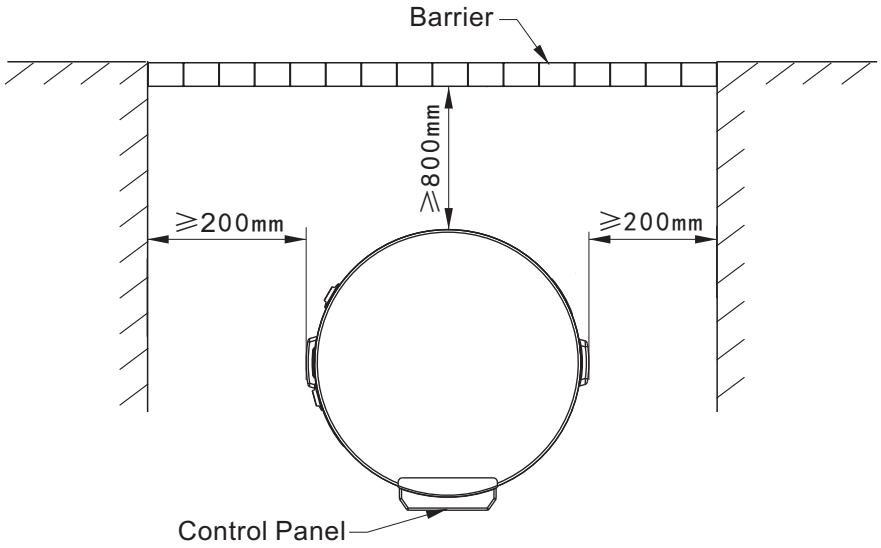
2. The Movement of Heat Pump

2.1 This heat pump is heavy requires at least two people to move and install it.
2.2 Please move the equipment according to the original factory packaging.
2.3 Please use protection during transit to avoid scratches and damage to the unit.
2.4 Do not touch fan with your hands or other objects.
2.5 Do not move the heat pump at an angle of <75°.



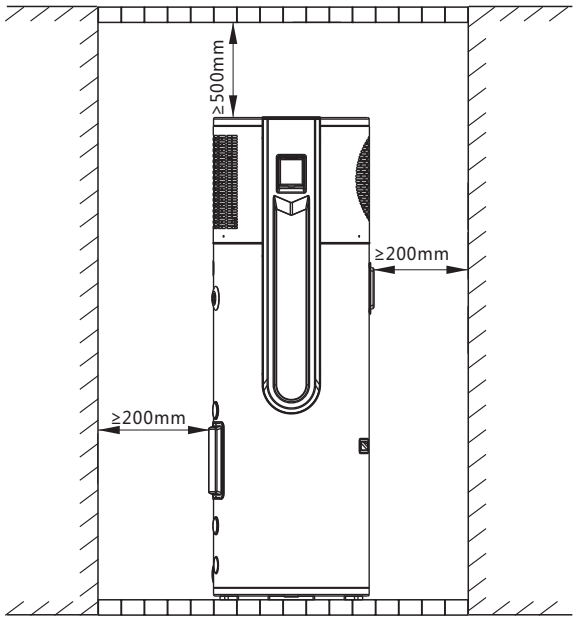
3. The Installation of Heat Pump

3.1 Please leave enough space for installation and maintenance.

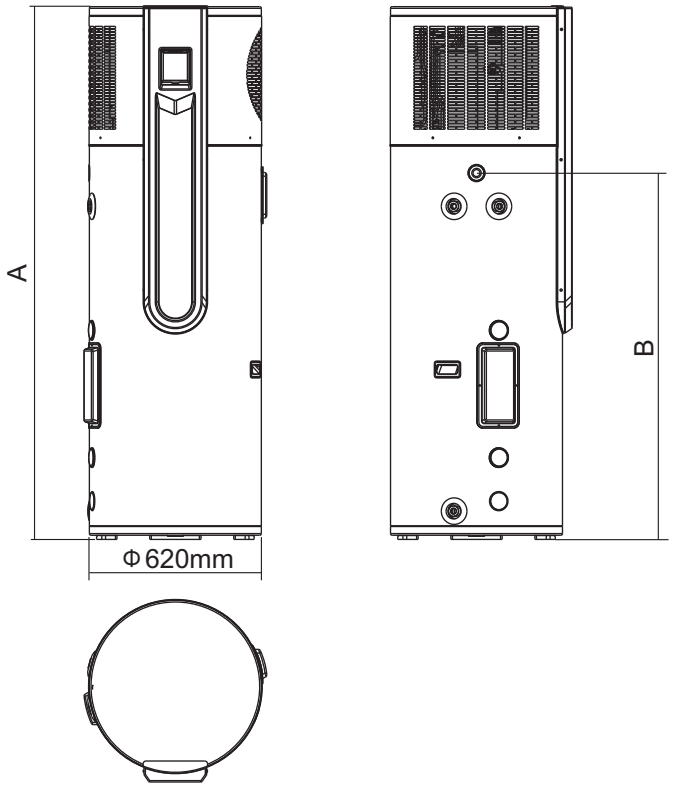


3.2 If heat pump is installed in the basement, indoors or other airtight space, please note exhaust and intake circulation between surrounding air and outdoor air.

3.3 If ducting is used, the air duct total length should be equal to or less than 6 meters, and the duct diameter should be equal to or more than 150 mm.

