



Service Manual

U-Grace Serie

Please be aware that all product codes beginning with GWH are to be seen as the TOSOT units beginning with TWH.

TOSOT units in this manual:

TWH09UB-K3DNA2E

TWH12UB-K3DNA2E

TWH18UC-K3DNA2E

(Refrigerant:R410A)

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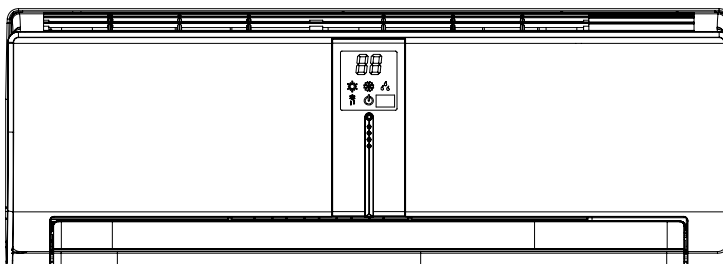
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Part I : Technical Information

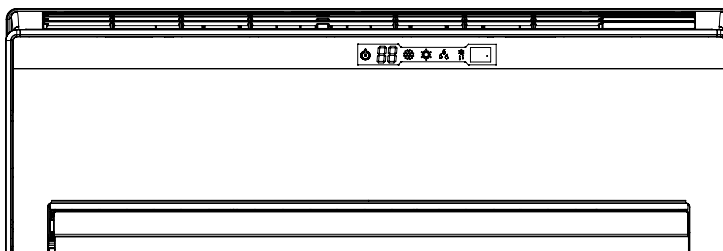
1. Summary

Indoor Unit:

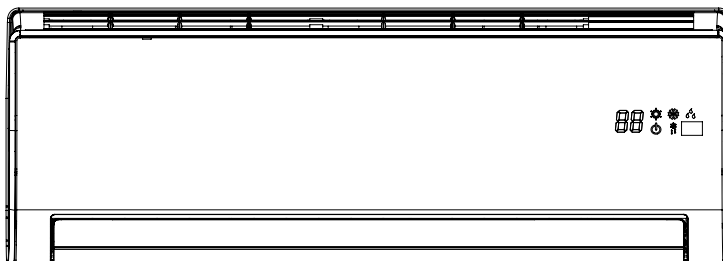
GWH09UB-K3DNA1E/I
GWH12UB-K3DNA1E/I
GWH18UC-K3DNA1E/I



GWH09UB-K3DNA2E/I
GWH12UB-K3DNA2E/I
GWH18UC-K3DNA2E/I

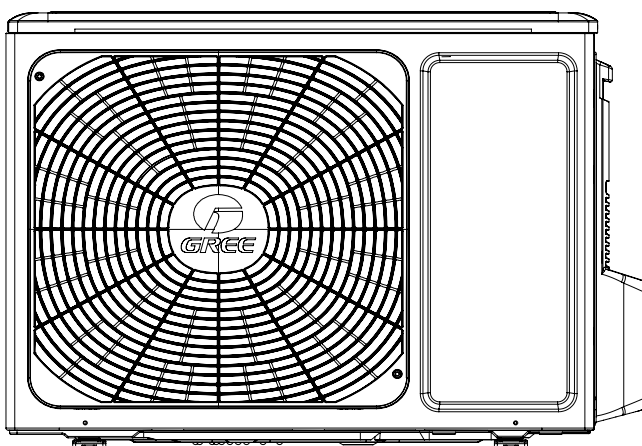


GWH09UB-K3DNA3E/I
GWH12UB-K3DNA3E/I

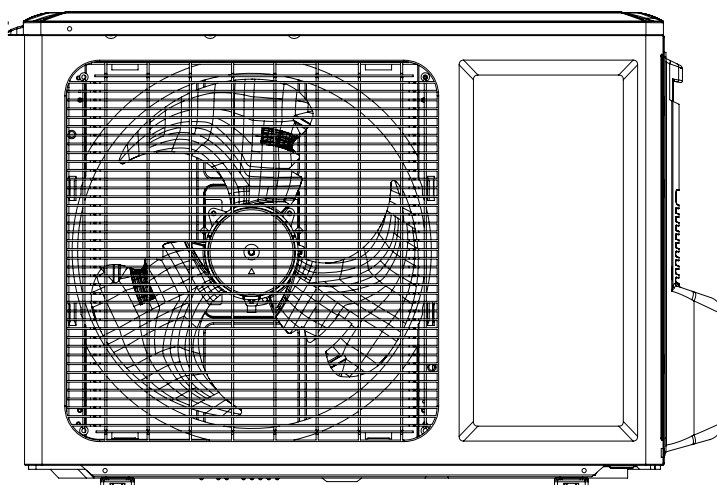


Outdoor Unit:

