

Air Cooled Modular Chiller

Service Manual

Service Manual



Your-conditions

CONTENTS

PRODUCT	2
2 NOMENCLATURE	2
3 FUNCTION	3
4 PRODUCT DATA	5
4.1 Product Data at Rated Condition	5
4.2 Operation Range	6
5 SCHEMATIC DIAGRAMS	7
5.1 Cooling Only	7
5.2 Heat Pump	8
CONTROL	10
1 OPERATION FLOWCHART	11
1.1 Cooling Operation	11
1.2 Heating Operation (including defrosting, electric heating)	12
2 MAIN LOGIC	13
2.1 Cooling Mode	13
2.2 Heating Mode	14
2.3 Anti-freezing Running	15
2.4 Control of Compressor	15
2.5 Control of fan	15
2.6 Control of Four-way Valve	15
2.7 Control of Water Pump	15
2.8 Control of the Electric Expansion Valve	16
3 WIRED REMOTE CONTROLLER	16
3.1 Function	16
The display of modular air-cooled scroll chiller (C series) shows the running parameter in real time. It can be connected with the remote control system.	16
3.2 Operation View	16
3.3 Display View	17
3.4 Controller Menu Structure	18
4. Sketch Map of DIP Switch	19
5. Contrasting Form for Jumper Cap and Models	21
INSTALLATION	23
1 BEFORE INSTALLATION	23
2 INSTALLATION SITE	23
3 CAUTION FOR INSTALLATION	23
4 MACHINE FOOTPRINT	24
Every cell unit should adopt rubber cushion, place on either the floor of outdoor or the flat of roof, secondly, fix it on with bolt. Either or, abreast assembly on two high intensity parallel trough girder or girder, with plane operation side, and, fix it on with ground bolt.	24
5 DIMENSION DATA	24
7 TYPICAL WATER PIPING DIAGRAM	27

8ANTIFREEZE	28
9 ELECTRIC WIRING WORK.....	28
9.1 Wiring Principle	28
9.2 Electric Wiring Design.....	29
1) . FIELD WIRING DIAGRAM (ONLY FOR REFERENCE)	29
9.3. Specification of Power Supply Wire and Air Switch	32
9.4 WIRING DIADRAM	32
MAINTENANCE	36
1 TROUBLE TABLE.....	36
2 FLOW CHART OF TROUBLESHOOTING.....	38
3 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS.....	43
4 EXPLODED VIEWS AND PART LIST	55

PRODUCT

PRODUCT**1 MODELS LIST**

Units Series	Model Name	Capacity (kW/Ton)		Power Supply	Ref.	Appearance
		Cooling	Heating			
MC (Na)	IWCQWRF65MG/NaC-M	62.5/1 7.8	70/20	380~ 415V 3Ph~ 50Hz	R410a	
	IWCQWF65MG/NaC-M	62.5/1 7.8	/			
	IWCQWRF80MG/NaC-M	71.5/2 0.3	80/22. 7			
	IWCQWF80MG/NaC-M	71.5/2 0.3	/			
	IWCQWRF130MG/NaC-M	125/35 .5	140/39 .8			
	IWCQWF130MG/NaC-M	125/35 .5	/			
	IWCQWRF160MG/NaC-M	143/40 .7	160/45 .5			
	IWCQWF160MG/NaC-M	143/40 .7	/			

2 NOMENCLATURE

IWC	QW	R	F	65	M	G	/	Na	C	-	M
1	2	3	4	5	6	7		8	9		10

NO.	Description	Options
1	Water Chiller	——
2	Scroll Compressor	——
3	Heat Pump	Default- Cooling only R-Heat pump
4	Air Cooled	——

5	Nominal Cooling Capacity	MC(Na) Series: 65=62.5kW= 17.8 TR 80=71.5kW= 20.3 TR 130=125kW=35.5 TR 160=143kW=40.7 TR
6	Module	——
7	Product number	——
8	Refrigerant	Na-R410A
9	Series number	——
10	Voltage	M - 380~415V 3Ph~ 50Hz

3 FUNCTION

The units with multi refrigerant circuits from 62.5 to 143 kW have outstanding benefits that make this product effective for a variety of applications. The units are shipped from the factory completely ready for installation and use. Each unit is pressure-tested, evacuated, and fully charged with R410A, and has an initial oil charge. After assembly, a complete operation test is performed with water flowing through the cooler to assure that the refrigeration circuit operates correctly.

The units can be installed on the rooftop, ground outside and so on instead of being equipped within a special machine room. It can be widely applied in new built or reconstructed industry and civil-building project, such as hotel, apartment, restaurant, office building, shopping mall, theater, gymnasium, hospital and so on, as well as supplies required cooling water for factories in technical process of producing, so it's especially suitable for some special locations where there are high-level requirements for noise and environments and where cooling tower are difficult to be installed.

- a) **Any module as master module design:** By conveniently plugging a manual operator into any one of units in linkage, such unit can operate as a master module to communicate with other units and coordinate the whole system to work in a specified way. This is one of proprietary technologies related to INVENTOR Module Unit. On the other hand, products by other manufacturers, which only allow a fixed unit as the master module, are subject to the fact that the whole system would fail to work if the master module is out of order, thus it is inconvenient to debug and maintain.
- b) **Timely intelligent defrosting mode,** which transcends the conventional periodical defrost mode, has been developed by studying how the system is influenced by frosting in different working conditions and analyzing a great amount of data. The totally new timely intelligent defrosting mode can help the unit to justify if frost is present on the evaporator. As such, defrosting operation is only taking place at required time; and when

frost is not found on the evaporator, the unit can continue to work without a need for initiating the defrosting operation. This greatly enhances heating reliability in low temperature high humidity working conditions; and at the same time, the average heating capacity of the system in low temperature frostless working conditions is improved to around 13.6% compared with conventional periodical defrost mode.

- c) **Super-compatibility:** units in same model can be combined, and units in different models can also be combined. A maximum of 16 modules can be combined for each system.
- d) **Totally enclosed scroll compressor:** compared with other type compressors on the same level of cooling capacity, this compressor has many advantages such as having less quantity of moving parts, smaller moment of rotation, less noise and vibration, and higher reliability and efficiency.
- e) **Super-protection:** the advanced microcomputer control system is fully featured in safety and protection and has a powerful fault self-diagnosis function.
- f) **High reliability:** famous and high quality branded cooling fitting is adopted, and meticulous design and elaborate fabrication in coordination with the multi-cooling system design are realized, all of which have improved operating reliability effectively.
- g) **Low noise:** low operating noise and less vibration make the unit suitable for a wide variety of works.
- h) **Low maintenance cost:** the special structure of the unit makes maintenance very convenient and maintenance cost very low.
- i) **Gapless modularized combination:** the unique X-shape structure design ensures a real gapless modularized combination of units, and is convenient for maintenance and repair, and also significantly saves installation space.
- j) **Silent mode:** according to user's requirement, the unit can automatically convert to the silent operating mode, not only saving energy, but also creating a comfortable and silent living environment.
- k) **Equalization technique for compressor operation:** the unique technique applied to balanced operation among compressors ensures each compressor in a system will take turns to run, thereby greatly prolonging the lifetime of compressor.
- l) **Humanized operating design:** through programmable setting, when the unit is working at ambient temperature that exceeds the allowable design range, a humanized friendly

prompt will appear on the display screen.

4 PRODUCT DATA

4.1 Product Data at Rated Condition

Models		Cooling Only	IWCQWF__MG/NaC-M			
			65	80	130	160
		Heat Pump	IWCQWRF__MG/NaC-M			
			65	80	130	160
Nominal Capacity	Cooling	kW	62.5	71.5	125	143
		TR	17.8	20.3	35.5	40.7
	Heating	kW	70	80	140	160
		TR	19.9	22.7	39.8	45.5
Power Input	Cooling	kW	24.8	26.7	49.6	53.4
	Heating	kW	24.1	26.7	48.1	53.3
Power Supply			380~415V 3Ph~50Hz			
Running Control			Microcomputer control, operating status display and abnormal status alarm			
Safeties			High and low voltage switches, freeze prevention switch, over-current protection switch, phase lacking protector, compressor overheat protection device and software delay starting compressor protection			
Compressor Type			Totally enclosed flexible scroll compressor			
Refrigerant Type			R410a			
Cooler	Water Flow	m ³ /h	10.8	12.3	21.5	24.6
		GPM	47.3	54.1	94.6	106.2
	Pressure Drop	kPa	30	35	30	35
	Heat Exchanger		High-efficient shell and tube heat exchanger			
	Max. Pressure	MPa	1			
	Water In/Out Pipe Diameter	mm	DN 50	DN 50	DN 150	DN 150
Condenser	Heat Exchanger		High-efficient fin tube type heat exchanger			
	Fan Motor Power Input	kW	0.7x3	0.7x3	0.7x6	0.7x6
Outline Dimension	Width	mm	1100	1100	2200	2200
	Depth	mm	2265	2265	2265	2265
	Height	mm	2214	2214	2214	2214

Net Weights	Cooling Only	kg	900	1000	1780	1980
	Heat Pump		950	1050	1880	2080

Notes:

① Nominal capacities are based on the follow conditions:

Item	Water side		Air side	
	Nominal Operating Condition		Nominal Operating Condition	
	Inlet water temp.(°C)	Outlet water temp.(°C)	Outdoor temp. (DB °C)	Outdoor temp .(WB °C)
Cooling	12	7	35	-
Heating	40	45	7	6

② The operating weight of the unit is equal to 110% of its net weight

4.2 Operation Range

Item	Water side		Air side
	Leaving Water (°C/°F)	Temperature Difference of Water (°C/°F)	Air on Condenser (°C/°F)
Cooling	5~15/41~59	2.5~8/37~47	5~46/41~115
Heating	40~50/104~122	2.5~8/37~47	-15~24/5~76

4.3 Electric Data

Model	Rated Power Supply	Compressor			Fan Motor		Total	
		Qty.	MRC each	NRC each	Qty.	NRC each	MRC	NRC
IWCQW(R)F65MG/NaC-M	380~415V 3Ph~ 50Hz	2	30A	25A	3	1.7A	63A	56.9A
IWCQW(R)F80MG/NaC-M	380~415V 3Ph~ 50Hz	2	35A	29.1A	3	1.7A	76.9A	65.1A
IWCQW(R)F130MG/NaC-M	380~415V 3Ph~ 50Hz	4	30A	25A	6	1.7A	127.9A	113.8A
IWCQW(R)F160MG/NaC-M	380~415V 3Ph~ 50Hz	4	35A	29.1A	6	1.7A	144.4A	130.2A

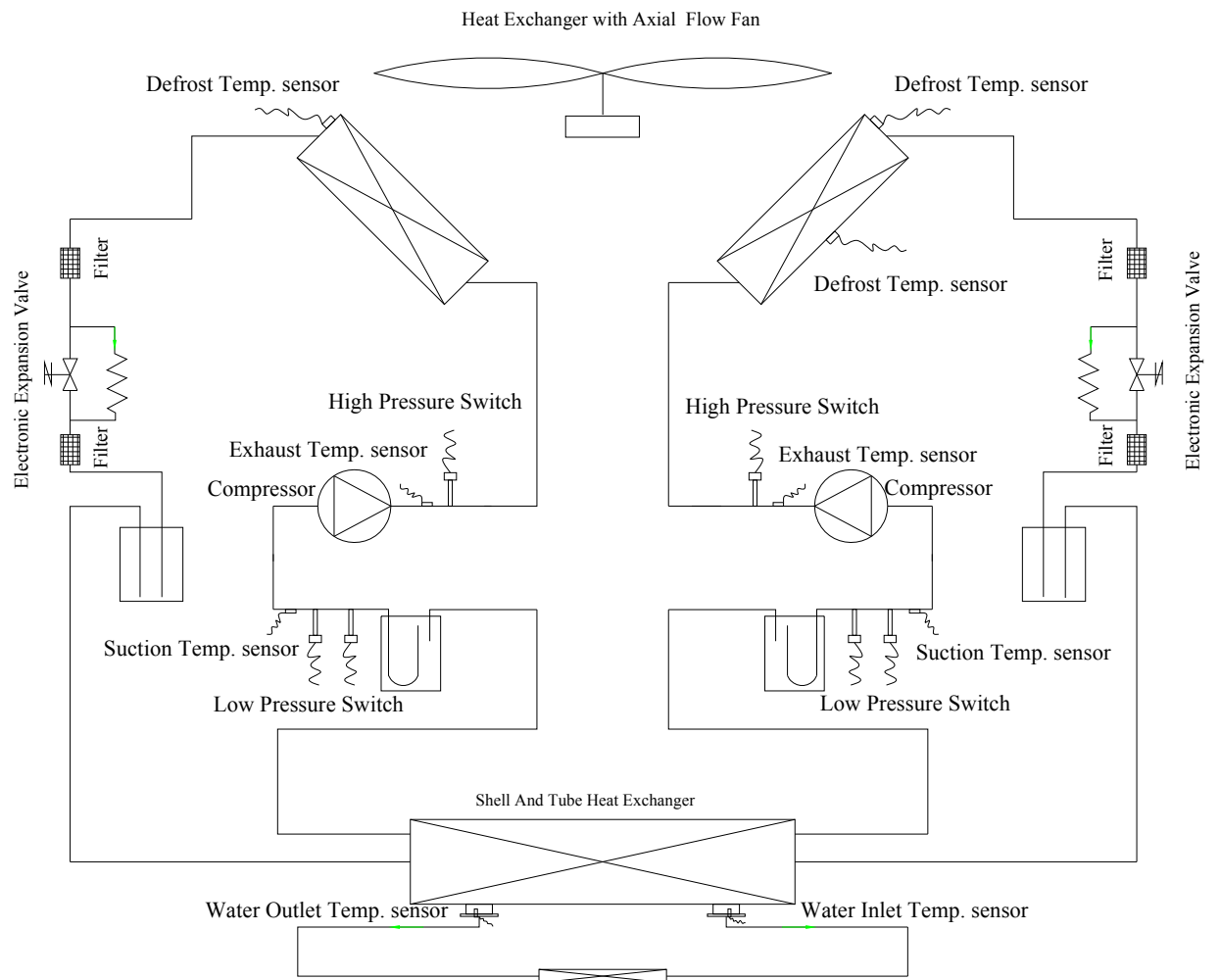
Notes:

MRC: Maximum running current (A)

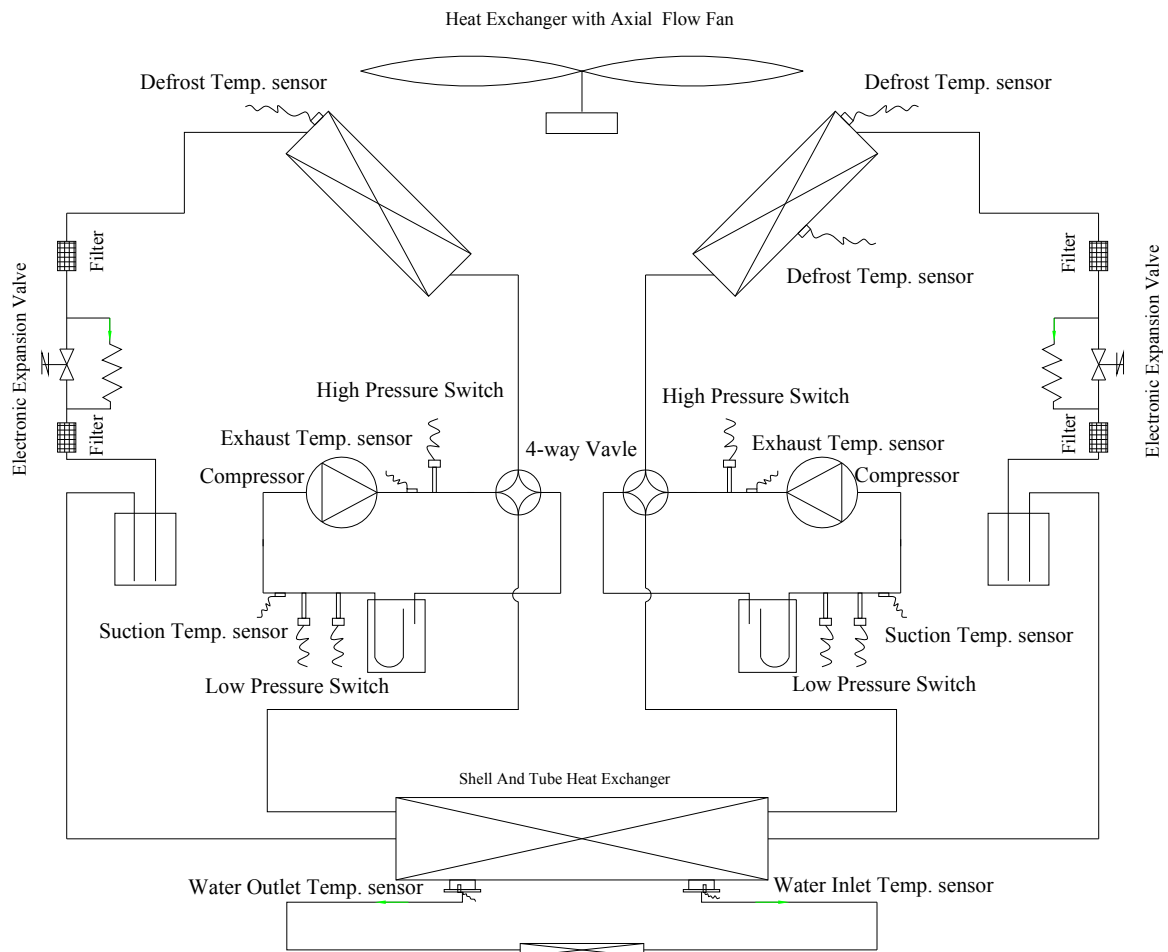
NRC: Nominal running current (A)

