GREE
Change for life

Rooftop Air-cooled Air Conditioner User Manual

Owner's Manual

Commercial Air Conditioners

Applicable Models: WKR105/NaA-M
WKR140/NaA-M
WKR180/NaA-M
WKR230/NaA-M
WKR280/NaA-M
WKR370/NaA-M

Thank you for choosing Commercial Air Conditioners, please read this owner’s manual carefully before operation and retain it for future reference.

Notices for Users

Dear Users:

Thanks for purchasing Gree rooftop air conditioner. Please read this manual carefully prior to installation and operation anxd strictly observe all installation and operation instructions covered in the manual.

Please pay attention to the following signs:

Warning: Improper operation might lead to serious personal injury or even death.

Notice: Improper operation might lead to personal injury or property damage.

Warning:

(1) Installation shall be performed by the appointed maintenance center, Otherwise it would lead to electric shock or a fire hazard, etc.

(2) Do not use or place any inflammable or explosive substances close to the unit.

(3) If there is abnormal condition (e.g. unpleasant smell), turn unit off and disconnect power immediately.

(4) Do not touch the high temperature component(e.g. compressor) with your fingers or other objects.

(5) Prohibit putting the object in the area of air inlet or air outlet.

(6) Do not start up or shut down the unit by inserting power or pulling out power cord.

(7) Do not refit the unit. Please ask the distributor or professionals to repair or reinstall the unit.

Notice: Improper operation might lead to personal injury or property damage.

(1) Before installation, please check the power cord if it complies with the power supply requirement on the nameplate. Make sure the power supply is safe.

(2) Before operation, please check if the electric wire connection is correct, in order to avoid electric shock or fire hazards, etc.

(3) Do not operate the unit with wet hands. Do not have the children operate the unit.

(4) Turning on and turning off the unit in the manual mean that the user operates the ON/OFF button in wired controller; cutting off power supply means stop supplying power to the unit.

(5) After installation, please energize the unit and then arrange electric leakage inspection.

If you have any problem, please contact with local distributor, appointed maintenance center or agent. You can also contact our company directly.

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1 Product Overview

1.1 Product Introduction

Gree rooftop air conditioner is such an equipment which can provide cool in summer and heat in winter. It is with the features of easy operation, low installation cost, low maintenance cost, etc., which will be adopted in air conditioning projects more and more frequently.

The air-cooled rooftop air conditioner does not require the cooling tower, cooling water pump, and therefore is especially applicable to where there is insufficient water source. They are not restricted to be installed in the machine room but instead at the rooftop and outdoor floor etc. They are widely used for centralized air processing in big space, such as exhibition centers, stadiums, theaters, shopping malls, libraries, etc.

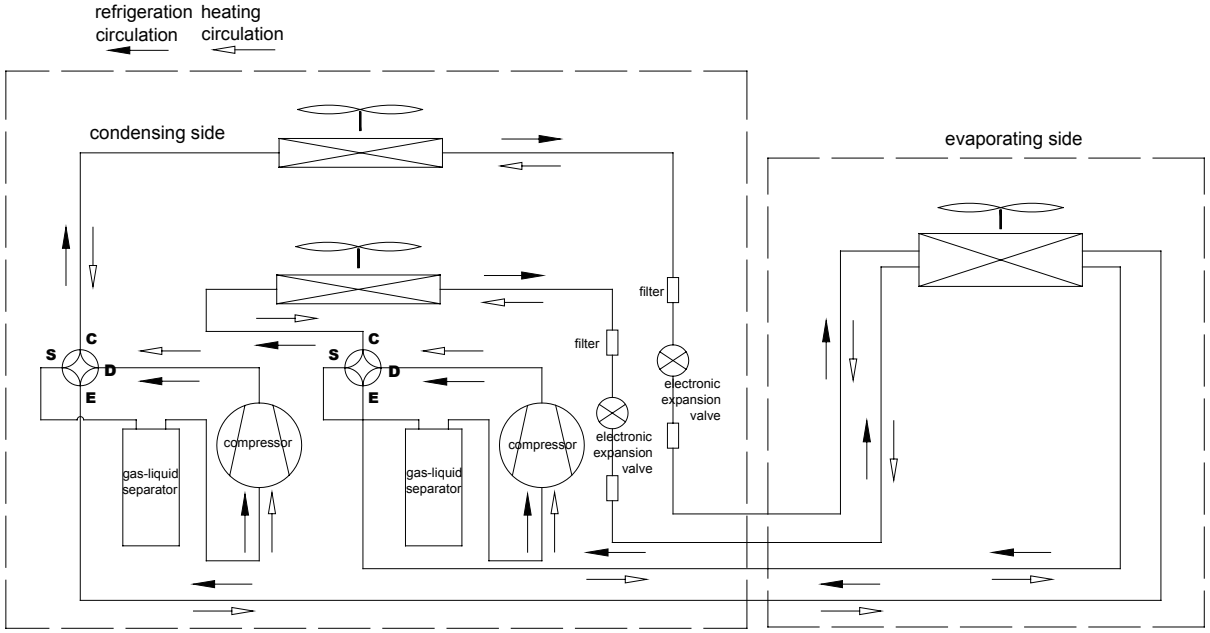
Composed of the high-efficiency scroll compressor, low-noise axial flow fan, high-accuracy electronic expansion valve and the advanced control system, Gree rooftop air-cooled air conditioner is the embodiment of Gree years' design experience and multiple advanced technical achievements.

1.2 System Principles

Refrigeration circulation: The low-temperature and low-pressure refrigerant gas from the indoor heat exchanger(evaporating side) will be inhaled by the compressor and then compressed into high-temperature and high-pressure overheating gas, which will later be discharged into the ambient from outdoor heat exchangers(condensing side). By exchanging heat with outdoor air, refrigerant will turn to saturated or overcooling liquid and flow to indoor heat exchanger(evaporating side) via throttling of expansion valve. The liquid refrigerant becomes gas after inhaling the heat in the air and then is inhaled by the compressor for compression to start a new cycle. In this way, the air is cooled down through indoor heat exchanger(evaporating side) and then sent to the air conditioning area, so as to realize the cooling effect.

Heat pump circulation: In heating, 4-way valve will be energized to make refrigerant circulate in a reverse direction of cooling. The high-temperature and high-pressure refrigerant gas compressed by the compressor is directly discharged into the indoor heat exchanger(condensing side) through the 4-way valve and then the heat is discharged into the air to realize heating effect. The condensed refrigerant liquid flows to the outdoor heat exchanger(evaporating side) through throttling of expansion valve. The liquid refrigerant evaporates after inhaling the heat in outdoor ambient(evaporating side) and then is inhaled by the compressor for compression to start a new cycle. In this way, the air is heated through indoor heat exchanger(condensing side) and then sent to the air conditioning area, so as to realize the heating effect.

