



Service Manual

Model: GWH09MB-K3DNE3G
GWH12MB-K3DNE3G
(Refrigerant:R410A)

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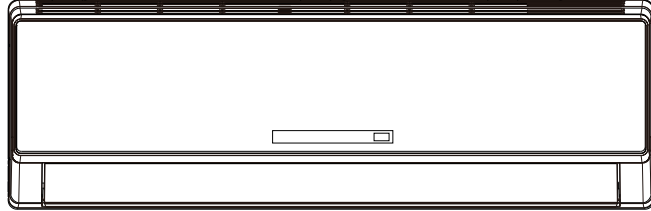
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Part 1 : Technical Information

1. Summary

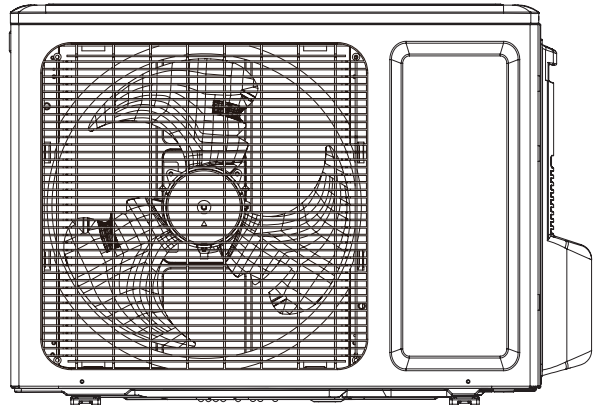
Indoor Unit:

GWH09MB-K3DNE3G/I
GWH12MB-K3DNE3G/I



Outdoor Unit:

GWH09MB-K3DNE3G/O
GWH12MB-K3DNE3G/O



Remote Controller:

YT1F(MOTO)



2. Specifications

2.1 Specification Sheet

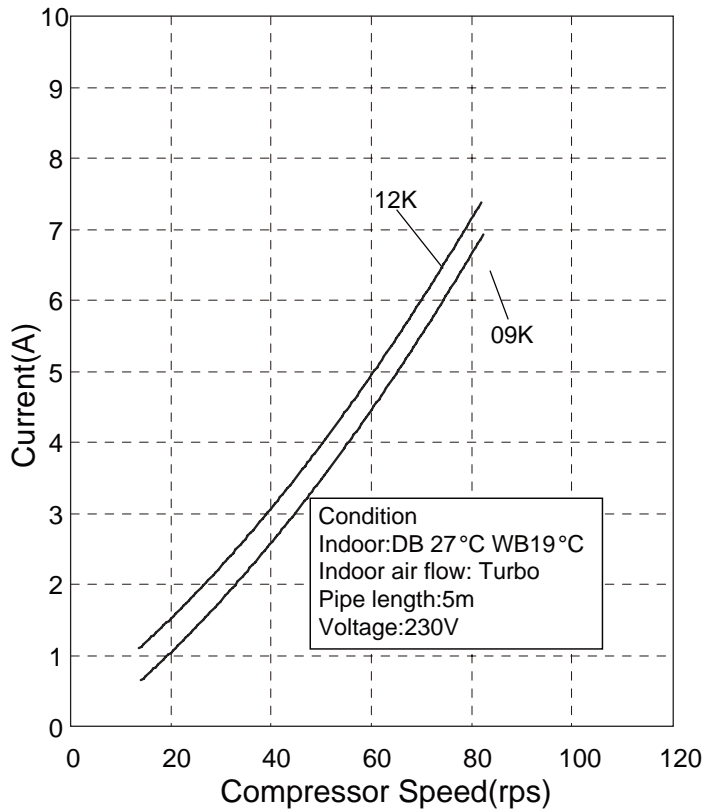
Model			GWH09MB-K3DNE3G	GWH12MB-K3DNE3G
Product Code			CB404003600 CB404003601	CB404003500 CB404003501
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Power Supply Mode			Indoor	Indoor
Cooling Capacity (Min~Max)		W	2600(600~3200)	3500(600~3900)
Heating Capacity (Min~Max)		W	3000(800~3600)	4000(880~4400)
Cooling Power Input (Min~Max)		W	870(185~1300)	1170(185~1400)
Heating Power Input (Min~Max)		W	900(220~1400)	1200(250~1550)
Cooling Power Current		A	3.8	5.2
Heating Power Current		A	3.92	5.3
Rated Input		W	1400	1600
Rated Current		A	6.69	7.8
Air Flow Volume(SH/H/M/L/SL)		m ³ /h	600/500/400/300/-	600/500/400/300/-
Dehumidifying Volume		L/h	0.8	1.2
EER		W/W	2.99	2.99
COP		W/W	3.33	3.33
SEER		W/W	6.1	6.1
HSPF		W/W	4.0	4.0
Application Area		m ²	12-18	16-24
Indoor Unit	Model of Indoor Unit		GWH09MB-K3DNE3G/I	GWH12MB-K3DNE3G/I
	Indoor Unit Product Code		CB404N03600/CB404N03601	CB404N03500/CB404N03501
	Fan Type		Cross-flow	Cross-flow
	Diameter Length(DXL)		mm	Φ92X645
	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	20
	Fan Motor RLA		A	0.1
	Fan Motor Capacitor		μF	1.0
	Input of Heater		W	-
	Evaporator Form			Aluminum Fin-copper Tube
	Pipe Diameter		mm	Φ7
	Row-fin Gap		mm	2-1.4
	Coil Length (LXD _X W)		mm	636X25.4X267
	Swing Motor Model			MP24AA
	Output of Swing Motor		W	2
	Fuse		A	3.15
	Sound Pressure Level (SH/H/M/L/SL)		dB (A)	42/39/34/28/-
	Sound Power Level (SH/H/M/L/SL)		dB (A)	54/50/45/40/-
	Dimension (WXHXD)		mm	845X275X180
Dimension of Carton Box (LXWXH)		mm	915X255X355	
Dimension of Package (LXWXH)		mm	918X258X370	
Net Weight		kg	9	
Gross Weight		kg	12	

Outdoor Unit	Model of Outdoor Unit		GWH09MB-K3DNE3G/O	GWH12MB-K3DNE3G/O
	Product Code of Outdoor Unit		CB404W03600/CB404W03601	CB404W03500/CB404W03501
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		QXA-A091zE190A	QXA-A091zE190A
	Compressor Oil		FVC 68EP	FVC 68EP
	Compressor Type		Rotary	Rotary
	L.R.A.	A	16.5	16.5
	Compressor RLA	A	4.9	4.9
	Compressor Power Input	W	950	950
	Overload Protector		1NT11L-6233	1NT11L-6233
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation temp	°C	16~30	16~30
	Ambient temp (Cooling)	°C	-15~48	-15~48
	Ambient temp (Heating)	°C	-15~24	-15~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	1-1.4	2-1.4
	Coil Length (LXDXW)	mm	710X19.05X508	695X38.1X506
	Fan Motor Speed	rpm	900/650	900/650
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.15	0.15
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1600	1600
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ400	Φ400
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level (H/M/L)	dB (A)	51/-/-	53/-/-
Sound Power Level (H/M/L)	dB (A)	63/-/-	63/-/-	
Dimension (WXHXD)	mm	776X540X320	776X540X320	
Dimension of Carton Box (LXWXH)	mm	848X360X580	848X360X580	
Dimension of Package (LXWXH)	mm	851X363X595	851X363X595	
Net Weight	kg	28.0	29.0	
Gross Weight	kg	32.0	33.0	
Refrigerant		R410A	R410A	
Refrigerant Charge	kg	0.7	0.85	
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	20	20
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ9.52
	Max Distance Height	m	10	10
	Max Distance Length	m	15	15
Note: The connection pipe applies metric diameter.				

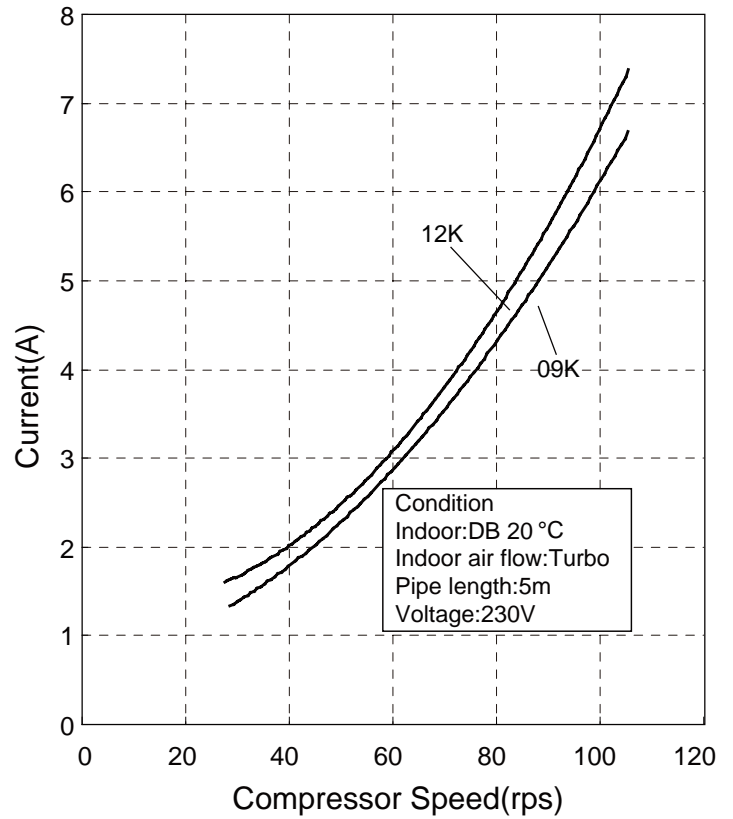
The above data is subject to change without notice; please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

Cooling

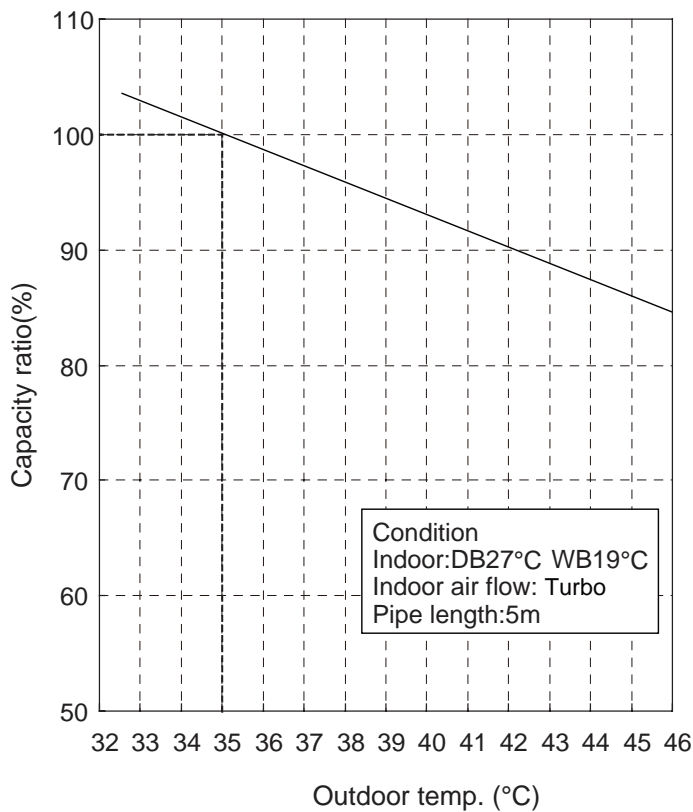


Heating

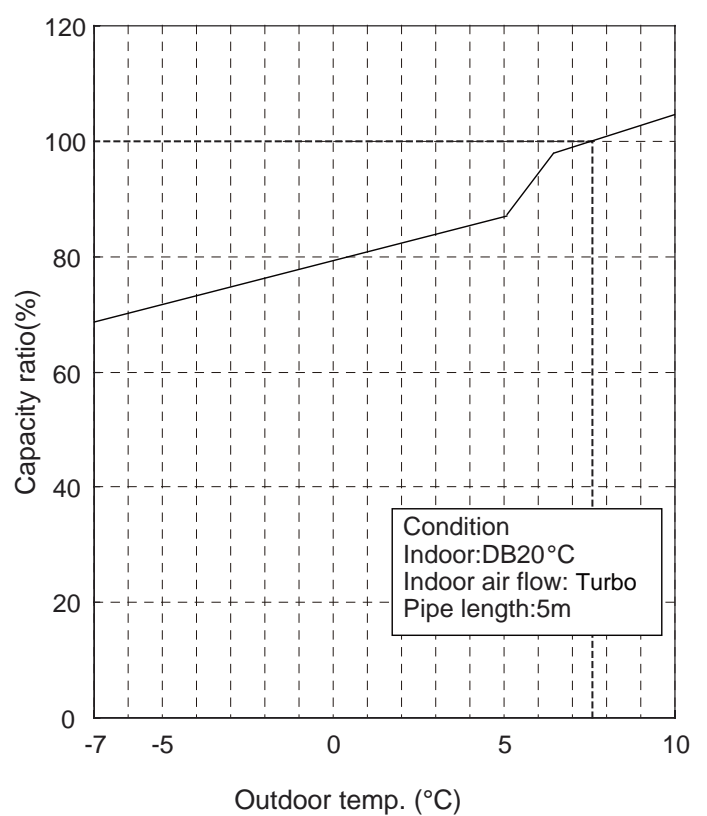


2.3 Capacity Variation Ratio According to Temperature

Cooling



Heating



2.4 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition(°C) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor revolution (rps)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
27/19	35/24	09K	0.9~1.1	12 to 15	65 to 38	TURBO	High	54
		12K		11 to 14	64 to 37			60

Heating:

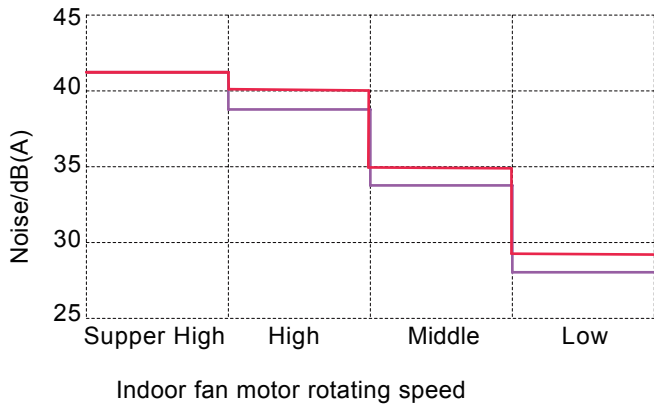
Rated heating condition(°C) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor revolution (rps)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
20/-	7/6	09K	2.2~2.4	35 to 63	2 to 5	TURBO	High	62
		12K		35 to 65	2 to 5			66

Instruction:

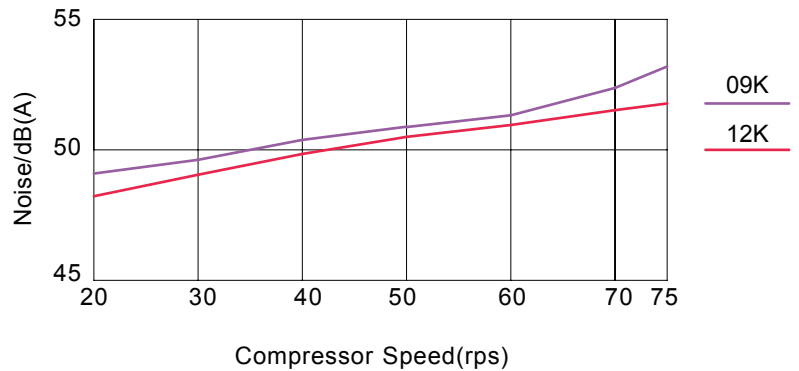
- T1: Inlet and outlet pipe temperature of evaporator
- T2: Inlet and outlet pipe temperature of condenser
- P: Pressure at the side of big valve
- Connection pipe length: 5 m.

2.5 Noise Curve

Indoor side noise when blowing

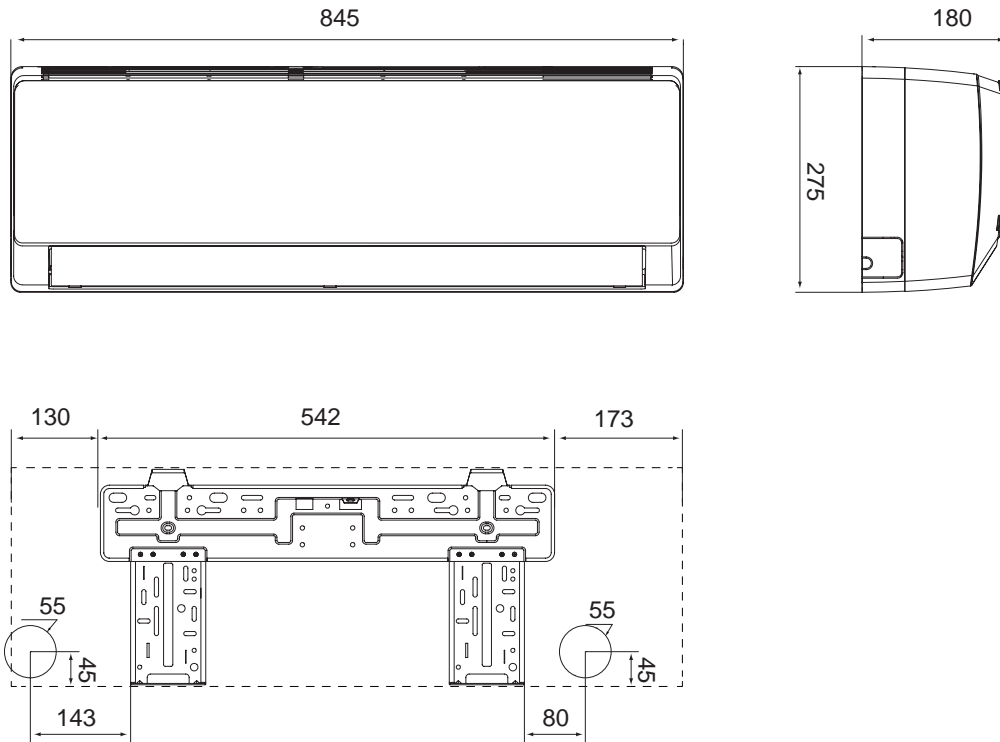


Outdoor side noise when Compressor speed changed

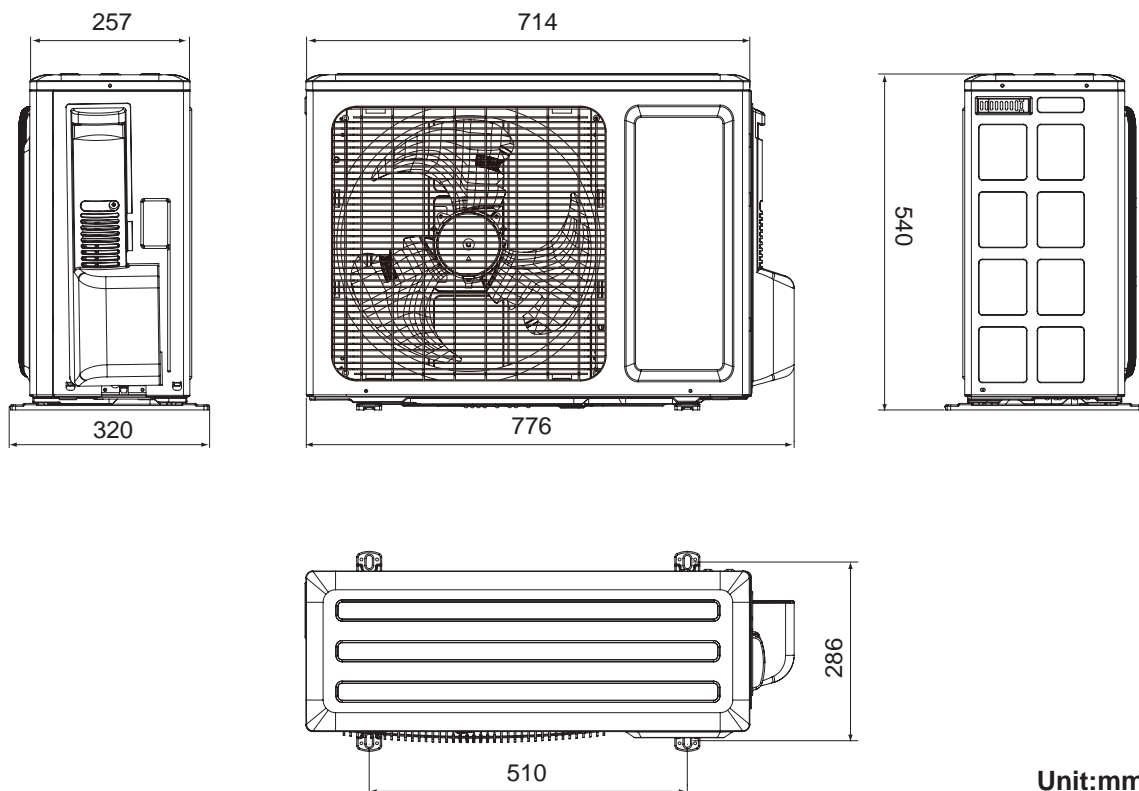


3. Outline Dimension Diagram

3.1 Indoor Unit



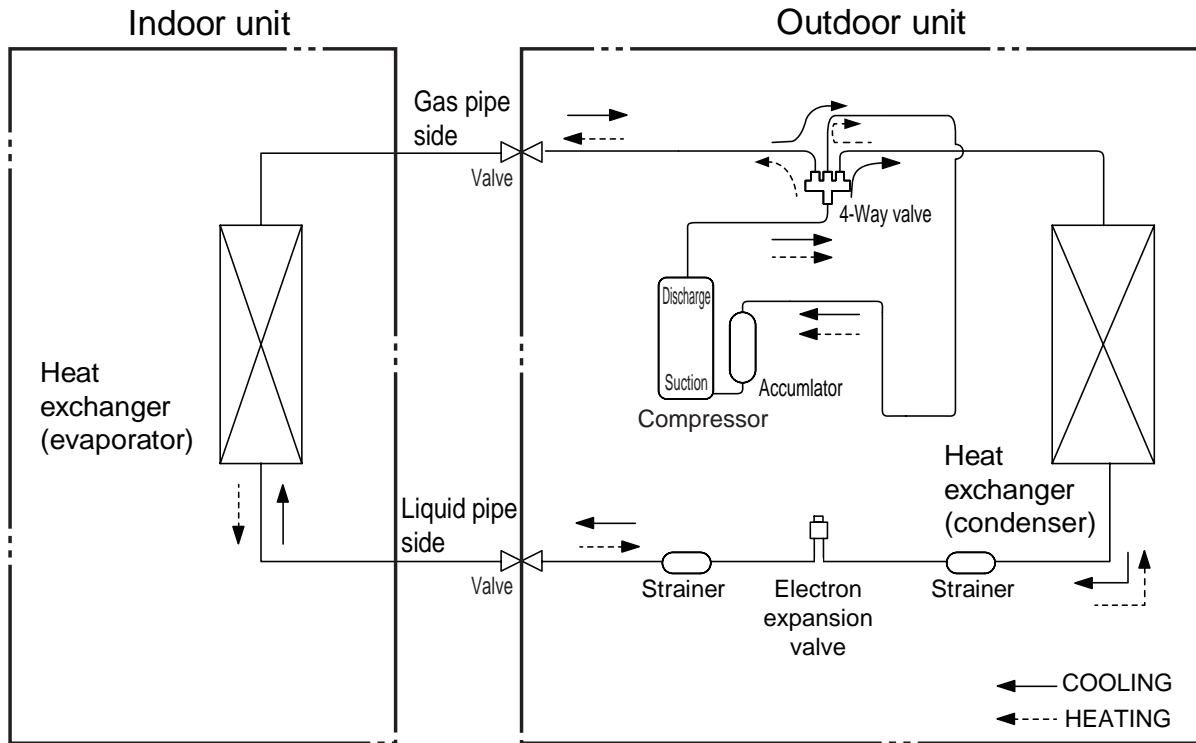
3.2 Outdoor Unit



Unit:mm

4. Refrigerant System Diagram

Cooling and heating model



Connection pipe specification:

Liquid pipe: 1/4" (6mm)

Gas pipe: 3/8" (9.52mm)

