Air Source Heat Pump Water Heater

Installation and service manual

Models:

GRS-2.4/D270ANbA-K

- Thank you for choosing Air Source Heat Pump Water Heater, please read this owner's manual carefully before operation and retain it for future reference. If you have lost the Owner's Manual, please contact the local agent or visit www.gree.com or send email to global@gree.com.cn or electronic version.
- GREE reserves the right to interpret this manual which will be subject to any change due to product improvement without further notice.
- GREE Electric Appliances, Inc. of Zhuhai reserves the final right to interpret this manual.

User Notice

Thank you for selecting Gree air source water heater.

In order to operate the product safety, please read this manual carefully before installation and operation and pay more attention for the notices for operation and maintenance. Meanwhile, please keep this manual well for future reference.

Air source water heater is a kind of professional household electric appliances. Improper installation may cause damage or risk. Therefore, the installation and maintenance must be conducted by the professional person. User can contact with the appointed local installation service center. Before installation, please read the part of installation on this manual carefully and then install the unit according to the instruction strictly. The interpretation for this manual is owned by the Gree Electric Appliances Inc. of Zhuhai, which is subject to change without prior notice.

The air source water heater is a kind of heat storage type water heater. When you are using the water, please turn on the cold water valve at first, adjust the flow volume of cold water and hot water and then adjust the water to the proper water temperature to prevent scalding. If you don't use this water heater for a short time in winter, please keep this unit is energized for 24hours a day. If you won't use this unit for a long time, please drain out the water inside water tank and pipeline to prevent damage. If the water can't be drained out smoothly, please contact our companies' dealer or appointed service center. Our company will send professional person to provide you with checking, debugging, clean and maintenance service.

This instruction manual is the operation and installation instruction manual for the vertical coil type air source water heater. As for the operation method for the wired controller, please refer to the equipped instruction manual for the wired controller.

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1 Safety instructions and recommendations

1.1 Symbols used

indicates the prohibited operations.

indicates instructions that must be followed.

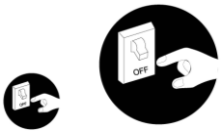
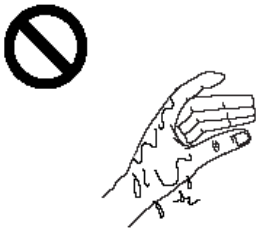
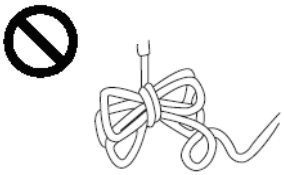
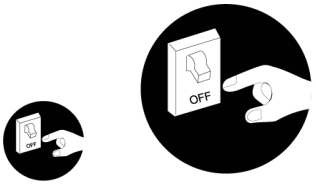
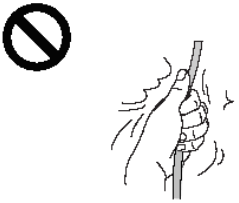
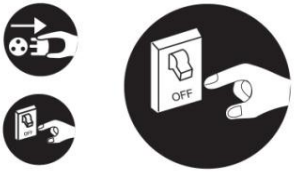
indicates instructions to which special attentions must be paid.

Notice: The special attentions must be paid.

Caution: Risk of material damage.

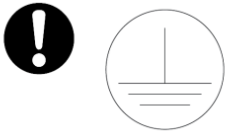
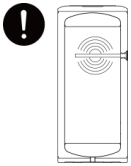
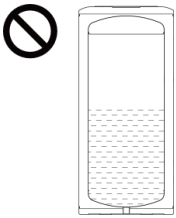
Warning: Risk of dangerous situation causing slight physical injury.

1.2 Safety instructions and recommendations

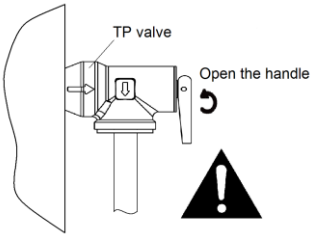
<table>
<tr><td colspan="3">Before you use this product, please read the following instructions carefully.</td></tr>
<tr><td colspan="3">Caution</td></tr>
<tr>
<td>★ For any exceptions such as burning smells, please cut off the power supply and then contact Gree authorized maintenance center.
 
If an exception persists, the air source water heater may be damaged, which may even cause an electric shock hazard or cause a fire.</td>
<td>★ Do not operate the water heater with wet hand.
 
Otherwise, an electric shock hazard may be caused.</td>
<td>★ Before installation, check whether the voltage of the local power grid accords with the voltage on nameplate of the unit, and capacity of the power supply, power cord or socket is suitable for input power of this unit.
 </td>
</tr>
<tr>
<td>★ Dedicated lines must be used for the power supply to prevent a fire.
 
Do not use multipurpose sockets or mobile wiring boards to connect wires. Otherwise, overheating or even a fire may be caused.</td>
<td>★ Pull out the power plug and drain the main unit and water tank when water heater is not in use for a long time to prevent cracking caused by cold weather.
 
</td>
<td>★ Do not damage wires or use undesignated wires.
 
Otherwise, overheating or a fire may be caused.</td>
</tr>
<tr>
<td>★ Before cleaning, please cut off the power supply.
 

Otherwise, an electric shock hazard may be caused.</td>
<td>★ Use dedicated circuits with a leakage circuit breaker protection for the power supply and ensure sufficient capacity.

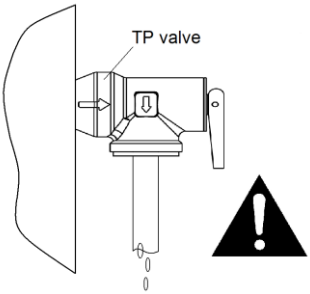
Otherwise, overheating, a fire, or an electric shock hazard may be caused.</td>
<td>★ Do not change the power cord or socket without any consent. Wiring tasks must be completed by qualified electricians. Ensure proper grounding for the metal part of the unit, and do not change the grounding mode.
 </td>
</tr>
</table>

★ The unit must be securely grounded! The grounding wire must be connected to a dedicated apparatus of the building.  If the unit is not grounded, contact qualified personnel for installation. Do not connect the ground cable to the gas pipe, water pipe, drainage pipe, or any other places considered improper by professional personnel.	★ Do not put any foreign matter into the unit. Otherwise, the unit may be damaged or cause hazards. Do not put your hands into the air outlet of the main unit. Otherwise, hazards may be caused. 	★ Do not repair the unit by yourself. Improper repair may cause an electric shock hazard or a fire. For repair services, contact the Gree appointed service center.
★ Do not stand on the main unit or water tank, or place any object on it. Otherwise, the main unit or water tank may be deformed or damaged, or even hazards may be posed when a person or object falls off.	★ To save energy more efficiently, install the main unit at a well-ventilated place. Do not block the air inlet or outlet of the main unit. Otherwise, energy efficiency may be reduced, and shutdown or even a fire may be caused.	★ Keep chemical sprays, gas tanks at least 1 meter away from the main unit. Otherwise, fire hazards or explosions may be caused.
★ Check whether the base of the main unit is damaged. If the base is damaged and not fixed, the unit may fall off, causing hazards.	★ To improve durability of the water tank, a Magnesium rod is installed inside the water tank. The Magnesium rod has a lifespan of two to three years, and must be replaced by professional maintenance personnel if a replacement is required. 	★ When the water tank has no water or not full filled, do not power on the unit. Otherwise, the unit may be damaged or a fire may be caused. 