◆ Sketch may of system principle:



1.3 Product Features

(1) The evaporator adopts direct evaporating cooling air way to reduce heat loss during interim processes, so as to improve the efficiency of the system.

(2) The structure is compact and equipped with cool and heat sources. It adopts air-cooled cooling design for direct air outlet, with no need of cooling and chilled water system.

(3) It transits the processed air directly with no need of indoor terminals, which greatly reduces indoor noise and provides a comfortable environment to the user.

(4) It adopts air-cooled cooling design, so that it is adaptable for the areas where lack water. As Hong Kong is short of water source, the government requires that cooling tower shall not be adopted and many buildings in Hong Kong adopt such kind of unit.

(5) The system doesn't need cooling water, chilled water system and AHU terminals, which greatly reduces malfunction rate. Unit maintenance is also simple, which greatly reduces daily management and maintenance cost.

(6) Hermetic scroll compressor: Compared with other type of compressor under the same cooling load, it has few movable components, smaller rotating torque, lower noise and vibration and higher reliability and efficiency.

(7) Powerful self-protection: It is equipped with the top-end microcomputer control system which is capable of providing well-rounded protection and self-diagnosis.

(8) High reliability: It is constructed of well-designed refrigeration parts for multiple refrigeration cycles, adequately guaranteeing the reliable operation.

(9) It adopts electronic expansion valve throttling, which always ensures the unit in best operation status.

2 Unit Introduction

2.1 Performance Parameters

Please refer to the parameters on the nameplate.

Note:

(1) Executive standard: GB/T 20738-2006;

(2) Rated working condition:

Nominal cooling: outdoor ambient temperature 35°C DB/24°C WB, indoor ambient temperature 27°C DB/19°C WB;

Nominal heating: outdoor ambient temperature 7°C DB/6°C WB, indoor ambient temperature 20°C DB/15°C WB;

(3) Applicable range:

Cooling: ambient temperature 18 ~ 48°C

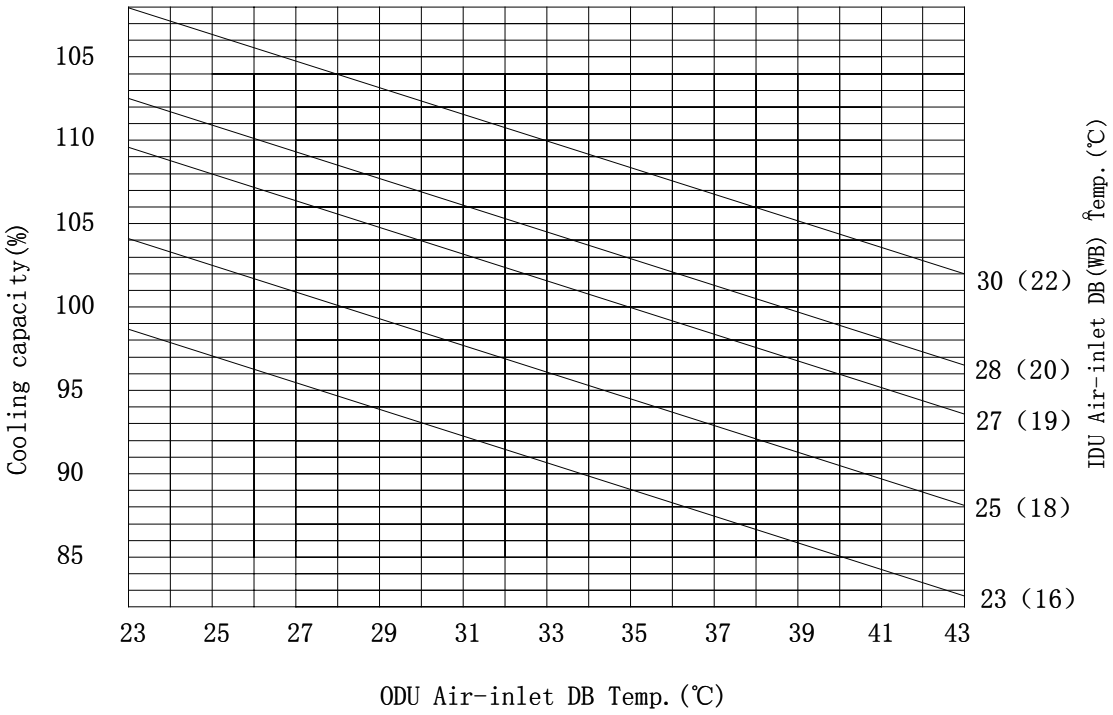
Heating: ambient temperature -15 ~ 24°C

(4) Adjusting range of indoor temperature: 16 ~ 30°C;

(5) If the specifications are changed due to product improvement, please refer to the parameters on the nameplate.

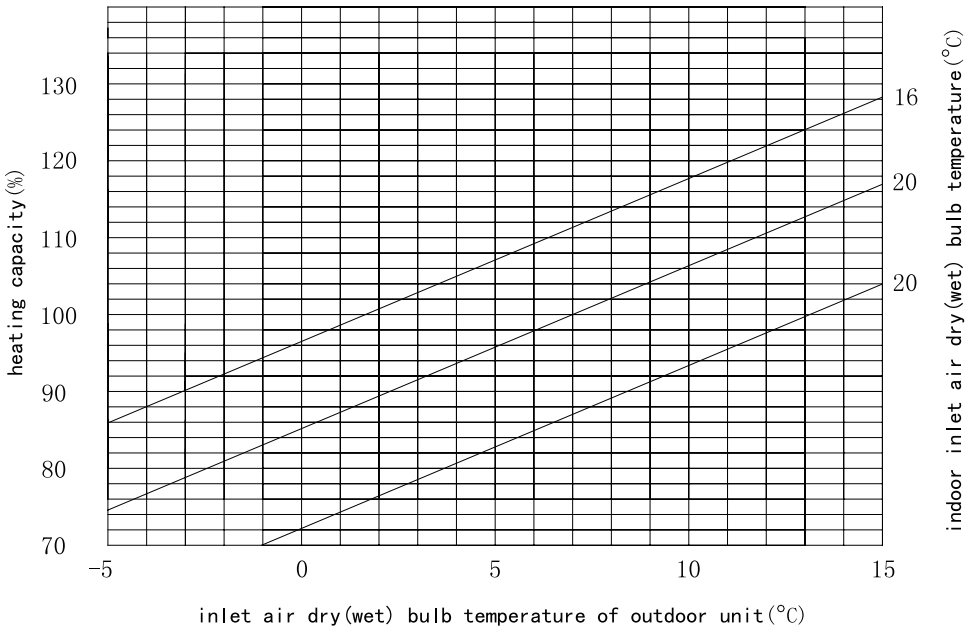
2.2 Capacity Correction Chart

(1) Unit cooling capacity correction chart in different indoor air inlet temperature and outdoor air inlet dry bulb temperature:



Cooling capacity corrections curve

(2) Unit heating capacity correction chart in different indoor air inlet temperature and outdoor air inlet dry bulb temperature:



Heating capacity corrections curve

Calculation of actual cooling(heating) capacity:

Actual cooling(heating) capacity = nominal cooling(heating) capacity x cooing capacity correction coefficient in different temperature

—— Nominal cooling(heating) capacity can be found in performance parameters sheet;

—— Correction coefficient can be found in the above capacity correction chart.

