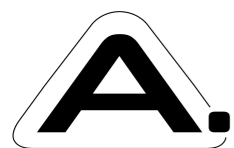




ALTITUDE
REFRIGERATION SOLUTIONS

Rooftop Air Conditioning(Heat Pump) Unit



ALTITUDE
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1 PRODUCT OVERVIEW

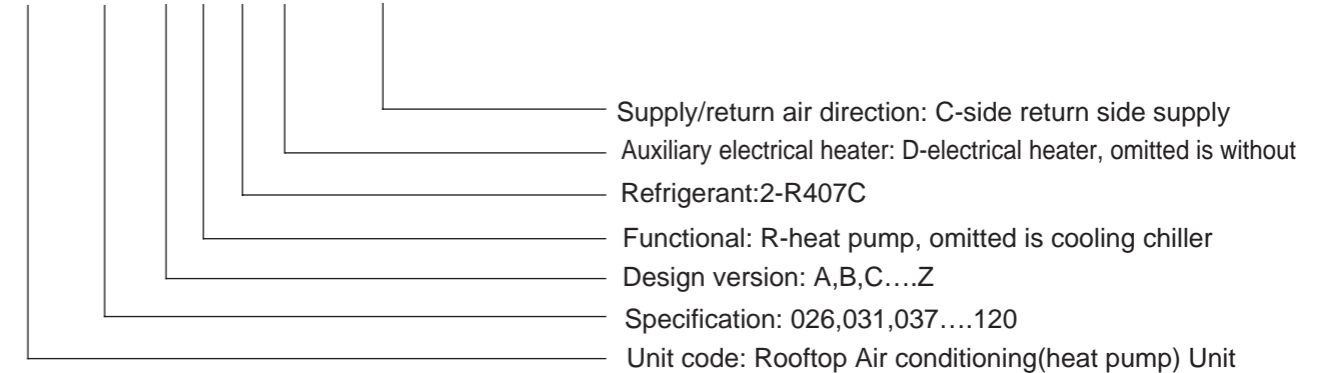
Integrated rooftop air conditioner(heat pump)unit is installed on outside rooftop by air cooling. QWRA series units do not need a special room, cooling tower, cooling water pump and cooling water pipeline system. The whole system is simple in structure and convenient in application. It is widely used in different types of buildings such as restaurants, shopping malls, hospitals, hotels, factories and office buildings.

As one of the professional air conditioning companies, we are focus on improvements and innovation of technology. QWRA series is a latest high-efficiency rooftop air conditioner for domestic market demand. The air flow of unit is from 5000m³/h to 24000m³/h, and the cooling capacity is from 24kw to 120kw, the type can be divided into four types, cooling only, heat pump, cooling + electrical heat, heat pump+ auxiliary heat.

We will combine advanced control technology, high-efficiency heat transfer technology and rich manufacturing experience to make it one of the most efficient, energy-efficient and quietest air conditioner in China. At the same time, the CANS laboratory was recognized by China, which can guarantee product performance and quality improvement.

2 MODEL SPECIFICATION

QWRA 026 B R 2 D - C



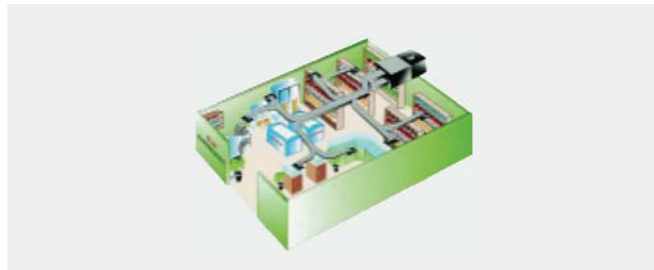
3 NOMINAL OPERATING CONDITIONS

Working Mode	In Room		Outside	
	DB temp. °C	WB temp. °C	DB temp. °C	WB temp. °C
Cooling	27	19	35	--
Heat Pump Heating	20	--	7	6
Electrical Heating	20	--	--	--