5 SCHEMATIC DIAGRAMS

5.1 Cooling Only



5.2 Heat Pump

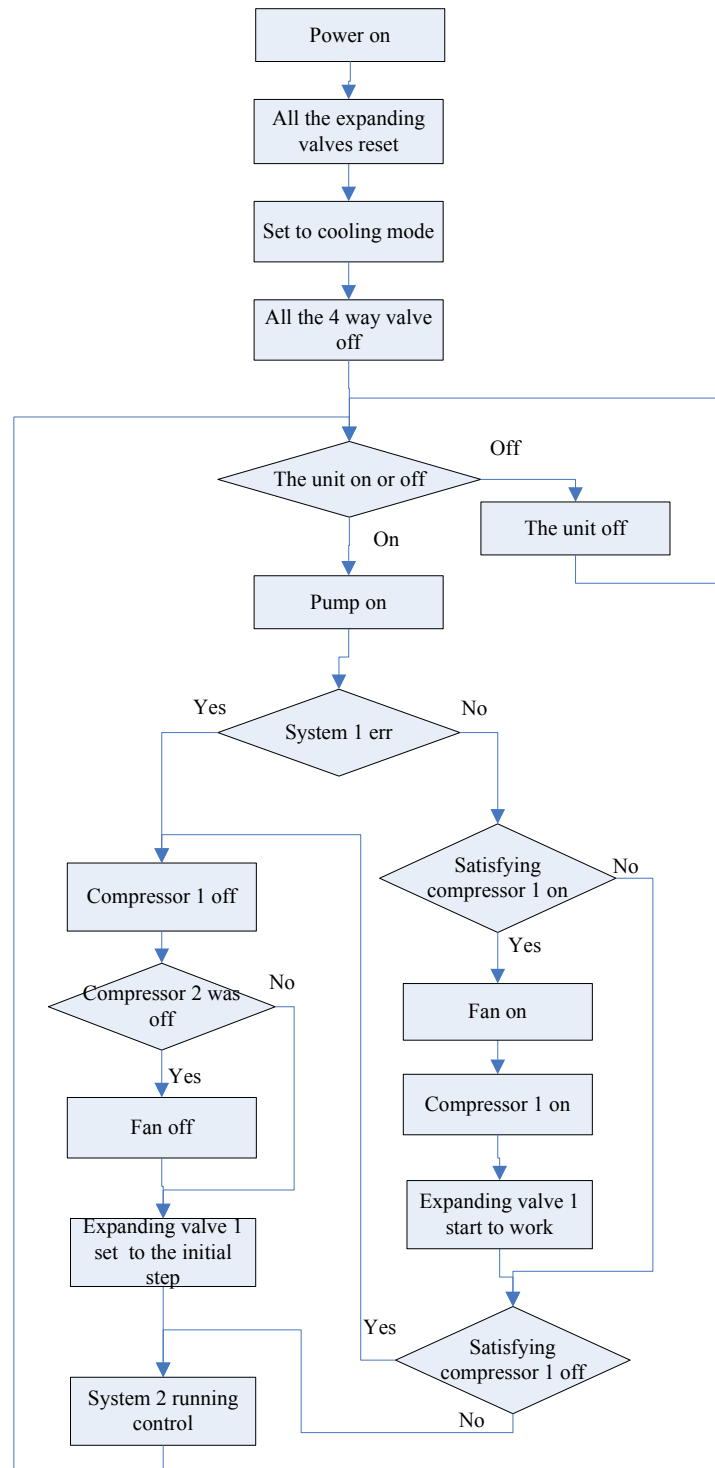


CONTROL

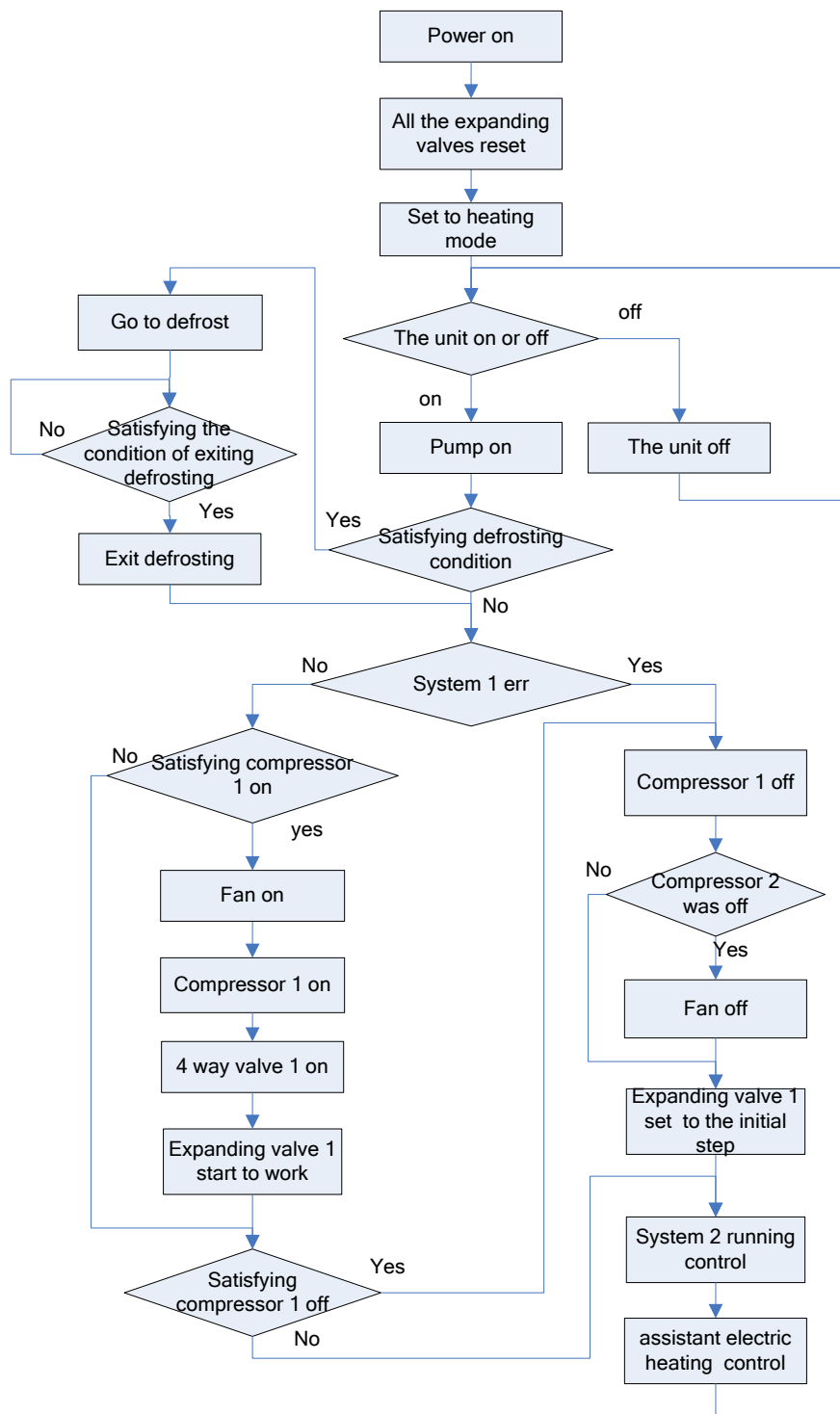
CONTROL

1 OPERATION FLOWCHART

1.1 Cooling Operation



1.2 Heating Operation (including defrosting, electric heating)



2 MAIN LOGIC

2.1 Cooling Mode

2.1.1 Control of Compressor

(1) Start-stop Control--- “first start, first stop; first stop, first start”

During running of the unit, the compressor is numbered instantly. It is controlled according to the principle of “first start, first stop; first stop, first start”.

(2) Water Temperature Drop (Rise) Rate Control

The water temperature interval is the main control, while the temperature drop (rise) rate is the auxiliary control. This can adapt to the load variation of the terminal, keeping water temperature stable and avoiding fierce variation. In this control mode, the system is based on the temperature and temperature drop rate: when the water temperature is too high and if the temperature drop is rapid, it means the output load is bigger than the terminal load. In that case, it is not necessary to startup the other compressor. The temperature interval and temperature drop is decided by experience, other theories and test so that the water temperature can be kept stable and frequent stop can be avoided.

2.1.2 Anti-freezing Protection

For each module, when the anti-freezing temperature is lower than the required value for protection, the anti-freezing protection will start while the compressor of this module will stop. When the anti-freezing temperature is higher than the required value for resume, this system will eliminate the anti-freezing protection.

When the anti-freezing temperature is between the above two temperature, it will not affect the anti-freezing protection.

If the unit is low temperature unit, the anti-freezing protection is invalid.

2.1.3 Stop of the Unit

Stop the unit manually or via timer: the compressor stops and then the fan stops. EXV is maximum and then adjusted to the initial steps. After certain control time, the water pump will stop.

Stop the unit upon reaching a temperature spots: the compressor stops and then the fan stops (on condition that both compressor stops). EXV is maximum and then adjusted to the initial steps. The water pump will not stop.

Disorderly closedown: the compressor stops and then the fan stops (except the malfunction of the fan). After the corresponding compressor stops for a period, EXV is maximum and then adjusted to the initial steps. The water pump will not stop.

2.2 Heating Mode

2.2.1 Control of Compressor

The control principle is the same with that of cooling mode.

2.2.2 Superheat Protection

For each module, when the superheat temperature is higher than the required value for protection, the superheat protection will start while the compressor of this module will stop. When the superheat temperature is lower than the required value for resume, this system will eliminate the superheat protection.

When the superheat temperature is between the above two temperature, it will not affect the superheat protection.

2.2.3 Control of Auxiliary E-heater

If the control function of auxiliary e-heater is switched on in the display board, it can be controlled automatically according to the inflow water temperature. It is necessary to set an interval to restart the e-heater.

When the temperature detected by inflow water temperature sensor is $\leq T1$, the second group of auxiliary e-heaters will work.

When the inflow water temperature is $\geq T2$, the second group of auxiliary e-heaters will stop.

When the inflow water temperature is between the above two temperature, the second group of auxiliary e-heaters remain the original state.

When the temperature detected by inflow water temperature sensor is $\leq T1 + tr0$, the first group of auxiliary e-heaters will work.

When the inflow water temperature is $\geq T2 + tr1$, the first group of auxiliary e-heaters will stop.

When the inflow water temperature is between the above two temperature, the first group of auxiliary e-heaters remain the original state.

After startup of the unit, the auxiliary e-heater will work after all the compressor runs for a certain period and all the above condition is reached.

2.2.4 Stop of the Unit (subject to the stop of the compressor)

Stop the unit manually or via timer: the compressor, the auxiliary e-heater and the fan stops in sequence. EXV is maximum and then adjusted to the initial steps. After certain setting time, the four-way valve will be de-energized and the water pump will stop.

Stop the unit upon reaching the temperature spots: the compressor stops and then the fan stops. EXV is maximum and then adjusted to the initial steps. The four-way valve will remain the original state and the water pump will not stop.

Disorderly closedown: the compressor stops and then the fan stops (unless the fan is wrong). After the corresponding compressor stops for a period, EXV is maximum and then adjusted to the initial steps. The water pump will not stop while the four-way valve will remain the original state.

2.3 Anti-freezing Running

Under the stop state of any mode (except manual defrosting mode), the automatic anti-freezing function can be switched on via the display board. The defaulted setting of this function is OFF.

For all the modules that reach automatic anti-freezing running condition, the compressor will run according to the setting condition and the regulation of “run for 6min and stop for 4 min”.

2.4 Control of Compressor

All compressors run according to the principle of “first start, first stop; first stop, first start”. For other information, refer to the control section of 1.3.1 and 1.3.2.

2.5 Control of fan

When starting up the unit, the fan will run before the compressor. After both compressors stop, the fan will stop later. During defrosting, the fan and the four-way valve will stop at the same time. When eliminating the defrosting function, the fan and the four-way valve run at the same time. There are three fans, the number of which can be decided according to the ambient temperature and throttle temperature in cooling mode. In other situation, all of the three fans will run.

2.6 Control of Four-way Valve

In cooling mode, the four-way valve is off. In heating mode, the four-way valve will run after the corresponding compressor runs. In defrosting mode, the four-way valve will be off. When eliminating the defrosting function, the four-way valve runs. When stop the unit, the four-way valve will stop after the corresponding compressor stops.

2.7 Control of Water Pump

When any of the modules needs to be started up, all the water pumps will run. When one module stops upon reaching certain temperature spots, all the water pumps remain running. When one module is stopped manually or via timer or due to malfunction, the water pump of this module remains running. Only when all the modules are stopped manually or via timer, the water pump will stop 5 min after all the compressor stops.

2.8 Control of the Electric Expansion Valve

After initial energizing of the controller, the electric expansion valve is initialized and reaches initial steps. The command of starting up the compressor is available after the initialization of the electric expansion valve. If there is starting up command after energizing, it can be valid after the initialization of the electric expansion valve.

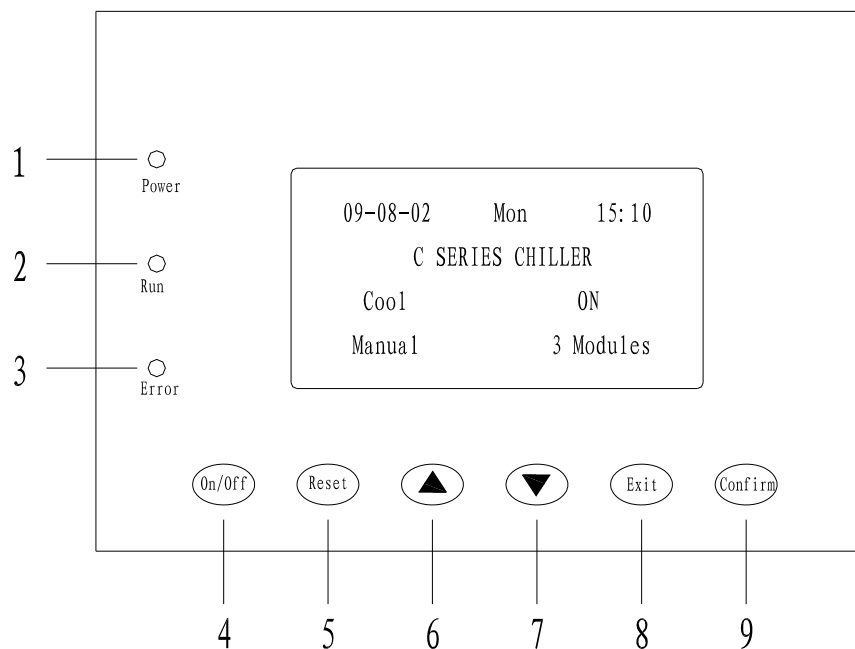
After the compressor runs for a certain period, the electric expansion valve is adjusted based on the throttle temperature, suction temperature and exhaust temperature.

3 WIRED REMOTE CONTROLLER

3.1 Function

The display of modular air-cooled scroll chiller (C series) shows the running parameter in real time. It can be connected with the remote control system.

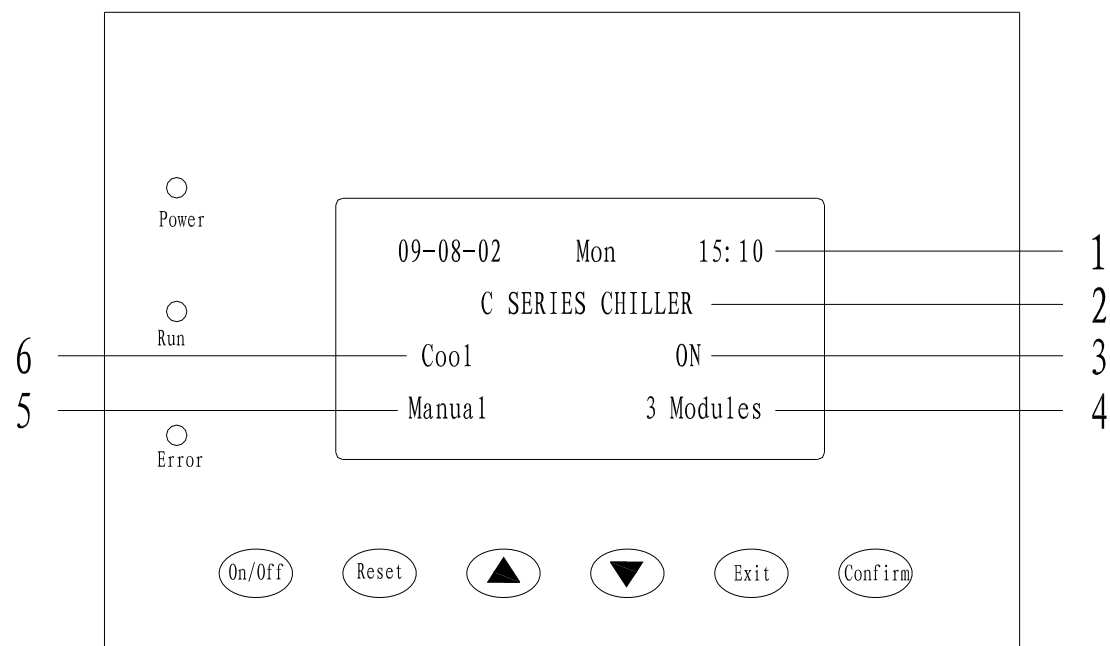
3.2 Operation View



NO.	Name	Function description
1	Power LED (red)	When the display board is energized, this LED lights; otherwise, it is dark.
2	Running LED (green)	When the display board is turned on, this LED lights; otherwise, it is dark.

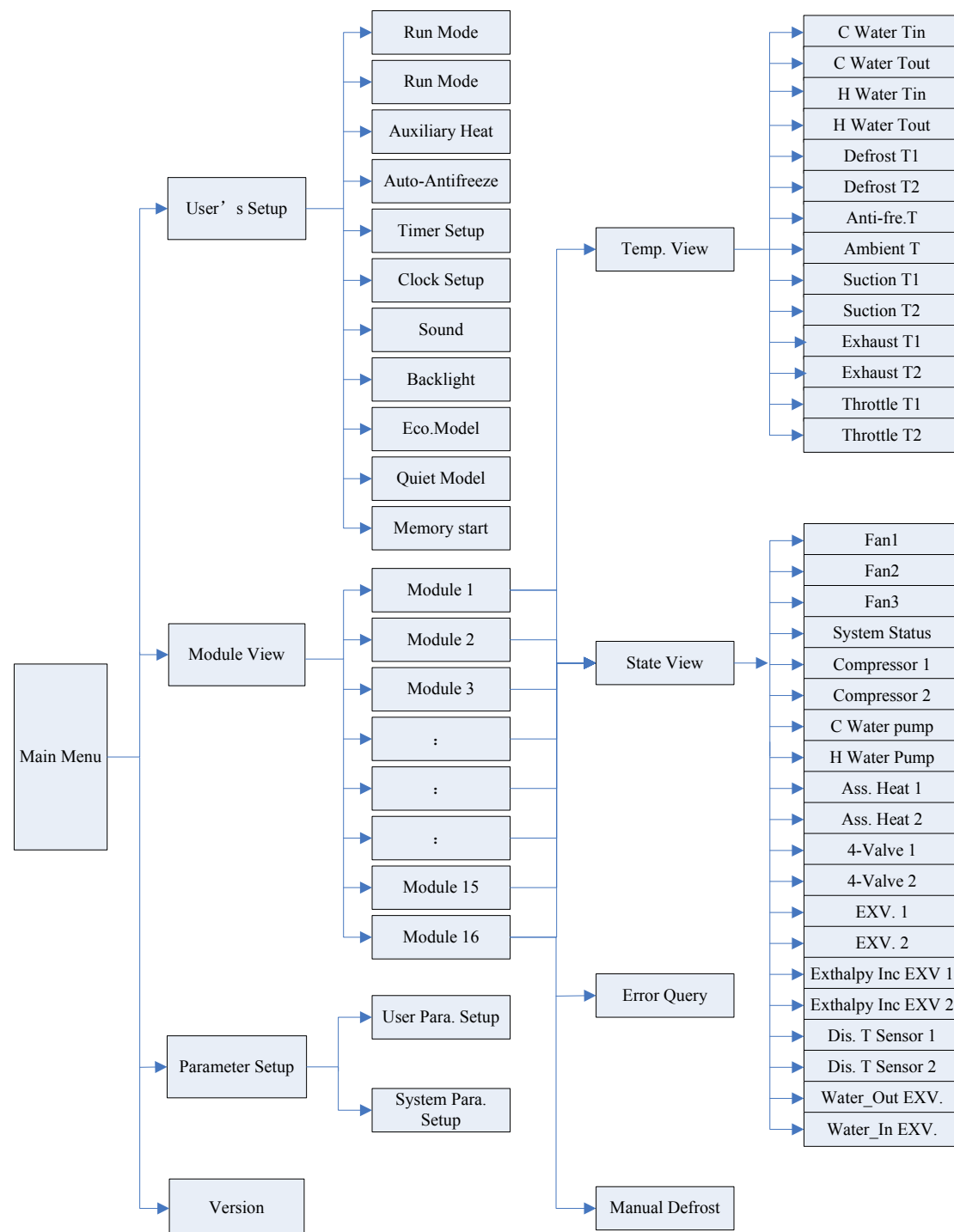
3	Error LED (red)	When there is malfunction, this LED lights; otherwise it is dark.
4	ON/OFF button	Control the start or stop of the unit. Under stop state, press the button (for 3s) to start up the unit. Under running state, press the button (for 3s) to stop the unit.
5	RESTORE button	Press this button to remove error and lock of exhaust temperature sensor.
6	UP button	Press this button to move the cursor upward or leftward. When modify the data, press this button to increase the value.
7	DOWN button	Press this button to move the cursor downward or rightward. When modify the data, press this button to decrease the value.
8	EXIT button	Press this button to return to last page.
9	CONFIRM button	Press this button to enter the next page. When modify the data, press this button to confirm the value and transfer the cursor.

