

Installation Manual-Use and Maintenance Manual

High Precision Air Conditioner

COOLBLADE

SCU/O(EX)

Chilled Water Single Coil Unit



Contents

Standard attachments	1
1 Overview	2
1.1 Product description	2
1.2 Model designation	2
1.3 Air supply form	2
1.3.1 Over supply air	3
1.3.2 Under supply air	3
1.4 Unit configuration	4
1.4.1 Main components	4
1.4.2 Optional functions	5
1.5 Environmental requirements	6
1.5.1 Operating environment	6
1.5.2 Storage environment	6
2 Mechanical installation	7
2.1 Unit transportation and acceptance	7
2.1.1 Transportation	7
2.1.2 Unpacking	7
2.1.3 Inspection	8
2.1.4 Unit package size	8
2.2 System layout diagram	8
2.3 Unit installation	9
2.3.1 Computer room requirements	9
2.3.2 Installation space	9
2.3.3 Unit size	10
2.3.4 Mounting bracket	10
2.3.5 Unit in place	11
2.3.6 Unit internal operation	12

2.3.7	Notes	13
2.4	Piping connection	13
2.4.1	Chilled water inlet / outlet pipe	14
2.4.2	Condensate drain	14
2.4.3	Humidifier water inlet pipe	15
2.4.4	Notes	15
3	Electrical installation.....	17
3.1	Task introduction and notes	17
3.1.1	Lines to be connected at the installation site.....	17
3.1.2	Notes	17
3.2	Unit wiring	17
3.2.1	Electrical interface location	17
3.2.2	Power cord connection	18
3.2.3	Control line connection	18
3.3	Electrical parameter table	19
3.3.1	Unit total input power.....	19
3.3.2	Electrical power of important components.....	21
3.4	Installation check	22
4	System debugging.....	23
4.1	Preliminary preparations for commissioning.....	23
4.1.1	Mechanical part.....	23
4.1.2	Electrical section.....	23
4.2	Commissioning process	23
4.3	Inspection after commissioning.....	24
4.3.1	Control switch	24
4.3.2	Control and safety switch set values	24
4.3.3	Air flow probe setting.....	25
4.3.4	Setting value of air filter fouling alarm switch.....	25
5	Operation and maintenance.....	27
5.1	Unit maintenance	27

5.1.1	Cleaning the air filter	27
5.1.2	Inspection and cleaning of drainage channels	27
5.1.3	Electric heating	28
5.1.4	Humidifier.....	28
5.1.5	Check the overall operating status of the unit	29
5.2	Unit disassembly.....	30
6	Troubleshooting.....	31
6.1.1	Unit startup failure	31
6.1.2	Abnormal temperature and humidity in the room	31
6.1.3	Abnormal air flow.....	34

Standard attachments

Each unit leaves the factory with the following attachments:

- **Installation manual-use and maintenance manual**
- **Control manual**
- **Production certificate**
- **Unit circuit diagram**
- **Factory test report**
- **2 unit keys**
- **Condensate pipe pre-connected 1.5 meters**
- **The humidifier drain pipe is pre-connected for 1.5 meters
(only configured when the humidification function is optional)**
- **2 spare fuses**
- **5 door panel plugs (for covering screws)**

1 Overview

1.1 Product description

As one of the main members of the European Heating and Heating Association, Climaveneta is responsible for the development of indicators for European chiller units. It is the only Italian equipment manufacturer recognized by the government as a third party test. Through the optimization of CAD structural design and the selection of new reliable components, the Clement COOLBLADE series of precision air conditioners has taken the lead in terms of flexibility, safety and reliability, energy efficiency and advancedness.

COOLBLADE series precision computer room air-conditioning chilled water unit is scientifically composed of chilled water refrigeration system, electric heating fin heat exchange system, humidification system, dehumidification system and other functional components. High energy efficiency with low energy consumption. Is an excellent product of contemporary energy saving and environmental protection. Large data processing centers widely used in military, medical, financial, communications, and various fields are your best choice.

1.2 Model designation

SC U 100 B2 - EX

SC: chilled water series

U / O: supply air form, U is under supply air, O is over supply air

100: Unit cooling capacity number

B2: Frozen water double coil series, the default stands for frozen water single coil series

EX: Submerged air casing (down-supply air), the default represents the fan installed in the unit

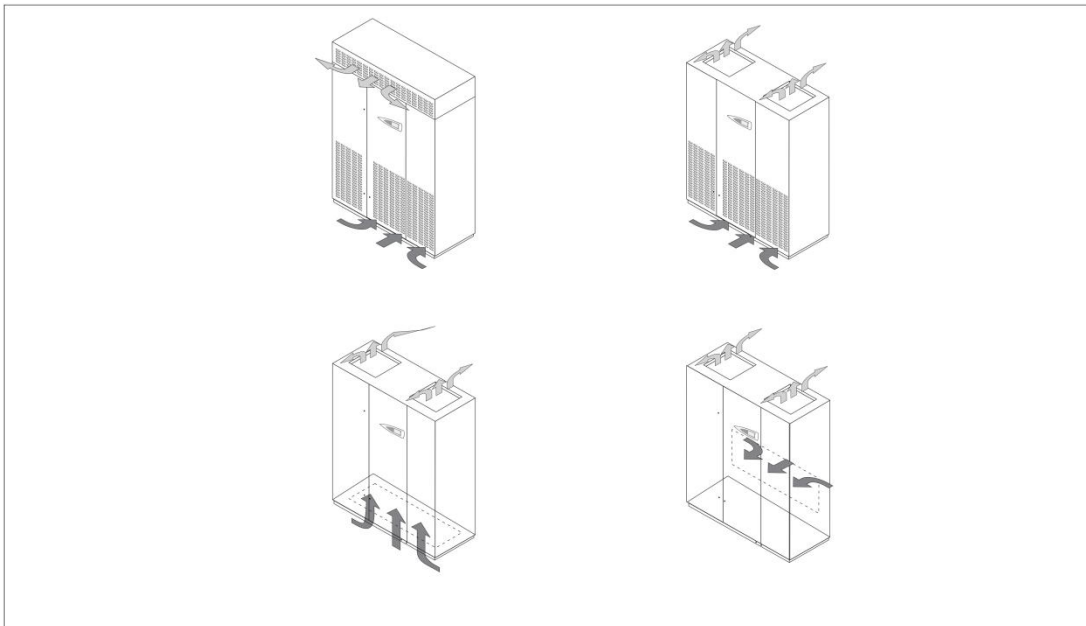
1.3 Air supply form

COOLBLADE series precision computer room air conditioners have multiple supply and return air modes, depending on the location of the unit's supply and return air outlets. There are mainly two

types of upper and lower supply air.