4 Product Features

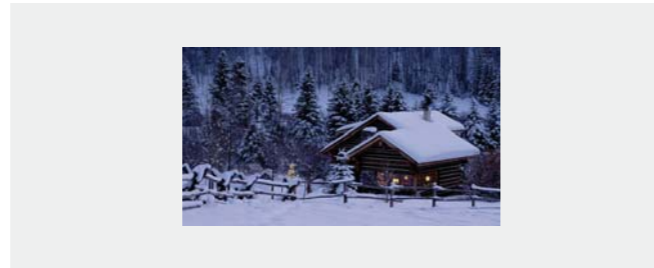
1 SYSTEM SIMPLE INVESTMENT LESS

The whole air system only has two major parts: outdoor unit and indoor unit supply air duct. The whole system is simple in design and convenient to install. There are no pumps, cooling towers, boilers, fan coil units and other equipments. Low project cost, short time installation, less initial investment.



2 STRONG CORROSION AND RUST RESISTANCE

The electro-galvanized steel plate case is electrostatic phosphating spray by imported automatic spraying equipment, which can meet the waterproof and anti-corrosion requirements of various outdoor climates to ensure surface quality during the life cycle.



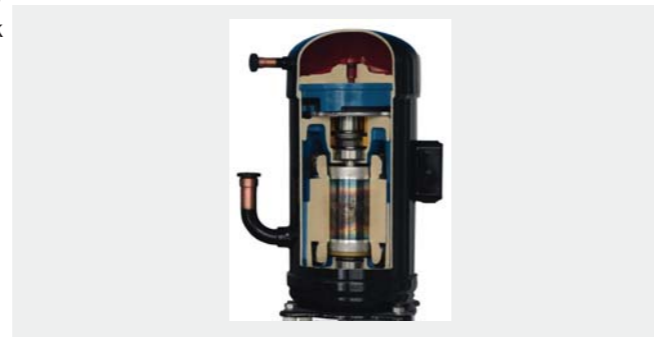
3 HIGH EFFICIENCY, ENERGY SAVING, SAFETY AND RELIABILITY

The high-efficiency hermetic scroll compressor has high volumetric efficiency and EER, low noise, low vibration and moisture shock resistance, stable quality and excellent performance.

The direct evaporative heat exchanger (cooling/heating) has no heat transfer medium avoiding the energy loss, and improving the operating efficiency.

Adaptive defrost control, avoiding unnecessary heat loss and ensuring heating quality.

Overall structural design and completely assembled in the factory, avoiding remaining problems, such as poor quality of welding and insufficient cleanliness of refrigerant, which improve the system operation reliability and energy saving effect.



4 FLEXIBLE INSTALLATION SAVES SPACE

The installation on the rooftop facilitate fresh air flow

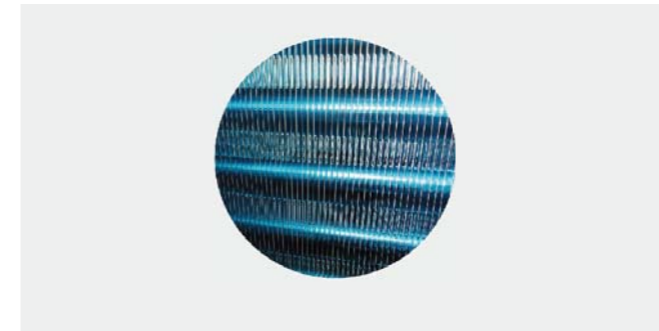
The installation on the rooftop doesn't take up indoor space.



5 EXCELLENT QUALITY

The heat exchanger adopts internal thread copper tube and aluminum fins, which are jointed by mechanical expansion tube to achieve the best heat transfer effect, and the total heat transfer coefficient is improved by 30% compared with the common coil; aluminum sheets are treated with hydrophilic and anti-corrosion treatment, which can effectively reduce condensed.