5. Electrical Part

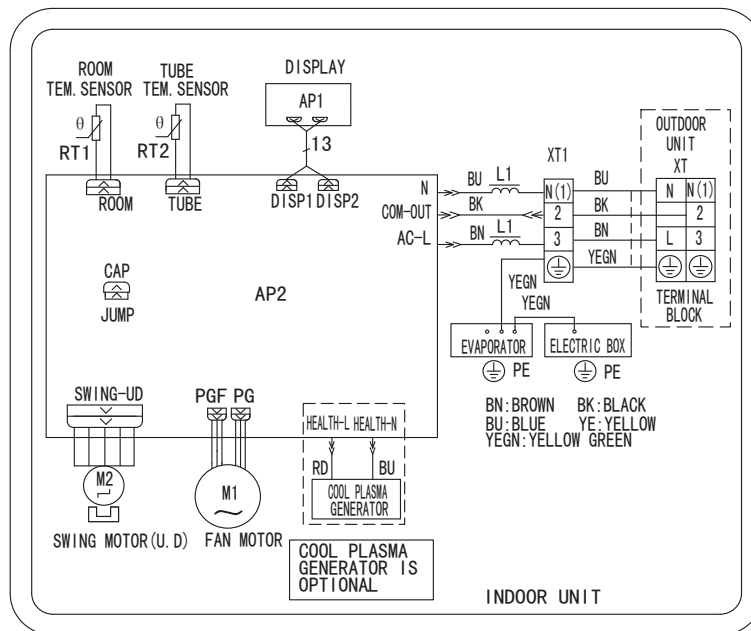
5.1 Wiring Diagram

● Instruction

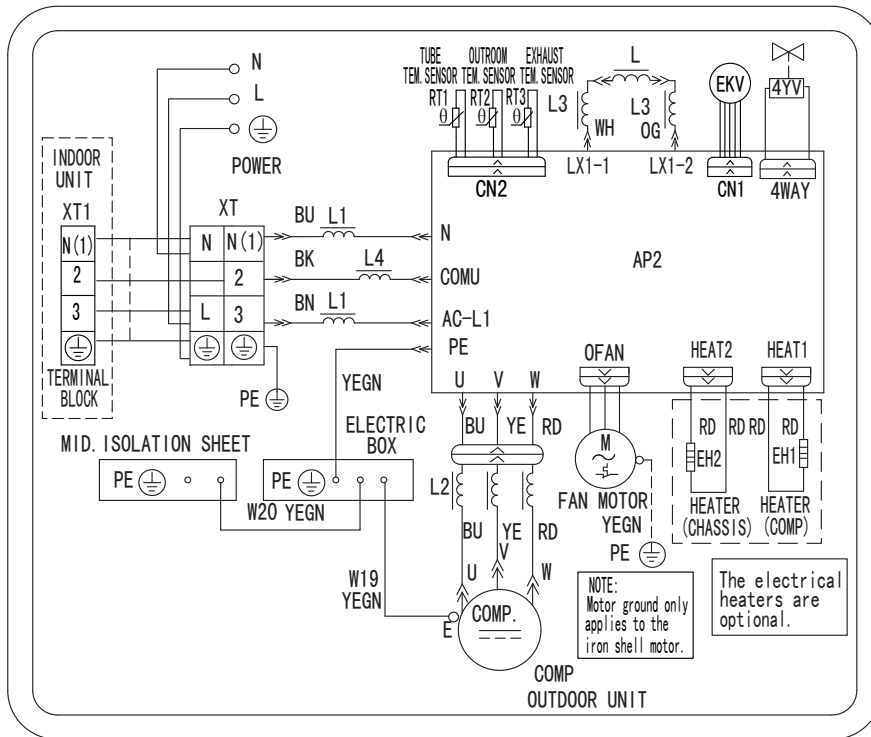
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

● Indoor Unit



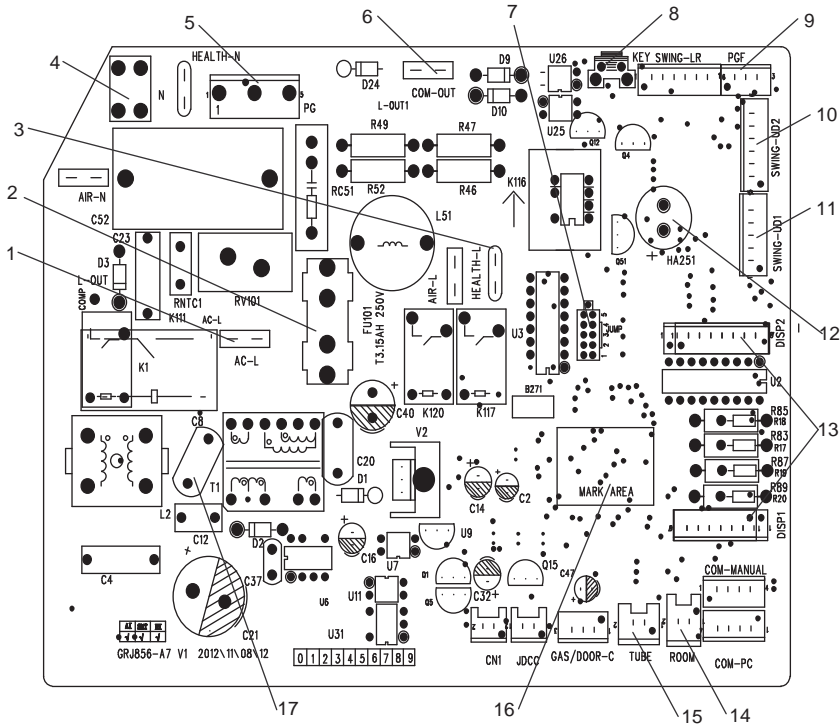
● Outdoor Unit



5.2 PCB Printed Diagram

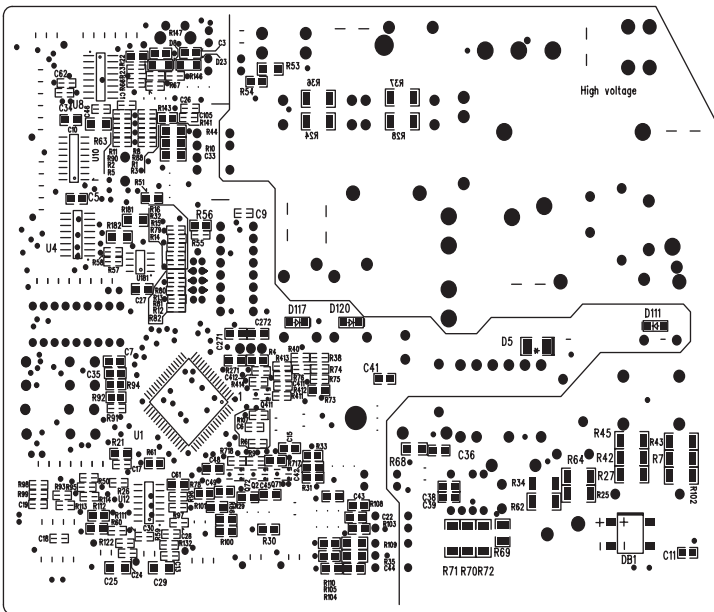
Indoor Unit

● Top view



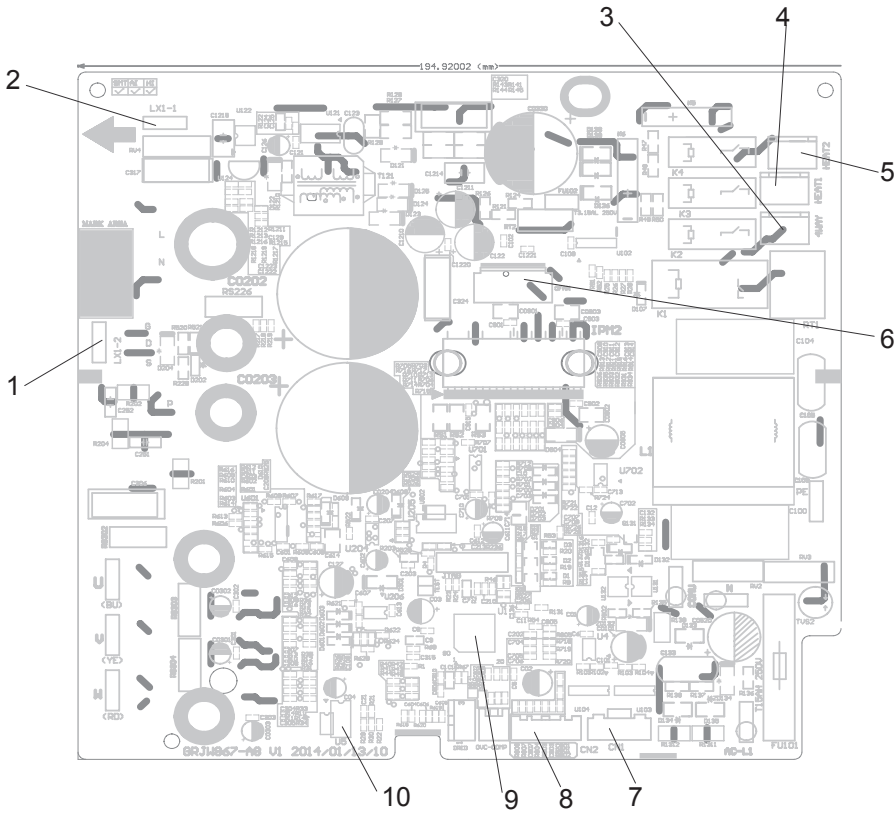
1	Port of Live wire
2	Protective tube
3	Live wire of health function
4	Port of neutral wire
5	Port of indoor fan
6	Communication port
7	Jumper Cap
8	Auto button
9	Feedback of indoor fan
10	Port of motor for vertical swing
11	Port of motor for horizontal swing
12	Buzzer
13	Port of display
14	Port of indoor ambient temp
15	Port of indoor pipe temp sensor
16	Main chip
17	High-frequency transformer

● Bottom view



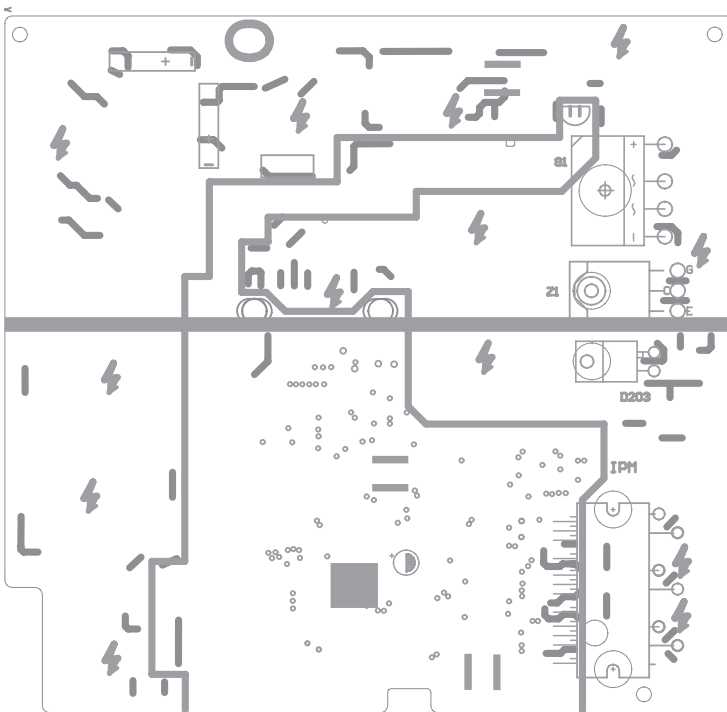
Outdoor Unit

● Top view



1	inductance pin2
2	inductance pin1
3	four-wayvalve
4	compressor electricheater
5	chassis electric heater
6	fan neilsbed
7	electric expansion valve
8	temp. sensor
9	main chip
10	EEPROM

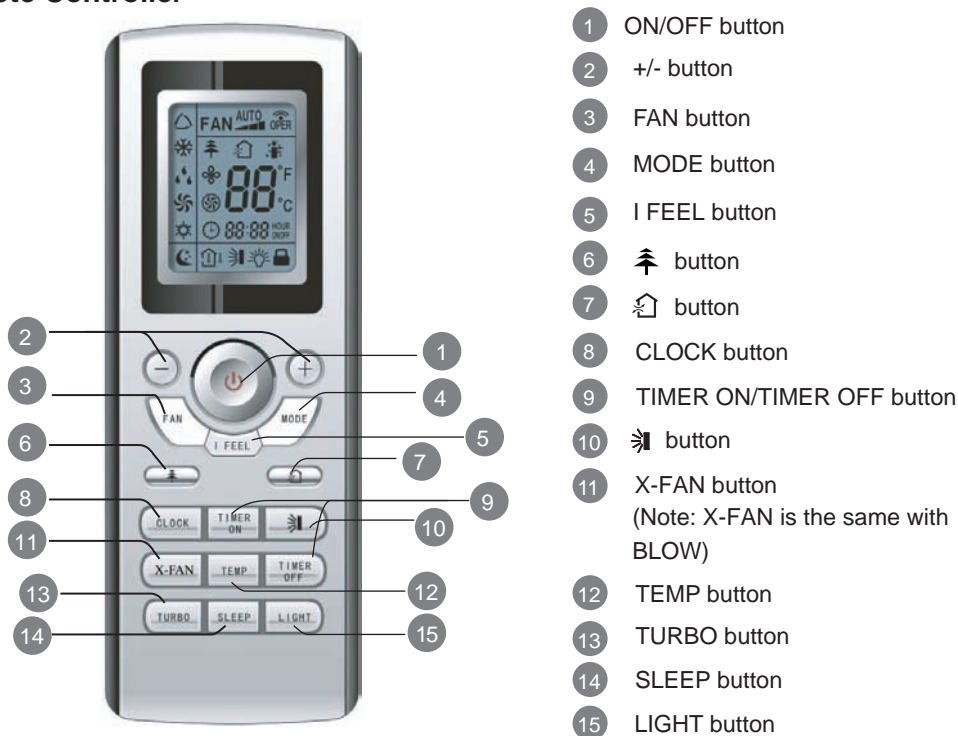
● Bottom view



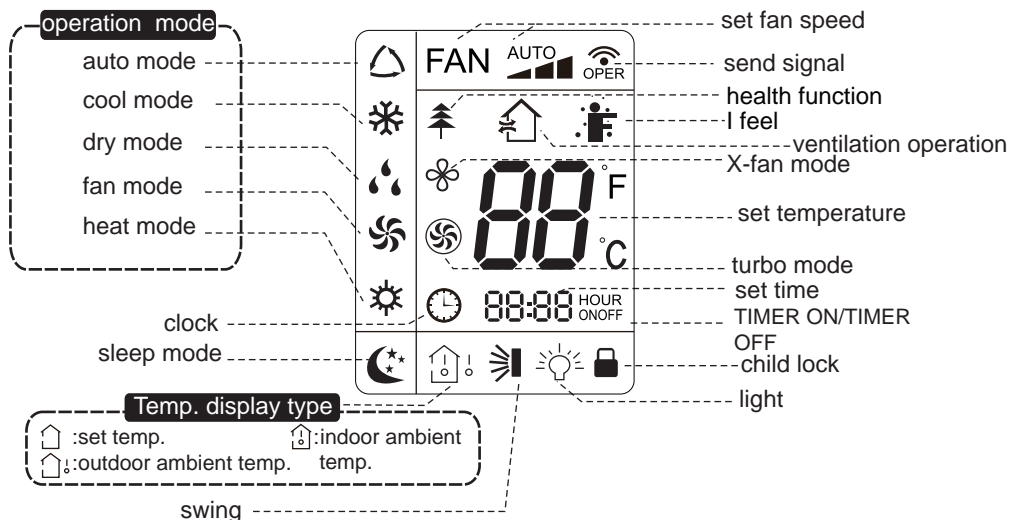
6. Function and Control

6.1 Remote Controller Introduction

Buttons on Remote Controller



Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

Note:After putting through the power, the air conditioner will give out a sound. Operation indicator " " is ON (red indicator). After that, you can operate the air conditioner by using remote controller.

1. ON/OFF Button

Press this button can turn on or turn off the air conditioner. After turning on the air conditioner, operation indicator " " on indoor unit's display is ON (green indicator. The colour is different for different models), and indoor unit will give out a sound.

2. MODE Button

Press this button to select your required operation mode.



- When selecting auto mode, Air conditioner will start auto operation according to indoor ambient temperature. Set temperature can't be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed. Press "↻" button can adjust fan blowing angle.
- After selecting cool mode, air conditioner will operate under cool mode. Cool indicator "❄" on indoor unit is ON. Press "+" or "-" button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "↻" button to adjust fan blowing angle.
- When selecting dry mode, the air conditioner operates at low speed under dry mode. Dry indicator "💧" on indoor unit is ON. Under dry mode, fan speed can't be adjusted. Press "↻" button to adjust fan blowing angle.
- When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. All indicators are OFF. Operation indicator is ON. Press "FAN" button to adjust fan speed. Press "↻" button to adjust fan blowing angle.
- When selecting heating mode, the air conditioner operates under heat mode. Heat indicator "🔥" on indoor unit is ON. Press "+" or "-" button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "↻" button to adjust fan blowing angle. (Cooling only unit won't receive heating mode signal. If setting heat mode with remote controller, press ON/OFF button can't start up the unit).

Note:

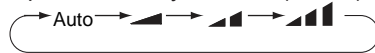
- For preventing cold air, after starting up heating mode, indoor unit will delay 1~5 minutes to blow air (actual delay time is depend on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C ; Fan speed: auto, low speed, medium speed, high speed.

3. "+" or "-" Button

- Press "+" or "-" button once increase or decrease set temperature 1 °C. Holding "+" or "-" button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly. (Temperature can't be adjusted under auto mode)
- When setting TIMER ON, TIMER OFF or CLOCK, press "+" or "-" button to adjust time. (Refer to CLOCK, TIMER ON, TIMER OFF buttons)

4. FAN Button

Pressing this button can set fan speed circularly as: auto (AUTO), low (▬), medium (▬▬), high (▬▬▬).

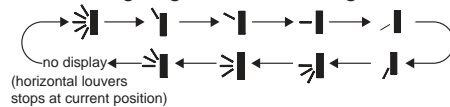


Note:

- Under AUTO speed, the IDU fan motor will adjust the fan speed (high, medium or low speed) according to ambient temperature.
- Fan speed under dry mode is low speed.

5. ↻ Button

Pressing this button can select up&down swing angle. Fan blow angle can be selected circularly as below:



- When selecting "↻", air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.
- When selecting "↻, ↻, ↻, ↻, ↻", air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- When selecting "↻, ↻, ↻", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold "↻" button above 2s to set your required swing angle. When reaching your required angle, release the button.

Note:

"↻, ↻, ↻" may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.

6. CLOCK Button

Press this button to set clock time. "🕒" icon on remote controller will blink. Press "+" or "-" button within 5s to set clock time. Each pressing of "+" or "-" button, clock time will increase or decrease 1 minute. Hold "+" or "-" button, 2s later, time will change quickly. Release this button when reaching your required time. Press "CLOCK" button to confirm the time. "🕒" icon stops blinking.

Note:

- Clock time adopts 24-hour mode.
- The interval between two operation can't exceeds 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

7. TIMER-ON/TIMER-OFF Button

- TIMER ON button

TIMER ON button

"TIMER ON" button can set the time for timer on. After pressing this button, "🕒" icon disappears and the word "ON" on remote

controller blinks. Press "+" or "-" button to adjust TIMER ON setting. After each pressing "+" or "-" button, TIMER ON setting will increase or decrease 1min. Hold "+" or "-" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER ON" to confirm it. The word "ON" will stop blinking. "🕒" icon resumes displaying. Cancel TIMER ON: Under the condition that TIMER ON is started up, press "TIMER ON" button to cancel it.

- **TIMER OFF button**

"TIMER OFF" button can set the time for timer off. After pressing this button, "🕒" icon disappears and the word "OFF" on remote controller blinks. Press "+" or "-" button to adjust TIMER OFF setting. After each pressing "+" or "-" button, TIMER OFF setting will increase or decrease 1min. Hold "+" or "-" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER OFF" to confirm it. The word "OFF" will stop blinking. "🕒" icon resumes displaying. Cancel TIMER OFF. Under the condition that TIMER OFF is started up, press "TIMER OFF" button to cancel it.

Note:

- Under on and off status, you can set TIMER OFF or TIMER on simultaneously.
- Before setting TIMER ON or TIMER OFF, please adjust the clock time.
- After starting up TIMER ON or TIMER OFF, set the constant circulating valid. After that, air conditioner will be turned on or turned off according to setting time. ON/OFF button has no effect on setting. If you don't need this function, please use remote controller to cancel it.

8. X-FAN Button

Press this button under cool and dry mode to start up x-fan function, and "🌀" icon on remote controller will be displayed. Press this button again to cancel x-fan function, and "🌀" icon will disappear.

Note:

- When x-fan function is on, if the air conditioner is turned off, indoor fan will still operate at low speed for a while to blow the residual water inside the air duct.
- During x-fan operation, press X-FAN button to turn off x-fan function. Indoor fan will stop operation immediately.

9. TEMP Button

By pressing this button, you can see indoor set temperature, indoor ambient temperature or outdoor ambient temperature on indoor unit's display. The setting on remote controller is selected circularly as below:



- When selecting "🏠" or no display with remote controller, temperature indicator on indoor unit displays set temperature;
- When selecting "🏠" with remote controller, temperature indicator on indoor unit displays indoor ambient temperature;
- When selecting "🏠s" with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.

Note:

- Outdoor temperature display is not available for some models. At that time, indoor unit receives "🏠s" signal, while it displays indoor set temperature.
- It's defaulted to display set temperature when turning on the unit. There is no display in the remote controller.
- Only for the models whose indoor unit has dual-8 display

10. TURBO Button

Under COOL or HEAT mode, press this button to turn to quick COOL or quick HEAT mode. "🌀" icon is displayed on remote controller. Press this button again to exit turbo function and "🌀" icon will disappear.

11. SLEEP Button

Under COOL, HEAT mode, press this button to start up sleep function. "🌙" icon is displayed on remote controller. Press this button again to cancel sleep function and "🌙" icon will disappear.

12. LIGHT Button

Press this button to turn off display light on indoor unit. "💡" icon on remote controller disappears. Press this button again to turn on display light. "💡" icon is displayed.

Function Introduction for Combination Buttons

Child lock function:

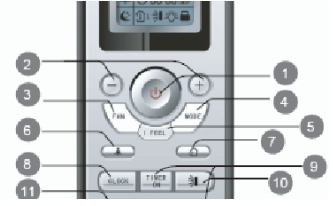
Press "+" and "-" simultaneously to turn on or turn off child lock function. When child lock function is on, "🔒" icon is displayed on remote controller. If you operate the remote controller, it won't send signal.

Temperature display switchover function:

Under OFF status, press "-" and "MODE" buttons simultaneously to switch temperature display between °C and °F.

Operation Guide

1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN, HEAT.
3. Press "+" or "-" button to set your required temperature. (Temperature can't be adjusted under auto mode).
4. Press "FAN" button to set your required fan speed: auto, low, medium and high speed.
5. Press "↻" button to select fan blowing angle.

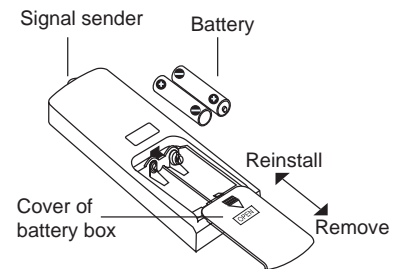


Replacement of Batteries in Remote Controller

1. Press the back side of remote controller marked with "OPEN" as shown in the fig, and then push out the cover of battery box along the arrow direction.
2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar are correct.
3. Reinstall the cover of battery box.

Note:

- During operation, point the remote control signal sender at the receiving window on indoor unit.
- The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you don't use remote controller for a long time, please take out the batteries.
- If the display on remote controller is fuzzy or there's no display, please replace batteries.



6.2 Brief Description of Modes and Functions

1. Temperature Parameters

- ◆ Indoor preset temperature (T_{preset})
- ◆ Indoor ambient temperature ($T_{\text{amb.}}$)

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) COOL mode

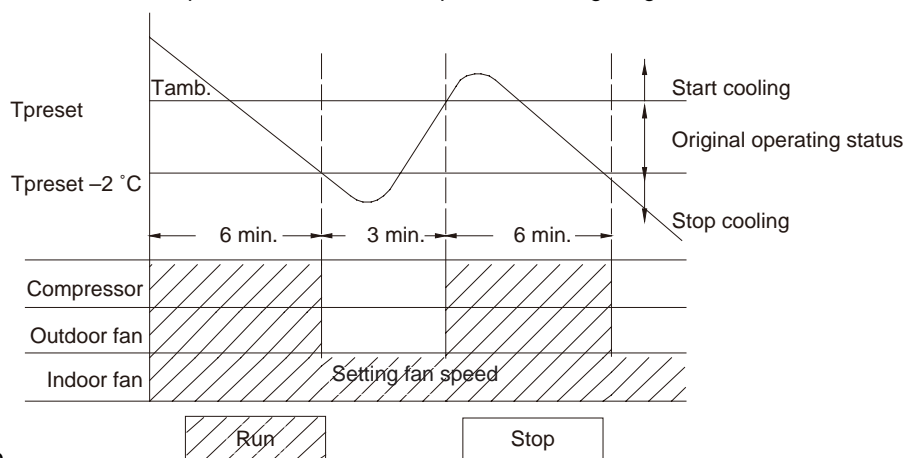
① The condition and process of cooling

If $T_{\text{amb.}} > T_{\text{preset}}$ COOL mode will act, the compressor and outdoor fan will run, and the indoor fan will run at the set speed.

If $T_{\text{amb.}} > T_{\text{preset}} - 2^{\circ}\text{C}$, the compressor will stop, the outdoor fan will delay 30 seconds to stop, and the indoor fan will run at the set speed.

If $T_{\text{preset}} - 2^{\circ}\text{C} < T_{\text{amb.}} < T_{\text{preset}}$, the unit will keep running in the previous mode.

In this mode, the reversal valve will not be powered on and the temperature setting range is $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$.



