AIR CONDITIONING SYSTEMS

Models:

C1VI - 09 / C1VO - 09
C1VI - 12 / C1VO - 12

Service Manual

inventor

Your-conditions

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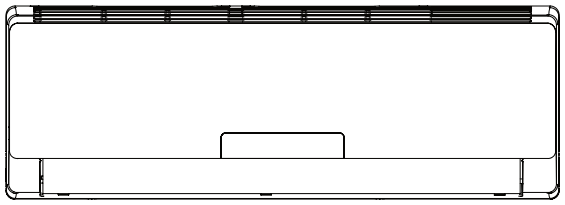
Summary and Features

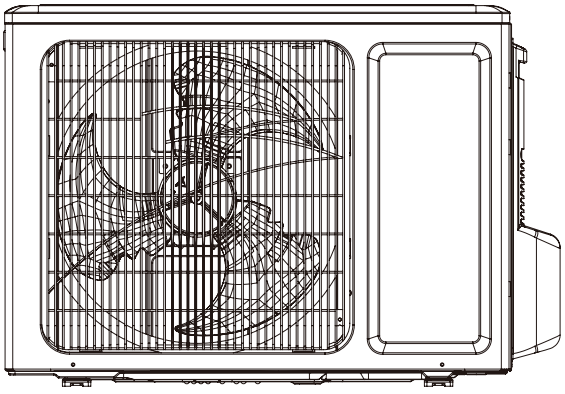
Indoor Unit

C1VI-09
C1VI-12



Outdoor Unit

C1VO-09
C1VO-12



Remote Controller

YB1FA

1.Safety Precautions

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.
Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment.
Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.
When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing.
Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.
Recognize the following safety information:

Warning Incorrect handling could result in personal injury or death.

Caution Incorrect handling may result in minor injury, or damage to product or property.

Warning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

●Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
●Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
●This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
●Have the unit adequately grounded in accordance with local electrical codes.
●Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

●Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
●Make sure the ceiling/wall is strong enough to bear the weight of the unit.
●Make sure the noise of the outdoor unit does not disturb neighbors.
●Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
●Avoid contact between refrigerant and fire as it generates poisonous gas.
●Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
●Make sure no refrigerant gas is leaking out when installation is completed.
●Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
●Keep your fingers and clothing away from any moving parts.
●Clear the site after installation. Make sure no foreign objects are left in the unit.
●Always ensure effective grounding for the unit.

Caution

●Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
●Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
●Provide an electric leak breaker when it is installed in a watery place.
●Never wash the unit with water.
●Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
●Never touch the heat exchanger fins with bare hands.
●Never touch the compressor or refrigerant piping without wearing glove.
●Do not have the unit operate without air filter.
●Should any emergency occur, stop the unit and disconnect the power immediately.
●Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2. Specifications

2.1 Unit Specifications

Parameter		Unit	Value
Model			C1VI - 09 / C1VO - 09
Product Code			C1VI - 09 / C1VO - 09
Power Supply	Rated Voltage	V ～	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity (Min ～ Max)		W	2500(550 ～ 3200)
Heating Capacity (Min ～ Max)		W	2800(800 ～ 3600)
Cooling Power Input (Min ～ Max)		W	770(250 ～ 1360)
Heating Power Input (Min ～ Max)		W	775(200 ～ 1380)
Cooling Power Current		A	3.44
Heating Power Current		A	3.55
Rated Input		W	1380
Rated Current		A	9
Air Flow Volume(SH/H/M/L/SL)		m^3/h	550/500/400/300/-
Dehumidifying Volume		L/h	0.8
EER		W/W	3.24
COP		W/W	3.61
SEER		W/W	-
HSPF		W/W	-
Application Area		m^2	12-18
Indoor Unit	Model of indoor unit		C1VI - 09
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ85X596
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1260/1050/900/690/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1320/1200/1000/910/-
	Output of Fan Motor	W	10
	Fan Motor RLA	A	0.1
	Fan Motor Capacitor	μF	1
	Input of Heater	W	-
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.5
	Coil Length (LXDXW)	mm	581X25.4X264
	Swing Motor Model		MP24AA
	Output of Swing Motor	W	1.5
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	40/37/35/32/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	50/47/45/42/-
	Dimension (WXHXD)	mm	790X265X170
	Dimension of Carton Box (LXWXH)	mm	870X248X355
	Dimension of Package (LXWXH)	mm	873X251X370
	Net Weight	kg	9
	Gross Weight	kg	12

Outdoor Unit	Model of Outdoor Unit		C1VO - 09
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,
	Compressor Model		QXA-A104zC190A
	Compressor Oil		FVC 68D
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	3.89
	Compressor Power Input	W	890
	Overload Protector		1NT11L-6233
	Throttling Method		Capillary
	Operation temp	ºC	16 ~ 30
	Ambient temp (cooling)	ºC	18 ~ 43
	Ambient temp (heating)	ºC	-7 ~ 24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ9.52
	Rows-fin Gap	mm	1-1.4
	Coil Length (LXDXW)	mm	695X22X508
	Fan Motor Speed	rpm	830±30
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.3
	Fan Motor Capacitor	μF	2.5
	Air Flow Volume of Outdoor Unit	m^3/h	1600
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	2.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2
	Sound Pressure Level (H/M/L)	dB (A)	50/-/-
	Sound Power Level (H/M/L)	dB (A)	60/-/-
	Dimension (WXHXD)	mm	776X540X320
	Dimension of Carton Box (LXWXH)	mm	848X360X580
	Dimension of Package (LXWXH)	mm	851X363X595
	Net Weight	kg	27
	Gross Weight	kg	31
	Refrigerant		R410A
	Refrigerant Charge	kg	0.73
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52
	Max Distance Height	m	10
	Max Distance Length	m	15

The above data is subject to change without notice. Please refer to the nameplate of the unit.

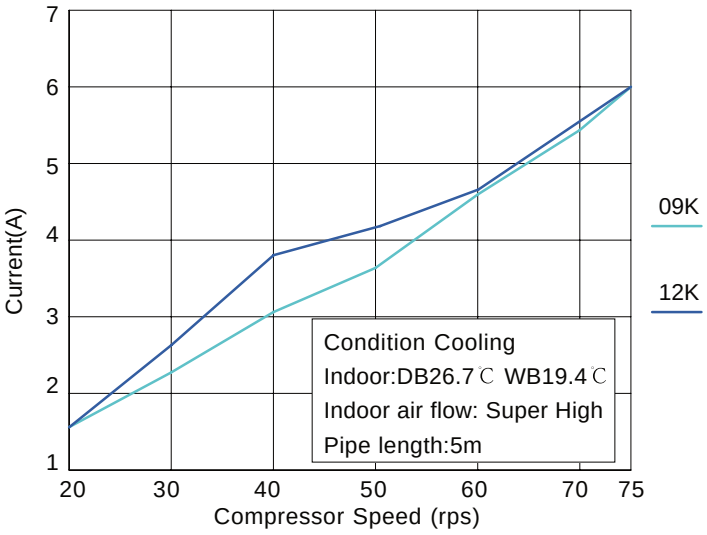
Parameter		Unit	Value
Model			C1VI - 12 / C1VO - 12
Product Code			C1VI - 12 / C1VO - 12
Power Supply	Rated Voltage	V ~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity (Min ~ Max)		W	3500(510 ~ 3900)
Heating Capacity (Min ~ Max)		W	3900(880 ~ 4400)
Cooling Power Input (Min ~ Max)		W	1080(230 ~ 1300)
Heating Power Input (Min ~ Max)		W	1080(250 ~ 1450)
Cooling Power Current		A	4.64
Heating Power Current		A	4.87
Rated Input		W	1500
Rated Current		A	9
Air Flow Volume(SH/H/M/L/SL)		m^3/h	600/500/400/300/-
Dehumidifying Volume		L/h	1.4
EER		W/W	3.24
COP		W/W	3.61
SEER		W/W	-
HSPF		W/W	-
Application Area		m^2	16-24
Indoor Unit	Model of indoor unit		C1VI - 12
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ92X645
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1290/1070/900/690/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1280/1050/980/920/-
	Output of Fan Motor	W	20
	Fan Motor RLA	A	0.1
	Fan Motor Capacitor	μF	1
	Input of Heater	W	-
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	645X25.4X267
	Swing Motor Model		MP24AA
	Output of Swing Motor	W	1.5
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	42/39/36/33/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	52/49/46/43/-
	Dimension (WXHXD)	mm	845X275X180
	Dimension of Carton Box (LXWXH)	mm	915X355X255
	Dimension of Package (LXWXH)	mm	918X370X258
	Net Weight	kg	11
	Gross Weight	kg	14

Outdoor Unit	Model of Outdoor Unit		C1VO - 12
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,
	Compressor Model		QXA-A104zC190A
	Compressor Oil		FVC 68D
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	3.89
	Compressor Power Input	W	890
	Overload Protector		1NT11L-6233
	Throttling Method		Capillary
	Operation temp	ºC	16 ~ 30
	Ambient temp (cooling)	ºC	18 ~ 43
	Ambient temp (heating)	ºC	-7 ~ 24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	695X38.1X506
	Fan Motor Speed	rpm	830±30
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.3
	Fan Motor Capacitor	μF	2.5
	Air Flow Volume of Outdoor Unit	m^3/h	1600
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	2.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2
	Sound Pressure Level (H/M/L)	dB (A)	52/-/-
	Sound Power Level (H/M/L)	dB (A)	62/-/-
	Dimension (WXHXD)	mm	776X540X320
	Dimension of Carton Box (LXWXH)	mm	848X360X580
	Dimension of Package (LXWXH)	mm	851X363X595
	Net Weight	kg	29
	Gross Weight	kg	33
	Refrigerant		R410A
	Refrigerant Charge	kg	0.95
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52
	Max Distance Height	m	10
	Max Distance Length	m	20

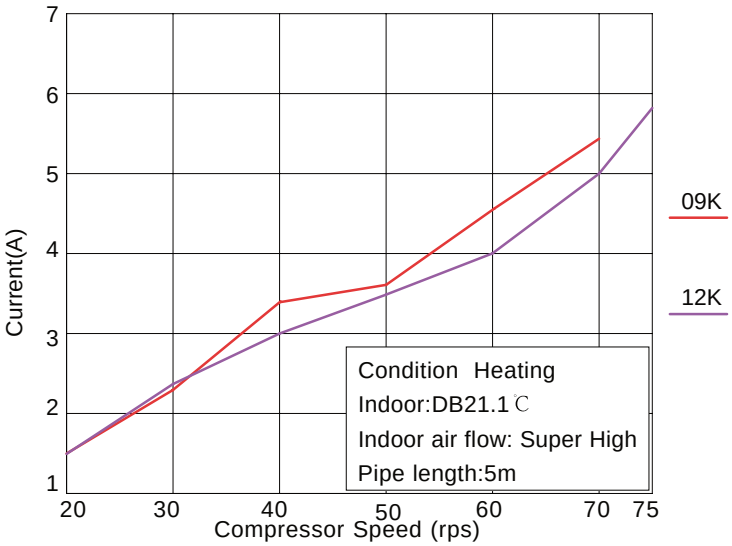
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

Cooling

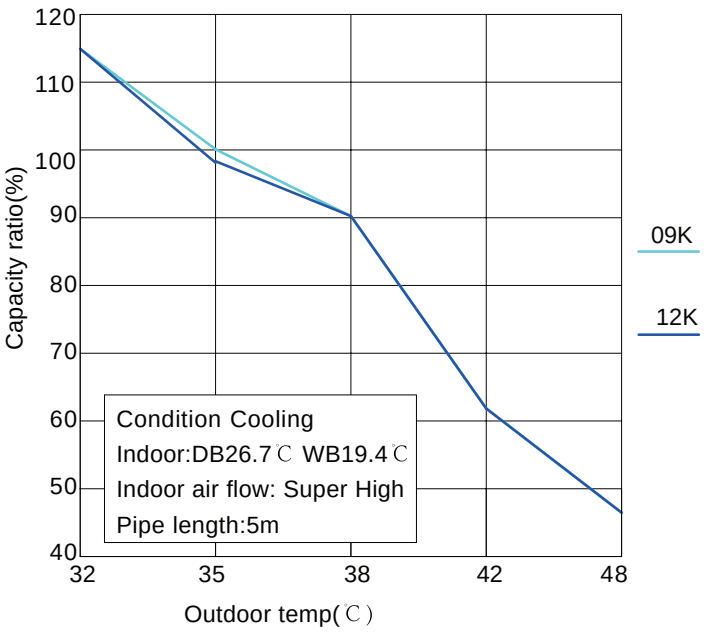


Heating

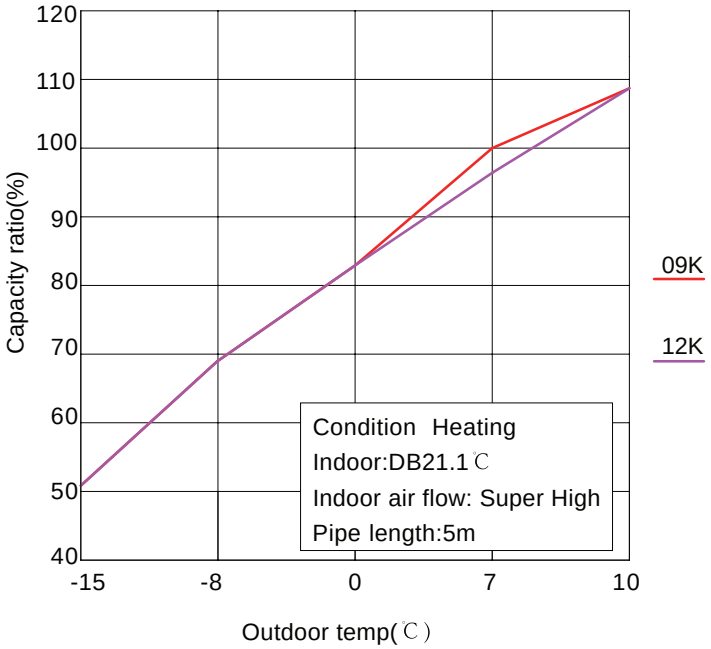


2.3 Capacity Variation Ratio according to Temperature

Cooling

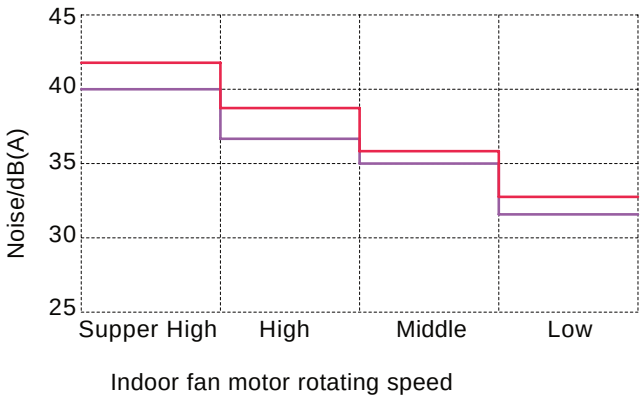


Heating

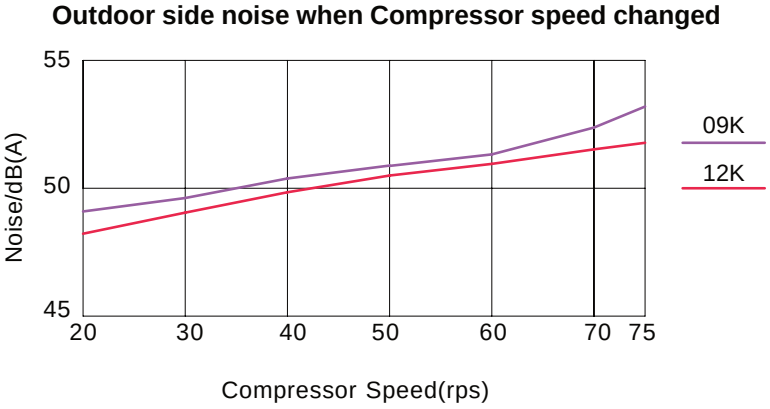


2.4 Noise Criteria Curve Tables for both Models

Indoor side noise when blowing



Outdoor side noise when Compressor speed changed



2.5 Operation Data

Cooling

Temperature condition (℃)		Model name	Standard pressure	Heat exchanger pipe temp		Indoor fan mode	Outdoor fan mode(rpm)	Compressor revolution (rps)
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)			
27/19	35/24	09K	0.8 ~ 1.1	12 to 15	65 to 38	Super High	830±20	54
		12K		11 to 14	64 to 37			60

Heating

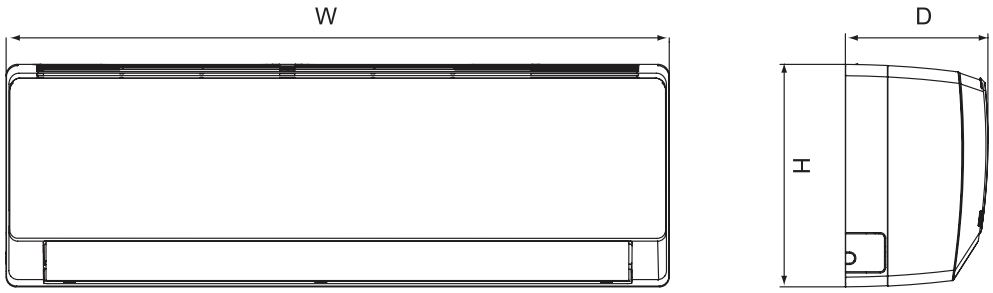
Temperature condition (℃)		Model name	Standard pressure	Heat exchanger pipe temp		Indoor fan mode	Outdoor fan mode(rpm)	Compressor revolution (rps)
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)			
20/-	7/6	09K	2.8 ~ 3.2	35 to 63	2 to 5	Super High	830±20	62
		12K		35 to 65	2 to 5			66

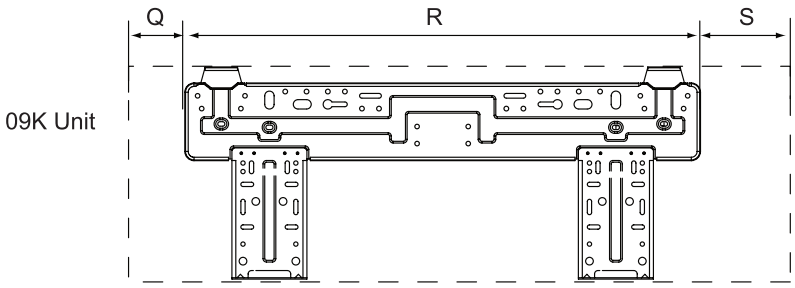
P: The air pipe pressure (gas valve side pressure) connect to indoor and oudoor unit
T1: Inlet and outlet pipe temperature of evaporator
T2: Inlet and outlet pipe temperature of condenser

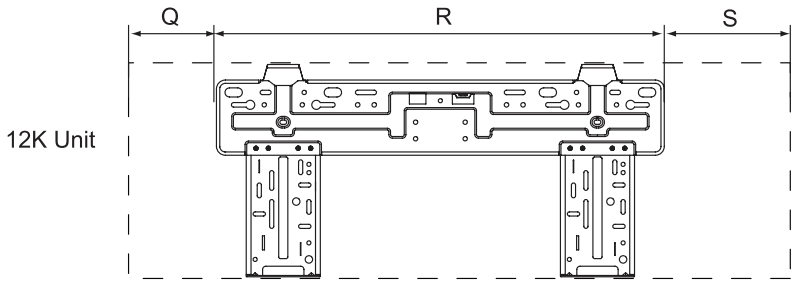
NOTES :
(1) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent. (Thermistor themometer)
(2) Connecting piping condition : 5m