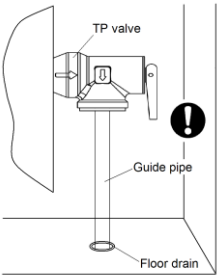
★ Open the TP valve handle on a regular (about one month) basis to check whether it is blocked. Perform sewage disposal by following the guide on a regular (about once a year) basis.



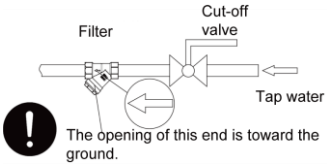
★ It is normal that the TP valve drips.



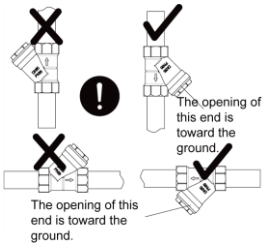
★ The pressure relief opening of the TP valve must be connected to one end of a securely fixed guide hose, and the other end is connected to the floor drain. Ensure that the guide hose is not twisted or folded.



★ You are advised to install the filter horizontally after the main shutoff valve of the user's water pipe. Ensure that the direction indicated by the arrow on the filter must be the same as the water flow. If impurities inside the waterway need to be cleared, open the end cap of the filter.



★ When the filter is installed vertically, the direction indicated by the arrow must not be upward and the end cap must be placed slantwise downwards.



★ 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 possibly 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.

★ This unit contains fluorinated gas with greenhouse effect covered by the Kyoto Protocol. Maintenance and disposal must be carried out by qualified persons only.

Refrigerant gas R134a,

GWP=1430.

★ The fuse model and rated value are in accordance with the corresponding controller or the silk screen attached on the protective tube.

2 Technical description

2.1 general description

- High-efficiency and energy-saving

This unit adopts the adaptive control of the electronic expansion valve, whose opening angle will be adjusted automatically according to the working condition of the unit. This unit is using the heat in the air to heat the domestic water. It will operate at the optimized condition all the time under the condition of ensuring reliability. The water tank adopts external winding microchannel heat exchanger, which is contacted with the inner port directly for ensuring high heat-exchanging efficiency and better pressure-bearing capacity. The high-efficiency heat-conducting materials are adopted between microchannel heat exchanger and inner port of water tank for better thermal conductivity.

- Reliable and durable

Adopt the special compressor for the heat pump water heater, high temperature and high pressure resistant. The water tank adopts the advanced stainless steel inner port, equipping with the anticorrosive design for the super-long magnesium. The complete unit is with multiple kinds of protection.

- Eco-friendly and safe

Adopt eco-friendly R134a refrigerant, no pollution to air and no risk of carbon monoxide poisoning for ensuring safety.

- Convenient for installation

The installation is not limited by the environment, which can be installed at carbarn, storage room, basement, balcony and so on. Not need person to take care of it. It’s applicable for family and villa and other places, no circulating waterway system. It’s very convenient for installation and maintenance.

- Deluxe configuration

The unit is equipped with high-class touchable wired controller. There’s hotwater, save, preset, night and electric heating five kinds of heating mode for free selection. The setting range for the water temperature is 35℃～70℃. You can select fast heating, timer ON and OFF, preset, i-know, disinfect and other functions.

- Intelligent defrosting

The unit is with freeze prevention and auto defrosting functions, which can solve the problem of icing and frost.

- High water temperature

The highest heating temperature for the heat pump can be up to 70℃, which can satisfy the requirement for different places and users.

- All-weather operation

This unit can provide hot water all the year round.

2.2 Main parts

2.2.1 Appearance

Because of the product improvement, the actual product may be different from the skect map. Please refer to the actual product.

Fig. 2-1 Sketch map for the appearance

2.2.2 Main parts

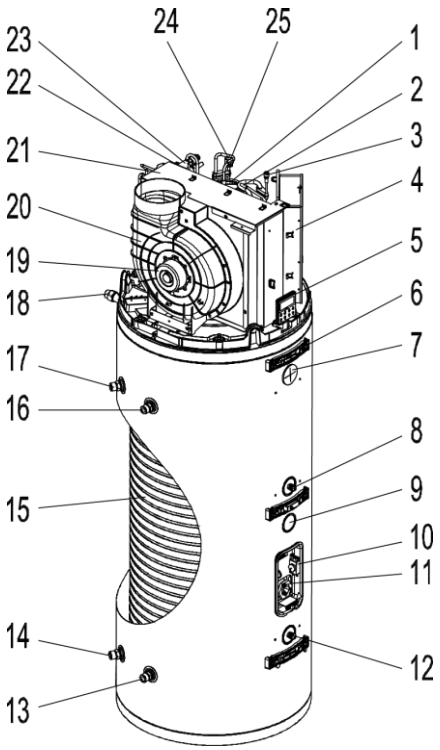


Fig. 2-2 Sketch map for main parts

1 Compressor
2 inspiration temperature sensor
3 Refrigerant-affusing nozzle
4 Wiring box
5 controller
6 Faceplant nog
7 Wire hole
8 Water temperature sensor
9 Magnesium rod
10 Water temperature controller
11 electric heating component
12 Water temperature sensor
13 Cold water inlet
14 Drain outlet
15 Microchannel heat exchanger
16 Hot water outlet
17 TP valve meatus
18 Condensate drain outlet
19 Fan
20 Fan groupware
21 evaporator
22 Electronic expansion valve
23 Four-way valve
24 High pressure switch
25 exhaust temperature sensor