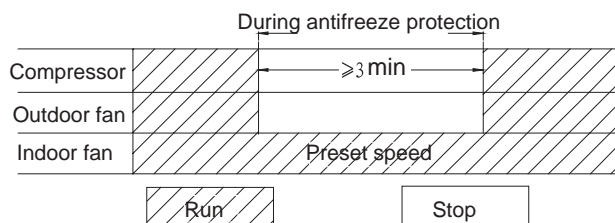
② Protection function

◆ Overcurrent protection

If total current is high, the compressor will run in limited frequency. If total current is too high, the compressor will stop, the outdoor fan will delay 30 seconds to stop, indoor unit will display E5 and outdoor yellow light will blink 5 times.

◆ Antifreezing protection

When the antifreezing protection is detected, the compressor will stop, the outdoor fan will stop after 30 seconds, and the indoor fan and swing motor will keep running in the original mode. When antifreezing protection is eliminated and the compressor has stopped for 3 minutes, the compressor will resume running in the original mode.



(2) Dehumidifying Mode

① Working conditions and process of dehumidifying

If $T_{\text{amb.}} > T_{\text{preset}}$, 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 $T_{\text{preset}} - 2^{\circ}\text{C} \leq T_{\text{amb.}} \leq T_{\text{preset}}$, the compressor remains at its original operation state.

If $T_{\text{amb.}} < T_{\text{preset}} - 2^{\circ}\text{C}$, 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) HEAT Mode

① Working conditions and process of heating

If $T_{amb} \leq T_{preset} + 2^{\circ}\text{C}$, 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 $T_{amb} \geq T_{preset} + 5^{\circ}\text{C}$, 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 $T_{preset} + 2^{\circ}\text{C} < T_{amb} < T_{preset} + 5^{\circ}\text{C}$, 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). $T_{\text{outdoor ambient}} > 5^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq -2^{\circ}\text{C}$;

(2) $-2^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < 5^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq -6^{\circ}\text{C}$;

(3) $-5^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < -2^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq -8^{\circ}\text{C}$;

(4) $-10^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < -5^{\circ}\text{C}$, $T_{\text{outdoor tube}} - T_{\text{compensatory}} \leq (T_{\text{outdoor ambient}} - 3^{\circ}\text{C})$

(5) $T_{\text{outdoor ambient}} < -10^{\circ}\text{C}$, $T_{\text{outdoor tube}} - T_{\text{compensatory}} \leq (T_{\text{outdoor ambient}} - 3^{\circ}\text{C})$

(after energizing, $T_{\text{compensatory}} = 0^{\circ}\text{C}$ during the first defrosting; if it is not the first defrosting, $T_{\text{compensatory}}$ is confirmed by $T_{\text{outdoor tube}}$ of quitting last defrosting: a. when $T_{\text{outdoor tube}} > 2^{\circ}\text{C}$, $T_{\text{compensatory}} = 0^{\circ}\text{C}$; b. when $T_{\text{outdoor tube}} \leq 2^{\circ}\text{C}$, $T_{\text{compensatory}} = 3^{\circ}\text{C}$)

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 $T_{\text{outdoor ambient}} \geq 10^{\circ}\text{C}$, 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 $T_{\text{indoor amb.}} < 24^{\circ}\text{C}$: if $T_{\text{tube}} \leq 40^{\circ}\text{C}$ 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 $T_{\text{tube}} > 40^{\circ}\text{C}$, 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 $T_{\text{tube}} > 42^{\circ}\text{C}$, the fan will run at present speed.

② In the case of $T_{\text{indoor amb.}} \geq 24^{\circ}\text{C}$: if $T_{\text{tube}} \leq 42^{\circ}\text{C}$, 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 $T_{\text{tube}} > 42^{\circ}\text{C}$, the indoor fan will be converted to preset speed.

Note: $T_{\text{indoor amb.}}$ 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 $I_{\text{total}} \leq 6\text{A}$, frequency rise will be allowed; if $I_{\text{total}} \geq 7\text{A}$, frequency rise will not be allowed; if $I_{\text{total}} \geq 8\text{A}$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq 9\text{A}$, 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 $T_{\text{ambient}} \geq 26^{\circ}\text{C}$, the unit will operate in Cool mode. The set temperature is 25°C.

b. When $T_{\text{ambient}} \leq 22^{\circ}\text{C}$, 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 $23^{\circ}\text{C} \leq T_{\text{ambient}} \leq 25^{\circ}\text{C}$, 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 its cooling mode, operation frequency is same as that under cooling mode; if its 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 $T_{\text{tube}} \leq 52^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If $T_{\text{tube}} \geq 55^{\circ}\text{C}$, frequency rise is not allowed.
- c. If $T_{\text{tube}} \geq 58^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If $T_{\text{tube}} \geq 62^{\circ}\text{C}$, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

- a. If $T_{\text{tube}} \leq 50^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If $T_{\text{tube}} \geq 53^{\circ}\text{C}$, frequency rise is not allowed.
- c. If $T_{\text{tube}} \geq 56^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If $T_{\text{tube}} \geq 60^{\circ}\text{C}$, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature $\geq 98^{\circ}\text{C}$, frequency is not allowed to rise.

If exhaust temperature $\geq 103^{\circ}\text{C}$, the compressor will run at reduced frequency.

If exhaust temperature $\geq 110^{\circ}\text{C}$, the compressor will stop.

If exhaust temperature $\leq 90^{\circ}\text{C}$ and 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.

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**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: $16\sim 30^{\circ}\text{C}$, 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

1. In cooling mode:

1.1 When the initial set temperature is $16\sim 23^{\circ}\text{C}$, the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 3°C ; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.2 When the initial set temperature is 24-27°C, the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 2°C; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.3 When the initial set temperature is 28-29°C, the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 1°C; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.4 When the initial set temperature is 30°C, the unit will keep on running at this temperature; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

Relationship between set temperature and running time:

Initial Temp.	Running time(T)							
0(start)	1	2	3	4	5	6	7	8
16	17	18	19	19	19	19	18	18
17	18	19	20	20	20	20	19	19
18	19	20	21	21	21	21	20	20
19	20	21	22	22	22	22	21	21
20	21	22	23	23	23	23	22	22
21	22	23	24	24	24	24	23	23
22	23	24	25	25	25	25	24	24
23	24	25	26	26	26	26	25	25
24	25	26	26	26	26	26	25	25
25	26	27	27	27	27	27	26	26
26	27	28	28	28	28	28	27	27
27	28	29	29	29	29	29	28	28
28	29	29	29	29	29	29	28	28
29	30	30	30	30	30	30	29	29
30	30	30	30	30	30	30	29	29

2. In heating mode:

2.1 When the initial set temperature is 16°C, the unit will keep on running at this temperature;

2.2 When the initial set temperature is 17-20°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 1°C;

2.3 When the initial set temperature is 21-27°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 2°C;

2.4 When the initial set temperature is 28-30°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 3°C;

Relationship between set temperature and running time:

Initial Temp.	Running time(T)							
0(start)	1	2	3	4	5	6	7	8
16	16	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16
18	17	17	17	17	17	17	17	17
19	18	18	18	18	18	18	18	18
20	19	19	19	19	19	19	19	19
21	20	19	19	19	19	19	19	19
22	21	20	20	20	20	20	20	20
23	22	21	21	21	21	21	21	21
24	23	22	22	22	22	22	22	22
25	24	23	23	23	23	23	23	23
26	25	24	24	24	24	24	24	24
27	26	25	25	25	25	25	25	25
28	27	26	25	25	25	25	25	25
29	28	27	26	26	26	26	26	26
30	29	28	27	27	27	27	27	27

(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.

① Cooling mode: in auto cooling mode or normal cooling mode, the auto fan speed will run at below mode:

- a. When $T_{amb} \geq T_{preset} + 2^{\circ}\text{C}$, the indoor fan will run at high speed;
- b. When $T_{preset} < T_{amb} < T_{preset} + 2^{\circ}\text{C}$, the indoor fan will run at middle speed;
- c. $T_{amb} \leq T_{preset}$, the indoor fan will run at low speed;

Switches between high speed and middle speed, middle speed and low speed, high speed and low speed, running time of 3.5 minutes must be ensured.

② Heating mode: in auto heating mode or normal heating mode, the auto fan speed will run at below mode:

- a. When $T_{amb} \leq T_{preset} + 1^{\circ}\text{C}$, the indoor fan will run at high speed;
- b. When $T_{preset} + 1^{\circ}\text{C} < T_{amb} < T_{preset} + 3^{\circ}\text{C}$, the indoor fan will run at middle speed;
- c. $T_{amb} \geq T_{preset} + 3^{\circ}\text{C}$, the indoor fan will run at low speed;

Switches between high speed and middle speed, middle speed and low speed, high speed and low speed, running time of 3.5 minutes must be ensured.

Fan mode is the same as cooling mode.

(7) Buzzer Control

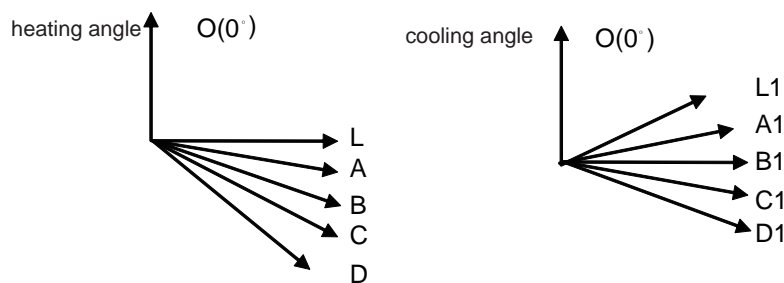
The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler does not receive the remote control ON signal under the mode of heating mode.

(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 set temperature displayed in auto cooling and fan mode is 25°C and the set temperature displayed in auto heating mode is 20°C. Under heating mode, nixie tube displays H1 or heating indicator is off 0.5s and blinks 10s in defrosting. (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 E8: Overload protection

F1: Indoor ambient sensor start and short circuit (continuously measured failure in 5S)

F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 5S)

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 dont 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 2 minutes under low air damper (The swing will operate as the former status within 2 minutes, cooling indicator is on for 0.5s and then off for 10s in drying 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.

(14) Electric heating band control of outdoor unit

① Compressor electric heating band control:

a) Start condition: the compressor is in off status and the outdoor ambient temperature $\leq -5^{\circ}\text{C}$.

b) Stop condition: the band is off when either of the below condition is met:

1. The compressor is in on status;

2. The compressor is in off status and the outdoor ambient temperature $\geq -5^{\circ}\text{C}$.

c) When outdoor ambient temperature sensor is in malfunction status, the electric heating band stops operation.

② Condenser electric heating band control:

1. When $T_{\text{outdoor ambient}} \leq 1^{\circ}\text{C}$, the electric heating band starts working;

2. When enter defrosting and defrosting is finished, the chassis electric heating band starts working for 3min as the compressor starts. After the compressor starts for 3min and $T_{\text{outdoor ambient}} \geq 3^{\circ}\text{C}$, the electric heating band stops operation.

3. When $T_{\text{outdoor ambient}} \geq 3^{\circ}\text{C}$, the condenser electric heating band doesn't work.

4. When $1^{\circ}\text{C} < T_{\text{outdoor ambient}} < 3^{\circ}\text{C}$, the condenser electric heating band keeps the previous status.

When outdoor ambient temperature sensor is in malfunction status, the electric heating band stops operation; the electric heating band can work again after 2min of last stop.

(15) Compulsive defrosting function

1. Condition of entering compulsive defrosting function;

When the unit and remote controller are set in heating mode and the set temperature is 16°C , continuously pressing "+, -, +, -, +, -" button within 5s, the indoor unit will enter compulsive defrosting setting and indoor unit will send compulsive defrosting signal to outdoor unit. When the outdoor unit receives compulsive defrosting signal, it will operate in normal defrosting mode. When the indoor unit receives the information that outdoor unit has entered defrosting, it will cancel sending compulsive defrosting signal to outdoor unit. Heating indicator on indoor unit is off for 0.5s and then blinks for 10s.

2. Condition of exiting compulsive defrosting function:

The condition of exiting compulsive defrosting function is the same as that in normal defrosting; after finishing defrosting, outdoor unit will send the signal of normal operation mode to indoor unit and when the indoor unit receives the signal, it will operate in normal mode.

(16) Refrigerant recycling function

1. Condition of entering refrigerant recycling function:

Within 5min of energizing, turning on the unit in cooling mode of 16°C , continuously press light button for 3 times within 3s to enter refrigerant recycling mode; Fo is displayed and send refrigerant recycling signal to outdoor unit.

2. Condition of exiting refrigerant recycling mode:

After entering refrigerant recycling mode, when receive any remote control signal or enter refrigerant recycling mode for 25min, the unit will exit refrigerant recycling mode.

Operation after refrigerant recycling mode: indoor unit runs in cooling mode, fan speed is super high, set temperature 16°C and the horizontal louver opens to the min angle.

Operation after exiting refrigerant recycling mode: indoor unit will run is the set status of last time.

Part II : Installation and Maintenance

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

- The installation or maintenance must accord with the instructions.
- Comply with all national electrical codes and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- All installation and maintenance shall be performed by distributor or qualified person.
- All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
- Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.



Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.

10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.

13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.

14. Replace the fuse with a new one of the same specification if it is burnt down; don't replace it with a cooper wire or conducting wire.

15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 20kg.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 2m.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
2. 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 or other hazards.
3. Make sure no refrigerant gas is leaking out when installation is completed.
4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
5. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

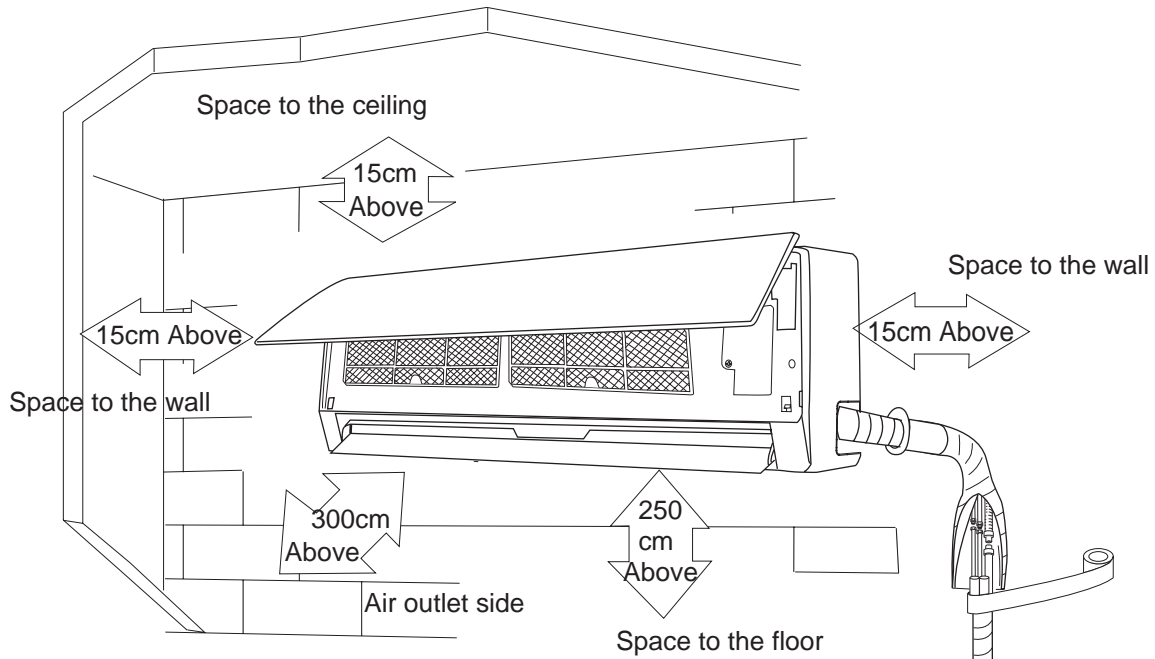
Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

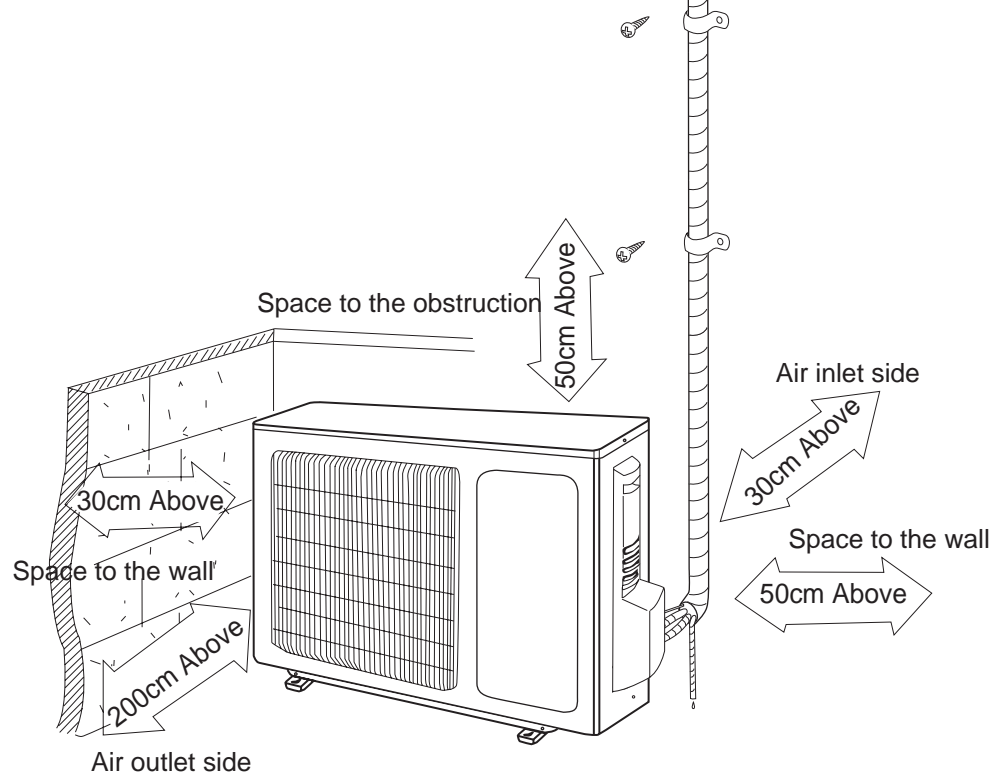
<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure meter</p> 
<p>10. Pipe pliers, pipe cutter</p> 	<p>11. Pipe expander, pipe bender</p> 	<p>12. Soldering appliance, refrigerant container</p> 

8. Installation

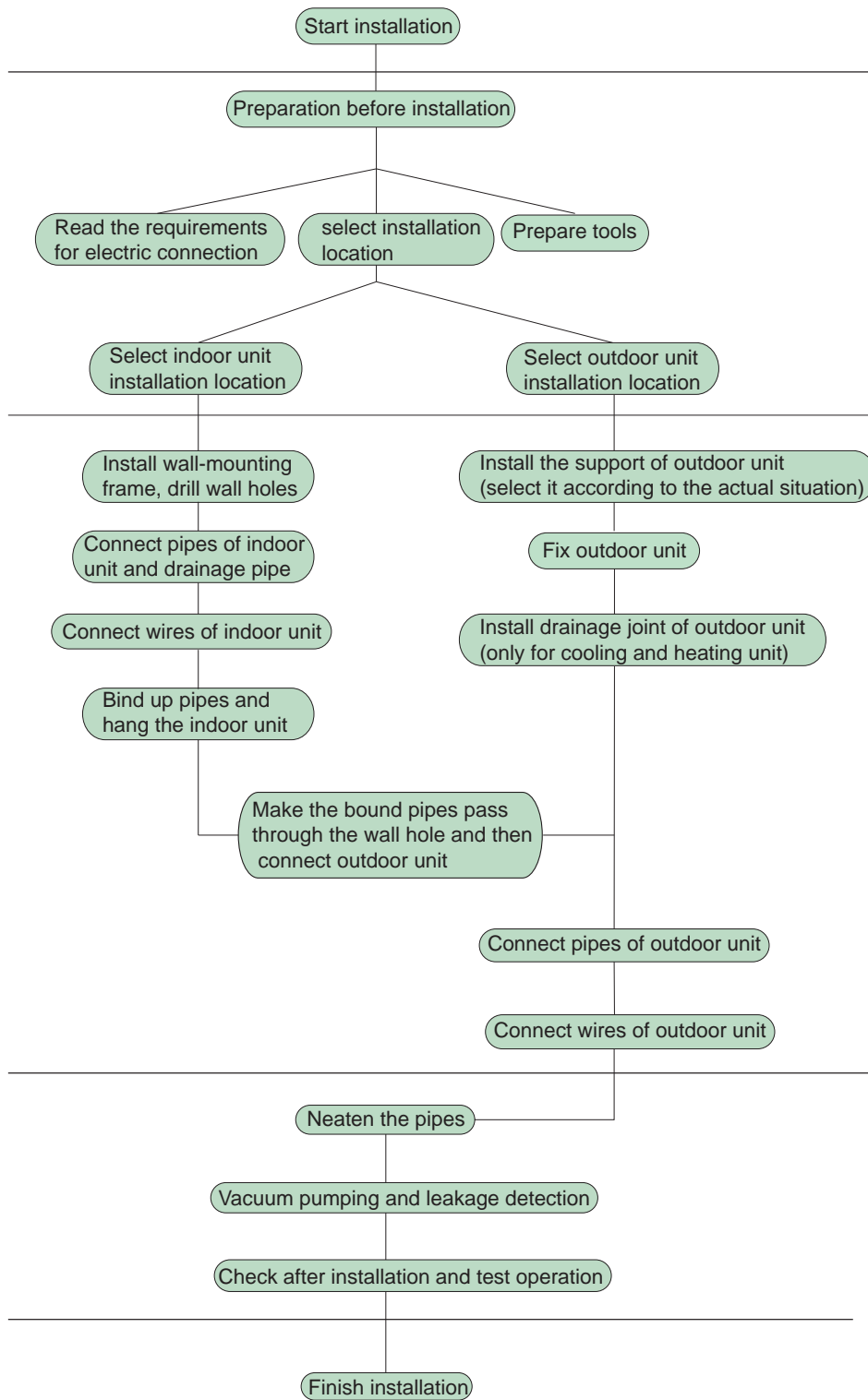
8.1 Installation Dimension Diagram



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



Installation procedures



Note: this flow is only for reference; please find the more detailed installation steps in this section.

8.2 Installation Parts-checking

No.	Name	No.	Name
1	Indoor unit	8	Sealing gum
2	Outdoor unit	9	Wrapping tape
3	Connection pipe	10	Support of outdoor unit
4	Drainage pipe	11	Fixing screw
5	Wall-mounting frame	12	Drainage plug(cooling and heating unit)
6	Connecting cable(power cord)	13	Owner's manual, remote controller
7	Wall pipe		

⚠ Note:

- 1.Please contact the local agent for installation.
- 2.Don't use unqualified power cord.

8.3 Selection of Installation Location

1. Basic Requirement:

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:

- (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air.
- (5) The place with sulfureted gas.
- (6) Other places with special circumstances.

2. Indoor Unit:

- (1) There should be no obstruction near air inlet and air outlet.
- (2) Select a location where the condensation water can be dispersed easily and won't affect other people.
- (3) Select a location which is convenient to connect the outdoor unit and near the power socket.
- (4) Select a location which is out of reach for children.
- (5) The location should be able to withstand the weight of indoor unit and won't increase noise and vibration.
- (6) The appliance must be installed 2.5m above floor.
- (7) Don't install the indoor unit right above the electric appliance.
- (8) The appliance shall not be installed in the laundry

3. Outdoor Unit:

- (1) Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
- (2) The location should be well ventilated and dry, in which the outdoor unit won't be exposed directly to sunlight or strong wind.
- (3) The location should be able to withstand the weight of outdoor unit.
- (4) Make sure that the installation follows the requirement of installation dimension diagram.
- (5) Select a location which is out of reach for children and far away from animals or plants.If it is unavoidable, please add fence for safety purpose.

8.4 Electric Connection Requirement

1. Safety Precaution

- (1) Must follow the electric safety regulations when installing the unit.
- (2) According to the local safety regulations, use qualified power supply circuit and air switch.
- (3) Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock,fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.

Air-conditioner	Air switch capacity
09K	10A
12K	10A

- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) For appliances with type Y attachment,the instructions shall contain the substance of thefollowing.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.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

2. Grounding Requirement:

- (1) The air conditioner is first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- (2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- (3) The grounding resistance should comply with national electric safety regulations.
- (4) The appliance must be positioned so that the plug is accessible.
- (5) An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- (6) Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

8.5 Installation of Indoor Unit

1. Choosing Installation location

Recommend the installation location to the client and then confirm it with the client.

2. Install Wall-mounting Frame

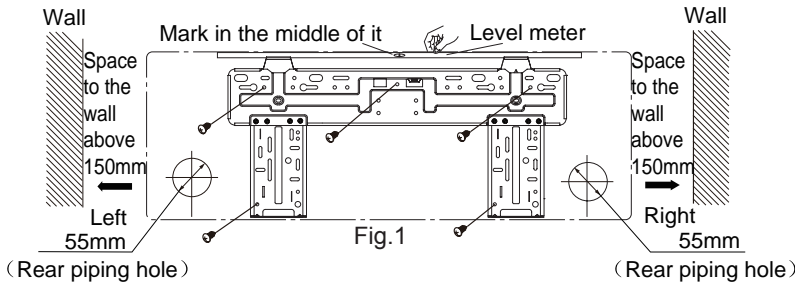
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles

in the holes.