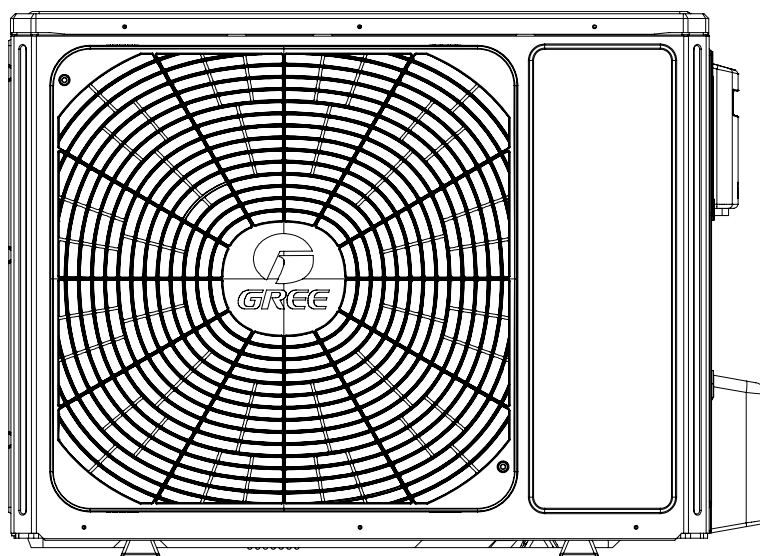
GWH09UB-K3DNA2E/O



GWH12UB-K3DNA2E/O

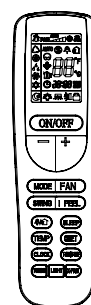


GWH18UC-K3DNA2E/O



Remote Controller:

YAA1FB1



2. Specifications

2.1 Specification Sheet

Model			GWH09UB-K3DNA1E, GWH09UB-K3DNA2E
			GWH09UB-K3DNA3E
Product Code			CB204002301, CB221001601
			CB205001701
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity		W	2600
Heating Capacity		W	2800
Cooling Power Input		W	720
Heating Power Input		W	760
Cooling Current Input		A	3.40
Heating Current Input		A	3.60
Rated Input		W	1550
Rated Current		A	/
Air Flow Volume (SH/H/M/L/SL)		m³/h	560/490/400/350/340
Dehumidifying Volume		L/h	0.8
EER		W/W	3.61
COP		W/W	3.68
SEER			6.1
SCOP			4.0
Application Area		m²	12-18
Indoor Unit	Indoor Unit Model		GWH09UB-K3DNA1E/I, GWH09UB-K3DNA2E/I
			GWH09UB-K3DNA3E/I
	Indoor Unit Product Code		CB204N02300, CB221N01601
			CB205N01700
	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ85X687
	Cooling Speed (max~min)	r/min	1350/1200/1100/1000/900/800/700
	Heating Speed (max~min)	r/min	1350/1250/1170/1090/1020/950/900
	Indoor Unit Fan Motor Power Output	W	20
	Indoor Unit Fan Motor RLA	A	0.2
	Indoor Unit Fan Motor Capacitor	μF	1
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	670X25.4X324
	Swing Motor Model		MP24AC/MP24AD
	Swing Motor Power Output	W	0.6
	Fuse Current	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	41/39/35/31/29
	Sound Power Level (SH/H/M/L/SL)	dB (A)	55/52/47/43/41
	Dimension (WXHXD)	mm	896X320X159
	Dimension of Carton Box (LXWXH)	mm	970X400X240
Dimension of Package(LXWXH)	mm	973X403X255	
Indoor Unit Net Weight	kg	11	
Indoor Unit Gross Weight	kg	14	