2.3 Operating principle

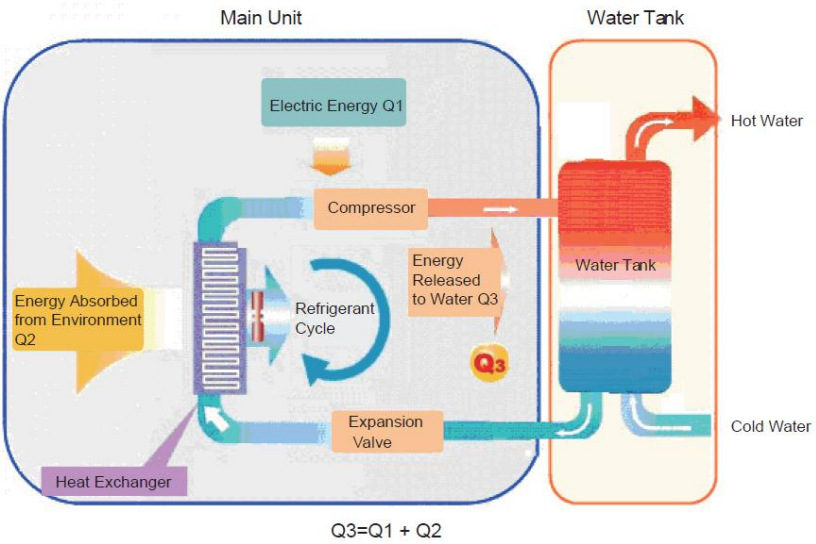


Fig. 2-3 Working principle diagram for the air source water heater

The air source water heater is driving the compressor by some part of electricity by using the heat pump principle. Through the thermal circuit, absorb the heat from the low-grade energy (air) in the surrounding environment, transmit it to the heat exchanger of water tank and then release it to the water inside the water tank for heating water.

The heating principle for air source water heater and heat pump air conditioner is the same. Heat pump air conditioner supplies the absorbed heat from natural environment to indoor air, while air source will use that heat to heat domestic water. Air source water heater is a kind of new, high-efficiency, energy-saving and eco-friendly water heater.

2.4 Technical specifications

Model			GRS-2.4/D270ANbA-K
Rated Heating Capacity(1)		W	2400
Rated Input Power(1)		W	685
Capacity		L	270
Load Profile		-	XL
COP(2)		W/W	2.58
Energy Efficiency Class(2)		-	A
Water Heating Energy Efficiency(2)		-	105%
Annual electricity consumption (average climate conditions)		kWh	1594
Maximum Input Power		W	1300+1500W (Electric Heater)
Outlet Water Temperature		°C	Default: 55°C, 35°C~70°C
Power Supply		-	220V-240V ~50Hz
Insulation Level		-	Ⅰ
Protection of Ingression		-	ⅠPX4
Refrigerant	Name		R134a
	Charge	kg	1.10
Outline Dimensions	W x D x H	mm	660×667×1958
Package Dimensions	W x D x H	mm	813×813×2100
Gross/Net Weight		kg	See the nameplate
Sound Power Level(3)		dB(A)	62
Operating Range		°C	-7~45

Notes:

(1) Value obtained with the following conditions: Outdoor temperature: 20°C DB/15°C WB; Water tank temperature (start/end): 15°C /55°C.

(2) Value obtained with an air temperature of 7°C and a water inlet at 10℃, as per EN16147-2011, (EU) No 814-2013.

(3) Value obtained as per EN 12102-2008, (EU) No 814-2013.

(4) The installation of suction and backflow conduits on the heat pump lessens its performance.

Under fast water heating mode, electric heater helps to heating water.

Please always see the nameplate for the exact data as this table is subject to change.

3 Installation

3.1 Important hint

(1) The air source water heater must be installed by professional person according to national wiring regulation and this instruction manual.

(2) If it needs to install and move the air source water heater, please contact with Gree appointed local maintenance center. If the air source water heater is installed by unappointed unit, Gree won't take the responsibilities for the malfunction and other problems due to the installation.

(3) If the users use the own prepared installation materials to install the air source water heater, Gree won't take any responsibilities for all the loss due to leakage of pipeline, drop of unit and poor installation.

(4) The water quality for the air source water heater should comply with the local sanitation standard for the domestic drinking water. If using the water in well, ground water or sea water, it will accelerate the consumption of magnesium rod in water tank and shorten the service life of the unit.

(5) The water passed through the iron-exchange water softener will accelerate the consumption of magnesium rod of water tank. Therefore, you are not suggested connecting the water softener to the water inlet of air source water heater.

3.2 Basic requirement for the installation position

If the product is installed at below places, it may cause malfunction for the air source water heater. If it's unavoidable, please contact local Gree appointed maintenance center to purchase special models.

(1) There are thermal sources, steam, flammable gas and explosive or volatile substances.

(2) There are high-frequency equipments, such as welding machines, medical facilities.

(3) Coastal places.

(4) There's oil (machine oil) in the air.

(5) There's sulfureted gas (sulfur spring).

(6) Special places.

3.3 Selection for installation positions

(1) The noise and discharge air won't disturb neighbours, animals or plants.

(2) Make sure the good ventilation for the water heater; air inlet and air outlet of water heater can't be blocked.

(3) The installation position should bear the weight and vibration for the water heater.

(4) Select the dry place. The unit can't be exposed at direct sunshine or strong wind.

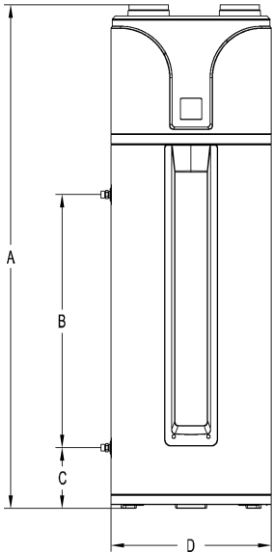
(5) Make sure the heat exchanger comply with the requirement of the installation drawing issue; the unit should be installed at the place where's convenient for maintenance and inspection.

(6) Select the place where is beyond the children.

(7) Do not affect the public passage and the city appearance.

3.4 Installation space requirement and installation drawing

3.4.1 Main size



Model	GRS-2.4/D270ANbA-K
A (mm)	1958
B (mm)	984
C (mm)	235.5
D (mm)	620

Fig. 3-1 Sketch map for main size

3.4.2 Installation requirement

(1) Do not point the air outlet of water heater at the upwind direction.

(2) The water heater should be installed at the places where the ambient temperature is above 0℃; The distance between hot water outlet and the hot water using position can't be too long. Conduct heat treatment protection for the hot water pipeline to reduce heat loss.

(3) The distance between water heater and surrounding wall or other shelter objects can't be too small. The installation space should satisfy the drawing requirement.

(4) If install a rain shed for protecting the water heater, please make sure that it won't affect the heat radiation and absorption for the heat exchanger.

(5) The water heater should be installed at the solid place uprightly. Fix the water heater with ground bolt if necessary.