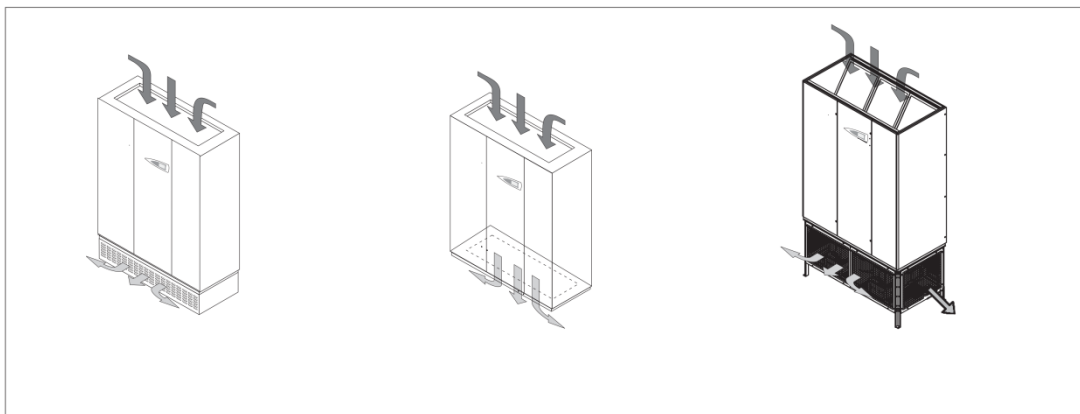
1.3.1 Over supply air

The upper blower unit is the air coming out from the top of the unit, and the air is usually returned from the front, back or bottom of the unit. We can provide different units of return air according to customer requirements. The air outlet of the upper blower unit can be connected to the air duct on the ceiling or an air outlet device can be connected to the air outlet.



1.3.2 Under supply air

The unit supplies air from the bottom and returns air from the top. The return air can directly take in air from the room or return air through an air inlet.



1.4 Unit configuration

1.4.1 Main components

The main components of the COOLBLADE series precision computer room air-conditioning chilled water unit include: fan, meter cooler, electric control box, microprocessor control system, proportional integral valve.

1) Unit appearance

The appearance of this series of units is RAL7016, and the sheet metal parts are made of galvanized steel. The company's advanced installation technology enables the unit to operate normally even when the unit is maintained; at the same time, this series of units have excellent mute performance. The inner surface of the inner cover of the unit can be equipped with double-layer sound insulation panels. Sound insulation materials made of special materials.

2) Fan

Adopting high efficiency and high reliability EC fan, single air inlet, backward tilting blade; equipped with brushless variable frequency motor, so that the EC fan can achieve extremely excellent performance under the conditions of low power consumption and high static pressure. The user can directly adjust the motor speed through the control panel to control the unit air volume or ESP.

3) Coil

The fin heat exchanger is used as the surface cooler in the room, which has a sufficiently large heat exchange area. The heat exchanger is composed of internally threaded copper tubes and aluminum fins with special shapes, which has excellent heat exchange performance. At the same time, the heat exchanger is hydrophilic and facilitates the drainage of condensed water. The heat exchanger is installed in front of the air outlet of the fan, with a water collecting tank and a drainage hose.

4) Electric control box

The installation and wiring of the electric control box are in full compliance with the IEC 204-1 / EN60204-1 standard. It is connected to the fan and compressor's power terminal box and overheat protection through a contactor. At the same time, it has a general disconnect switch to ensure electrical safety.

5) Microprocessor control system

The microprocessor equipped in the system can accurately control the temperature and humidity of the indoor environment, and at the same time can monitor the operating status of the unit, in accordance with EEC directive 89/336.

6) Proportional Integral Valve

The units are equipped with proportional integral valves to regulate the chilled water flow, control the cooling capacity of the units and the indoor temperature. Optional 3P on / off control and 0-10V analog control are available to adjust the chilled water valve.

7) Control switch

The units are equipped with air flow switches, return air temperature and humidity probes, and supply air temperature probes, and other control switches such as smoke / fire detection probes are optional (see 4.3.1 Control Switches for details).

1.4.2 Optional functions

1) Electric heating

The unit can be equipped with electric heating for reheating, with overheating protection. In the case of overheating of the unit, it can cut off the power and issue an alarm signal.

2) Electrode humidifier

The unit can be equipped with an electrode humidifier. The humidifier can turn on the humidification function according to the indoor humidity and can control the salt content in the water.

3) RS485

The RS485 option card on the BMS port can be connected to the monitoring system, and the unit is connected to the building management system using the Modbus communication protocol.

4) Water leak alarm

Optional point-type leak detection probe or belt-type detection tape can provide control signals to the unit or an independent monitoring system to trigger the unit's alarm for timely processing.

5) Filter dirty alarm

The pressure difference between the front and rear of the filter is used to determine whether the filter pad is dirty or not, which triggers the alarm function of the unit and reminds the customer to replace the filter pad with a new one.

6) High and low voltage phase sequence protection

Monitor power fluctuations, overvoltage, undervoltage, phase sequence, and phase loss.

7) Damper linkage

This function is for the upper fan unit. After the unit is turned on, it provides AC 24V power to the external air valve. After the air valve is opened to the specified position, it returns a dry contact signal to the unit. At this time, the unit fan starts; The original AC 24V loses power. The external air valve uses its own return device to automatically return to the closed state of the air valve.

1.5 Environmental requirements**1.5.1 Operating environment**

The operating environment of COOLBLADE series precision computer room air conditioners meets GB / T19413, as shown in the following table:

Project	COOLBLADE series chilled water unit
Environment temperature	24°C~ 50°C
Altitude	< 10000, (≥ 1000m, Please consult the manufacturer)
Voltage limits	380V± 10%/3P/50Hz (also apply to 60Hz)

1.5.2 Storage environment

COOLBLADE series precision computer room air-conditioning storage environment meets GB / T19413. For details, please see the table below. The unit must be stored indoors. It is best to keep the original packaging of the unit:

Project	COOLBLADE series chilled water unit
Environment temperature	-20°C~ 50°C
Humidity environment	5% ~ 85%RH (without condensation)
Storage environment	Indoor, clean, no dust