Film thickness, reduce water film thermal resistance, improve coil heat transfer efficiency; special designed air-cooled condenser, unique tube bundle pipe, fully consider the refrigerant status change and flow rate, pressure under cooling and heating conditions, ensure the coil is sufficiently cold (cooling) and overheating (heating). The use of ALCO, DANFOSS and other European and American brand refrigerant system automation components, the quality is table. The electrical control components are all well known brands such as SIEMENS and LG, and the performance is reliable. The high quality and high efficiency centrifugal fan and special anti-vibration structure make the unit vibration less and low noise.



6 QUIET OPERATION

The 22mm thick high-efficiency insulation board is used inside the unit, effectively block the noise generated by the air supply system.

Adopting the newest high quality hermetical scroll compress, stable and reliable operation, low noise and small vibration.

Adopting the high static axial-flow fan which conforms to the aerodynamics principle and the operation is quiet.



7 INTELLIGENT CONTROL

LCD display;

Multi-color backlight, the backlight color changes automatically according to the operation mode;

The control temperature can be selected from 10°C to 30°C; the return air temperature display range 0°C—50°C;

Multi-function operation mode: refrigerant, ventilation, dehumidification, heating, automatic;

Automatic loading, unloading, automatic defrost function;

Automatic detection, fault display alarm;

Real-time time adjustment and display, timed on/off setting;

Energy-saving sleep mode, key lock function;

The running fault display, compressor operating status display;

Mainboard sensor parameter display;

Infrared remote control, reserved communication port for remote control (optional);

Complete automatic protection system.



5 TECHNICAL PARAMETERS(ONE)

ITEM		MODEL QWRA	026B2	026BR2	031B2	031BR2	037B2	037BR2	052B2	052BR2
Rated cooling capacity			25	25	29	29	35	35	50	50
Rated heating capacity		kW	-	27	-	32	-	37	-	55
Electrical heater(optional)		kW	-	9	-	9	-	12	-	12
Air flow		m ³ /h	5000		6500		7500		9500	
ESP		Pa	250		250		300		300	
Electric	Power									
	Total power input	kW	11.6		13.6		14.6		21	
	Total current	A	23.6		26.2		29		40	
	Max. power input	kW	14.5		17		18.3		26.3	
Compressor	Type		High efficient scroll type							
	Start		Directly start							
	Qty		2				2			
	Energy control	%	100~50~0				100~50~0			
	Rated power input	kW	4.3x2		4.9x2		5.4x2		7.9x2	
	Rated current	A	8.0x2		8.5x2		9.9x2		13.8x2	
Axial-flow fan	Type		Axial-flow type							
	Qty		2				2			
	Power input	kW	0.4		0.4		0.4		1.1	
Supply fan	Typ		Centrifugal fan							
	Power input	kW	2.2		3.0		3		3	
	Rated current	A	5.2		6.8		6.8		6.8	
Heat exchanger		Copper tube and aluminum fins								
Filter device	Material	Nylon filter								
	Thickness	10m m								
Size	Length	m m	1880		1880		2100		2250	
	Width	m m	1560		1560		1560		1950	
	Height	m m	1135		1135		1135		1460	
Refrigerant	Type		R407C							
	Charge	kg	4x2		5.1x2		6.2x2		8.0x2	
Case		Galvanized plate painted								
Operation weight	kg	400		450		620		800		
Noise	db (A)	64		65		67		68		
Cooling Season EER			2.32	-	2.32	-	2.32	-	2.32	-
Annual performance factor			-	2.13	-	2.13	-	2.13	-	2.13

Note:

- 1, Cooling working condition: environment temp. DB:35°C, room inlet temp. DB/WB:27/19°Cy
- 2, Heating working condition: environment temp. DB/WB: 7/6°C, room inlet temp. DB20°C.
- 3, The total power input doesn't includes electrical heater part.
- 4, Noise is tested under standard air flow, 3m from the condenser.
- 5, The specification will be changed according to the improvement. So please refer to the actual unit parameters.