3.3 Display View



NO.	Name	Function description
1	Time display	Display the current time.
2	Unit name	Unit name
3	Running state	Display the current running state of the unit.
4	Number of modules	The number of connected unit
5	ON/OFF mode	ON/OFF mode of the system
6	Running mode	Display the current running mode

3.4 Controller Menu Structure



(1) User's setup: It is the basic setting that commonly used by users, such as "mode setting" and "start-stop mode".

(2) Module view: View the temperature, state, malfunction, defrosting of the module.

(3) Parameter setup: It can be divided into user parameter setup and system parameter setup.

(4) Version: View the version of the wired controller.

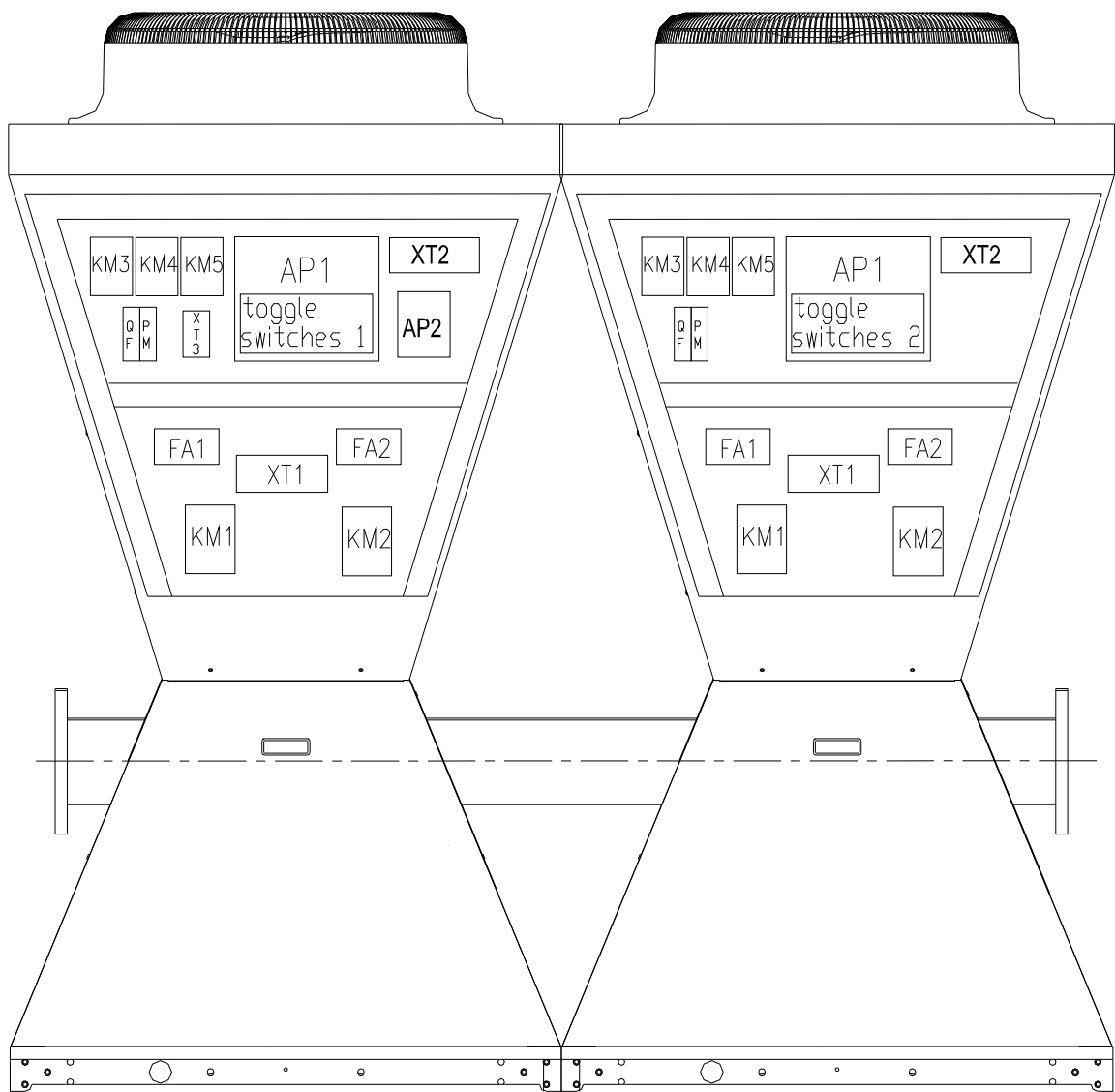
4. Sketch Map of DIP Switch

Four bit toggle switches are used for indicating hardware address (1~16) of modules, with module No. displayed in turn on the panel as Module 1, Module 2,, Module 16. All of the modules which are connected with one wired controller, their toggle switches indicated the address should be different. Toggle switches 1, 2, 3 and 4 are binary code, with 1 for the lowest bit and 4 for the highest bit. Comparison drawings are as follows (Caution: only in the condition of power supply shutoff can toggle switches be set):



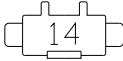
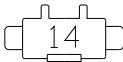
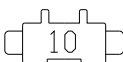
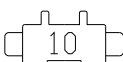
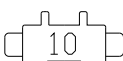
Note: the toggle switches 1, 2 of IWCQW(R)F130MG/NaC-M, IWCQW(R)F160MG/NaC-M, that indicated the address should be different, but the corresponding address must be continuous.

The layout for electric control cabinet from Models: IWCQW(R)F130MG/NaC-M, IWCQW(R)F160MG/NaC-M, are shown in below:



5. Contrasting Form for Jumper Cap and Models

The jumper cap on mainboard of corresponding models should be in accordance with that of following table, if there is some reason need to replace the mainboard, please make sure that the mainboard should be installed with the jumper cap of corresponding models.

Model	Corresponding jumper cap	Serial No. of jumper cap	Sketch map of jumper cap
IWCQWRF65MG/NaC-M	No.14 jumper cap	4202300114	
IWCQWRF80MG/ NaC-M	No.14 jumper cap	4202300114	
IWCQWRF130MG/ NaC-M	No.14 jumper cap	4202300114	
IWCQWRF160MG/ NaC-M	No.14 jumper cap	4202300114	
IWCQWF65MG/NaC-M	No.10 jumper cap	4202300110	
IWCQWF80MG/ NaC-M	No.10 jumper cap	4202300110	
IWCQWF130MG/ NaC-M	No.10 jumper cap	4202300110	
IWCQWF160MG/ NaC-M	No.10 jumper cap	4202300110	

INSTALLATION

INSTALLATION

1 BEFORE INSTALLATION

After delivery of unit to specified address, users shall organize personnel to open the case for acceptance and check.

- a) Check the completeness of enclosed document and accessories according to the content of list.
- b) Check the type and specifications of the unit according to the enclosed document.
- c) Check the unit for damages or components.
- d) Check the leak of refrigerant filled in the unit.

Should there be any damage or questions, please state the situations to the local office of our company so that the problems shall be solved.

2 INSTALLATION SITE

- a) Assembly base must be located in enough ventilation space, and the load of the assembly base should be taken into account.
- b) Leave room for unit assembly, operation and maintenance.
- c) Ensure there is not vertical obstruction on top of the unit.
- d) Ensure the drain is pre-reversed.

3 CAUTION FOR INSTALLATION

- a) Ensure the connection pipe and power line assembled correctly.
- b) To ensure noise and vibration satisfy the running request, there should be rubber cushion and rubber connection pipe adopted.
- c) Assembly base of the unit must be cement or steel structure, which can bear the operation weight of the machine and has level surface.
- d) Assembly location shall be free from fire, flammable matters, corrosive gas or waste gas. Ventilation space shall be pre-reserved. Please take measures to reduce noise and vibration as much as possible.

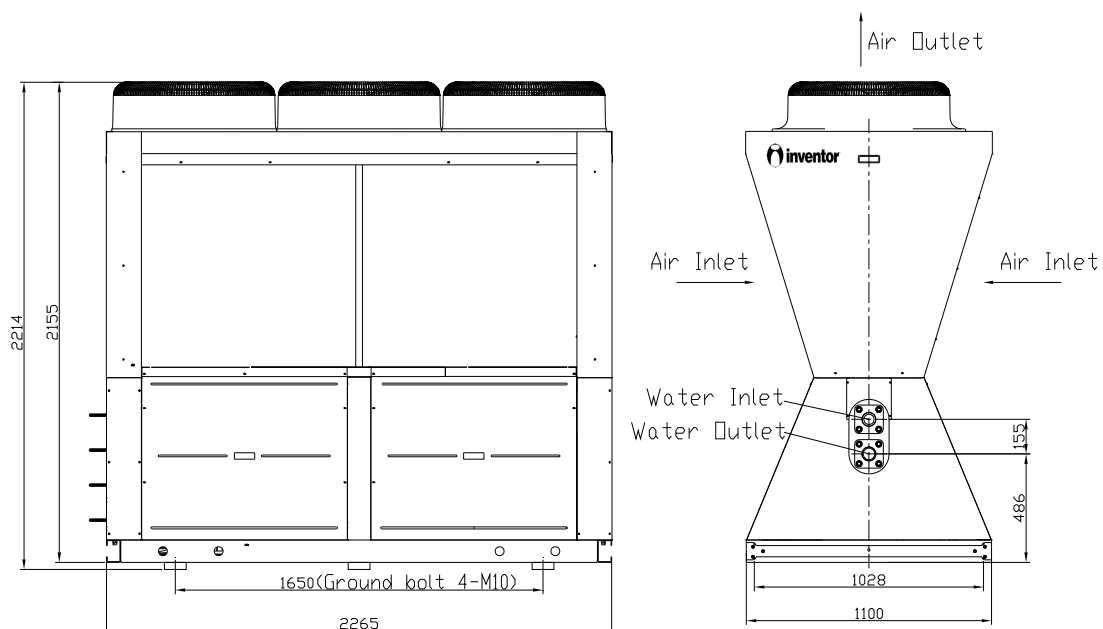
4 MACHINE FOOTPRINT

Every cell unit should adopt rubber cushion, place on either the floor of outdoor or the flat of roof, secondly, fix it on with bolt. Either or, abreast assembly on two high intensity parallel trough girder or girder, with plane operation side, and, fix it on with ground bolt.

5 DIMENSION DATA

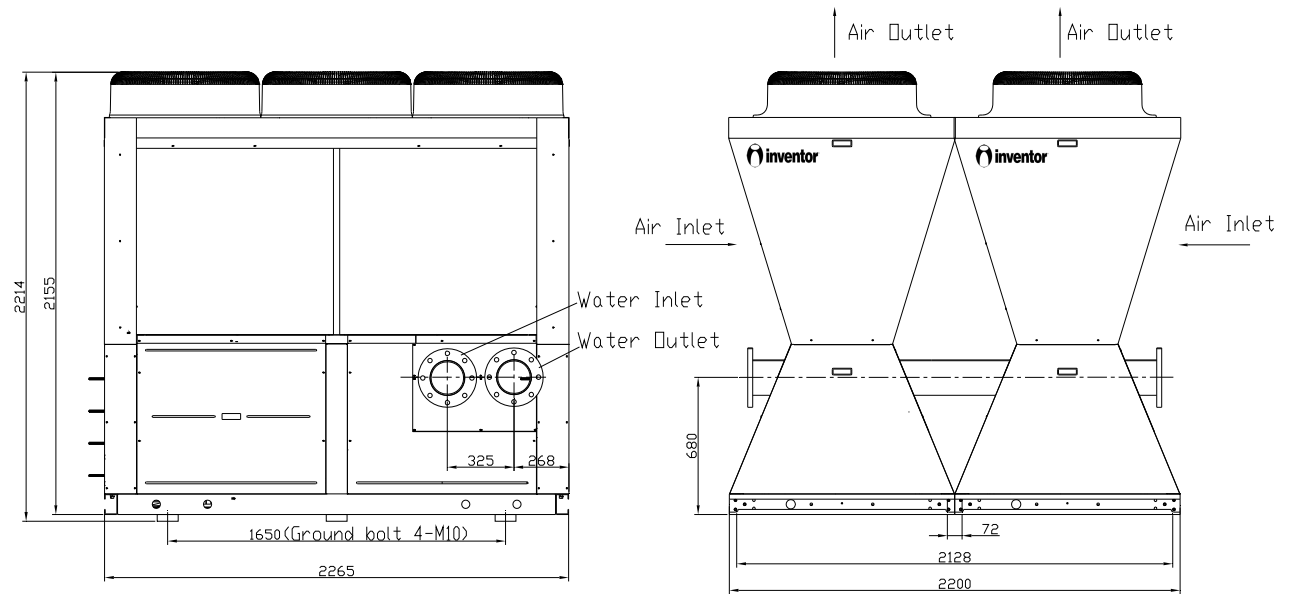
- a. Graph for the shape and size for IWCQW(R) F65MG/NaC-M, IWCQW(R) F80MG/NaC-M

Rubber cushion aren't shown in this view



- b. Graph for the shape and size for IWCQW(R)F130MG/NaC-M, IWCQW(R)F160MG/NaC-M

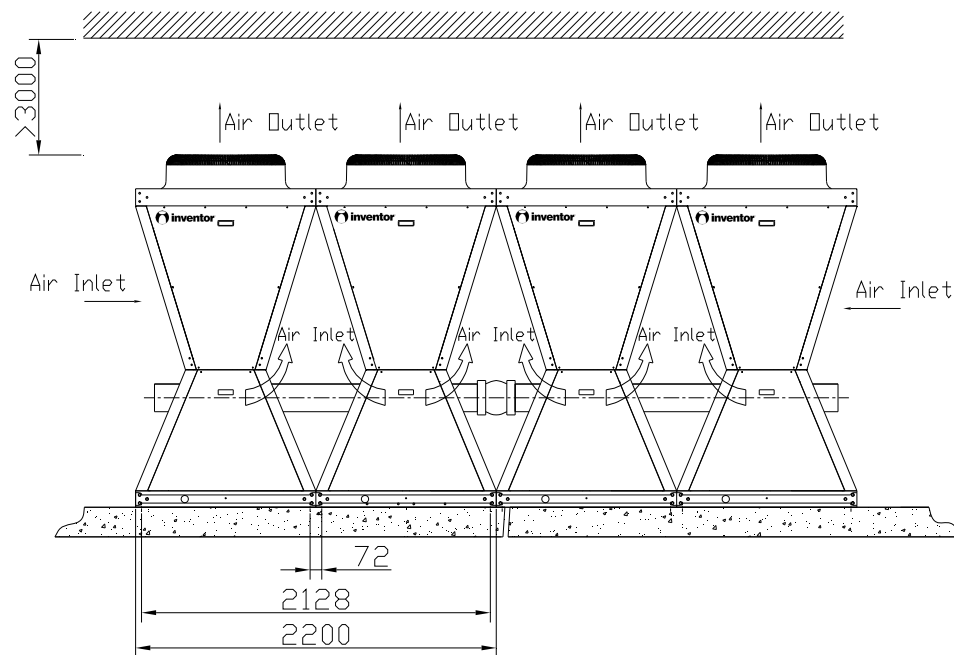
Rubber cushion aren't shown in this view



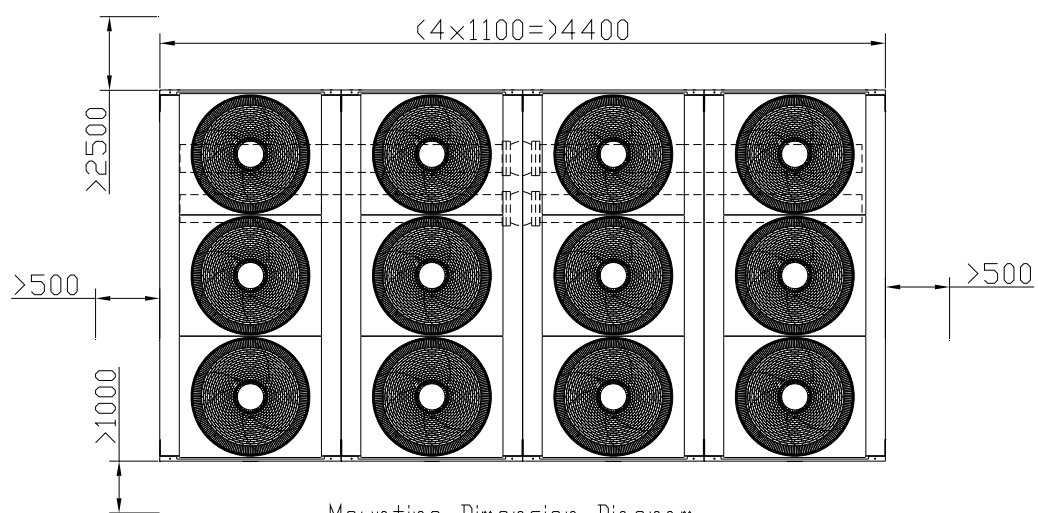
6 INSTALLATION CLEARANCE DATA

Room for unit assembly shall be open with free ventilation and without short circuit of air flow.