Outdoor Unit	Outdoor Unit Model		GWH09UB-K3DNA2E/O
	Outdoor Unit Product Code		CB221W01601
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXA-A086zE190A
	Compressor Oil		FVC 68D/RB 68EP
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	20
	Compressor Rated Load Amp (RLA)	A	4.2
	Compressor Power Input	W	881
	Compressor Overload Protector		1NT11L-6233
	Throttling Method		Electron expansion valve
	Set Temperature Range	°C	16~30
	Cooling Operation Ambient Temperature Range	°C	18~43
	Heating Operation Ambient Temperature Range	°C	-7~24
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	710X38.1X506
	Outdoor Unit Fan Motor Speed	rpm	900/650
	Outdoor Unit Fan Motor Power Output	W	30
	Outdoor Unit Fan Motor RLA	A	0.27
	Outdoor Unit Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	m ³ /h	1600
	Outdoor Unit Fan Type		Axial-flow
	Outdoor Unit Fan Diameter	mm	Φ400
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Dis-charge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suc-tion Side	MPa	2.5
	Sound Pressure Level (H/M/L)	dB (A)	50/-/-
	Sound Power Level (H/M/L)	dB (A)	63/-/-
	Dimension (WXHXD)	mm	776X540X320
	Dimension of Carton Box (LXWXH)	mm	848X360X580
	Dimension of Package(LXWXH)	mm	851X363X595
	Outdoor Unit Net Weight	kg	31
	Outdoor Unit Gross Weight	kg	35
	Refrigerant		R410A
	Refrigerant Charge	kg	0.9
Conne- tion Pipe	Connection Pipe Length	m	5
	Connection Pipe Gas Additional Charge	g/m	20
	Outer Diameter of Liquid Pipe(GREE Allocation)(Metric)	mm	Φ6
	Outer Diameter of Gas Pipe(GREE Allocation)(Metric)	mm	Φ9.52
	Max Distance Height	m	10
	Max Distance Length	m	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.

Indoor Unit	Indoor Unit Model		GWH12UB-K3DNA1E/I, GWH12UB-K3DNA2E/I GWH12UB-K3DNA3E/I
	Indoor Unit Product Code		CB204N02400, CB221N01701 CB205N01800
	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ85X687
	Cooling Speed (max~min)	r/min	1350/1250/1150/1050/950/850/700
	Heating Speed (max~min)	r/min	1350/1270/1180/1100/1040/980/900
	Indoor Unit Fan Motor Power Output	W	20
	Indoor Unit Fan Motor RLA	A	0.2
	Indoor Unit Fan Motor Capacitor	μF	1
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	670X25.4X324
	Swing Motor Model		MP24AC/MP24AD
	Swing Motor Power Output	W	0.6
	Fuse Current	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	42/40/36/32/29
	Sound Power Level (SH/H/M/L/SL)	dB (A)	55/53/48/44/42
	Dimension (WXHDX)	mm	896X320X159
	Dimension of Carton Box (LXWXH)	mm	970X400X240
Dimension of Package(LXWXH)	mm	973X403X255	
Indoor Unit Net Weight	kg	11	
Indoor Unit Gross Weight	kg	14	

Outdoor Unit	Outdoor Unit Model		GWH12UB-K3DNA2E/O
	Outdoor Unit Product Code		CB221W01700
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXA-A091zE190A
	Compressor Oil		FVC 68D/RB 68EP
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	20
	Compressor Rated Load Amp (RLA)	A	4.5
	Compressor Power Input	W	942
	Compressor Overload Protector		1NT11L-6233
	Throttling Method		Electron expansion valve
	Set Temperature Range	°C	16~30
	Cooling Operation Ambient Temperature Range	°C	18~43
	Heating Operation Ambient Temperature Range	°C	-7~24
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7.94
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	734X38.1X550
	Outdoor Unit Fan Motor Speed	rpm	900/650
	Outdoor Unit Fan Motor Power Output	W	30
	Outdoor Unit Fan Motor RLA	A	0.27
	Outdoor Unit Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	m³/h	2200
	Outdoor Unit Fan Type		Axial-flow
	Outdoor Unit Fan Diameter	mm	Φ438
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Dis-charge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suc-tion Side	MPa	2.5
	Sound Pressure Level (H/M/L)	dB (A)	52/-/-
	Sound Power Level (H/M/L)	dB (A)	63/-/-
	Dimension (WXHDXD)	mm	842X596X320
	Dimension of Carton Box (LXWXH)	mm	878X360X630
	Dimension of Package(LXWXH)	mm	881X363X645
	Outdoor Unit Net Weight	kg	34
	Outdoor Unit Gross Weight	kg	37
	Refrigerant		R410A
	Refrigerant Charge	kg	1.1
Conne- ction Pipe	Connection Pipe Length	m	5
	Connection Pipe Gas Additional Charge	g/m	20
	Outer Diameter of Liquid Pipe(GREE Allocation)(Metric)	mm	Φ6
	Outer Diameter of Gas Pipe(GREE Allocation)(Metric)	mm	Φ12
	Max Distance Height	m	10
	Max Distance Length	m	20
Note: The connection pipe applies metric diameter.			