2 Mechanical installation

2.1 Unit transportation and acceptance

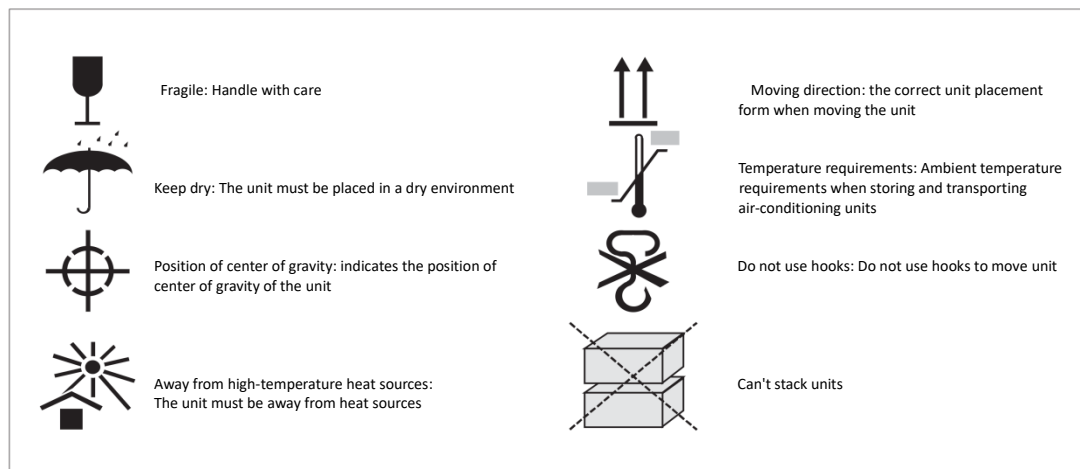
2.1.1 Transportation

Do not move the air-conditioning unit by tilting or laying down. It is best to arrive at the installation site and remove the outer packaging of the startup unit. Try not to expose the unit to the outdoors for a long time.

The unit can be moved in the following ways:

- 1) For forklift, there is an opening for forklift on the base of the unit.
- 2) When using a sling, be careful not to hoist the edge area of the unit when using the sling.

The following symbols are formulated according to the ISO 7000 standard and will appear on the outer packaging of the unit. The specific meanings are as follows:



2.1.2 Unpacking

- 1) Remove the packing box;
- 2) Remove the wooden packing frame: The bottom of the unit is fixed to the wooden packing frame with 4 M6 bolts. You can use appropriate tools to remove the bolts.

2.1.3 Inspection

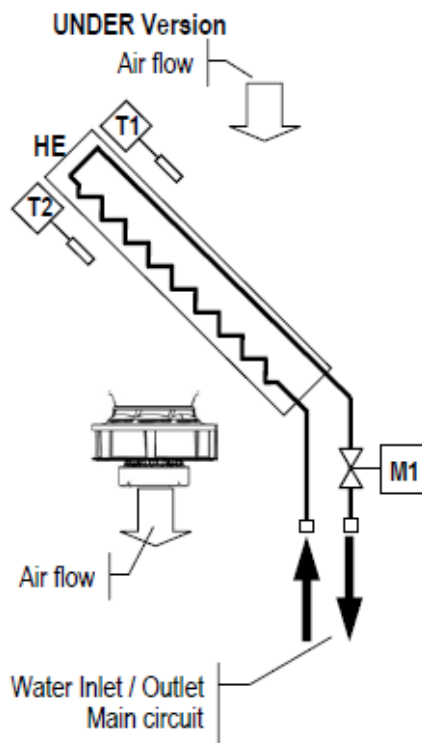
When receiving the air-conditioning unit, it is necessary to check whether the unit is intact. If any unit damage caused by transportation is found, please notify the transporter in writing immediately.

Focus on checking the control board for damage to the front panel of the unit; if the side cover is incorrectly installed, it must be installed in the correct position before installing the unit.

2.1.4 Unit package size

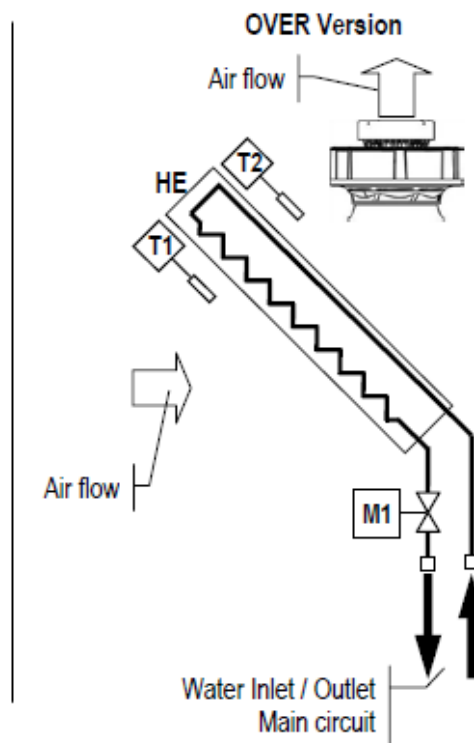
Model	SCU/O(EX)																			
	009	011	016	020	025	030	035	050	060	070	080	090	100	120	140	160	180	200	220	
Width (mm)	700		1100		900			1590				2090			2590			3090		
Depth (mm)	605		605		805			995				995			995			995		
Height (mm)	2185		2185		2185			2185				2185			2185			2185		
Weight (kg)	153	163	233	243	279	294	324	438	448	454	465	563	588	609	706	746	776	825	865	

2.2 System layout diagram



M1: Two-way valve (optional three-way valve)

HE: Coil



T1: Inlet air temperature and humidity probe

T2: Outlet temperature probe

2.3 Unit installation

2.3.1 Computer room requirements

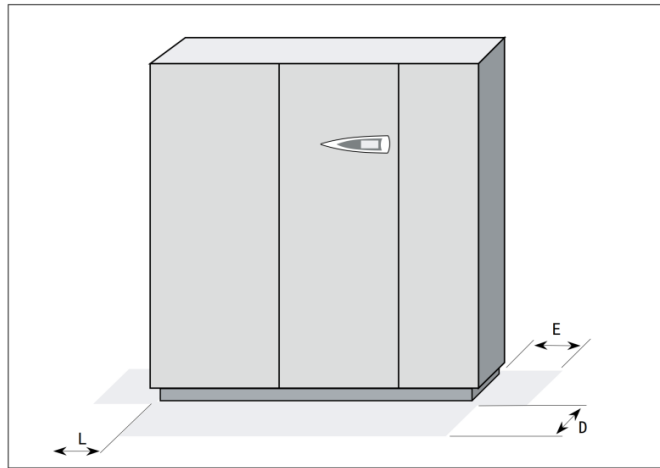
- 1) In order to ensure the normal operation of the environmental control system in the air-conditioned room, moisture and heat insulation work should be done well;
- 2) The equipment room must have good thermal insulation and a closed moisture-proof layer; the moisture-proof layer of the ceiling and walls must be made of polyethylene film; the concrete wall and floor coating must be moisture-proof;
- 3) The entry of outdoor air may increase the compliance of the system with heating, cooling, humidification, and dehumidification. Therefore, it is necessary to minimize the entry of outdoor air into the equipment room. (The intake of outdoor air should be less than 5% of the total indoor air circulation. All doors and windows should be fully enclosed, and the gap should be as small as possible.)

2.3.2 Installation space

The installation of COOLBLADE series units only needs to leave enough space in front of the unit. The design of this space can ensure that customers can easily operate when installing or servicing the unit in the future. At the same time, thanks to the structural characteristics of the COOLBLADE series, multiple units can be installed side by side or on the base bracket without leaving space on the side or rear.