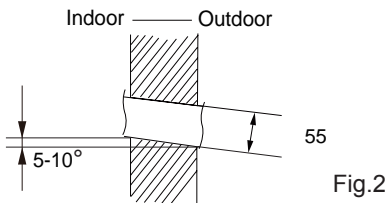
(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Install Wall-mounting Frame

(1) Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame. (As show in Fig.1)



(2) Open a piping hole with the diameter of $\Phi 55$ on the selected outlet pipe position. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of $5-10^\circ$. (As show in Fig.2)



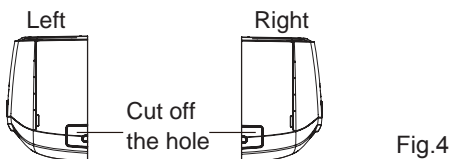
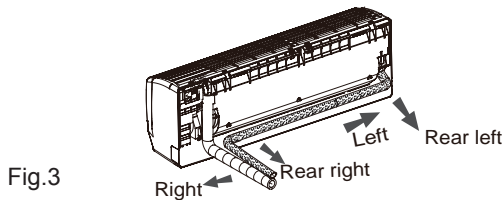
⚠ Note:

- (1) Pay attention to dust prevention and take relevant safety measures when opening the hole.
- (2) The plastic expansion particles are not provided and should be bought locally.

4. Outlet Pipe

(1) The pipe can be led out in the direction of right, rear right, left or rear left. (As show in Fig.3)

(2) When selecting leading out the pipe from left or right, please cut off the corresponding hole on the bottom case. (As show in Fig.4)



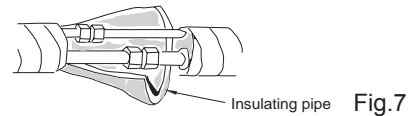
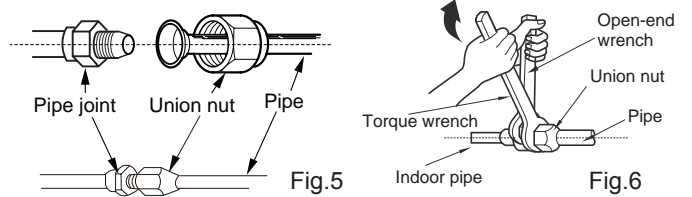
5. Connect the Pipe of Indoor Unit

(1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)

(2) Pretightening the union nut with hand.

(3) Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench. (As show in Fig.6)

(4) Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape. (As show in Fig.7)



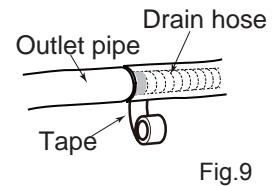
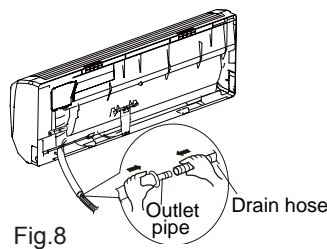
Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
$\Phi 6$	15~20
$\Phi 9.52$	30~40
$\Phi 12$	45~55
$\Phi 16$	60~65
$\Phi 19$	70~75

6. Install Drain Hose

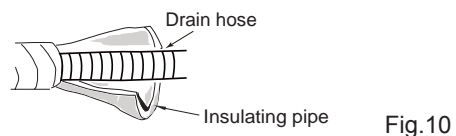
(1) Connect the drain hose to the outlet pipe of indoor unit. (As show in Fig.8)

(2) Bind the joint with tape. (As show in Fig.9)



⚠ Note:

- (1) Add insulating pipe in the indoor drain hose in order to prevent condensation.
- (2) The plastic expansion particles are not provided. (As show in Fig.10)



7. Connect Wire of Indoor Unit

(1) Open the panel, remove the screw on the wiring cover and then take down the cover.(As show in Fig.11)

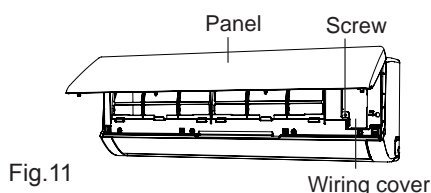


Fig.11

(2) Make the power connection wire go through the cable-cross hole at the back of indoor unit and then pull it out from the front side.(As show in Fig.12)

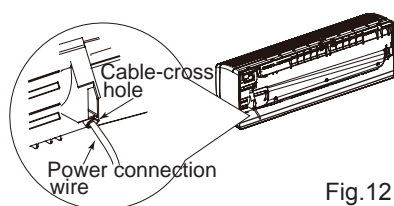
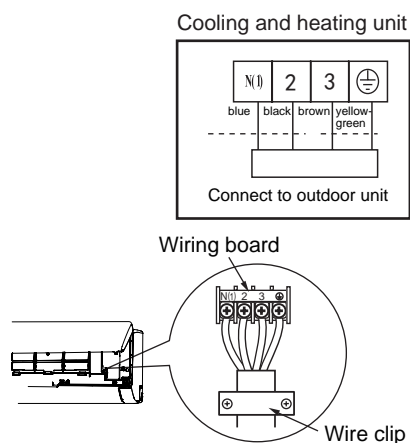


Fig.12

(3) Remove the wire clip; connect the power connection wire to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip.(As show in Fig.13)



Note: The wiring connect is for reference only, please refer to the actual one.

Fig.13

(4) Put wiring cover back and then tighten the screw.

(5) Close the panel.

⚠ Note:

(1) All wires of indoor unit and outdoor unit should be connected by a professional.

(2) If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.

(3) For the air conditioner with plug, the plug should be reachable after finishing installation.

(4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

8. Bind up Pipe

(1) Bind up the connection pipe, power cord and drain hose with the band.(As show in Fig.14)

(2) Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose.(As show in Fig.15)

(3) Bind them evenly.

(4) The liquid pipe and gas pipe should be bound separately at the end.

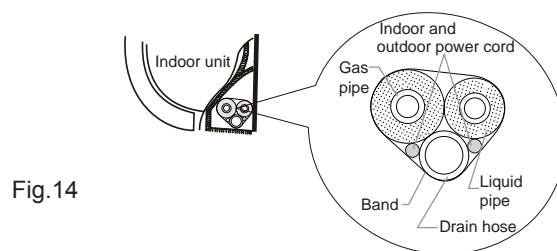


Fig.14

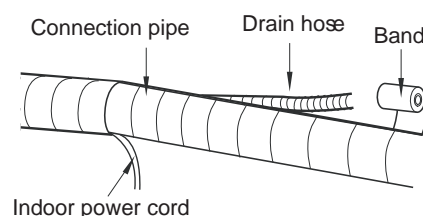


Fig.15

⚠ Note:

(1) The power cord and control wire can't be crossed or winding.

(2) The drain hose should be bound at the bottom.

9. Hang the Indoor Unit

(1) Put the bound pipes in the wall pipe and then make them pass through the wall hole.

(2) Hang the indoor unit on the wall-mounting frame.

(3) Stuff the gap between pipes and wall hole with sealing gum.

(4) Fix the wall pipe.(As show in Fig.16)

(5) Check if the indoor unit is installed firmly and closed to the wall.(As show in Fig.17)

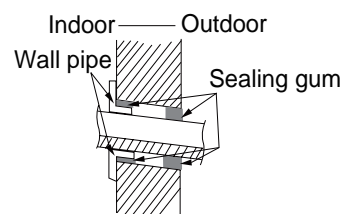


Fig.16

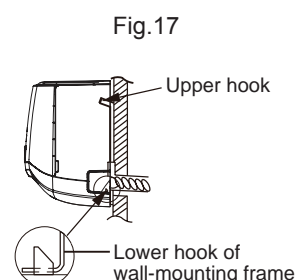


Fig.17

⚠ Note:

Do not bend the drain hose too excessively in order to prevent blocking.

8.6 Installation of Outdoor Unit

1. Fix the Support of Outdoor Unit(select it according to the actual installation situation)

- (1) Select installation location according to the house structure.
- (2) Fix the support of outdoor unit on the selected location with expansion screws.

▲ Note:

- (1) Take sufficient protective measures when installing the outdoor unit.
- (2) Make sure the support can withstand at least four times the unit weight.
- (3) The outdoor unit should be installed at least 3cm above the floor in order to install drain joint.(As show in Fig.18)
- (4) For the unit with cooling capacity of 2300W~5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W~16000W, 10 expansion screws are needed.

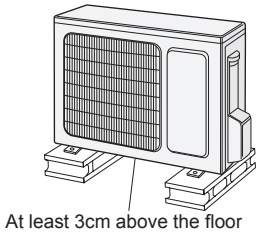


Fig.18

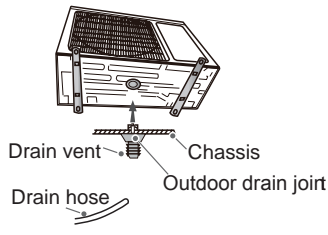


Fig.19

2. Install Drain Joint(Only for cooling and heating unit)

- (1) Connect the outdoor drain joint into the hole on the chassis.
 - (2) Connect the drain hose into the drain vent.
- (As show in Fig.19)

3. Fix Outdoor Unit

- (1) Place the outdoor unit on the support.
 - (2) Fix the foot holes of outdoor unit with bolts.
- (As show in Fig.20)

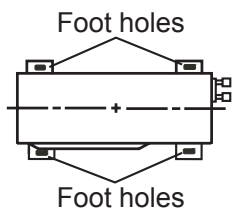


Fig.20

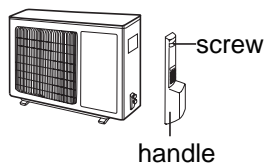


Fig.21

4. Connect Indoor and Outdoor Pipes

- (1) Remove the screw on the right handle of outdoor unit and then remove the handle.(As show in Fig.21)
- (2) Remove the screw cap of valve and aim the pipe joint at the bellmouth of pipe.(As show in Fig.22)

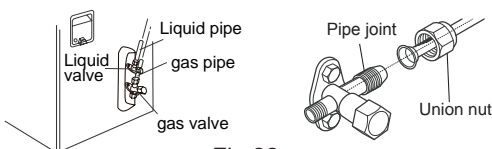


Fig.22

- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
Φ6	15~20
Φ9.52	30~40
Φ12	45~55
Φ16	60~65
Φ19	70~75

5. Connect Outdoor Electric Wire

- (1) Remove the wire clip; connect the power cord to the wiring terminal according to the color; fix them with screws. (As show in Fig.23)

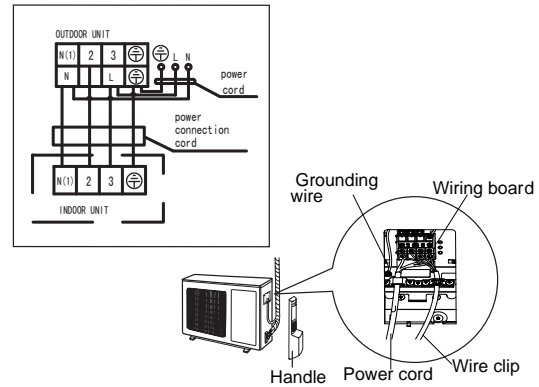


Fig.23

Note: the wiring connect is for reference only, please refer to the actual one.

- (2) Fix the power connection wire with wire clip.
- (3) Fix the stopper on handle with screw.

▲ Note:

- (1) After tightening the screw, pull the power cord slightly to check if it is firm.
- (2) Never cut the power connection wire to prolong or shorten the distance.

6. Neaten the Pipes

- (1) The pipes should be placed along the wall, bent reasonably and hidden possibly. Min. semidiameter of bending the pipe is 10cm.
- (2) If the outdoor unit is higher than the wall hole, you must set a U-shaped curve in the pipe before pipe goes into the room, in order to prevent rain from getting into the room.(As show in Fig.24)

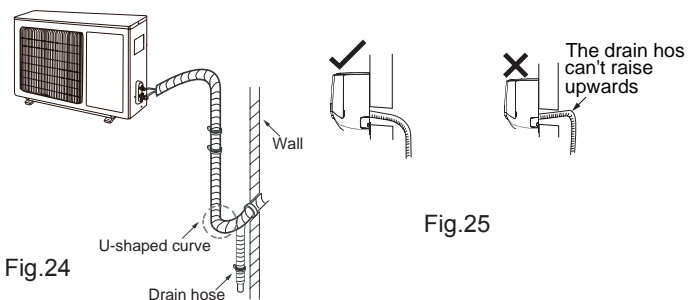


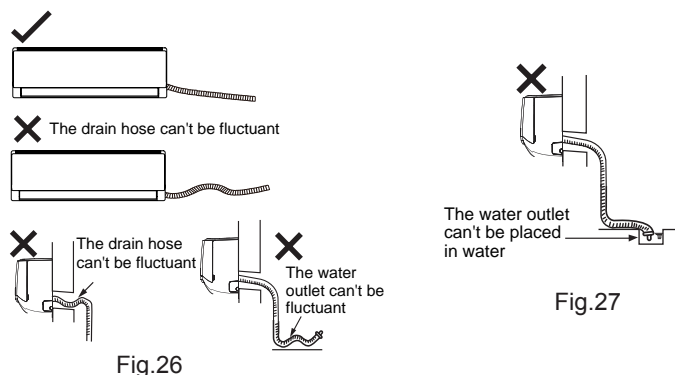
Fig.24

Fig.25

▲ Note:

- (1) The through-wall height of drain hose shouldn't be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fluctuant, etc.(As show in Fig.26)

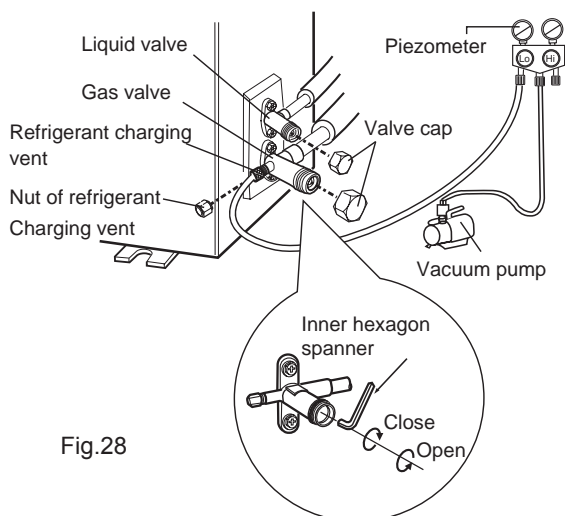
(3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)



8.7 Vacuum Pumping and Leak Detection

1. Use Vacuum Pump

- (1) Remove the valve caps on the liquid valve and gas valve and the nut of refrigerant charging vent.
- (2) Connect the charging hose of piezometer to the refrigerant charging vent of gas valve and then connect the other charging hose to the vacuum pump.
- (3) Open the piezometer completely and operate for 10-15min to check if the pressure of piezometer remains in -0.1MPa.
- (4) Close the vacuum pump and maintain this status for 1-2min to check if the pressure of piezometer remains in -0.1MPa. If the pressure decreases, there may be leakage.
- (5) Remove the piezometer, open the valve core of liquid valve and gas valve completely with inner hexagon spanner.
- (6) Tighten the screw caps of valves and refrigerant charging vent.(As show in Fig.28)



2. Leakage Detection

- (1) With leakage detector:
Check if there is leakage with leakage detector.
- (2) With soap water:
If leakage detector is not available, please use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water for more than 3min. If there are air bubbles coming out of this position, there's a leakage.

8.8 Check after Installation and Test Operation

1. Check after Installation

Check according to the following requirement after finishing installation.

NO.	Items to be checked	Possible malfunction
1	Has the unit been installed firmly?	The unit may drop, shake or emit noise.
2	Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating) capacity.
3	Is heat insulation of pipeline sufficient?	It may cause condensation and water dripping.
4	Is water drained well?	It may cause condensation and water dripping.
5	Is the voltage of power supply according to the voltage marked on the nameplate?	It may cause malfunction or damage the parts.
6	Is electric wiring and pipeline installed correctly?	It may cause malfunction or damage the parts.
7	Is the unit grounded securely?	It may cause electric leakage.
8	Does the power cord follow the specification?	It may cause malfunction or damage the parts.
9	Is there any obstruction in air inlet and air outlet?	It may cause insufficient cooling (heating).
10	The dust and sundries caused during installation are removed?	It may cause malfunction or damaging the parts.
11	The gas valve and liquid valve of connection pipe are open completely?	It may cause insufficient cooling (heating) capacity.

2. Test Operation

- (1) Preparation of test operation
 - The client approves the air conditioner installation.
 - Specify the important notes for air conditioner to the client.
- (2) Method of test operation
 - Put through the power, press ON/OFF button on the remote controller to start operation.
 - Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
 - If the ambient temperature is lower than 16°C , the air conditioner can't start cooling.

9. Maintenance

9.1 Error Code List

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
1	High pressure protection of system	E1							During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment); 3. Ambient temperature is too high.
2	Antifreezing protection	E2				OFF 1S and blink 3 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
3	In defect of refrigerant	F0					OFF 1S and blink 9 times		The Dual-8 Code Display will show F0 and the complete unit stops.	1. In defect of refrigerant; 2. Indoor evaporator temperature sensor works abnormally; 3. The unit has been plugged up somewhere.
4	High discharge temperature protection of compressor	E4				OFF 1S and blink 7 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
5	Overcurrent protection	E5				OFF 1S and blink 5 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.
6	Communication Malfunction	E6				Always ON			During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
7	High temperature resistant protection	E8				OFF 1S and blink 6 times			During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
8	EEPROM malfunction	EE				OFF 1S and blink 11 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
9	Limit/decrease frequency due to high temperature of module	EU							All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
10	Malfunction protection of jumper cap	C5							Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)	Operation Indicator	Cool Indicator	Heating Indicator	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			Yellow Indicator
11	Gathering refrigerant	Fo				OFF 1S and blink 17 times			When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode
12	Indoor ambient temperature sensor is open/short circuited	F1							During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged.(check with sensor resistance value chart) 4. Mainboard damaged.
13	Indoor evaporator temperature sensor is open/short circuited	F2							AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.
14	Outdoor ambient temperature sensor is open/short circuited	F3					OFF 1S and blink 6 times		During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
15	Outdoor condenser temperature sensor is open/short circuited	F4					OFF 1S and blink 5 times		During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
16	Outdoor discharge temperature sensor is open/short circuited	F5					OFF 1S and blink 7 times		During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasnt been inserted into the copper tube
17	Limit/decrease frequency due to overload	F6					OFF 1S and blink 3 times		All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
18	Decrease frequency due to overcurrent	F8					OFF 1S and blink once		All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
19	Decrease frequency due to high air discharge	F9					OFF 1S and blink twice		All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
20	Limit/decrease frequency due to antifreezing	FH					OFF 1S and blink 4 times		All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low
21	Voltage for DC bus-bar is too high	PH					OFF 1S and blink 13 times		During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
22	Voltage of DC bus-bar is too low	PL					OFF 1S and blink 12 times		During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
23	Compressor Min frequency in test state	P0		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during min. cooling or min. heating test
24	Compressor rated frequency in test state	P1		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during nominal cooling or nominal heating test
25	Compressor maximum frequency in test state	P2		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)					Showing during max. cooling or max. heating test

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
26	Compressor intermediate frequency in test state	P3		(during blinking, ON 0.25s and OFF 0.25s)	(during blinking, ON 0.25s and OFF 0.25s)				Showing during middle cooling or middle heating test	
27	Overcurrent protection of phase current for compressor	P5						During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor).	
28	Charging malfunction of capacitor	PU						During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor	
29	Malfunction of module temperature sensor circuit	P7						During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1	
30	Module high temperature protection	P8						During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.	
31	Decrease frequency due to high temperature resistant during heating operation							All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)	
32	Static dedusting protection									
33	Overload protection for compressor	H3				OFF 1S and blink 8 times		During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2.Refer to the malfunction analysis (discharge protection, overload)	

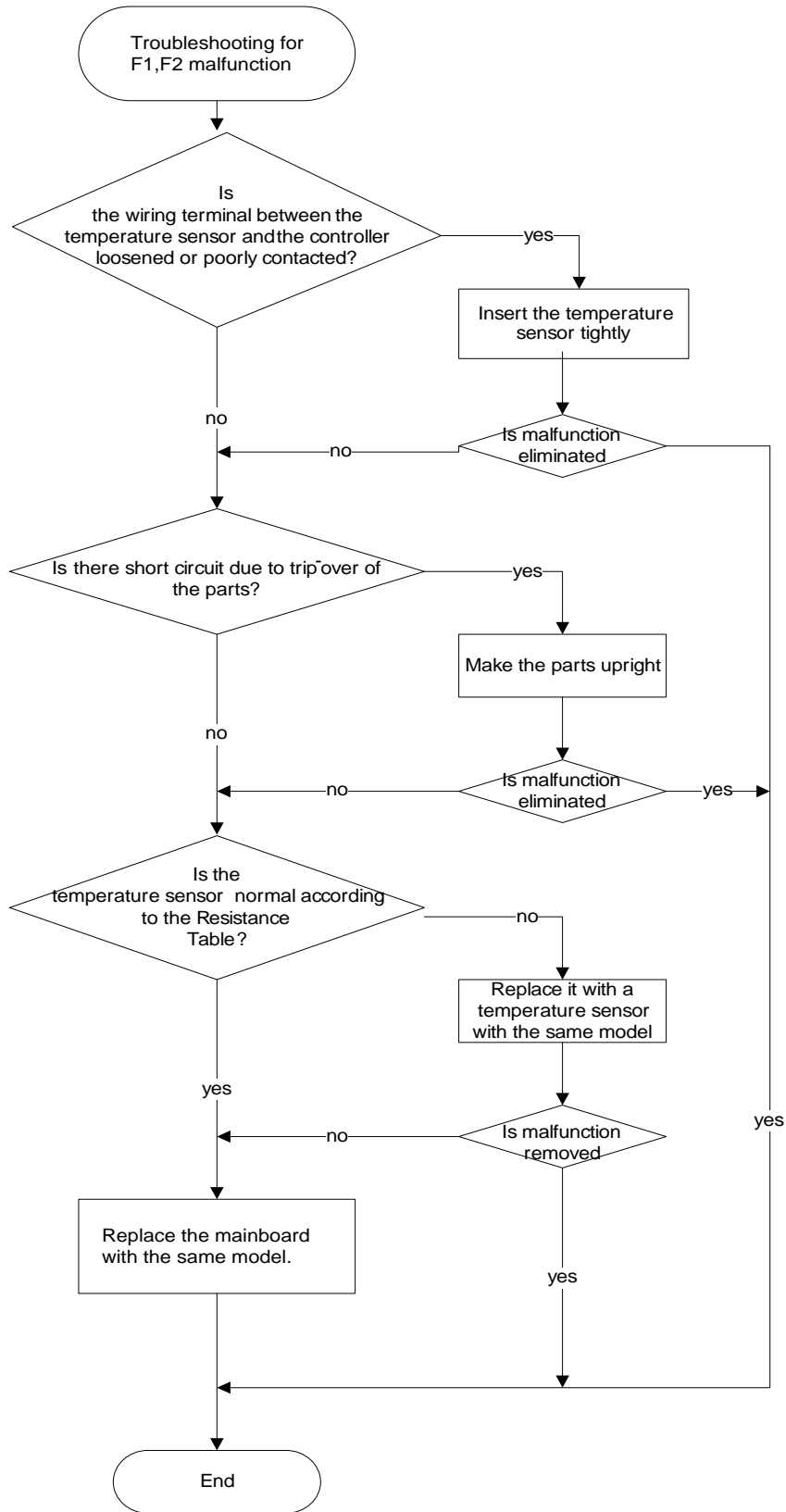
NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
34	System is abnormal	E8				OFF 1S and blink 6 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (overload, high temperature resistant)
35	IPM protection	H5				OFF 1S and blink 4 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
36	Module temperature is too high	H5				OFF 1S and blink 10 times				
37	Internal motor (fan motor) do not operate	H6							Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard rev detecting circuit.
38	Desynchronizing of compressor	H7							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
39	PFC protection	HC				OFF 1S and blink 14 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
40	Outdoor DC fan motor malfunction	L3					OFF 1S and blink 14 times		Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
41	power protection	L9				OFF 1S and blink 9 times			compressor stop operation and Outdoor fan motor will stop 30s latter , 3 minutes latter fan motor and compressor will restart	To protect the electrical components when detect high power
42	Indoor unit and outdoor unit doesn't match	LP				OFF 1S and blink 16 times			compressor and Outdoor fan motor can't work	Indoor unit and outdoor unit doesn't match
43	Failure start-up	LC							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
44	Malfunction of phase current detection circuit for compressor	U1							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
45	Malfunction of voltage dropping for DC bus-bar	U3							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
46	Malfunction of complete units current detection	U5							During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.
47	The four-way valve is abnormal	U7							If this malfunction occurs during heating operation, the complete unit will stop operation.	1. Supply voltage is lower than AC175V; 2. Wiring terminal 4V is loosened or broken; 3. 4V is damaged, please replace 4V.
48	Zero-crossing malfunction of outdoor unit	U9							During cooling operation, compressor will stop while indoor fan will operate; during heating, the complete unit will stop operation.	Replace outdoor control panel AP1
49	Frequency limiting (power)						OFF 1S and blink 13 times			
50	Compressor running					OFF 1S and blink once				
51	The temperature for turning on the unit is reached						OFF 1S and blink 8 times			
52	Frequency limiting (module temperature)						OFF 1S and blink 11 times			