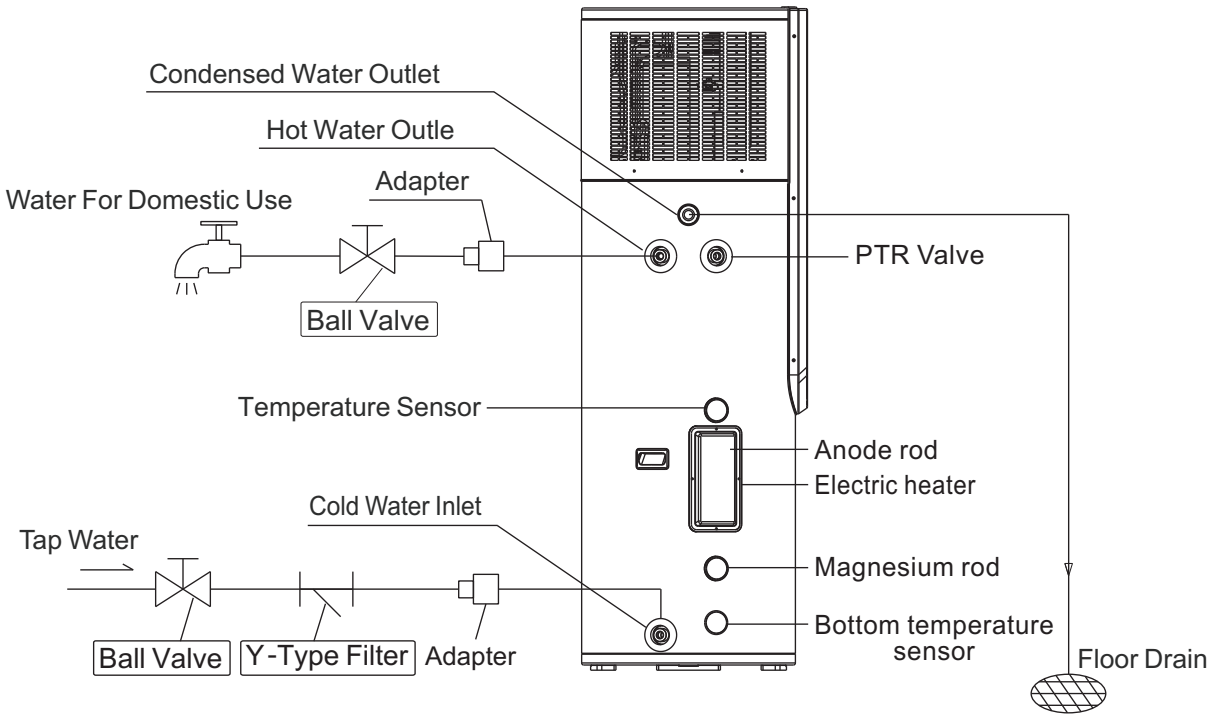


4. Products External Dimension



Model \ Size(mm)	A	B
AHS-210HF4GHB	1518	1010
AHS-270HF4GHB	1838	1330

1. Pipe Connection Diagram



2. Water Quality Requirements

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

3. Water Pipe Installation Instructions

3.1 Please don't use iron pipe for heat pump connections. CPVC pipe, PPR pipe or PB pipe or other pipe as per local regulations is recommended.

3.2 Water pipes, connectors etc must be installed according to the drawing. If the ambient temperature is below 0 ℃, proper insulation must be installed for the water pipes.

3.3 Water inlet/outlet size is G3/4'', external thread.

3.4 The water pipe's working life must not be less than the heat pump's working life.

3.5 Relief valve is G1/2'', 0.8 MPa. After installation, ensure that the drainage pipe which connects to the relief valve is not blocked.

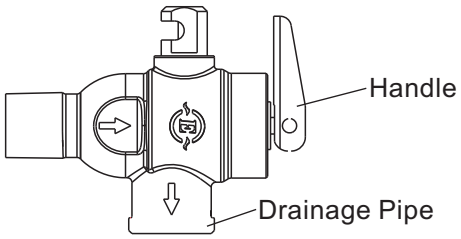
NOTE:

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

To ensure the TPR valve functions correctly, perform the following steps every six months, and replace it if needed:

- Locate the TPR valve on the left side of the unit.
- Carefully use the lever to release the valve, allowing some water to drain from the tank. Note that the expelled water may be very hot.

- If water flows freely during this process, it indicates that the TPR valve is still in good working condition.
- If water does not flow freely, it suggests that the TPR valve needs replacement.
- In the case of a required replacement, please contact your plumber or reach out to your service team for assistance.

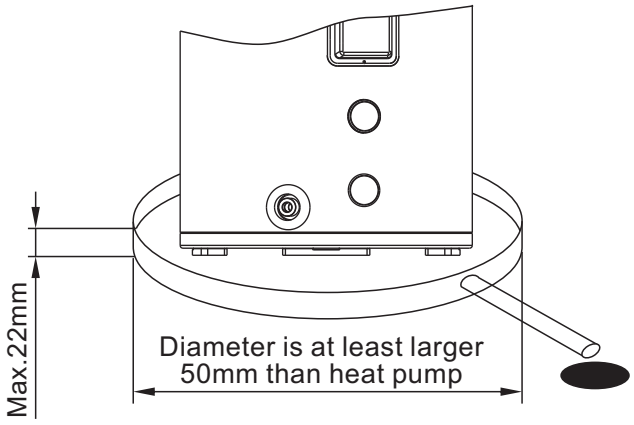


⚠ DANGER

- Do not hold down the handle of safety valve.
- Do not knock down safety valve.
- Do not plug the drainage port.
- Excretion pipe must be connected with a open drainage port.

Explosion Danger

3.6 After pipe installation is complete, open up the valve controlled cold water inlet and the valve controlled hot water outlet to fill water into tank, you can stop when water overflows from water outlet, then inspect all piping and ensure there is no water leakage. If leakage is found, it must be repaired and water tank filled again.
3.7 When intake pressure is below 0.15MPa, a booster pump needs to be installed to connect with inlet water pipe for purpose of increasing water pressure. Water pressure must be greater than 0.15MPA after booster installation. When intake pressure is greater than 0.65MPa, a relief valve needed to be installed to connect with inlet water pipe for purpose of keeping your water tank in a long-term working state.
3.8 During heat pump operation, condensed water droplets may be formed. Drainage water port may be unexpectedly blocked, which can make surface of equipment drip water. To ensure correct long-term operation, we suggest a water tray. Please refer to the below chart.



NOTE:

When used in a location where the temperature is below 0℃, if the heat pump is installed outdoors, please take measures to protect water pipe according to local minimum temperature to prevent frozen or damaged water pipes.