(6) There should be tap water pipe, joint of hot water pipe and floor drain nearby the water heater for water supply for water tank, hot water supply and water drainage.

(7) Condensate water drainage: connect the drainage hose to the drainage hole on the unit according to the drawing tightly and then lead to drainage hose to proper place for discharge.

3.5 Water pipe connection

(1) Pipeline preparation

Adopt the special pipe for the hot water exit pipe of water heater. S2.5 series PPR pipe with the external diameter of dn20 are suggested. If adopt other similar insulated pipe materials, you can select it by referring to above external diameter and the pipe thickness. Aluminium pipe are not suggested to be adopted.

(2) Installation of water inlet pipe and water outlet pipe of water tank

The water inlet pipe must be installed with safe device, strainer and cut-off valve, and the installation sequence must be the same with the sketch map of unit installation. A cut-off valve must be installed on the water outlet pipe.

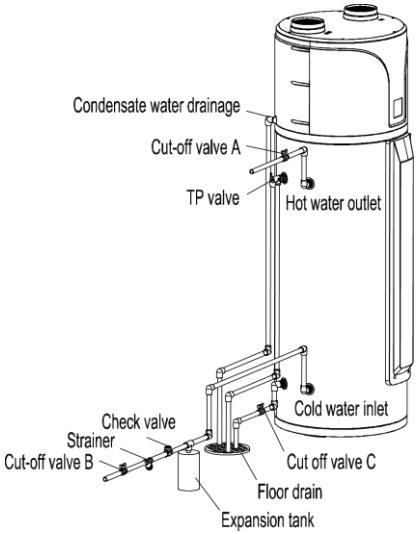
For the convenience of drainage or clean for water tank, you are suggested to install a three-way valve and a cut-off valve at the air outlet of water tank; if the water tank is far away from the water using point (hot water pipe is more than 20m) or the hot water using point is lower than the hot water outlet of water tank, three-way valve and cut-off valve must be installed.

(3) Installation of drainage pipe

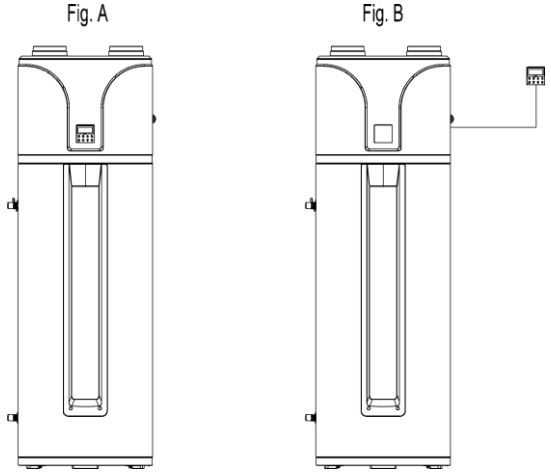
Take out the choke plug of drainage outlet, and then connect the drainage outlet and the floor drain with pipeline. The position for the connection end for drainage

pipeline and floor drain should be lower than the bottom part of water tank; otherwise, the water can't drained completely. A cut-off valve must be installed at the drainage pipeline, and the cut-off valve must be installed at the position where is convenient for the operation.

3.6 Installation sketch map



3.7 Installation Instruction of Wired Controller



(1) Fig. A is the standard installation way of wired controller. The wired controller

is installed on the unit before ex-factory;

(2) Fig. B is the detached installation way of wired controller. Long communication wire shall be equipped to install the wired controller on the wall. If this kind of installation way is adopted, please contact the after-sales installation personnel to select the communication cable with proper length;

Instructions for installing the wired controller on the wall:

① Remove the 6 fixing screws on the top cover;

② Remove the top cover;

③ Remove the 6 fixing screws on the front outer case subassembly;

④ Remove the front outer case subassembly;

⑤ Remove the 3 fixing screws of the gland of wired controller ;

⑥ Remove the gland and wired controller (please keep the gland of wired controller properly for future use);

Please change the original short communication cable with long communication wire, which is led out from the cable-crossing hole of unit;

⑦ Install decoration cover;

⑧ Tighten the fixing screw of decoration cover;

⑨ Install the front outer case subassembly;

⑩ Tighten the 6 fixing screws of front outer case subassembly;

⑪ Install the upper cover;

⑫ Tighten the fixing screw of upper cover;

⑬ Connect the wired controller with long communication cable and then install the wired controller on the wall;