6 TECHNICAL PARAMETERS(TWO)

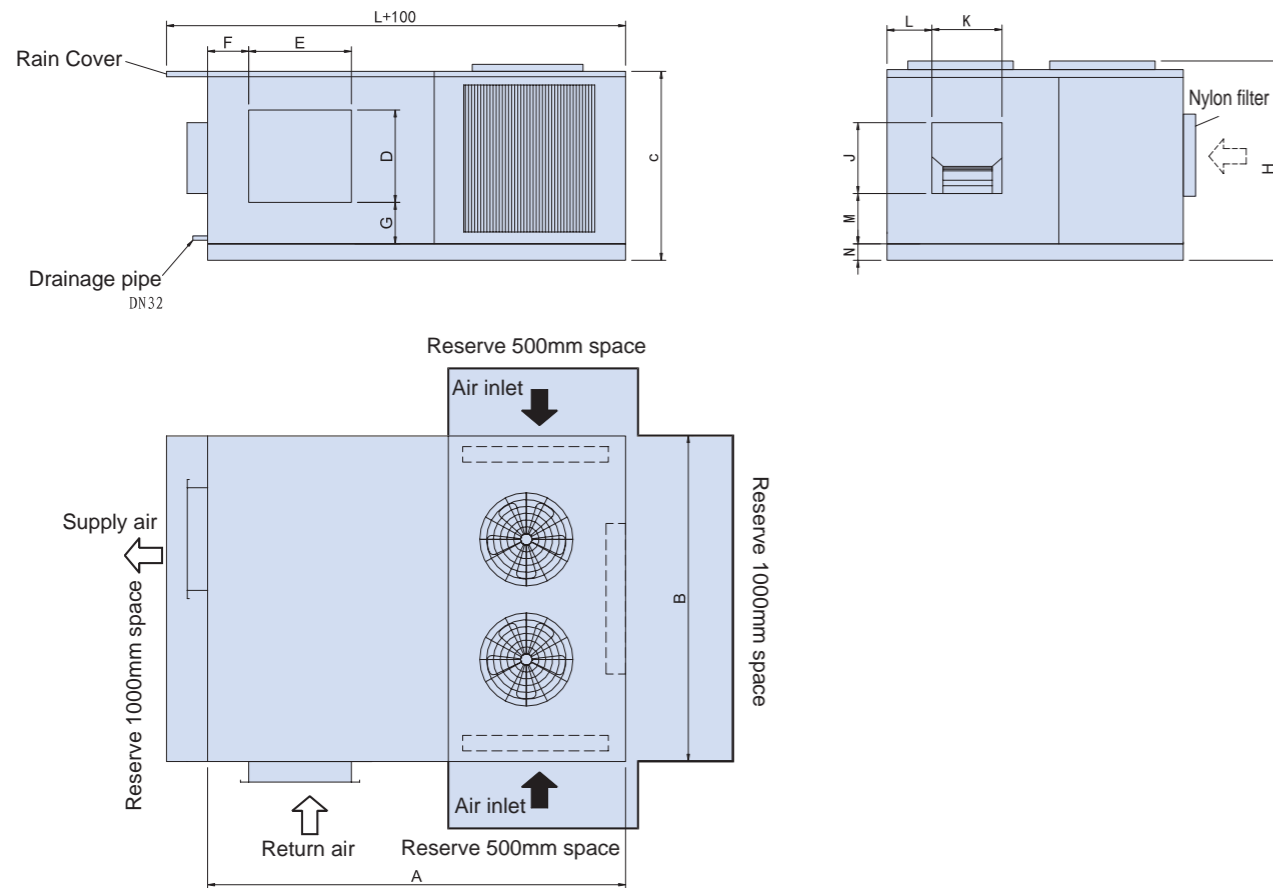
ITEM		MODEL QWRA	064B2	064BR2	078B3	078BR2	102B2	102BR2	120B2	120BR2
Rated cooling capacity			61	61	74	74	97	97	114	114
Rated heating capacity		kW	-	65	-	78	-	108	-	124
Electrical heater(optional)		kW	-	15	-	18	-	24	-	30
Air flow		m ³ /h	12000		15000		20000		24000	
ESP		Pa	300		400		400		400	
Electric	Power									
	Total power input	kW	24		29.6		43.5		52.2	
	Total current	A	46.4		57.5		81.4		99.9	
	Max. power input	kW	30		37		54.4		65.3	
Compressor	Type		High efficient scroll type							
	Start		Directly start							
	Qty		2				4			
	Energy control	%	100~50~0				100~50~0			
	Rated power input	kW	8.9x2		5.4x4		7.9x4		8.9x4	
	Rated current	A	16.0x2		9.9x4		13.8x4		16.0x4	
Axial-flow fan	Type		Axial-flow type							
	Qty		2		2		2		2	
	Power input	kW	1.1		1.25		2.2		2.8	
Supply fan	Typ		Centrifugal fan							
	Power input	kW	4.0		5.5		7.5		11	
	Rated current	A	8.8		11.7		15.6		22.3	
Heat exchanger		Copper tube and aluminum fins								
Filter device	Material	Nylon filter								
	Thickness	10m m								
Size	Length	m m	2450		2800		3200		3400	
	Width	m m	1950		2100		2200		2200	
	Height	m m	1460		1680		1760		1760	
Refrigerant	Type		R407C							
	Charge	kg	9.5x2		6.2x4		8x4		9.15x4	
Case		Galvanized plate painted								
Operation weight	kg	900		1150		1350		1420		
Noise	db (A)	68		69		72		74		
Cooling Season EER			2.32	-	2.32	-	2.32	-	2.32	-
Annual performance factor			-	2.13	-	2.13	-	2.13	-	2.13