NOTE:

- The equipment must be connected to the correct power supply, supply voltage must comply with rated voltage.
- Power supply circuit must be fitted with a grounding wire, and grounding wire of power supply must be reliably connected with external grounding wire.
- The installation must be undertaken by professional personnel based on provided circuit diagrams.
- Leakage protection device must be installed correctly according to the National Technical Standard for electrical equipment.

1. Power Specification

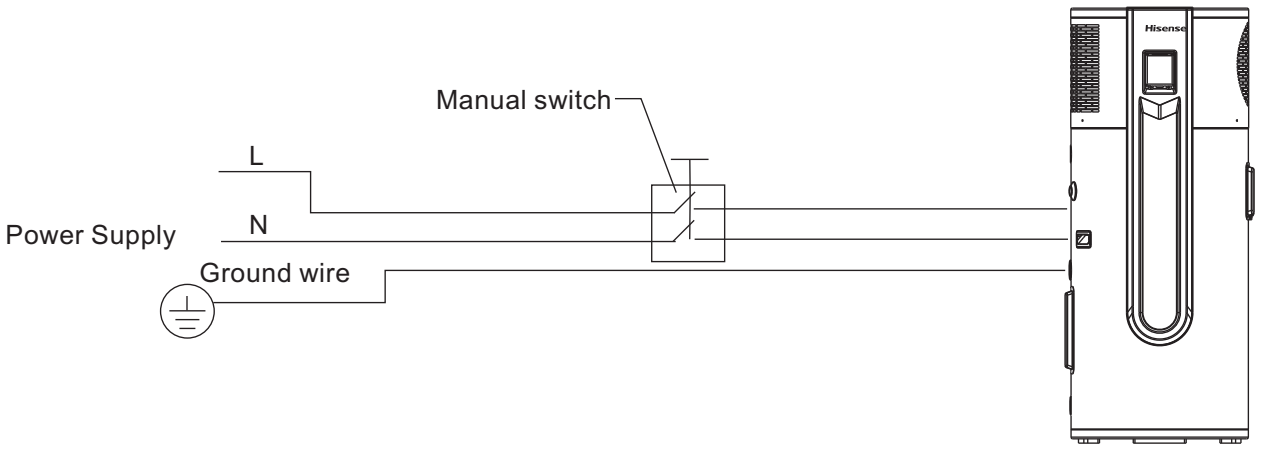
Item / Model	Power supply	Minimum wire diameter (mm^2)		Manual switch(A)		Leakage protection device	Circuit breaker
		Size (continuous length ≤ 30m)	Ground wire(mm)	Capacity	Fuse		Rated current(A)
AHS-210HF4GHB AHS-270HF4GHB	220V/50Hz	≥ 2.5	≥ Φ1.0	≥ 16	16	Below 30mA 0.1sec	≥ 16

Remark:

1 Please directly connect the plug to the socket on site if there is 15A socket there.

2 Make new power supply cable from circuit breaker and connect to the equipment by licensed professional person if there is no 15A socket there.