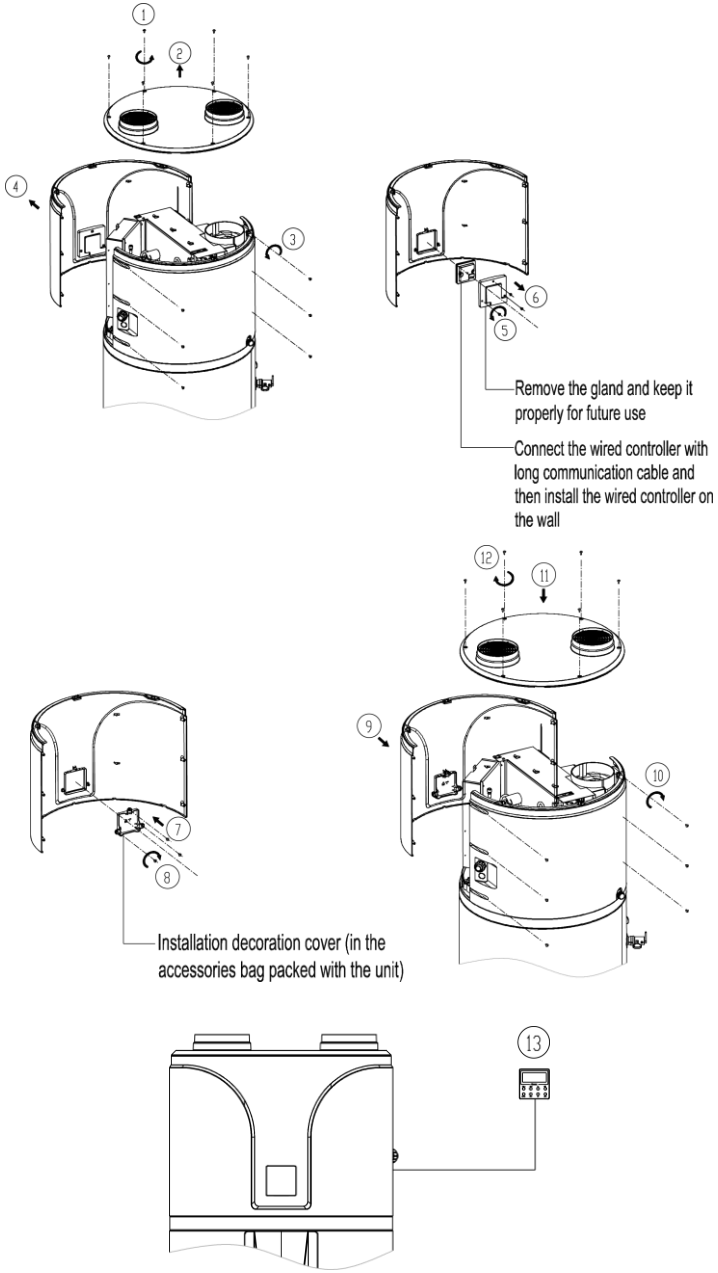


Fig. 3-2 Sketch map for Installation Instruction of Wired Controller

3.8 Wired Controller Installation

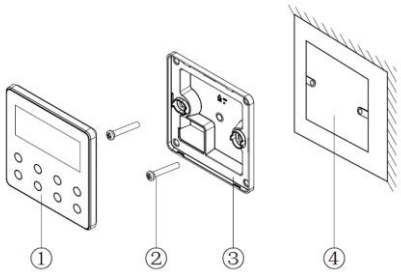
3.8.1 Requirements for Wired Controller Installation Locations

(1) Do not install the wired controller in a wet place or a place exposed to direct sunlight.

(2) Do not install the unit or wired controller of the air source water heater in a place susceptible to electromagnetic interference.

(3) Ensure that the communication line is connected to the correct interface. Otherwise, communication will be failure.

3.8.2 Wired Controller Installation



No.	1	2	3	4
Name	Front panel of wired controller	Screw	Soleplate of controller	Socket's base box installed in the wall

Fig. 3-3 Accessories of Wired Controller

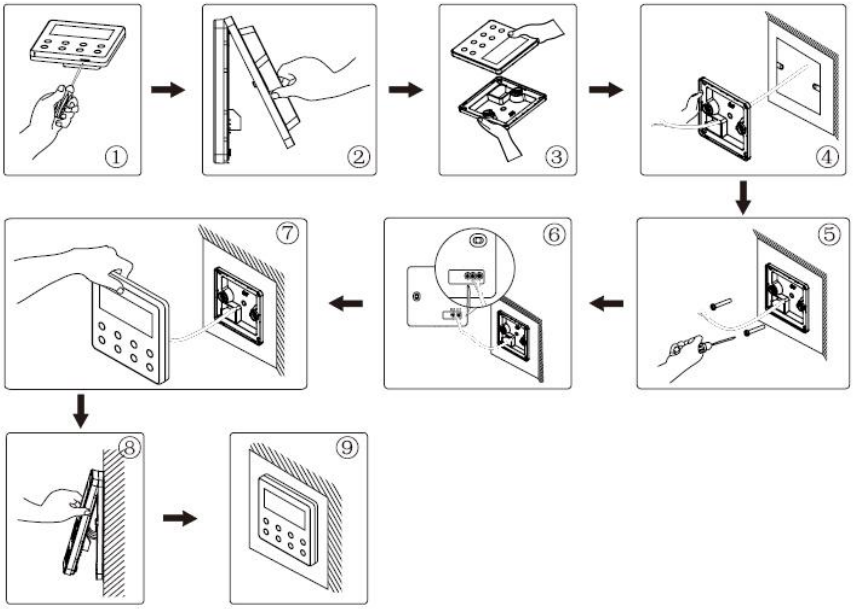


Fig. 3-4 Installation Diagram of Wired Controller

Fig. 3-3 is the installation diagram of wired controller. Cut off power supply of heavy-current wire embedded in mounting hole in the wall before installation. The installation method is as below:

Pry the removal port with straight screwdriver to separate the front panel and soleplate of wired controller;

Pull out the communication cable(4-core twisted pair wire) in the base box and then make the communication cable go through the hole of soleplate of wired controller;

Joint the controller's soleplate and base box with screws M4×25;

Insert the communication cable(4-core twisted pair wire) into controller's slot;

Buckle the front panel and soleplate of controller together.

Caution

During the following connections, pay special attentions to prevent malfunction due to electromagnetic interference:

(1) The communications line of the wired controller and the line of the

temperature sensor should be separated from the power cable, and the distance between them should be greater than 20 cm. Otherwise, the unit may not be able to communicate properly.

(2) If the unit is installed in a place susceptible to electromagnetic interference, the communications line of the wired controller and the line of the temperature sensor must be used. Shielded twisted pair.

3.8.3 Rainproof Box Installation

If the wired controller is to be installed in outdoors or dank places, please install a rainproof box for wired controller. Pay attention to cut off the power supply of heavy current wire embedded in the installation hole of wall. The whole installation procedure shall be done without electricity. The installation method is as follows:

Separate the panel of wired control and bottom plate with a flat screwdriver;

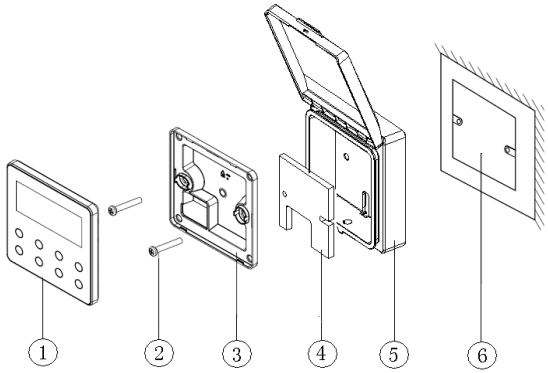
Pull out the communication wire(4-core twisted pair wire) inside the installation box and make this wire go through the wire-crossing hole of rainproof box and wired controller bottom plate;

Secure the bottom plate of wired controller, rubber cushion, rainproof box at the installation box with screws; if there is no installation box in the wall, please drill hole on the wall and install plastic expansion pipe. Secure the bottom plate of wired controller, rubber cushion and rainproof box at the plastic expansion pipe with tapping screws(plastic expansion pipe and tapping screw are provided by our company);

Insert the communication cable(4-core twisted pair wire) into the groove of wired controller;

Align the panel of wired controller with the bottom plate and then fasten them together.

Note: When disassembling the wired controller, please use the flat screwdriver carefully(As shown in Fig. 3-6).