In order to facilitate the maintenance or other operations of the unit, please ensure that at least 500mm (see the table below) is reserved in front of the unit.

Warning: Under no circumstances should all or part of the air outlet be blocked.



Model	SCU/O(EX)																			
	009	011	016	020	025	030	035	050	060	070	080	090	100	120	140	160	180	200	220	
D (mm)	> 500		> 500		> 800			> 900				> 900			> 900			> 900		
E (mm)	0		0		0			0				0			0			0		
L (mm)	0		0		0			0				0			0			0		

2.3.3 Unit size

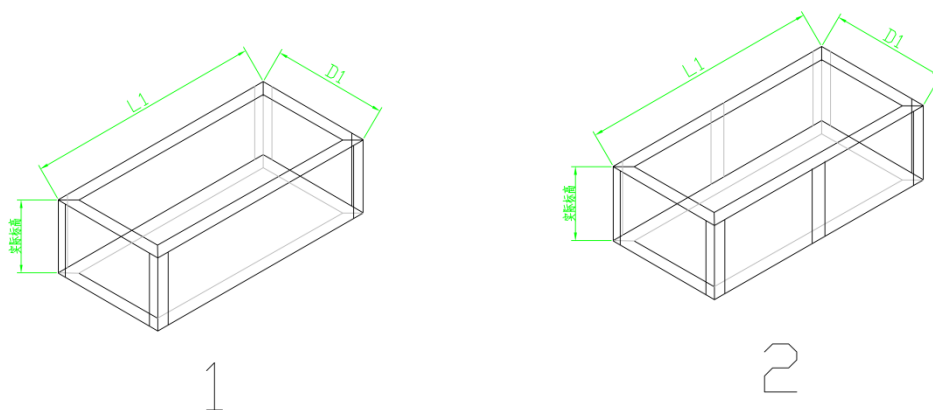
Model	SCU/O(EX)																			
	009	011	016	020	025	030	035	050	060	070	080	090	100	120	140	160	180	200	220	
Width (mm)	600		1000		800			1490				1990			2490			2990		
Depth (mm)	500		500		700			890				890			890			890		
Height (mm)	1980		1980		1980			1980				1980			1980			1980		
Weight (kg)	120	130	200	210	245	260	290	369	379	385	396	476	495	516	610	650	680	720	760	

2.3.4 Mounting bracket

The mounting bracket is prepared by the installer and mainly performs the following functions:

- 1) It is allowed to install the air conditioner in the equipment room before installing the raised floor;
- 2) Can completely suppress mechanical vibration;
- 3) It is convenient for pipeline arrangement.

The bracket is welded with No. 5 angle steel or No. 10 channel steel to ensure that it can be piped into the bottom. For the dimensions of the bracket, please refer to the table below:



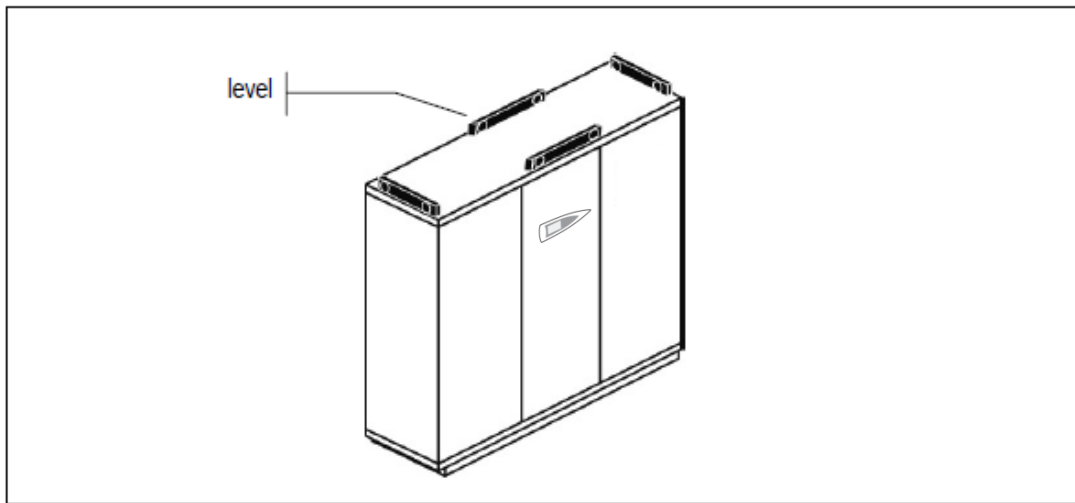
Model		SCU/O(EX)																		
		009	011	016	020	025	030	035	050	060	070	080	090	100	120	140	160	180	200	220
Support form		1											2							
L1	mm	580		980		780		1470				1970			2470		2970			
D1	mm	480		480		680		870				870			870		870			
H1	mm	Actual elevation																		

2.3.5 Unit in place

During installation, you need to pay attention to the following (if you do not install and operate according to the specifications, you are responsible for it):

- 1) The unit without adjusting legs or the submerged wind box needs to be reliably fixed on the on-site mounting bracket. In order to cushion the mechanical vibration, it is recommended to add a layer of EPDM rubber between the unit and the bracket with a thickness of not less than 5mm.
- 2) The unit with adjustable outriggers or sunken air box can be fixed with the on-site installation bracket or directly to the ground. After the outriggers are adjusted, the unit and the air box must be kept horizontal.
- 3) The on-site mounting bracket must be reliably fixed to the ground, and it must be level with the unit's fixed surface. The mounting bracket can be made according to the installation size of the unit base.
- 4) For a unit with a submerged wind box or hood, the unit must be securely fixed to the wind box or hood. In order to cushion mechanical vibration, it is recommended to add a layer of EPDM rubber between the unit and the wind box or hood, with a thickness of not less than 5mm.

- 5) After the unit and wind box are installed in place, the levelness needs to be measured. The reference diagram is as follows:



2.3.6 Unit internal operation

By removing the panels in each direction of the unit, you can perform corresponding operations inside the unit.

There are two ways to remove the front panel and side cover:

1) Front panel:

All front panels are hinged and can be opened and closed by locks on the door panel. The front panel can be opened or closed with a key that cooperates with the lock. After opening the front panel, the unit can be operated, and the unit can be inspected and repaired smoothly even in a very narrow space. After opening the front panel, all components of the unit can be operated. The number of front panels depends on the cooling capacity of the unit.

2) Side cover:

All side covers can be removed, and the side covers are fixed by screws. However, there is no need to remove the side cover during daily maintenance, which means that multiple units can be placed closely in a row without considering the space left on the side. Black plastic sealing caps are installed in the screw holes of the side cover.

3) Rear cover:

The rear cover is locked with self-tapping screws. Usually, the rear cover is installed close to the wall, so there is no need to remove the rear cover.

4) Inside board:

The high-speed fan and electric heater inside the unit are blocked by the inner panel, which can provide protection. The inner panel cannot be removed without the unit being turned off.