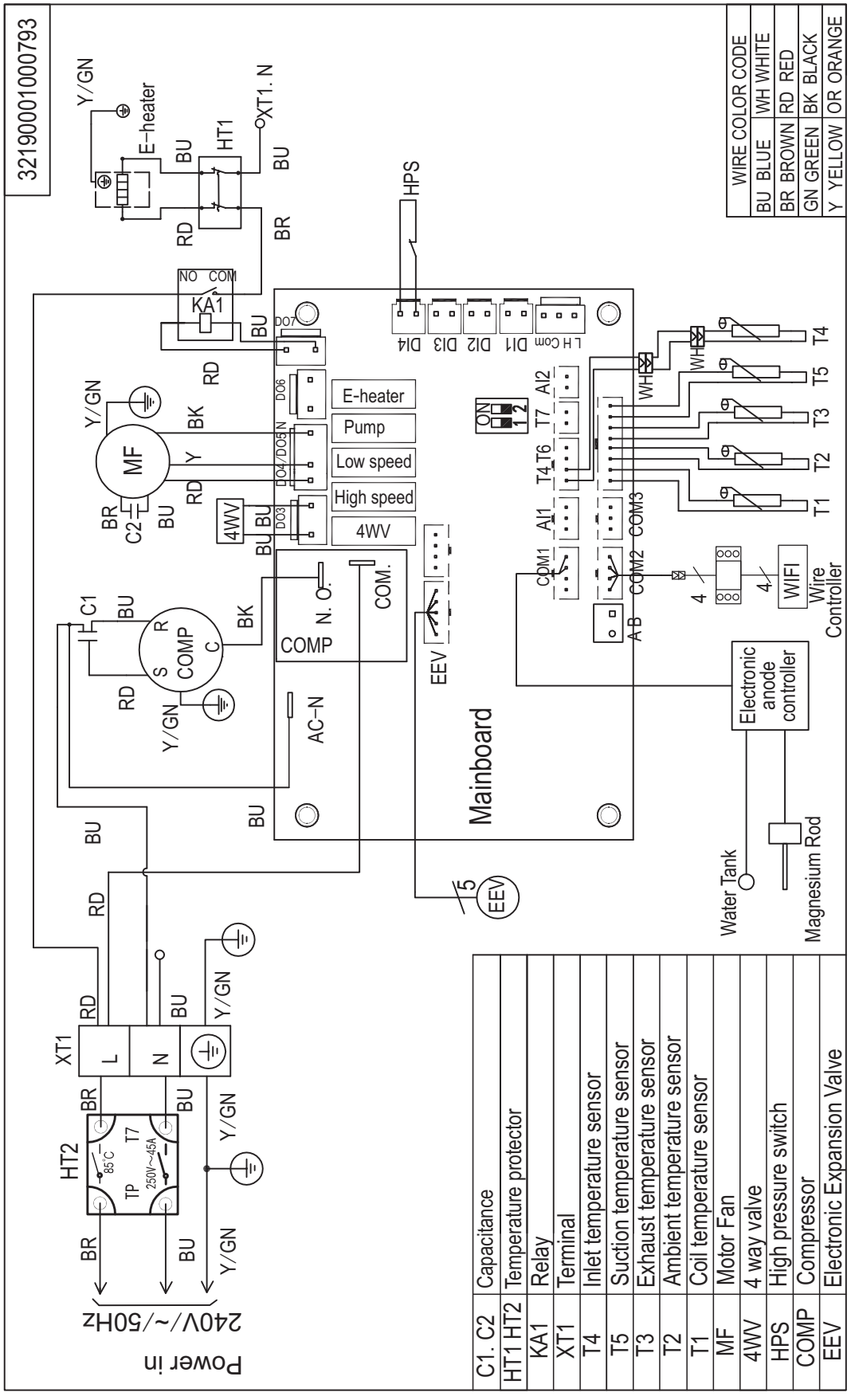
2. Leakage Protection



WARNING

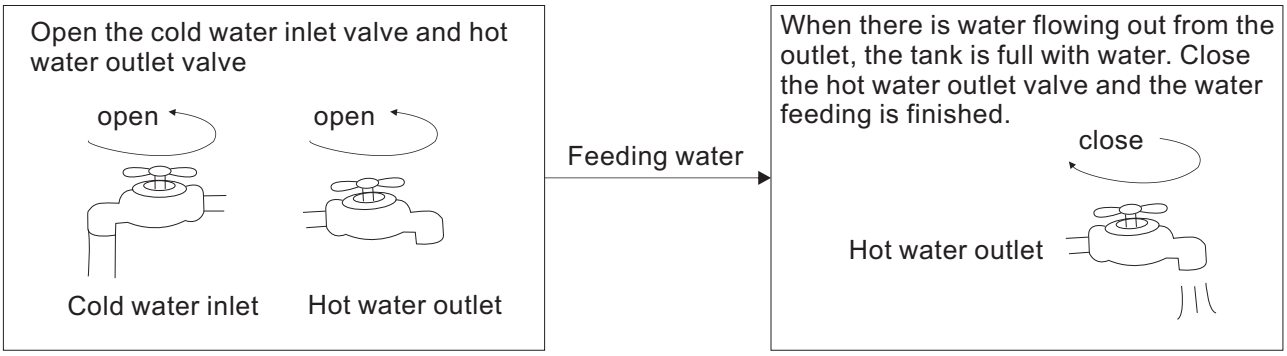
- The power supply must have a leakage protection device installed according to the above diagram for your safety.
- The equipment cannot be used unless you have confirmed grounding wire is reliably connected.

3. Internal Wiring Diagram

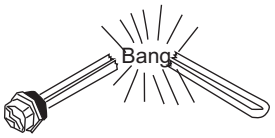


When using the unit, please operate in the following order:

1. Feeding water: when using the unit for the first time (or reusing it after the tank is emptied), before connecting the unit to power, please make sure the tank is full of water. Water feeding method is as per below picture.



Operation without water in water tank may result in the damage of auxiliary E-heater. Due to such damage, manufacturer will not be liable for any damages caused by this issue.

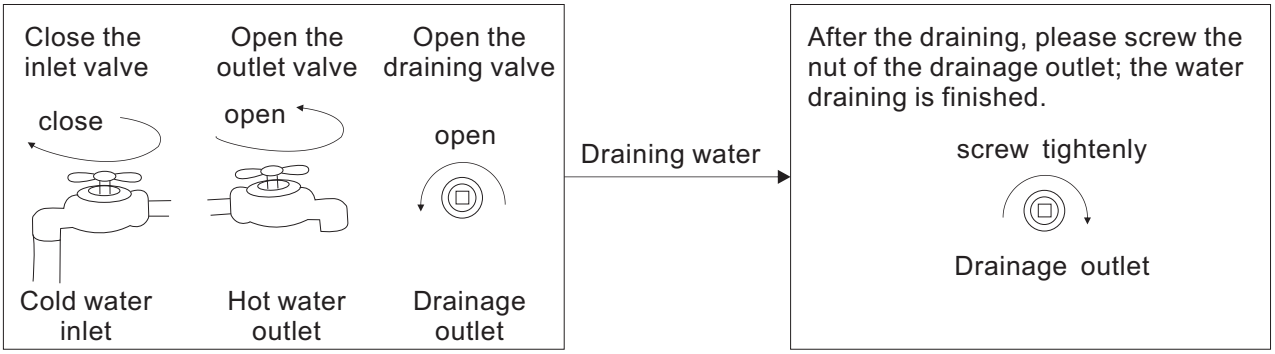


2. Connect the unit to power. Then the screen will turn on, which shows that the unit is connected to power. The user can check different parameters by clicking the relative button on the screen (see next page).

⚠ DANGER

Water temperature over 50℃ can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering. Water temperature limiting valves are recommended.

3. Water draining: before cleaning or moving the unit, please drain the water in the water heater. The draining method is as per below picture:



1. Control system specifications

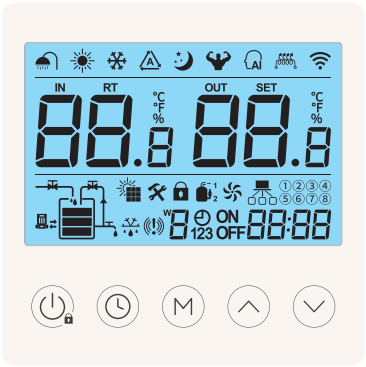
1.1 Operating condition

- Voltage:220V ~ ±10%,50Hz±1Hz.
- Ambient temperature: -7 ~ +43℃.
- Storage temperature: -20 ~ +75℃.
- Relative humidity: 0 ~ 95%RH.
- Temperature accuracy: ±1℃.

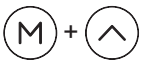
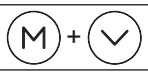
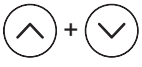
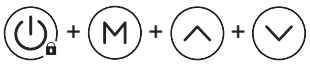
1.2 Main function

- Display the water temperature and setting temperature. Can also query the coil temperature, ambient temperature, exhaust temperature etc.
- Power cut memory function.
- When power lost, clock will still work.
- Timing on/off.
- Automatic defrosting.
- Forced defrost.
- Large LCD display.
- Protection functions.
- The error code display and query.
- Key-Lock Function.
- Anti-freezing function.
- When there is no wired controller or wired controller is broken, the system will recognize it, and control the heat pump to run automatically.