3. Construction Views

3.1 Indoor Unit



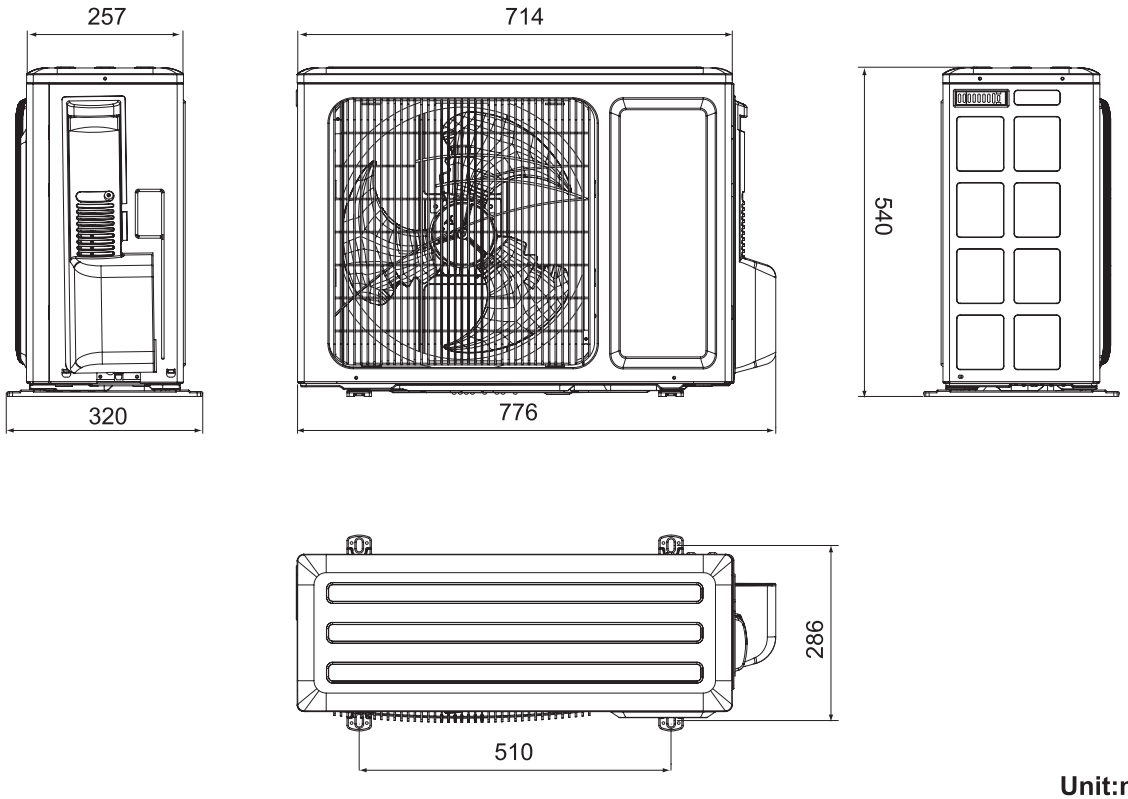




Unit:mm

Model	W	H	D	Q	R	S
09K	790	265	170	36	605	149
12K	845	275	180	130	542	173

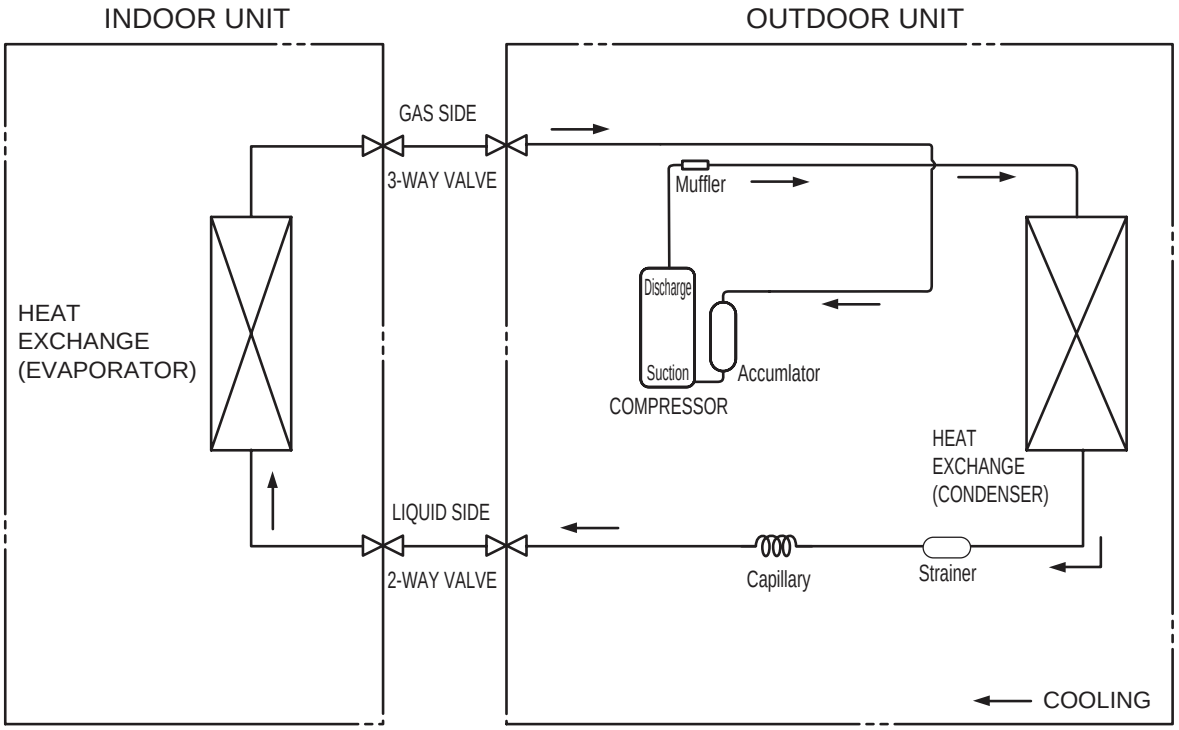
3.2 Outdoor Unit



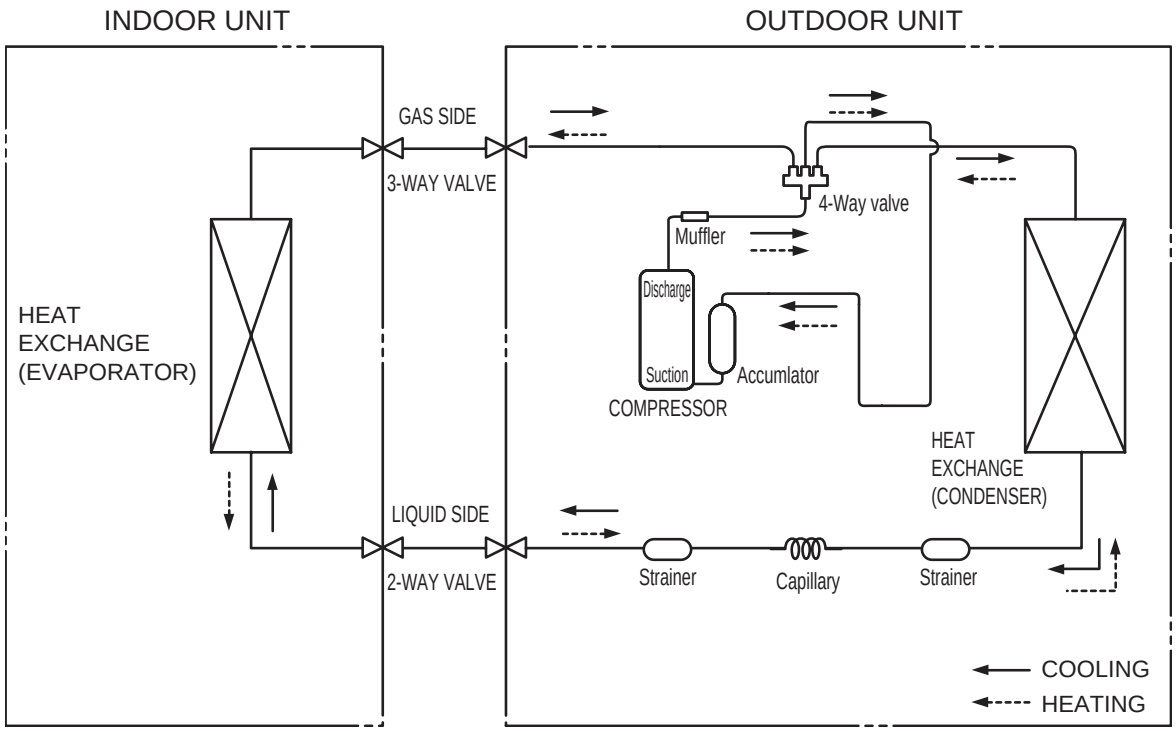
Unit:mm

4. Refrigerant System Diagram

(1)Cooling Only Models



(2)Cooling&Heating Models



Refrigerant pipe diameter
Liquid : 1/4" (6 mm)
Gas : 3/8" (9.52 mm)

5. Schematic Diagram

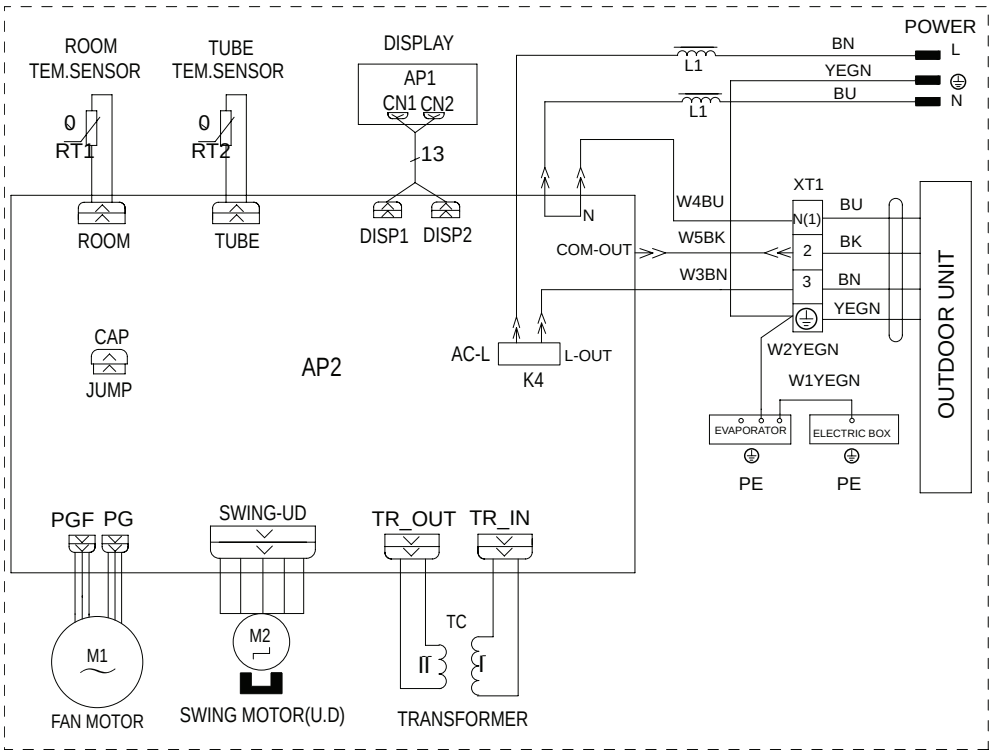
5.1 Electrical Data

Meaning of marks

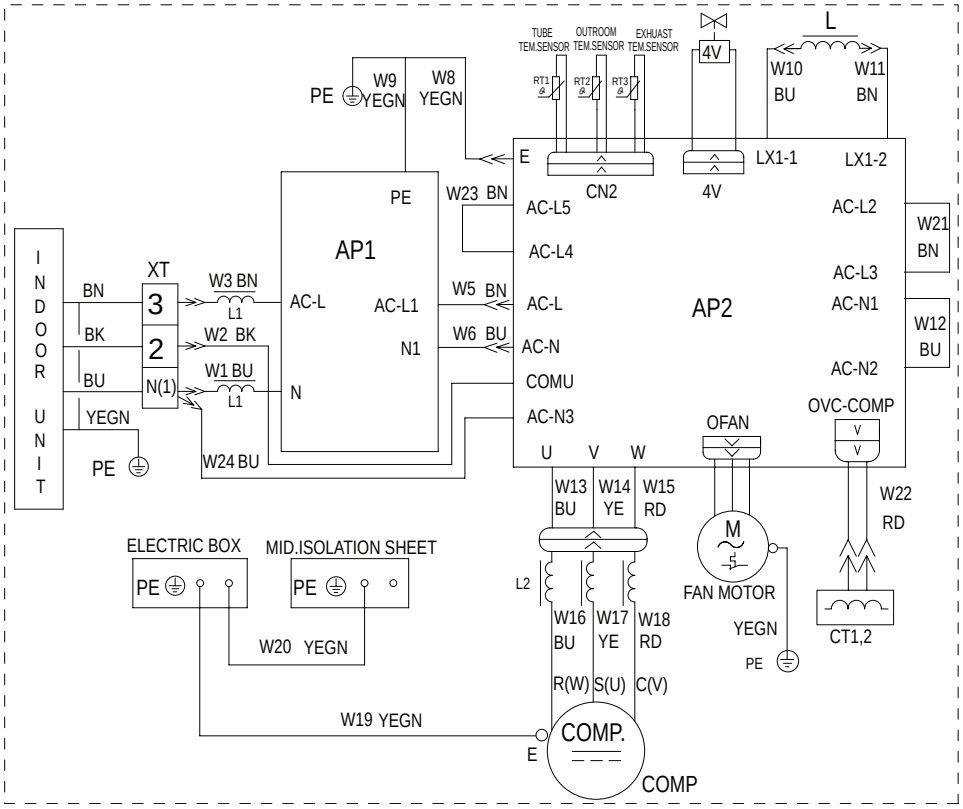
Symbol	Color symbol	Symbol	Parts name
OG	ORANGE	⏚	PROTECTIVE EARTH
WH	WHITE	COMP	COMPRESSOR
YE	YELLOW	CT1,2	OVERLOAD
RD	RED	4V	4-WAY VALVE
YEGN	YELLOW GREEN	XT	TERMINAL BLOCK
BN	BROWN		
BU	BLUE		
BK	BLACK		

5.2 Electrical Wiring

●Indoor Unit



Outdoor Unit

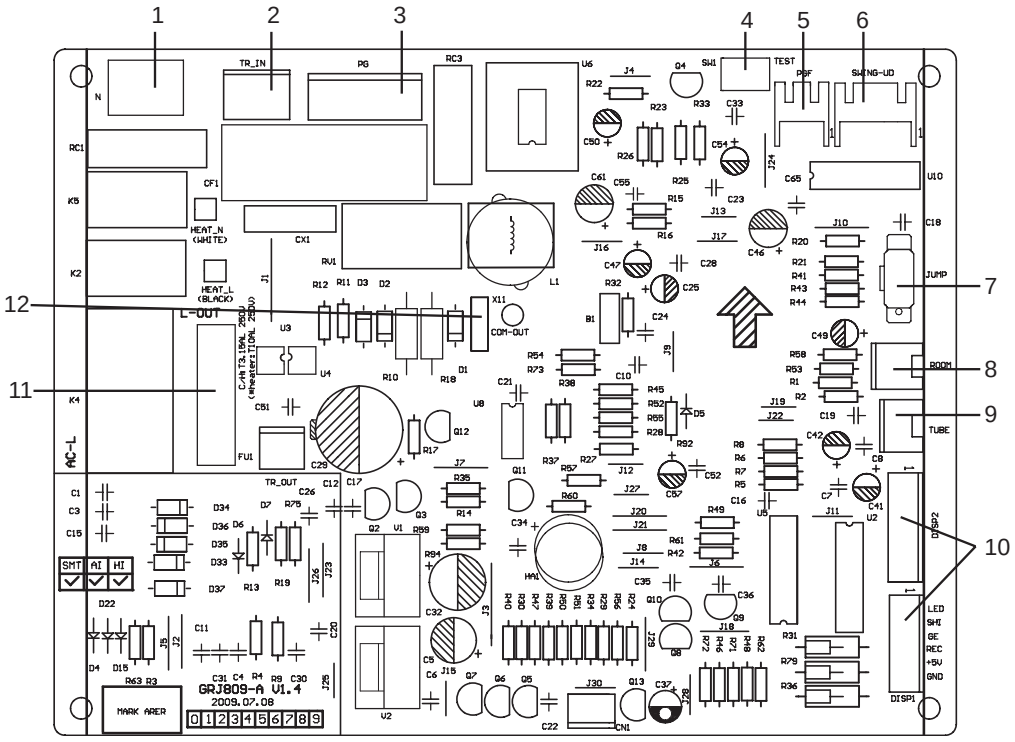


These circuit diagrams are subject to change without notice. Please refer to the one supplied with the unit.

5.3 Printed Circuit Board

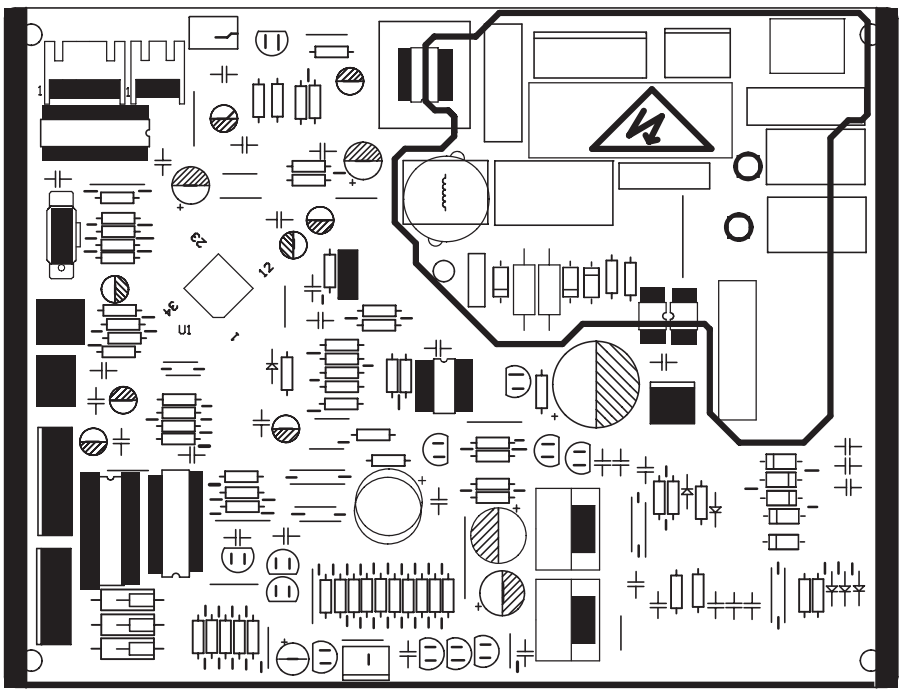
(1)Indoor Unit

●TOP VIEW



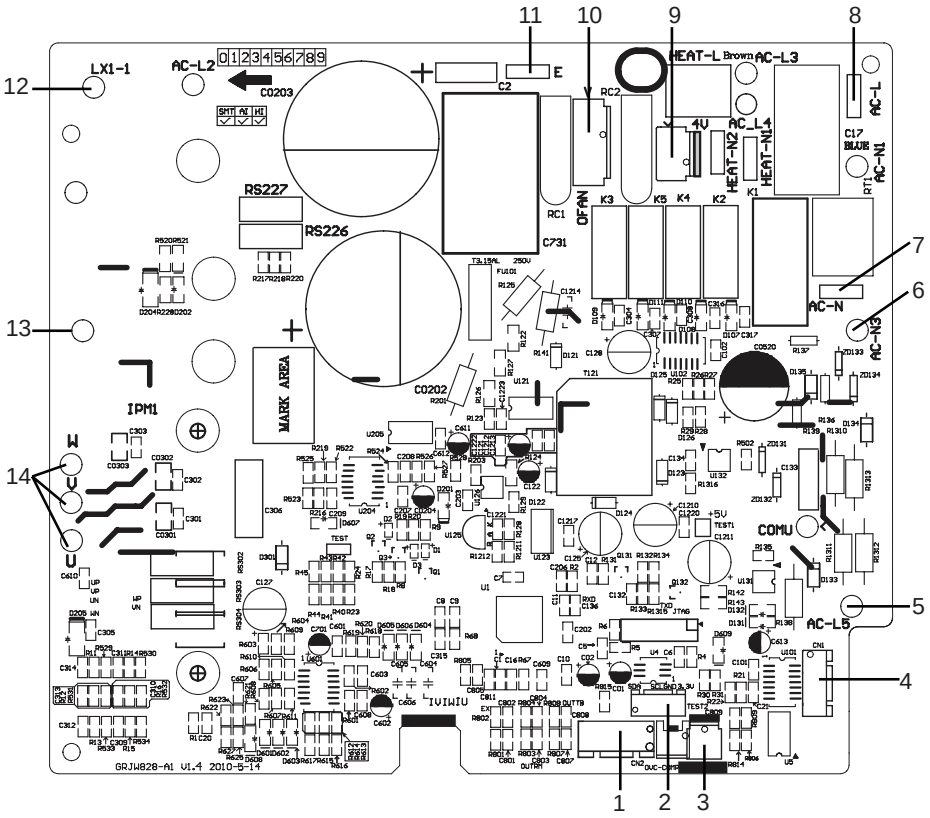
1	Interface of neutral wire
2	Transformer input
3	Interface of PG motor
4	Auto button
5	Feedback from PG motor
6	Up&down swing
7	Jump cap
8	Room temperature sensor
9	Pipe temperature sensor
10	Display interface of DISP-1, DISP-2
11	Protective tube
12	Communication interface

●BOTTOM VIEW



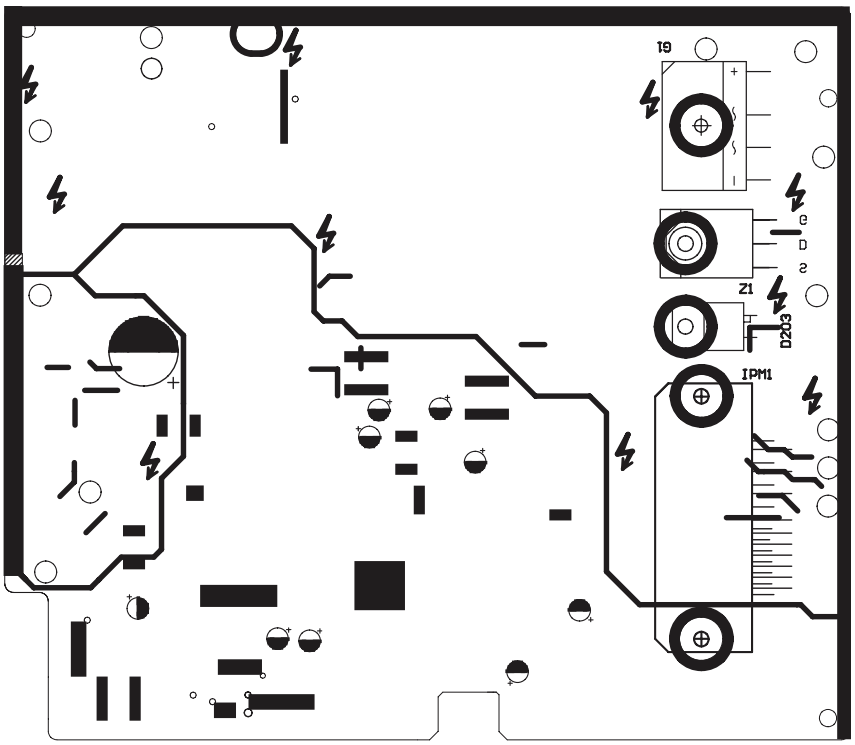
(2)Outdoor Unit

●TOP VIEW



1	Needle base of temperature sensor
2	Memory core
3	Needle base of overload temperature sensor
4	Electronic expansion valve
5	Communication interface
6	Neutral wire(communication circuit)
7	Neutral wire (output of filtering board)
8	Live wire (output of filtering board)
9	Interface of 4-way valve
10	Interface of fan
11	Earthing wire (filtering board)
12	Input of induction
13	Output of induction
14	Input end of compressor

●BOTTOM VIEW



6. Function and Control

6.1 Remote Control Operations

1 ON/OFF

Press it to start or stop operation.

2 MODE

Press it to select operation mode (AUTO/COOL/DRY/FAN/HEAT).

3 +

Press it to increase temperature setting.

4 -

Press it to decrease temperature setting.

5 FAN

Press it to set fan speed.

6

Press it to set swing angle.

7 TIMER ON

Press it to set auto-on timer.

8 TIMER OFF

Press it to set auto-off timer.

9 CLOCK

Press it to set clock.

10 X-FAN (X-FAN is the alternative expression of BLOW for the purpose of understanding.)

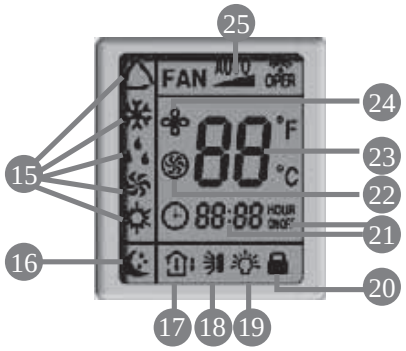
11 TEMP

12 TURBO

13 SLEEP

14 LIGHT

Press it to turn on/off the light.



15 MODE icon:

If MODE button is pressed, current operation mode icon (AUTO), (COOL), (DRY), (FAN) or (HEAT is only for heat pump models) will show.

16 SLEEP icon :

is displayed by pressing the SLEEP button. Press this button again to clear the display.

17 TEMP icon:

Pressing TEMP button, (set temperature), (indoor ambient temperature), (outdoor ambient temperature) and blank is displayed circularly.

18 Up & down swing icon:

is displayed when pressing the up & down swing button. Press this button again to clear the display.

19 LIGHT icon:

is displayed by pressing the LIGHT button.Press LIGHT button again to clear the display.

20 LOCK icon:

is displayed by pressing "+" and “-” buttons simultaneously.Press them again to clear the display.

21 SET TIME display:

After pressing TIMER button, ON or OFF will blink.This area will show the set time.

22 TURBO icon:

is displayed when pressing theTURBO button.Press this button again to clear the display.

23 DIGITAL display:

This area will show the set temperature. In SAVE mode,"SE" will be displayed. During defrosting operation, “H1” will be displayed.

24 X-FAN icon:

is displayed when pressing the X-FAN button. Press this button again to clear the display.

25 FAN SPEED display:

Press FAN button to select the desired fan speed setting(AUTO Low-Med-High).Your selection will be displayed in the LCD windows, except the AUTO fan speed.

1 ON/OFF:

Press this button to turn on the unit. Press this button again to turn off the unit.

2 MODE:

Each time you press this button,a mode is selected in a sequence that goes from AUTO, COOL,DRY, FAN, and HEAT *, as the following:

AUTO ▶ COOL ▶ DRY ▶ FAN ▶ HEAT*

*Note: Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

3 + :

Press this button to increase set temperature. Hold it down for above 2 seconds to rapidly increase set temperature. In AUTO mode, set temperature is not adjustable.

4 -:

Press this button to decrease set temperature. Hold it down for above . 2 seconds to rapidly decrease set temperature. In AUTO mode, set temperature is not adjustable.

5 FAN :

This button is used for setting fan speed in the sequence that goes from AUTO, , , to then back to Auto.

AUTO → → → →

Low speed Medium speed High speed

6

Press this button to set up & down swing angle, which circularly changes as below:

This remote controller is universal. If any command , or is sent out, the unit will carry out the command as indicates the guide louver swings as:

7 TIMER ON:

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again. After pressing this button, ⏲ disappears and "ON" blinks . 0 0:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 seconds after setting, press TIMER ON button to confirm.

8 TIMER OFF:

Press this button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again.TIMER OFF setting is the same as TIMER ON.

9 CLOCK :

Pressing CLOCK button, ⏲ blinks. Within 5 seconds, pressing + or - button adjusts the present time. Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting, and then ⏲ will be constantly displayed.

10 X-FAN:

Pressing X -FAN button in COOL or DRY mode,the icon ✿ is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

11 TEMP:

Press this button, could select displaying the indoor setting temperature or indoor ambient temperature.When the indoor unit firstly power on it will display the setting temperature, if the temperature's displaying status is changed from other status to" ⌂ ",displays the ambient temperature, 5s later or within 5s, it receives other remote control signal that will return to display the setting temperature. if the users haven't set up the temperature displaying status,that will display the setting temperature.

