GREE
Change for life

Owner's Manual

Original Instructions

Commercial Air Conditioners

Concealed Ceiling FCU

Thank you for choosing commercial air conditioners. 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 an email to global@cn.gree.com for the electronic version.

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

To Users

Thank you for selecting Gree's product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

(1) This equipment should be installed, operated or maintained by the qualified servicemen who have had specific training. During operation, all safety issues covered in the labels, User's Manual and other literature should be followed strictly. This equipment is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

(2) This product has gone through strict inspection and operational test before leaving the factory. In order to avoid damage due to improper disassembly and inspection, which may impact the normal operation of unit, please do not disassemble the unit by yourself. You can contact our designated dealer or local service center for professional support if necessary.

(3) When the product is faulted and cannot be operated, please contact our designated dealer or local service center as soon as possible by providing the following information.

- Contents of nameplate of product (model, cooling/heating capacity, product No., ex-factory date).
- Malfunction status (specify the situations before and after the error occurs).

(4) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation without further notice.

Contents

Safety Notices (Please be sure to abide)

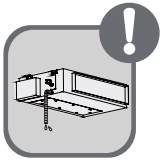
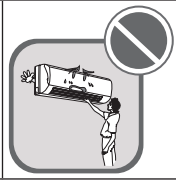
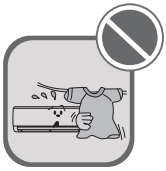
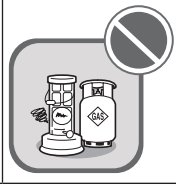
⚠ **WARNING**: If not abide strictly, it may cause severe damage to the unit or the people.

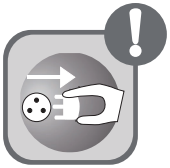
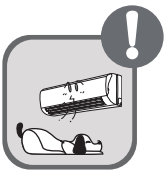
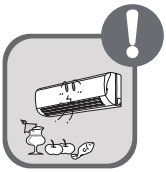
⚠ **NOTE**: If not abide strictly, it may cause slight or medium damage to the unit or the people.

This sign indicates that the operation must be prohibited. Improper operation may cause severe damage or death to people.

This sign indicates that the items must be observed. Improper operation may cause damage to people or property.

⚠WARNING			
	Please perform installation in accordance with this manual and read it carefully prior to startup and service.		Installation should be done by sales agents or qualified servicemen. Do not do it personally, as incorrect installation would lead to water leakage, electrocution, fire hazards etc.
	Before installation, check for power supply and see if it complies with that on the nameplate. Besides, check for safety of the power supply.		This unit should be grounded and there should be grounding lines for the power socket so as to prevent electrocution. Do not connect the grounding lines to the gas lines, water lines, lightning rod or telephone lines.
	Specialized components and parts should be used for installation; otherwise it would lead to water leakage, electrocution, fire hazards etc.		Size of the power lines should be large enough. Power lines and other electric connection lines should be replaced by specialized cables.
	When wiring of power lines is finished, remember to install a electric box to prevent safety accidents.		When installation is finished, check for connection of drain lines, water lines and electric lines, as incorrect connection would lead to water leakage, electrocution, fire hazards etc.
	Do not start or stop the unit by drawing out or plugging in the power plug.		Do not let the children play with this unit.

	Do not operate this unit with wet hands.		Do not clean this unit until the unit is turn off and the power supply is cut off, otherwise it would lead to electrocution or personal injury.
	Do not spray or rinse this unit with water, as it would lead to malfunction or electrocution.		Do not let this unit exposed to moist, wet or corrosive environment.
	Volatile liquid like thinner or petroleum would damage appearance of this unit. (Only soft dry cloth and cloth with neutral detergent can be used to clean the outer casing of this unit.)		Do not make the set point too low under the cooling mode.
	Entering and leaving water lines, condensate lines and valves should be thermal insulated so as to prevent from dewing in summer.		Do not repair this unit by yourself, as incorrect repair would lead to electrocution or fire hazards. Please contact the after-sales center and repair should be done by the qualified servicemen.
	Never splice the power cord or use an extended cord. It can cause overheating or fire.		Don't insert your hands or stick into the air intake or outlet vents.
	Don't block the air intake of the FCU.It can decrease the FCU capacity or cause a malfunction.		Keep combustilble spray away from the units more than 1.5m. It can cause a fire or explosion.