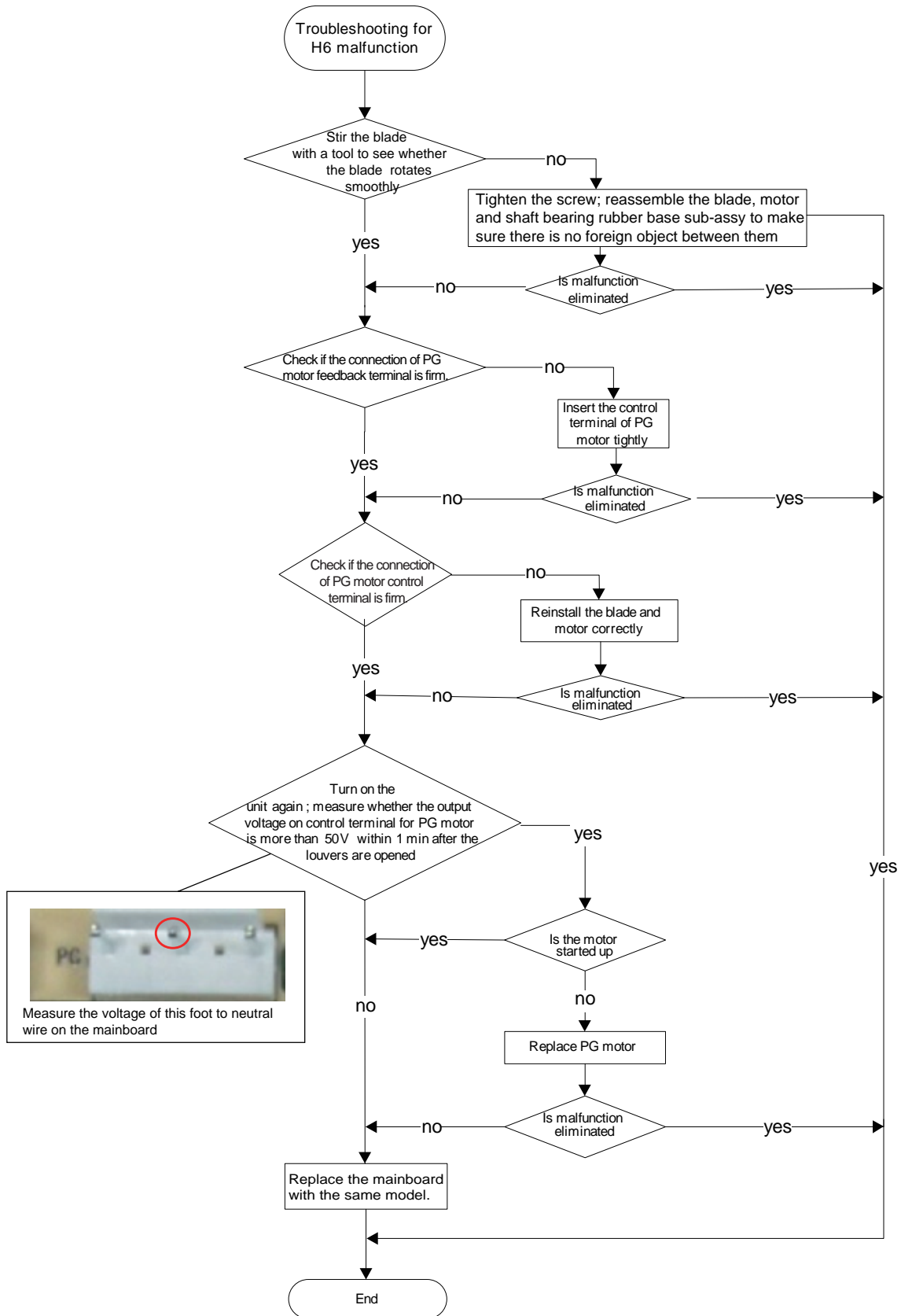
NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
53	Normal communication							OFF 0.5S and blink once		
54	Defrosting				OFF 3S and blink once (during blinking, ON 10s and OFF 0.5s)	OFF 1S and blink twice			Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state

9.2 Troubleshooting for Main Malfunction

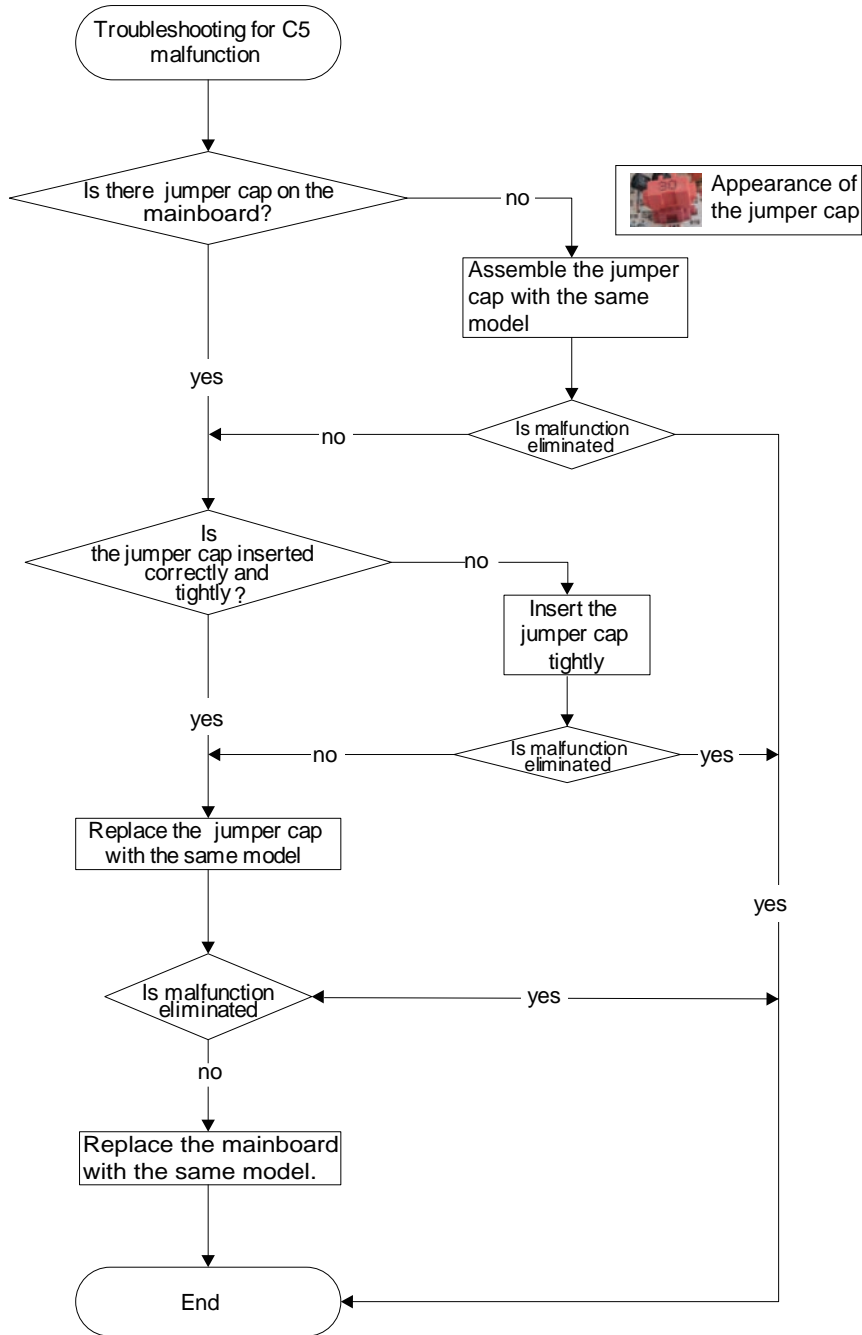
1. Malfunction of Temperature Sensor F1, F2



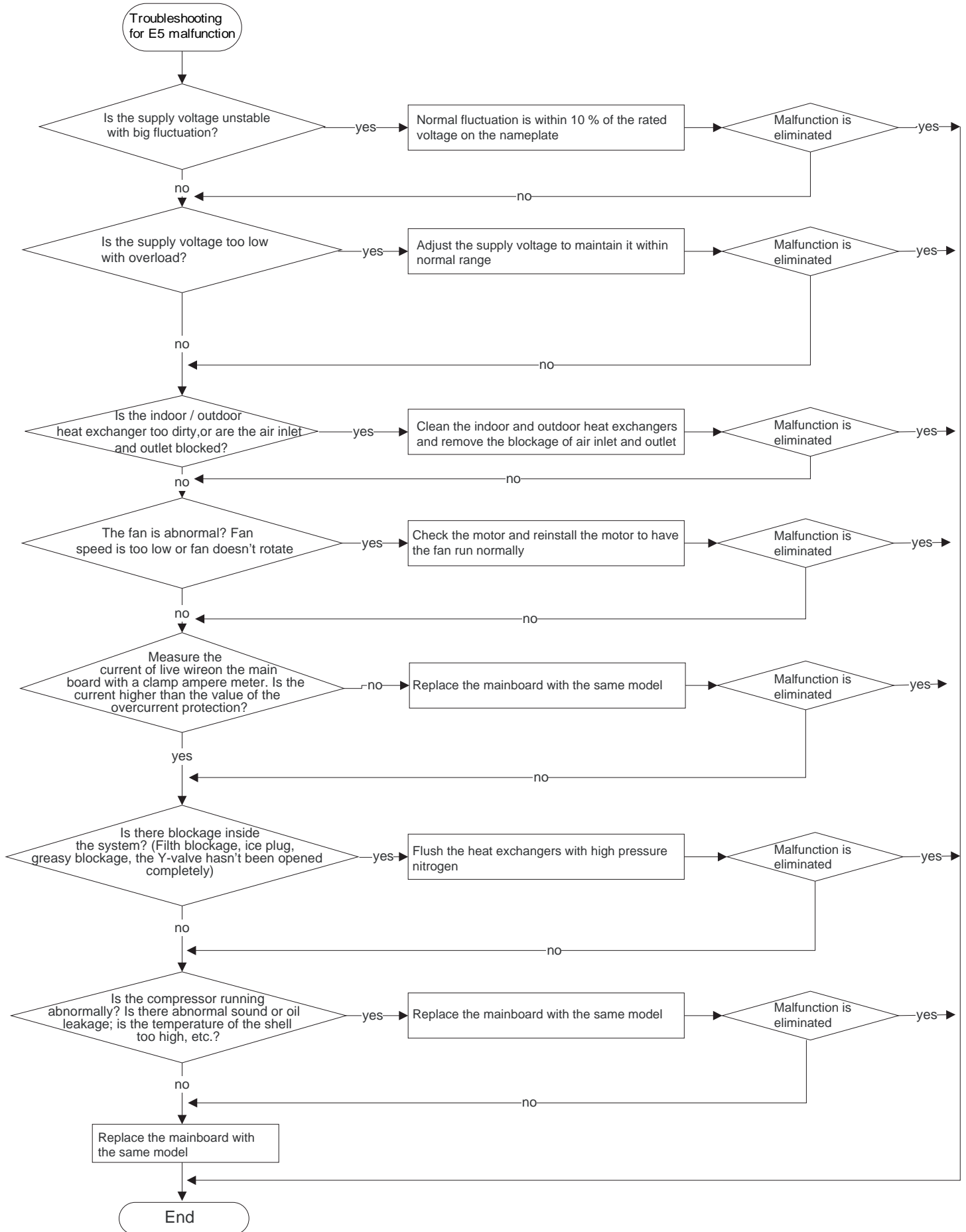
2. Malfunction of Blocked Protection of IDU Fan Motor H6



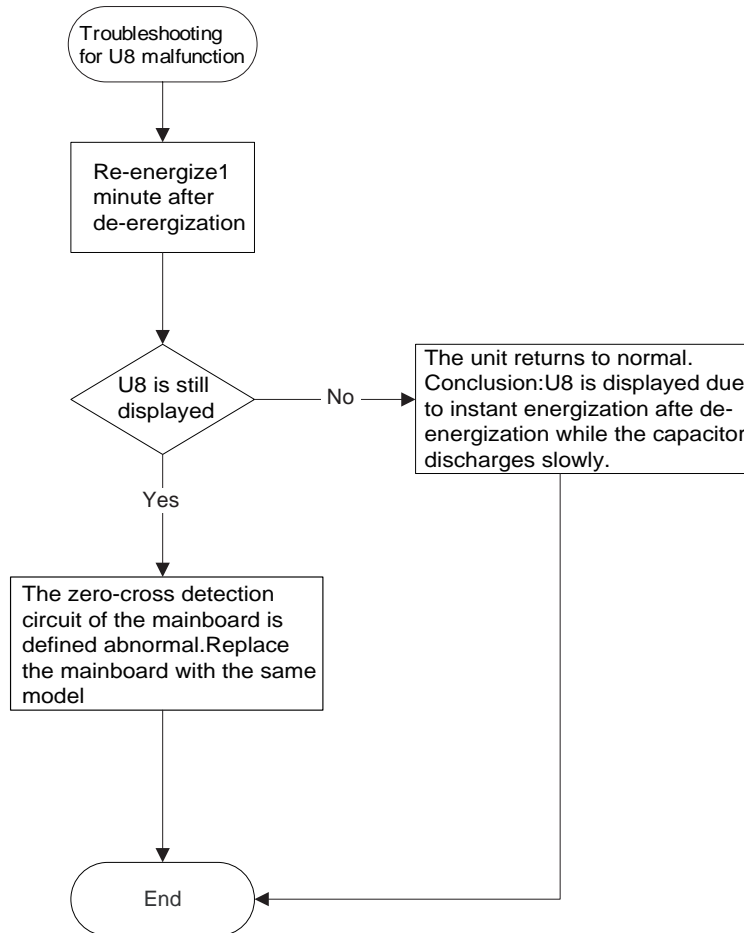
3. Malfunction of Protection of Jumper Cap C5



4. Malfunction of Overcurrent Protection E5



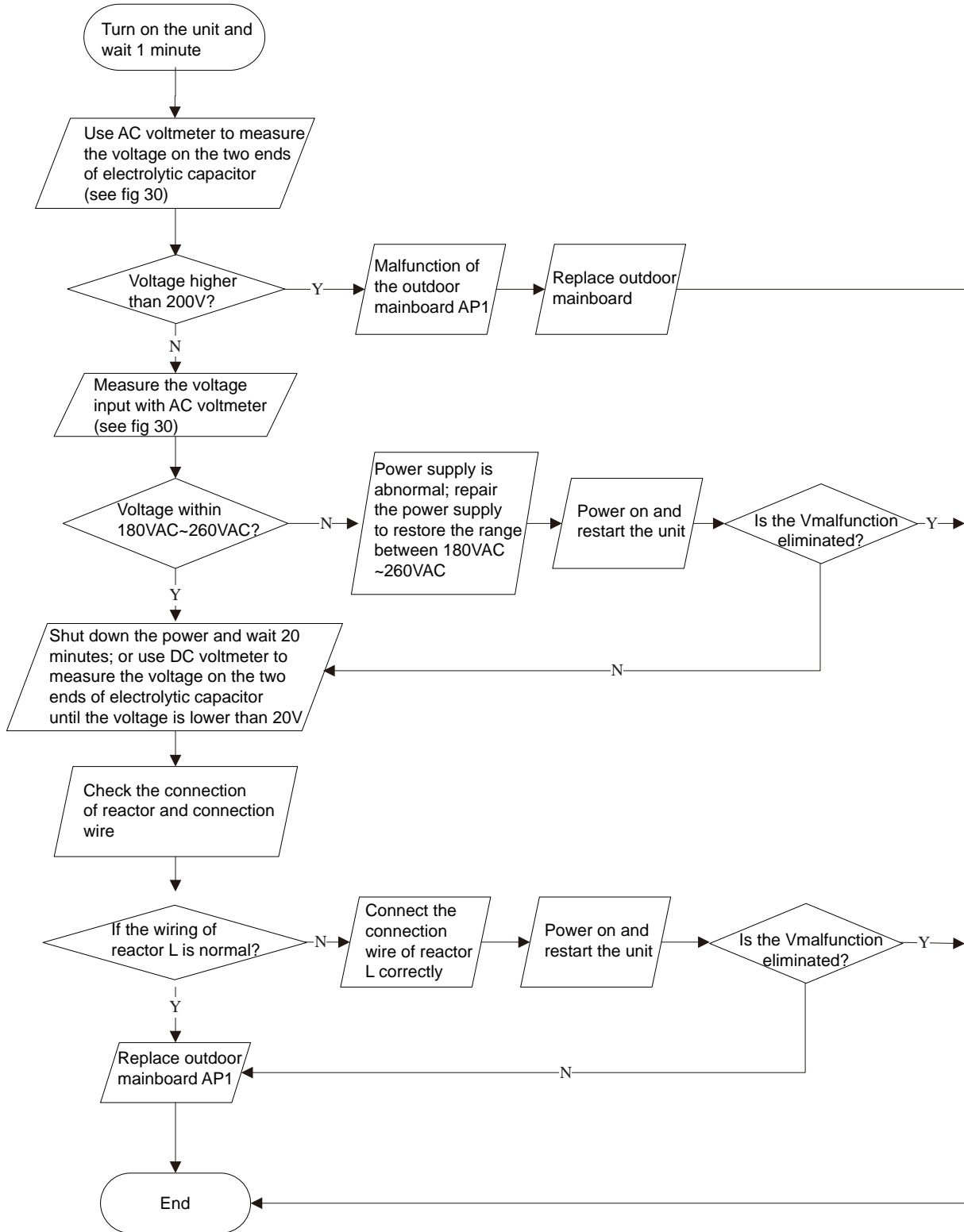
5. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8



6.Capacity charging malfunction (outdoor unit malfunction) (AP1 below means control board of outdoor unit)

Main detection points:

- Detect if the voltage of L and N terminal of XT wiring board is between 210VAC-240VAC by alternating voltage meter;
- Is reactor (L) well connected? Is connection wire loosened or pulled out? Is reactor (L) damaged?

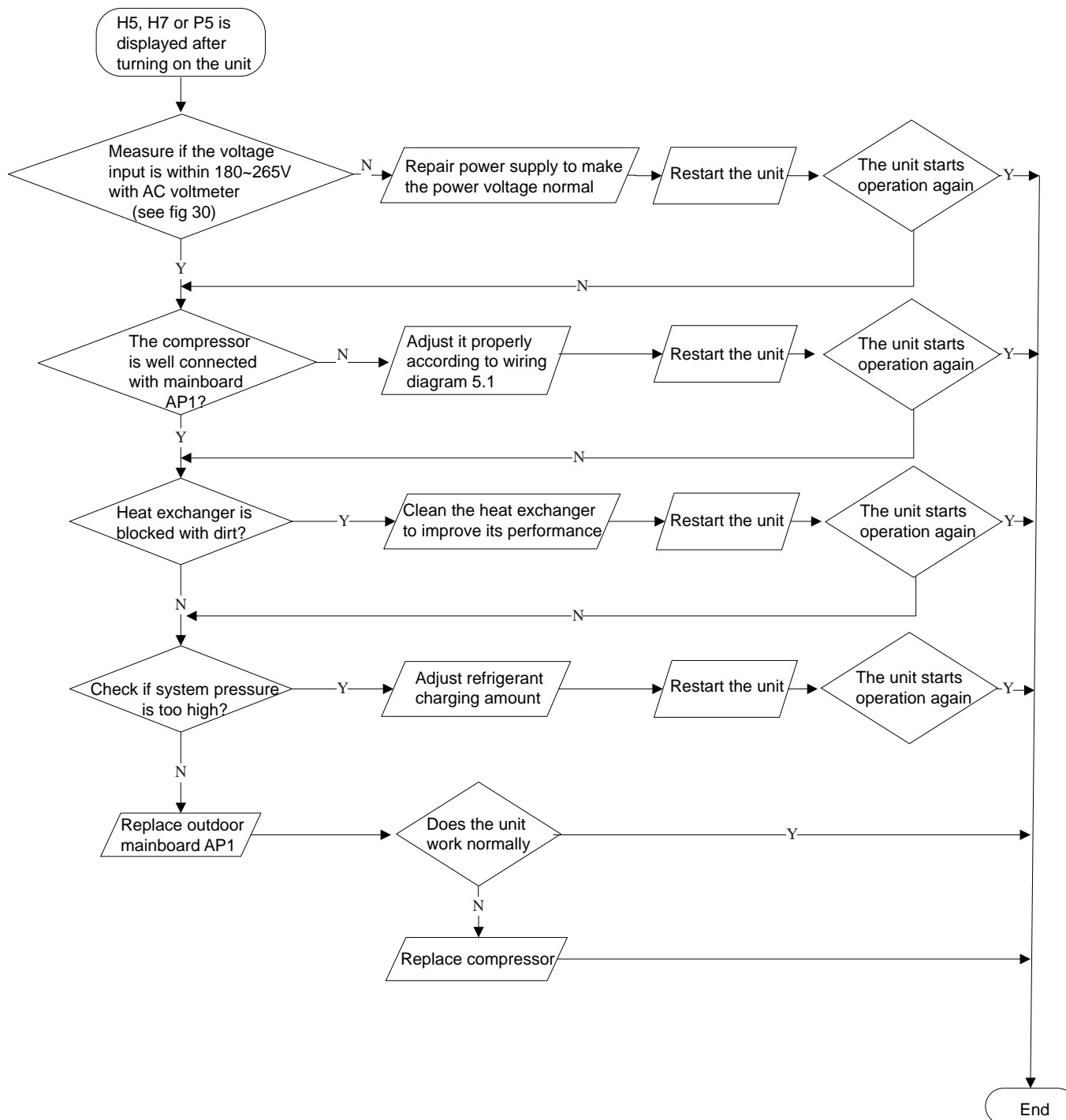


7. IPM protection(H5), desynchronizing malfunction(H7), overcurrent of compressor phase current (P5) (AP1 below means control board of outdoor unit)

Main detection points:

- Is voltage input within the normal range
- If the control board AP1 is well connected with compressor COMP? If they are loosened? If the connection sequence is correct?
- Heat exchange of unit is not good (heat exchanger is dirty and unit radiating environment is bad);
- If the system pressure is too high?
- If the refrigerant charging amount is appropriate?
- If coil resistance of compressor is normal? Is compressor coil insulating to copper pipe well?
- If the work load of unit is heavy? If radiating of unit is good?