No.	Name	No.	Name
1	Panel of wired controller	4	Rubber cushion(rainproof box)
2	Screw	5	Rainproof box
3	Bottom plate of wired controller	6	Installation box inside the wall

Fig. 3-5 Rainproof Box Assy of Wired Controller

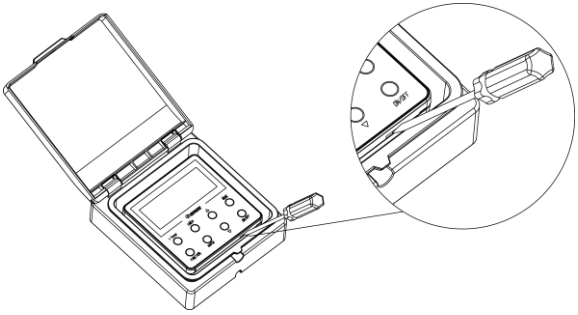


Fig. 3-6 Disassembly Diagram of Rainproof Box of Wired Controller

4 Electric wire connection

4.1 Collocation of electric wire

(1) Air source water heater is the type Ⅰ home appliances. Wires must be connected according to wiring regulation by professional person.

(2) A switch which is used for ensuring all poles of power are OFF must be installed at the fixing circuit, and it should be connected to the wiring terminal of

power directly.

(3) Please do adopt reliable earthing measures. Earthing should be connected to the special earthing device on the building.

(4) Use the power regulated on the nameplate; adopt the special circuit for the water heater.

(5) The power cord must be copper core cable and the working temperature should not be higher than the regulated value; the wire diameter should be big enough and please select it according to table 5-1; if the length is less than 15m, please select the power cord with bigger sectional area to prevent overload. During installation process, do not drag the power forcibly.

(6) The supply power must use the individual fixed device and its structure should be match with the power phase of electric heater and comply with related standard requirement. The leakage switch is suggested to be installed. Do not install the leakage switch at outdoors, bathroom, kitchen, balcony and other moist places.

(7) Do not use the convertor of socket, the prolong wire of cable and wiring board to adapt the power cord of water heater; do not refit other power cord to adapt the household power. Do not share the power cord with other home appliances.

(8) If the on-site installation condition is changed, please decrease the capacity properly for operation according to the provided power cord by manufacturer and the specification of air switch.

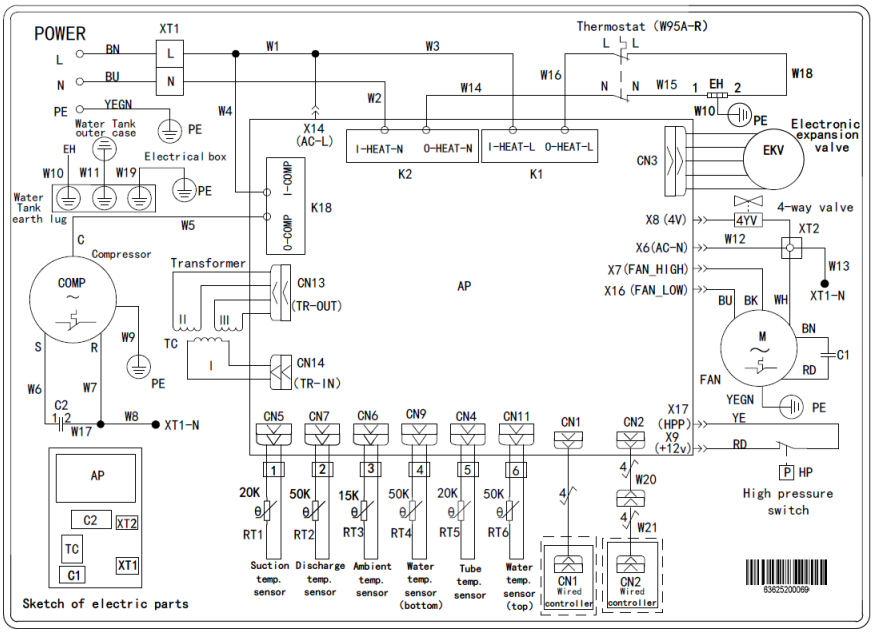
(9) If the power cord is damaged, it must be replaced by manufacturer, service department or similar professional person to avoid hazard.

Table 4-1 Power configuration table

Model	Power type	The minimum sectional area for power cord (mm^2)			Capacity of air switch (A)
		Live wire	Neutral wire	Earthing wire	
GRS-2.4/D270ANbA-K	220V-240V ～50Hz	1.5	1.5	1.5	16

4.2 Electric wiring, connection

(1) Principle diagram for electric wiring



(2) If the unit is equipped with earth wire, please connect one end of earth wire to earthing screw of water tank, and the other end to the earthing screw of the wiring box for the right side plate of main unit.

(3) Please select the proper power cord according to the power configuration table and then connect it to the main power.

(4) Fix the heavy-current wire with wire-fixing clamp and reinstall the wiring box cover.

5 Debugging for the complete unit

When the waterway system and the electric wires for air source water heater are installed well, please check the unit according to below table.

Table 5-1 Check table for the unit

Check items	If the unit is not installed properly, it may cause below circumstances
Check whether the water heater is installed reliably?	The unit may rave about, vibrate or give out sound.
Check whether there’re obstacles at the air inlet and air outlet?	The unit can’t operate normally.
Check whether there’s proper insulated pipeline for the pipe of water tank?	There may be the risk for safety.
Check whether the insulation measure is conducted well for the water pipeline?	It may affect the performance of unit and the pipeline damage be frozen up.
Check whether the power voltage is same as that on nameplate?	There may be malfunction for the unit or parts may be burnt out.
Whether the model of electric wire complies with the regulation?	There may be malfunction for the unit or parts may be burned out.
Check whether the water inlet pipeline is installed with safety device?	The operation pressure for the water tank is high and there’s the risk of safety.
Check whether the water replenishing pressure for tap water is too high?	The operation pressure for the water tank is too high. If the unit is generating water successively, there will be abnormal sound.
When the water replenishing pressure is high, check whether the pressure stabilizeing valve is installed on the water inlet pipeline?	The operation pressure for the water tank is too high. If the unit is generating water successively, there will be abnormal sound.
Check whether the earth wire for the water heater is reliable?	There may be the risk of safety.

When above items are OK, please debug the unit for the complete unit. The debugging procedure is as below:

(1) Add water for the water tank: Add water for the water tank according to 9.1 or the mark on the water tank, and then check whether there’s water leakage for the pipeline and joint. As for the initial installation, it must be operates by installor. If user operates it again after discharging water, it also needs to add

water before turning on the unit.

(2) Energize the complete unit: After be energized, the wired controller will give out a sound. Observe whether the display on the wired controller is normal. The wire controller is with memory function. For the first time be energized, wire controller may display OFF or standby.

(3) Engineering parameters setting on wire controller: System clock time setting, disinfection function setting, etc.