12 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

13 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.

14 LIGHT:

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on , 💡 is displayed. If the light is tunrned off, 💡 disappears.

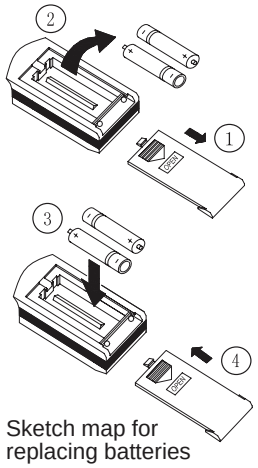
15 Combination of "+" and "-" buttons: About lock

Press "+ " and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, 🔒 is displayed. In this case, pressing any button, 🔒 blinks three times.

16 Combination of "MODE" and "-" buttons:About switch between Fahrenheit and Centigrade At unit OFF, press "MODE" and "- " buttons simultaneously to switch between ℃ and ℉.

Replacement of Batteries

1.Remove the battery cover plate from the rear of the remote controller.
(As shown in the figure)
2.Take out the old batteries.
3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.
4. Reinstall the battery cover plate.



Sketch map for replacing batteries

★Notes:

●When replacing the batteries, do not use old or different types of batteries. Otherwise, it may cause malfunction.
●If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.
●The operation should be performed in its receiving range.
●It should be kept 1m away from the TV set or stereo sound sets.
●If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds. If it still can't operate properly, replace the batteries.

6.2 Description of Each Control Operation

1. Temperature Parameters

◆ **Indoor preset temperature (Tpreset)**

◆ **Indoor ambient temperature (Tamb.)**

2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

(1) Cooling Mode

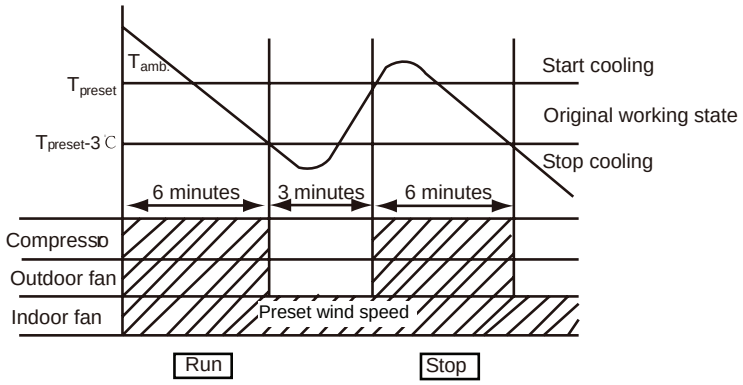
① **Working conditions and process of cooling**

When Tamb.≥Tpreset, the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When T indoor amb. =Tpreset-2℃, after compressor operates at the frequency which is lower than 15Hz for continuous 15 minutes, if Tindoor amb.=Tpreset -2℃ still, compressor stops operation.
When Tindoor amb.≤Tpreset-3℃, compressor stops operation and outdoor fan stops operation in 30s later. Indoor fan operates at set speed.
When Tpreset-2℃＜Tindoor amb.＜Tpreset, the previous operation status will be maintained.

Under this mode, the four-way valve will be de-energized and temperature can be set within a range from 16 to 30°C.

If the compressor is shut down for some reason, the indoor fan and the swing device will operate at original state.



② **Protection**

◆ **Antifreeze protection**

Under cooling and dehumidifying mode, 6 minutes after the compressor is started:

If T evap≤2°C, the compressor will operate at reduced frequency.

If T evap≤-1°Cis detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If T evap. ≥10°Cand the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

◆ **Total current up and frequency down protection**

If Itotal≤6, frequency rise will be allowed; if Itotal≥7, frequency rise will not be allowed; ifItotal≥8, the compressor will run at reduced frequency; and if Itotal≥9, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(2) Dehumidifying Mode

① **Working conditions and process of dehumidifying**

If Tamb>Tpreset, the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If Tpreset -2°C≤Tamb≤Tpreset, the compressor remains at its original operation state.

If Tamb.< Tpreset -2°C, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② **Protection**

Protection is the same as that under the cooling mode.

(3) Heating Mode

① **Working conditions and process of heating**

If Tamb.≤Tpreset +2°C, the unit enters heating mode, in which case the four-way valve, the compressor and the outdoor fan will operate simultaneously, and the indoor fan will run at preset speed in the condition of preset cold air prevention.

If T amb.≥Tpreset +5°C, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will stop after 60-second blow at low speed

If Tpreset +2°C<T amb.< Tpreset +5°C, the unit will maintain its original operating status.

Under this mode, the four-way valve is energized and temperature can be set within a range of 16 - 30°C. The operating symbol, the heating symbol and preset temperature are revealed on the display.

② Condition and process of defrost

When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes.

(1). T outdoor ambient ＞ 5°C, T outdoor tube≤-2°C;

(2) -2°C≤T outdoor ambient ＜ 5°C, T outdoor tube≤-6°C;

(3) -5°C≤T outdoor ambient ＜ -2°C, T outdoor tube≤-8°C;

(4)-10℃.＜Toutdoor amb.＜-5℃, Toutdoor pipe-Tcompensation≤Toutdoor amb.-3℃

(5)Toutdoor amb.＜-10℃, Toutdoor pipe-Tcompensation≤Toutdoor amb.-3℃

(After energization, for the first defrosting, Tcompensation=0℃; if it is not first defrosting, Tcompensation is determined by Toutdoor pipe of last time of quitting defrosting;

a. when Toutdoor pipe＞2℃, Tcompensation=0℃; b. when Toutdoor pipe≤2℃, Tcompensation=3℃)

At that time, the indoor fan stops and the compressor stops, and after 30 seconds the outer fan will stop, and then after 30 seconds, the four-way valve will stop. After 30 seconds, the compressor is initiated for raising the frequency to defrost frequency.

When the compressor has operated under defrost mode for 7.5 minutes, or T outdoor ambient ≥ 10°C, the compressor will be converted to 46Hz operation. After 30 seconds, the compressor will stop. And after another 30 seconds, the four-way valve will be opened, and after 60 seconds, the compressor and the outer fan will be started, the indoor fan will run under preset cold air prevention conditions, and H1 will be displayed at temperature display area on the display panel. Defrost frequency is 85Hz.

③ **Protection**

◆ **Cold air prevention**

The unit is started under heating mode (the compressor is ON):

① In the case of T indoor amb. <24°C: if T tube≤40°C and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if T tube>40°C, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if T tube>42°C, the fan will run at present speed.

② In the case of T indoor amb. ≥24°C: if T tube≤42°C, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if T tube>42°C, the indoor fan will be converted to preset speed.

Note: T indoor amb. indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

◆ **Total current up and frequency down protection**

If the total current Itotal≤6, frequency rise will be allowed; if Itotal≥7, frequency rise will not be allowed; if Itotal≥8, the compressor will run at reduced frequency; and if Itotal≥9, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(4) Fan Mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.

Under the mode, temperature can be set within a range of 16 - 30°C .

(5) AUTO Mode

① **Working conditions and process of AUTO mode**

a. When T ambient ≥26°C, the unit will operate in Cool mode. The set temperature is 25°C.

b. When T ambient ≤22°C, the heat pump unit will operate in Heat mode., set temperature be 20°C; the cooling only unit will operate in Fan mode, set temperature be 25°C.

c. When 23°C≤T ambient ≤25°C, the unit will operate in the previous state. If it is energized for the first time, it will operate in Fan mode.

d. Under auto mode, if it's cooling mode, operation frequency is same as that under cooling mode; if it's heating mode, operation frequency is same as that under heating mode.

② **Protection**

a. In cooling operation, protection is the same as that under the cooling mode;

b. In heating operation, protection is the same as that under the heating mode;

c. When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

(6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes

① **Overload protection**

T tube: measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

1) Cooling overload

a. If T tube≤52°C, the unit will return to its original operation state.

b. If T tube≥55°C, frequency rise is not allowed.

c. If T tube≥58°C, the compressor will run at reduced frequency.

d. If T tube≥62°C, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

a. If T tube≤50°C, the unit will return to its original operation state.

b. If T tube≥53°C, frequency rise is not allowed.

c. If T tube≥56°C, the compressor will run at reduced frequency.

d. If T tube≥60°C, the compressor will stop and the indoor fan will blow residue heat and then stop.

② **Exhaust temperature protection of compressor**

If exhaust temperature ≥98°C, frequency is not allowed to rise.

If exhaust temperature ≥103°C, the compressor will run at reduced frequency.

If exhaust temperature ≥110°C, the compressor will stop.

If exhaust temperature ≤90°Cand the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ **Communication fault**

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

④ **Module protection**

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

⑤ **Overload protection**

If temperature sensed by the overload sensor is over 115°C, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 95°C, the overload protection will be relieved°C.

⑥ **DC bus voltage protection**

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

⑦ **Faults of temperature sensors**

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

3. Other Controls

(1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C. Regulating Range: 16~30°C, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

(5) SLEEP State Control

a. When the air conditioner is under the mode of COOL, DRY, and the SLEEP mode has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will raise 1°C, and it will raise 1°C again after 2 hours, so it raise 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

b. When the air conditioner is under the mode of HEAT, and the Timer has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will reduce 1°C, and it will reduce 1°C again after 2 hours, so it reduce 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

c. The setting temperature keeps the same under the FAN mode and AUTO mode.

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

Cooling mode: T ring ≥ T setting + 2°C, high speed; T setting - 2°C<T ring<T setting + 2°C, medium speed; T ring≤ T setting - 2°C, low speed.

Sending wind mode: : T ring> T setting+ 4°C, high speed; T setting +2°C≤T ring≤T setting + 4°C, medium speed; T ring<T setting +2°C, low speed.

Moisture removal mode: force to be set as the low speed

Heating mode: T ring≤ T setting + 1°C, high speed; T setting +1°C<T ring<T setting + 5°C, medium speed; T ring ≥T setting + 2°C, low speed.

(7) Buzzer Control

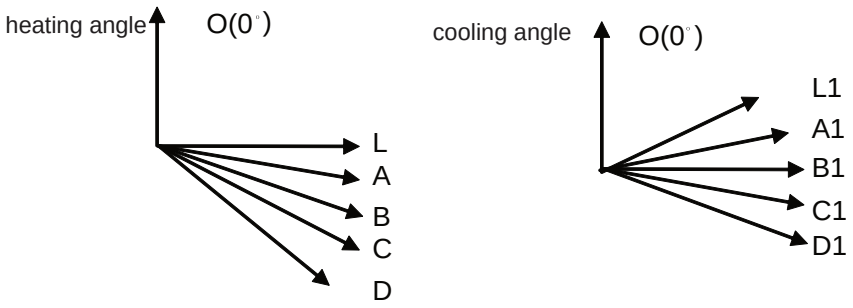
The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn’t receive the remote control ON signal under the mode of heating mode.

(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to counter-clockwise, close the air outlet. After starting the machine, if you don’t set the swinging function, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine, then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location C, Location D, Location L to Location D, stop at any location between L-D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Display

① Operation pattern and mode pattern display

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 16°C to 30°C) and indoor ambient temperature. The heating and air supply temperature will display 25°C under auto-mode, the temperature will display 18°C under the heating mode, and the temperature will display H1 under the defrosting mode.(If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Protection function and failure display

E2: Freeze-proofing protection E4: Exhausting protection E5: Overcurrent protection

E6: Communication failure H4: Overload protection

F1: Indoor ambient sensor start and short circuit (continuously measured failure in 30S)

F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 30S)

F3: Outdoor ambient sensor start and short circuit (continuously measured failure in 30S)

F4: Outdoor condenser sensor start and short circuit (continuously measured failure in 30S, and don't measure within 10 minutes after defrosted)

F5: Outdoor exhausting sensor start and short circuit (continuously measured failure in 30S after the compressor operated 3 minutes)

H3: Overload protection of compressor H5: Module protection

PH: High-voltage protection PL: Low-voltage protection

P1: Nominal cooling and heating P2: Maximum cooling and heating

P3: Medium cooling and heating P0: Minimum cooling and heating

(12) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 10 minutes under low air damper (The swing will operate as the former status within 10 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly. When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(13) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted form power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

7. Installation Manual

7.1 Notices for Installation

Caution

1.The unit should be installed only by authorized service center according to local or government regulations and in compliance with this manual.

2.Before installing, please contact with local authorized maintenance center. If the unit is not installed by the authorized service center, the malfunction may not be solved due to incovenient contact between the user and the service personnel.

3.When removing the unit to the other place, please firstly contact with the local authorized service center.

4.Warning: Before obtaining access to terminals, all supply circuits must be disconnected.

5.For appliances with type Y attachment, the instructions shall contain the substance of the following. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

6.The appliance must be positioned so that the plug is accessible.

7.The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.

8.The instructions shall state the substance of the following:

This appliance is not intended for use by persons(including children)with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

7.1.1 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

●strong heat sources, vapours, flammable gas or volatile liquids are emitted.

●high-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment.

●salt-laden air prevails (such as close to coastal areas).

●the air is contaminated with industrial vapours and oils.

●the air contains sulphures gas such as in hot spring zones.

●corrosion or poor air quality exists.

7.1.2 Installation Site of Indoor Unit

1.The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.

2.Select a site where the condensate can be easily drained out, and where it is easily connected to outdoor unit.

3.Select a place where it is out of reach of children.

4.Select a place where the wall is strong enough to withstand the full weight and vibration of the unit.

5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 250cm or more above the floor.

6.Select a place about 1m or more away from TV set or any other electric appliance.

7.Select a place where the filter can be easily taken out.

8.Make sure that the indoor unit is installed in accordance with installation dimension instructions.

9.Do not use the unit in the laundry or by swimming pool etc.

7.1.3 Installation Site of Outdoor Unit

1.Select a site where noise and outflow air emitted by the unit will not annoy neighbors.

2.S elect a site where there is sufficient ventilation.

3.Select a site where there is no obstruction blocking the inlet and outlet.

4.The site should be able to withstand the full weight and vibration.

5.Select a dry place, but do not expose the unit to direct sunlight or strong wind.

6.Make sure that the outdoor unit is installed in accordance with the installation instructions,and is convenient for maintenance and repair.

7.The height difference between indoor and outdoor units is within A m, and the length of the connecting tubing does not exceed B m.

Model	A	B
09K	10	15
12K	10	20

8.Select a place where it is out of reach of children.

9.Select a place where the unit does not have negative impact on pedestrians or on the city.

7.1.4 Safety Precautions for Electric Appliances

1.A dedicated power supply circuit should be used in accordance with local electrical safety regulations.

2.Don't drag the power cord with excessive force.

3.The unit should be reliably earthed and connected to an exclusive earth device by the professionals.

4.The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.

5.The minimum distance between the unit and combustive surface is 1.5m.

6.The appliance shall be installed in accordance with national wiring regulations.

7.An all-pole disconnection switch with a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Note:

●Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected. There should be reliable circuit in the diagram.

●Inadequate or incorrect electrical connections may cause electric shock or fire.

7.1.5 Earthing Requirements

1.Air conditioner is type I electric appliance. Please ensure that the unit is reliably earthed.

2.The yellow-green wire in air conditioner is the earthing wire which can not be used for other purposes. Improper earthing may cause electric shock.

3.The earth resistance should accord to the national criterion.

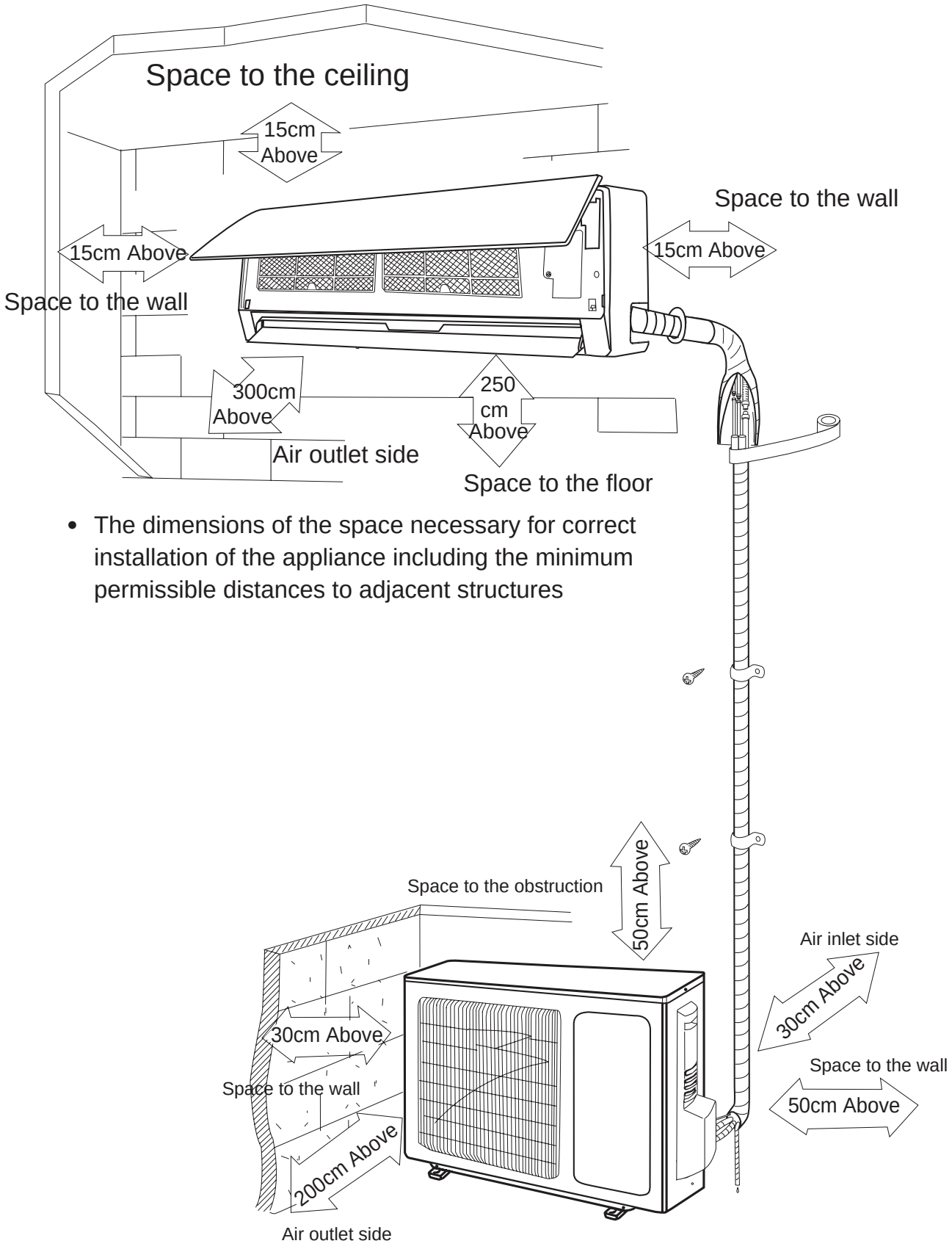
4.The power must have reliable earthing terminal. Please do not connect the earthing wire with the following:

① Water pipe ② Gas pipe ③ Contamination pipe

④ Other place that professional personnel consider is unreliable

5. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

7.2 Installation Drawing



- The dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures

7.3 Install Indoor Unit

7.3.1 Installation of Mounting Plate

1. Mounting plate should be installed horizontally. As the water tray's outlet for the indoor unit is two-way type, during installation, the indoor unit should slightly slant to water tray's outlet for smooth drainage of condensate.
2.Fix the mounting plate on the wall with screws.
3.Be sure that the mounting plate has been fixed firmly enough to withstand about 60 kg. Meanwhile, the weight should be evenly shared by each screw.

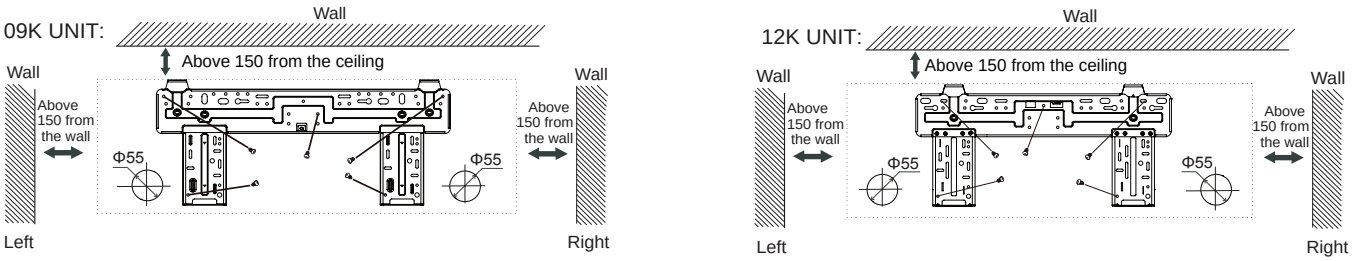
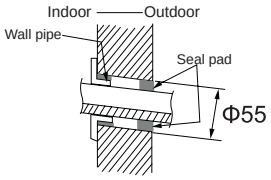


Fig. 1

Unit:mm

7.3.2 Drill Piping Hole

1.Slant the piping hole (Φ55) on the wall slightly downward to the outdoor side.
2.Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



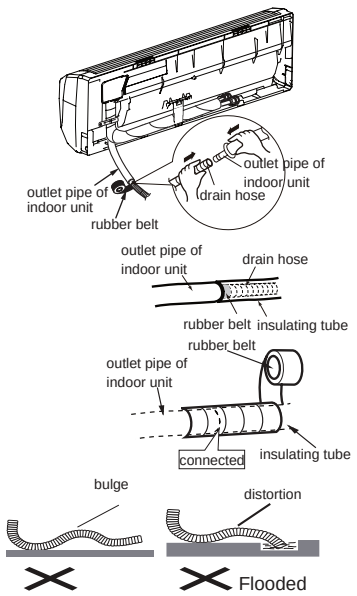
7.3.3 Installation of Drain Hose

1.Connect the drain hose to the outlet pipe of the indoor unit. Bind the joint with rubber belt.

2.Put the drain hose into insulating tube.

3.Wrap the insulating tube with wide rubber belt to prevent the shift of insulating tube. Slant the drain hose downward slightly for smooth drainage of condensate.

Note: The insulating tube should be connected reliably with the sleeve outside the outlet pipe. The drain hose should be slanted downward slightly, without distortion, bulge or fluctuation. Do not put the outlet in the water.



7.3.4 Connecting Indoor and Outdoor Electric Wires

1.Open the front panel.
2.Remove the wiring cover .Connect and fix the power connection cord to the terminal board. As shown in Fig 2.
3.Make the power connection cord pass through the hole at the back of indoor unit.
4.Reinstall the cord anchorage and wiring cover.
5.Reinstall the front panel.

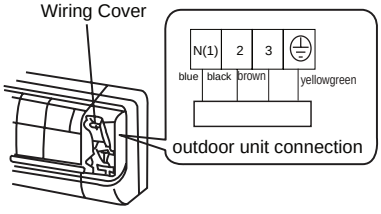


Fig.2

NOTE:

All wires between indoor and outdoor units must be connected by the qualified electric contractor.

● Electric wires must be connected correctly. Improper connection may cause malfunction.

● Tighten the terminal screws securely.

● After tightening the screws, pull the wire slightly to confirm whether it's firm or not.

● Make sure that the electric connections are earthed properly to prevent electric shock.

● Make sure that all wiring connections are secure and the cover plates are reinstalled properly. Poor installation may cause fire or electric shock.

7.3.5 Installation of Indoor Unit

●The piping can be output from right, right rear, left or left rear.

1.When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis when necessary(As shown in Fig.3)

(1) Cut off tailing 1 when routing the wiring only;

(2) Cut off tailing 1 and tailing 2 when routing both the wiring and piping.

2.Take out the piping from body case; wrap the piping, power cords, drain hose with the tape and then make them pass through the piping hole. (As shown in Fig.4)

3.Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough. (As shown in Fig.5)

4.The installation site should be 250cm or more above the floor.