2. Wired controller and operation



2.1 Controller Instruction

Symb	Name	Meaning
	ON/OFF key	1. ON/OFF key (hold for 1 second). 2. Return key. 3. Escape key. 4. Unlock key (hold for 3 seconds).
	Clock key	1. Setting the clock, press the key will enter into clock setting interface, and then press one time to switch the hour and minute area. 2. Setting the timer (press the key and hold for 3s). 3. During timer setting, press the key and hold for 3s, cancel the current timer setting. 4. During clock setting, press the key and fold for 3s, enable or disable the week function.
	Mode key	1. Press the key and hold for 5s, enter into parameter setting interface. 2. Press the key to change operation mode. 3. In parameter query interface, press the key enter into value setting or save the setting.
	Up key	1. Press the key to change temperature setting value or parameter value or change hour and minute value. 2. Press the key and hold for 3s to query the system status/parameter. 3. Page up.
	Down key	1. Press the key to change temperature setting value or parameter value or change hour and minute value. 2. Press the key and hold for 3s to query the system status/parameter. 3. Page down.
	Combination key	When heat pump running in heating mode, press the two keys and hold for 3s, turn ON/OFF Boost mode (turn ON/OFF heating element).
		When heat pump running, press the two keys and hold for 5s, start/exit defrosting mode.
		When power on the heat pump, press the two keys and hold for 5s, enter into Ventilation mode (running high speed). Press the two keys for 3s, running low speed. Press the two keys for 3s again, exit Ventilation mode.
		Press the three keys and hold for 5s, turn ON/OFF sterilization mode.
		Power on within 5 minutes and don't turn on the heat pump, press the four keys and hold for 5s,restore the factory setting.

2.2 Instruction of the buttons

Status	Symbol	Meaning
Not bright		Heat pump OFF or not in heating mode
Light up		In heating mode
Light up		Heating element ON
Flash for 1s		Run in Boost mode
Flash for 2s		Run in sterilization mode
Light up	RT	Water temperature
Light up	ST	Setting temperature
Light up	℃	Degree centigrade
Light up	℉	Degree Fahrenheit (reserved)
Light up	%	Percent(reserved)
Light up		Low/middle/high water level(reserved)
Flash		Heat pump OFF and refrigerant recovery mode
Light up		In defrosting mode
Light up		Maintenance mode
Light up		Error present
Light up		Lock screen
Light up		Compressor running
Light up		High fan speed
Light up		Low fan speed
Flash for 1s		Ventilation mode: high fan speed
Flash for 2s		Ventilation mode: low fan speed
Display	88:88	Error code display
Light up		Timer ON
Display	ON	In timing ON period
Flash	ON	Setting timing ON
Display	OFF	In timing OFF period
Flash	OFF	Setting timing OFF
Light up/Not bright	123	Timer number 1/2/3
Display		Week

Operation Parameter Query

When power on, press "⌃" or "⌄" button for 3 seconds, will enter into status query interface, press "⌃" or "⌄" button to query each status; Press "⏻" button will exit status query interface.

Name	Code	Remark
Fluorine cycle/water cycle heat pump	0	0=water cycle; 1=fluorine cycle
High pressure switch	1	0=disconnect; 1=close
Low pressure switch	2	0=disconnect; 1=close
Water flow switch	3	0=disconnect; 1=close
EEV value	4	Measured value
Evaporator coil sensor	5	Measured value
Ambient temperature sensor	6	Measured value
Suction temp.	7	Measured value
Exhaust temperature sensor	8	Measured value
Water inlet temperature(Water tank)	9	Display value = measured value + compensation value
Water outlet temperature	10	Display value = measured value + compensation value
Compressor	11	0=stop; 1=running
4-way valve	12	0=stop; 1=running
High-speed fan	13	0=stop; 1=running
Low-speed fan	14	0=stop; 1=running
Circulation water pump	15	0=stop; 1=running
Heating element	16	0=stop; 1=running
Compressor working time before defrosting	17	Measured value
Link switch	18	0=Open; 1=Close
Program code	19	Show the code
Dial switch	20	0=Open; 1=Close
Dial switch	21	0=Open; 1=Close
Phase detecting value	22	0=OK; 3=Lack phase; 4=Phase fault; 5=No connection

1. Lock and unlock

When the controller is in the normal display mode and there is no button operation for more than 60 seconds it will get automatically locked. Press the key "⏻" for 3 seconds to unlock, it will beep.

2. Turn ON/OFF the heat pump

When the controller is in the normal display mode, press "⏻" button for more than 1 second to switch the controller to the power ON or OFF mode.

3. Operation mode selection

When the controller is in normal display mode, press "Ⓜ" key to show the existing operation mode, it will display constantly for 8 seconds, before it disappear, press "Ⓜ" again to switch between different operating modes;

The mode name will show at the clock area for 8 seconds each time when you touch "Ⓜ" key, when unlock, the area will show clock, pressing "Ⓜ" key one time will query the existing operation mode.

The system default mode is STAN mode; When the unit is switched on for the first time, the system will operate under STAN mode, later on the unit will always start as per previous setting mode. For changing the mode, refer below instructions:

Operation Modes Chart With Symbols

S.No.	Mode	Symbol	Setting Range
01	Standard Mode	STAN	15°C~60°C
02	Economic Mode	ECO	15°C~60°C
03	Hybrid Mode	HYB	15°C~65°C
04	Hybrid Mode 1	HYB1	15°C~70°C
05	Electric Mode	ELE	15°C~70°C

3.1 STAN mode (Standard mode)

In STAN mode, the controller will display " StAn ", in this mode only heat pump operates and the default water temperature setting is 55°C, setting range is 15°C~60°C, restart temperature difference is 5°C.

3.2 ECO mode (Economic mode)

In ECO mode, the controller will display " ECO ", in this mode only heat pump operates and the default water temperature setting is 55°C, setting range is 15°C~60°C, restart temperature difference is 12°C.