(4) Complete unit operation: After the unit is filled with water, check the water system. Confirm the faucet or the sprayer heat is turned off. Turn on the unit when the cut-off valve at the water inlet pipe and water outlet pipe is opened. When the wired controller is displaying the heating icon, check whether the unit operates normally. Determinant standard: the fan operates normally, the complete unit operates normally; there's no obvious vibration and abnormal sound; let users operate by themselves after the unit has operated normally for at least 20 min.

6 Method for adding or discharging refrigerant

6.1 Add refrigerant

Connect the middle hose from refrigerant manometer to the refrigerant tank, connect one end of blue hose of low pressure manometer to the refrigerant-affusing nozzle of gas valve (do not tighten it), open the valve of refrigerant tank, open valve next to the low pressure manometer to discharge air for 5s and then close it, and then tighten the hose joint on the nozzle of refrigerant-charging nozzle. When the low pressure needle on the manometer is decreasing slowly, twist off the valve next to the low-pressure manometer to ass refrigerant.

6.2 Discharge refrigerant

To open the refrigerant-affusing nozzle of gas valve to discharge the refrigerant.

Notice

This operation must be finished by professional persons. Do not operate it by yourself to avoid hazard. Refrigerant must be charged according to the volume indicated on the nameplate.

7 Unit specification

7.1 Hot water generation capacity

During heating, the unit will absorb the heat from outdoor air constantly and then release the heat to water for heating the water inside the water tank. Once the outdoor temperature is decreased, the heating capacity will also be decreased. Please refer to the below curve for reference.

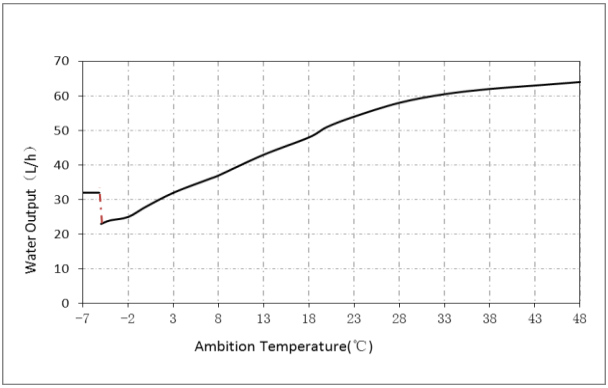


Fig. 7-1 Correction diagram of water generation capacity for GRS-2.4/D270ANbA-K

If pressing “RAPID” button on wired controller, the 1500W accessorial electric heating will be also started up; Compared with heating only with heat pump, water generation capacity will be increased 32L/h after starting up the accessorial electric heating.

7.2 Operation specification

(1) Defrosting

① If there’s defrosting phenomenon during hot water generation process, the unit will defrost automatically in order to improve the heating effect;

② During defrosting running, the fan will stop operation;

③ If defrosting is activated under high temperature environment （＞10℃）and the unit operates abnormally, please ask for maintenance.

(2) Turn on the unit again when the unit is stopped for a long time

If turn on the unit again when the unit stops operation for a long time (including

turn on the unit for the first time), there may be turbid liquid flowing out of the faucet, which is the normal phenomenon. That phenomenon will disappear after for a while.

(3) Power failure

① If power failure occurs during operation period, all operation will be stopped.

② The wired controller is with power-off memory function.

③ If wrong action is resulted in by thunderbolt, wireless of the car, please cut off the power by hand. Energize the unit and turn on the unit again.

(4) Memory function

Once power failure occurs for the water heater or the wired controller, the wired controller will memorize the status of the unit automatically. After energizing again, the wired controller let the unit operate at the set status before power failure.

8 Notices for the operation in winter

(1) If the temperature is low in winter and the unit hasn't been started up for a long time, energize the unit for at least 8h before turning on the unit.

(2) If the outdoor temperature is low in winter, do not cut off the power if the unit stops operation for a short time. Otherwise, the auto freeze prevention protection will be invalid. Under the low temperature circumstances, the auto prevention protection will be active when the water temperature inside the water tank is closing to freezing point, and it will be stopped when the water temperature inside the water tank rises to the safe temperature. However, the auto freeze protection function for the water tank is not unavailable for water inlet pipe and water outlet pipe. If the temperature at the installation position for the unit is lower than 0℃, the antifreezing heating belt must be installed at the pipeline and it should be at the energized status. If the water tank must be installed at outside, the pipe at the outdoor side should be as short as possible, including the connection pipe of refrigerant and the water inlet pipe and water outlet pipe for the water tank; otherwise, the heat will be lost too much; What's more, too much will be lost and the water system will be frozen. Meanwhile, the connection position for the valve and bending position for the water pipe must be insulated well.

(3) If the unit won't be used for a long time, please drain out the water inside the water tank and pipeline completely. Otherwise, the water system will be frozen. After water is drained out completely, if operate the unit again, fill up the water tank with water and then the unit can be turned on. Please refer to the water replenishing and water drainage for water tank for details.

Warm hint:

If it's not convenient for operation or there's hazard, please contact the local appointed dealer or appointed service center directly. We will appoint profession persons to check, debug and clean the unit, and discharge water and fill the water tank with water for you.

9 Maintenance

9.1 Water replenishing and water drainage for water tank

(1) Water replenishing for water tank

① Cut off the power for the unit, open the cut-off valve on hot water exit pipe and the valve at the water using point;

② Open the cut-off valve on the water inlet pipe for tap water;

③ Cut off the valve at the water using point when there's water flowing out from that point.

④ When water supply is finished, put through the power.

(2) Water drainage for water tank

① Cut off the power for the unit and then cut off the cut-off valve on the tap water inlet pipe;

② Cut off the cut-off valve on the hot water exit pipe and the valve at the water using point;

③ Open the cut-off valve at the drain outlet.

④ When the water inside the water tank is drained out, please close the cut-off valve at the drain outlet.

9.2 Periodical clean for the water tank

In order to ensure the hot water quality, please clean the water tank periodically by below procedures:

(1) Cut off the power;

(2) Close off the cut-off valve on the inlet pipe of water tank;

(3) Open the cut-off valve on the hot water exit pipe and the valve at the water using point;

(4) Open the cut-off valve on the drain outlet until the water is drainaged completely;

(5) Open the cut-off valve on the water inlet pipe of water tank, flush the water tank until the water drained from the drain outlet is clean, and then close the cut-off valve on the drain outlet.

(6) Fill the water tank according to water supply operation;

(7) Put through the power when the water is cleaned.

Notice

In general, the water tank should be cleaned once every year. If the water quality is bad, please add the clean times.