3 Unit Installation

3.1 Acceptance Check

When the unit is delivered to the destination, the user is responsible for organizing personnel to perform the acceptance check. Checks listed below should be taken as a minimum.

(1) If all required documents and accessories are provided as per the packing list.

(2) Check the equipment model and specification.

(3) If the equipment is damaged and all parts are provided.

(4) Check the pipeline system to see if refrigerant leaks.

When there is damager or any other question, contact the local sales representative for applicable solutions. Acceptance check shall be done within 7 day after the unit reaches the destination. If there is any damage inside the unit, please don’t turn on the unit. If necessary, you can take a picture for the broken component and contact the carrier and local sales agent. The interior damage shall be proposed within 7 day after the unit reaches the destination.

Note: After the acceptance check, take necessary protection to the unpacked equipment. Note that it is not recommended to unpack the equipment too early to avoid any unexpected damage.

3.2 Moving and Storing of unit

3.2.1 Moving and Storing Requirements

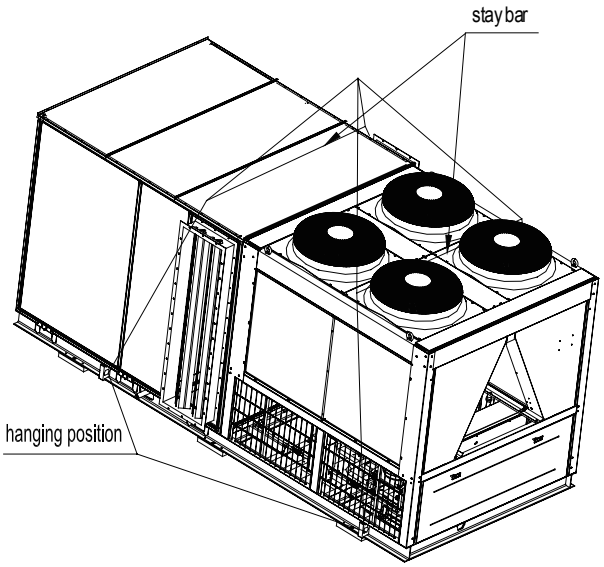
Each unit will undergo a series of strict factory inspections and tests to guarantee the expected performance and quality. However, special attention should be paid during handling and shipping to prevent the control system and the piping system from being damaged.

The unit shall be stored in a dry and clean place with relative humidity below 90% and ambient temperature below 40°C, in order to avoid corrosion and rustiness of fan, motor shaft and bearing and other important components. Meanwhile, the unit cannot be stored in a place with vibration and corrosive gases to avoid damage of related function components.

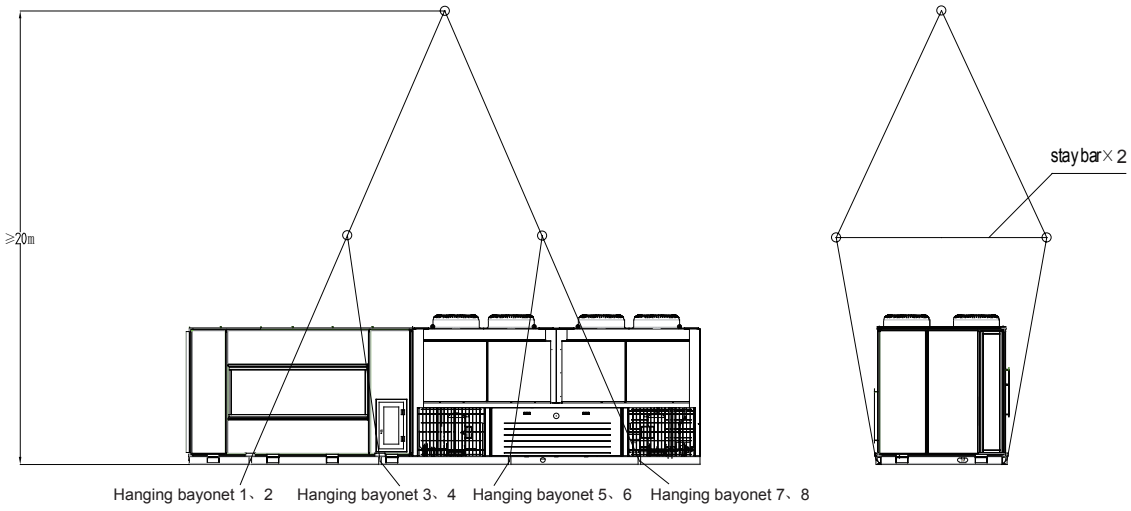
Note: The unit can't be handled by forklift.

3.2.2 Hanging Sketch Map and Hanging Requirements of Unit

Hang sketch map for WKR105/NaA-M, WKR140/NaA-M, WKR180/NaA-M:



Hang sketch map for WKR230/NaA-M, WKR280/NaA-M, WKR370/NaA-M:



Note:

① Hanging position is shown as above. Please check the reliability of hanging hook, steel wire and stay bar, etc;

② Each hanging lope shall withstand the weight of the whole unit. Its length shall be adjustable;

③ Try to hang the unit horizontally; you can only hang the unit from the position indicated in the hanging sketch map. It is recommended to use hanging device and avoid extrusion of electric control box and all connection parts by hanging device.

④ The cardboard or soft slab rubber with thickness above 5mm shall be applied in the contact between hanging lope and case, in order to avoid damaging the unit. If the appearance of unit is scratched during hanging or transportation, please apply paint timely to avoid rustiness.

⑤ There shall be nobody below the unit when hanging it;

⑥ The hanging device shall comply with GB 6067-1985 “Safety Regulation for Crane”.