Note:

- 1, Cooling working condition: environment temp. DB:35°C, room inlet temp. DB/WB:27/19°Cy
- 2, Heating working condition: environment temp. DB/WB: 7/6°C, room inlet temp. DB20°C.
- 3, The total power input doesn't includes electrical heater part.
- 4, Noise is tested under standard air flow, 3m from the condenser.
- 5, The specification will be changed according to the improvement. So please refer to the actual unit parameters.

7 OUTLINE DIMENSION

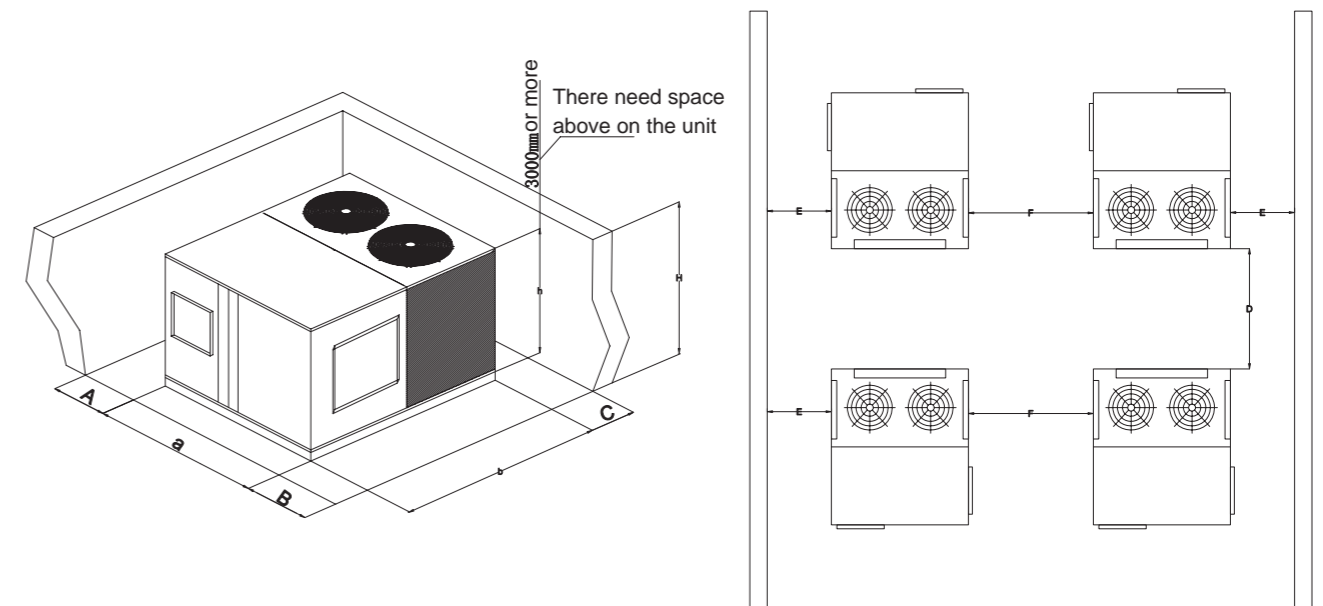
1 HORIZONTAL AIR RETURN WAY



MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N
Q W RA026	1880	1560	1135	450	400	325	300	1300	360	360	255	310	80
Q W RA031	1880	1560	1135	450	400	325	300	1300	360	360	255	310	80
Q W RA037	2100	1560	1135	450	500	325	300	1300	405	405	220	315	80
Q W RA052	2250	1950	1460	450	750	275	465	1600	510	510	250	425	80
Q W RA064	2450	1950	1460	700	600	600	340	1600	510	510	240	430	80
Q W RA078	2800	2100	1680	600	900	250	500	1900	570	570	300	450	80
Q W RA102	3200	2200	1760	750	900	450	470	1980	715	715	300	520	80
Q W RA120	3400	2200	1760	800	1000	500	445	1980	715	715	300	520	80

8 UNIT WORKING SPACE

- The unit is installed on outside platform or rooftop. The compressor repair, control wiring, and fan motor maintenance must be considered during installation. With the increase condensing temperature, the cooling capacity will increase. In order to obtain the maximum cooling effect, the unit installation position should be selected according to the following advice.