9.3 Replacement of magnesium rod

As for ensuring the service life of water tank, magnesium rod is installed inside the water tank. In general, the service life for the magnesium rod is 2-3 years. If the water quality for the hot water is bad, the service life for the magnesium rod will be shortened. The process for replacing the magnesium rod is as below:

(1) Drain out the water inside the water tank completely before disassembly;

(2) Open the protection cover at the installation outlet of the magnesium rod of water tank;

(3) Twist off the magnesium rod with inner hexagon, and then take it out carefully to prevent sullage of magnesium rod dropping into the inner pot of water tank;

(4) Install the new magnesium rod and then fix it with inner hexagon wrench;

(5) Close the protection cover and then fill the water tank with water according to water supply operation.

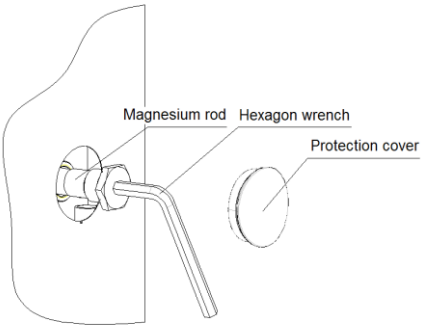


Fig. 9-1 Sketch map for the replacement operation for the magnesium rod

Notice

The replacement for the magnesium rod must be conducted by the professional person. Do not replace it by yourself. Please contact Gree appointed local dealer or appointed service center.

9.4 Maintenance for the unit

(1) Please check the air inlet and the air outlet for the main unit periodically to see whether there are blocked.

(2) Please check the user side waterway, pipe joint and valve periodically to see whether there are damaged or blocked; check whether the joint is leaking and whether the strainer is blocked.

10 Precautions for Safety Usage

(1) For comfort usage, it's suggested to use shower head with flow rate of 6～7L/min.

(2) User should have regular check and maintenance for heat pump water heater, if there is abnormal condition, please immediately contact Gree after-sales service for help so as to guarantee normal, safe and reliable unit operation.

(3) Regular check and replace the magnesium bar is necessary. Customer can contact Gree serviceman for replacement. Recommended replace period is 2～3 years.

(4) Cut off the power supply prior to any maintenance or services. A non-professional personnel is not allowed to adjust or service the heat pump water heater.

(5) Improper operation might cause scald due to hot water. Water heating without enough water might produce high-temperature steam or hot water, which might cause serious scald. Hence, guarantee the water tank is filled with water.

(6) The water heater is equipped with safe relief valve for reliable operation, please don't change its location and never block its outlet. The pipe should be directly connected to floor drain.

(7) Never drink the water inside the water tank.

(8) Children bath should be supervised by adults.

(9) This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

(10) In order to prevent the hazard due to the invalidation if electric heating of water tank, the electric heating circuit is equipped with thermostat. If the water temperature is higher than 95℃, the thermostat will be activated to cut off the electric heating power. However, if the electric heating is abnormal, it needs to contact Gree service man to maintain or replace it.

11 Malfunction analysis

Warning

Please do not maintain the air source water heater by yourselves; otherwise, it may cause electric shock or fire hazard. Please contact with Gree appointed maintenance center for maintenance. Before asking for the maintenance, please check below items for saving your time and cost.

Talbe 11-1

“Malfunction” phenomenon	**“Malfunction” analysis**
The unit can’t operate if turn on the unit immediately after stopping operation	In order to protect the unit, if turn on the unit immediately after stopping operation, the microcomputer will make the unit delay 5 min to operate.
There’s water-flowing sound during operation process.	During the operation process, there will be the sound of “HUA－HUA－”, which is the flowing sound of refrigerant. It’s not the malfunction.
The condensate water is drained out from the water heater.	This is the normal phenomenon for the unit, not the malfunction. Please feel free to operate it. Please connect the drainage pipe to the proper drainage outlet by referring to Installation sketch map.
There’s water drainage from the TP valve.	During heating process, when the inner port of water tank operates at ultrahigh pressure, there will be a little water drainage from the TP valve for releasing pressure, which is the normal phenomenon. If there’s too much water drainage and there’s vibration, please contact the appointed maintenance center.

Table 11-2

“Malfunction” phenomenon	“Malfunction” analysis
Wired controller displays freeze prevention	When the unit operate in winter, the freeze prevention protection will be activated, which is the normal phenomenon.
Hot water flowing from sprayer head is too short	The water flowing volume for the sprayer head is too big, which is the normal phenomenon. Replace it with the sprayer head with the rated flow volume of 6～7L/min.
Wired controlled displays L6 and water temperature	Ambient temperature is too low, which is higher than the operation range for the main unit of the water heater. Or the set temperature for the unit is too high, which exceeds the aximum heating temperature for the heat pump.
During water generation process, there’s frosting phenomenon for the unit	If the unit is generating water for a long time, there will be frosting phenomenon, which is the normal phenomenon. In order to improve the heating effect, the unit will defrost automatically.
During defrosting process, the unit will blow fan and the motor stops operation.	The fan won’t be started up during defrosting process, which is the normal phenomenon.
If turn on the water heater when it hasn’t been used for a long time, there will be turbid flowing out of the faucet in the beginning.	It’s the normal phenomenon. After for a while, this phenomenon will disappear.

Table 11-3

If there’s below circumstances, please contact Gree appointed maintenance center.	
Malfunction phenomenon	**Malfunction analysis**
The water heater stops operation and the wired controller displays E1	High pressure protection for the system
The water heater stops operation and the wired controller displays E3	Refrigerant-lacking protection

The water heater stops operation and the wired controller displays E4	Discharge protection
The water heater stops operation and the wired controller displays E6	Communication malfunction
The water heater stops operation and the wired controller displays EH	Binding protection for accessorial electric heater
The water heater stops operation and the wired controller displays F3	Malfunction of outdoor ambient temperature sensor
The water heater stops operation and the wired controller displays F4	Malfunction of discharge temperature sensor
The water heater stops operation and the wired controller displays F6	Malfunction of tube temperature sensor for outdoor heat exchanger
The water heater stops operation and the wired controller displays Fd	Malfunction of suction temperature sensor
The water heater stops operation and the wired controller displays FE	Malfunction of upper temperature sensor of water tank
The water heater stops operation and the wired controller displays FL	Malfunction of lower temperature sensor of water tank
The water heater stops operation and the wired controller displays L6	Unit's capacity is insufficient
There's harsh sound during operation; There's off-flavor during operation; Air switch or leakage protection switch breaks off frequently.	There may be risk for the safety. Please stop operation immediately and cut off the power.
The unit will be defrosted if the ambine temperature is high （＞10℃）	Abnormal operation for the unit
After-sales service	
If there's quality or other problems for the Gree products, please contact with Gree local appointed maintenance center. If this manual is lost, please contact with Gree local appointed dealer.	

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