Specific assembly sizes are shown in the graph with unit of mm.



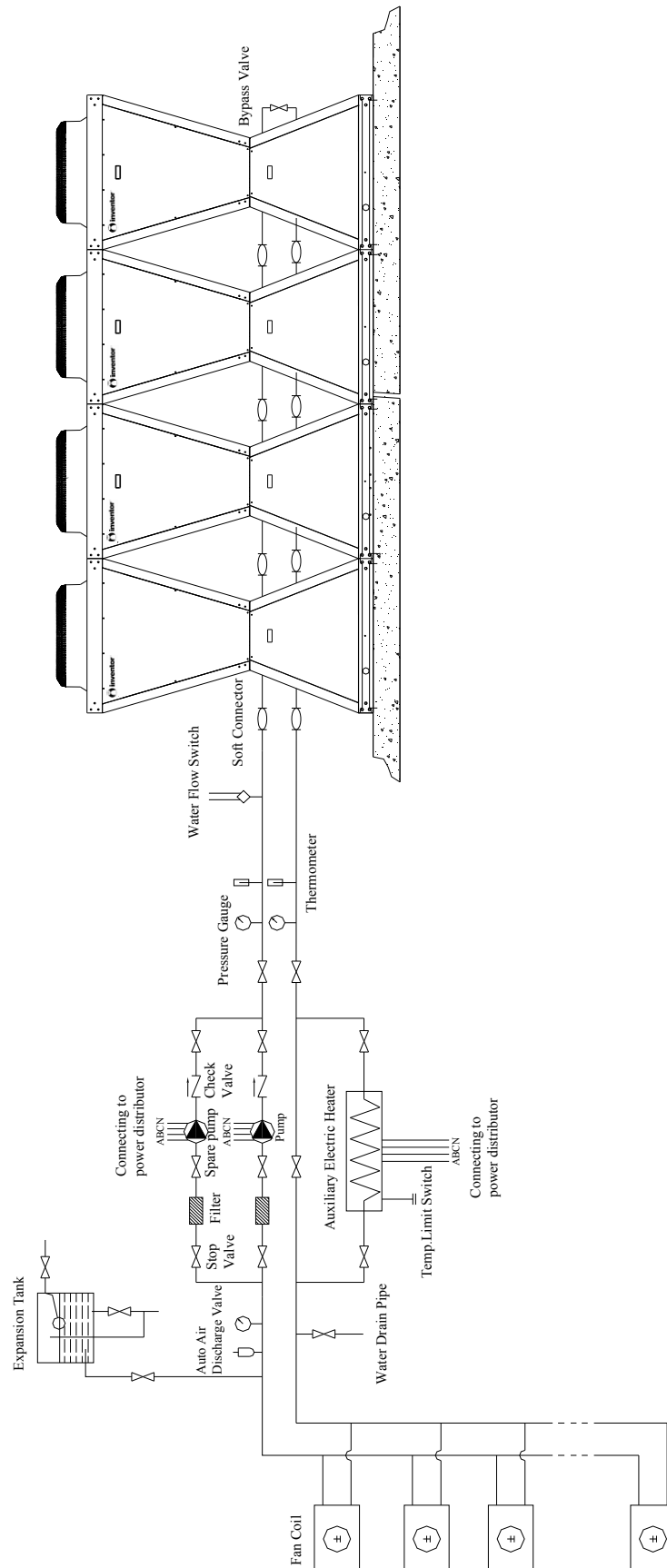
Rubber cushion pad shall be attached under the unit base which shall be fixed on the foundation with bolts.



Mounting Dimension Diagram

Attention: Don't put rotory cooler and heat pump in the same system for consideration of safety and reliability of the unit.

7 TYPICAL WATER PIPING DIAGRAM



8 ANTIFREEZE

The units can operate with a leaving chilled fluid temperature from of 20°C to 60°C (-6°C~16°C) A glycol solution is required when leaving chilled fluid temperature is below 4.5°C. The use of glycol will reduce the performance of the unit depending on concentration.

Mass Concentration %	10	20	30	40	50
Freezing Point °C (°F)	-3.3(26)	-7.8(18)	-13.9(7)	-21.7(-7)	-33.3(-29)
Ambient Temperature °C (°F)	8.3(47)	-1.7(29)	-6.7(20)	-16.7(2)	-26.7(-16)
Cooling Capacity Correction Factor	0.998	0.993	0.987	0.980	0.973
Water Flow Correction Factor	1.036	1.060	1.092	1.132	1.182
Pressure Drop Correction Factor	1.07	1.10	1.18	1.24	1.30

9 ELECTRIC WIRING WORK

9.1 Wiring Principle

□ General principles

- ◆ Wires, equipment and connectors supplied for use on the site must be in compliance with provisions of regulations and engineering requirements.
- ◆ Only electricians holding qualification are allowed to perform wire connection on the site.
- ◆ Before connection work is started, the power supply must be shut off.
- ◆ Installer shall be responsible for any damage due to incorrect connection of the external circuit of the unit.
- ◆ Caution --- MUST use copper wires.

□ Connection of power cable to the electric cabinet of the unit

- ◆ Power cables should be laid out through cabling trough, conduit tube or cable channel.
- ◆ Power cables to be connected into the electric cabinet must be protected with rubber or plastic to prevent scratch by edge of metal plate.
- ◆ Power cables close to the electric cabinet of the unit must be fixed reliably to make the power terminal in the cabinet free from an external force.
- ◆ Power cable must be grounded reliably.

□ Connection of control cables

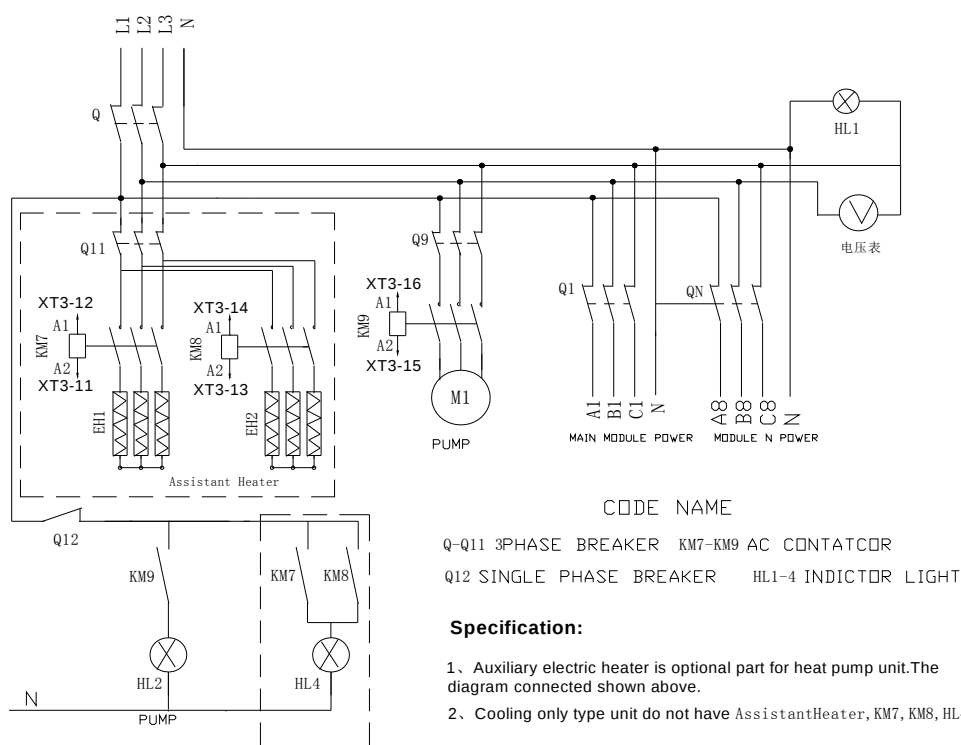
- ◆ Sectional area of control cables is at least 1mm².
- ◆ Signals from water flow switches are weak current, so control cables should not be laid out side by side along with cables carrying 50V or higher voltage. If such arrangement is really impossible to avoid, space between strong and weak signals must be kept at least

150mm.

- ◆ Control signals (220V AC; capacity 5A) from chilled water pump and auxiliary electric heater will initiate AC contactors of chilled water pump and auxiliary electric heater. DO NOT use such control signals from chilled water pump and auxiliary electric heater to directly drive the motor of chilled water pump or electric heater.
- ◆ Control cables to enter into the cabinet should be left with a certain surplus capacity. DO NOT just bind redundant cables into a bunch and intrude them into the cabinet.

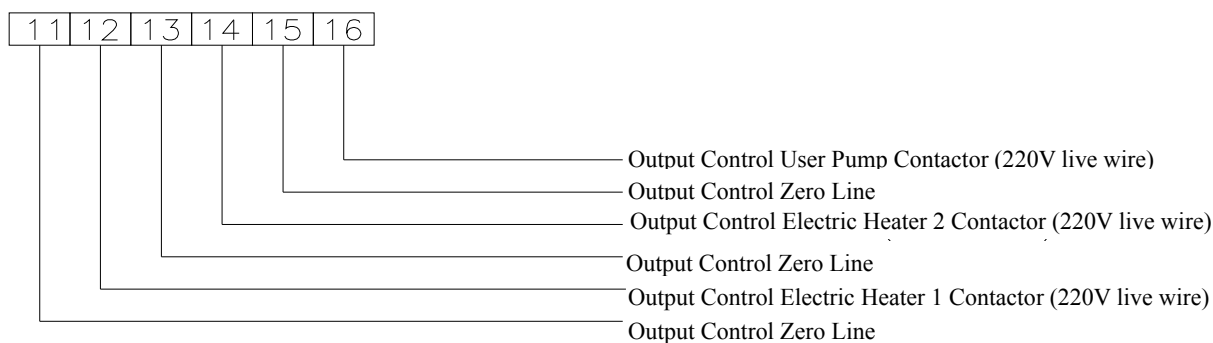
9.2 Electric Wiring Design

1) . FIELD WIRING DIAGRAM (ONLY FOR REFERENCE)



2). Wiring for External Control Users

Connection for External Control User



Remarks: Auxiliary electric heater 1 and 2 and AC contactor output control line of user's pump can be connected to 11, 12, 13, 14, 15 and 16 of the terminal (XT3) of any module.

3) .Connection of Modules

I). Use the 4-core communication wires to connect each module between CN33, CN25. Use a 3-core ($2 \times 1\text{mm}^2$) signal wires to connect the terminal 9, 10 between each modules. Refer to the diagram shown above.

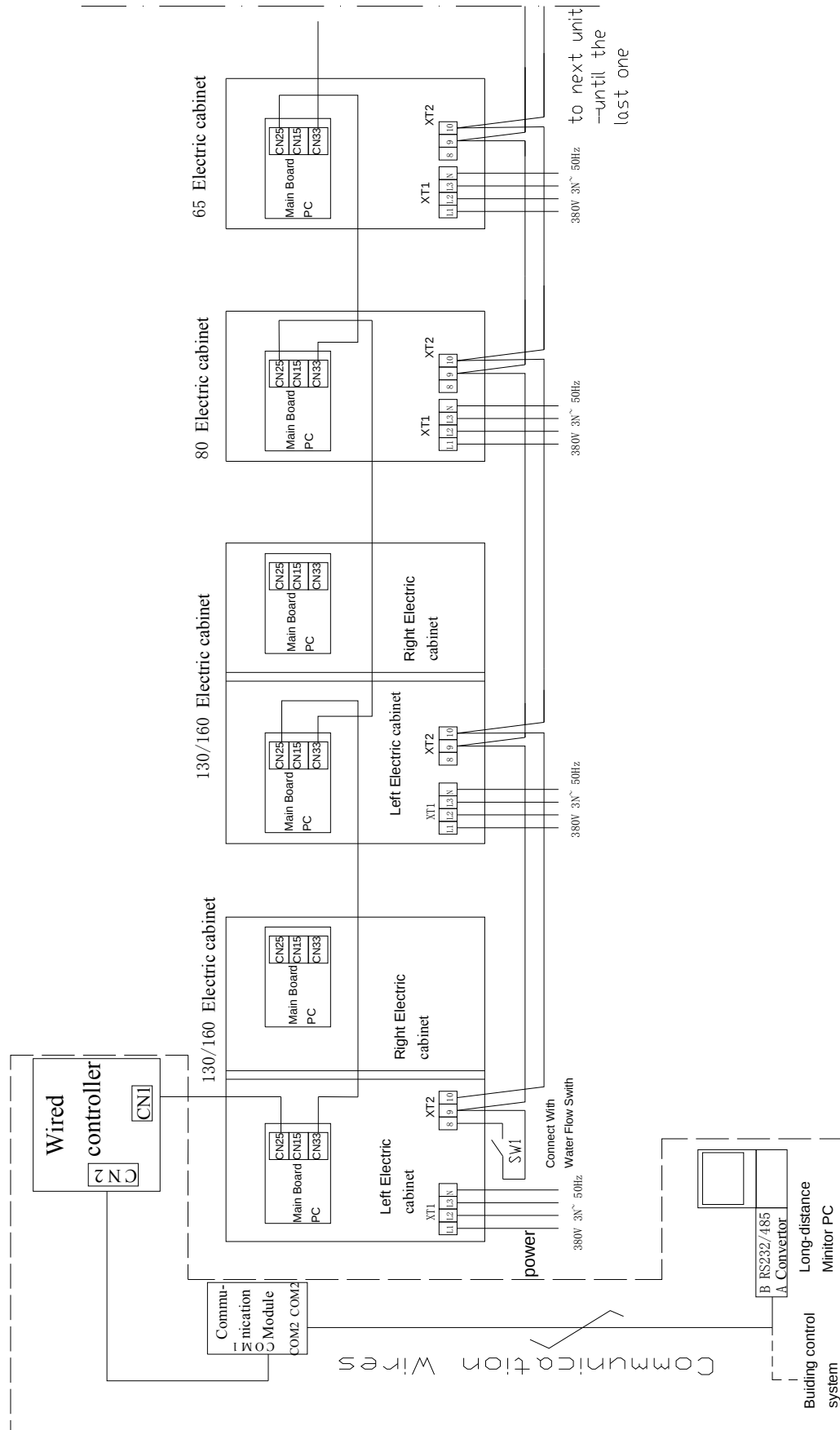
□). Use a 3-core ($2 \times 1\text{mm}^2$) signal wires to connect the Water Flow Switch with the terminal 8, 9 in one of the units.

□). Use a 4-core($4 \times 25\text{mm}^2 \sim 95\text{mm}^2$) wires to connect each module terminal XT1 L1,L2,L3,N together. Refer to the diagram shown above.

□).130/160means: IWCQW(R) F130MG/NaC-M, IWCQW(R) F160MG/NaC-M;
(two modules in each one)

80 means: IWCQW(R) F80MG/NaC-M; (One module in each one)

65 means: IWCQW(R) F65MG/NaC-M. (One module in each one)



9.3. Specification of Power Supply Wire and Air Switch

Power cable specifications and air switch types in the following list are recommended for selection.

Unit Model	Power supply	Air switch capacity (A)	Min. sectional area of grounding cable (mm ²)	Min. sectional area of power cable (mm ²)
IWCQW(R)F65MG/NaC-M	380~415V 3Ph~ 50Hz	63	16	25
IWCQW(R)F80MG/NaC-M	380~415V 3Ph~ 50Hz	100	25	50
IWCQW(R)F130MG/NaC-M	380~415V 3Ph~ 50Hz	125	35	70
IWCQW(R)F160MG/NaC-M	380~415V 3Ph~ 50Hz	180	50	95

Note: 1、 Power cables are copper core cable and copper connectors must be used for power cable connection.

- 2、 If circuit breakers with leakage protection are in use, action response time must be less than 0.1 second.
- 3、 The above selected power cable diameters are determined based on assumption of distance from the distribution cabinet to the unit less than 75m. If cables are laid out in a distance of 75m to 150m, diameter of power cable must be increased to a further grade.

9.4 WIRING DIADRAM

DIAGRAM 1 is only used in IWCQW(R) F65MG/NaC-M, IWCQW(R) F80MG/NaC-M; DIAGRAM 1 and DIAGRAM 2 are used in IWCQW(R) F130MG/NaC-M, IWCQW(R) F160MG/NaC-M.



The diagram is only for reference and the circuit diagram attached on the unit prevails.

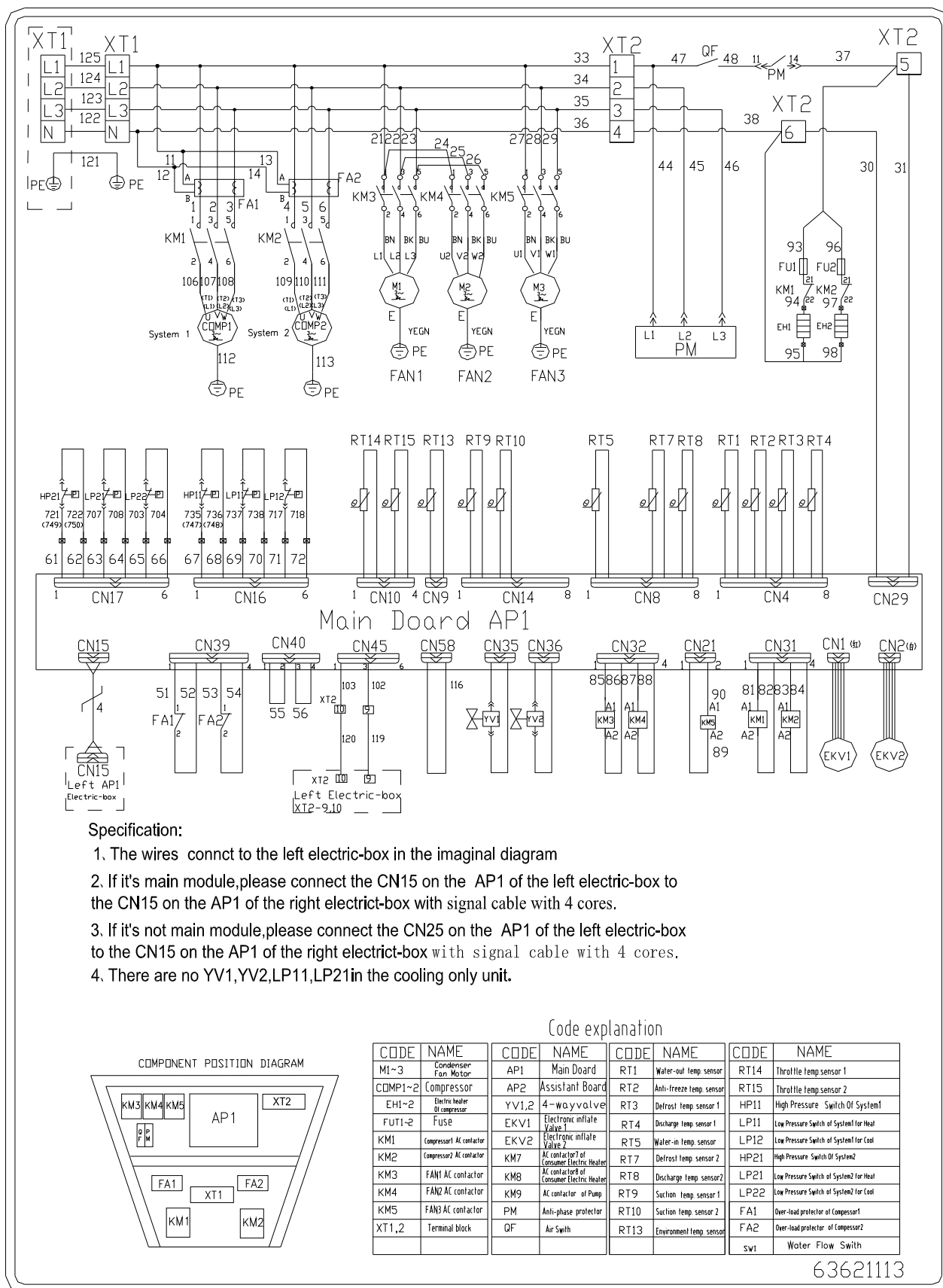


DIAGRAM 2

The diagram is only for reference and the circuit diagram attached on the unit prevails.