3.3 HYB mode (Hybrid mode)

Under HYB mode, the controller will display " HYb ", in this mode, only heat pump run until the water temperature reach at 60°C, when water temperature up to 60°C, heat pump will stop running, heating element go on heating until the water temperature up to the setting temperature (if the set value more than 60°C). In this mode, water temperature setting range is 15°C~65°C, restart temperature difference is 5°C.

3.4 HYB1 mode (Hybrid mode 1)

Under HYB1 mode, the controller will display "HYb1", in this mode, only heat pump run until the water temperature reach at 60°C, when water temperature up to 60°C, heat pump will stop running, heating element go on heating until the water temperature up to the setting temperature (if the set value more than 60°C). In this mode, water temperature setting range is 15°C~70°C, restart temperature difference is 5°C(default value).

3.5 ELE mode (Heating element mode)

Under ELE mode, the controller will display " ELE ", in this mode only the heating element will work to heat the water. Water temperature setting range is 15°C~70°C, restart temperature difference is 10°C.

4. Water temperature set

Unlock the controller, in the main interface, press the "⌃" or "⌄" button to increase or decrease the water temperature setting value.

5. Clock settings

In the main interface, click the "⏲" button to enter the clock setting interface;

During clock setting, when hour part flash, press and hold the "⏲" button for 3 seconds, enable / disable the week function. If enable the week function, it will shows weekday (Monday: 1, Tuesday: 2...Sunday: 7).

If enabled the week function, then in the real-time clock setting interface, press the "⏲" button, the weekday part of the number flashes first, press "⌃" or "⌄", you can set the weekday of the clock; if disabled the week function, press the "⏲" button, will set the hours first. the hour part of the number flashes, press "⌃" or "⌄", you can set the hour of the clock;

when the hour part is set, press the "⏲" button again, the number of minutes will flash, press "⌃" or "⌄" to set the minutes of the clock;

After the minutes part is set, press the "⏲" button again to confirm the real-time clock setting and return to the main interface;

In the real-time clock setting interface, if there is no button operation for 60 seconds, the current clock setting value will be confirmed and return to the main interface;

In the clock setting interface, press the "⏲" button to confirm the clock setting value and return to the main interface.

6. Work time settings

Press and hold the "⏲" button for 3 seconds in the main interface to enable or disable the timer working mode. Then press "⌃" or "⌄" to chose the timer No. 1 or No.2 or No.3 period.

When the timer No. 1 period is selected, the symbol flashes, press and release "⏲" to switch the hour of the start time(ON), the hour part of the number flashes, press "⌃" or "⌄", you can set the hour. When the hour part is set, press the "⏲" button again, the number of minutes will flash, press "⌃" or "⌄" to set the minutes. After the minutes part is set, press the "⏲" button again set the hour of the end time(OFF), the hour part of the number flashes, press "⌃" or "⌄",you can set the hour. When the hour part is set, press the "⏲" button again, the number of minutes will flash, press "⌃" or "⌄" to set the minutes.

After the minutes part is set, press the "⏲" button again to confirm the setting and then switch to next period (No. 2 or No. 3) timer working set, the setting method is the same as above.

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

When all time periods are canceled, it is considered to be in working hours throughout the day.

When the start time and end time of a certain working period are the same, it discards the time period.

When enabled the week function, the timing work cycle time is week, if disabled the week function, the cycle time is 24 hours.

7. Forced defrosting

When the controller is in the normal display mode and the heat pump is ON. Press "Ⓜ" and "⌄" buttons together for more than 5 seconds to activate or deactivate the "Forced Defrost" function.

The symbol "❄" will light up when the "Forced Defrost" is ON.

8. Boost mode

When the controller is in the normal display and the heat pump in heating mode. Press "Ⓜ" and "⌃" buttons together for more than 3 seconds to enable or disable the boost mode, when enable the boost mode, heating element ON, the symbol "♨" will flash for 1 second then light up, when Heat Pump Water Heater -34- / 44 the temperature reach at the set temperature, heating element off, the symbol "♨" will flash, means it is operate in boost mode.

When turn off the heat pump, will exit boost mode.

9. Sterilization

Manual Sterilization Mode:

When the controller is in the normal display mode and the heat pump is ON. Press "⏻" and "🕒" and "⌄" buttons together for more than 5 seconds to sterilize the water tank, the symbol "♨" will flash for 2 seconds then light up, and the heat pump will heate up the water to 60°C .

In automatic sterilization, the symbol "♨" will flash for 2 seconds then light up, and the heat pump will heate up the water to 60°C. It will automatic sterilization every 7 days.

Error code	Error Description	Possible Cause	Solution
E05	High pressure protection	High pressure switch is broken/ Connection is loose	Customer service to identify the reasons
E09	Communication failure	Signal wire connection loose/There is Strong magnetic field/PCB is broken/Signal wire is broken	Replace the controller communication line (mainboard COM2 port)
E12	Exhaust temp. too high	Lack of refrigerant/Fluorine system leak	Check then add refrigerant
E14	Tank temp. sensor failure	Sensor failure/Connection is loose	Replace the T4temp. sensor
E16	Coil temp. sensor failure	Sensor failure/Connection is loose	Replace the T1temp. sensor
E18	Exhaust temp. sensor failure	Sensor failure/Connection is loose	Replace the T3temp. sensor
E21	Ambient temp. sensor failure	Sensor failure/Connection is loose	Replace the T2temp. sensor
E29	Suction temp. sensor failure	Sensor failure/Connection is loose	Replace the T5temp. sensor (Remark: refer to the diagram, T1+T2+T3+T5 are in group parts)

Please confirm the followings before pilot run of heat pump

- The heat pump has been installed correctly.
- Assembled pipe and wire are all correct.
- Drain water line is not blocked.
- Insulation materials are intact.
- Ground wire is installed correctly.
- Power voltage is equivalent to rated voltage of heat pump.
- Inlet and outlet air port have no obstacle.
- Air attached to water pipe is drained out, and all valves have been opened.
- Leakage protection device works well.
- Input water pressure is more than 0.15MPa.