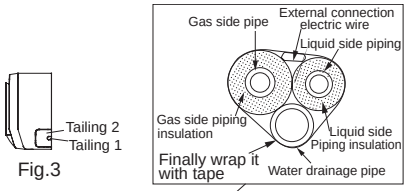


Fig.3

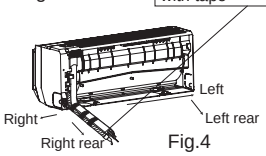


Fig.4

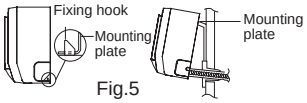


Fig.5

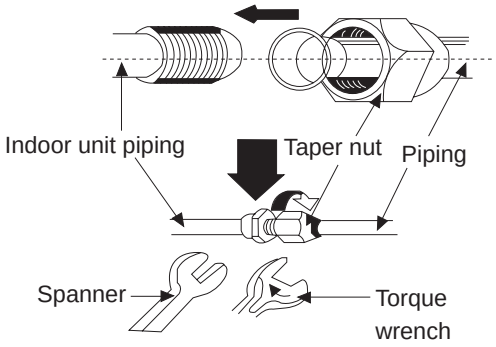
7.3.6 Installation of Connection Pipe

1.Align the center of the pipe flare with the related valve.

2.Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench by referring to the following:

Tube diameter	Tightening torque,approximate(N·m)
Φ6.35(1/4”)	14～18N·m(140-180kgf.cm)
Φ9.52(3/8”)	34～42N·m(340-420kgf.cm)
Φ12.7(1/2”)	49～61N·m(490-610kgf.cm)
Φ15.88(5/8”)	68～82N·m(680-820kgf.cm)

NOTE: Connect the connection pipe to indoor unit at first and then to outdoor unit. Handle piping bending with care. Do not damage the connection pipe. Ensure that the joint nut is tightened firmly, otherwise, it may cause leakage.



7.4 Install Outdoor Unit

7.4.1 Electric Wiring

1.Remove the handle on the right side plate of outdoor unit.

2.Take off wire cord anchorage. Connect and fix the power connection cord to the terminal board. Wiring should fit that of indoor unit.

3.Fix the power connection cord with wire clamps and then connect the corresponding connector.

4.Confirm if the wire has been fixed properly.

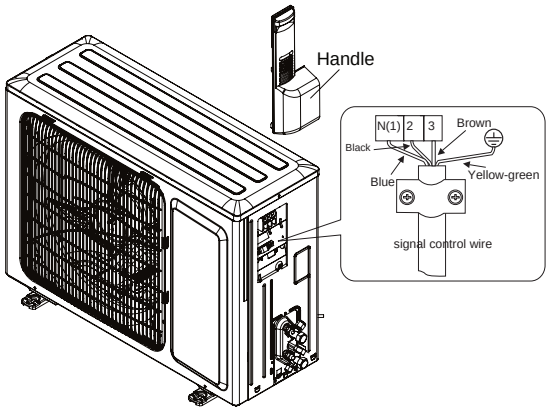
5.Reinstall the handle.

NOTE:

●Incorrect wiring may cause malfunction of spare part.

●After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire.

Schematic diagram being reference only, please refer to real product for authentic information.



7.4.2 Air Purging and Leakage Test

1.Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
Connect joint of charging hose to vacuum pump.
3. Fully open the handle of Lo manifold valve.
4. Open the vacuum pump for vacuumization. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside (If noise of vacuum pump has been changed, the reading of multimeter is 0). Then tighten the nut.
5.Keep vacuuming for more than 15mins and make sure the reading of multi-meter is $-1.0X10^5$ pa(-76cmHg).
6. Fully open high/low pressure valves.
7. Remove charging hose from charging end of low pressure valve.
8. Tighten lid of low pressure valve. (As shown in Fig.6)

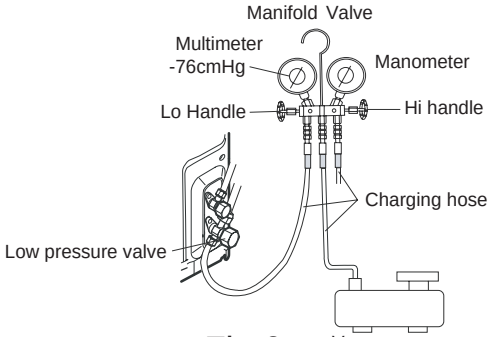
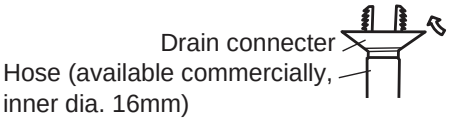


Fig.6

7.4.3 Outdoor Condensate Drainage (only for heat pump unit)

During heating operation, the condensate and defrosting water should be drained out reliably through the drain hose.
Install the outdoor drain connector in a Φ25 hole on the base plate and attach the drain hose to the connector so that the waste water formed in the outdoor unit can be drained out .The hole diameter 25 must be plugged.
Whether to plug other holes will be determined by the dealers according to actual conditions.



7.5 Check after Installation and Operation Test

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has it been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating) capacity
Is heat insulation sufficient?	It may cause condensation and dripping.
Is water drainage satisfactory?	It may cause condensation and dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunctionor damage the product.
Is the electric wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.
Has the unit been connected to a secure earth connection?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunctionor damage the part.
Are the inlet and outlet openings blocked?	It may cause insufficient cooling(heating) capacity.
Is the length of connection pipes and refrigerant capacity been recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1.Before Operation Test
(1)Do not switch on power before installation is finished completely.
(2)Electric wiring must be connected correctly and securely.
(3)Cut-off valves of the connection pipes should be opened.
(4)All the impurities such as scraps and thrums must be cleared from the unit.
2.Operation Test Method
(1)Switch on power and press "ON/OFF"button on the remote controller to start operation.
(2)Press MODE button to select the COOL, HEAT (Not available for cooling only unit), FAN to check whether the operation is normal or not.

7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

1.Lift up the front panel from its two ends, as shown by the arrow direction, and then remove the air filter. (As shown in fig. a)

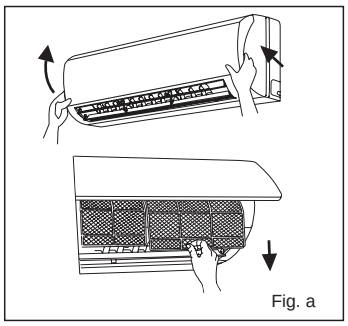


Fig. a

2.Attach the healthy filter onto the air filter. (As shown in fig. b)

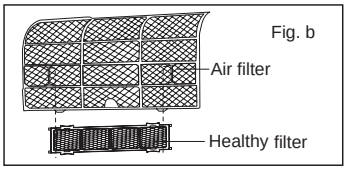


Fig. b

3.Install the air filter properly along the arrow direction in Fig.c, and then close the panel .

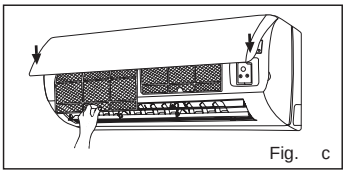


Fig. c

7.6.2 Cleaning and Maintenance

Remove the healthy filter and reinstall it after cleaning according to the installation instruction. Don't use brush or hard things to clean the filter. After cleaning, be sure to dry it in the shade.

7.6.3 Service Life

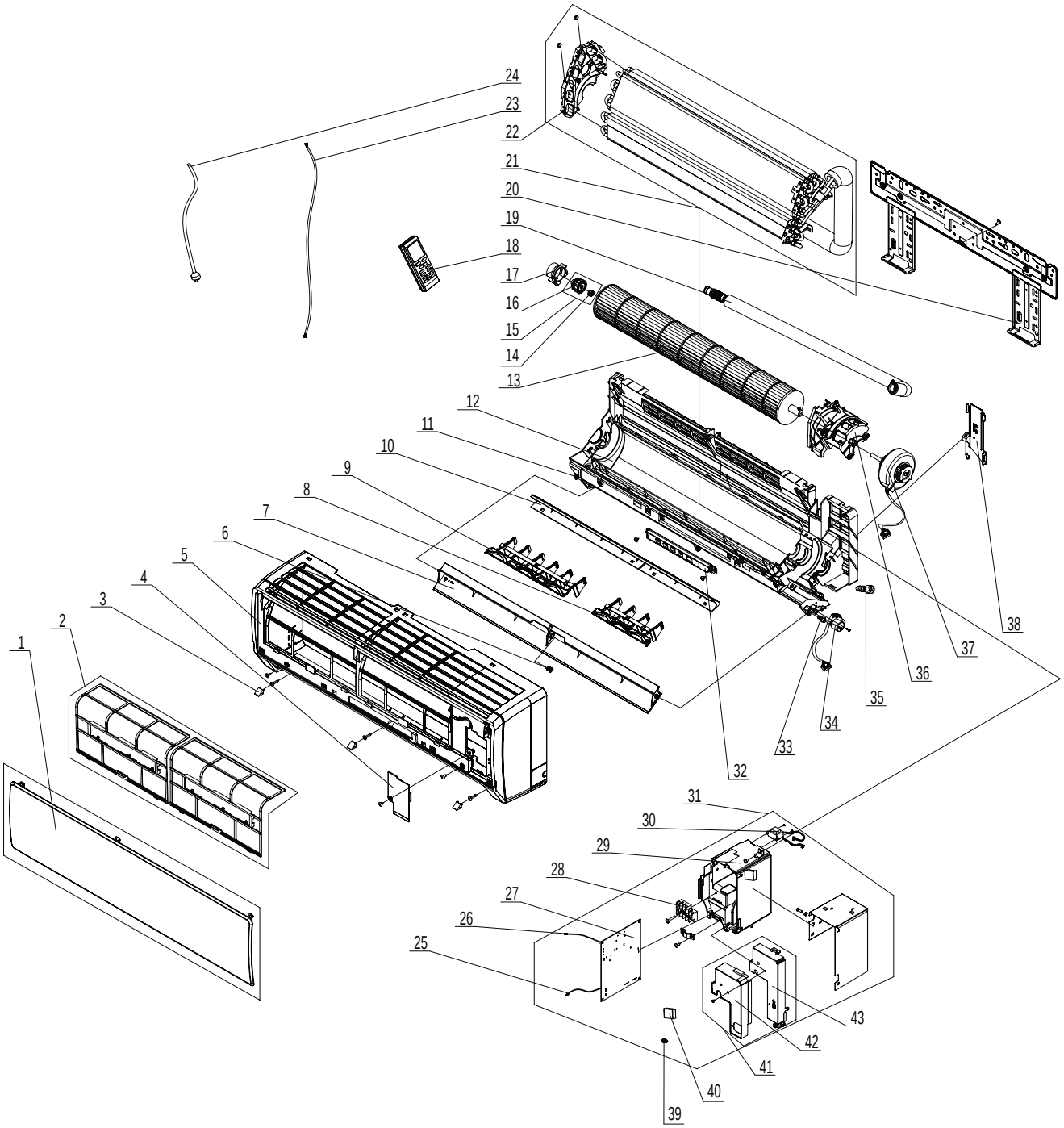
The general serive life for the healthy filter is about one year under normal condition. As for silver ion filter, it is invalid when its surface becomes black (green).

●This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein is different from the actual product, please refer to the atual product. The quantity of healthy filters is based on the actual delivery.

8. Exploded Views and Parts List

8.1 Indoor Unit

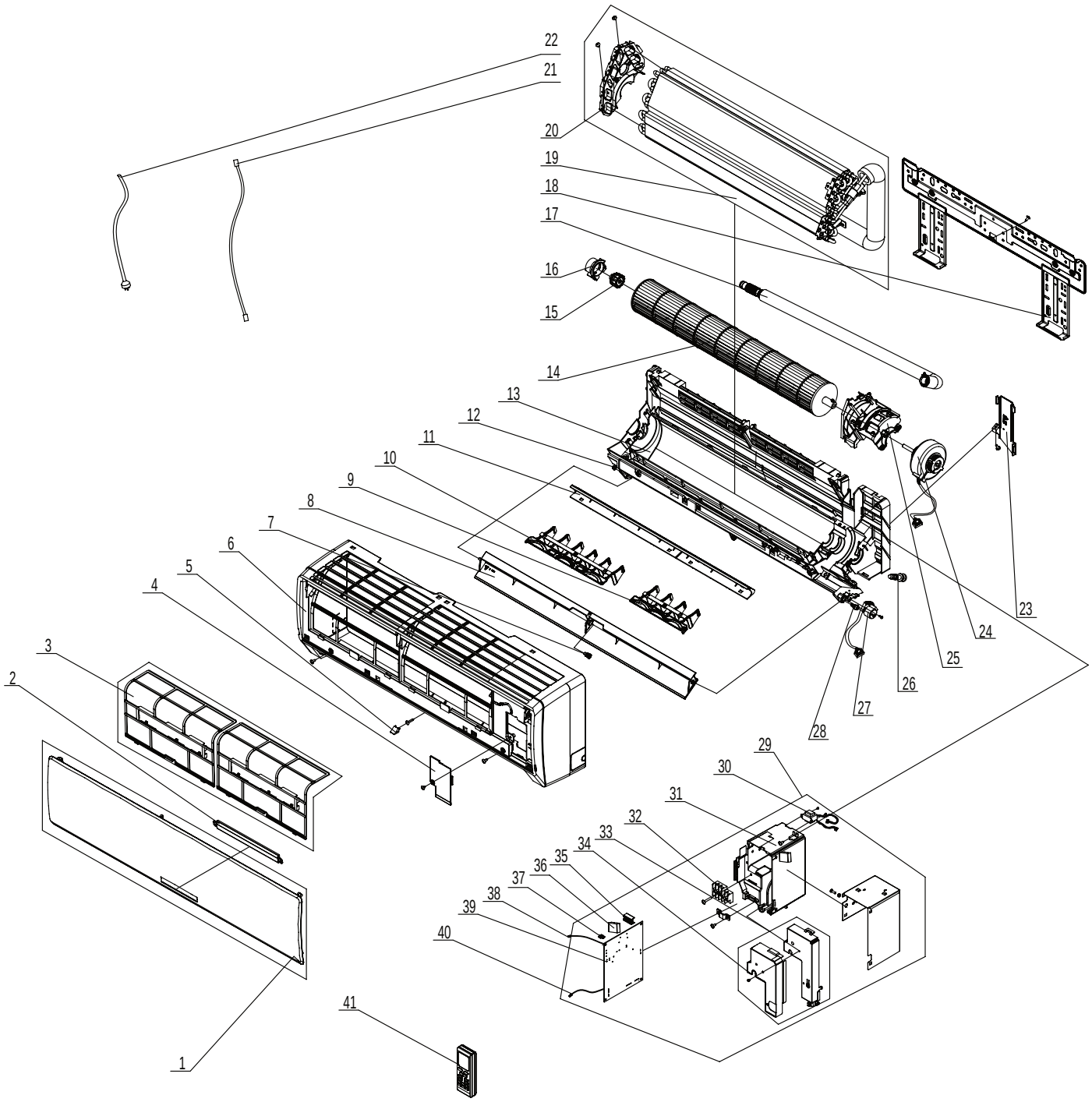
C1VI - 09



NO.	Description	Part Code	Qty
		C1VI - 09	
	Product Code	CB171N0190	
1	Front Panel	20012121S	1
2	Filter Sub Assy	11122081	2
3	Screw Cover	24252016	3
4	Electric Box Cover2	20122075	1
5	Front Case	20012120	1
6	Axile Bush	10542008	1
7	Guide Louver	10512111	1
8	Air Louver 1	10512113	1
9	Air Louver 2	10512114	1
10	Helicoid tongue	26112162	1
11	Axile Bush	10542704	1
12	Rear Case assy	2220210101	1
13	Cross Flow Fan	10352018	1
14	Fan Bearing	76512210	1
15	O Gasket sub assy of Bearing	76512051	1
16	O Gasket of Cross Fan Bearing	76512203	1
17	Ring of Bearing	26152022	1
18	Remote Controller	01252015	1
19	Drainage hose	0523001406	1
20	Wall Mounting Frame	01252015	1
21	Evaporator Assy	0100255203	1
22	Evaporator Support	24212090	1
23	Connecting Cable	400205236	1
24	Power Cord	400204643	1
25	Tube Sensor	390000591	1
26	Ambient Temperature Sensor	390000451	1
27	Main Board	30138476	1
28	Terminal Board	42011233	1
29	Electric Box	2011208201	1
30	Transformer	43110283	1
31	Electric Box Assy	2020206205	1
32	Display Board	30565007	1
33	Crank	10582070	1
34	Step Motor	1521210801	1
35	Rubber Plug (Water Tray)	76712012	1
36	Motor Press Plate	26112160	1
37	Fan Motor	15012115	1
38	Pipe Clamp	26112164	1
39	Jumper	4202300102	1
40	Capacitor CBB61	33010002	1
41	Shield cover of Electric Box sub assy	01592073	1
42	Shield cover of Electric Box	01412036	1
43	Electric Box Cover1	20122103	1

The data above are subject to change without notice.

C1VI - 12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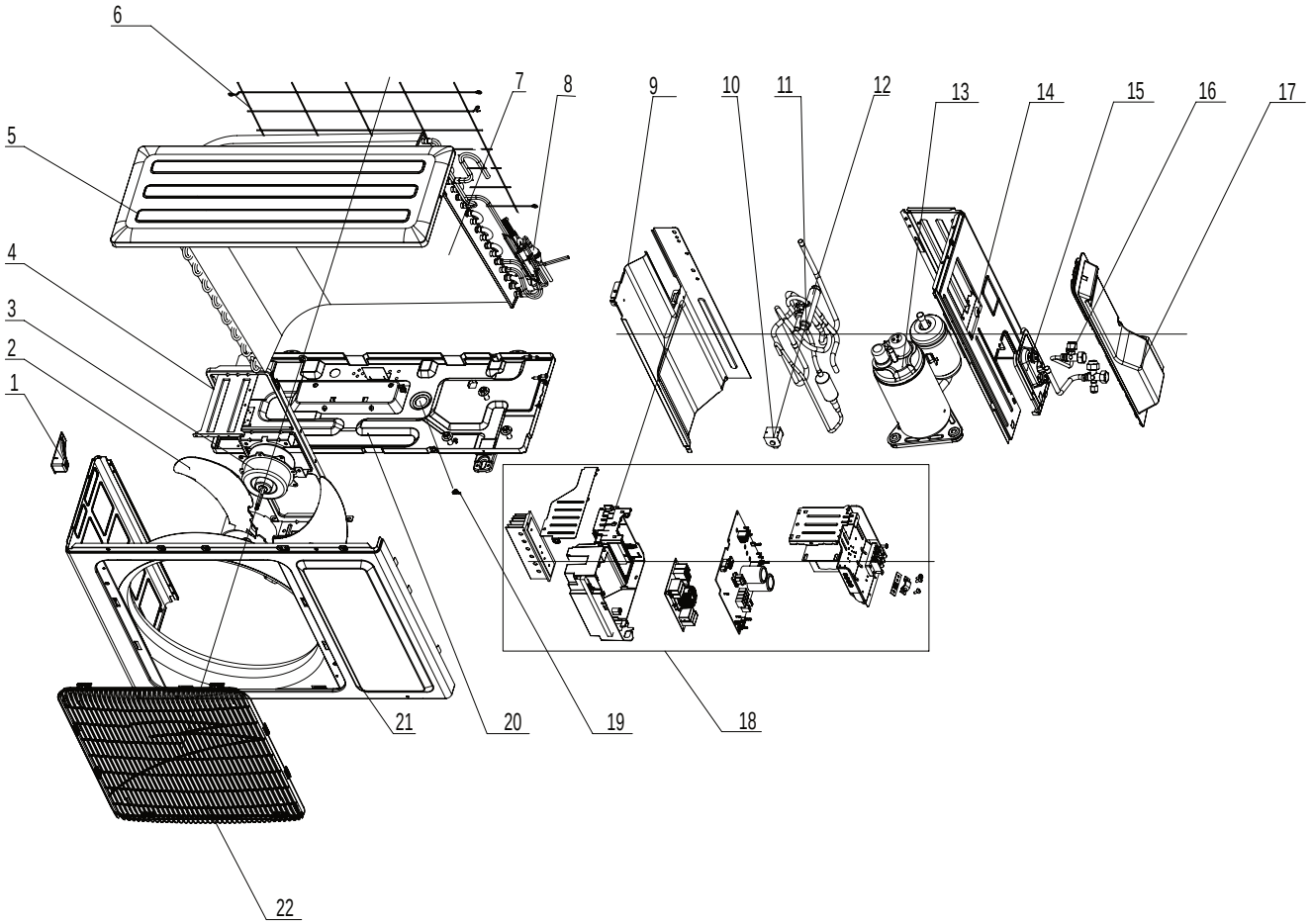
NO.	Description	Part Code	Qty
		C1VI - 12	
	Product Code	CB171N0210	
1	Front Panel	20012122S	1
2	Display Board	30565007	1
3	Filter Sub Assy	1112220401	2
4	Electric Box Cover2	20122075	1
5	Screw Cover	24252016	1
6	Front Case Sub Assy	20012139	1
7	Axile Bush	10542008	1
8	Guide Louver	10512157	1
9	Air Louver 1	10512156	1
10	Air Louver 2	10512155	1
11	Helicoid tongue	26112163	1
12	Left Axile Bush	10512037	1
13	Rear Case assy	2220210301	1
14	Cross Flow Fan	10352017	1
15	O Gasket sub assy of Bearing	76512051	1
16	Ring of Bearing	26152022	1
17	Drainage hose	0523001401	1
18	Wall Mounting Frame	01252021	1
19	Evaporator Assy	01002321	1
20	Evaporator Support	24212091	1
21	Connecting Cable	400205236	1
22	Power Cord	400204643	1
23	Pipe Clamp	26112164	1
24	Fan Motor	150120874	1
25	Motor Press Plate	26112161	1
26	Rubber Plug (Water Tray)	76712012	1
27	Step Motor	1521210801	1
28	Crank	10582070	1
29	Electric Box Assy	2020212810	1
30	Transformer	43110283	1
31	Electric Box	20112082	1
32	Terminal Board	42011233	1
33	Shield cover of Electric Box sub assy	01592073	1
34	Electric Box Cover1	20122103	1
35	Radiator	49010252	1
36	Capacitor CBB61	33010002	1
37	Jumper	4202300104	1
38	Ambient Temperature Sensor	390000451	1
39	Main Board	30138476	1
40	Tube Sensor	390000591	1
41	Remote Controller	30510041	1

The data above are subject to change without notice.