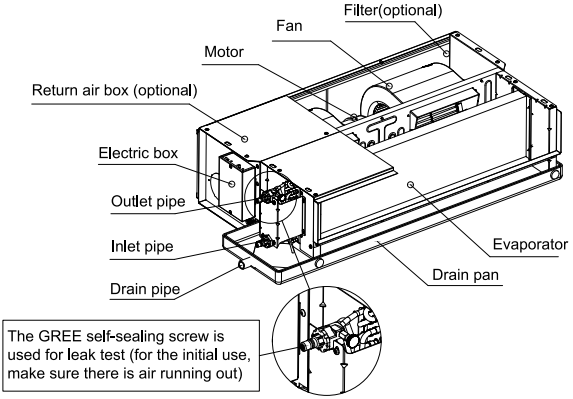
⚠NOTE			
	During operation, do not insert fingers or other objects into the moving parts, which would lead to unnecessary injuries.		Please cut off the power supply when this unit is not used for long time in consideration of safety.
	When there is something unusual (like unusual smell, burning smell, smoke etc.), please turn off the unit and cut off the main power supply at once, and then contact the after-sales servicemen. If unusual conditions go on, this unit would burn out, or even it would lead to electrocution or fire hazards.		Wiring of power lines and electric connection lines should be secure enough. Terminals also should be tightly fastened. The connection line should not suffer external forces. For the unit equipped with the wired controller, the controller would be powered on firstly; otherwise it would be out of normal use.
	The filter should be cleaned periodically in case that heat exchanging effect would be affected.		Please do freeze protection in winter to prevent copper tubes from cracking.
	Don' t leave windows and doors open for a long time while operating the FCU. It can decrease the FCU capacity.		Don't blow the wind to animals and plants directly. It can cause a bad influence to them.
	Don't use the FCU for other purposes, such as drying clothes, preserving foods, etc.		Don't place a space heater near the FCU.

1 Product Introduction

1.1 Working Principle

The cold (hot) water entering the heat exchanger will do heat exchanging with air passing through the surface of the heat exchanger to condition the air temperature and humidity. There is no (cold) hot source for this product itself. The running mode depends on the environment temperature and the running mode of the main unit.

1.2 Main Parts



1.3 Working Conditions

(1) The entering water temperature for cooling is suggested to be no less than 5°C,otherwise it would lead to condensate; the entering water temperature for heating is suggested to be not higher than 80°C (normally 60°C), otherwise it would lead to corrosion of copper tubes or abnormal noise.

(2) The suggested working environment temperature for cooling ranges 16~40°C and ranges 10~35°C for heating. Besides, the relative humidity is or less than 80%.

(3) This product is a kind of comfort air conditioning, and is not allowed to be installed where there are corrosive, explosive and inflammable substances or smog; otherwise it would lead to operation failure, shortened service life, five hazard or even severe injuries. Special air conditions are required for where mentioned above.

2 Unit Installation

2.1 Installation Environment

(1) There should be no direct sunlight.

(2) The hanger, ceiling and the building structure should be capable of supporting the weight of the unit.

(3) The drain pipe can be easily led out.

(4) The inlet and outlet air flow will not be blocked.

(5) There should be no inflammable and explosive substances.

(6) There should be no corrosive gas, heavy dust, salt fog, smog or moisture.

2.2 Precautions for Installation

(1) The unit should be installed by the qualified servicemen who are familiar with the unit and relative local laws and regulations.

(2) The unit shall be installed securely. When installing hanger bolts, be sure they are capable of withstanding 4 times the weight of the unit. If unsure, they shall be reinforced. The weight of the unit is specified on the nameplate.

(3) The unit should be kept level during lifting. Hanger bolts are only intended to bear the weight of the unit other than the outside force of the duct, water pipe and others.

(4) The unit shall be protected again dust during installation.

⚠NOTE

- The length of the duct shall be compatible with the rated static pressure, otherwise the unit would fail to run properly, or excessive noise or even burnout of the motor. The inlet and outlet of the duct shall be attached with flexible connections.

(5) Requirements on Duct Installation

- The duct shall be designed and installed as per the applicable local standards.
- The duct shall be designed so that its sectional area won't change suddenly and the air direction won't change at the outlet.
- The duct shall be insulated reliably to prevent sweating under the cooling operation.