2.3.7 Notes

Before installing the equipment, confirm whether the installation environment meets the requirements (see 1.5 Environmental Requirements), and confirm whether the building is to be modified to cooperate with the pipeline laying, wiring and ventilation pipeline construction work. Installation must strictly follow the design drawings and reserve maintenance space.

In order to achieve the designed performance of the unit and maximize its service life, proper installation is essential. This section should be applied in conjunction with current mechanical and electrical installation regulations. The COOLBLADE series chilled water unit adopts floor-mounted installation. The unit must be placed on a mounting bracket (see 2.3.4 Mounting bracket for details).

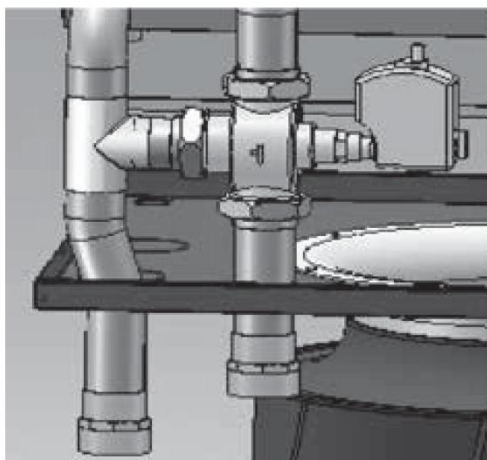
2.4 Piping connection

The piping that the unit needs to connect has the following aspects:

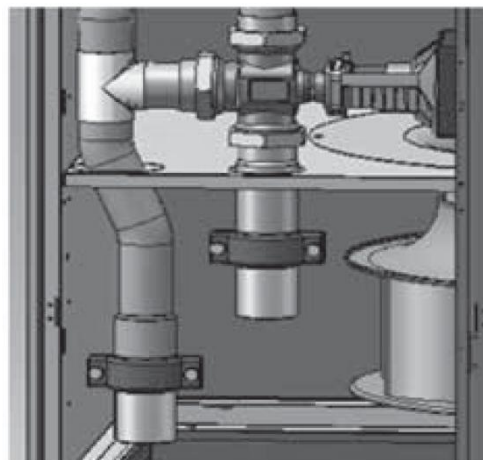
- 1) Pipeline connection between the unit and the host (chilled water inlet and outlet pipes);
- 2) Condensate drain pipe;
- 3) Humidifier inlet pipe (for models with optional humidifier).

The pipe routing between the unit and the host is configured by the user, and the selection, layout and fixing of the piping must be operated according to industry standards.

2.4.1 Chilled water inlet / outlet pipe



Threaded connection



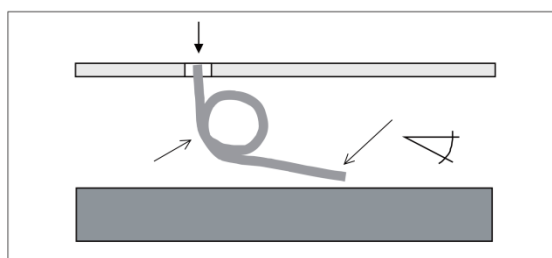
Grooved Hoop Connection

- 1) The small unit (009-035) is threaded, and the inlet and outlet pipe joints contain pipe threads.
- 2) Large units (050-220) are connected by grooved pipe couplings, and grooved steel pipe joints are worn for welding.
- 3) The specifications of the unit's reserved takeover can refer to the following table:

Model	SCU/O(EX)																		
	009	011	016	020	025	030	035	050	060	070	080	090	100	120	140	160	180	200	220
Reserved takeover specifications	F3/4"		F1"		F1" 1/4			DN40		DN50				DN65					

2.4.2 Condensate drain

- 1) The condensate formed during the dehumidification process of the air-conditioning unit needs to be drained outdoors. A water collecting tank for collecting condensed water is



arranged at the bottom of the unit surface cooler, and the condensed water is connected to the drainage system through a hose at the bottom of the water collecting tank. The unit itself is equipped with a hose as standard. When installing, you only need to connect the drainage hose to the drainage system through a rubber or plastic pipe (pipe diameter

19mm).

- 2) If the air-conditioning unit is equipped with a humidifier, the condensed water is drained to the outside of the unit through the drainage system of the humidifier. The unit has been installed with a drainage hose. During the installation, rubber or plastic hoses (32mm diameter) are required to connect the hoses to the drainage system.

WARNING: The temperature of the water drained from the humidifier is very high and needs attention. The drain hose of the humidifier must not be bundled with any other wires, and the hose must be directed down to prevent touching the power cord.

2.4.3 Humidifier water inlet pipe

A male screw joint is installed below the water inlet solenoid valve at the bottom of the humidification tank, and the connecting pipe diameter is a 6mm rubber pipe. The plastic pipe needs to be connected to the water supply system of the air conditioning unit installation site.

2.4.4 Notes

For the pipeline connection of the unit (excluding the condensate connection of the unit), the following matters need to be noted:

- 1) The use of flexible connections can prevent the transmission of vibrations while allowing slight vibrations.
- 2) The tee connection at the waterway connection point of the unit can simplify the installation and disassembly of the unit.
- 3) A shut-off valve is used to connect the unit to the chilled water system. A ball valve can be used to adjust the maximum opening to minimize the water pressure drop.
- 4) During installation, it is necessary to check whether the specifications of the water connection pipe meet the requirements to prevent the unit from failing to meet the requirements due to insufficient chilled water flow.
- 5) Check whether the water connection of the unit is correct. All chilled water pipes need to be wrapped with insulation pipes to prevent frost on the outer surface of the water pipes; the insulation must include valves and tee connections.

6) The standard configuration of large units (050-220) is steel header plus steel water pipe. If antifreeze such as ethylene glycol is required, it is recommended to choose copper header and copper water pipe.

7) When the unit is used in a low temperature environment, it is necessary to check whether a certain concentration of ethylene glycol antifreeze has been added to the water system. For the concentration of antifreeze, refer to the following table:

°C	0	-5	-10	-15	-20	-25
%	0	12%	20%	28%	35%	40%

3 Electrical installation

3.1 Task introduction and notes

3.1.1 Lines to be connected at the installation site

- 1) Unit power cord;
- 2) Unit monitoring, group control, alarm and related control lines.

The above part of the wiring needs to be determined according to the site conditions.

3.1.2 Notes

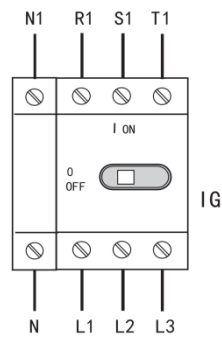
- 1) Therefore, the connection of power, control and ground wires must comply with the regulations of the country and local electrician regulations;
- 2) For full load current, refer to the equipment nameplate. The cable size should be consistent with local wiring rules;
- 3) Main power requirements: $380V \pm 10\%$ / 3P / 50Hz (also apply to 60Hz), beyond this range will invalidate the warranty terms.
- 4) Electrical installation work must be performed by professional installers who have received professional training recognized by the local country and passed the assessment;
- 5) Before connecting the circuit, measure the input power voltage with a voltmeter to make sure that the power is off and the main load switch is in the off state.