8.2 Outdoor Unit

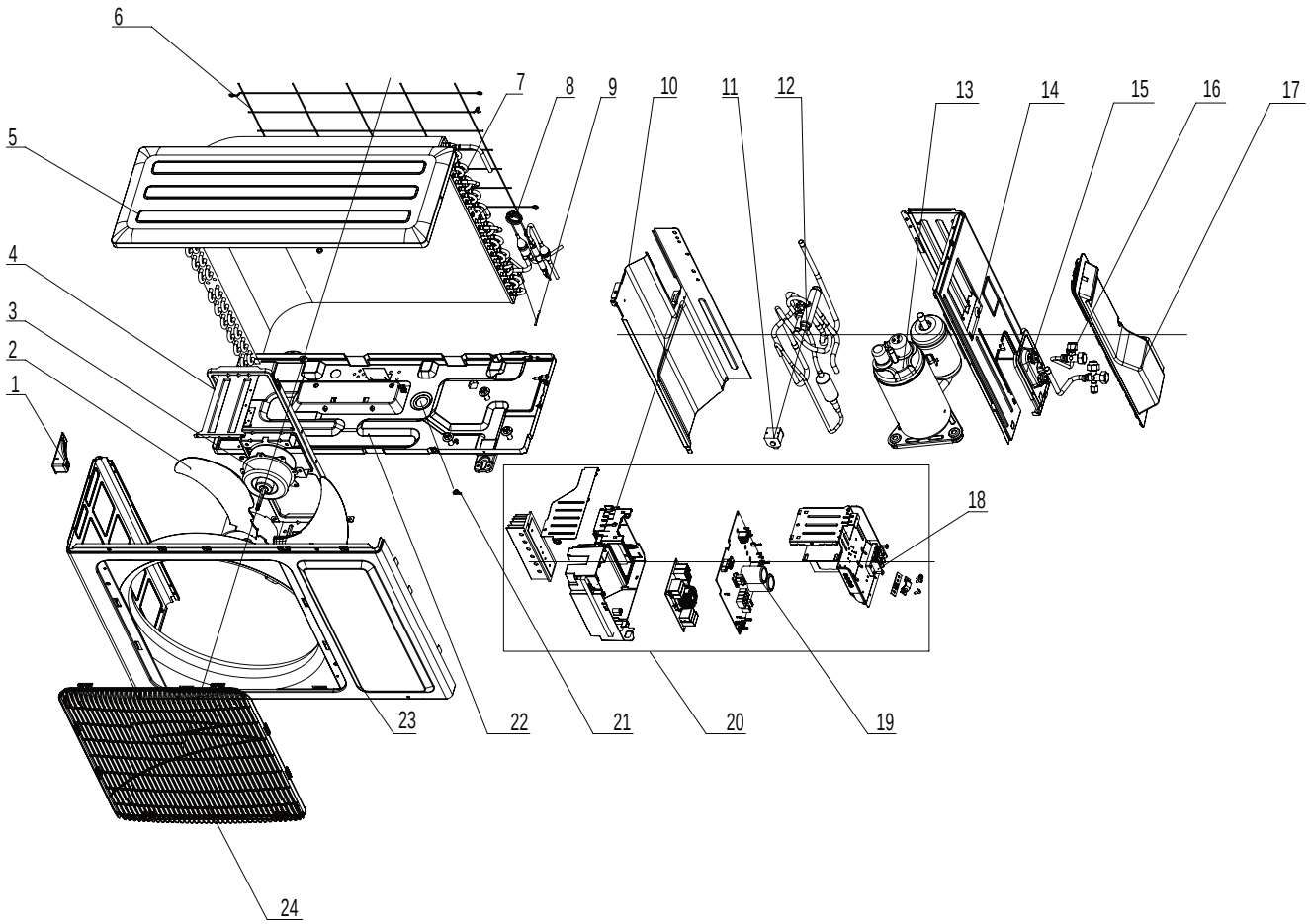
C1VO - 09



NO.	Description	Part Code	Qty
		C1VO - 09	
	Product Code	CB171W0190	
1	Small Handle	26233100	1
2	Axial Flow Fan	10333004	1
3	Fan Motor	15013076	1
4	Motor Support	01703058	1
5	Top Cover Sub-Assy	01253454	1
6	Rear Grill	01473042	1
7	Condenser Assy	01113788	1
8	Capillary Sub-Assy	03063317	1
9	Clapboard Sub-Assy	01233385	1
10	Magnet Coil	4300040050	1
11	4-way Valve Assy	03123448	1
12	4-way Valve	0430004022	1
13	Compressor and fittings	00103209_G	1
14	Right Side Plate Sub-Assy	0130317801	1
15	Valve Support	0170308901P	1
16	Valve	07100005	1
17	Big Handle	26233433	1
18	Electric Box Sub-Assy	0260338104	1
19	Drainage Connecter	06123401	1
20	Chassis Sub-assy	01203846P	1
21	Front Panel	01533027P	1
22	Front grill	22413433	1

The data above are subject to change without notice.

C1VO - 12



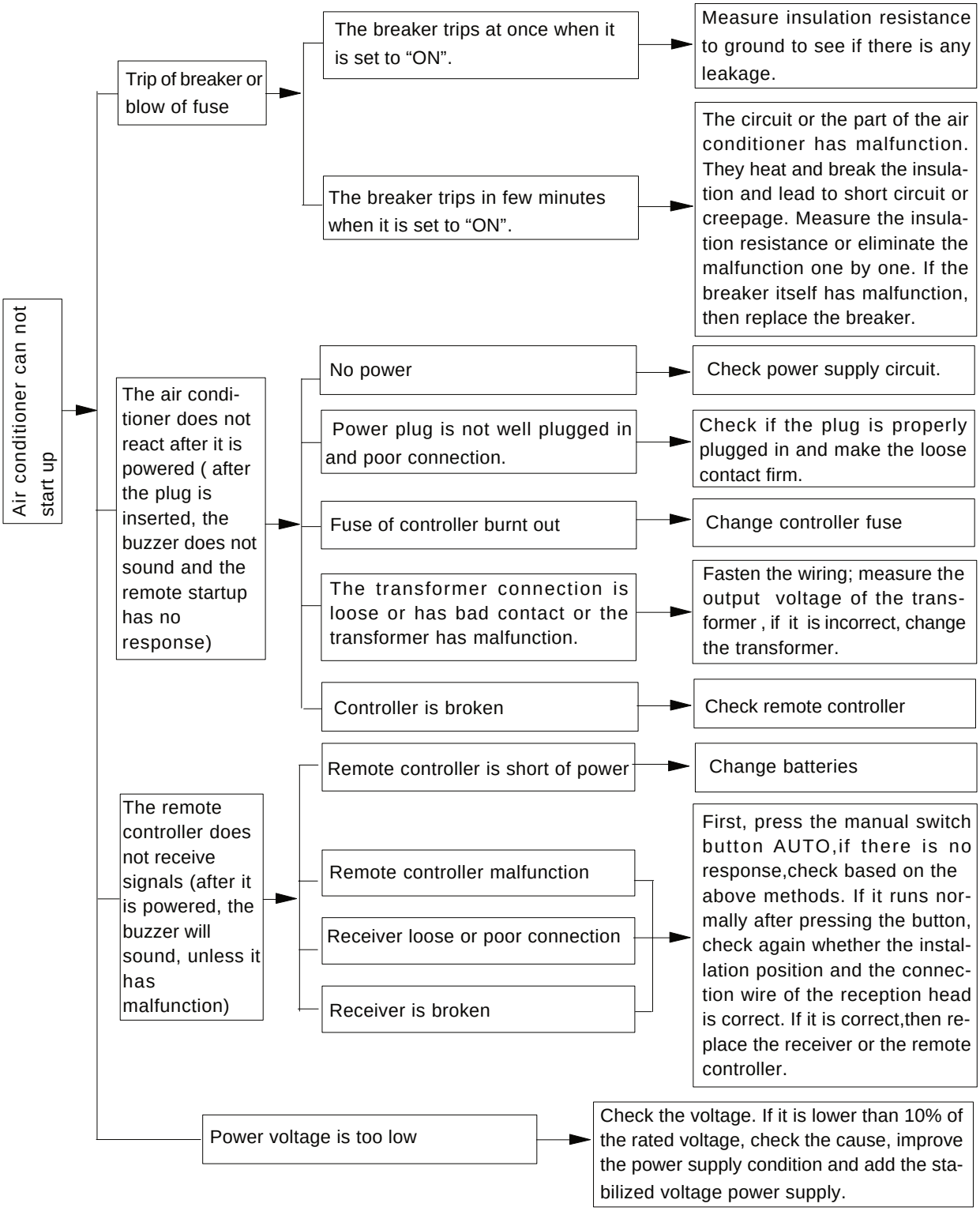
NO.	Description	Part Code	Qty
		C1V0 - 12	
	Product Code	CB171W0210	
1	Small Handle	26233100	1
2	Axial Flow Fan	10333004	1
3	Fan Motor	15013076	1
4	Motor Support	01703058	1
5	Top Cover Sub-Assy	01253454	1
6	Rear Grill	01473042	1
7	Condenser Assy	01113811	1
8	Capillary Sub-Assy	03063338	1
9	Temperature Sensor	3900030801	1
10	Clapboard Sub-Assy	01233385	1
11	Magnet Coil	4300040050	1
12	4-way Valve Assy	03123385	1
13	Compressor and fittings	00103209_G	1
14	Right Side Plate Sub-Assy	0130317801	1
15	Valve Support	0170308901P	1
16	Valve	07100005	1
17	Big Handle	26233433	1
18	Terminal Board	42011113	1
19	Capacitor CBB61	33010034	1
20	Electric Box Sub-Assy	0260338007	1
21	Drainage Connecter	06123401	1
22	Chassis Sub-assy	01203954P	1
23	Front Panel	01533027P	1
24	Front grill	22413433	1

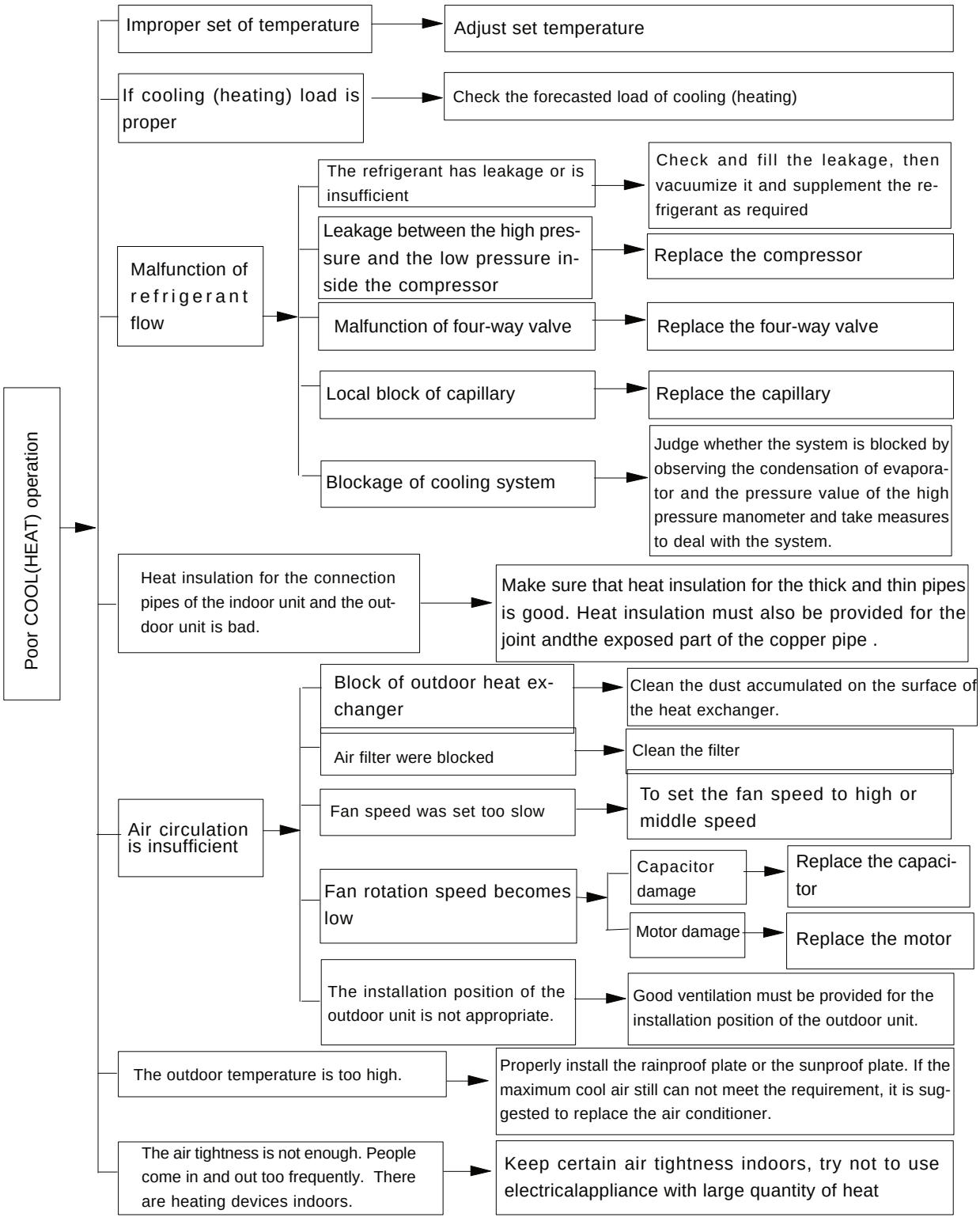
The data above are subject to change without notice.

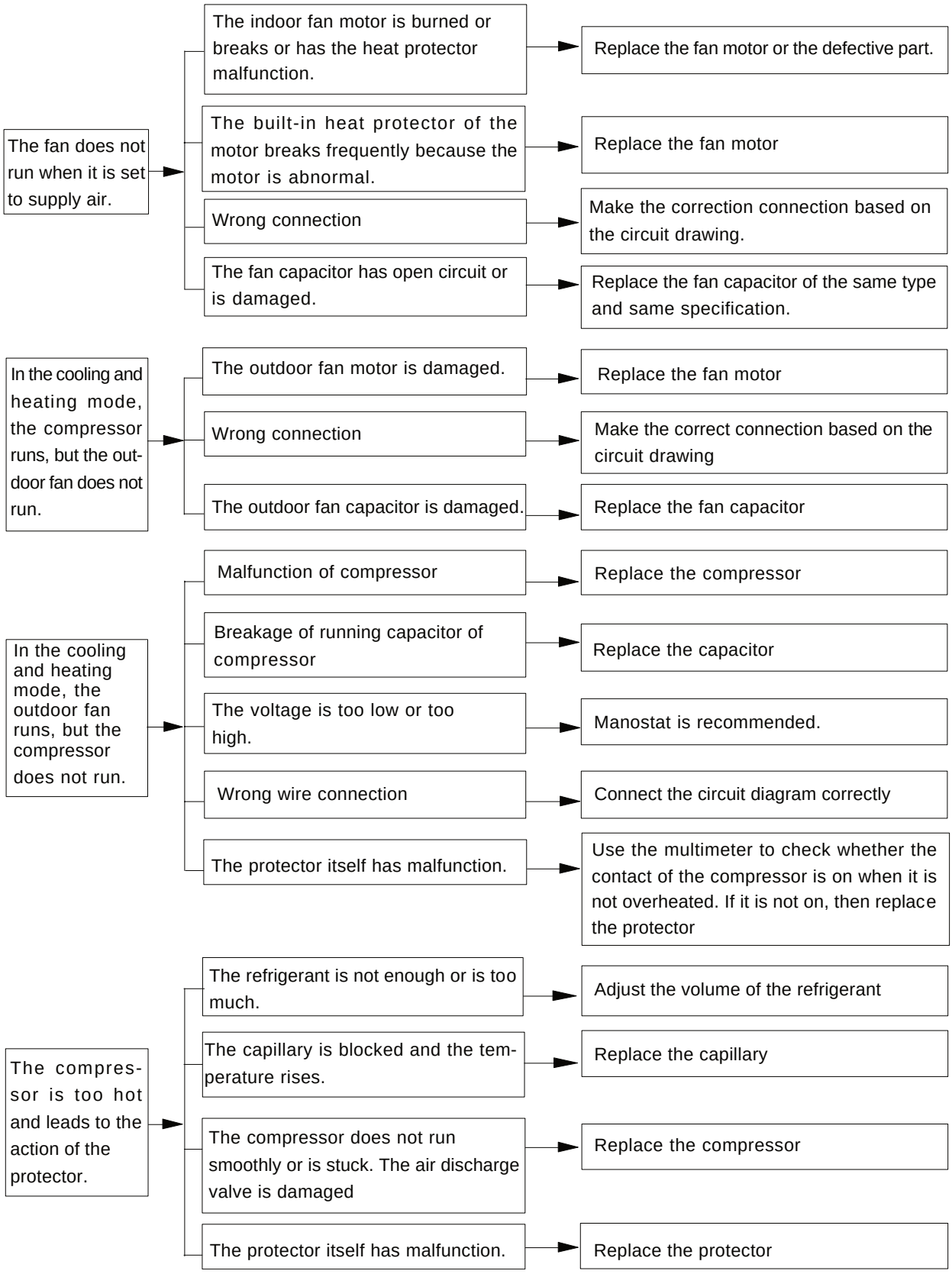
9. Troubleshooting

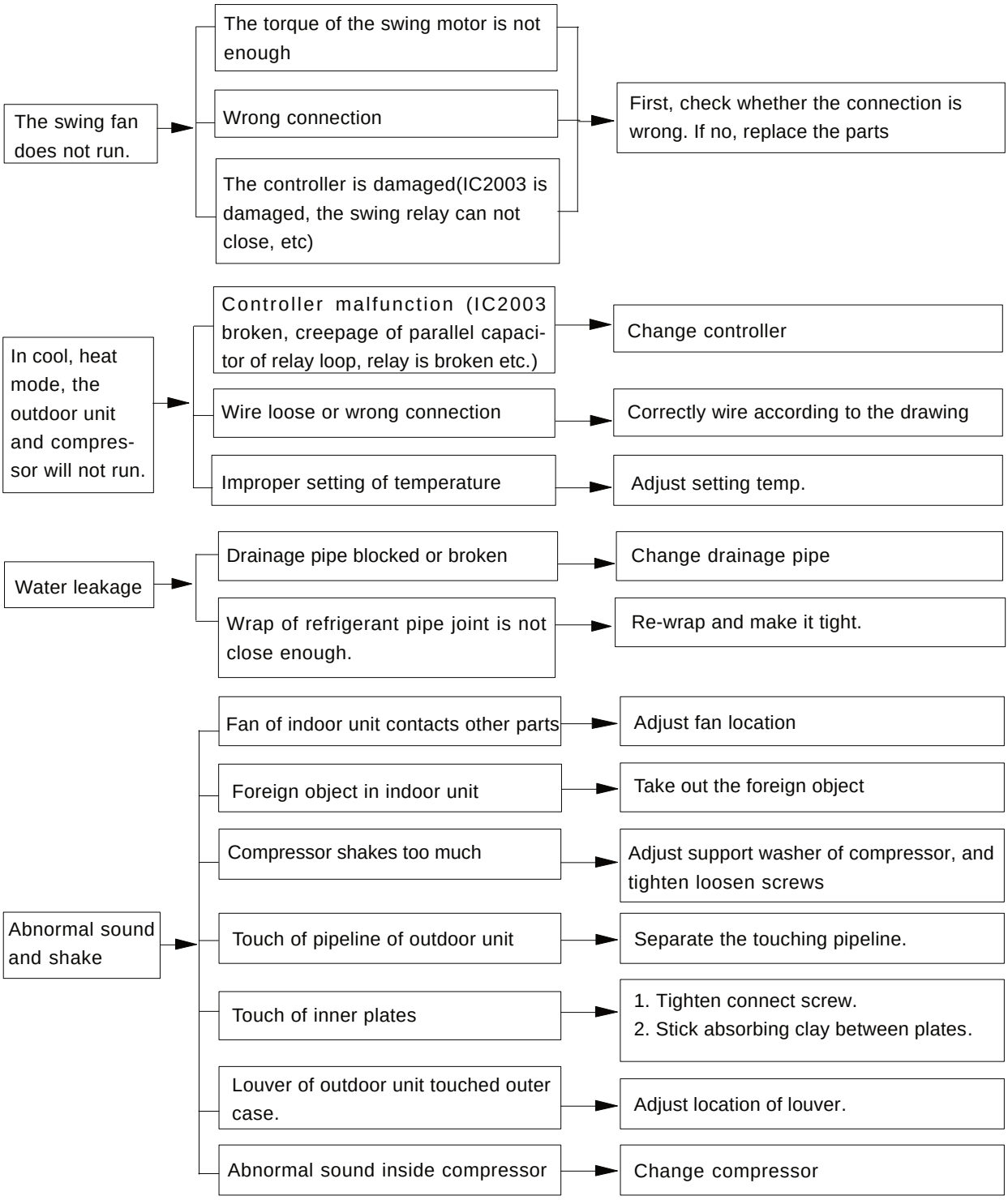
9.1 Malfunction Analysis

Note: When replacing the controller, make sure insert the wire jumper into the new controller, otherwise the unit will display C5




Poor COOL(HEAT) operation
Improper set of temperature
Adjust set temperature
If cooling (heating) load is proper
Check the forecasted load of cooling (heating)
Malfunction of refrigerant flow
The refrigerant has leakage or is insufficient
Check and fill the leakage, then vacuumize it and supplement the refrigerant as required
Leakage between the high pressure and the low pressure inside the compressor
Replace the compressor
Malfunction of four-way valve
Replace the four-way valve
Local block of capillary
Replace the capillary
Blockage of cooling system
Judge whether the system is blocked by observing the condensation of evaporator and the pressure value of the high pressure manometer and take measures to deal with the system.
Heat insulation for the connection pipes of the indoor unit and the outdoor unit is bad.
Make sure that heat insulation for the thick and thin pipes is good. Heat insulation must also be provided for the joint andthe exposed part of the copper pipe .
Air circulation is insufficient
Block of outdoor heat exchanger
Clean the dust accumulated on the surface of the heat exchanger.
Air filter were blocked
Clean the filter
Fan speed was set too slow
To set the fan speed to high or middle speed
Fan rotation speed becomes low
Capacitor damage
Replace the capacitor
Motor damage
Replace the motor
The installation position of the outdoor unit is not appropriate.
Good ventilation must be provided for the installation position of the outdoor unit.
The outdoor temperature is too high.
Properly install the rainproof plate or the sunproof plate. If the maximum cool air still can not meet the requirement, it is suggested to replace the air conditioner.
The air tightness is not enough. People come in and out too frequently. There are heating devices indoors.
Keep certain air tightness indoors, try not to use electricalappliance with large quantity of heat


The fan does not run when it is set to supply air.
The indoor fan motor is burned or breaks or has the heat protector malfunction.
Replace the fan motor or the defective part.
The built-in heat protector of the motor breaks frequently because the motor is abnormal.
Replace the fan motor
Wrong connection
Make the correction connection based on the circuit drawing.
The fan capacitor has open circuit or is damaged.
Replace the fan capacitor of the same type and same specification.
In the cooling and heating mode, the compressor runs, but the out-door fan does not run.
The outdoor fan motor is damaged.
Replace the fan motor
Wrong connection
Make the correct connection based on the circuit drawing
The outdoor fan capacitor is damaged.
Replace the fan capacitor
In the cooling and heating mode, the outdoor fan runs, but the compressor does not run.
Malfunction of compressor
Replace the compressor
Breakage of running capacitor of compressor
Replace the capacitor
The voltage is too low or too high.
Manostat is recommended.
Wrong wire connection
Connect the circuit diagram correctly
The protector itself has malfunction.
Use the multimeter to check whether the contact of the compressor is on when it is not overheated. If it is not on, then replace the protector
The compres-sor is too hot and leads to the action of the protector.
The refrigerant is not enough or is too much.
Adjust the volume of the refrigerant
The capillary is blocked and the tem-perature rises.
Replace the capillary
The compressor does not run smoothly or is stuck. The air discharge valve is damaged
Replace the compressor
The protector itself has malfunction.
Replace the protector