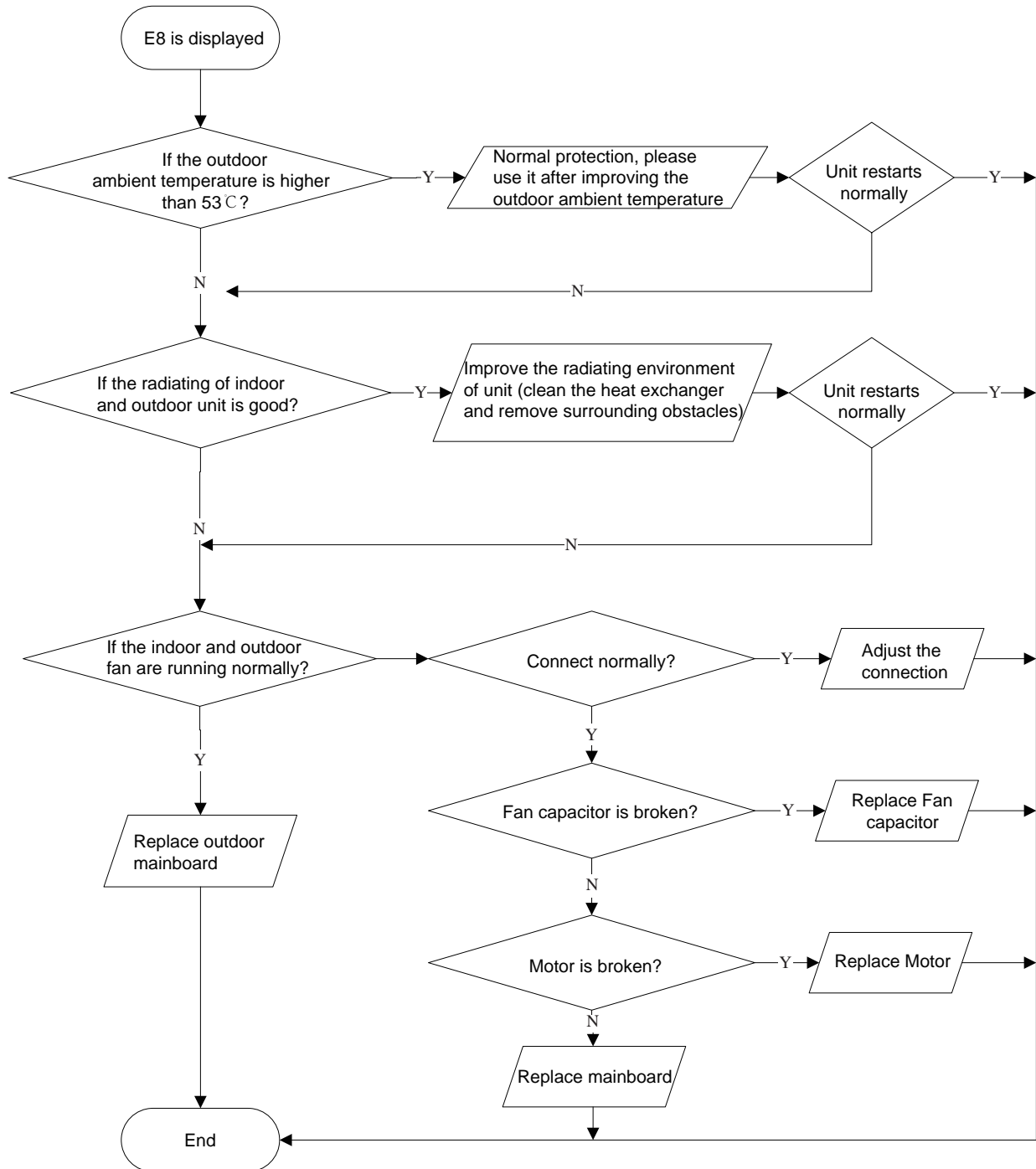
Malfunction diagnosis process:



8.High temperature and overload protection (E8)(AP1 below means control board of outdoor unit)

Main detection points:

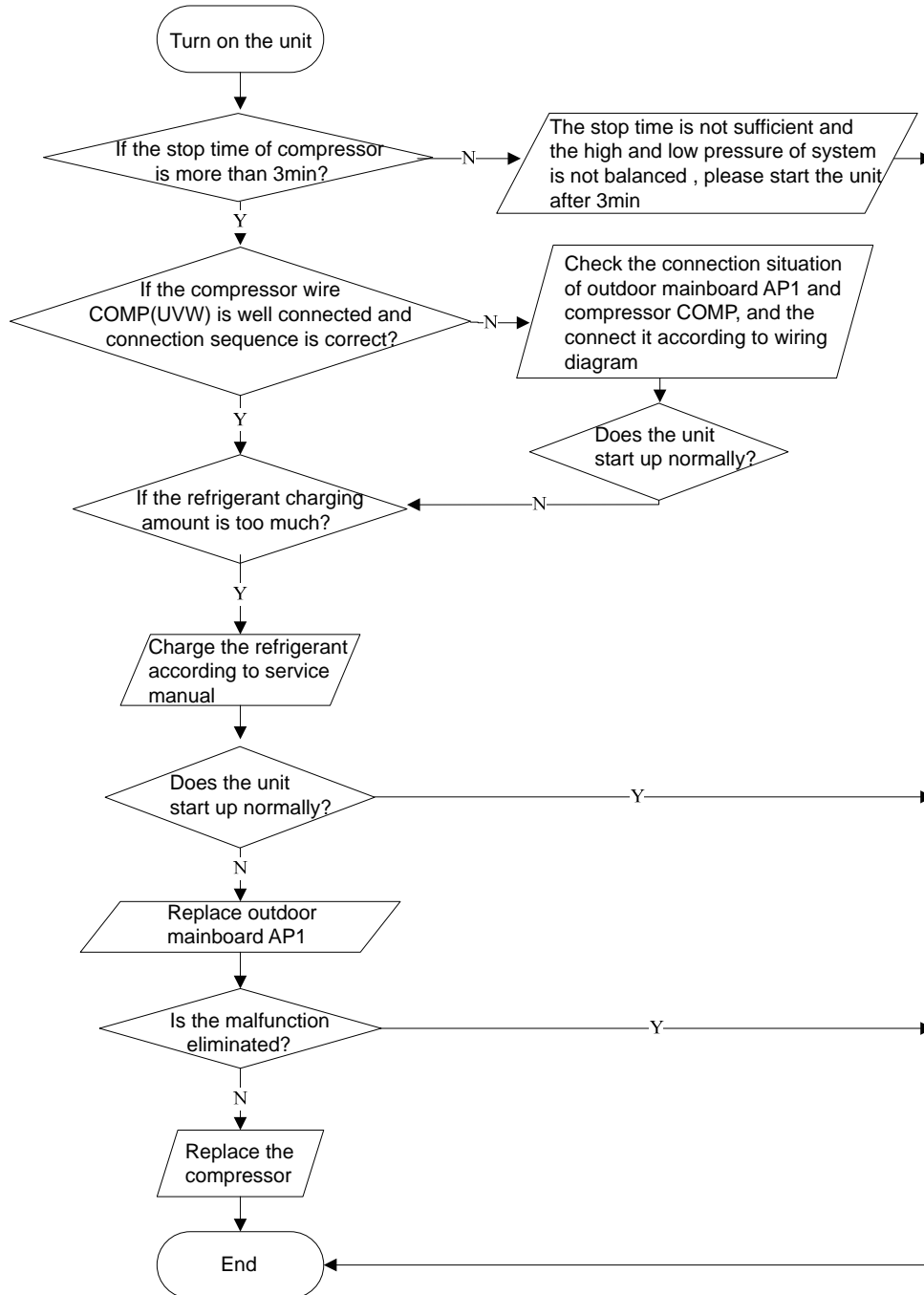
- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan are running normally;
- If the radiating environment of indoor and outdoor unit is good.



9.Start-up failure (LC) (AP1 below means control board of outdoor unit)

Main detection points:

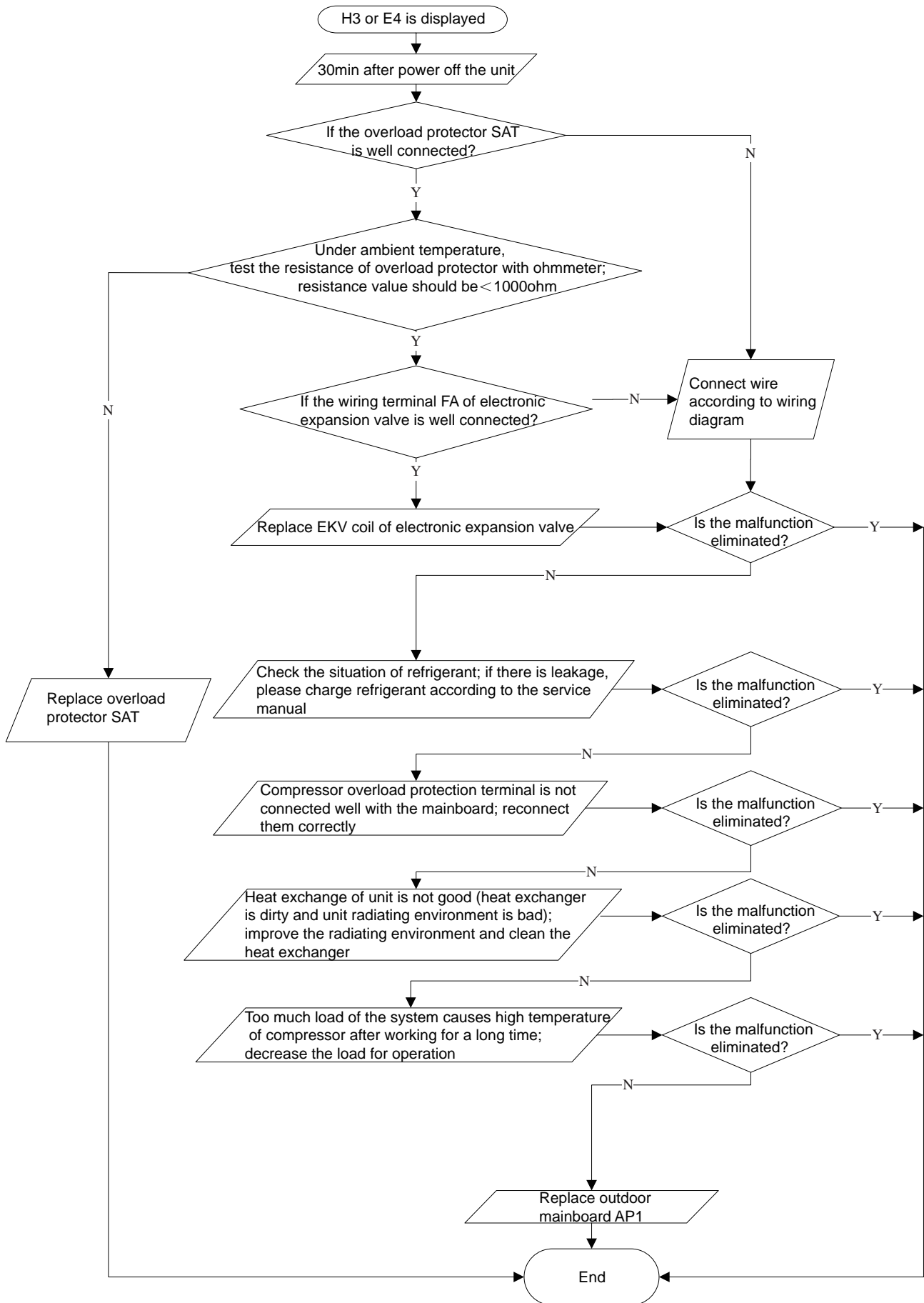
- If the compressor wiring is correct?
- If the stop time of compressor is sufficient?
- If the compressor is damaged?
- If the refrigerant charging amount is too much?



10. Overload and high discharge temperature malfunction

Main detection points:

- If the electronic expansion valve is connected well? Is the electronic expansion valve damaged?
- If the refrigerant is leaked?
- The compressor overload protection terminal is not connected well with the mainboard?
- If the overload protector is damaged?
- Heat exchange of unit is not good? (heat exchanger is dirty and unit radiating environment is bad)
- Too much load of the system causes high temperature of compressor after working for a long time?
- Malfunction of discharge temperature sensor?

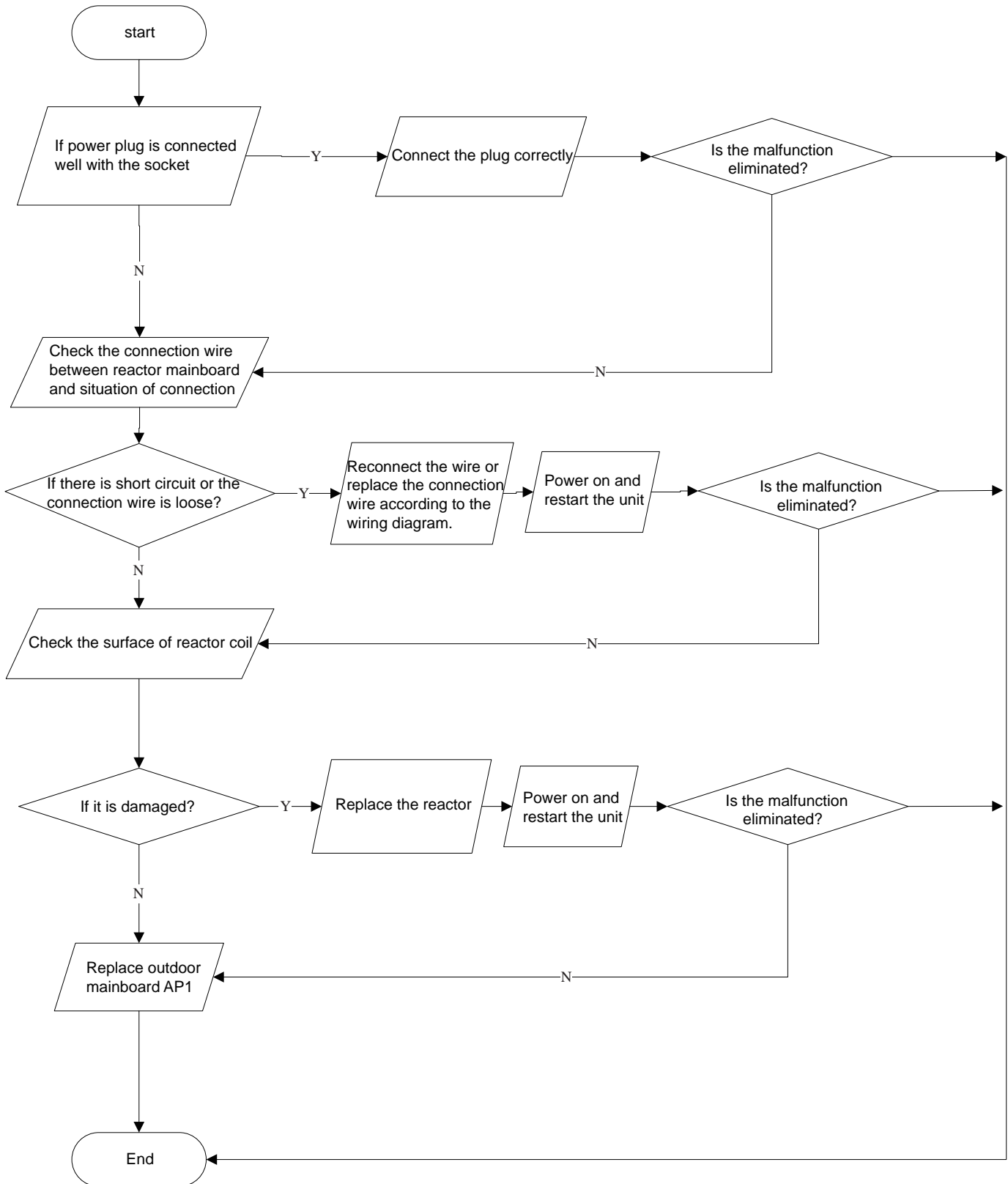


11.PFC (correction for power factor) malfunction (outdoor unit malfunction)

Main detection points:

- Check if power plug is connected well with the socket
- Check if the reactor of outdoor unit is damaged?

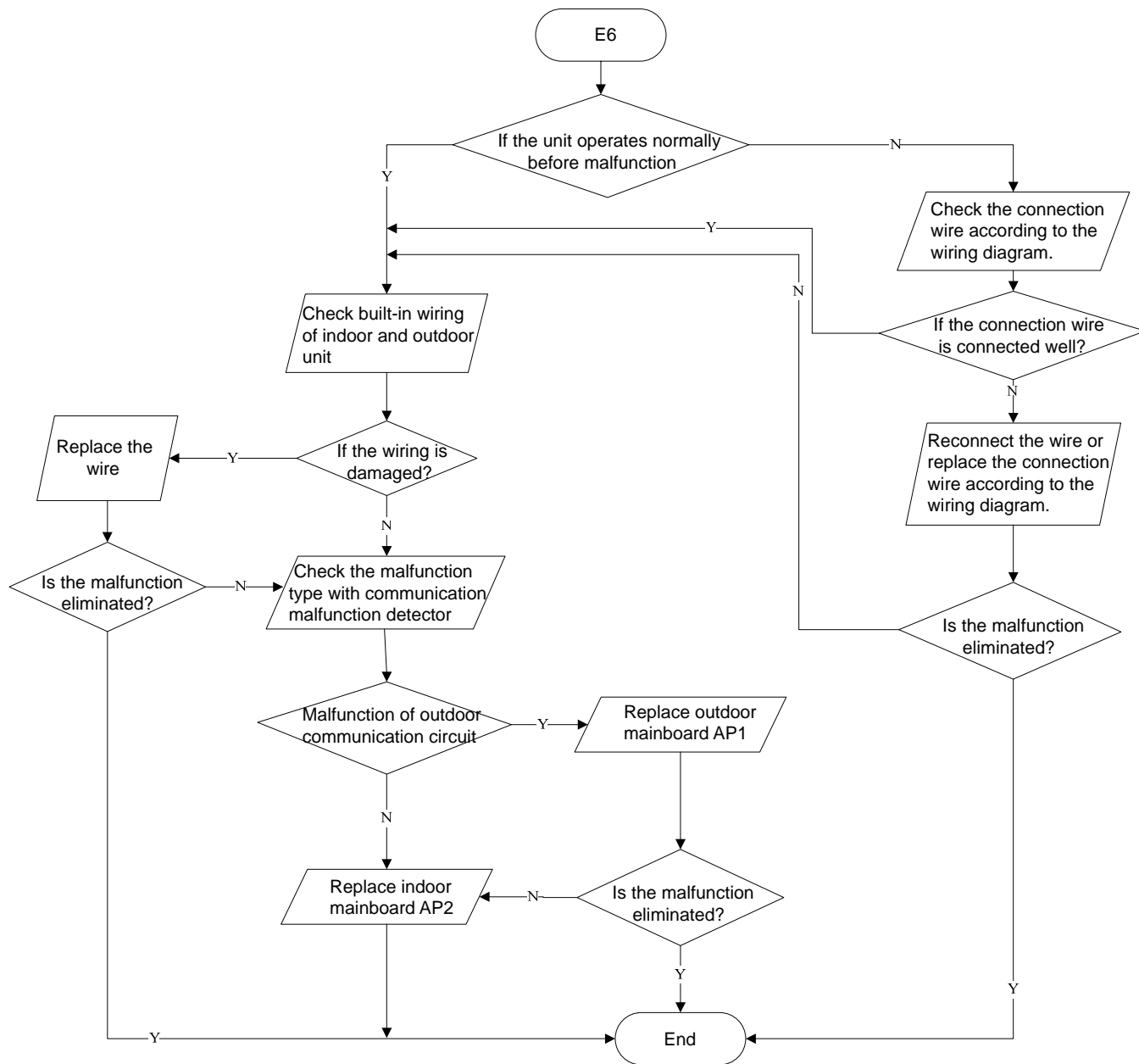
Malfunction diagnosis process:



12. Communication malfunction (E6)

Main detection points:

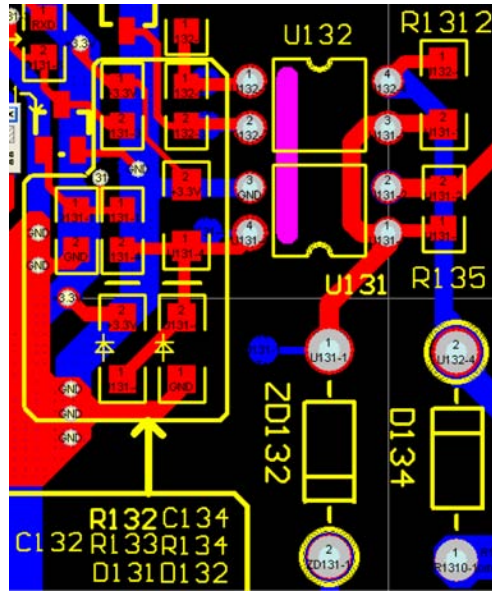
- Check if the connection wire and the built-in wiring of indoor and outdoor unit are connected well and without damage;
 - If the communication circuit of indoor mainboard is damaged? If the communication circuit of outdoor mainboard (AP1) is damaged?
- Malfunction diagnosis process:



13. Flow chart for outdoor communication circuit detecting:

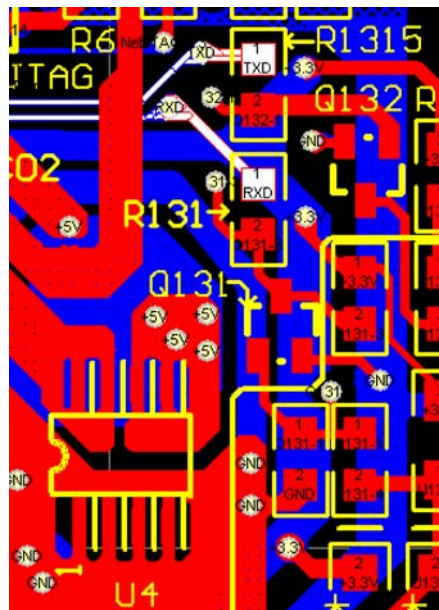
(1) Test the voltage between N point of wiring board and communication cable with universal meter. The voltage shall be variable. Otherwise, it might be malfunction of mainboard of indoor unit, or malfunction of mainboard of outdoor unit, or wrong wire connection of indoor and outdoor unit. Please ensure 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.

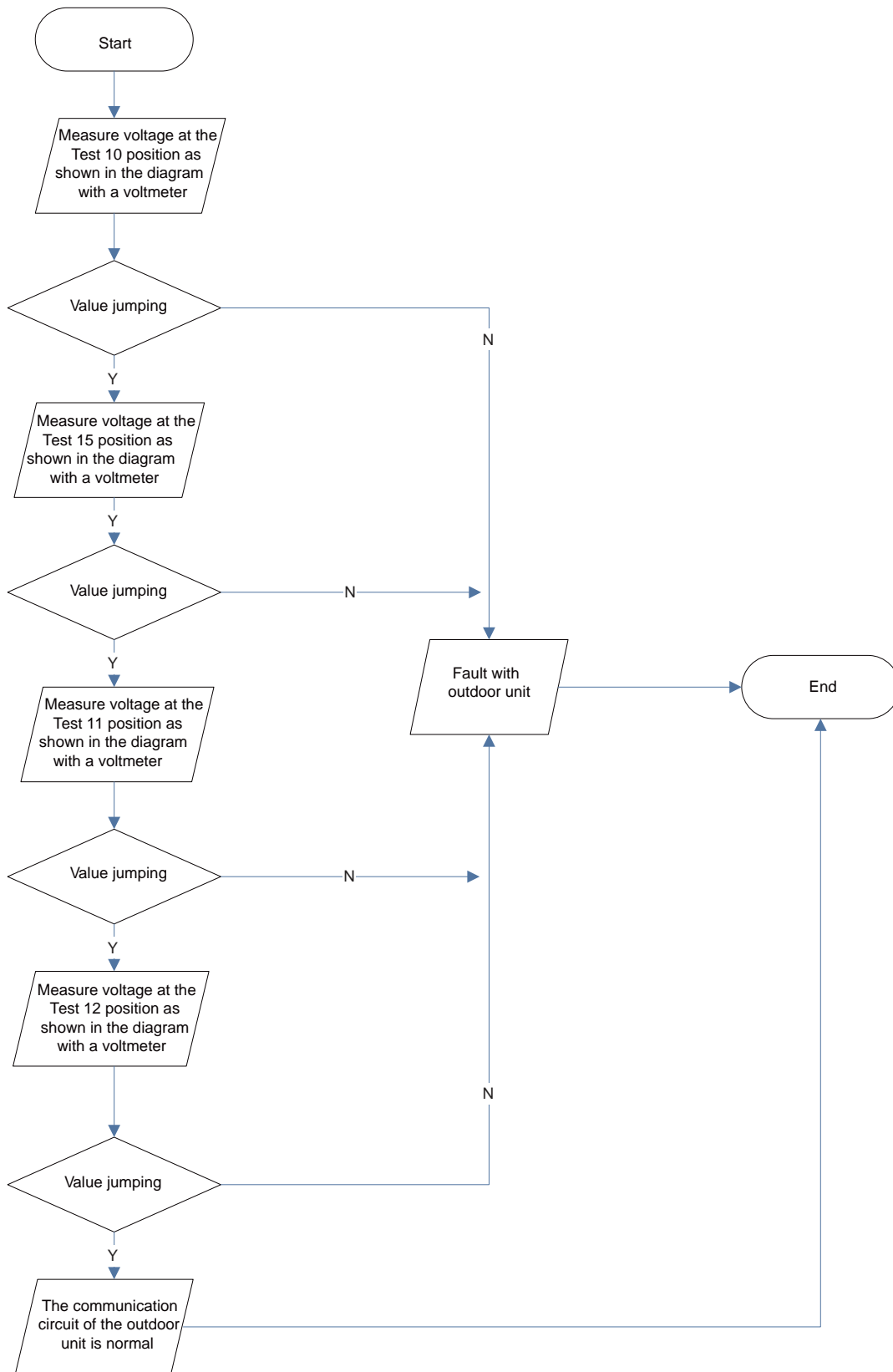
(2) Test the voltage of pin 1 and pin 2 of U132 with universal meter (voltage of both sides of R135). The voltage should be variable. (Test 10) Test the voltage of pin 3 and pin 4 of U132 with universal meter (voltage of both sides of R1312). The voltage should be variable. (Test 15) Otherwise, there 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.