3.2 Unit wiring

3.2.1 Electrical interface location

Open the front door of the unit, you can see the electric control box of the unit, open the panel outside the electric control box (locked to the electric control box by screws), expose the internal electrical components, and then operate.

A: Main load switch wiring instructions



Power line (user-supplied)

Note: As the product is constantly updated, the pictures are for reference only,
the actual product shall prevail

Warning: The internal electrical components are sensitive to the static electricity of the human body, so discharge the static electricity of the human body to the ground before touching any electrical components.

3.2.2 Power cord connection

The power supply interface of the unit is "3.2.1 Location of electrical interface". L1 ~ L3, N, PE of the power supply interface of the unit are connected to the corresponding ends of the external power supply. Recommended power line and distribution circuit breaker specifications for indoor units are selected according to 3.3 electrical parameter table.

Warning: Incorrect wiring may cause damage to the equipment and personal safety. You must ensure that the power phase, neutral and ground are connected correctly and reliably!

3.2.3 Control line connection

Please refer to the attached accessories: circuit diagram for the control line connection of the unit.

Warning: Before connecting the control wires, the wiring personnel must take appropriate anti-static measures.

3.3 Electrical parameter table

3.3.1 Unit total input power

Mod.	V/Ph/Hz	B			R			H			T			Air-switch (A)
		kW	FLA	mm2	kW	FLA	mm2	kW	FLA	mm2	kW	FLA	mm2	
SCU/O 009	380/3N/50	1.10	1.80	1.5	5.10	19.98	6	3.35	12.03	4	5.10	19.98	6	4P/63A
SCU/O 011	380/3N/50	1.10	1.80	1.5	5.10	19.98	6	3.35	12.03	4	5.10	19.98	6	4P/63A
SCU/O 016	380/3N/50	2.20	3.60	1.5	10.20	39.96	10	5.95	9.30	6	13.95	45.66	16	4P/63A
SCU/O 020	380/3N/50	2.20	3.60	1.5	10.20	39.96	10	5.95	9.30	6	13.95	45.66	16	4P/63A
SCU/O 025	380/3N/50	2.70	4.30	2.5	11.70	17.90	4	6.45	10.00	6	15.40	23.60	6	4P/80A
SCU/O 030	380/3N/50	2.70	4.30	2.5	11.70	17.90	4	6.45	10.00	6	15.40	23.60	6	4P/80A
SCU/O 035	380/3N/50	2.70	4.30	2.5	11.70	17.90	4	6.45	10.00	6	15.40	23.60	6	4P/80A
SCU/O 050	380/3N/50	3.6	5.5	2.5	21.6	32.8	10	9.6	14.6	4	27.6	42.0	16	4P/80Aor4P/100A
SCU/O 060	380/3N/50	3.6	5.5	2.5	21.6	32.8	10	9.6	14.6	4	27.6	42.0	16	4P/80Aor4P/100A
SCU/O 070	380/3N/50	7.3	11.2	2.5	25.3	38.5	10	13.3	20.3	6	31.3	47.7	16	4P/80Aor4P/100A
SCU/O 080	380/3N/50	7.3	11.2	2.5	25.3	38.5	10	13.3	20.3	6	31.3	47.7	16	4P/80Aor4P/100A
SCU/O 090	380/3N/50	7.0	10.8	2.5	25.0	38.2	10	13.0	19.9	6	31.0	47.3	16	4P/80Aor4P/100A
SCU/O 100	380/3N/50	7.2	11.0	2.5	25.2	38.3	10	13.2	20.1	6	31.2	47.5	16	4P/80Aor4P/100A
SCU/O 120	380/3N/50	7.2	11.0	2.5	25.2	38.3	10	13.2	20.1	6	31.2	47.5	16	4P/80Aor4P/100A
SCU/O 140	380/3N/50	7.2	11.0	2.5	25.2	38.3	10	14.7	22.4	6	32.7	49.8	16	4P/80Aor4P/100A
SCU/O 160	380/3N/50	10.5	16.2	4	28.5	43.6	16	18.0	27.6	10	36.0	55.0	16	4P/80Aor4P/100A
SCU/O 180	380/3N/50	10.5	16.2	4	28.5	43.6	16	18.0	27.6	10	36.0	55.0	16	4P/80Aor4P/100A
SCU/O 200	380/3N/50	10.8	16.5	4	37.8	57.5	16	18.3	27.9	10	45.3	68.9	25	4P/80Aor4P/100A

SCU/O 220	380/3N/50	10.8	16.5	4	37.8	57.5	16	18.3	27.9	10	45.3	68.9	25	4P/80Aor4P/100A
-----------	-----------	------	------	---	------	------	----	------	------	----	------	------	----	-----------------

B= with cooling only

H= Refrigeration + standard electric humidification

R= Refrigeration + electric heating

T= Refrigeration + electric heating + standard electric humidification

3.3.2 Electrical power of important components

SCU/O(EX)	EC Fan				Heater			Humidifier		
	V/PH/HZ	n °	FLI(KW)	FLA(A)	n °	FLI(KW)	FLA(A)	kg/h	FLI(KW)	FLA(A)
009	380/3N/50	1	1.10	1.8	2	4	18.18	3	2.25	10.23
011	380/3N/50	1	1.10	1.8	2	4	18.18	3	2.25	10.23
016	380/3N/50	2	1.10	1.8	4	8	36.36	5	3.75	5.70
020	380/3N/50	2	1.10	1.8	4	8	36.36	5	3.75	5.70
025	380/3N/50	1	2.70	4.3	3	9	13.67	5	3.75	5.70
030	380/3N/50	1	2.70	4.3	3	9	13.67	5	3.75	5.70
035	380/3N/50	1	2.70	4.3	3	9	13.67	5	3.75	5.70
050	380/3N/50	1	3.60	5.5	6	18	27.35	8	6.00	9.12
060	380/3N/50	1	3.60	5.5	6	18	27.35	8	6.00	9.12
070	380/3N/50	2	3.65	5.6	6	18	27.35	8	6.00	9.12
080	380/3N/50	2	3.65	5.6	6	18	27.35	8	6.00	9.12
090	380/3N/50	2	3.50	5.4	6	18	27.35	8	6.00	9.12
100	380/3N/50	2	3.60	5.5	6	18	27.35	8	6.00	9.12
120	380/3N/50	2	3.60	5.5	6	18	27.35	8	6.00	9.12
140	380/3N/50	2	3.60	5.5	6	18	27.35	10	7.50	11.40
160	380/3N/50	3	3.50	5.4	6	18	27.35	10	7.50	11.40
180	380/3N/50	3	3.50	5.4	6	18	27.35	10	7.50	11.40
200	380/3N/50	3	3.60	5.5	9	27	41.02	10	7.50	11.40
220	380/3N/50	3	3.60	5.5	9	27	41.02	10	7.50	11.40

3.4 Installation check

After the electrical installation is complete, check to confirm:

- 1) The power supply voltage is the same as the rated voltage on the equipment nameplate;
- 2) There is no open circuit or short circuit in the electrical circuit of the system;
- 3) The power cables and ground cables to the power distribution circuit breaker and the unit have been connected;
- 4) The rating of the circuit breaker or fuse is correct;
- 5) The control cable has been connected;
- 6) All cables and circuit connectors have been tightened, and the fastening screws have not loosened.