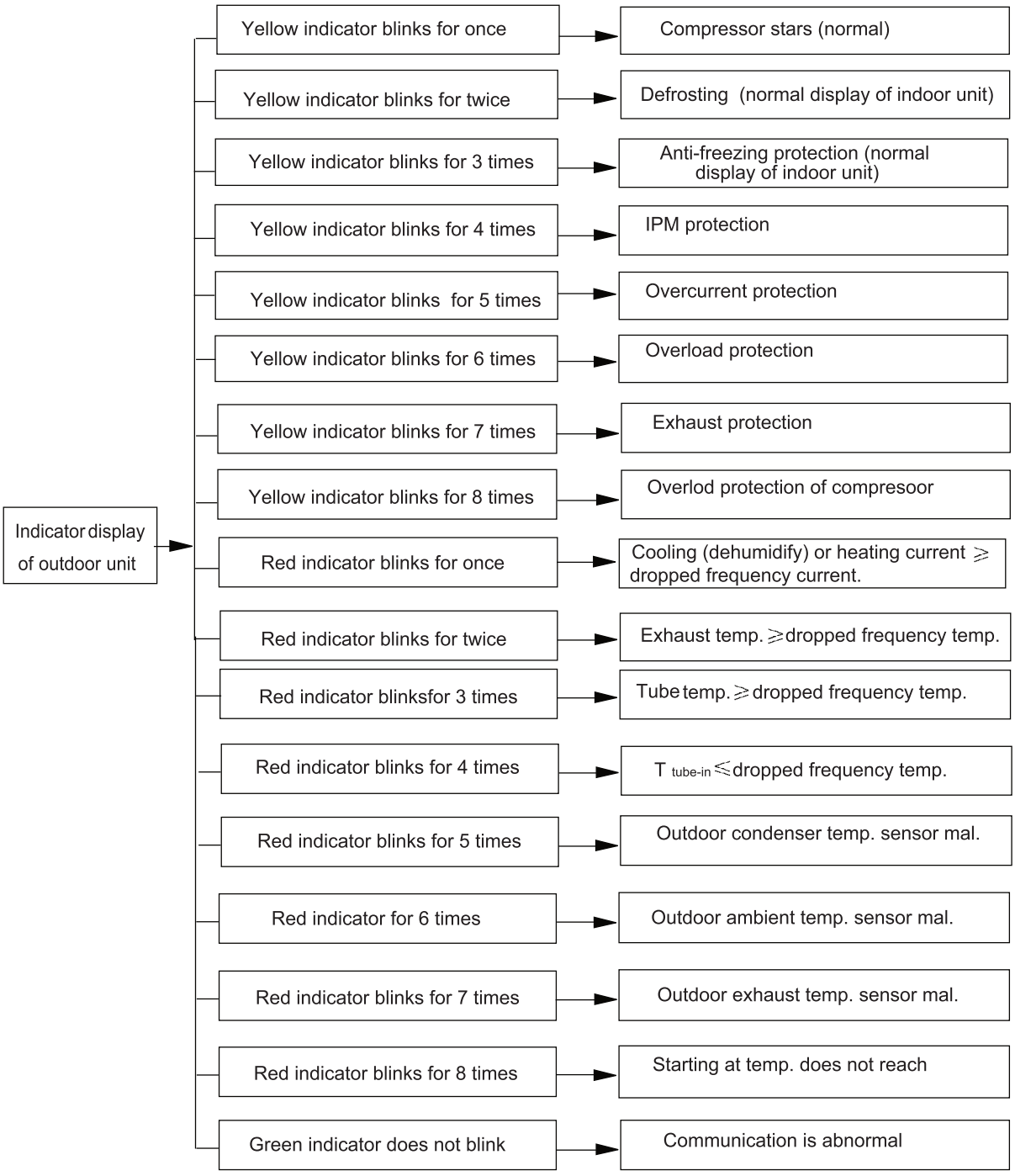

The swing fan does not run.
The torque of the swing motor is not enough
Wrong connection
The controller is damaged(IC2003 is damaged, the swing relay can not close, etc)
First, check whether the connection is wrong. If no, replace the parts
In cool, heat mode, the outdoor unit and compressor will not run.
Controller malfunction (IC2003 broken, creepage of parallel capacitor of relay loop, relay is broken etc.)
Change controller
Wire loose or wrong connection
Correctly wire according to the drawing
Improper setting of temperature
Adjust setting temp.
Water leakage
Drainage pipe blocked or broken
Change drainage pipe
Wrap of refrigerant pipe joint is not close enough.
Re-wrap and make it tight.
Abnormal sound and shake
Fan of indoor unit contacts other parts
Adjust fan location
Foreign object in indoor unit
Take out the foreign object
Compressor shakes too much
Adjust support washer of compressor, and tighten loosen screws
Touch of pipeline of outdoor unit
Separate the touching pipeline.
Touch of inner plates
1. Tighten connect screw.
2. Stick absorbing clay between plates.
Louver of outdoor unit touched outer case.
Adjust location of louver.
Abnormal sound inside compressor
Change compressor

9.2 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

Nane of malfunction	Display of indoor unit	state of the lamps of outdoor unit PCB			Reasons
	ERROR CODE	GREEN-LED2	RED-LED3	YELLOW-LED4	
Stop for anti-freezing protection of indoor-unit	E2			blink-3times	refrigerant leakage、indoor unit air flow blocked up、filter duty
Stop for exhaust protection	E4			blink-7 times	less refrigerant、capillary blocked up、ambient temperature is abominable
Overcurrent protection	E5			blink-5 times	low voltage、ambient temperature is abominable
Stop for communication malfunction	E6	do not blink			communication line failure、main PCB failure、interfere souce、connect line wrong
Stop for compressor overload protection	H3			blink-8 times	compressor shell over heat、lessrefrigerant、capillary blocked up
Overload protection	H4			blink-6 times	ambient temperature is abominable、heat exchanger blocked up
Stop for IPMmodule protetion	H5			blink-4 times	IPM moudel over heat、low voltage、silica gel
PG motor (indoor fan motor) does not operate	H6				PG motor control terminal does not contact well; Blade does not rotate fluently due to incorrect installation; motor or control panel is damaged
Indoor ambient temperature sensor malfunction	F1				terminal connect not reliable、temperature sensor maifunction
Indoor tube temperature sensor malfunction	F2				terminal connect not reliable、temperature sensor maifunction
Outdoor ambient temperature sensor malfunction	F3		blink-6 times		terminal connect not reliable、temperature sensor maifunction
Outdoor tube temperature sensor malfunction	F4		blink-5 times		terminal connect not reliable、temperature sensor maifunction
Outdoor exhaust temperature sensor malfunction	F5		blink-7 times		terminal connect not reliable、temperature sensor maifunction
Jumper cap malfunction protection	C5				there's no jumper cap on the controller、jumper cap is not inserted properly and tightly、jumper cap is damaged、corresponding circuit on mainboard has malfunction
Indoor and outdoor units can't match with each other	LP			blink-16times	Indoor unit and outdoor units can't match with each other
PG motor(indoor fan) zero-cross detection circuit malfunction	U8				abnormal of zero-cross detection circuit of controller mainboard.
PFC overcurrent malfunction	HC			blink-14times	Overcurrent of PFC
High protection of power	L9			blink-9times	Complete unit's power is too high
High voltage protection	PH			blink-13times	DC side voltage is too high
low voltage protection	PL			blink-12times	DC side voltage is too low
Automatic defrosting	H1			blink-2 times	H1is not error code,it is noemal operation. Just heat pump has this fuction
REMARK:	1.Error codes only can be seen in the type which has the temperature display pcb.maybe some type has not this function,the lamps on the outdoor pcb are avaiable 2.Normally,the communication between indoor unit and outdoor unit is successful, the gree lam				

9.3 Malfunction Display

If malfunction occurs,corresponding code will display and the unit will resume normal until protection or malfunction disappears.



Analysis or processing of some of the malfunction display:

1. Compressor discharge protection

Possible causes: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser; the system has noncondensing gas (such as air, water etc.); blockage of capillary assy (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor; malfunction of protection relay; malfunction of discharge sensor; outdoor temperature too high.

Processing method: refer to the malfunction analysis in the above section.

2. Low voltage overcurrent protection

Possi ble cause: Sudden drop of supply voltage.

3. Communication malfunction

Processing method: Check if communication signal cable is connected reliably.

4. Sensor open or short circuit

Processing method: Check whether sensor is normal, connected with the corre sponding position on the controller and if damage of lead wire is found.

5. Compressor over load protection

Possible causes: insufficient or too much refrigrant; blockage of capillary and increase of suction temp.; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.

Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compress or is fine when it is not overheated, if not replace the protector.

6. System malfunction

i.e.overload protection.When tube temperature(Check the temperature of outdoor heat exchanger when cooling and check the temperatur e of indoor heat exchanger when heating) is too high, protectionwill beactivated.

Possi ble causes: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction.

please refer to the malfunction analysis in the previous section for handling method .

7. IPM module protection

Processing method:Once the module malfunction happens,if it persists for a long time and can not be selfcanceled, cut off the power and turn off the unit,and then re-energize the unit again after about 10 min.After repeating the procedure for sever times, if the malfunction still exists,replace the module.

9.4 How to Simply Check the Main Part

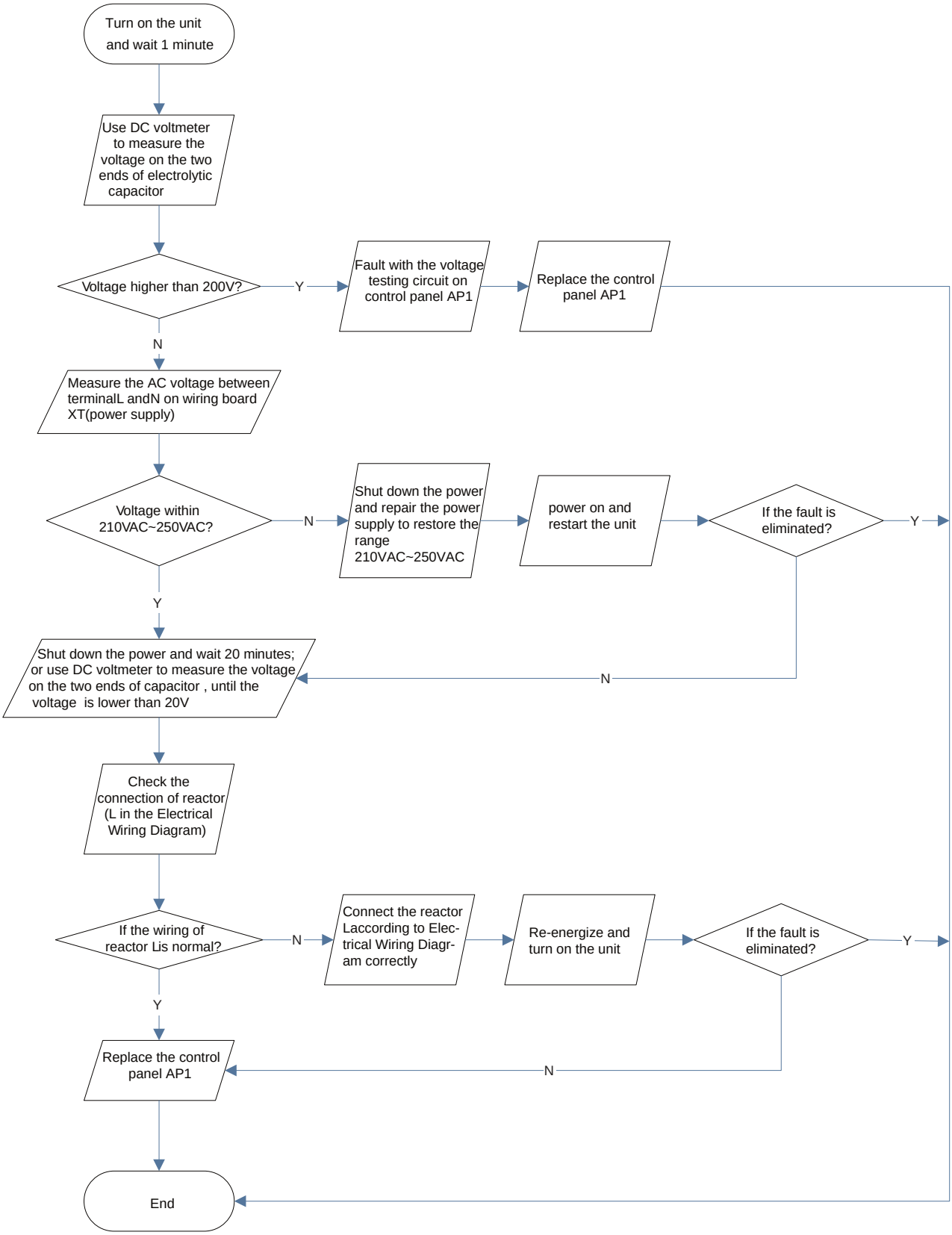
(1) Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

Main Check Points:

●Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.

●Is the reactor (L) correctly connected? Is the connection loose or fallen? Is the reactor (L) damaged?

Fault diagnosis process:



(2) IPM Protection, Out-of-step Fault, Compressor Phase Overcurrent (AP1 below refers to the outdoor control panel)

Main check points:

●Is the connection between control panel AP1 and compressor COMP secure? Loose? Is the connection in correct order?

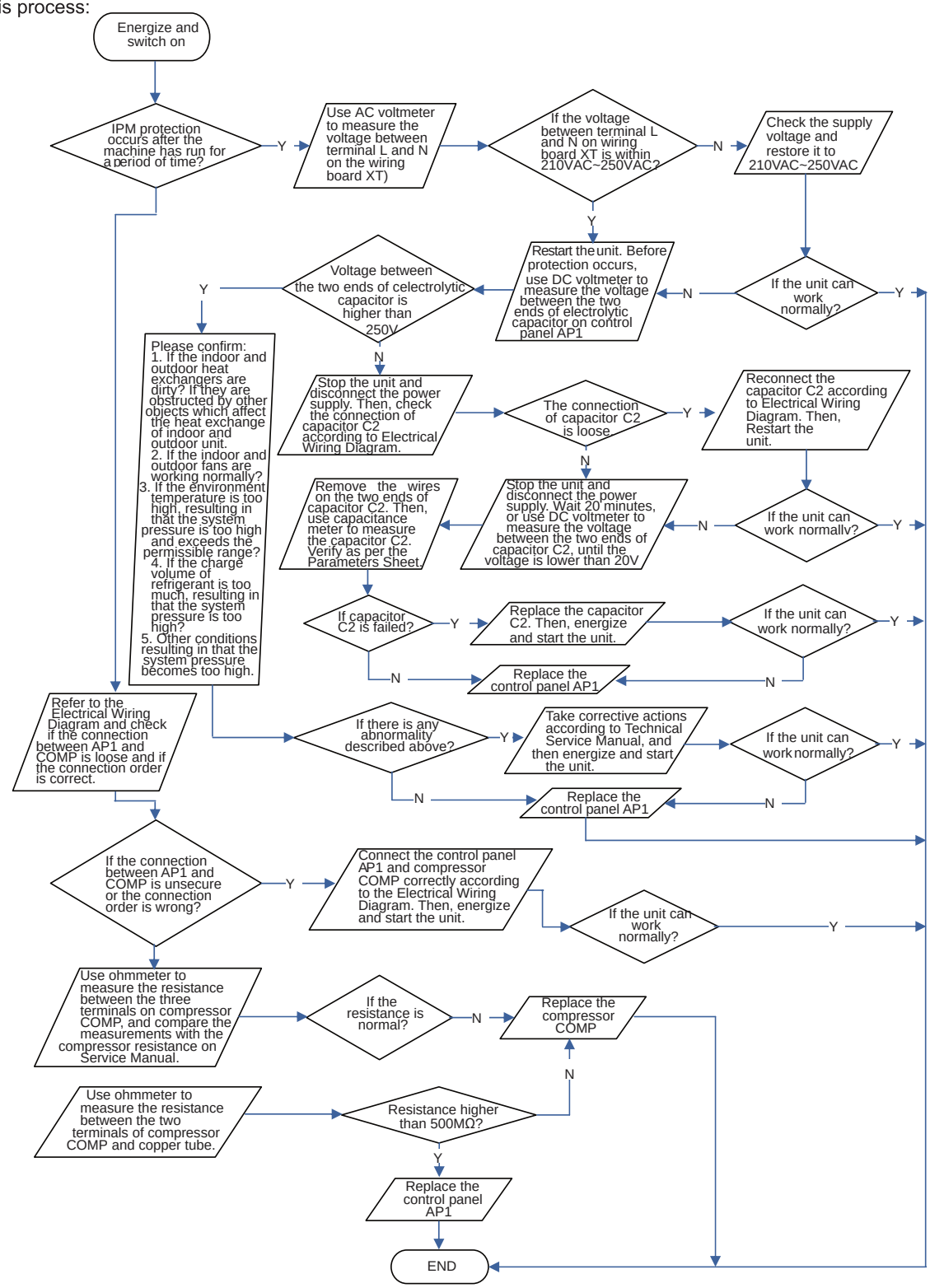
●Is the voltage input of the machine within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)

●Is the compressor coil resistance normal? Is the insulation of compressor coil against the copper tube in good condition?

●Is the working load of the machine too high? Is the radiation good?

I●s the charge volume of refrigerant correct?

Fault diagnosis process:



(3)High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit)

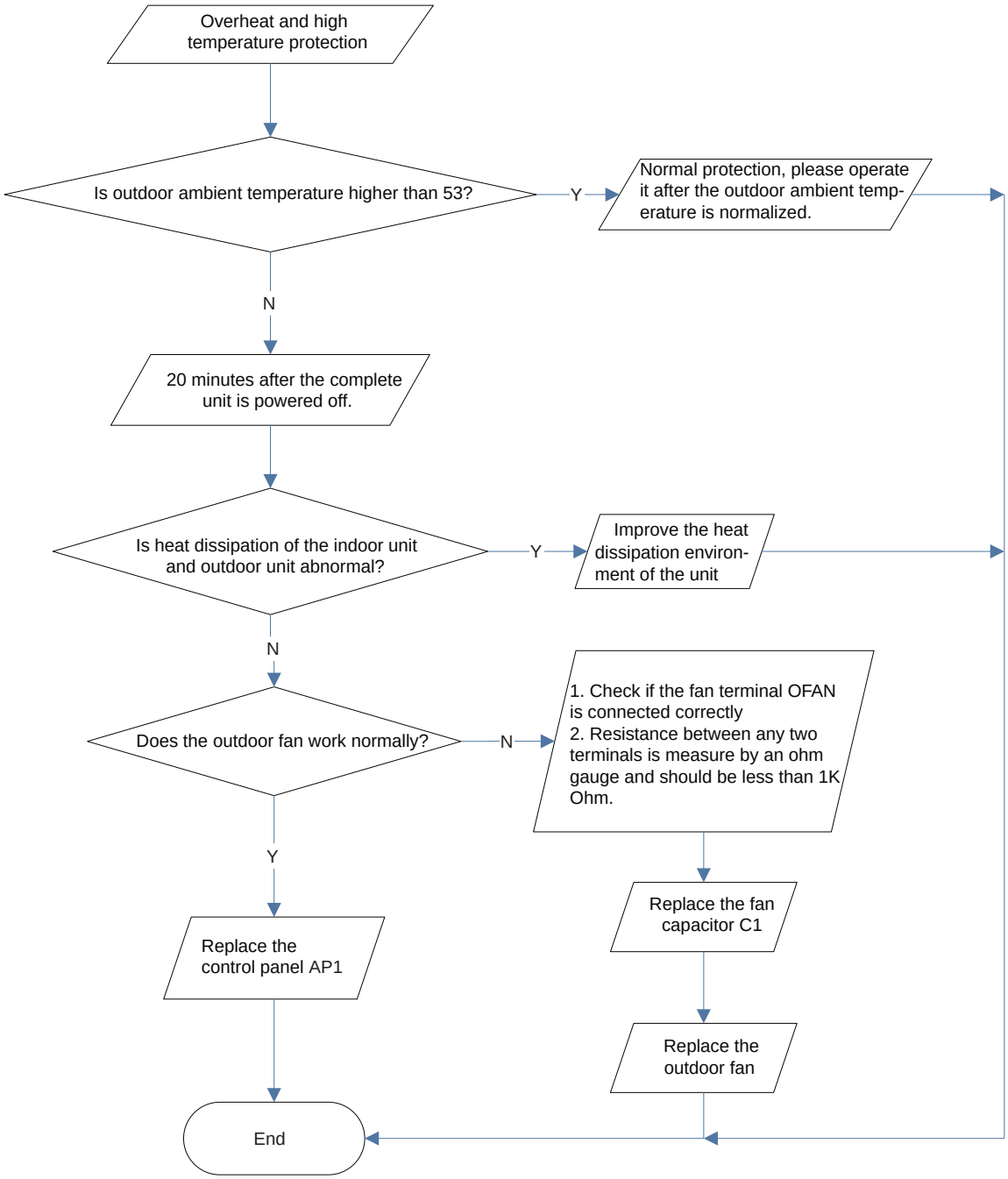
Mainly detect:

●Is outdoor ambient temperature in normal range?

●Are the outdoor and indoor fans operating normally?

●Is the heat dissipation environment inside and outside the unit good?

Fault diagnosis process:



(4) Start-up failure (following AP1 for outdoor unit control board)

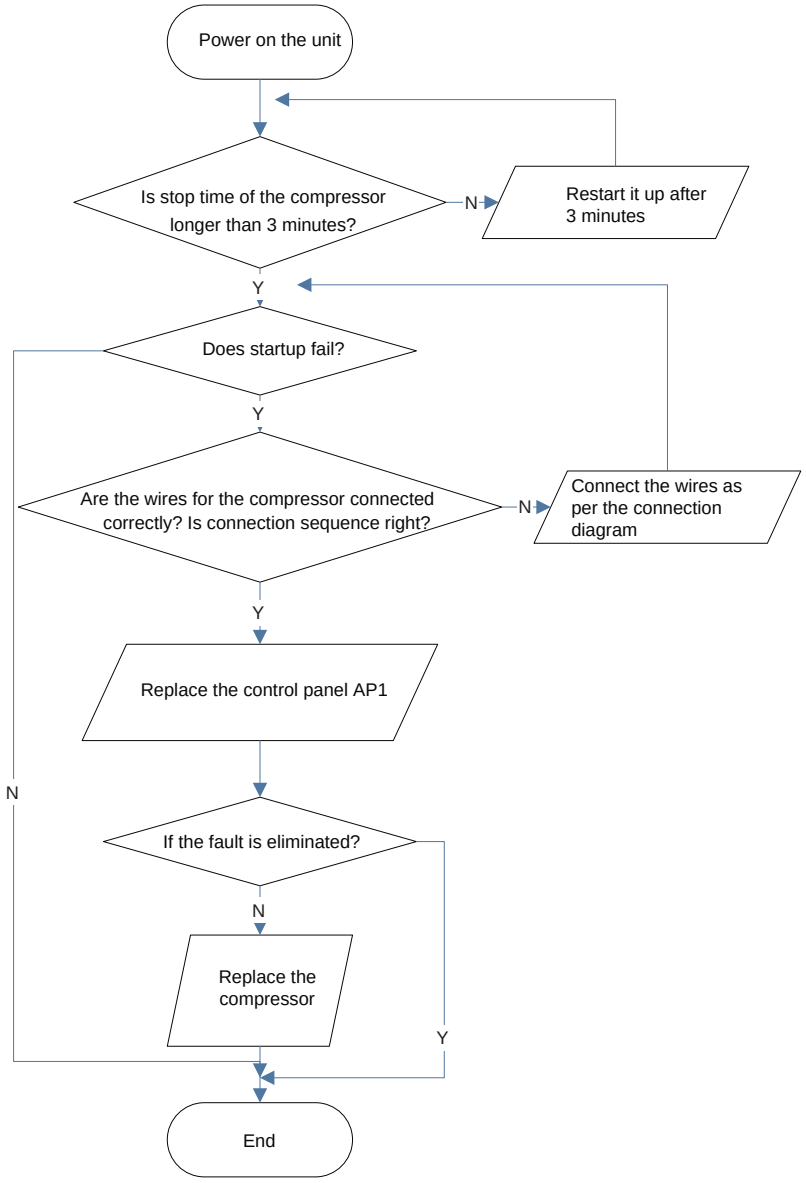
Mainly detect:

●Whether the compressor wiring is connected correct?

●Is compressor broken?

●Is time for compressor stopping enough?