MAINTENANCE

MAINTENANCE

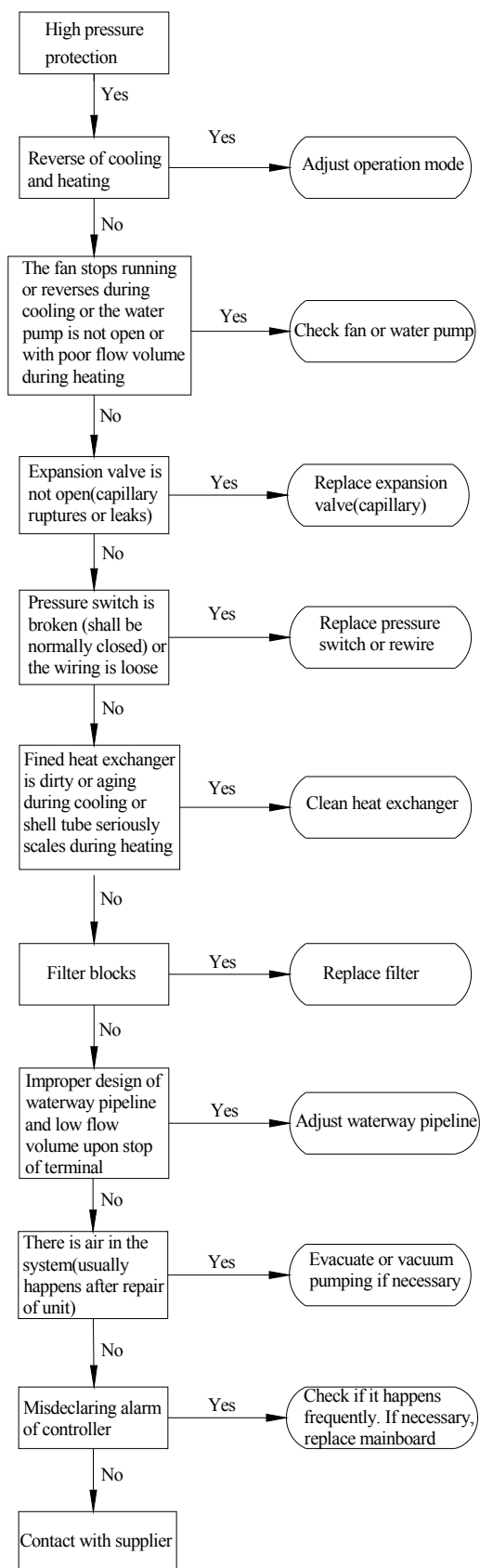
1 TROUBLE TABLE

Name of Error	Source of Error Signal	Description
high pressure of compressor 1 (compressor 2)	high pressure switch of system 1 (system 2)	If the high pressure switch of compressor 1 (compressor 2) disconnects, the corresponding compressor will stop. If both compressors stop, the two fans will stop later. The error LED of the display board lights and the corresponding alarm mark will be shown in “malfunction view”. The error must be removed manually before the unit resume normal running.
low pressure of compressor 1 (compressor 2)	low pressure switch of system 1 (system 2)	If the low pressure switch of compressor 1 (compressor 2) disconnects, the corresponding compressor will stop. If both compressors stop, the two fans will stop later. The error can be removed automatically for 5 times while it can not resume automatically for the 6th time. If it is detected for 3 times in one hour, it can not resume automatically. The corresponding marks will be shown in “error view”. It is required to remove the error manually. When the display board is off, the low pressure will not be detected. In automatic anti-freezing and defrosting mode, after startup of the water pump, the low pressure will be detected by pressing heating low pressure button. When the display board is on, if the low pressure is lower than heating low pressure protection value, the controller will send “low pressure protection” signal. The error can not be removed unless repaired by service man. When the compressor stops running, if the low pressure is lower than heating low pressure, the controller will send “low pressure protection” signal. The error can not be removed unless repaired by service man.
discharge high temperature protection of compressor 1 (compressor 2)	discharge temperature sensor system 1 (system 2)	If the discharge high temperature protection ($\geq 130^{\circ}\text{C}$ start protection; the resume value is 85°C) of compressor 1 (compressor 2) is detected, the corresponding compressor will stop. If both compressors stop, the two fans will stop later. The error LED of the display board lights and the corresponding alarm symbol will be shown in “malfunction view”. The error must be removed manually before the unit resume normal running.
overcurrent of compressor	overcurrent protector of	If the overcurrent of compressor 1 (compressor 2) is detected, the corresponding compressor will stop. If both

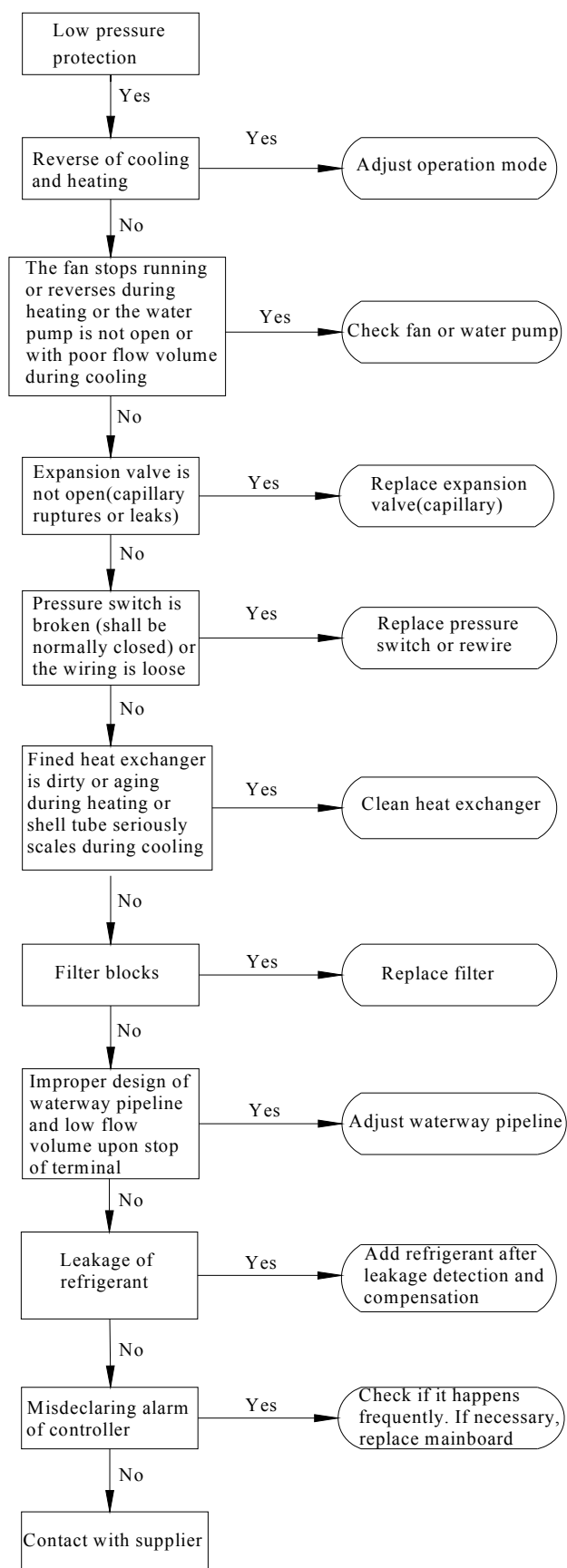
	compressor	compressors stop, the two fans will stop later. The error LED of the display board lights and the corresponding alarm symbol will be shown in “malfunction view”. The error must be removed manually before the unit resume normal running.
temperature sensor protection	temperature sensor	The successive detecting time: if it is detected that the abnormality lasts for 5s, it is error; if it is detected that the normality lasts for 3s, it is normal. When the inflow water temperature sensor is wrong, all the compressor of this module will stop immediately. When the suction temperature sensor 1 (2) is wrong, the corresponding compressor will stop. If both compressors stop, the fan will stop 30s later. As the outflow water temperature sensor is not related to the logic control, when there is error, the compressor will not stop, but the malfunction is displayed on the display board. When the anti-freezing temperature sensor and ambient temperature sensor is wrong, the compressor of this module will stop immediately and the fan will stop 30s later. If the defrosting sensor 1 (2) is wrong, the corresponding compressor will stop during heating mode and cooling mode. If there is signal of temperature sensor malfunction and it resume to normal automatically, the error mark will be removed automatically. But if it occurs 3 times in one hour or it can not resume to normal automatically, it is necessary to remove it manually. The error LED of the display board lights and the corresponding alarm symbol will be shown in “malfunction view”.
Water flow switch protection	mainboard contact	When a module detects that the water flow switch is closed (in normal state, when the water pump is running, the water flow switch is open) for 10s, the compressor of this module will stop and the fan will stop 30s later. The four-way valve remains the original state. The expansion valve keeps the initial steps. When water flow switch protection occurs for all the modules, the water pump will stop after the compressor stops for 10s.
communication error	mainboard	When the information of the display board is not received for 30s, this module will stop automatically. For the module with communication error, its water pump will stop 5 min after the compressor stops.

2 FLOW CHART OF TROUBLESHOOTING

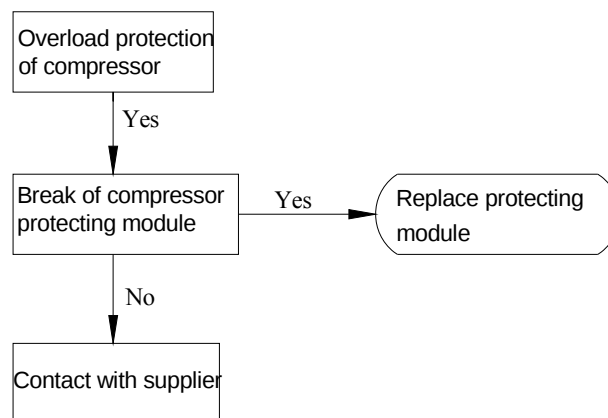
1. High Pressure Protection



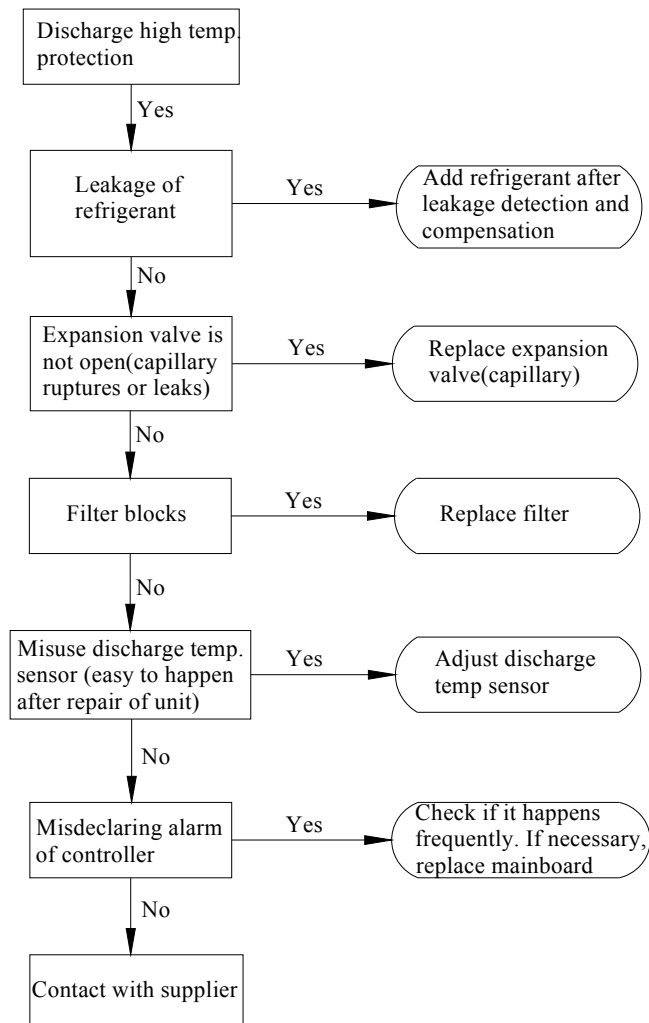
2. Low Pressure Protection



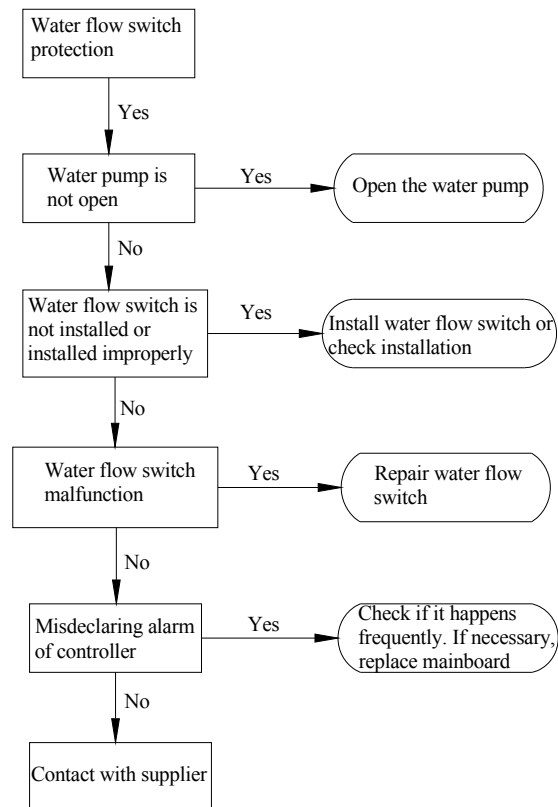
3. Overload Protection



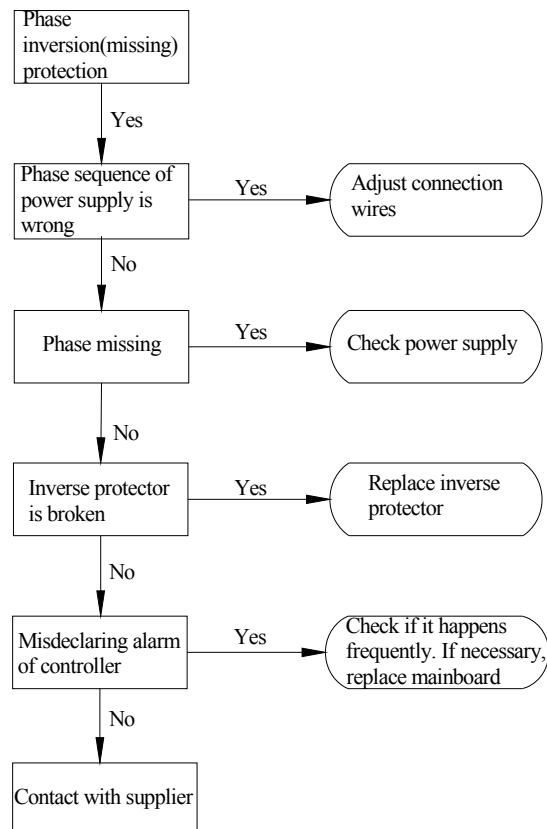
4. Discharge High Temperature Protection



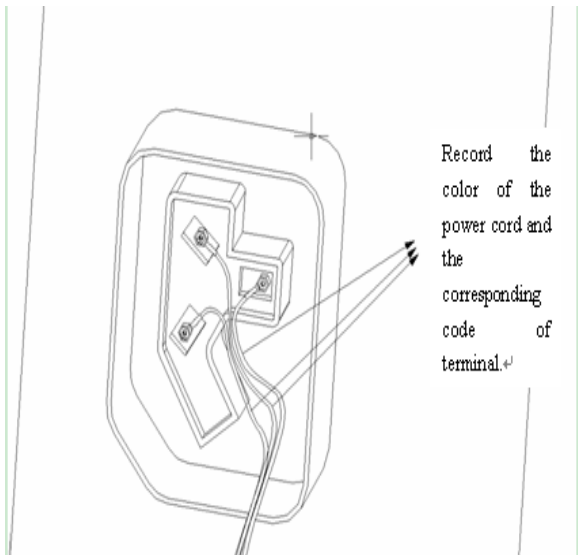
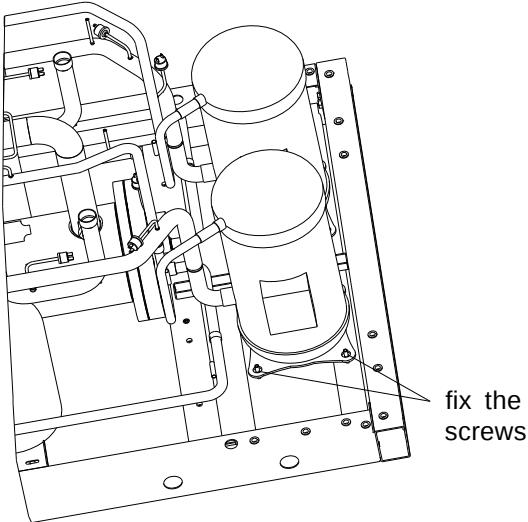
5. Water Flow Switch Protection