MODEL	OUTLINE SIZE			MINIMUM SPACE			MINIMUM AIR INLET SPACE			HEIGHT OF THE WALL
	a	b	h	A	B	C	D	E	F	H
Q W RA026	1560	1880	1135	1000	1000	1000	1000	1000	2000	1515
Q W RA031	1560	1880	1135	1000	1000	1000	1000	1000	2000	1515
Q W RA037	1560	2100	1135	1000	1000	1000	1200	1200	2000	1515
Q W RA052	1950	2250	1460	1000	1000	1000	1400	1200	2000	1515
Q W RA064	1950	2450	1460	1000	1000	1000	1400	1200	2000	1840
Q W RA078	2100	2800	1680	1000	1000	1000	1400	1200	2000	2060
Q W RA102	2200	3200	1760	1200	1200	1000	1400	1800	2000	2140
Q W RA120	2200	3400	1760	1200	1200	1000	1400	1800	2000	2140

9 COOLING/HEATING CAPACITY CORRECTION FACTORS

1 REFRIGERATION OPERATION

Room inlet temp. °C		Environment temp. DB °C				
DB Temp.	WB Temp.	25	30	35	40	45
23	16	0.98	0.94	0.89	0.85	0.81
25	18	1.05	1	0.95	0.9	0.85
27	19	1.1	1.05	1	0.95	0.90
28	20	1.12	1.07	1.02	0.96	0.91
30	22	1.19	1.13	1.08	1.02	0.96
32	24	1.26	1.20	1.15	1.08	1.03

2 HEATING OPERATION

Room inlet DB temp. °C	Environment WB temp. °C				
	-5	0	6	10	15
16	0.77	0.89	1.02	1.13	-
18	0.77	0.88	1.02	1.12	-
20	0.76	0.87	1	1.11	1.25
21	0.76	0.78	0.99	1.10	1.24
22	0.75	0.86	0.97	1.09	1.23
24	0.75	0.85	0.96	1.08	1.22