1. Maintenance

1.1 Frequently check power plug and sockets and make sure both of them have been connected well and reliably, and have no over-heating effect.
1.2 When not used for a long time, especially where temperature is below 0°C, water filled in the water tank must be drained out to prevent from damaging inner tank. (operation shown in the above contents)
1.3 To make heat pump to keep a long-term and high efficiency working state, we suggest you should clean inner tank up every half a year to remove accumulated sediment, please obey the following rules to clean inner tank:
1.3.1 Turn off power supply of heat pump.
1.3.2 Turn off cold water inlet valve, and open up hot water tap water.
1.3.3 Connect drainage water with drain outlet through a soft pipe. (temperature resistance of drainage pipe must be more than 93°C, if drainage pipe is not suitable, please turn on cold water inlet valve, and turn on hot water tap until water is not hot).
1.3.4 Turn on drainage water port of heat pump, clean water tank attached to inner tank up, if needed, you will wash inner tank for many times to clear sediment.
1.3.5 Turn off drainage water port, re-fill water into inner tank and recover power supply.
1.4 Each device has been matched with one anode rod, and anode rod will be slowly consumed during the process of protecting inner tank and extending use life. Under some water circumstance, anode rod and water can rise reaction, hot water will be quickly corroded and rise leakage when anode rod has been used up. We suggest check insulation materials every one year, if anode rod is used up, you can inquiry local service center or technical department to acquire a new one.
1.5 It is recommended that the temperature is not set higher than the temperature required, to reduce heat losses and increase system efficiency.
1.6 Filter should be cleaned up every one month to make sure heating effect.
1.7 If used in regions where the temperature is below 0°C, you should take suitable measures to protect pipes in case the heat pump is installed outdoors.

2. Specific information for service personnel

2.1 Checks to the area
Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, 2 to 6 shall be completed prior to conducting work on the system.
2.2 Work procedure
Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.
2.3 General work area
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
2.4 Checking for presence of refrigerant
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e.non-sparking, adequately sealed or intrinsically safe.
2.5 Presence of fire extinguisher
If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

2.6 No ignition sources

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

2.7 Ventilated area

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

2.8 Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.

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

– the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.

– the ventilation machinery and outlets are operating adequately and are not obstructed.

– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.

– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.

– refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

2.9 Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall 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 shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering or purging the system.
- That there is continuity of earth bonding.

3. Repairs to sealed components

3.1 During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

3.2 Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

4. Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use. The device must be operated in safe conditions, and the device must be operated in rated conditions. Replace parts only with safety parts specified by the manufacturer, otherwise other parts may cause the leaked refrigerant to catch fire.

5. Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

6. Detection of flammable refrigerants

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 all refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
NOTE Examples of leak detection fluids are
– bubble method,
– fluorescent method agents.
If a leak is suspected, all naked flames shall be removed/extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

7. Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- Remove refrigerant.
- Purge the circuit with inert gas (optional for A2L).
- Evacuate (optional for A2L).
- Purge with inert gas (optional for A2L).
- Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants other than A2L refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, other than A2L refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. 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 potential ignition sources and that ventilation is available.

8. Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

9. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.
9.1 Become familiar with the equipment and its operation.
9.2 Isolate system electrically.
9.3 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.
- Recovery equipment and cylinders conform to the appropriate standards.

9.4 Pump down refrigerant system, if possible.
9.5 If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
9.6 Make sure that cylinder is situated on the scales before recovery takes place.
9.7 Start the recovery machine and operate in accordance with instructions.
9.8 Do not overfill cylinders (no more than 80 % volume liquid charge).
9.9 Do not exceed the maximum working pressure of the cylinder, even temporarily.
9.10 When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
9.11 Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

10. Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

11. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

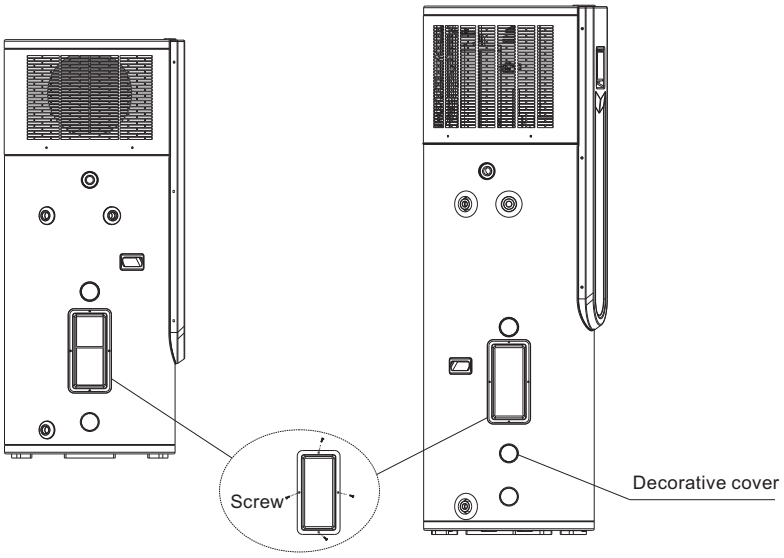
12. Error & Approaches

Error	Reason	Approach
The outlet water is cold. The screen is dark.	1. The plug is not plugged properly. 2. The temperature controller is on the lowest temperature control state. 3. The temperature controller is damaged. 4. The circuit board of the indicator lamp is damaged.	1. Plug in properly. 2. Set the temperature of the controller in higher state. 3.Inform the service department.
No water out from the hot water outlet	1. The tap water is cut off. 2. The water pressure is too low. 3. The tap water inlet valve is closed.	1. Waiting for the restore of the tap water. 2. Wait and use when the water pressure is raised. 3. Open the tap water inlet valve.
Water leakage	Bad tightness in the connecting points between pipes.	Improve the tightness of the connecting points.