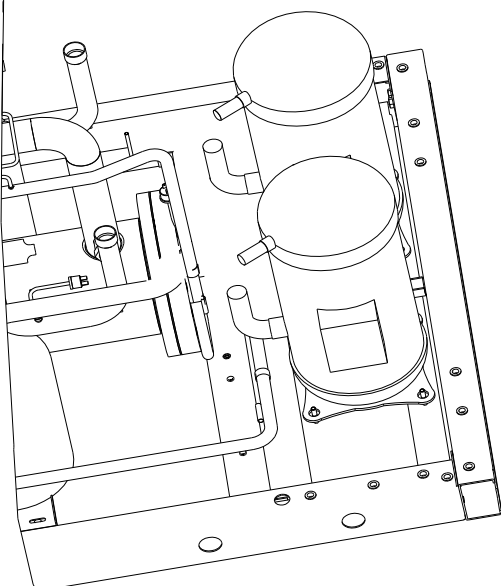
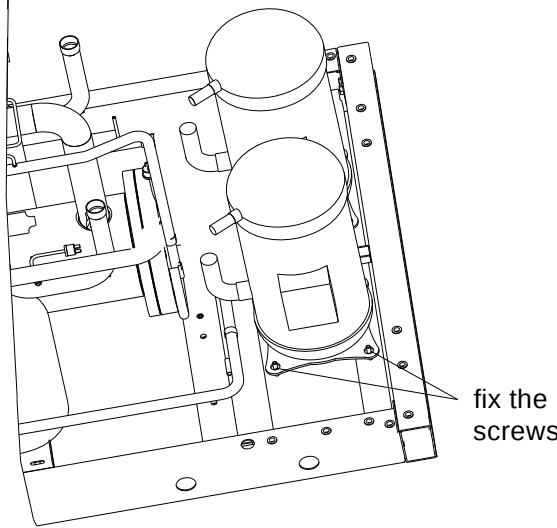


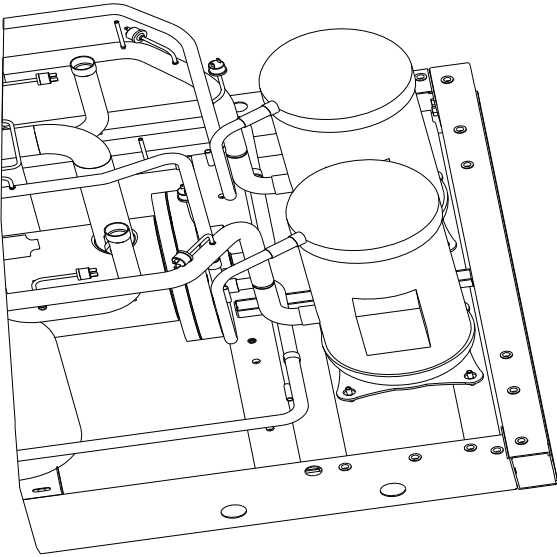
6. Phase Inversion (missing) Protection



3 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS

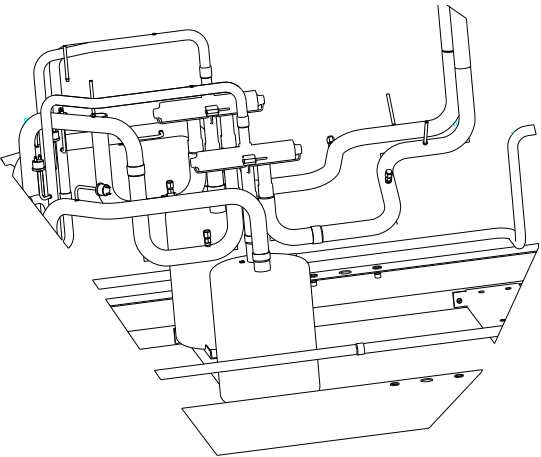
Disassembly and Assembly of Compressor		
Remarks: Make sure there isn't any refrigerant in pipe system and the power supply is cut off before removal of the compressor.		
Step	Diagram	Handling Instruction
1. Remove the power cord		● Loosen the screw of the power cord. ● Remove the power cord. ● If the compressor has e-heater belt, it should be removed together. Note: when removing the power cord, mark the terminals in case of mistake.
2. Loosen the screw of compressor the footing		● Remove the screws of the compressor with coach wrench or box end wrench. ● Put the screws together in case of loss.

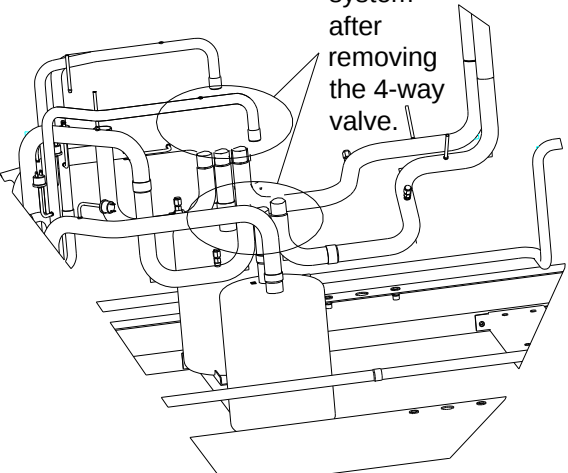
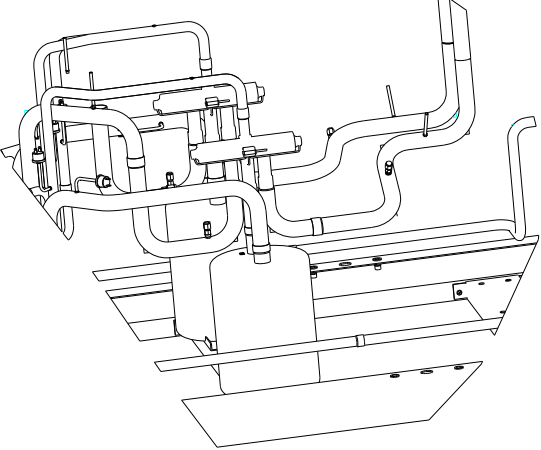
3. Disconnect the compressor from the pipe.		● Solder the pipe rapidly in case of overburning. ● Do not damage the compressor for future analysis.
4. Remove the compressor from the chassis and fix a new one.	 fix the screws	● Do not damage the rubber cushion when removing the compressor. ● Seal the removed compressor in case of entry of moisture. ● Put the new compressor on the rubber cushion. Put the steel bushing on the rubber cushion. ● Tighten the screws until they reach the steel bushing,

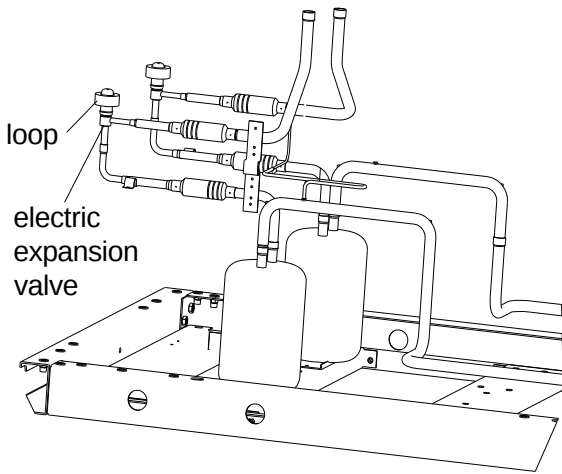
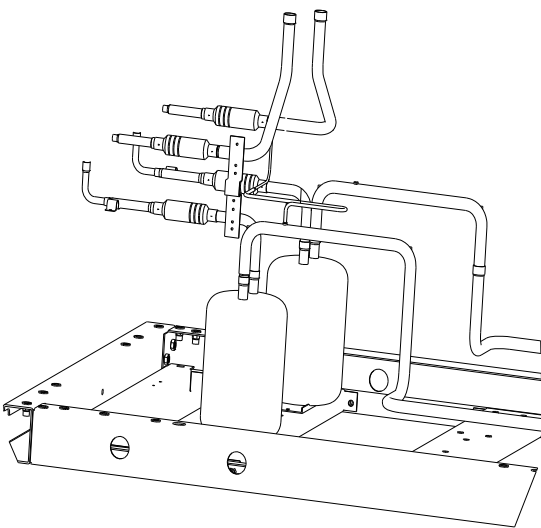
5. Connect the air inlet and outlet of the compressor to the pipe. Check if the running of compressor is normal.		● Connect the air inlet and outlet pipe and weld them. It is required to charge nitrogen when welding. ● Perform leak test with high pressure nitrogen. ● energize the unit and make the AC contactor of the compressor run for 2-3s. ● When the compressor rotates inversely, there will be sharp noise.
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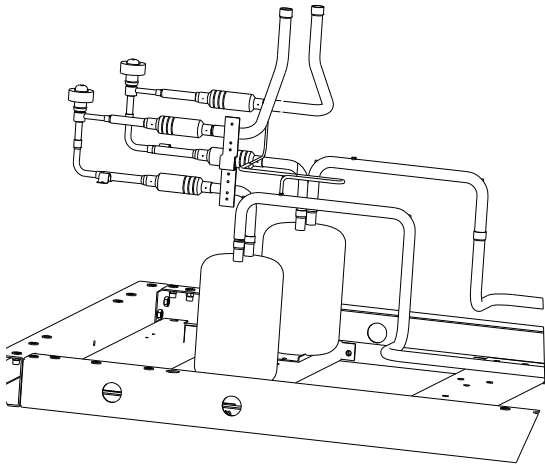
Disassembly and Assembly of 4-way valve

Remark: Before disassembly, cut off the power and reclaim the refrigerant.

Step	Diagram	Handling Instruction
1. Before welding, it is required to record its direction. The unit with dual system can not refer to the other system.		● before removing the four-way valve, record its installation direction. ● remove the wire. ● warp the four-way valve with wet cloth for future analysis. ● Solder off the four-way valve.

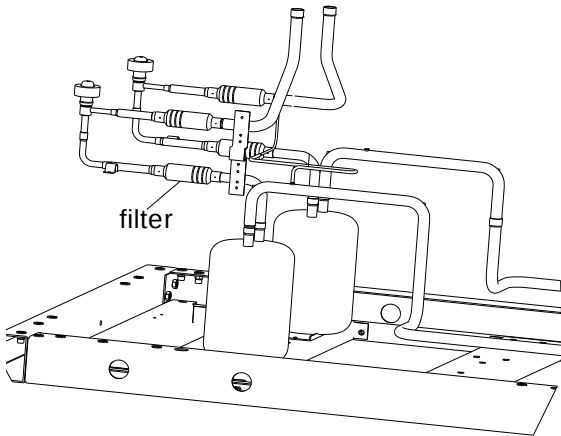
2. Clean the system. The model of the new four-way valve should be the same as that of the original one. The piping should also be the same.	 Clean the system after removing the 4-way valve.	● The model of the new four-way valve should be the same as that of the original one. If it is not clear, it should be confirmed by technician. ● warp the four-way valve with wet cloth. ● connect the four-way valve with the four pipe according to the original direction. ● Weld the pipes. ● It is required to charge nitrogen when welding.
3. Vacuumize the system and recharge the refrigerant.		● Ensure that the vacuum degree should reach -1.0bar. as the unit needs to be repaired, the vacuum time should be longer. ● Name and quality of the refrigerant should comply with the requirement on the nameplate.

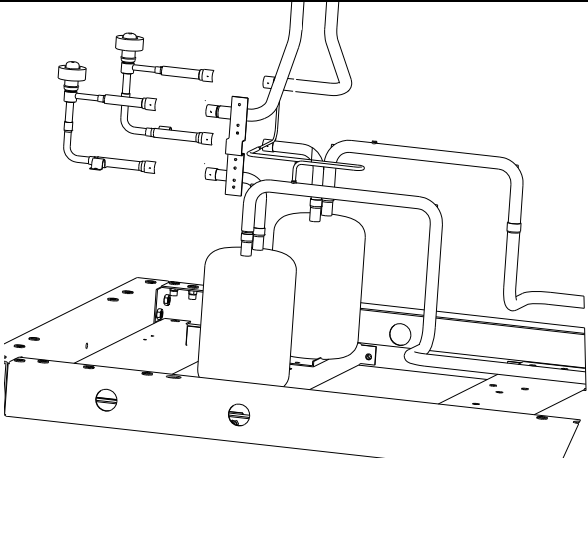
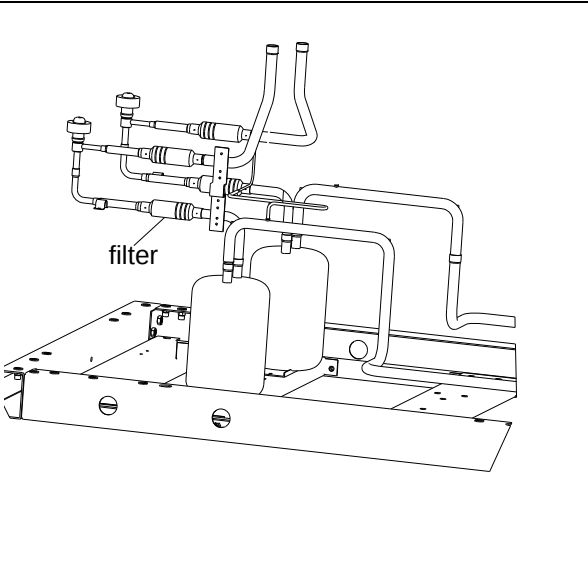
Disassembly and Assembly of electronic expansion valve		
Remark: Before disassembly, cut off the power and reclaim the refrigerant.		
Step	Diagram	Handling Instruction
1. Reclaim the refrigerant.		● Cut off the power. ● Reclaim the refrigerant.
2. Remove the expansion valve.		● Remove the wire from the valve. Record the installation direction of the electric expansion valve. ● Wrap the expansion valve and the filter with wet cloth for the sake of their integrity. ● Solder off the expansion valve.

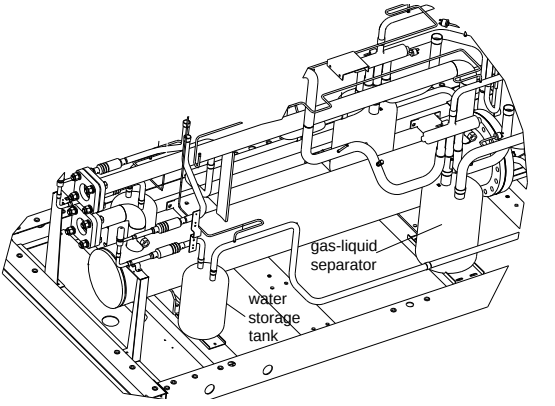
3. Mount the new expansion valve.		● Mount the new expansion valve of the same model. ● Warp the expansion valve with wet cloth. Mount it and connect the pipe. ● Weld it with the welding gun. ● After the pipe cools, install the wire. Note: It is required to charge nitrogen when welding.
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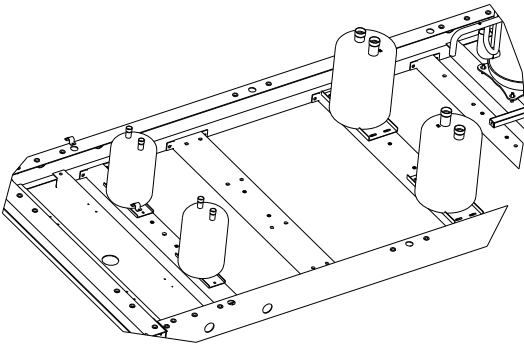
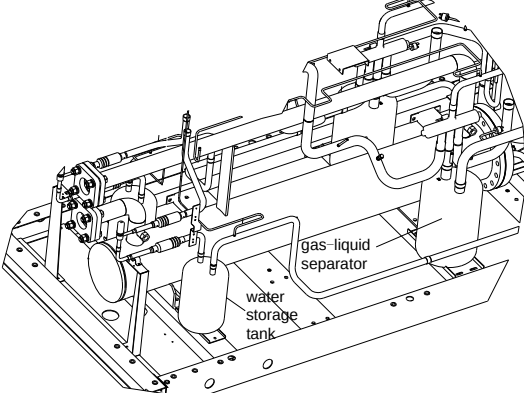
Disassembly and Assembly of filter

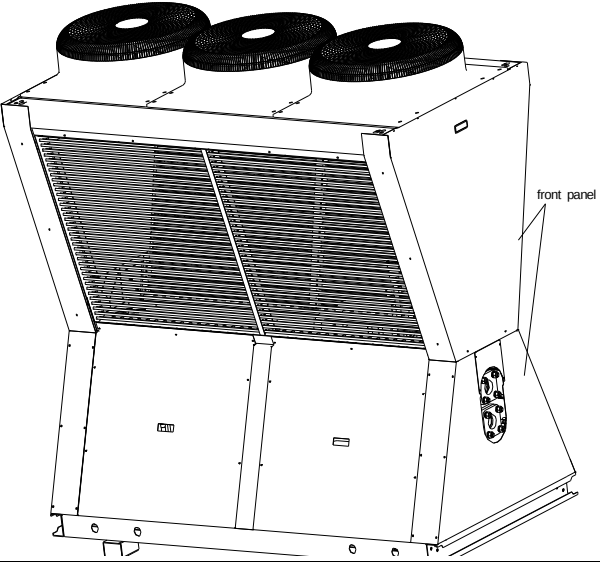
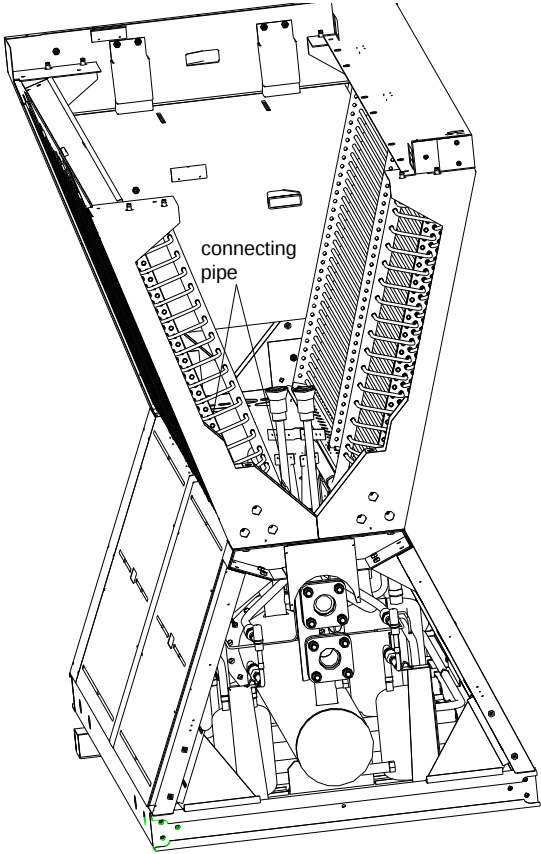
Remark: Before disassembly, cut off the power and reclaim the refrigerant.