3.3 Selection of Unit

When selecting the unit, please select the model according to the required cooling(heating) capacity, noise and other key parameters. Please follow related standards in air conditioning industry to design air duct, soundproof measure, silencing measure, vibration reduction and drainage, so as to meet the user’s requirements.

3.4 Installation of Unit and Notices

3.4.1 Selection of Installation Position

(1) Make sure that the transit route and means are correct to avoid damage of unit and possible danger;

(2) Make sure that the installation base is firm; if the unit is installed on the metal part of construction, electric insulation must be confirmed and it should meet related technical standard ;

(3) Make sure that installation position is far away from storage area of combustible and explosive substance, avoid leakage of combustible and explosive substance and possible explosion or fire hazard;

(4) It is suggested to install in place with good ventilation, but take note of noise of air discharge and operation of unit;

(5) If the unit is installed on rooftop, take note of the air direction and avoid strong wind;

(6) There should be no strong heat source and air outlet of other equipments around the unit, there should be no strong steam and flammable gas;

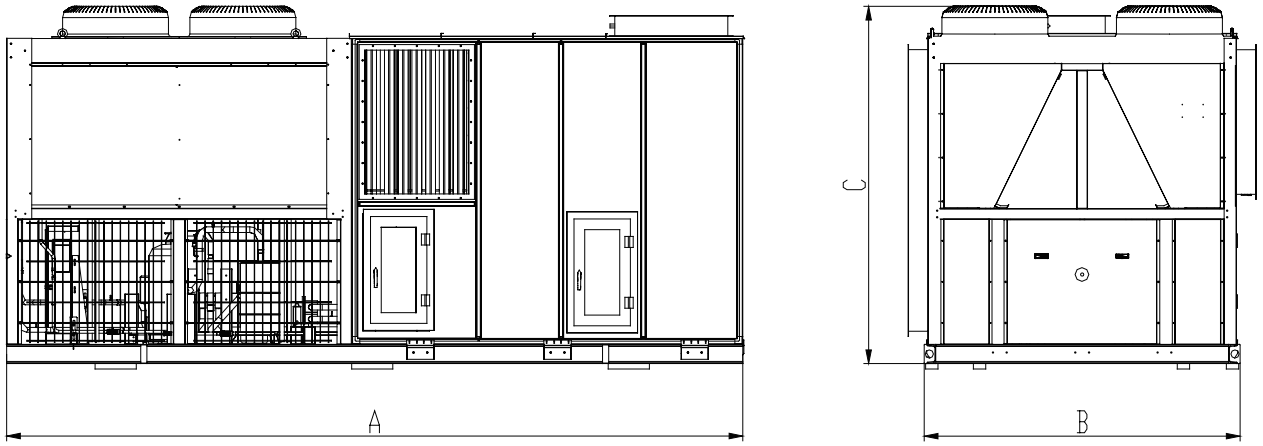
(7) There should set drain ditch or water outlet near the installation position for convenient drainage;

(8) It is not allowed to install this unit in the position with intense magnetic field, high salinity and alkalinity, high acidity and unstable voltage;

(9) If the unit is installed out of the protection of lightning protection system of construction, there should install lightning protection facility according to requirements of current national standard Stipulation for Lightning Protection Design of Construction (GB50057-94-2000).

3.4.2 External Dimension of Unit

External dimension of WKR105/NaA-M WKR140/NaA-M WKR180/NaA-M WKR230/NaA-M WKR280/NaA-M WKR370/NaA-M (Unit: mm),

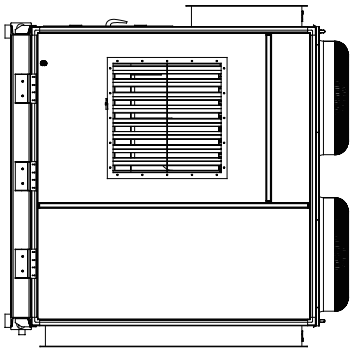


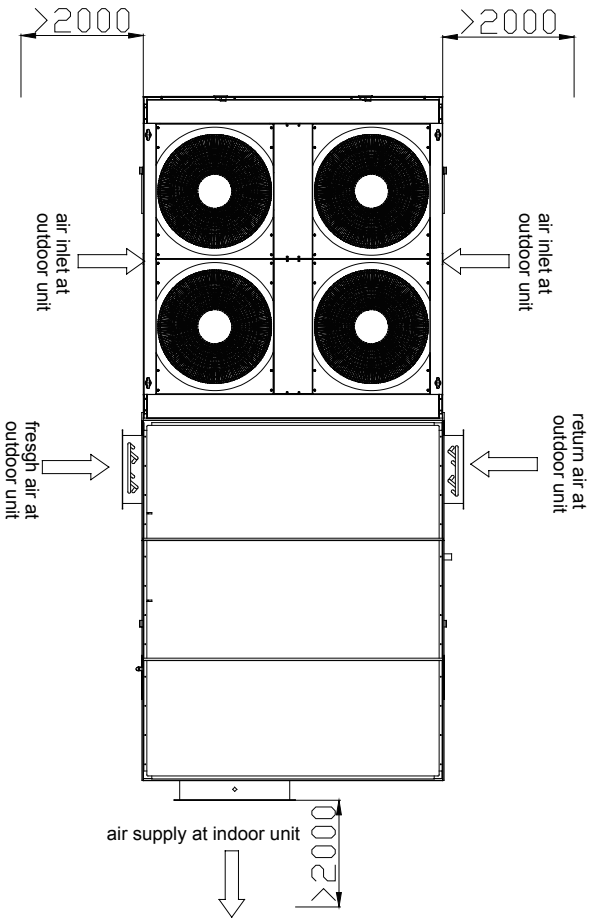
Notes: Position of air outlet is only for reference, please subject to actual design of unit.