13.Anode rod replacement

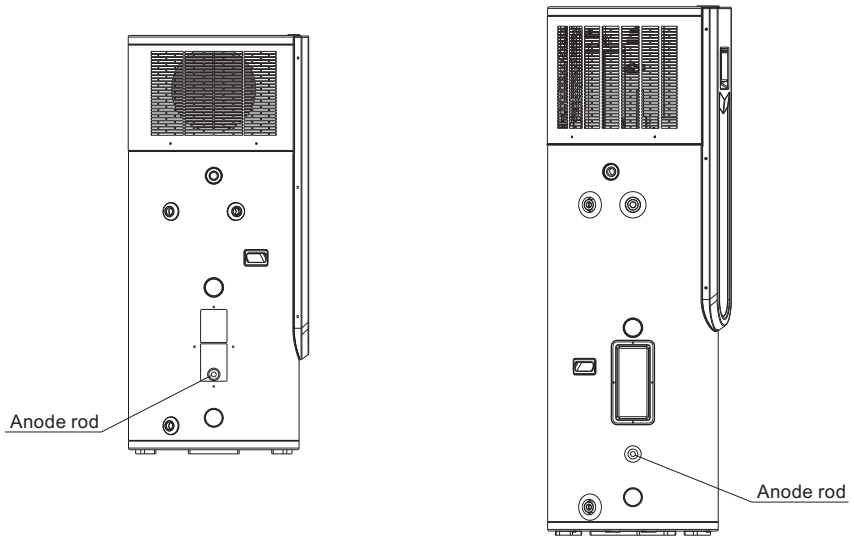
⚠ Caution	Check it once a year, generally replace once every two years.

13.1 Check the decorative cover of anode rod from the front of water tank.



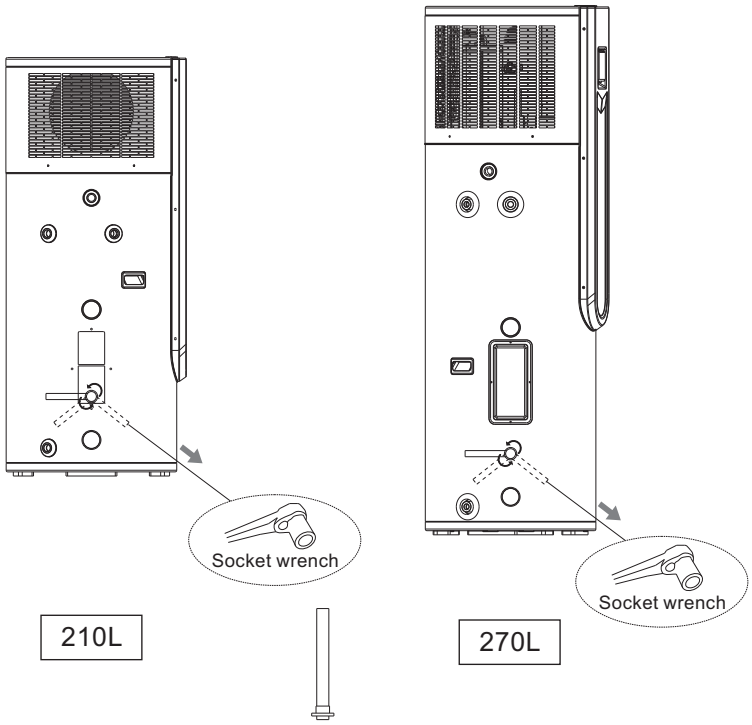
210L 270L

13.2 Remove the decorative cover and we can see the anode rod.

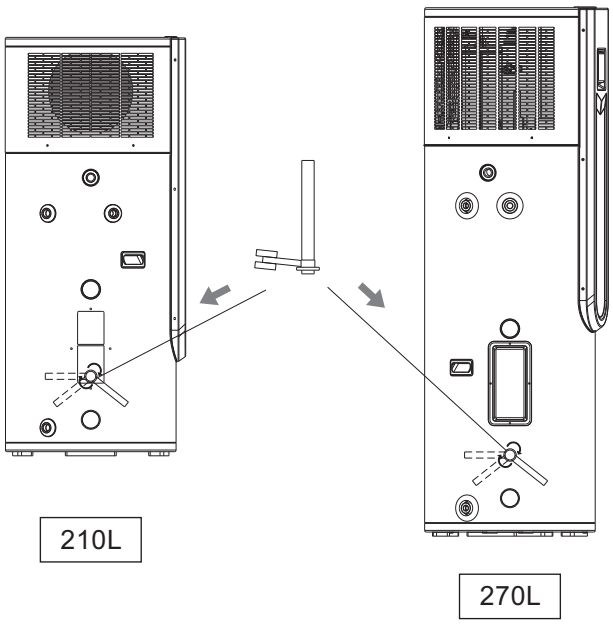


210L 270L

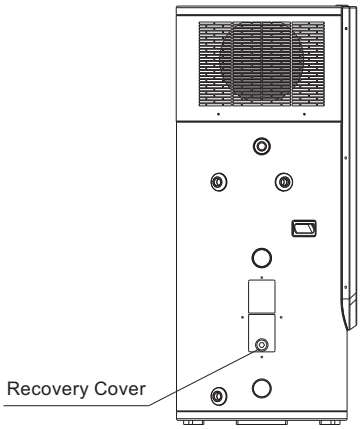
13.3 Use the socket wrench(Φ21) to screw tease out the anode rod.



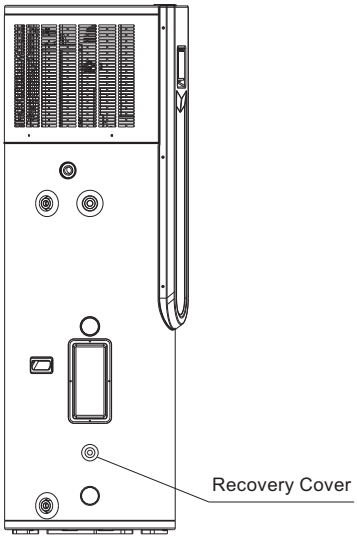
13.4 Wrap the raw material belt on the screw thread of a new piece of anode rod, and install it.



13.5 Make sure the anode rod is tightened enough and put the cover back.



210L



270L

After-sale Service

If your hot water heater can not operate normally, please turn off the unit and cut off the power supply at once, then contact our service center or technical department.

Correct Disposal of this product
This marking indicates that this product should not be disposed with other household wastes throughout the EU.To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources.To return you used device,please use the return and collection systems or contact the retailer where the product was purchased.They can take this product for environmental safe recycling.

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