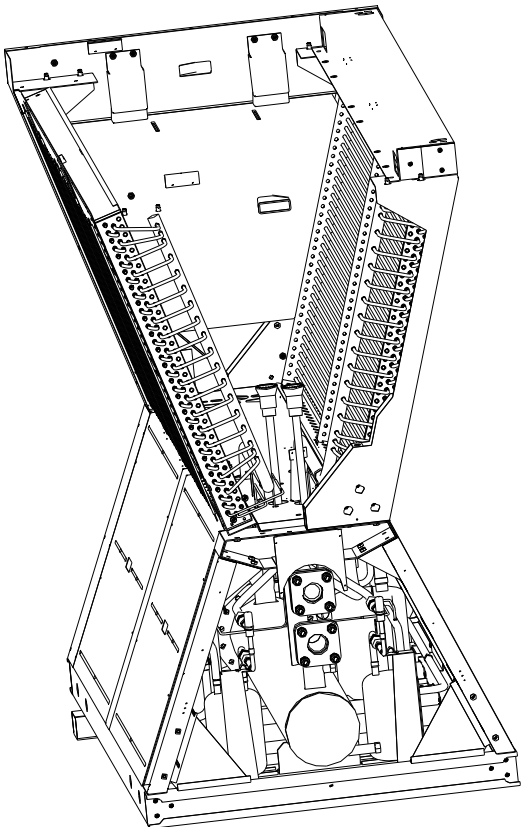
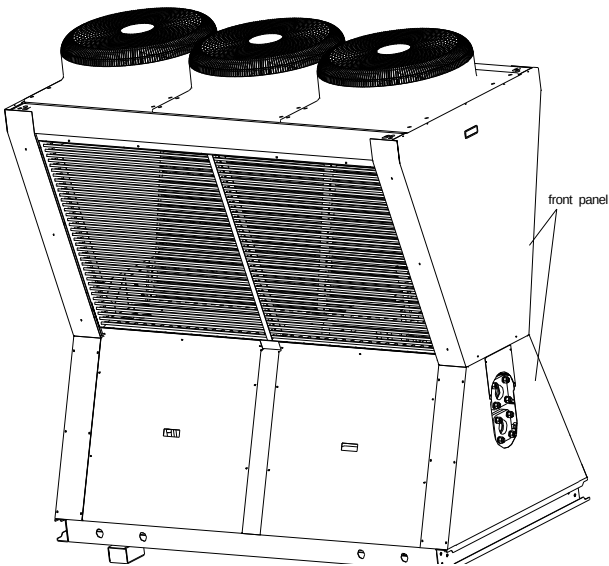
Step	Diagram	Handling Instruction
1. Reclaim the refrigerant.		● cut off the power. ● Reclaim the refrigerant.

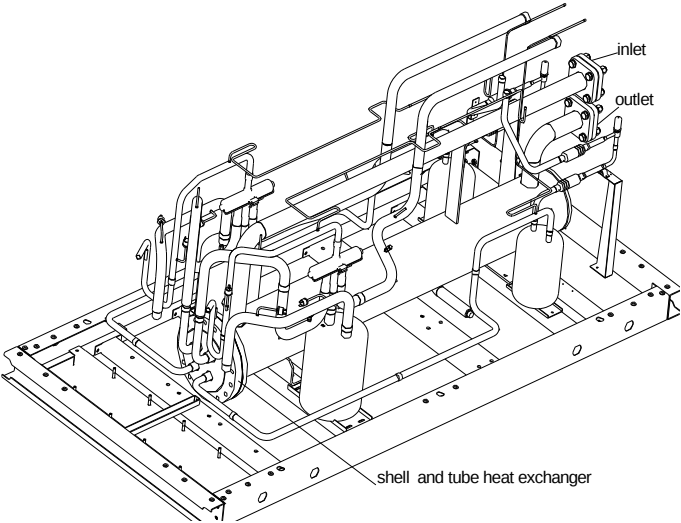
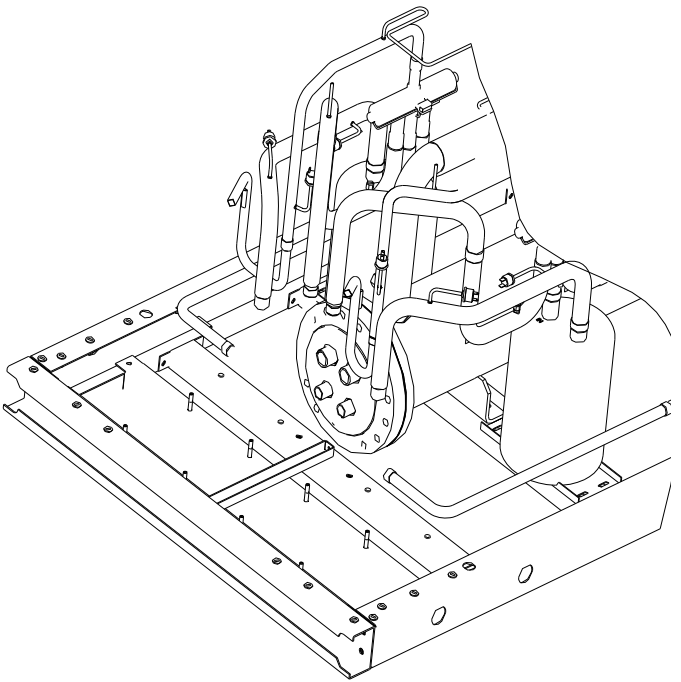
2. Remove the filter.		● Record the installation direction of the filter before removing it. ● Wrap the expansion valve and the filter with wet cloth for the sake of their integrity. ● Solder off the filter.
3. Mount the new filter.		● Mount the new filter of the same model. ● Wrap the new filter with wet cloth. Install it and connect the pipe. ● Weld it with the welding gun. Note: It is required to charge nitrogen when welding.

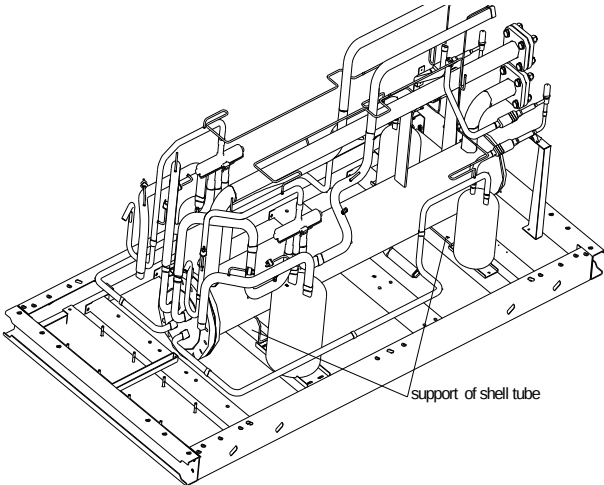
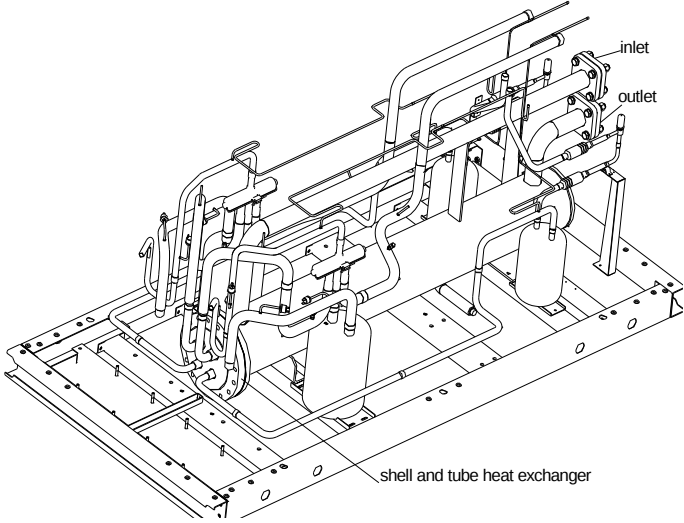
Disassembly and Assembly of gas-liquid separator and liquid storage tank		
Remarks: Reclaim the refrigerant properly. Prepare related equipment and tools and ensure a ventilative working environment.		
Step	Diagram	Handling Instruction
1. Remove the gas-liquid separator, connecting pipe and screws of the chassis.		● Remove the pipe after heating it by welding, ● Remove the screws, gas-liquid separator and liquid storage tank.

2. Clean the system and mount the gas-liquid separator and liquid storage tank of the same model.		● Mount the gas-liquid separator and liquid storage tank of the same model. Fix them with screws. ● Connect the pipe to the gas-liquid separator and liquid storage tank.
3. Mount and weld the gas-liquid separator		● Weld the pipe with welding gun. Note: It is required to charge nitrogen when welding.

Disassembly and Assembly of Condenser		
Remark: Before disassembly, cut off the power and reclaim the refrigerant.		
Step	Diagram	Handling Instruction
1. Remove the front panel as shown on the right diagram. (The replacement of front condenser is the example.)		● Completely reclaim the refrigerant. ● Cut off the power. ● Remove the fan subassembly. Cut off the power of the fan and remove the outer sheet metal of the condenser.
2. weld the inlet and outlet pipe of the condenser. Pay attention to the direction of the flame in case of burning the fin and the sheet metal of the condenser.		● Solder off the connecting pipe of the condenser according to the left diagram.

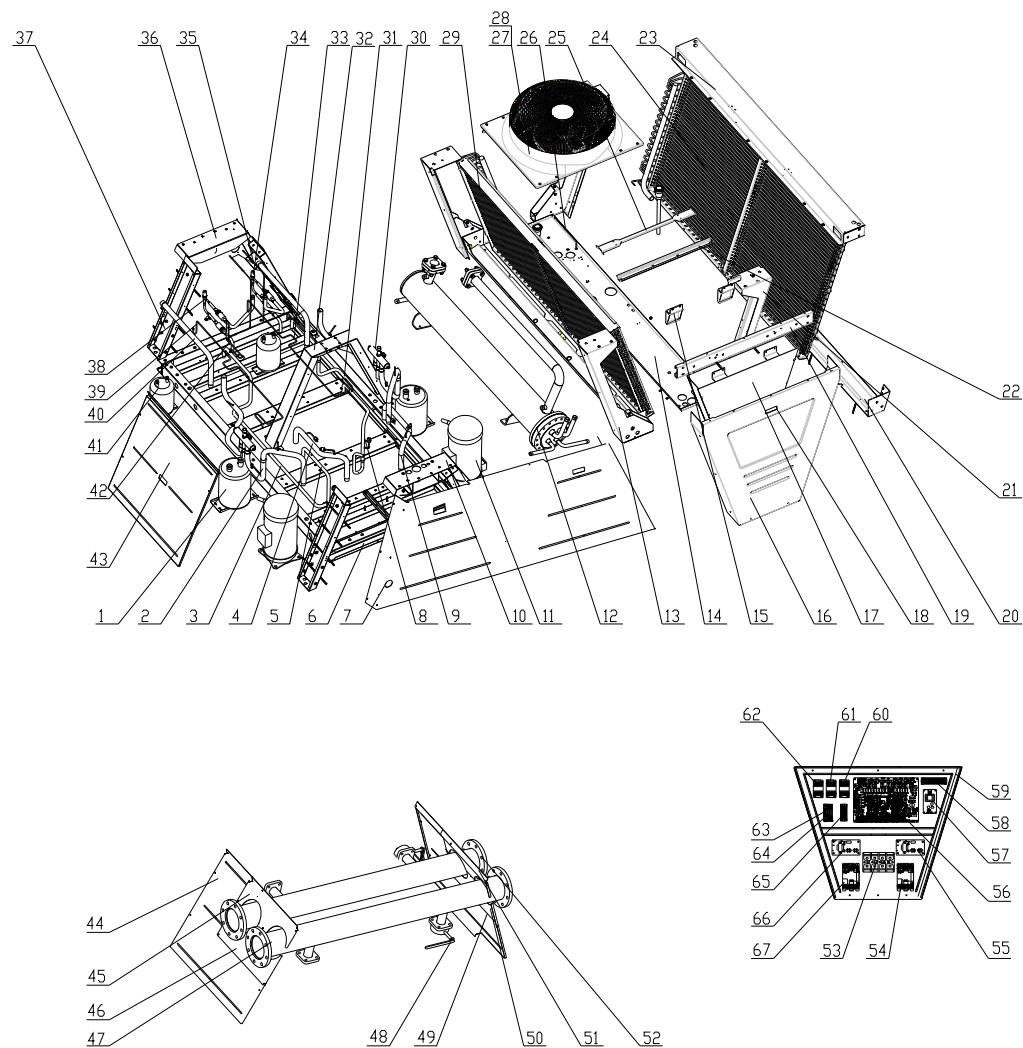
3. Remove the pipe clamp fixing separator and weld the two lower pipes of the condenser.		● Remove the steady rest. ● Solder off the connecting pipe of the condenser according to the left diagram.
4. Mount the new condenser, the fan and the sheet metal.		● mount the new condenser according to the steps of disassembly. ● Weld the connecting pipe. Note: It is required to charge nitrogen when welding. ● When reconnect the power cord of the fan motor, pay attention to the sequence.

Disassembly and Assembly of evaporator		
Remark: Before disassembly, cut off the power and reclaim the refrigerant.		
Step	Diagram	Handling Instruction
1. Loosen the inlet and outlet port and remove the front panel.		● ; discharge the water in the pipe. ● Remove the pipe connected with shell and tube. ● Remove the sheet metal on the lower part of the unit.
2. Solder off the pipe connected with the heat exchanger. (the heat exchanger of different unit is different, so it is required to record the connection in case of wrong connection.)		● warp the soldering point of the copper pipe and pipe sheet with wet cloth. ● Remove the for pipes with welding gun.

3. Loosen the 4 screws on the support abutment of the shell and tube heat exchanger.		● Remove the 4 screws fixing the shell and tube. ● Remove the shell and tube.
4. Mount the new shell and tube and connect the pipe.		● Mount the new shell and tube of the same model. ● Warp the soldering point of the copper pipe and pipe sheet with wet cloth. Weld the pipe. Note: It is required to charge nitrogen when welding. ● Connect the water pipe. ● Mount the sheet metal.

4 EXPLODED VIEWS AND PART LIST

1) Model: IWCQWRF130MG/NaC-M, IWCQWRF160MG/NaC-M



Parts List

No.	Name of part	Part code
1	Vapour-liquid Separator	07421111
2	4-way Valve Sub-Assy 1	04141139
3	shell and tube heat exchanger Inlet Sub-Assy 1	04321444
4	Suction Pipe Sub-Assy 1	04671319
5	Exhaust Pipe Sub-Assy 1	04631345
6	Foundation Sub-Assy	01191122P
7	The Under Panel 3	01541148P
8	Exhaust Pipe Sub-Assy 2	04631344
9	Suction Pipe Sub-Assy 2	04671318
10	Mid supporting Panel Sub-Assy	01891136P

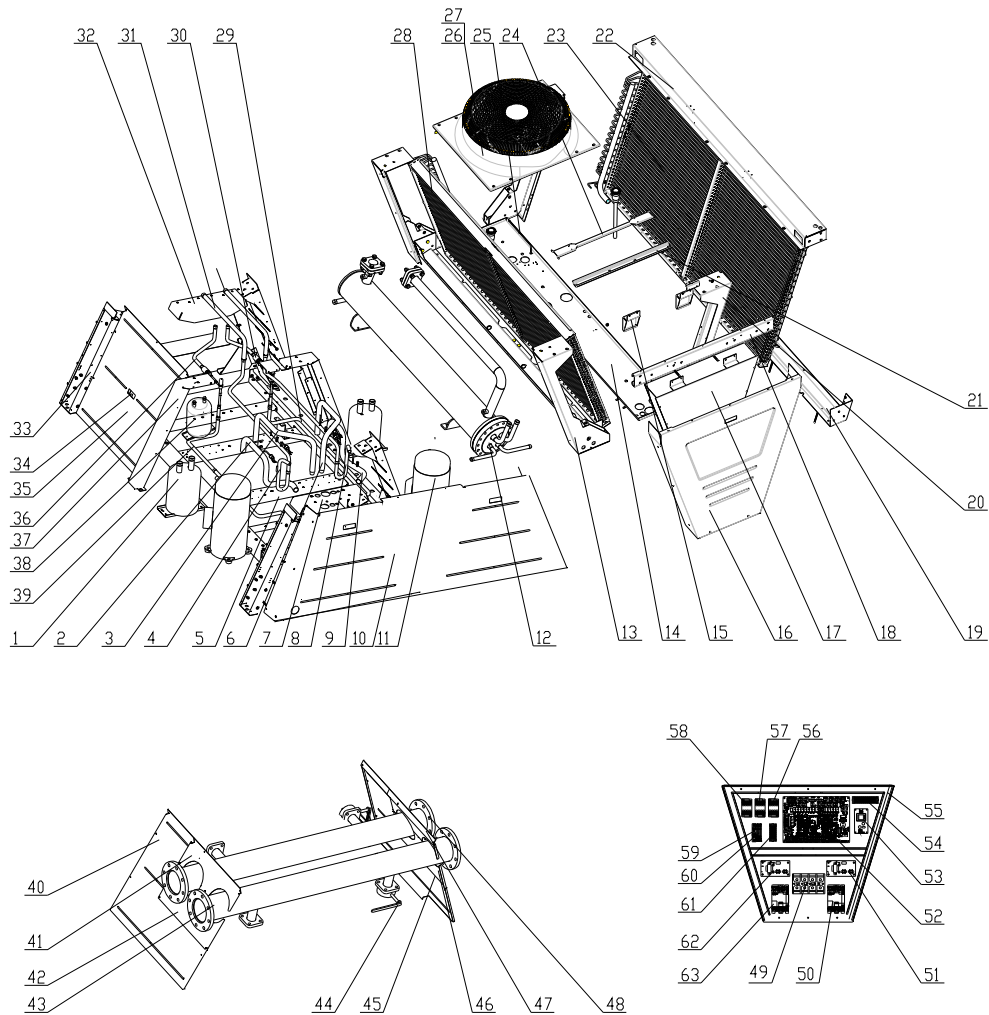
11	Compressor	00201121 ☐
		00208044 ☐
12	shell and tube heat exchanger	01058825 ☐
		0105882501 ☐
13	Shoring Sub-Assy 6	01851148P
14	Water Collecting Panel Assy	01281145P
15	Electric Cabinet Installation Beam Sub-Assy 2	01321236P
16	Upper Front Panel 2	01541147P
17	Electric Cabinet Assy	01391179 ☐
		01391325 ☐
18	Handle	26235253
19	Upper Mounting longeron Sub-Assy	01871292P
20	Mounting Crossbeam Sub-Assy(Mid)	01321279P
21	Shoring Sub-Assy 5	01851149P
22	Fan Motor Mounting Beam Sub-Assy	01321227P
23	Upper Mounting Crossbeam Sub-Assy	01871246P
24	Condenser Assy 2	0112113401 ☐
		0112113801 ☐
25	Airproof Panel	01341115P
26	pipe of "L" shape	05021379
27	Fan and Motor Sub-Assy	15401114
28	Streamlined Dome	26904101
29	Condenser Assy 1	0112113301 ☐
		0112113701 ☐
30	4-wayValveSub-Assy 2	04141138
31	shell and tube heat exchanger Inlet Sub-Assy 2	04321442
32	Shoring Sub-Assy 2	01851145P
33	Hot Vapour Byway Vapour Pipe 2	04611267
34	Electric Expansion Valve Sub-Assy 2	07331142