9.3 Troubleshooting for Normal Malfunction

1. Air Conditioner Can't be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once	Make sure the air conditioner is grounded reliably Make sure wires of air conditioner is connected correctly Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off	Select proper air switch
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller Repair or replace remote controller

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit's pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit's pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver Can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. ODU fan Motor Can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of the ODU fan motor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the capacity of fan
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Motor of outdoor unit is damaged	When unit is on, cooling/heating performance is bad and ODU compressor generates a lot of noise and heat.	Change compressor oil and refrigerant. If no better, replace the compressor with a new one

5. Compressor Can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and it's 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

6. Air Conditioner is Leaking

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe connection place of indoor unit	Wrap it again and bundle it tightly

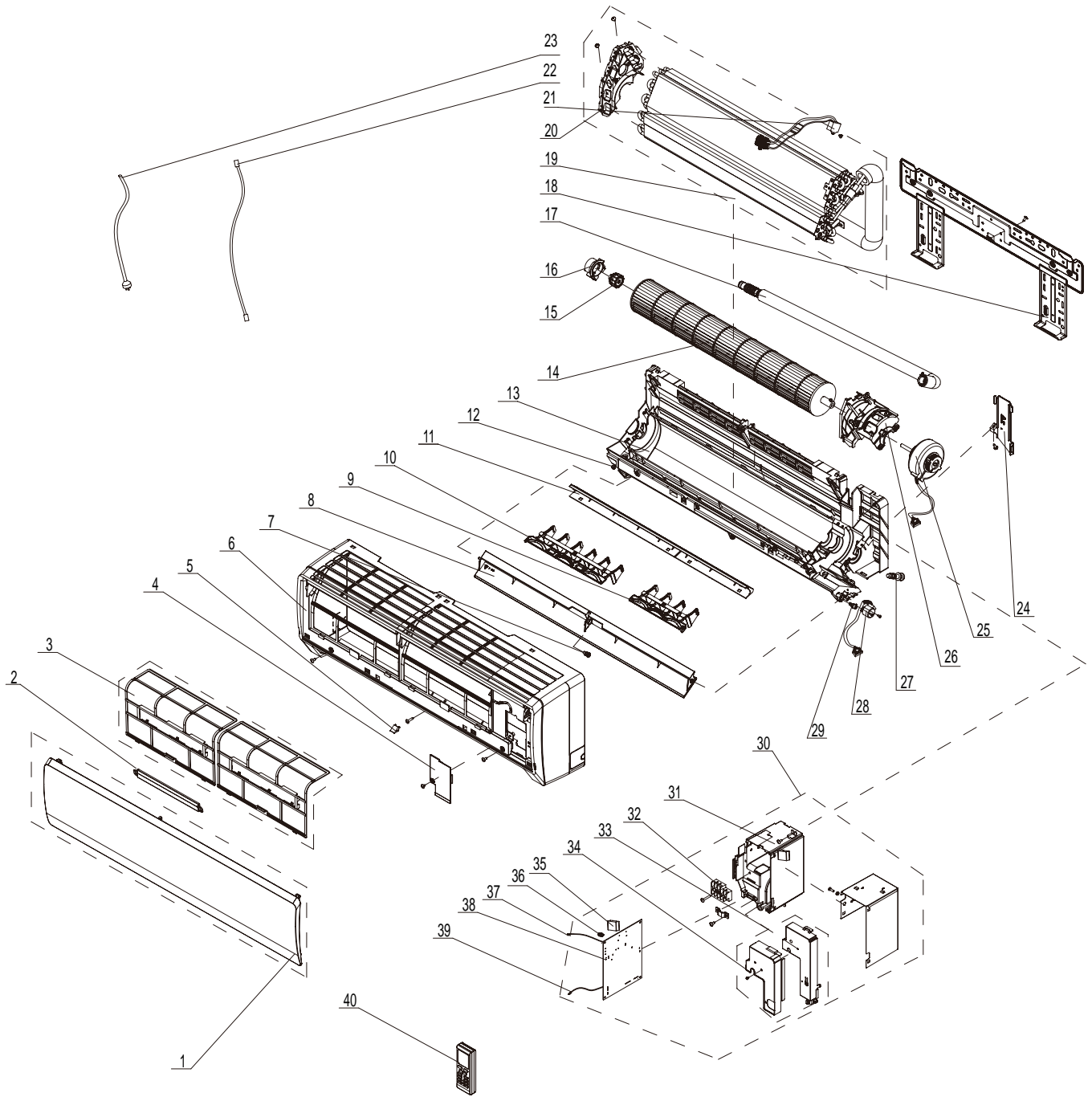
7. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and there's abnormal sound	There's the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, there's abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Foreign objects inside the indoor unit or there're parts touching together inside the indoor unit	There's abnormal sound fro indoor unit	Remove foreign objects. Adjust all parts' position of indoor unit, tighten screws and stick damping plaster between connected parts
Foreign objects inside the outdoor unit or there're parts touching together inside the outdoor unit	There's abnormal sound fro outdoor unit	Remove foreign objects. Adjust all parts' position of outdoor unit, tighten screws and stick damping plaster between connected parts
Short circuit inside the magnetic coil	During heating, the way valve has abnormal electromagnetic sound	Replace magnetic coil
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts' List

10.1 Indoor Unit

GWH09MB-K3DNE3G/I, GWH12MB-K3DNE3G/I



NO.	Description	Part Code		Qty
		GWH09MB-K3DNE3G/I	GWH12MB-K3DNE3G/I	
		Product Code		
		CB404N03600	CB404N03500	
1	Front Panel	2001288801P	2001288801P	1
2	Display Board	30565144	30565144	1
3	Filter Sub-Assy	1112220403	1112220403	2
4	Electric Box Cover2	2010249602	2010249602	1
5	Screw Cover	242520172	242520172	1
6	Front Case Sub-Assy	2001213923	2001213923	1
7	Axile Bush	1054203602	1054203602	1
8	Guide Louver	1051215701	1051215701	1
9	Air Louver 1	1051215601	1051215601	1
10	Air Louver 2	1051215501	1051215501	1
11	Helicoid tongue	2611216301	2611216301	1
12	Left Axile Bush	10512037	10512037	1
13	Rear Case assy	2220210311	2220210311	1
14	Cross Flow Fan	10352017	10352017	1
15	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
16	Ring of Bearing	26152022	26152022	1
17	Drainage hose	0523001401	0523001401	1
18	Wall Mounting Frame	01252021	01252021	1
19	Evaporator Assy	01002424	01002953	1
20	Evaporator Support	24212091	24212091	1
21	Cold Plasma Generator Sub-assy	1114001602	1114001602	1
22	Connecting Cable	4002052317	4002052317	0
23	Power Cord	/	/	/
24	Pipe Clamp	2611216402	2611216402	1
25	Fan Motor	150120874	150120874	1
26	Motor Press Plate	26112161	26112161	1
27	Rubber Plug (Water Tray)	76712012	76712012	1
28	Step Motor	1521212901	1521212901	1
29	Crank	10582070	10582070	1
30	Electric Box Assy	10000200890	10000200891	1
31	Electric Box	2011208201	2011208201	1
32	Terminal Board	42011233	42011233	1
33	Shield cover of Electric Box sub-assy	01592073	01592073	1
34	Electric Box Cover1	22242135	22242135	1
35	Capacitor CBB61	33010747	33010747	1
36	Jumper	4202300106	4202300105	1
37	Ambient Temperature Sensor	390000453	390000453	1
38	Main Board	30138000410	30138000410	1
39	Temperature Sensor	390000599	390000599	1
40	Remote Controller	305100491	305100491	1

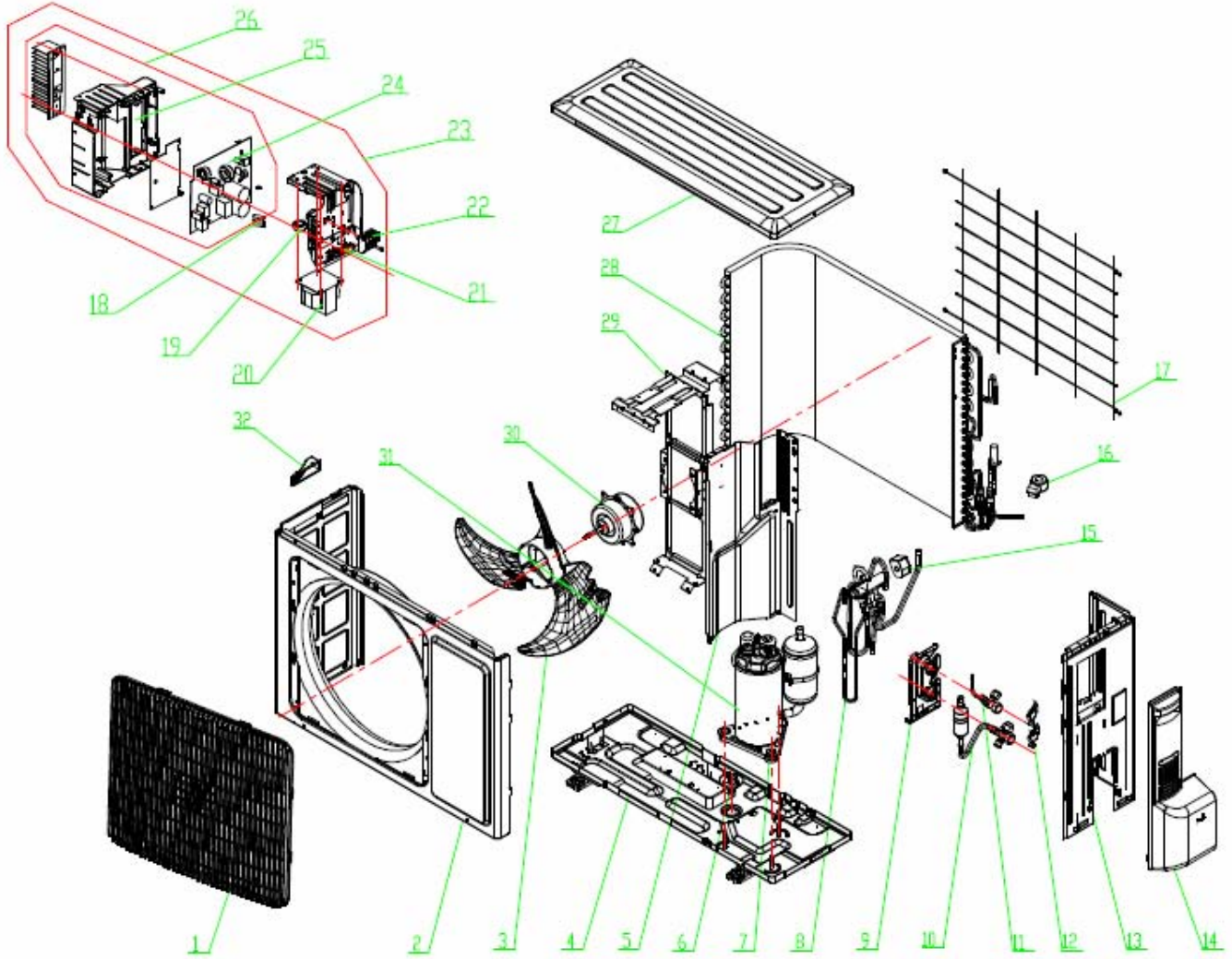
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NO.	Description	Part Code		Qty
		GWH09MB-K3DNE3G/I	GWH12MB-K3DNE3G/I	
		Product Code		
		CB404N03601	CB404N03501	
1	Front Panel	2001288801P	2001288801P	1
2	Display Board	30565144	30565144	1
3	Filter Sub-Assy	1112220403	1112220403	2
4	Electric Box Cover2	2010249602	2010249602	1
5	Screw Cover	242520172	242520172	1
6	Front Case Sub-Assy	2001213923	2001213923	1
7	Axile Bush	1054203602	1054203602	1
8	Guide Louver	1051215701	1051215701	1
9	Air Louver 1	1051215601	1051215601	1
10	Air Louver 2	1051215501	1051215501	1
11	Helicoid tongue	2611216301	2611216301	1
12	Left Axile Bush	10512037	10512037	1
13	Rear Case assy	2220210311	2220210311	1
14	Cross Flow Fan	10352017	10352017	1
15	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
16	Ring of Bearing	26152022	26152022	1
17	Drainage hose	0523001401	0523001401	1
18	Wall Mounting Frame	01252021	01252021	1
19	Evaporator Assy	01002424	01002953	1
20	Evaporator Support	24212091	24212091	1
21	Cold Plasma Generator Sub-assy	/	/	/
22	Connecting Cable	4002052317	4002052317	0
23	Power Cord	/	/	/
24	Pipe Clamp	2611216402	2611216402	1
25	Fan Motor	150120874	150120874	1
26	Motor Press Plate	26112161	26112161	1
27	Rubber Plug (Water Tray)	76712012	76712012	1
28	Step Motor	1521212901	1521212901	1
29	Crank	10582070	10582070	1
30	Electric Box Assy	10000200890	10000200891	1
31	Electric Box	2011208201	2011208201	1
32	Terminal Board	42011233	42011233	1
33	Shield cover of Electric Box sub-assy	01592073	01592073	1
34	Electric Box Cover1	22242135	22242135	1
35	Capacitor CBB61	33010747	33010747	1
36	Jumper	4202300106	4202300105	1
37	Ambient Temperature Sensor	390000453	390000453	1
38	Main Board	30138000404	30138000404	1
39	Temperature Sensor	390000599	390000599	1
40	Remote Controller	305100491	305100491	1

Above data is subject to change without notice.

10.2 Outdoor Unit

GWH09MB-K3DNE3G/O(CB404W03600/CB404W03601)

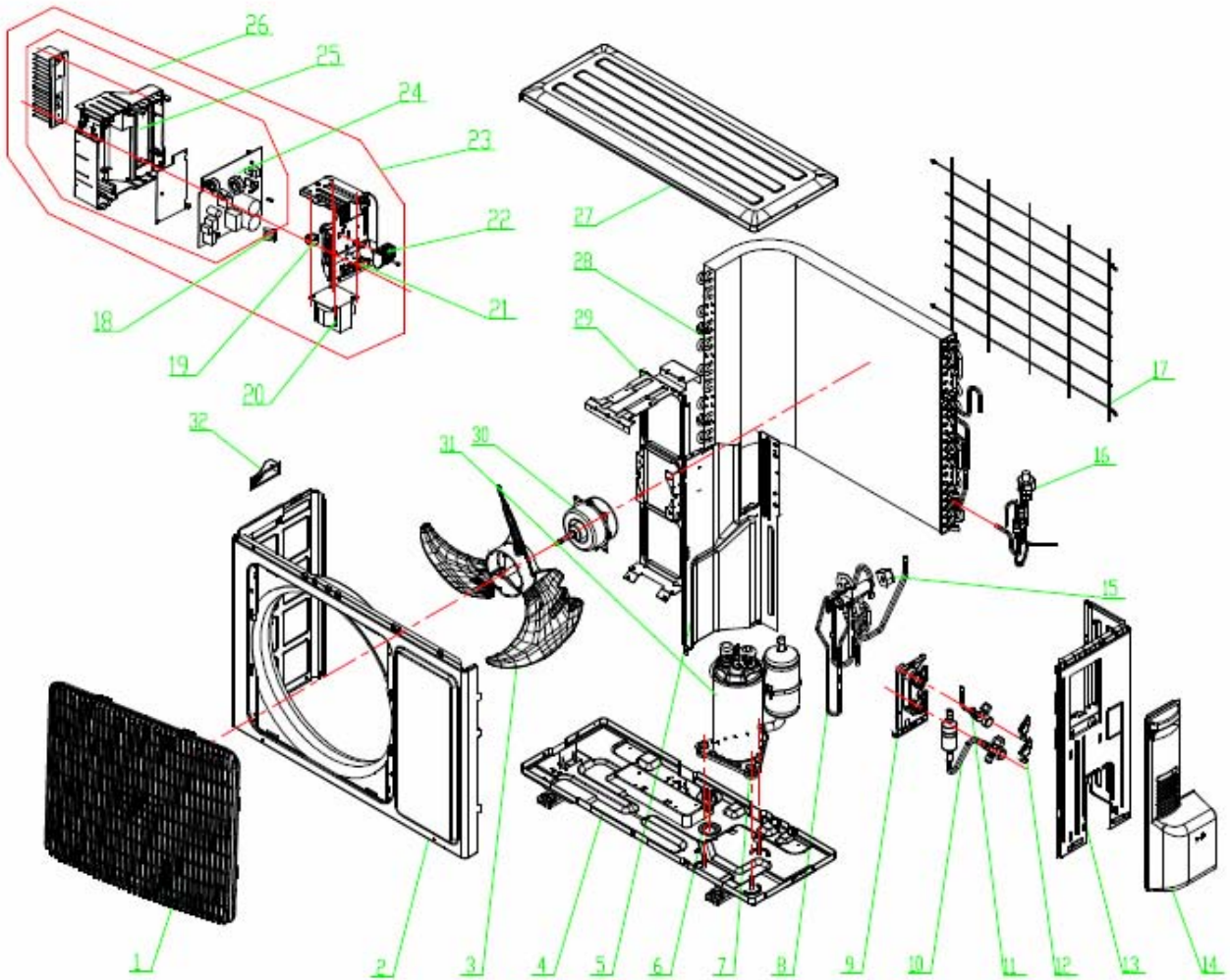


NO.	Description	Part Code	Qty
		GWH09MB-K3DNE3G/O	
		Product Code CB404W03600	
1	Front Grill	22413008	1
2	Front Panel Assy	0153304801	1
3	Axial Flow Fan	10333004	1
4	Chassis Sub-assy	0280330401P	1
5	Clapboard Sub-Assy	0123338502	1
6	Drainage Connector	06123401	1
7	Compressor Gasket	76710302	3
8	4-Way Valve Assy	03073151	1
9	Valve Support	0171314201P	1
10	Cut off Valve Assy	071302391	1
11	Valve	07100003	1
12	Valve Support Block	26113017	2
13	Right Side Plate Sub-Assy	0130317801	1
14	Big Handle	26233433	1
15	Magnet Coil	4300040050	1
16	Magnet Coil	4300876701	1
17	Rear Grill	01473009	1
18	Temperature Sensor	3900030805	1
19	Magnetic Ring	49010109	1
20	Reactor	43130184	1
21	Wire Clamp	71010003	2
22	Terminal Board	42010313	1
23	Electric Box Assy	10000100126	1
24	Main Board	30138000446	1
25	Electric Box	20113032	1
26	Electric Box Sub-Assy	10000500040	1
27	Top Cover Sub-Assy	0125307002	1
28	Condenser Assy	01100200141	1
29	Motor Support	01703104	1
30	Fan Motor	1501308506	1
31	Compressor and Fittings	0010389601	1
32	Small Handle	26233100	1

Above data is subject to change without notice.

NO.	Description	Part Code	Qty
		GWH09MB-K3DNE3G/O	
		Product Code CB404W03601	
1	Front Grill	22413008	1
2	Front Panel Assy	0153304801	1
3	Axial Flow Fan	10333004	1
4	Chassis Sub-assy	0280330401P	1
5	Clapboard Sub-Assy	0123338502	1
6	Drainage Connector	06123401	1
7	Compressor Gasket	76710302	3
8	4-Way Valve Assy	03073151	1
9	Valve Support	0171314201P	1
10	Cut off Valve Assy	071302391	1
11	Valve	07100003	1
12	Valve Support Block	26113017	2
13	Right Side Plate Sub-Assy	0130317801	1
14	Big Handle	26233433	1
15	Magnet Coil	4300040050	1
16	Magnet Coil	4300876701	1
17	Rear Grill	01473009	1
18	Temperature Sensor	3900030805	1
19	Magnetic Ring	49010109	1
20	Reactor	43130184	1
21	Wire Clamp	71010003	2
22	Terminal Board	42010313	1
23	Electric Box Assy	10000100175	1
24	Main Board	30138000449	1
25	Electric Box	20113032	1
26	Electric Box Sub-Assy	10000500082	1
27	Top Cover Sub-Assy	0125307002	1
28	Condenser Assy	01100200141	1
29	Motor Support	01703104	1
30	Fan Motor	1501308506	1
31	Compressor and Fittings	0010389601	1
32	Small Handle	26233100	1

Above data is subject to change without notice.



NO.	Description	Part Code	Qty
		GWH12MB-K3DNE3G/O	
		Product Code CB404W03500	
1	Front Grill	22413008	1
2	Front Panel Assy	0153304801	1
3	Axial Flow Fan	10333004	1
4	Chassis Sub-assy	02803304P	1
5	Clapboard Sub-Assy	0123338502	1
6	Drainage Connector	06123401	1
7	Compressor Gasket	76710302	3
8	4-Way Valve Assy	03073145	1
9	Valve Support	0171314201P	1
10	Cut off Valve Assy	071302391	1
11	Valve	07100003	1
12	Valve Support Block	26113017	2
13	Right Side Plate Sub-Assy	0130317801	1
14	Big Handle	26233433	1
15	Magnet Coil	4300040050	1
16	Magnet Coil	4300876701	1
17	Rear Grill	01473009	1
18	Temperature Sensor	3900030805	1
19	Magnetic Ring	49010109	1
20	Reactor	43130184	1
21	Wire Clamp	71010003	2
22	Terminal Board	42010313	1
23	Electric Box Assy	10000100127	1
24	Main Board	30138000428	1
25	Electric Box	20113032	1
26	Electric Box Sub-Assy	10000500042	1
27	Top Cover Sub-Assy	0125307002	1
28	Condenser Assy	01100200142	1
29	Motor Support	01703104	1
30	Fan Motor	1501308506	1
31	Compressor and Fittings	0010389601	1
32	Small Handle	26233100	1

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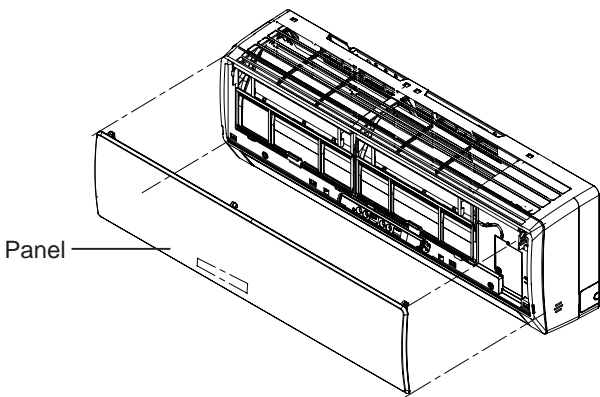
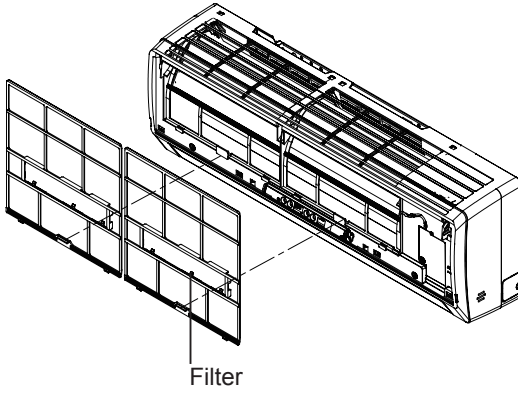
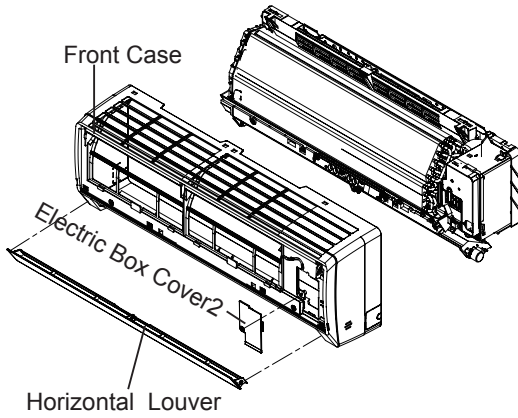
NO.	Description	Part Code	Qty
		GWH12MB-K3DNE3G/O	
		Product Code CB404W03501	
1	Front Grill	22413008	1
2	Front Panel Assy	0153304801	1
3	Axial Flow Fan	10333004	1
4	Chassis Sub-assy	02803304P	1
5	Clapboard Sub-Assy	0123338502	1
6	Drainage Connector	06123401	1
7	Compressor Gasket	76710302	3
8	4-Way Valve Assy	03073145	1
9	Valve Support	0171314201P	1
10	Cut off Valve Assy	071302391	1
11	Valve	07100003	1
12	Valve Support Block	26113017	2
13	Right Side Plate Sub-Assy	0130317801	1
14	Big Handle	26233433	1
15	Magnet Coil	4300040050	1
16	Magnet Coil	4300876701	1
17	Rear Grill	01473009	1
18	Temperature Sensor	3900030805	1
19	Magnetic Ring	49010109	1
20	Reactor	43130184	1
21	Wire Clamp	71010003	2
22	Terminal Board	42010313	1
23	Electric Box Assy	10000100174	1
24	Main Board	30138000448	1
25	Electric Box	20113032	1
26	Electric Box Sub-Assy	10000500083	1
27	Top Cover Sub-Assy	0125307002	1
28	Condenser Assy	01100200142	1
29	Motor Support	01703104	1
30	Fan Motor	1501308506	1
31	Compressor and Fittings	0010389601	1
32	Small Handle	26233100	1