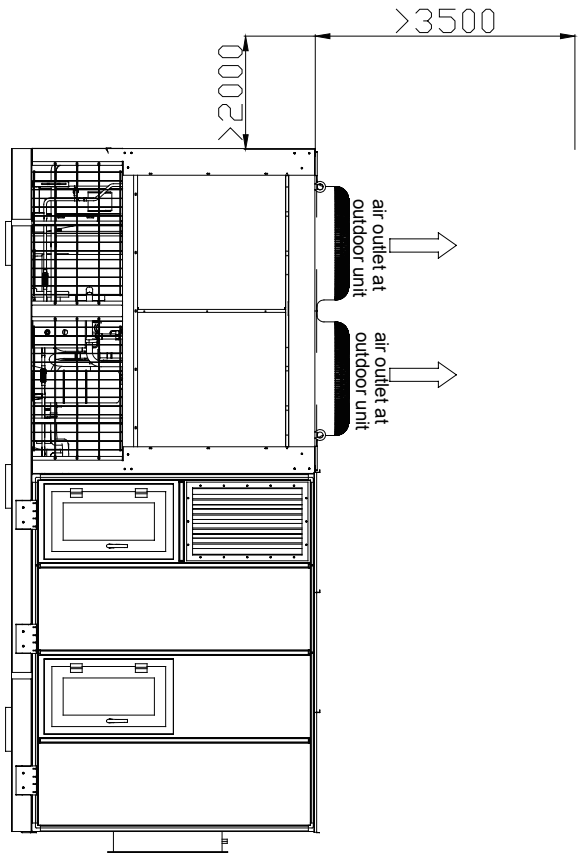
Model	A	B	C
WKR105/NaA-M	4680	2100	2310
WKR140/NaA-M.	4680	2100	2310
WKR180/NaA-M	5370	2200	2510
WKR230/NaA-M	6750	2100	2310
WKR280/NaA-M	7350	2100	2310
WKR370/NaA-M	8580	2200	2510

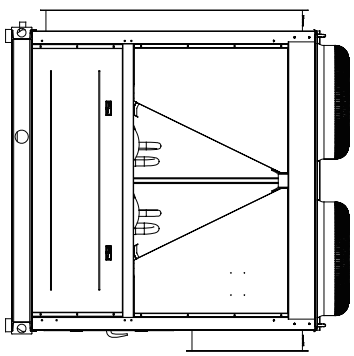
3.4.3 Installation Space for Unit

It is applicable to: WKR105/NaA-M, WKR140/NaA-M, WKR180/NaA-M, WKR230/NaA-M, WKR280/NaA-M, WKR370/NaA-M (Unit: mm)









3.4.4 Requirements for Foundation Installation of Unit

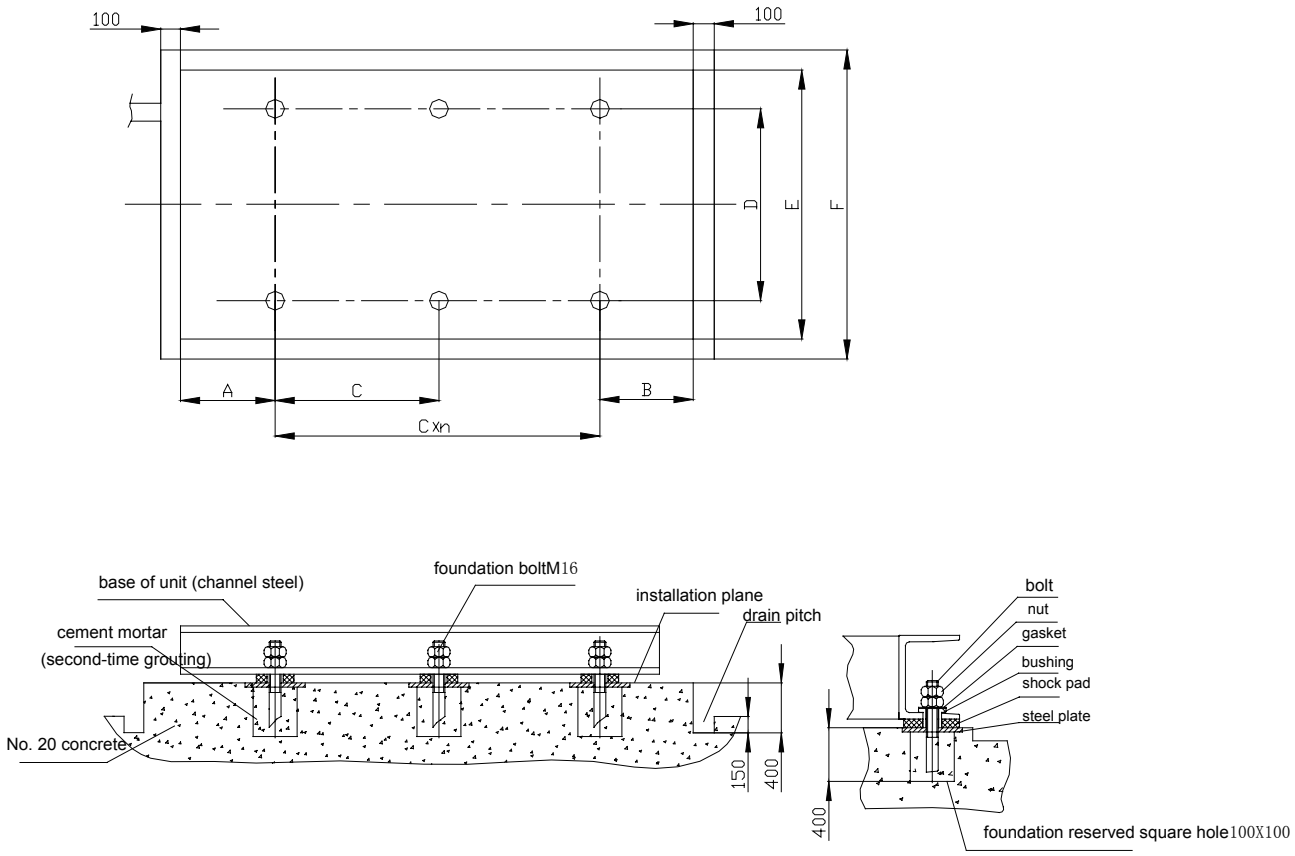


Fig. 1 Sketch map for foundation installation of integrated unit (Unit: mm)

Model	A	B	C	C×n	D	E	F
WKR105/NaA-M	650	700	1665	1665×2	2000	2050	2250
WKR140/NaA-M	650	700	1665	1665×2	2000	2050	2250
WKR180/NaA-M	795	830	1870	1870×2	2100	2150	2350
WKR230/NaA-M	945	945	1620	1620×3	2000	2050	2250
WKR280/NaA-M	435	435	1620	1620×4	2000	2050	2250
WKR370/NaA-M	795	1305	1620	1620×5	2100	2150	2350

(1) Installation of foundation should be designed by professional personnel according to actual situation;

(2) Installation foundation of unit must be concrete or steel structure to bear operating weight of unit, and plane of foundation must be level;

(3) Please refer to sketch map for foundation installation of unit (the above figure), accurately place steel plate and shock pad on the foundation, after the unit and foundation bolts are firmly installed, conduct the second-time grout filling. Installation of foundation bolt is about 60mm higher than installation plane;

(4) Reserve space for installation, operation and maintenance of unit;

(5) nstallation place of unit should be kept away from fire, flammable substance, corrosive gas or waste gas; reserve space for ventilation; adopt proper measures to reduce noise and vibration as much as possible.