Fault diagnosis process:



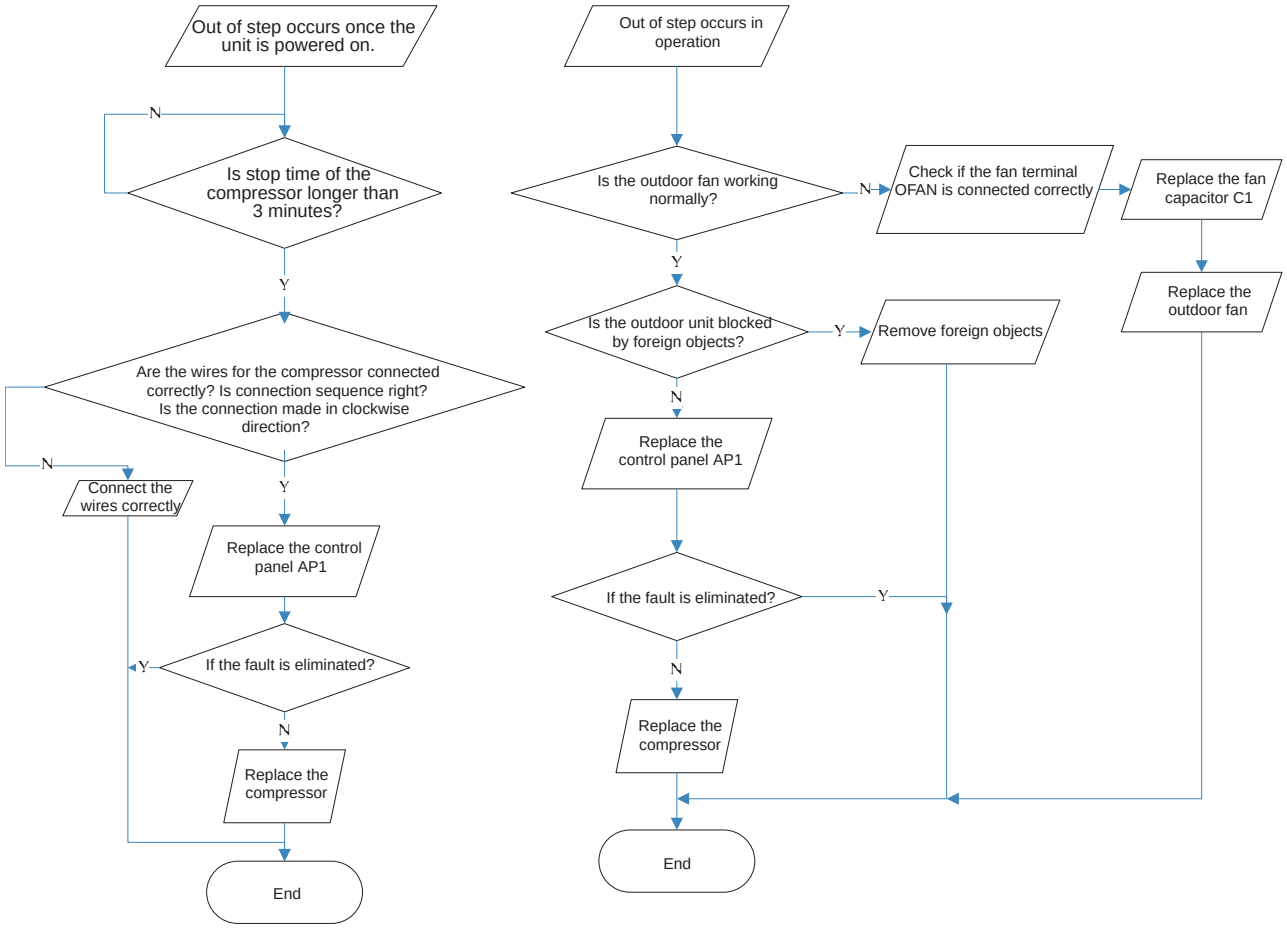
(5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

●Is the system pressure too high?

●Is the input voltage too low?

Fault diagnosis process:



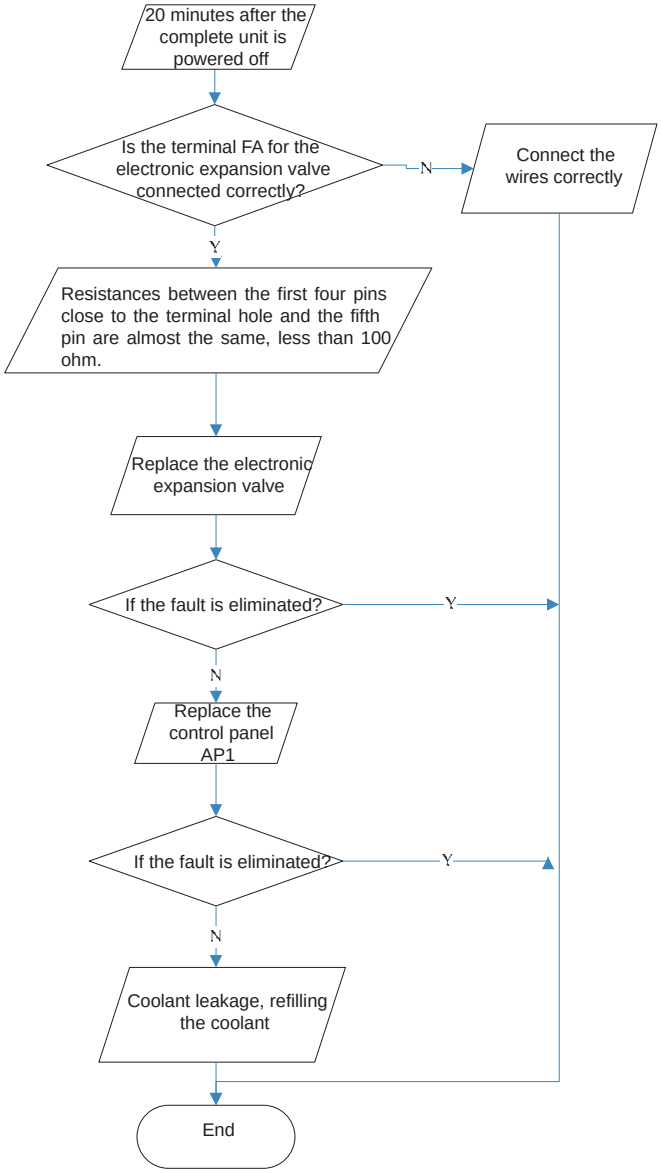
(6)Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board)

Mainly detect:

●Is the PMV connected well or not? Is PMV damaged?

●Is refrigerant leaked?

Fault diagnosis process:

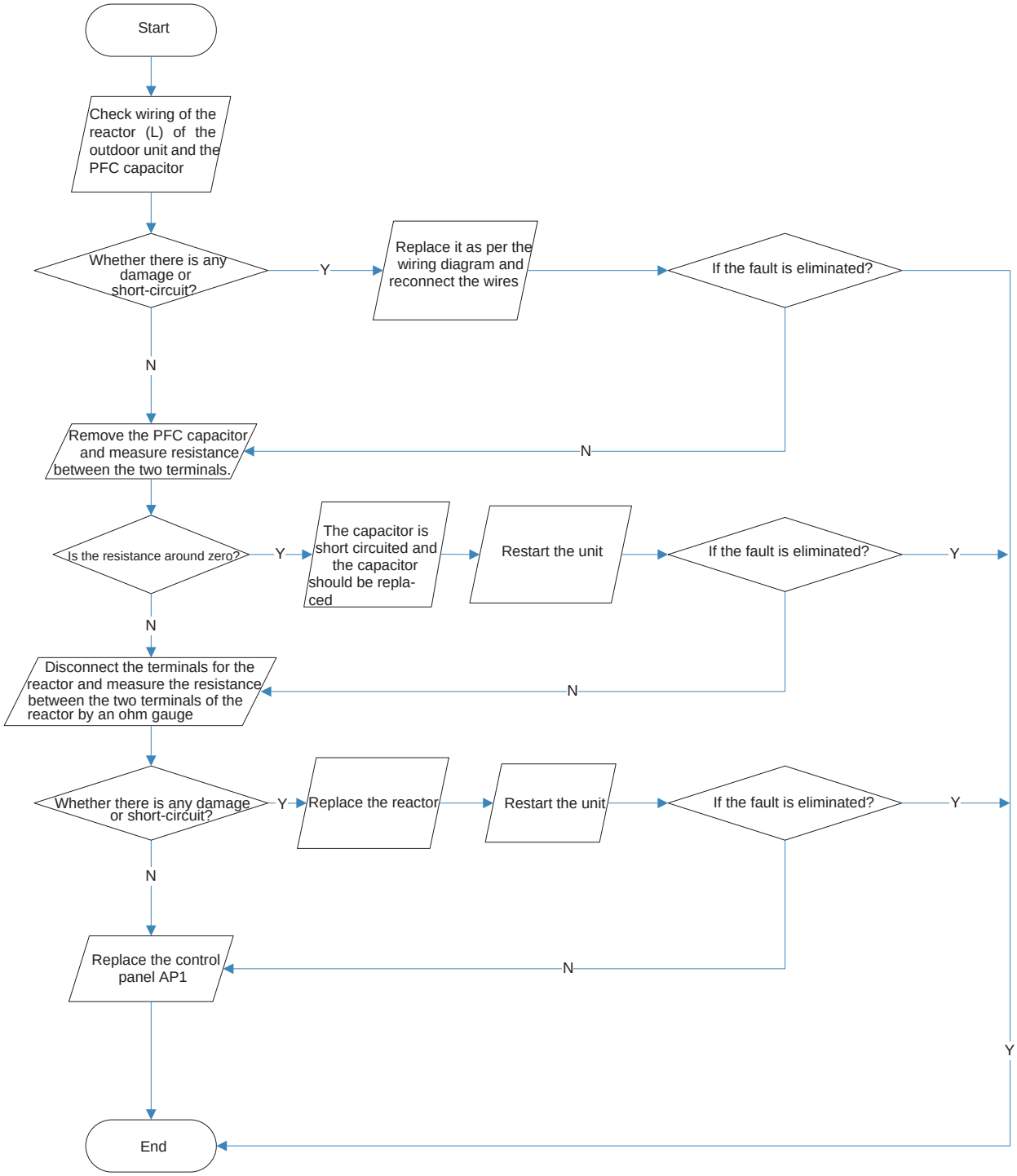


(7)Power factor correct or (PFC) fault (a fault of outdoor unit) (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

●Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken

Fault diagnosis process:



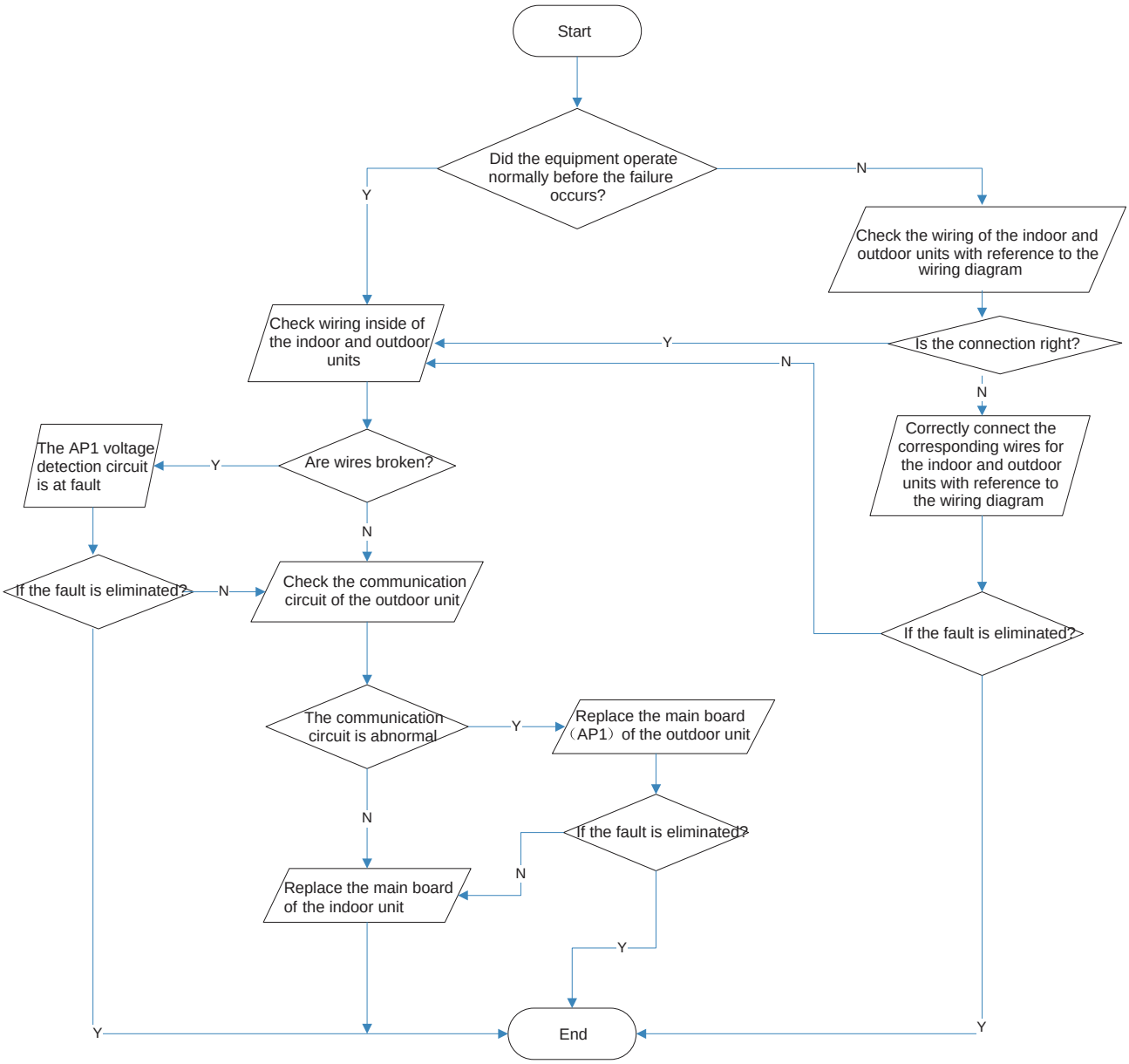
(8) Communication malfunction: (following AP1 for outdoor unit control board)

Mainly detect:

●Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?

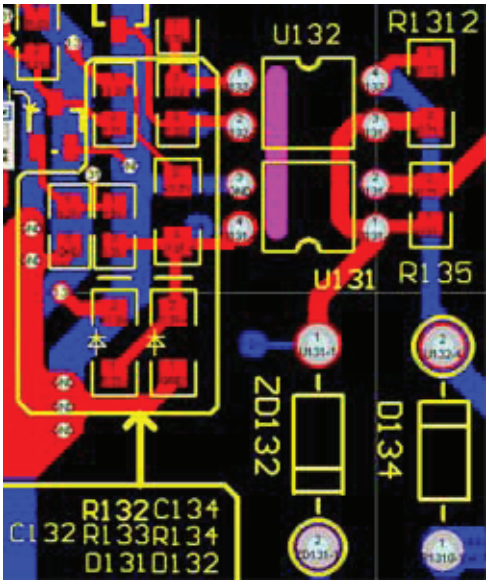
●Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any damage?

Fault diagnosis process:

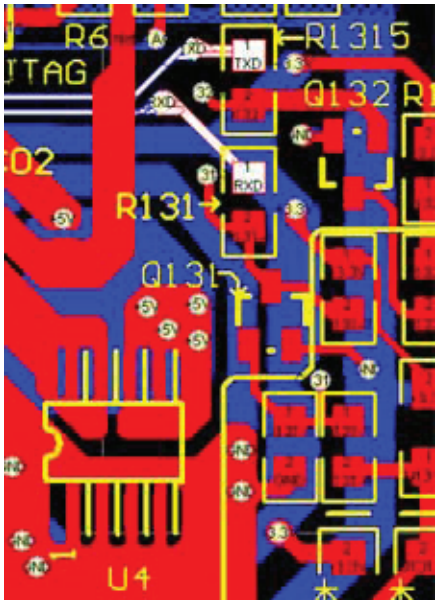


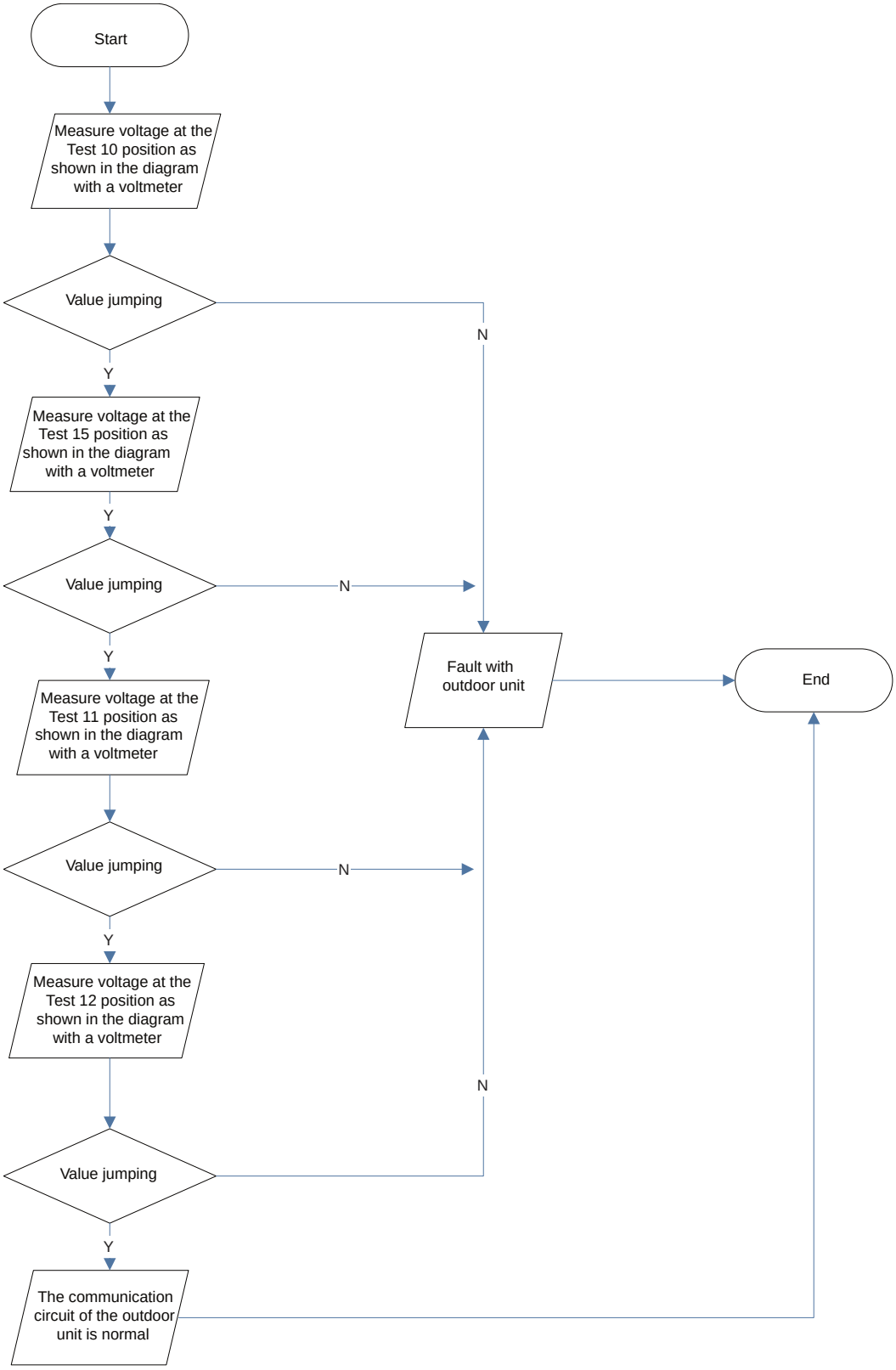
(9) Flow chart for outdoor communitcation circuit detecting:

(1) Test the voltage between N point of wiring board and communication cable with universal meter. The voltage shall be variable. Otherwise, it might be malfunction of mainboard of indoor unit, or malfunction of mainboard of outdoor unit, or wrong wire connection of indoor and outdoor unit. Please ensure that there is no malfunction of mainboard of indoor unit, or wrong wire connection of indoor and outdoor unit. After removing the malfunction of indoor unit, remove the malfunction of outdoor unit.
(2) Test the voltage of pin 1 and pin 2 of U132 with universal meter (voltage of both sides of R135). The voltage should be variable. (Test 10) Test the voltage of pin 3 and pin 4 of U132 with universal meter (voltage of both sides of R1312). The voltage should be variable. (Test 15) Otherwise, there is malfunction of mainboard of outdoor unit.



(3) Test the voltage of pin 3 and pin 4 of U131 with universal meter (voltage of both sides of R134). The voltage should be variable. (test 11) Test the voltage of pin 1 and pin 2 of U132 with universal meter (voltage of both sides of C134). The voltage should be variable. (test 12) Otherwise, there is malfunction of mainboard of outdoor unit.
(4) Test the voltage between pin 1 of R135 (white) and pin 1 of U4. The voltage should be variable. Test voltage between pin1 of R131 (white) and pin 1 of U4 with universal meter. The voltage should be variable. Otherwise, there is malfunction of mainboard of outdoor unit.




Start
Measure voltage at the Test 10 position as shown in the diagram with a voltmeter
Value jumping
N
Y
Measure voltage at the Test 15 position as shown in the diagram with a voltmeter
Y
Value jumping
N
Y
Measure voltage at the Test 11 position as shown in the diagram with a voltmeter
Value jumping
N
Y
Measure voltage at the Test 12 position as shown in the diagram with a voltmeter
Value jumping
N
Y
The communication circuit of the outdoor unit is normal
Fault with outdoor unit
End

Appendix

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)									
Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Appendix 2: Resistance Table of Outdoor and Indoor Tube Temperature Sensors(20K)									
Temp. （℃）	Resistance(kΩ)		Temp. （℃）	Resistance(kΩ)		Temp. （℃）	Resistance(kΩ)		Temp. （℃）	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Appendix 3: Resistance Table of Outdoor Discharge Temperature Sensor(50K)									
Temp. （℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.754
-28	799.8		11	93.42		50	17.65		89	4.609
-27	750		12	89.07		51	16.99		90	4.469
-26	703.8		13	84.95		52	16.36		91	4.334
-25	660.8		14	81.05		53	15.75		92	4.204
-24	620.8		15	77.35		54	15.17		93	4.079
-23	580.6		16	73.83		55	14.62		94	3.958
-22	548.9		17	70.5		56	14.09		95	3.841
-21	516.6		18	67.34		57	13.58		96	3.728
-20	486.5		19	64.33		58	13.09		97	3.619
-19	458.3		20	61.48		59	12.62		98	3.514
-18	432		21	58.77		60	12.17		99	3.413
-17	407.4		22	56.19		61	11.74		100	3.315
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.129
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.955
-12	306.2		27	45.07		66	9.827		105	2.872
-11	289.6		28	43.16		67	9.489		106	2.792
-10	274		29	41.34		68	9.165		107	2.715
-9	259.3		30	39.61		69	8.854		108	2.64
-8	245.6		31	37.96		70	8.555		109	2.568
-7	232.6		32	36.38		71	8.268		110	2.498
-6	220.5		33	34.88		72	7.991		111	2.431
-5	209		34	33.45		73	7.726		112	2.365
-4	198.3		35	32.09		74	7.47		113	2.302
-3	199.1		36	30.79		75	7.224		114	2.241
-2	178.5		37	29.54		76	6.998		115	2.182
-1	169.5		38	28.36		77	6.761		116	2.124
0	161		39	27.23		78	6.542		117	2.069
1	153		40	26.15		79	6.331		118	2.015
2	145.4		41	25.11		80	6.129		119	1.963
3	138.3		42	24.13		81	5.933		120	1.912
4	131.5		43	23.19		82	5.746		121	1.863
5	125.1		44	22.29		83	5.565		122	1.816
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.222		124	1.725
8	108		47	19.81		86	5.06		125	1.682
9	102.8		48	19.06		87	4.904		126	1.64

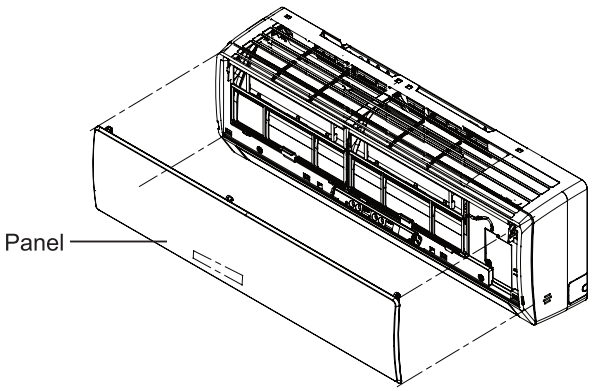
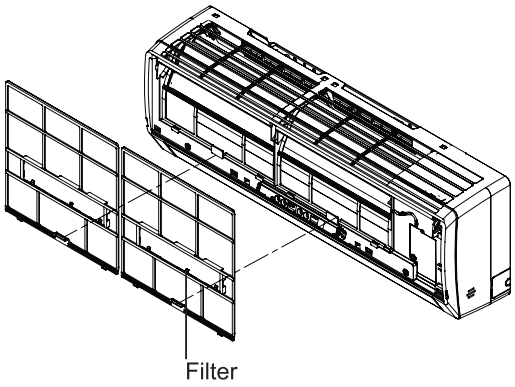
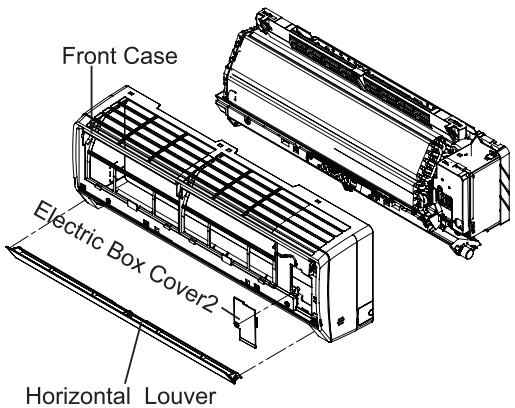
Note: The information above is for reference only.