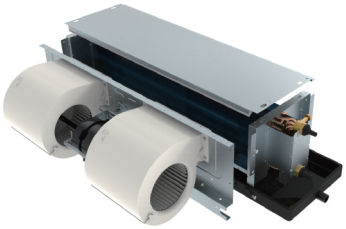
⚠NOTE

- The supply oulet and return air inlet can be kept too close, or it would lead to "short circuit" of the air flow and then the heat exchanging effect would be influenced.
- The duct and fittings should be fixed securely and foreign matters inside the air inlet/outlet and duct should be removed, or unusual noise would arise.

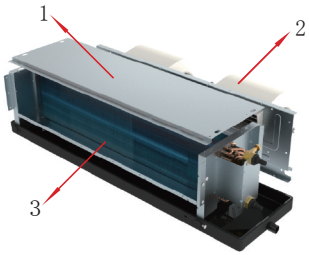
(6) Interchange of the Right and Left Forms

Facing the air outlet, the unit is considered to be left-hand when the connection pipe is at the left side and to be the right-hand when the connection pipe is at the right side.

When the order is placed incorrectly, the left-hand and righ-hand structure can be switched on site following steps stated below(the following operation is just applicable to the G series FCU):



Left Form



Right Form

1: Top Plate; 2: Centrifugal fan; 3: Side plate at the air outlet

Step 1: Remove the centrifugal fan, top plate at the air outlet and screws at the electric box.

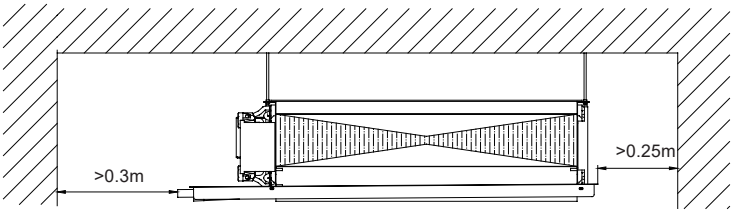
Step 2: Remove the side plate at the air outlet and then install it to the opposite side.

Step 3: Rotate the centrifugal fan and top plate 180° and then fix them with screws.

Step 4: Install the electric box at the other side of the water inlet pipe.

2.3 Installation and Maintenance Space

There should be enough service space around the unit.



2.4 Installation of the Inlet and Outlet Pipes

Water inlet/outlet pipes shall be cleaned up prior to installation and the outlet shall be equipped with a filter to prevent valves from being clogged by foreign matters.

(1) The drain pipe and inlet/outlet pipe shall be with the standard threaded pipe fittings. Water pipes shall be installed as per applicable local standards. During installation, do not over-tighten the pipe fittings to avoid any damage on the header and connections of the coil.

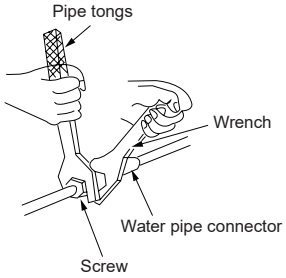
(2) The inlet and outlet pipe should be installed in accordance with the labels on the unit, as the reversely connected inlet and outlet pipes would degrade the capacity of the unit.

(3) The inlet/outlet pipe shall be installed in accordance with the applicable labels and equipped with the quakeproof flexible connections and movable joints, as well as suitable filters to prevent the heat exchanger from scaling which then would lower the heat exchange efficiency.

(4) The inlet/outlet pipe shall be equipped with valves to control and cut off the water flow. The weight of water pipes shall not be withstood by the main unit. Clearance should be reserved in consideration of thermal expansion and shrinkage when fixing pipes.

(5) The inlet/outlet pipe, drain pipe and valves shall be insulated to prevent sweating under the cooling operation in summer.

(6) Do not connect the inlet and outlet water pipelines forcibly to prevent them from being damaged and they should be sealed with Teflon and fastened with the wrench or crimping plier. Do not over tighten them; otherwise the copper tubes would be damaged.



(7) After the pressure test, pipelines should be insulated properly. Cut-off valves, motor valves, filters and other accessories should be installed in the drain pan as possible as they can, otherwise they should be insulated or equipped with an external drain pan to prevent condensate from dripping.

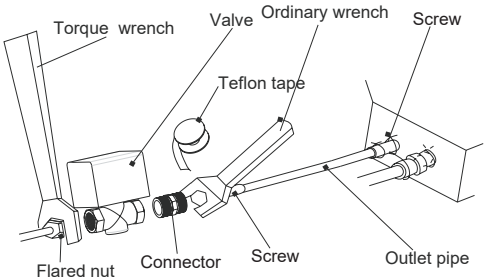
2.5 Installation of the Drain Pipe

(1) The condensate drain pipe should be installed downward with a slope larger than 5% to facilitate drainage.