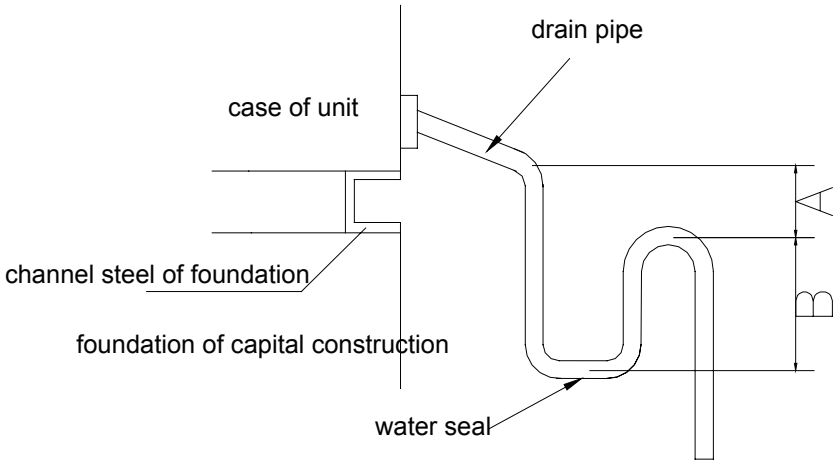
3.4.5 Installation of Condensate Pipe

Condensate pipe should be kept in a certain inclination pitch for discharging condensation water. Joint of condensate pipe should be cover with heat insulating material to avoid condensation of water. Condensate pipe should connect to water seal, as shown below. Height of water seal depends on pressure inside the condensate pipe.

When the section of condensate pipe is in negative pressure, A=B ≥ P/10+20(mm)

When the section of condensate pipe is in positive pressure, A ≥ 30mm, B ≥ P/10+20(mm)

P is the absolute pressure inside the system, unit is Pa.



4 Installation of Electricity

Warning: Rooftop unit must be reliably grounding, otherwise it may cause electric shock or fire hazard.

Notes: All the installation of electricity must be conducted by professional personnel according to local laws, rules and instructions.

4.1 Layout of Electric Wire

When using the unit, its cooling capacity will be different due to different using method. When evaporating pressure decreases, cooling capacity will accordingly decrease. If condensation pressure increases, the cooling capacity will decrease, and power consumption will also increase. The key for fully exerting performance of unit is to improve suction pressure and lower discharge pressure of compressor. Thus please consider the following points:

(1) Install according to national wiring rules;

(2) Installation of all the electric appliances must be conducted by professional personnel according to local laws, rules and instructions.

(3) Power source must apply rated voltage and special power source for air conditioner unit;

(4) Layout of power cord must pass through trunking or wire duct;

(5) When connecting into electric box of unit, power cord must be protected with rubber or plastic sleeve.

(6) Reserve proper surplus length of control wire, please do not truss excrescent electric wire and foist it into electric box of unit;

(7) Power cord should be fixed firmly and avoid stress of wiring terminal. Please do not drag the power cord;

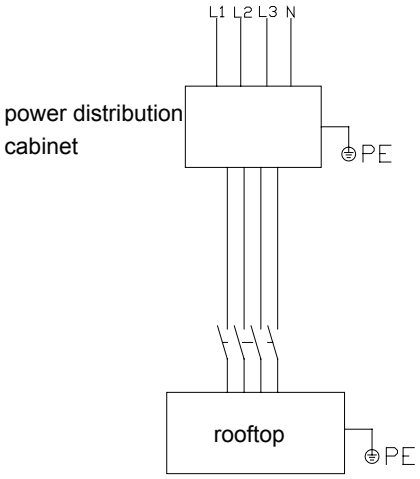
(8) Diameter of power cord should satisfy the following requirement (see below); damaged soft power cord and connecting wire should be replaced with special soft wire;

(9) User must install air switch and leakage switch in power source for cutting off electricity

of the whole system, and leakage switch should be tested monthly regularly (can conduct test by pressing test button on leakage switch). Air switch should possess magnetic tripping and heat tripping function to ensure protection under the condition of short circuit or overloading.

4.2 Connection of Circuit

External wiring diagram of integrated unit



Notes: for specific circuit connection of each unit please refer to circuit diagram stuck on electric control cabinet of unit.

4.3 Power Source Allocation

Model	Power source	Air switch/wire diameter of general supply		
		Circuit breaker (A)	Power line (mm2)	Zero line and earth line (mm2)
WKR105/NaA-M	3Ph,380V, 50Hz	125	35	16
WKR140/NaA-M	3Ph,380V, 50Hz	150	50	25
WKR180/NaA-M	3Ph,380V, 50Hz	200	70	35
WKR230/NaA-M	3Ph,380V, 50Hz	250	95	50
WKR280/NaA-M	3Ph,380V, 50Hz	300	150	70
WKR370/NaA-M	3Ph,380V, 50Hz	350	240	120

Notes: Sheet for model selection of air switch and power cord (unit of defaulted wire diameter is mm2; all the lead wire is 5-core).

(1) Specification of power cord of unit is based on multi-core copper cable with usage temperature of 40°C and withstand temperature of 90°C (such as YJV copper core cross linking polyethylene insulating sleeve cable) is laying in trunking (GB/T 16895.15-2002). If using conditions are different, please calculate and adjust according to national standard for fear of overloading accident.

(2) Specification of circuit breaker is based on the condition of working ambient temperature of 40°C, and it is adopted according to maximum current of unit. If using conditions are different, please calculate and adjust according to national standard.

(3) Rooftop air conditioner is I class electric appliance, please conduct reliable earthing measure. Resistance for earthing should meet the requirement of national standard GB17790.

(4) The yellow and green wire inside the unit is earth wire, it is not allow to change it for other use or cut it off. It should not be fixed with tapping screw, otherwise it may cause electric shock;Please do not connect earth line to the following places:

1) tap water pipe;
2) gas pipe;
3) drain pipe;
4) other insecure places.

5 Unit Debugging, Daily Operation and Maintenance

5.1 Preparation Work for Debugging

◆ Check the unit

(1) Check whether the appearance of the unit and the pipeline system is damaged during transportation process;

(2) Check whether the fan blade is contacting the outer case and the grille;

(3) Check whether all temperature sensor on the unit is inserted tightly;

(4) Check whether all bolts are loosened;

(5) Check whether there ‘s foreign objects inside the unit (inside the air duct system) and whether air inlet and air outlet are blocked. Eliminate the dust on the unit;

(6) Check whether the electricity and gas are normal; check whether all valves for the air duct system is at the working position; check whether the air duct system is normal;

(7) Check whether the drain trap for the condensate water at the coil pipe is installed correctly;

(8) Check whether the air tightness at the air outlet, air inlet and service door is in good condition;

(9) Check the fins of coil pipe. Comb them if necessary.