10 NORMAL PERATION RANGE

Range	Type	Cooling	Heating
Environment temp. (°C)		18 ~ 45	-10 ~ 21
Room return air temp. (°C)		18 ~ 32	≤ 27

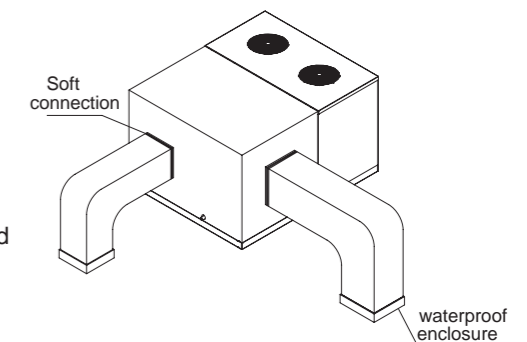
Note:

- 1, If the working environment exceeds the above conditions, the unit's protection device will start;
- 2, Unit outside the above range need non-standard design.

11 UNIT INSTALLATION

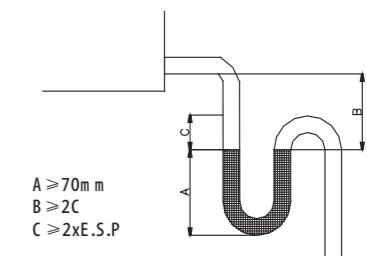
1 SIDE WIND

- The sideward rooftop units use horizontal air inlet/outlet. The connection between the air duct and the unit needs soft type, to reduce the noise generated by vibration.
- The unit send the air to the room through the air duct vertically. The installation refer to on the right.
- All air ducts should be sealed to prevent air leakage. If the air duct is directly exposed in the air. Thermal insulation is required to prevent the cold bridge generated. The outdoor air ducts should be treated as rainproof. We suggest the air duct insulation layer placed inside the air duct to reduce the noise.
- when air duct enter into the room, It is necessary to protect the surrounding area of the air duct to prevent rain, dust, sand and the like from entering the room.



2 INSTALLATION OF DRAINAGE PIPE

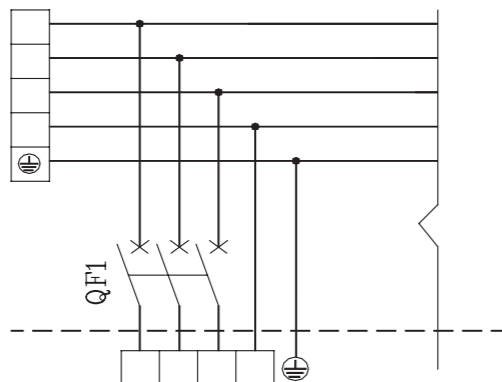
- When installing the unit, a suitable water seal should be provided to ensure the condensate water discharged smoothly. The installation diagram of the water seal is as shown on the right.



Note: E.S.P. is excess static pressure

12 ELECTRICAL WIRING

- When the unit is running, the power supply must be stable, consider all voltage drop factors, the operating voltage should be kept within $\pm 10\%$ of the rated value, if the voltage is too high or too low, it will have an adverse effect on the unit.
- The phase-to-phase voltage difference can't exceed $\pm 2\%$ of the rated value, and the difference between the highest and lowest phase currents is less than $\pm 3\%$ of the rated value to avoid overheating of the compressor.
- The power supply frequency should be kept within $\pm 2\%$ of the rated value.
- The minimum starting voltage must be maintained at more than 85% of the rated value.
- If the power cord is too long, the compressor will not start. The length of the power cord must be less than 2% of the rated value. If the length can't be shortened, the power cord should be thickened.
- The wiring from the power supply to the unit must be strictly in accordance with the electrical and technical standards, and the insulation is good, after the unit is connected, the insulation between the terminal and the unit should be measured with a 500V high resistance meter, the insulation resistance is at least 3 M Ω .
- In order to reduce the damage to transformers, wiring and other electrical equipment caused by short-circuited, facilitate the independent control of each unit's start-stop, the power supply line must be equipped with a low-voltage circuit breaker(QF).
- The operating current, input power and other parameters in the performance specification are tested under standard operating conditions, in actual operation, it will be very different. If the outside temperature is higher and the air conditioning load is too large, the unit operating current and input power will increase. Therefore, the power supply, transformer, low-voltage circuit breaker, and wiring capacity should be selected under the possible server working conditions. It is recommended to choose according to the table.