(2) The size of the drain hose should be equal or larger than the drain pipe.

2.6 Installation of the Water Valve

2.6.1 Precautions

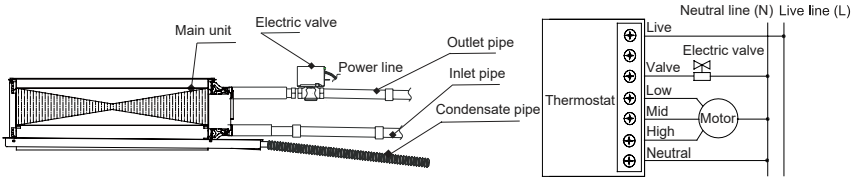


(1) See the figure above for installation of the water valve. Firstly, connect one end of the water pipe to the water inlet of the unit, and then connect the other end to water valve. During installation, both the torque wrench and ordinary wrench should be used. For the former, the torque should be less than 90N.m.

(2) In order for better sealing effect, before connection they should be wrapped with Teflon tape.

(3) After the connector, the water valve and the water pipes have been finished, start the water pump and see if they leak or not.

(4) Insulate the water valve and the pipe with sponge.



(5) When the water pipe and water valve have been installed, connect the connection line of the valve to the thermostat.

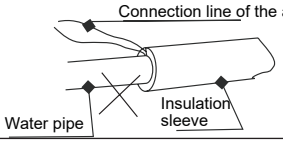
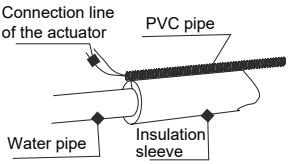
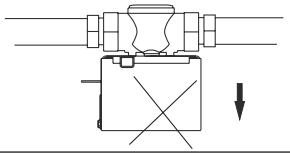
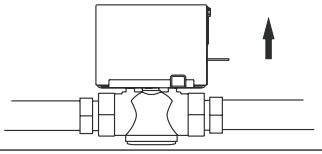
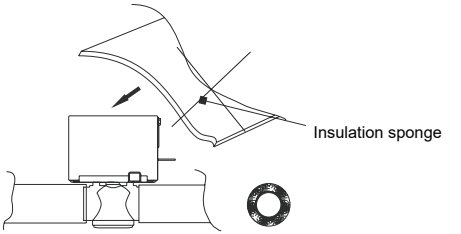
(6) Check the wiring carefully and then start the water pump and unit to see if they work normally.

⚠NOTE

- It is suggested to equip each unit with a motor valve and a thermostat, otherwise when the unit is turned off low-temperature chilled water in the water system will still flow but the fan will stop, which would make temperature of the outer casing quiet lower than the environmental dewing temperature and lead to severe dewing and then the dropping water will damage the ceiling and decoration. Once the unit is not equipped with the motor valve and the thermostat, close the cut-off valve manually when the unit is turned off to prevent from dewing.

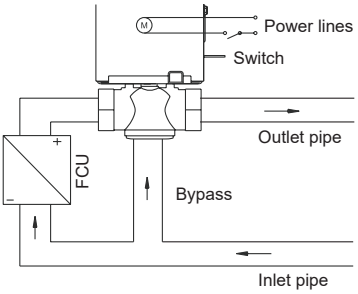
2.6.2 Requirement on Installation

(1) The water valve should be installed as the following statement; otherwise it would affect the normal operation.

<table>
<tr>
<td>⃠ It is not allowed to directly insulate the connection line of the actuator and the water pipe together, otherwise it would lead to shortcutting of the water valve which would affect its service life.
 
</td>
<td>❗ Put the connection line through the PVC pipe and then bind them with the insulation sleeve.
 
</td>
</tr>
<tr>
<td>⃠ Never install the valve downwards, otherwise the condensate would flow into the valve and damage the valve or then would lead to shortcutting or fire hazards.
  </td>
<td>❗ The main body of the valve should be installed upwards and the power lines should be arranged above the water pipe.
  </td>
</tr>
<tr>
<td colspan="2"> 

Do not cover fully the valve with the insulation sponge; otherwise it would lead to poor heat radiation and even fire hazards.</td>
</tr>
</table>

(2) There are direct pass and bypass for the water valve and they can be selected based on actual conditions. See the figure below for the working principle for the water valve.