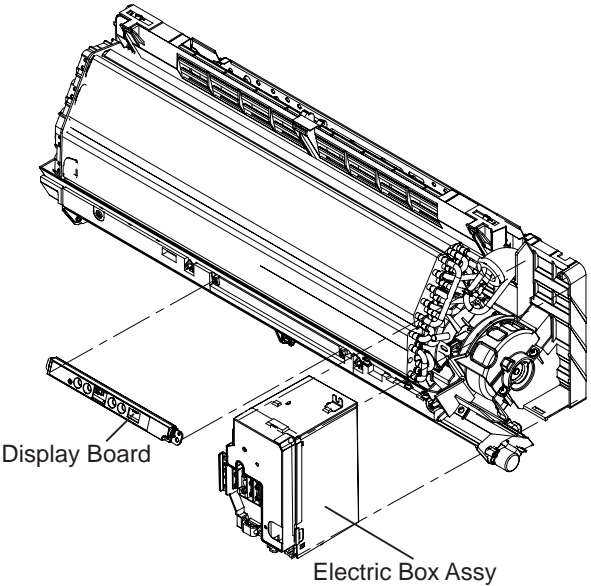
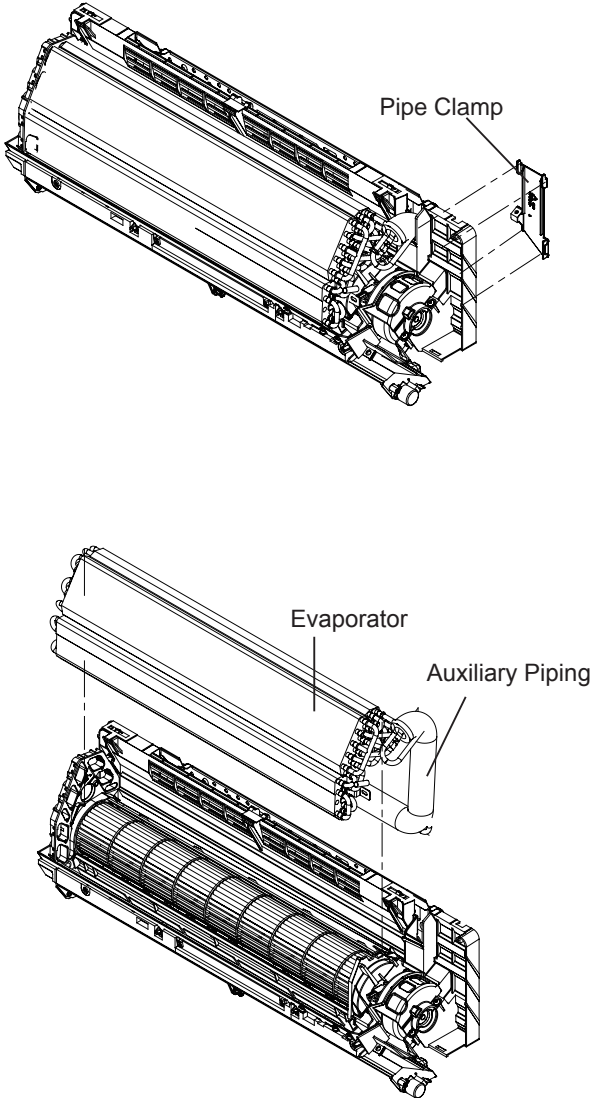
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11. Removal Procedure

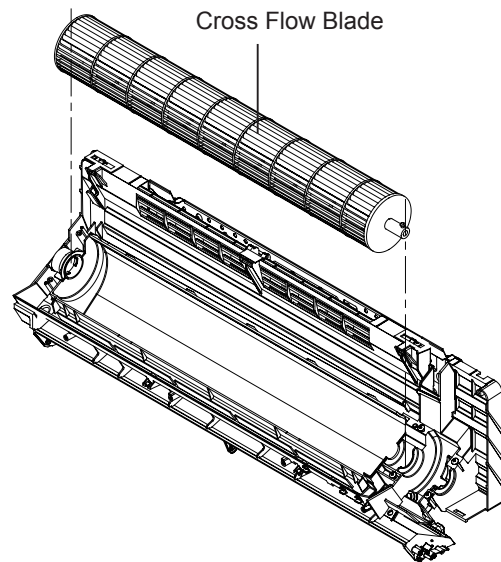
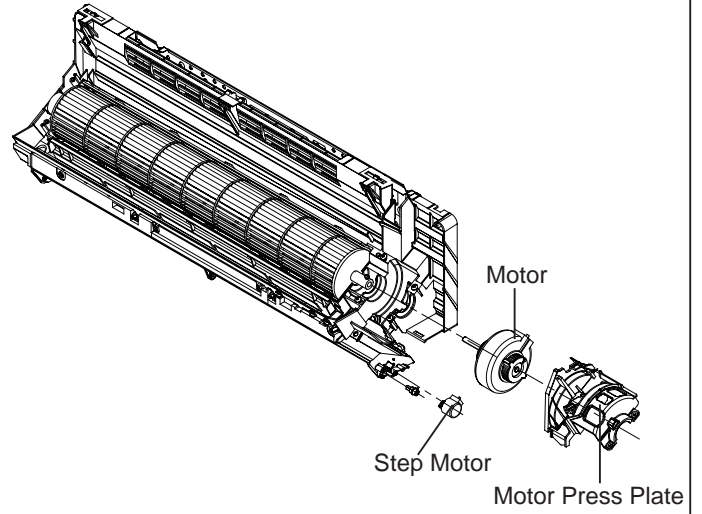
! Caution: discharge the refrigerant completely before removal.

11.1 Removal Procedure of Indoor Unit

Steps	Procedure	Procedure
<p>1.Remove panel</p>	<p>Open the front panel.Push the rotor shaft on both sides of the panel to make it separate from the groove .Remove the panel.</p>	 <p>Panel</p>
<p>2.Remove filter</p>	<p>Loosen the clasp of the filter.Push the filter inward and then draw it upward to remove it.</p>	 <p>Filter</p>
<p>3.Remove horizontal louver and front case</p>	<p>Remove axial sleeve of horizontal louver. Bend the louver outwards and then remove the louver.</p> <p>Loosen the screws of the electric box cover2 with screwdriver.Remove the electric box cover2.</p> <p>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.</p>	 <p>Front Case</p> <p>Electric Box Cover2</p> <p>Horizontal Louver</p>

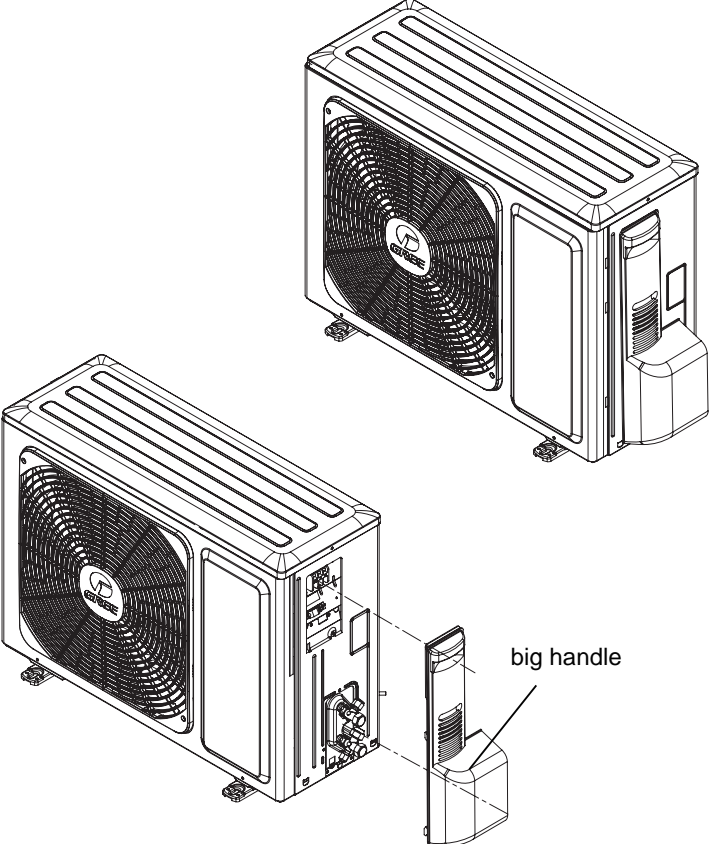
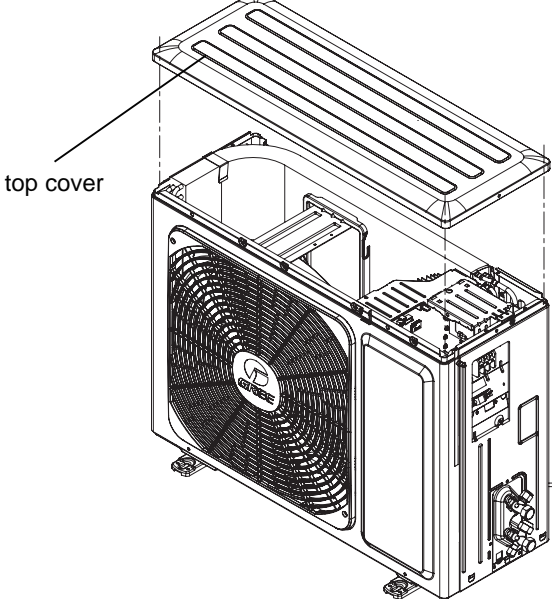
Steps	Procedure	Procedure
<p>4.Remove electric box assy</p>	<p>Remove the screws of the electric box assy.Remove the screws at the joint of the earthing wire and evaporator.Looseen the clasp at the joint of the electric box cover and the electric box.Remove the 2 screws of the display.Remove the electric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

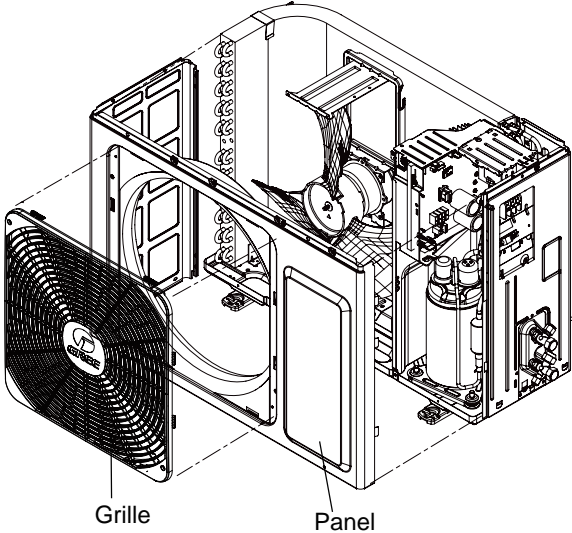
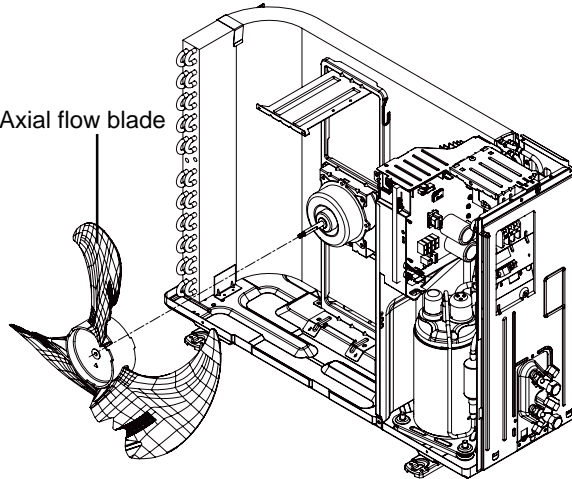
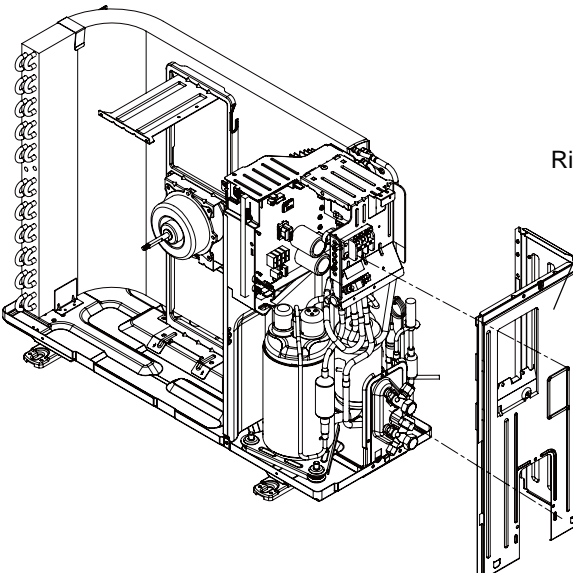
Steps	Procedure
<p>6.Remove motor and axial flow blade</p>	
<p>1</p>	<p>Remove screws of step motor and then remove the motor.</p> <p>Remove the screw of the motor press plate and then remove the press plate.</p> <p>Remove the screws at the joint of the cross flow blade and the motor. Take down the motor.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

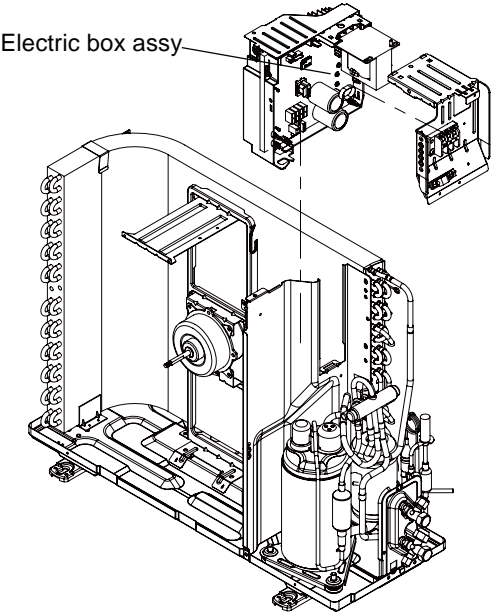
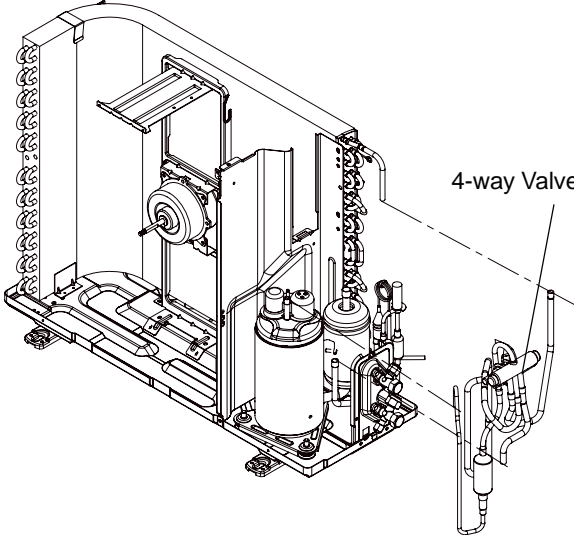
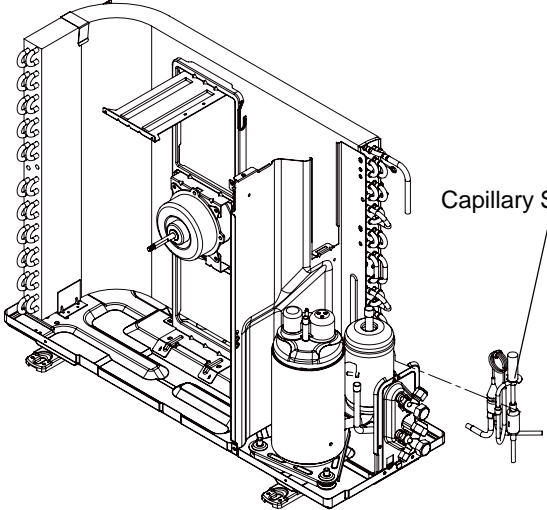


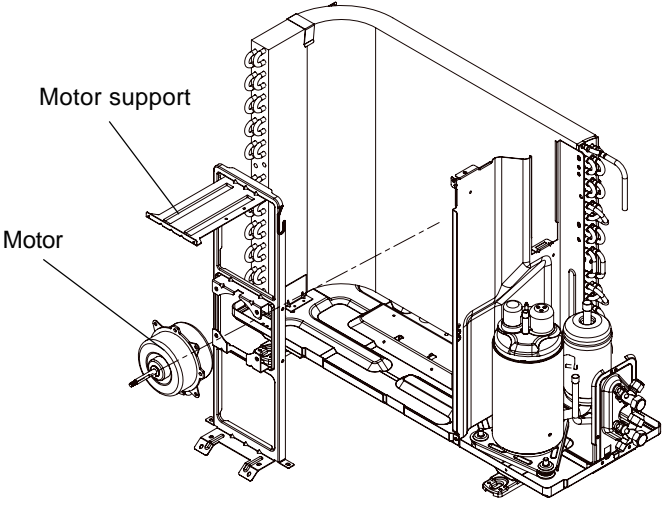
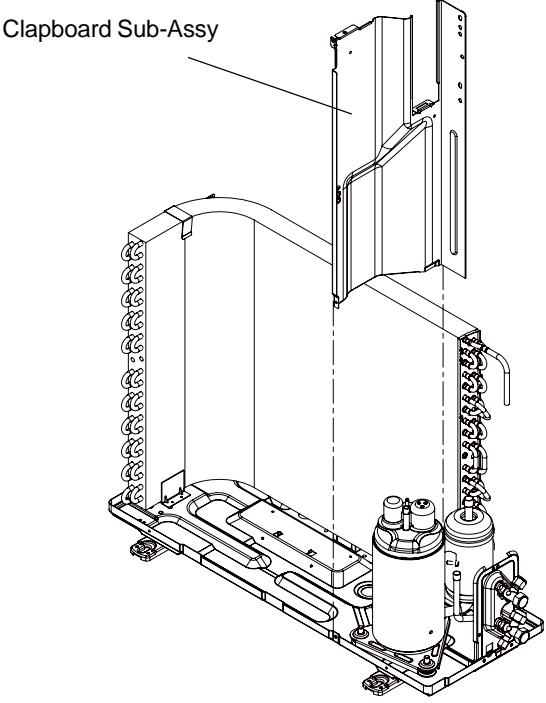
11.2 Removal Procedure of Outdoor Unit

Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

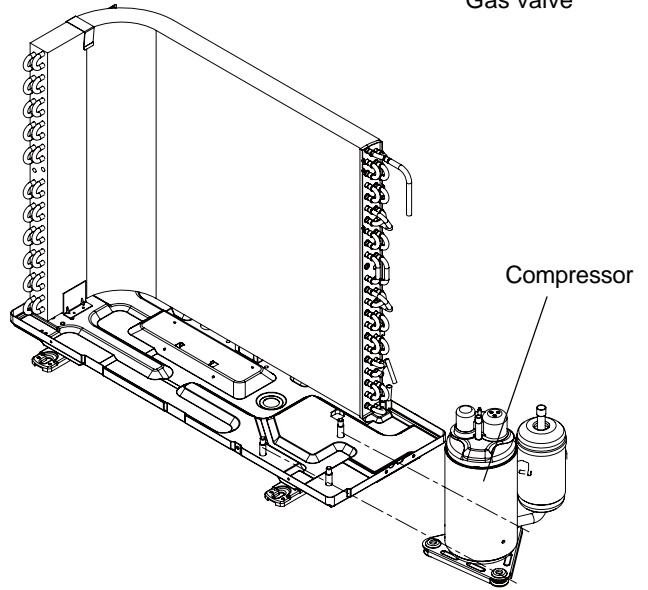
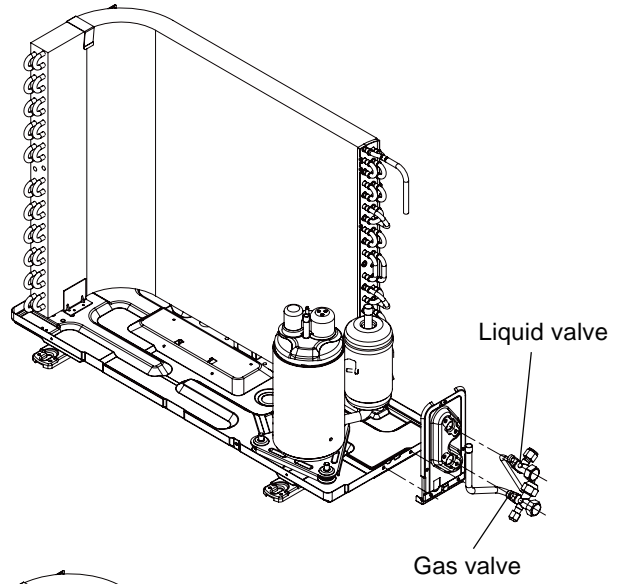
Steps	Procedure
<p>1.Remove big handle</p> <p>Before disassamble.</p> <p>Remove 1 connection screw fixing big handleand then removethe big handle.</p>	
<p>2. Remove top cover</p> <p>Remove 3 connection screws among top cover plate, front panel and right sideplate. Then remove top cover plate.</p>	

Steps	Procedure
<p>3.Remove grille and front panel</p>	<p>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.</p>  <p style="text-align: center;">Grille Panel</p>
<p>4.Remove axial flow blade</p>	<p>Remove the nut fixing the blade and then remove the axial flow blade.</p>  <p style="text-align: center;">Axial flow blade</p>
<p>5.Remove right side plate</p>	<p>Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.</p>  <p style="text-align: right;">Right side plate</p>

Steps	Procedure	
<p>6.Remove electric box assy</p>	<p>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.</p>	 <p>Electric box assy</p>
<p>7.Remove 4-way valve assy</p>	<p>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.</p>	 <p>4-way Valve Assy</p>
<p>8.Remove capillary sub-assy</p>	<p>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)</p>	 <p>Capillary Sub-assy</p>

Steps	Procedure
<p>9.Remove motor and motor support</p>	<p>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.</p> 
<p>10.Remove clapboard sub-assy</p>	<p>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.</p> 

Steps	Procedure
11.Remove Compressor	
1	<p>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.</p>
2	<p>Remove the 3 footing screws of the compressor and remove the compressor.</p>



Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: $T_f = T_c \times 1.8 + 32$

Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	23	82/83	82.4	28
66/67	66.2	19	75/76	75.2	24	84/85	84.2	29
68	68	20	77	77	25	86	86	30

Ambient temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
32/33	32	0	55/56	55.4	13	79/80	78.8	26
34/35	33.8	1	57/58	57.2	14	81	80.6	27
36	35.6	2	59/60	59	15	82/83	82.4	28
37/38	37.4	3	61/62	60.8	16	84/85	84.2	29
39/40	39.2	4	63	62.6	17	86/87	86	30
41/42	41	5	64/65	64.4	18	88/89	87.8	31
43/44	42.8	6	66/67	66.2	19	90	89.6	32
45	44.6	7	68/69	68	20	91/92	91.4	33
46/47	46.4	8	70/71	69.8	21	93/94	93.2	34
48/49	48.2	9	72	71.6	22	95/96	95	35
50/51	50	10	73/74	73.4	23	97/98	96.8	36
52/53	51.8	11	75/76	75.2	24	99	98.6	37
54	53.6	12	77/78	77	25			

Appendix 2: Configuration of Connection Pipe

1. Standard length of connection pipe

- 5m, 7.5m, 8m.

2. Min. length of connection pipe is 3m.

3. Max. length of connection pipe and max. high difference.

4. The additional refrigerant oil and refrigerant charging required after prolonging connection pipe

- After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.

- The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	15 m	5 m
7000 Btu/h(2051 W)	15 m	5 m
9000 Btu/h(2637 W)	15 m	10 m
12000 Btu/h(3516 W)	20 m	10 m
18000 Btu/h(5274 W)	25 m	10 m
24000 Btu/h(7032 W)	25 m	10 m
28000 Btu/h(8204 W)	30 m	10 m
36000 Btu/h(10548 W)	30 m	20 m
42000 Btu/h(12306 W)	30 m	20 m
48000 Btu/h(14064 W)	30 m	20 m

- When the length of connection pipe is above 5m, add refrigerant according to the prolonged length of liquid pipe. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

- Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(mm)	Gas pipe(mm)	Cooling only(g/m)	Cooling and heating(g/m)
Φ6	Φ9.5 or Φ12	15	20
Φ6 or Φ9.5	Φ16 or Φ19	15	20
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	/	250	250
Φ22.2	/	350	350

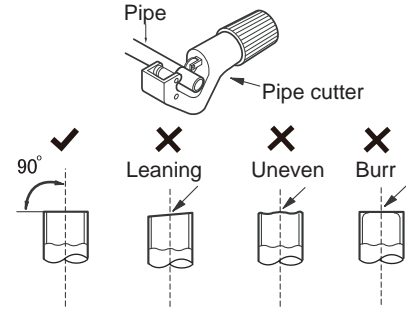
Appendix 3: Pipe Expanding Method

⚠ Note:

Improper pipe expanding is the main cause of refrigerant leakage. Please expand the pipe according to the following steps:

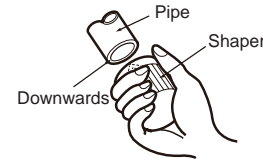
A: Cut the pip

- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.



B: Remove the burrs

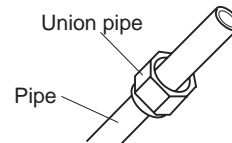
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



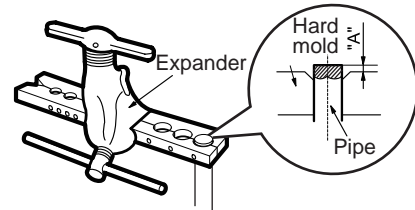
E: Expand the port

- Expand the port with expander.

⚠ Note:

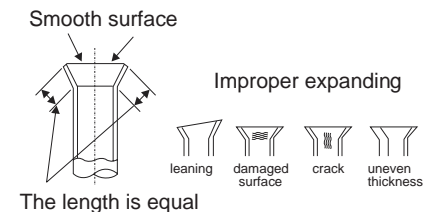
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35 (1/4")	1.3	0.7
Φ9.52 (3/8")	1.6	1.0
Φ12 - 12.70 (1/2")	1.8	1.0
Φ16 - 15.88 (5/8")	2.4	2.2



F: Inspection

- Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



Appendix 4: List of Resistance for Temperature Sensor

Resistance Table for Indoor and Outdoor Ambient Temperature Sensor(15K)

Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)
-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

Resistance Table for Indoor and Outdoor Tube Temperature Sensor(20K)

Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)
-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	0.777
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

Resistance Table of Outdoor Discharge Temperature Sensor(50K)

Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)	Temp(°C)	Resistance(k)
-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.

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