After all the above contents are checked and confirmed to be correct, you can start debugging.

4 System debugging

4.1 Preliminary preparations for commissioning

4.1.1 Mechanical part

- 1) Confirm that the chilled water pipeline has been reliably connected and leaked as required;
- 2) Confirm that the water supply and drainage pipes of the humidification system have been reliably connected and leak-tested according to requirements; (for models with optional humidifier)
- 3) Make sure that the temperature of the equipment room is above 20 ° C and that it has a certain heat load. If it is not available, other heating devices or electric heating of the unit shall be used first to preheat the environment of the equipment room to ensure the rated heat load necessary for commissioning.

4.1.2 Electrical section

- 1) Confirm that the input voltage of the main power supply is within the nominal range of $\pm 10\%$ of the rated voltage. Confirm that all electrical or control wiring is correct and tighten all electrical and control connectors;
- 2) Power cables and low-voltage control cables need to be arranged separately;

4.2 Commissioning process

- 1) Power on the unit: Close the main load switch to the "1" position;
- 2) Close all circuit breakers inside the electrical control box;
- 3) Close the circuit breaker of the auxiliary circuit and check whether the control panel is powered on.
- 4) Use the buttons on the control panel to start the unit.
- 5) Check if the selection direction of the fan is correct; if the direction is not correct,

disconnect the power supply of the unit, reverse any two of the three-phase power lines, and restart the unit;

- 6) Check whether the water valve works normally;
- 7) Check whether the specifications of the water pipe are correct; 8) If the unit issues an alarm, refer to the control manual.

4.3 Inspection after commissioning

4.3.1 Control switch

COOLBLADE series units are equipped with the following control switches:

- 1) Air flow switch;
- 2) Return air temperature and humidity probe;
- 3) Supply air temperature probe.

The following control switches are available as options:

- 1) Electric heating overheating protection (unit with electric heating), installed on the right side of the electric control box, with manual reset function;
- 2) Point-type water leak detection probe or tape detection tape;
- 3) Air filter is blocking the probe (differential pressure switch);
- 4) Water flow probe;
- 5) Smoke / fire detection probe;

4.3.2 Control and safety switch set values

After starting the air-conditioning unit, the following parameters need to be adjusted:

- 1) Indoor ambient temperature (cooling or heating setpoint)
- 2) Relative humidity (humidification or dehumidification setpoint)
- 3) Air filter dirty clogging alarm set point, refer to "Air filter clogging alarm switch set value"

Note: The settings of the control and safety switches must not be changed.

4.3.3 Air flow probe setting

When the fan of the unit (only one unit) or one of the fans stops running, the air flow pressure differential switch is activated. The factory setting of the differential pressure switch is 50Pa.

The pressure difference between the inlet and outlet of the fan depends on the air flow speed. After the unit is assembled, the pressure difference switch may need to

be recalibrated; check whether the contacts are closed when the fan is running.

Follow these steps to adjust the setpoint:

- 1) Simulate a fault (stop the fan or one of the fans) and check whether the pressure difference switch is activated;
- 2) If the differential pressure switch is not activated, gradually increase the set value of the differential pressure switch.

To change the setting value of the differential pressure switch:

Unscrew the two bolts B, remove the outer protective cover, and rotate the adjustment button to adjust the range from 30 to 300Pa.

If you need to replace the differential pressure switch, first remove the fastening bolts, remove the plastic hose connected to the positive and negative pressure monitoring points, and remove the power connection cable. You can then install a new differential pressure switch using the reverse procedure.



4.3.4 Setting value of air filter fouling alarm switch

When the unit leaves the factory, the set value of the air filter alarm switch is 300Pa. The calibration of the air filter alarm switch must not only consider the pressure drop of the incoming and outgoing air, but also the speed of the air flow.

Follow these steps to calibrate the air filter clogging alarm switch:

- 1) Install a clean air filter on the unit;
- 2) Start the air-conditioning unit;

3) Cover the surface of the air filter with cardboard or wood board gradually. When 50-60% of the surface of the air filter is covered, check whether the alarm switch alarms;

If the alarm switch does not alarm, the pressure value is set too high, and the set value needs to be gradually reduced;

If the alarm switch has already alarmed without covering 50% of the surface area, increase the set value gradually.

5 Operation and maintenance

5.1 Unit maintenance

In order to ensure the correct operation of the air-conditioning unit, the user needs to pay attention to what is covered in this section

Only a few simple maintenance operations on the unit are needed on a regular basis to avoid significant damage to the unit.

Only authorized agencies and professionals may operate the unit.

5.1.1 Cleaning the air filter

As more and more dust and impurities adhere to the air filter, the air flow and flow rate of the unit will gradually decrease, which will lead to a reduction in the cooling capacity and efficiency of the unit. Regular cleaning of the air filter dirt can avoid the above problems. The interval between cleaning processes depends on the air conditions in the local environment:

- Check the air filter for cleanliness every week
- Clean the air filter with a vacuum cleaner every two weeks
- Use soapy water to clean the air filter every month
- Change air filter every six months

The above cleaning and maintenance intervals are not suitable for all environmental conditions, and the air filter needs to be cleaned and replaced more frequently if necessary.

Make sure the unit is turned off and disconnected from the power supply before operating the air filter.

5.1.2 Inspection and cleaning of drainage channels

During installation, it is necessary to ensure that the condensate and humidifier drainage system are complete to prevent the condensate from seeping into the indoor floor.

When the humidifier discharges water, a certain amount of scale may be contained in the

discharged water according to the hardness of the water. Scale can settle on the bottom of the drain pipe, blocking the drain pipe and elbows, so regular cleaning of the scale is required.

Descaling (acidic solution) is required to remove limescale.

Turn off the unit and disconnect the power before cleaning the drain.

5.1.3 Electric heating

Refer to the circuit diagram for the wiring method of the electric heating connection to the contactor. If you need to replace the electric heater, first disconnect the power supply of the unit and wait for the electric heater to cool down before replacing it. After replacing the electric heater, make sure that the ground wire is connected properly.