2.7 Electric Wiring

2.7.1 Precautions for Electric Wiring

(1) All electric wiring should be performed by the qualified technical in accordance with local standards, regulations and this manual.

(2) The specialized electric circuit with rated voltage should be used for the power supply.

(3) Do not pull the power lines by force.

(4) The power lines should be sized sufficiently. The damaged power lines and connection lines should be replaced by specialized lines.

(5) The unit should be connected to the specialized grounding device by the qualified servicemen. For the fixed lines, there should be the breaker and air switch with sufficient capacity. The air switch should be of the magnetic or electric trip-off functions so as for shortcutting and overloading protection.

(6) The unit should be grounded reliably. The yellow-green line is the grounding line. Do not put it into other use, or cut it. The grounding line cannot be fixed with self-tapping screws; otherwise it would lead to electric shock. The grounding line cannot be connected to the running water line, the gas line, the drain line and where it is not approved.

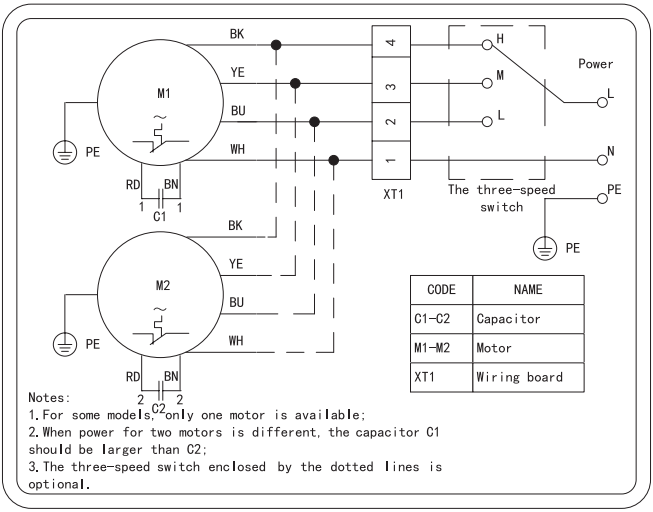
2.7.2 Steps for Electric Wiring

(1) Open the electric box and pull the power lines and connection lines of the electric water valve through the rubber rings. Then, fix them with the wire clamps.

(2) Perform wiring in accordance with the electric wiring diagram.

(3) Fix the lines with the wire clamps.

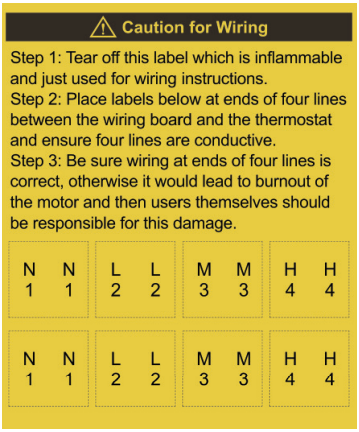
2.7.3 External Wiring Diagram



⚠NOTE

- The wiring diagrams as shown above are just for reference. Those struck to the main body ofthe unit always prevail for repair and maintenance.

Before wiring, remember to tear off the following warning label and then do wiring as it states, or it would lead to burnout of the motor.



⚠WARNING

- All wiring and piping shall be performed by the skilled servicemen.

⚠NOTE

- The neutral line should be connected with that of the thermostat; otherwise it would lead to burnout of the motor. The grounding line should be connected to the electric system other than somewhere else as close as possible; otherwise it would lead to fire hazards. Do use one thermostat to control multiple fan coil units, otherwise it would lead to burnout of the motor or the thermostat or even fire hazards.

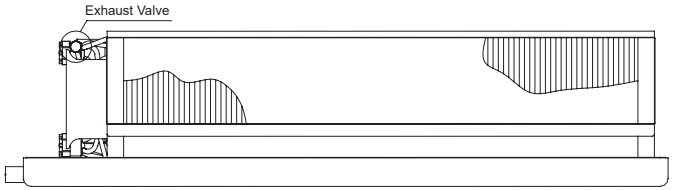
3 Commissioning and Maintenance

3.1 Inspection after Installation

Item	Possible Consequence	Inspection
Is the main unit installed securely?	The unit may fall down, vibrate or generate noise.	
Is the leak test performed?	The unit fails to work normally.	
Is the unit insulted properly?	It may generate condensate and water drops.	
Does drainage go smoothly?	It may generate condensate and water drops.	
Does the power voltage comply with the nameplate?	Errors may rise or some component may be damaged.	
Are wiring and piping performed properly?	Errors may rise or some component may be damaged.	
Is the unit grounded reliably?	It would lead to electric leak.	
Are the electric lines sized properly?	Errors may rise or some component may be damaged.	
Is there foreign matter at the air inlet or outlet?	It would lead to poor cooling capacity.	