(10) Check the fan

Please turn off the power switch when checking the inner part of the fan. Check whether the transportation protection parts for the fan are removed and whether vibration damper and flexible connection devices are normal; Rotate the impeller of the fan with hand to ensure the impeller can rotate freely and make sure there’s no foreign objects inside the fan; Check whether the belt roller and bearing can operate normally;

(11) Check the bearing of fan

All the bearings of the fan are filled with lubricant oil. If the unit is operated soon after shipment, it‘s not necessary to conduct extra work. If the unit hasn’t be operate for a long time after shipment or assembly, check whether the bearing can operate normally after starting up the unit for 15min. If the lubricating grease is much more black than fresh oil,please replace the lubricant oil. As for the bearing with base, inject lubricating grease through oil-filling nozzle; as for other bearings, open the bearing at first, eliminate old lubricating grease, clean the bearing with gasoline and dry it, and then fill the bearing with new lubricating grease. If the unit is rusted because it hasn’t been started up for a long time and the unit is at formaldehyde climate condition, please replace the bearing. Please ask for the professional person to replace the bearing. After replacing the lubricating grease or the bearing, operate the unit for 15min and then check the temperature of the bearing. That temperature can’t exceed the ambient temperature.

(12) Check the motor

Check the lubricating circumstances of the motor bearing. If the motor hasn’t been used for a long time or the unit is stored at the formaldehyde condition, please check whether the lubricating grease is oxidized. If yes, please replace the lubricating grease in time. Check the insulation circumstance for the motor, including the insulation status between phase and neutral wire, phase and phase, which can be checked with 500V megneter. The insulation should be 10 MΩ (heat) or 100 MΩ(cold) at least. If the insulation requirement can’t be satisfied, please dry the motor. The method for drying the motor is as below:

Method 1: Put it into the 100 ~ 110°C oven for 24h to dry the motor.

Method 2: Supply three phase AC power for 12 consecutive hours, equivalent to 10% of total voltage, and then lock the rotor of motor (adjust the voltage with regulating transformer or regulator).

◆ Check the pipeline system

(1) Check whether the connection ball valve and cut-off valve at outdoor unit side and indoor unit side in the system pipeline are opened or not. If not, please open the valves;

(2) Check whether there's grease at the pipeline joint and charging valve and make sure there's no refrigerant leakage.

◆ Check the electric system

(1) Check whether the supply power is consist with that required on instruction manual and nameplate on the unit;

(2) Check whether the specification of the power cord is consisting with that required on the instruction manual;

(3) Check whether the power cord is connected correctly;

(4) Check whether all supply power and control circuit are connected correctly; check whether the earthing wire is connected reliably; check whether all wiring terminals are inserted tightly.

◆ Check the DIP switch code

By referring to the table of DIP switch code in the instruction manual, check whether the actual code for the unit is correct.

5.2 Test Run

Note: Test run should be conducted by professional person when all above inspection items are qualified.

(1) Energize the unit and turn on the unit. As for the three-phase unit, if the power cord is connected reversely, the phase protector will be activated. The main board will not be energized, and the fan and the compressor will not operate. Please cut off the power, connect the three phase again correctly and then energize the unit to turn it on.

(2) When the compressor is started up, if there's abnormal sound, please stop operation immediately and check it.

(3) During test run procedure, if the compressor stops operation no more than 3min, do not turn on the unit again with hand. If the compressor operates no more than 6mins, do not turn off the unit with hand.

Note: Because the unit adopts the totally-enclosed scroll compressor, the power phase sequence must be correct.

5.3 Daily Operation and Maintenance

The unit should be operated and managed by professional person. During operation process, please check the operation status of the unit. If there are abnormal circumstances, please repair it in time and maintain the unit periodically.

◆ Safety requirement: Please make sure person safety during daily maintenance!

(1) Make sure the maintenance person is insulated with the unit;

(2) Maintenance person can't go into the unit before the fan stops rotating;

(3) Please make sure the power for all electric devices is disconnected before going into the unit.

◆ Daily operation:

(1) At the time of ex-factory, all safety protection switches have been set well. Users should adjust or eliminate it by themselves;

(2) For the first operation or turn on the unit again when the unit has stopped operation for a

long time (24h above), connect the supply power in advance for ensuing 8h above preheat time.

(3) Do not pile sundries on the unit and its accessories. The surrounding areas should kept be dry, clean and well-ventilated. If there's too much dust on the fins of condenser, please eliminate in time to ensuring the normal operation of the unit;

(4) If the unit will not be used for a long time, please turn off the fresh air valve and loosen the belt of fan. Add some lubricating oil on the lubricating part;

(5) If there's malfunction for the unit and the user can't solve it, please contact local appointed maintenance center in time.

(6) Please do not turn on and turn off the unit frequently.

◆ Maintain the unit :

Periodic work: Below maintenance work should be conducted every 3-6 months. The actual maintenance period should be decided by the actual environment conditioner and operation circumstances.

(1) Check the electric circuit and electric devices to make sure electric parts are reliable, wire connection and earthing are correct;

(2) Check whether the bearing is damaged due to friction and whether there's lubricant oil leakage. If necessary, please add lubricant oil or replace the bearing;

(3) Please check the degree of tightness of bolt of bearing and other bolts;

(4) Check the degree of tightness of belt;

(5) Check the vibration circumstances of the fan; check whether the vibration isolation equipment works normally;

(6) Check the temperature-rising circumstance of the motor. If it's abnormal, please find out the reason and then repair or replace it;

(7) Check whether the flexible device at the air outlet is fixed tightly and correctly. If it's damaged, please replace it in time;

(8) Check the heat-exchange coil pipe. If it's dirty, please clean it and then dry it;

(9) Check the water tray and then clean the water tray. If the water tray is rusted, please deal with the rust and then brush some paint;

(10) Check whether the tightness of the service door is in good condition and whether it can be opened or closed normally. Lubricate the door hinge with lubricating oil.

(11) Check the working circumstances for all parts of the unit frequently. Check whether there's grease at the pipeline joint and charging valve to make sure there's no refrigerant leakage. If there's leakage, please contact the appointed local maintenance center. Do not deal with it by yourself.