10. Removal Procedure

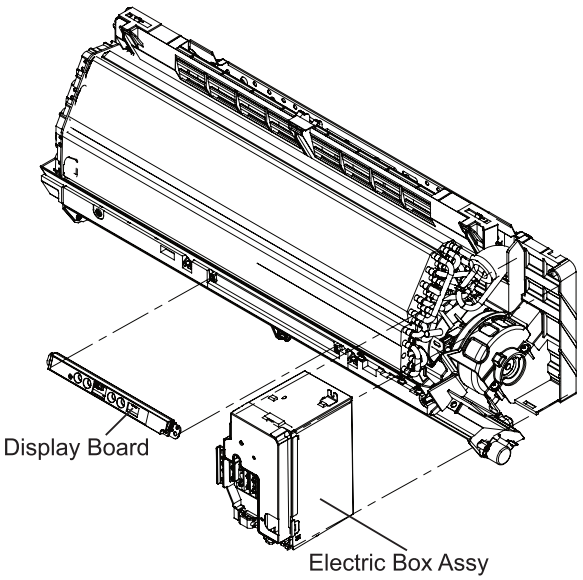
10.1 Removal Procedure of Indoor Unit

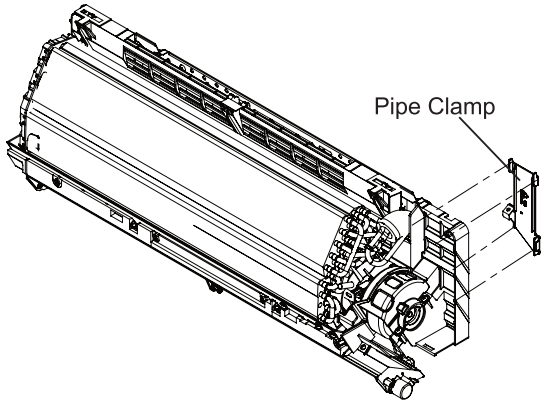
Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

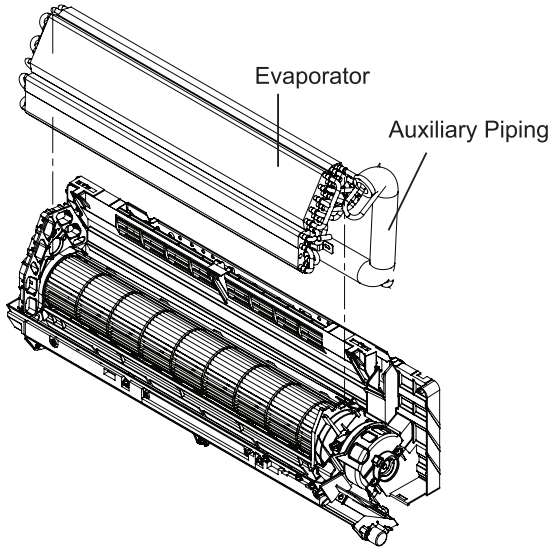
NOTE:Take A3 front panel for example.

Step	Procedure	
1.Remove panel		
	Open the front panel.Push the rotor shaft on both sides of the panel to make it separate from the groove .Remove the panel.	
2.Remove filter		
	Loosen the clasp of the filter.Push the filter inward and then draw it upward to remove it.	
3.Remove horizontal louver and front case		
	Remove axial sleeve of horizontal louver. Bend the louver outwards and then remove the louver. Loosen the screws of the electric box cover2 with screwdriver.Remove the electric box cover2. Open the screw cap on the front case. Remove the screws fixing the front case. Loosen the six clasps of the front case. Remove the front case.	

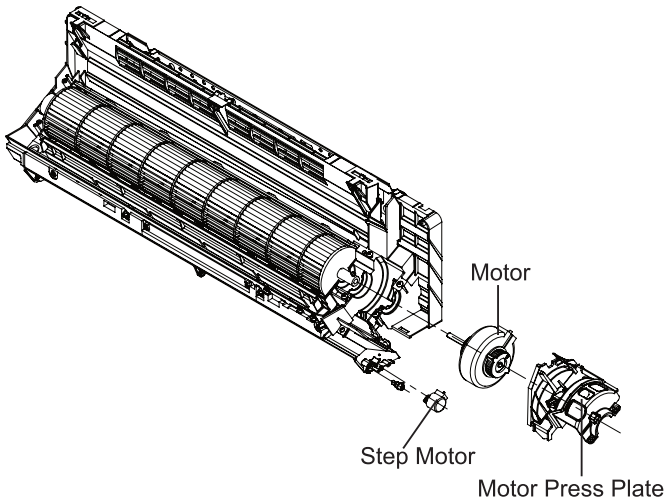
Step	Procedure
4.Remove electric box assy	
	Remove the screws of the electric box assy.Remove the screws at the joint of the earthing wire and evaporator.Loosen the clasp at the joint of the electric box cover and the electric box.Remove the 2 screws of the display.Remove the electric box assy.
5.Remove evaporator	
1	Remove the screws of the press plate of connecting pipe.Remove press plate of connecting pipe.
2	Remove the 3 screws at the joint of the evaporator and rear case.Adjust slightly the pipe on the evaporator.Remove the evaporator.

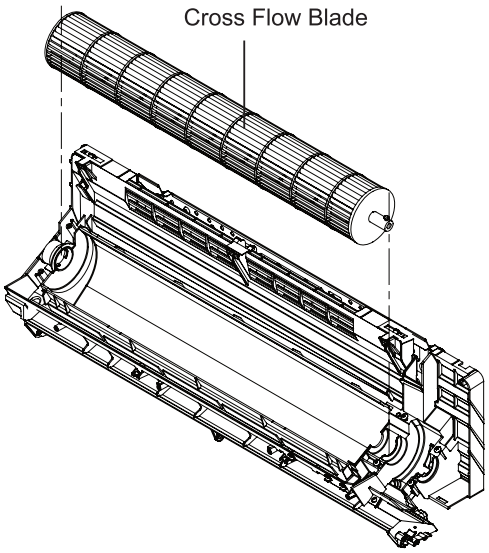






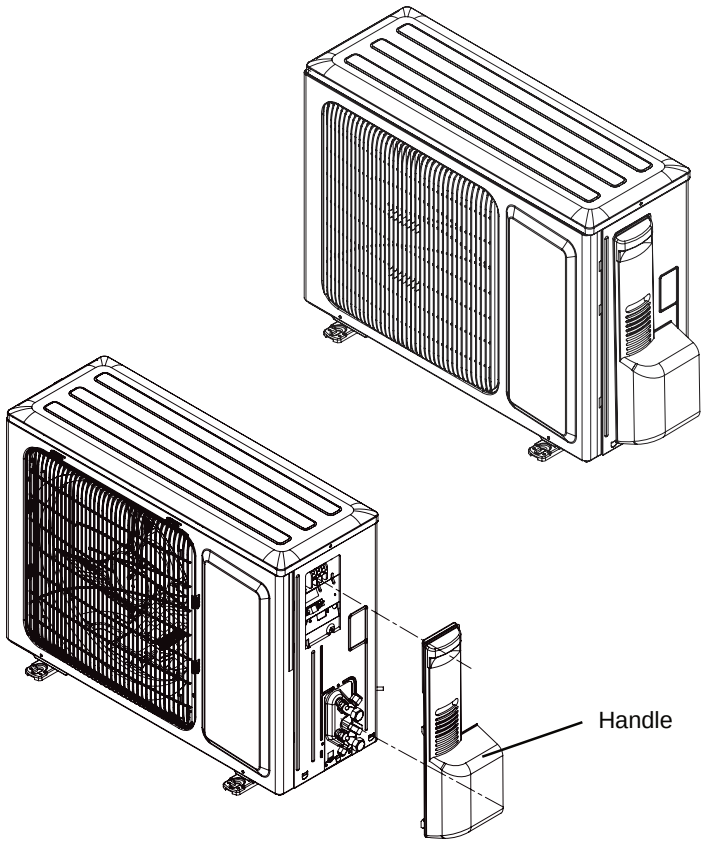
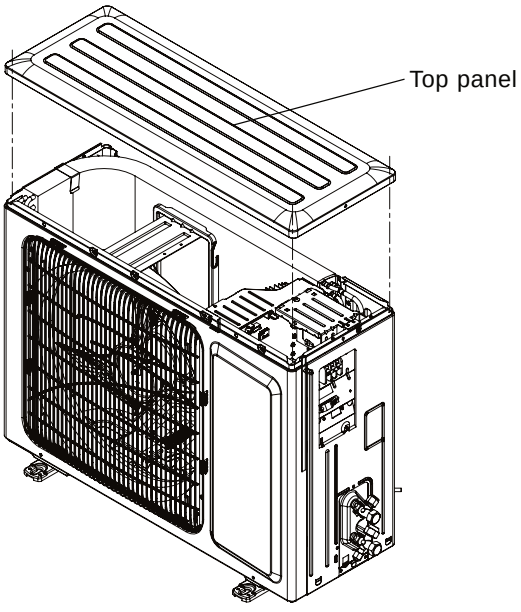
Step	Procedure
6.Remove motor and axial flow blade	
1	Remove screws of step motor and then remove the motor. Remove the screw of the motor press plate and then remove the press plate. Remove the screws at the joint of the cross flow blade and the motor. Take down the motor.
2	Remove the cross flow blade.

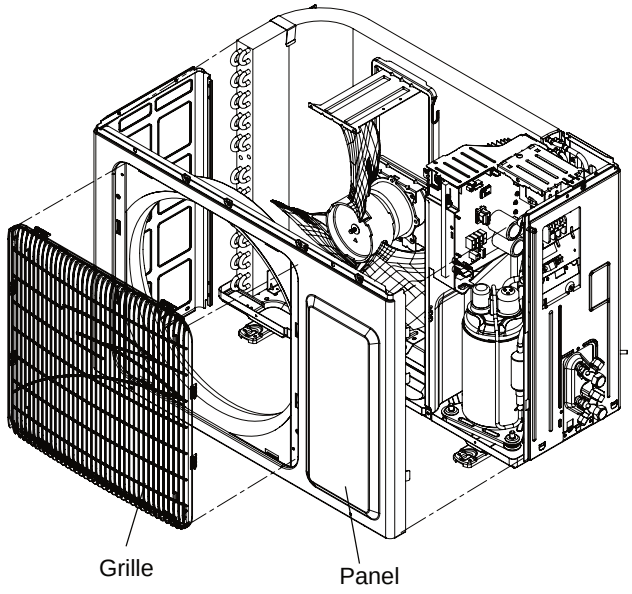
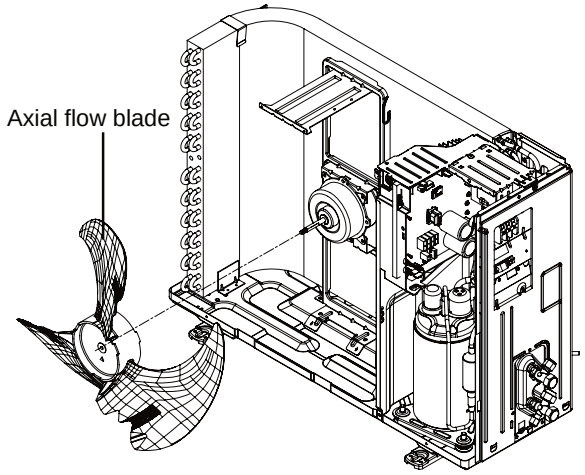
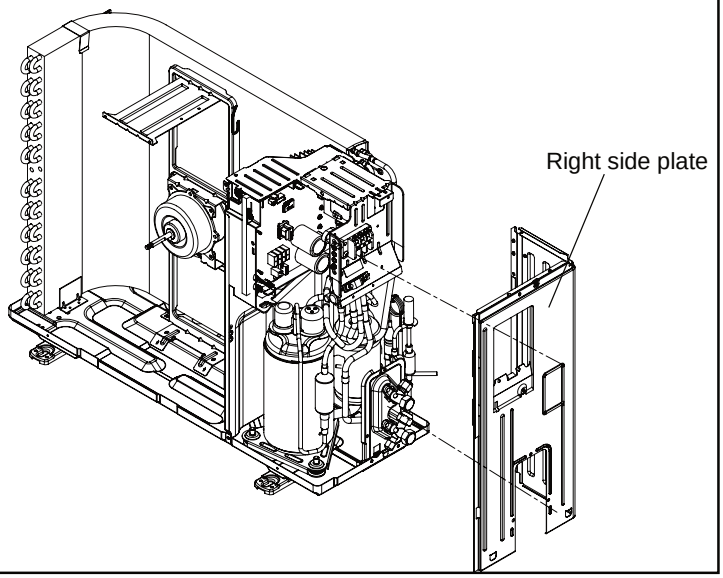


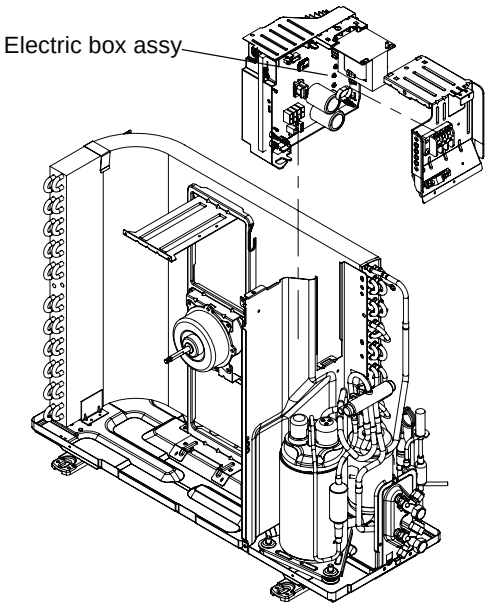
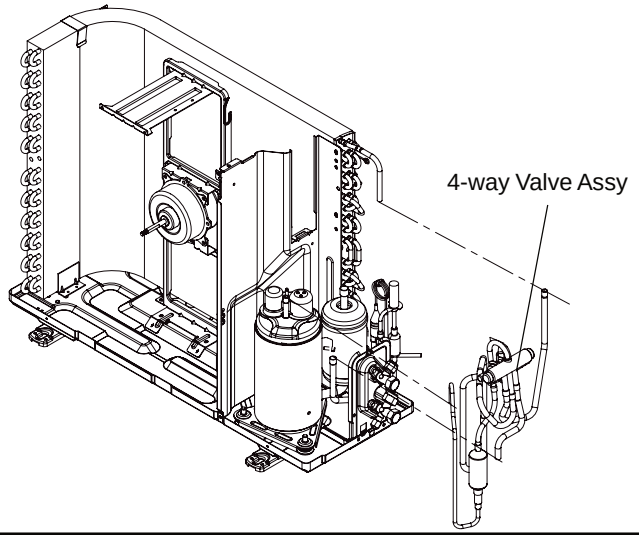
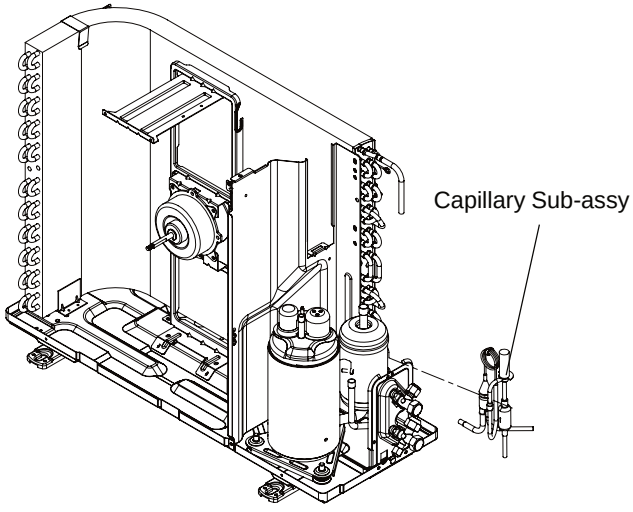


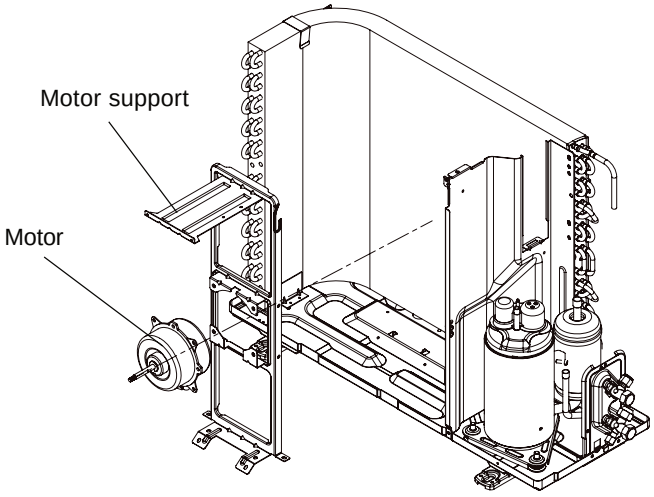
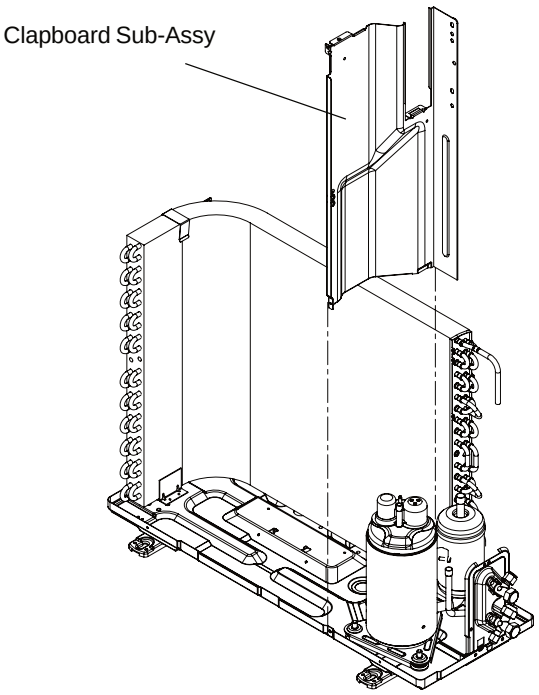
10.2 Removal Procedure of Outdoor Unit

Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

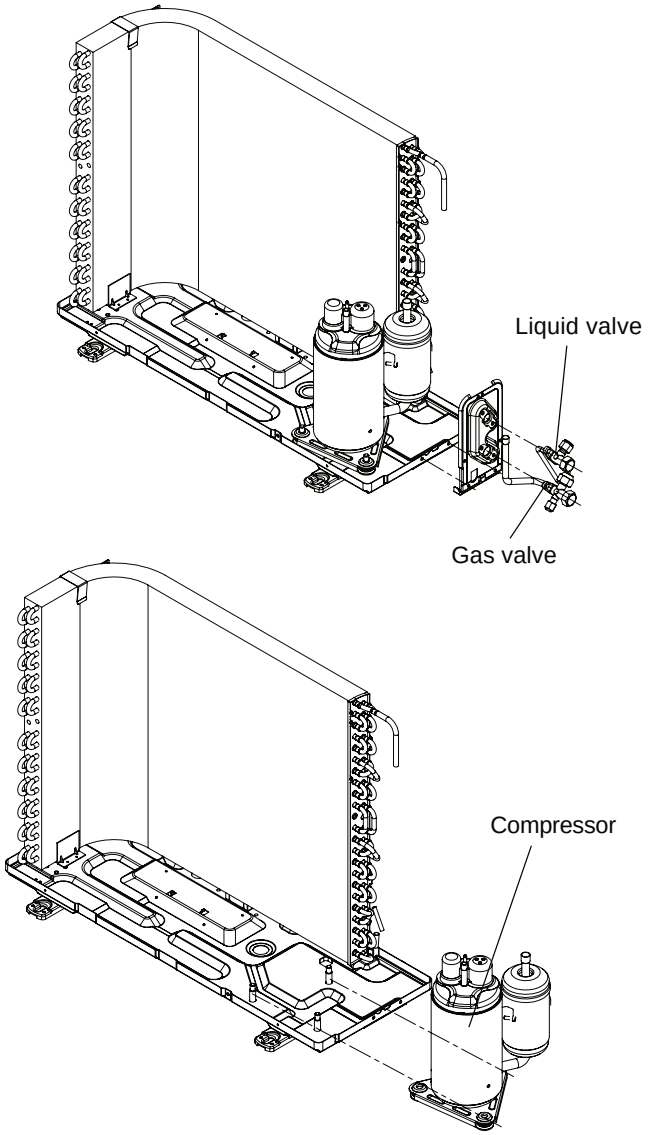
Steps	Procedure
1.Remove big handle	
1	Before disassembly.
2	Remove the connection screw fixing the big handle and then remove the handle.
2. Remove top cover	
	Remove connection screws connecting the top cover plate with the front panel and the right side plate, and then remove the top panel.

Steps	Procedure
3.Remove grille and front panel	
Remove connection screws between the front grille and the front panel. Then remove the front grille. Remove connection screws connecting the front panel with the chassis and the motor support, and then remove the front panel.	
4.Remove axial flow blade	
Remove the nut fixing the blade and then remove the axial flow blade.	
5.Remove right side plate	
Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.	

Steps	Procedure	
6.Remove electric box assy		
	Remove the 2 screws fixing the cover of electric box. Lift to remove the cover. Loosen the wire and disconnect the terminal. Lift to remove the electric box assy.	
7.Remove 4-way valve assy		
	Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out.(Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.	
8.Remove capillary sub-assy		
	Unsolder weld point of capillary Sub-assy, valve and outlet pipe of condensator. Then remove the capillary Sub-assy. Do not block the capillary when unsoldering it. (Note: before unsoldering,discharge refrigerants completely)	

Steps	Procedure
9.Remove motor and motor support	
	Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove the motor. Remove the 2 tapping screws fixing the motor support. Lift motor support to remove it.
	
10.Remove clapboard sub-assy	
	Loosen the screws of the Clapboard Sub-Assy . The Clapboard Sub-Assy has a hook on the lower side. Lift and pull the Clapboard Sub-Assy to remove.
	

Steps	Procedure
11.Remove Compressor	
1	Remove the 2 screws fixing the gas valve. Unsolder the welding spot connecting gas valve and air return pipe and remove the gas valve. (Note: it is necessary to warp the gas valve when unsoldering the welding spot.) Remove the 2 screws fixing liquid valve. Unsolder the welding spot connecting liquid valve and remove the liquid valve.
2	Remove the 3 footing screws of the compressor and remove the compressor.



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