3.2 Trial Run

(1) For initial running, open the exhaust valve at the water outlet pipe and expel air inside the pipe and then close it when water flows out. When there is air remaining inside the coil, it would lead to unusual noise and also would affect heat exchanging performance.



(2) Before startup, please clear away foreign matters inside the drain tray and volute casing, and around the unit.

(3) Before initial startup, rotate the fan blades manually, making sure fan blades would not collide with the volute casing.

(4) Start the unit until it is certain that all wiring is correct.

(5) All cold and hot water should be softened.

(6) Do the pressure test when it is certain that the water system is fully sealed. The pressure test should comply with corresponding national standards with the pressure rising gradually. Water adding and air exhaustion should be done one layer after another. Never repair leakage when pressurized.

⚠NOTE

- Do freeze protection in winter and make sure water inside the system for commissioning will not freeze in winter. After commissioning, drain the water system completely and add anti-freeze liquid in water, otherwise coils would suffer frost cracking.

3.3 Maintenance Requirement

(1) Unplug the unit before cleaning; otherwise it would lead to electric shocks or injuries.

(2) The filter shall be cleaned in accordance with the actual working environment. It is strongly recommend to clean the filter once every two month and clean pipes once every two years.

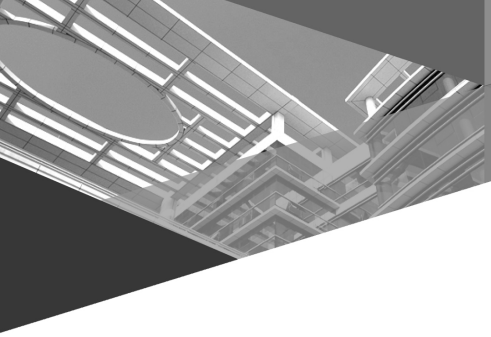
(3) Overall maintenance shall be performed every 2~3 year, including cleaning away the scale on the inner surface of the coil with chemical agent to guarantee expected heat exchange efficiency.

(4) Overall maintenance shall be performed every 2~3 year, including cleaning away the scale on the inner surface of the coil with chemical agent to guarantee expected heat exchange efficiency.

(5) Routine maintenance shall be performed, including cleaning foreign matters in the drain pan, cleaning the main unit, and checking if the motor and the main unit are attached securely.

4 Troubleshooting

No.	Symptoms	Possible Causes	Corrective Measures
1	The unit does not run.	There is no power supply.	Repower the unit when power supply is available.
		The power plug is loosened.	Tighten the power plug.
		The motor is burnt out.	Replace the motor and check for the wiring
2	There is abnormal noise.	The volute or blade is deformed, or the volute contacts the blade.	Replace the volute or the blade.
		The air filter is clogged.	Clean the filter.
		There are foreign matters at the inlet/outlet or inside the duct.	Remove foreign matters.
		There is abnormal noise from the motor.	Replace the motor.
		The fastening screws are loosened.	Tighten them.
3	The airflow rate is too low.	The air filter is clogged.	Clean the air filter.
		There are foreign matters at the return inlet and air outlet.	Clear foreign matters.
		The duct resistance exceeds the design value.	Lower the duct resistance or reselect the unit.
4	The cooling or heating effect is poor.	The air filter is clogged.	Clean the air filter.
		The dampers are not opened.	Open the dampers.
		The fins are clogged or damaged.	Clean or repair fins.
		The entering water temperature cooling is too high and too low for cooling.	Adjust the entering water temperature.
5	Water leaks.	The condensate pipe is clogged.	Clean the drain pipe.
		The unit is not installed as required.	Adjust the unit and let the unit keep a certain inclination degree.
		The environmental air humidity is too high.	Do humidification and do not let the high-temperature and high-humidity air coming into the room.
		The fan stops but cold water is supplied continuously.	Close the water dampers or run the unit.
		The discharge valve is not tightened.	Tighten the discharge valve.



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