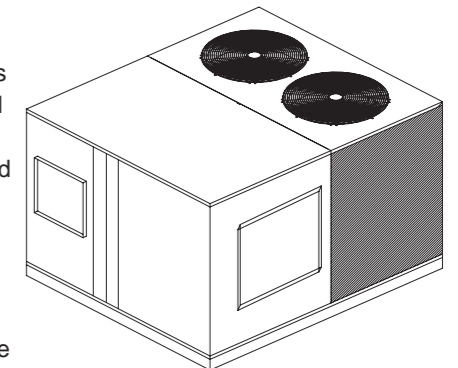
MODEL	Total rated current	Max. current	Main power cable mm ²
QWRA026B2/BR2	23.6	33	10
QWRA031B2/BR2	26.2	36.7	10
QWRA037B2/BR2	29	40.6	10
QWRA052B2/BR2	40	56	16
QWRA064B2/BR2	46.4	65	16
QWRA078B2/BR2	57.5	80.5	25
QWRA102B2/BR2	81.4	114	35
QWRA120B2/BR2	99.9	139.9	50

Note: please use three phase five wiring cable, only allow to use copper wires

13 MAINTENANCE AND REPAIR

1 HEAT EXCHANGER

- A vacuum cleaner can be used with a nylon brush to clean dust and debris from the surface of the heat exchanger. If there is a source of compressed air, the compressed air can be used to blow dust from the surface of the heat exchanger. The caveat is that the heat exchanger surface does not need to be cleaned if equipped with a suitable air filter and proper maintenance.



2 A DRAIN

- Before the unit is running, check whether the drain pipe is blocked to make the condensate discharge smoothly.

3 COMPONENT REPLACEMENT

- Accessories can be obtained through the factory service headquarters or distributor. The accessories you need should be noted as follows:
 - unit model;
 - the number of the machine when it leaves the factory;
 - name and quantity of accessories;
- Note:
 - If the unit is restarted after a long shutdown, the compressor crankcase heater should be energized for at least 24 hours before restarting the compressor.
 - When doing air tightness and leak testing, do not mix flammable hazardous gases such as oxygen and acetylene into the refrigeration circuit to avoid danger. It is best to use nitrogen or refrigerant for such tests.

4 OPERATION

- For units with a temperature controller, please note the following:
 - make sure the start switch is closed;
 - press the start switch "🔌" bottom
 - set the air conditioning temperature you need;
 - the compressor can be restarted(except for relays with a delay 3 minutes) to protect the compressor after at least 3 minutes.

13 MAINTENANCE AND REPAIR

5 REPAIR

- Special unit structure design make the maintenance is easy, unload the front and back plate, then can repair it.
- Wiring box also can be repair in the front plate part.
- Generally, it needs to check and clean heat exchanger once a season, but if the unit is under bad working environment, please ask the professional worker to maintain it, or it will be shorter the lifetime.
- Please pay attention:
When the unit is running, do not extend rods and other hard objects from the exhaust hood to the machine to avoid injury and machine accidents.
- Season begins:
 - 1, Check the oil return obstacles at the return air outlet and the air outlet of the unit, if so, remove the obstacle.
 - 2, Check if the grounding device is in good condition. Be sure to make the ground device intact so that the unit can operate safety.
 - 3, Ask the professional to repair the unit and clean the filter
- End of season:
 - 1, When the weather is fine, carry out half-day air supply operation to dry the inside of the unit.
 - 2, Turn off the power, otherwise the unit will consume power.
 - 3, Ask the professional to repair the unit and clean the filter.