35	Hot Vapour Byway liquid Sub-Assy 2	04321391
36	Mid support Panal Sub-Assy 2	01891137P
37	Shoring Sub-Assy 1	01851147P
38	Electric Expansion Valve Sub-Assy 1	07331143
39	Hot Vapour Byway Vapour Pipe 1	04611264
40	Connection Pipe (Condenser)	04311117
41	liquid depositary	07422206
42	Hot Vapour Byway liquid Sub-Assy 1	04321388
43	The Under Panel 1	01541117P
44	The Under Panel 5	01541122P
45	Airproof Panel 7	01491159P
46	Airproof Panel 6	01491160P
47	Water Pipe Sub-Assy	04361101
48	butterfly valve	07386078
49	The Under Panel 7	01541149P
50	Airproof Panel 5	01491161P
51	Airproof Panel 4	01491308P
52	Water Pipe Sub-Assy 2	04361111
53	Auxiliary board XT1	42010247
54	AC contactor KM2	` 44010214
55	Over Current Protector FA2	46020120 □
		46020121 □
56	Main board AP1	30220034
57	Auxiliary board AP2	30222007
58	Terminal block XT2	42011135
59	Trunk	42010302
60	AC contactor KM5	44010229
61	AC contactor KM4	44010229
62	AC contactor KM3	44010229
63	Air-break switch QF	45020203 □
	Phase Reverse Protector PM	46020054 □
64	Terminal block XT3	420111251
65	Over Current Protector FA1	46020120 □
		46020121 □
66	AC contactor KM1	` 44010214

Note:

- 1、The parts which are labeled “□” are only used in IWCQWRF130MG/NaC-M;
- 2、The parts which are labeled “□” are only used in IWCQWRF160MG/NaC-M;

2) Model: IWCQWF130MG/NaC-M, IWCQWF160MG/NaC-M



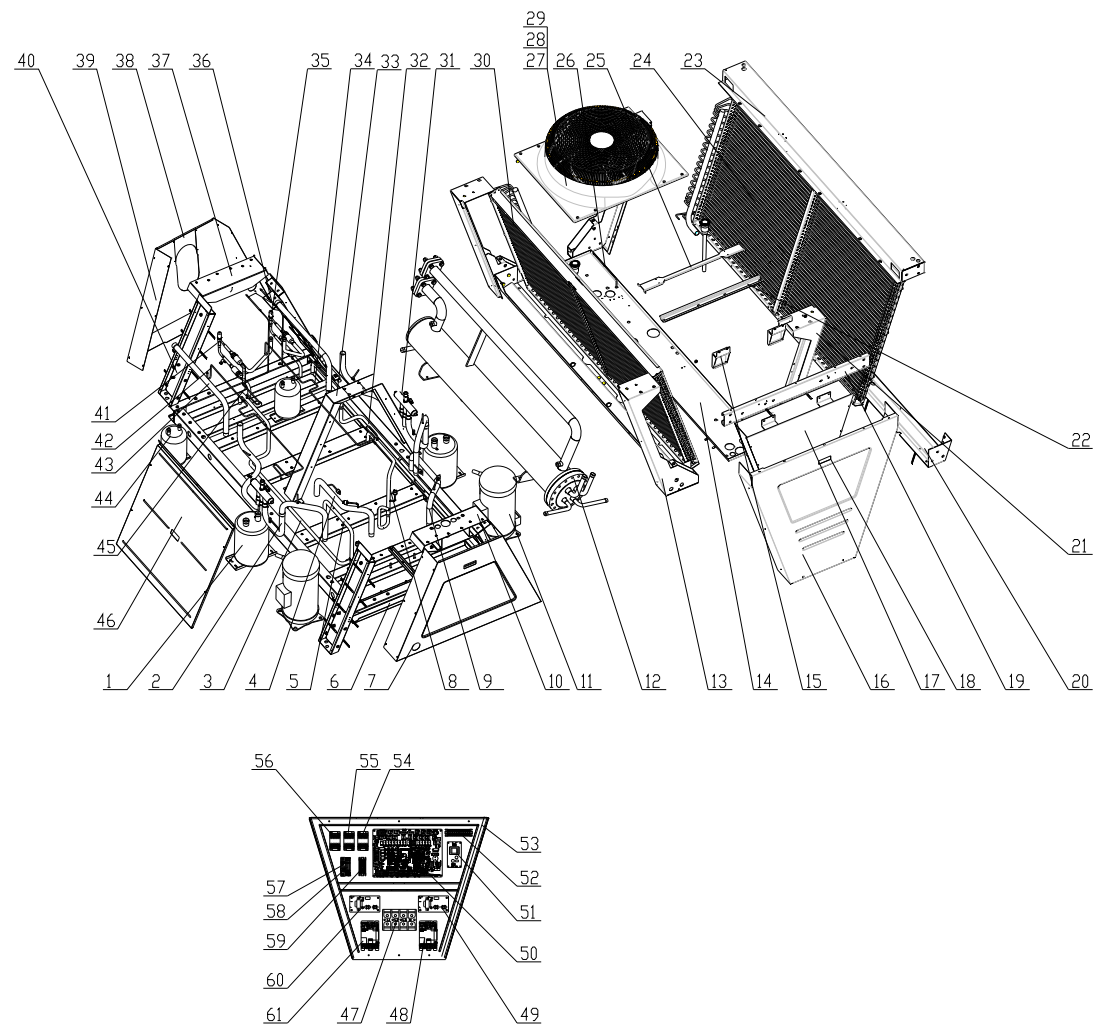
Parts List

No.	Name of part	Part code
1	Vapour-liquid Separator	07421111
2	Suction Pipe Sub-Assy 1	04671167
3	Vapour Return Pipe 1	04651189
4	Exhaust Pipe Sub-Assy 1	04631179
5	Foundation Sub-Assy	01191122P
6	Vapour Return Pipe 2	04651188
7	Mid supporting Panal Sub-Assy	01891136P
8	Exhaust Pipe Sub-Assy 2	04631180
9	Suction Pipe Sub-Assy 2	04671168
10	The Under Panel 3	01541148P
11	Compressor	00201121 □
		00208044 □
12	shell and tube heat exchanger	01058825 □
		0105882501 □
13	Shoring Sub-Assy 6	01851148P
14	Water Collecting Panel Assy	01281145P
15	Electric Cabinet Installation Beam Sub-Assy 2	01321236P
16	Upper Front Panel 2	01541147P
17	Electric Cabinet Assy	01391179 □
		01391325 □
18	Upper Mounting longeron	01871292P
19	Mounting Crossbeam Sub-Assy(Mid)	01321279P
20	Shoring Sub-Assy 5	01851149P
21	Fan Motor Mounting Beam Sub-Assy	01321227P
22	Upper Mounting Crossbeam Sub-Assy	01871246P
23	Condenser Assy 2	0112113401 □
		0112113801 □
24	Airproof Panel	01341115P
25	pipe of "L" shape	05021379
26	Fan and Motor Sub-Assy	15401114
27	Streamlined Dome	26904101
28	Condenser Assy 1	0112113301 □
		0112113701 □
29	shell and tube heat exchanger Inlet Sub-Assy 2	0432144201
30	Electric Expansion Valve Sub-Assy 2	07331142
31	transition pipe (Condenser)	04311119

32	Mid support Panal Sub-Assy 2	01891137P
33	Shoring Sub-Assy 1	01851147P
34	Handle	26235253
35	The Under Panel 1	01541117P
36	Electric Expansion Valve Sub-Assy 1	07331143
37	Shoring Sub-Assy 2	01851145P
38	liquid depositary	07422206
39	shell and tube heat exchanger Inlet Sub-Assy 1	0432144401
40	The Under Panel 5	01541122P
41	Airproof Panel 7	01491159P
42	Airproof Panel 6	01491160P
43	Water Pipe Sub-Assy	04361101
44	butterfly valve	07386078
45	The Under Panel 7	01541149P
46	Airproof Panel 5	01491161P
47	Airproof Panel 4	01491308P
48	Water Pipe Sub-Assy 2	04361111
49	Auxiliary board XT1	42010247
50	AC contactor KM2	` 44010214
51	Over Current Protector FA2	46020120 □
		46020121 □
52	Main board AP1	30220034
53	Auxiliary board AP2	30222007
54	Terminal block XT2	42011135
55	Trunk	42010302
56	AC contactor KM5	44010229
57	AC contactor KM4	44010229
58	AC contactor KM3	44010229
59	Air-break switch QF	45020203
60	Phase Reverse Protector PM	46020054
61	Terminal block XT3	420111251
62	Over Current Protector FA1	46020120 □
		46020121 □
63	AC contactor KM1	` 44010214

Note:

- 1、The parts which are labeled “□” are only used in IWCQWF130MG/NaC-M;
- 2、The parts which are labeled “□” are only used in IWCQWF160MG/NaC-M;
- 3) Model: IWCQWRF65MG/NaC-M, IWCQWRF80MG/NaC-M



Parts List

No.	Name of part	Part code
1	Vapour-liquid Separator	07421111
2	4-way Valve Sub-Assy 1	04141139
3	shell and tube heat exchanger Inlet Sub-Assy 1	04321444
4	Suction Pipe Sub-Assy 1	04671319
5	Exhaust Pipe Sub-Assy 1	04631345
6	Foundation Sub-Assy	01191122P
7	The Under Panel 4	01541119P
8	Exhaust Pipe Sub-Assy 2	04631344
9	Suction Pipe Sub-Assy 2	04671318
10	Mid supporting Panal Sub-Assy	01891136P
11	Compressor	00201121 □
		00208044 □
12	shell and tube heat exchanger	0105880901 □

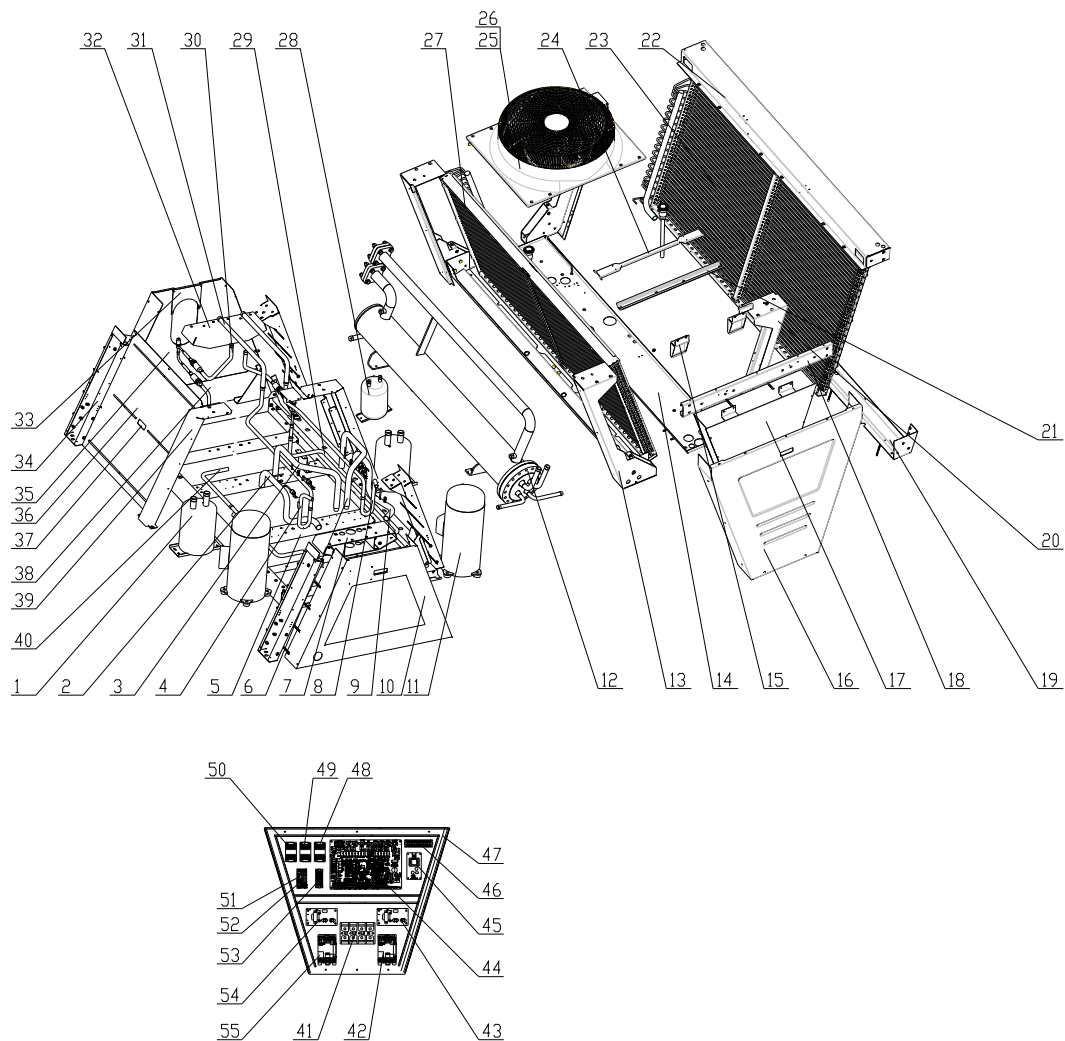
		01058809 □
13	Shoring Sub-Assy 6	01851148P
14	Water Collecting Panel Assy	01281145P
15	Electric Cabinet Installation Beam Sub-Assy 2	01321236P
16	Upper Front Panel	01541121P
17	Electric Cabinet Assy	01391179 □
		01391325 □
18	Handle	26235253
19	Upper Mounting longeron Sub-Assy	01871292P
20	Mounting Crossbeam Sub-Assy(Mid)	01321279P
21	Shoring Sub-Assy 5	01851149P
22	Fan Motor Mounting Beam Sub-Assy	01321227P
23	Upper Mounting Crossbeam Sub-Assy	01871246P
24	Condenser Assy 2	0112113401 □
		0112113801 □
25	Airproof Panel	01341115P
26	pipe of "L" shape	05021379
27	Axial Flow Fan Sub-Assy	10338702
28	Fan Motor SW700B	1570320201
29	Streamlined Dome	26904101
30	Condenser Assy 1	0112113301 □
		0112113701 □
31	4-wayValveSub-Assy 2	04141138
32	shell and tube heat exchanger Inlet Sub-Assy 2	04321442
33	Shoring Sub-Assy 2	01851145P
34	Hot Vapour Byway Vapour Pipe 2	04611267
35	Electric Expansion Valve Sub-Assy 2	07331142
36	Hot Vapour Byway liquid Sub-Assy 2	04321391
37	Mid support Panal Sub-Assy 2	01891137P
38	Airproof Panel	01341115P
39	The Under Panel 6	01541123P

40	Shoring Sub-Assy 1	01851147P
41	Electric Expansion Valve Sub-Assy 1	07331143
42	Hot Vapour Byway Vapour Pipe 1	04611264
43	Connection Pipe (Condenser)	04311117
44	liquid depositary	07422206
45	Hot Vapour Byway liquid Sub-Assy 1	04321388
46	The Under Panel 1	01541117P
47	Auxiliary board XT1	42010247
48	AC contactor KM2	` 44010214
49	Over Current Protector FA2	46020120 □
		46020121 □
50	Main board AP1	30220034
51	Auxiliary board AP2	30222007
52	Terminal block XT2	42011135
53	Trunk	42010302
54	AC contactor KM5	44010229
55	AC contactor KM4	44010229
56	AC contactor KM3	44010229
57	Air-break switch QF	45020203
58	Phase Reverse Protector PM	46020054
59	Terminal block XT3	420111251
60	Over Current Protector FA1	46020120 □
		46020121 □
61	AC contactor KM1	` 44010214

Note:

- 1、The parts which are labeled “□” are only used in IWCQWRF65MG/NaC-M;
- 2、The parts which are labeled “□” are only used in IWCQWRF80MG/NaC-M;

4) Model: IWCQWF65MG/NaC-M, IWCQWF80MG/NaC-M



Parts List

No.	Name of part	Part code
1	Vapour-liquid Separator	07421111
2	Suction Pipe Sub-Assy 1	04671167
3	Vapour Return Pipe 1	04651189
4	Exhaust Pipe Sub-Assy 1	04631179
5	Foundation Sub-Assy	01191122P
6	Vapour Return Pipe 2	04651188
7	Mid supporting Panal Sub-Assy	01891136P
8	Exhaust Pipe Sub-Assy 2	04631180
9	Suction Pipe Sub-Assy 2	04671168
10	The Under Panel 4	01541119P
11	Compressor	00201121 □
		00208044 □
		01058825 □
12	shell and tube heat exchanger	0105882501 □
13	Shoring Sub-Assy 6	01851148P

14	Water Collecting Panel Assy	01281145P
15	Electric Cabinet Installation Beam Sub-Assy 2	01321236P
16	Upper Front Panel 2	01541147P
17	Electric Cabinet Assy	01391179 □
18	Upper Mounting longeron	01391325 □
19	Mounting Crossbeam Sub-Assy(Mid)	01871292P
20	Shoring Sub-Assy 5	01321279P
21	Fan Motor Mounting Beam Sub-Assy	01851149P
22	Upper Mounting Crossbeam Sub-Assy	01321227P
23	Condenser Assy 2	01871246P
24	Airproof Panel	0112113401 □
25	Fan and Motor Sub-Assy	0112113801 □
26	Streamlined Dome	01341115P
27	Condenser Assy 1	15401114
28	liquid depositary	26904101
29	shell and tube heat exchanger Inlet Sub-Assy 2	0112113301 □
30	Electric Expansion Valve Sub-Assy 2	0112113701 □
31	transition pipe (Condenser)	07422206
32	Mid support Panel Sub-Assy 2	0432144201
33	Airproof Panel	07331142
34	Shoring Sub-Assy 1	04311119
35	The Under Panel 6	01891137P
36	The Under Panel 1	01341115P
37	Handle	01851147P
38	Electric Expansion Valve Sub-Assy 1	01541123P
39	Shoring Sub-Assy 2	01541117P
40	shell and tube heat exchanger Inlet Sub-Assy 1	26235253
41	Auxiliary board XT1	07331143
42	AC contactor KM2	01851145P
43	Over Current Protector FA2	0432144401
		42010247
		44010214
		46020120 □
		46020121 □

44	Main board AP1	30220034
45	Auxiliary board AP2	30222007
46	Terminal block XT2	42011135
47	Trunk	42010302
48	AC contactor KM5	44010229
49	AC contactor KM4	44010229
50	AC contactor KM3	44010229
51	Air-break switch QF	45020203
52	Phase Reverse Protector PM	46020054
53	Terminal block XT3	420111251
54	Over Current Protector FA1	46020120 □
		46020121 □
55	AC contactor KM1	44010214

Note:

- 1、The parts which are labeled “□” are only used in IWCQWF65MG/NaC-M;
- 2、The parts which are labeled “□” are only used in IWCQWF80MG/NaC-M;



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