◆ Maintain the fan

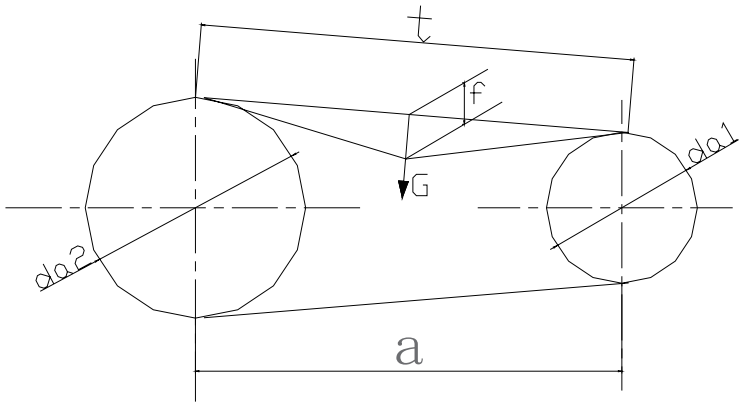
Turn off the main switch before entering into the fan.

(1) Maintain the belt. Check the motor and the belt of the fan. Adjust it if necessary. Clean the surface of the belt with dry cloth. When replacing the belt, please replace it with the same model belt. Install the belt and then adjust the belt roller to make sure the locating surface of the belt roller is at the same level.

(2) Check and adjust the tensile force of the belt. The belt should be kept proper tensile force. Use the tensile force inspect tool to check the tensile force of the belt. (Note: the belt can't be too tight. Otherwise, it may damage the bearing;

(3) During the driving process, pretightening force: adding the load G which is vertical to the belt edge at the midpoint of the scrap edge between belt and belt roller and then generate the regulated flexivity to control the pretightening force. See below fig.

In order to test the required pretightening force Fo, add a regulated load G at the midpoint of scrap edge of the belt to generate 1.6mm flexivity every 100m of scrap edge. That's f= $\frac{1.6t}{100}$.



Refer to the table 1 for the required vertical force G for the pretightening force.

The required vertical force G for the pretightening force Unit: N

Belt type		Diameter of small belt roller	v(m/s) Speed of belt v(m/s)		
			0~10	10~20	20~30
Narrow V belt	SPZ	67~95	9.5~14	8~13	6.5~11
		>95	14~21	13~19	11~18
	SPA	100~140	18~26	15~2L	12~18
		>140	26~38	21~32	18~27

◆ Cooling or heating coil pipe maintenance

Check the fins of coil pipe periodically and clean then if necessary. Prohibit washing them with tap water. If the coil pipe is very dirty, please clean it with detergent.

◆ Strainer maintenance

Check the strainer frequently. Clean or replace the strainer periodically. Please be careful when replacing and installing the strainer to prevent damage.

6 Common Malfunction and Troubleshooting

Note: If there's problem during the operation process, please contact local dealer or appointed office.

When the professional technicians are dealing with the problems, please refer to below table.

Common malfunction	Causes	Troubleshooting
Compressor can't be started up	There's problem for the power; Wires are loosed; Malfunction of relay or fuse; Malfunction of compressor	① Check whether the phases sequence is inverse ② Check them and then tighten them ③ Found out the causes and then repair it ④ Replace compressor
Big noise for the fan	The bolts used for fixing the fan are loosed; Blade are contacting the outer case or grille; The blade can't operate stably and smoothly	① Tighten the bolts of fan again ② Find out the reason and then adjust it ③ Replace the fan

Common malfunction	Causes	Troubleshooting
Big noise for compressor	There's liquid shock when the refrigerant entering the compressor; Some parts for the compressor are damaged	① Check whether the expansion valve is invalid and whether the temperature sensor is loosed, and then repair them ② Replace the compressor
Compressor stops operation frequently	Too much or too less refrigerant	① Discharge or add some refrigerant
Compressor operates while the unit can't heat	Refrigerant are all leaked out Malfunction of compressor	① Check the leakage and add refrigerant ② Replace the compressor
Heating effect is not obvious	The thermal insulation for the air duct system is poor; The heat exchanging for the evaporator is poor; Refrigerant is poor	① Reinforce the thermal insulation for the air duct system ② Check the air inlet/outlet of the unit and clean the evaporator ③ Check whether there's refrigerant leakage and then add some refrigerant
Air leakage	Sealing the box board is poor; There's seaming between the functional segments; The unit is deformed due to poor installation; Service door is damaged or deformed;	① Attach the sealing strip for the panel again ② Sealed seam ③ Adjust the installation position for the unit ④ Repair and adjust the service door
Water leakage	Water flies due to big air volume; Water tray is cracked or the drainage outlet is blocked; Water inlet/outlet pipe or pipeline for heat exchanger is damaged	① Adjust the air ② Check and repair it ③ Check and replace it
Emit sweat	Thermal insulation for the structure parts is poor; Thermal insulation for the panel or sealing is poor;	① Attach thermal insulation materials ② Attach thermal insulation materials and sealing strip
Water drainage for the water try is poor	Water tray is concaved; The drainage pipe is higher than the water level of condensate water pipe inside the water tank;	① Adjust the concaved part ② Replace the pipeline outside the unit ③ Add or adjust the drain trap

Common malfunction	Causes	Troubleshooting
Abnormal operation	The belt roller and the axis are loosed; The belt roller is sliding; The bearing for the fan is damaged due to friction; The blade impeller contacts the outer case; The air valve is shaking; There're foreign objects; The damping support is damaged	① Tighten them or replace them ② Adjust or replace them ③ Repair or replace them ④ Adjust it again ⑤ Adjust it again ⑥ Eliminate them ⑦ Repair or replace the vibration damper
Big air volume	Resistance at the air duct is too small or air duct is too short; Rotation speed is too fast	① Balance the air pressure again ② Design it and then replace the belt roller
Small air volume	The belt is loosed or cracked; Coil pipe or filter is too dirty; Resistance at the air duct is too big or air duct is too long; The belt roller or the axis is loosed ; Rotation speed is too slow; Adjustment valve for fresh air or air supply is damage or the opening angle is improper	① Adjust or replace it ② Clean or replace it ③ Balance the air pressure ④ Repair or replace it ⑤ Design it again and replace the belt roller ⑥ Check the adjustment valve or adjust the opening angle of valve to proper position
The belt is damaged due to friction	The belt is loose; The balanced distance between two belt rollers is too big; The surface of belt roller groove is rough	① Adjust or replace it ② Adjust and calibrate it ③ Replace the roller belt
The motor is burnt	Overload; the motor specification is improper(voltage) Insulation is poor	① Balance the air volume and then replace the motor ② Replace the motor ③ Replace the motor

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