5.1.4 Humidifier

According to customer requirements, the air-conditioning unit can be equipped with electrode humidifier. The working principle of an electrode humidifier is to heat the water inside the humidification tank by the current between the electrodes, and evaporate the water to obtain water vapor. By controlling the water inlet and outlet solenoid valves to control the water level in the humidifier and the salt content in the water, the current transformer can detect and control the current between the electrodes to control the amount of steam generated.

When the indoor humidity is lower than the set value, the main board controls the contactor of the humidifier to close (see the circuit diagram for details), powers the humidifier, and the humidifier starts to work.

When the water level in the humidifier is too low and the current value is less than the set value, the water inlet valve opens to adjust the water level.

Depending on the water supplied to the humidifier, the drain valve may be activated to adjust the salt concentration in the humidifier.



The daily maintenance that the humidifier needs to do is to regularly check and clean the steam generating part of the humidifier.

The following operations need to be performed once a year, preferably in summer.

Regularly clean the inside of the humidification tank, remove the scale that has accumulated on the electrode surface, and clean the water filter at the bottom of the humidification tank.

To remove the humidification tank:

- 1) Thoroughly remove water from the humidifier
- 2) Turn off the main load switch on the unit
- 3) Remove the steam outlet hose from the top of the humidifier
- 4) Remove the connector of power cable and electrode
- 5) Unfasten the fixing strap of the humidifier
- 6) Remove the humidifying tank upwards

The humidification tank can be reused many times after cleaning, but if the electrode is worn, it can not be used again and it needs to be replaced with a new electrode. Humidification tank body and filter installed at the bottom make up a complete humidification tank.

In order to ensure long-term stable operation of the humidifier, water injection and drainage operations need to be performed regularly.

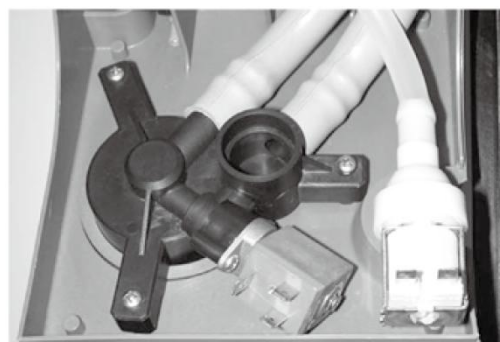
Proceed as follows:

- 1) Drain the water inside the humidifier completely (use the control board to operate)
- 2) Turn off the main load switch of the unit
- 3) Remove the 3/4 pipe joint from the water

inlet solenoid valve

- 4) Clean the removed pipe joint
- 5) Remove the drain pipe and thoroughly

clean the dirt inside the drain pipe and elbow



5.1.5 Check the overall operating status of the unit

The overall operation of the unit needs to be checked regularly. The purpose is to compare the

difference between the current operating status of the unit and the last checked operating status. Any discrepancies found need to be taken seriously and the cause carefully checked.

Regular inspection and cleaning of the unit can ensure long-term stable operation of the unit. Under normal circumstances, the overall inspection of the unit once a month can ensure the normal operation of the unit, except in special circumstances. If the unit is maintained reasonably for a long time, it is unlikely that the unit will have major failures and cause other work to be interrupted.

After 10 years of continuous operation of the unit, a complete and comprehensive inspection of the unit is required.

5.2 Unit disassembly

The disassembly of the unit is performed in accordance with CE2002 / 96 / CE standards.

If it is necessary to disassemble the air-conditioning unit, it needs to be operated by professional personnel. The disassembly contract needs to be signed before the unit is disassembled.

6 Troubleshooting

There is a detailed fault description in the control manual of the air conditioner. When the unit generates an alarm, please refer to the alarm description in the control manual.

If necessary, contact the nearest service center of the company to explain the possible reasons for the unit alarm.

6.1.1 Unit startup failure

Alarm type	Cause	Solution
The unit cannot be turned on.	The control box is not powered on.	Check the power supply and close the main load switch.
	The auxiliary circuit is not energized.	Check the auxiliary circuit and check the fuse on the motherboard.
	The control board did not send a power-on command to the unit.	Check the DC power supply.

6.1.2 Abnormal temperature and humidity in the room

Alarm type	Cause	Solution
The indoor temperature is too high.	The indoor ambient temperature and humidity settings on the control panel are incorrect	Check the settings in the control panel
	Air flow is too small or 0	Refer to "Low or No Air Flow"
	The indoor ambient temperature and humidity	Check if the probe's power wiring is correct

	probe is faulty	Check if the probe is properly connected to the motherboard
	The indoor heat load is higher than the cooling capacity of the unit	Check indoor heat load
	Valve is not working properly	Check whether the connection between the valve and the actuator is normal, manually operate the valve
	There is no chilled water to cool the indoor air	Check whether the connection between the valve and the actuator is normal, and manually operate the valve.
	The chilled water temperature is too high	Check whether the water-cooled unit works normally
Low indoor temperature	Electric control box is not powered	Check the power supply and close the main load switch
	Auxiliary circuit is not energized	Check auxiliary circuit Check the fuse on the motherboard
	The valve is stuck at the maximum opening degree and cannot be automatically reduced	Manually operate the valve and close its opening; reset the actuator
High indoor humidity	The temperature and humidity settings of the indoor environment on the control panel are incorrect	Check the settings in the control panel

	Latent heat load is higher than design value	Check design latent heat load Check air velocity and outdoor air condition Check if outdoor air is flowing into the room
	The control system is not working properly	Checking the status of the control panel Check if the control board and probe are working properly
	Chilled water temperature did not reach dehumidification temperature	Reduce the chilled water temperature until condensation appears on the coil surface
Low indoor humidity	The temperature and humidity settings of the indoor environment on the control panel are incorrect	Check the settings in the control panel
	Latent heat load is lower than design value	Check latent heat load
	Humidifier does not start	Check the humidifier water supply pressure Check that the control system and steam generation system are working properly
	The control system is not working properly	Checking the status of the control panel Check if the control board and probe are working properly

6.1.3 Abnormal air flow

Alarm type	Cause	Solution
Low or no air flow	Fan is not powered	Check the power input of the fan
	Air filter is dirty (air filter clogging alarm switch may have issued an alarm signal)	Clean the dust, debris, etc. of the air filter; if the blockage is serious, you need to replace the air filter; check whether the setting value of the air filter alarm switch is correct
	Fan rotates in the wrong direction	Reverse any two-phase power cord Check if the direction of fan rotation is correct
	Air flow is blocked	Check the air passage
	Fan circuit breaker tripped	Check fan winding current; after reset, measure voltage and input power
	Excessive pressure drop during air flow	Check the supply and return air system (air duct, ceiling, raised floor, air inlet and outlet devices, etc.)

Climaveneta Chat Union Refrigeration Equipment Vietnam CO., LTD
Factory B1, Road No 01, Phuc Long Industrial Park, Ben Luc, Long An



The company reserves the right to change product specifications without notice