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

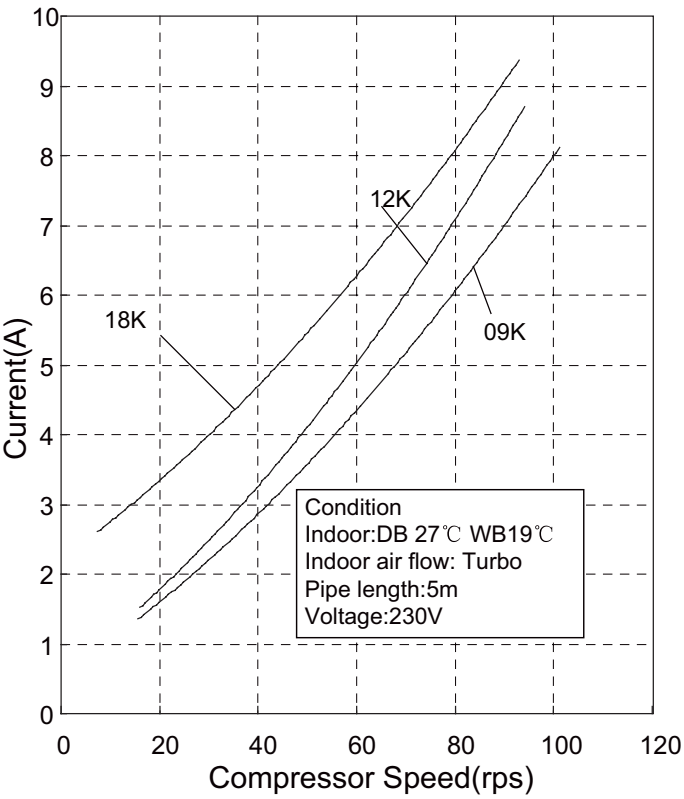
Indoor Unit	Indoor Unit Model		GWH18UC-K3DNA1E/I GWH18UC-K3DNA2E/I
	Indoor Unit Product Code		CB204N02500 CB221N01801
	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ98X765
	Cooling Speed (max~min)	r/min	1350/1150/1070/1000/950/900/850
	Heating Speed (max~min)	r/min	1350/1150/1080/1020/950/900/850
	Indoor Unit Fan Motor Power Output	W	35
	Indoor Unit Fan Motor RLA	A	0.32
	Indoor Unit Fan Motor Capacitor	μF	2.5
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	770X25.4X343
	Swing Motor Model		MP24HA/MP24HB
	Swing Motor Power Output	W	2.5
	Fuse Current	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	47/43/39/34/31
	Sound Power Level (SH/H/M/L/SL)	dB (A)	58/56/52/48/44
	Dimension (WXHDX)	mm	998X340X178
	Dimension of Carton Box (LXWXH)	mm	1080X425X268
	Dimension of Package(LXWXH)	mm	1083X428X283
	Indoor Unit Net Weight	kg	14
Indoor Unit Gross Weight	kg	17	

Outdoor Unit	Outdoor Unit Model		GWH18UC-K3DNA2E/O
	Outdoor Unit Product Code		CB221W01801
	Compressor Manufacturer		mitsubishi electric (GUANGZHOU)COMPRESSOR CO. LTD
	Compressor Model		SNB130FGYMC
	Compressor Oil		FV50S
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	27
	Compressor Rated Load Amp (RLA)	A	8.4
	Compressor Power Input	W	1245±3%
	Compressor Overload Protector		1NT11L-6578
	Throttling Method		Electron expansion valve
	Set Temperature Range	°C	16~30
	Cooling Operation Ambient Temperature Range	°C	18~43
	Heating Operation Ambient Temperature Range	°C	-7~24
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ9.52
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	848.5X44X660
	Outdoor Unit Fan Motor Speed	rpm	850/700/570
	Outdoor Unit Fan Motor Power Output	W	60
	Outdoor Unit Fan Motor RLA	A	0.58
	Outdoor Unit Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	m³/h	3200
	Outdoor Unit Fan Type		Axial-flow
	Outdoor Unit Fan Diameter	mm	Φ520
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level (H/M/L)	dB (A)	56/-/-
	Sound Power Level (H/M/L)	dB (A)	65/-/-
	Dimension (WXHXD)	mm	955X700X396
	Dimension of Carton Box (LXWXH)	mm	1026X455X735
	Dimension of Package(LXWXH)	mm	1029X458X750
	Outdoor Unit Net Weight	kg	48
	Outdoor Unit Gross Weight	kg	53
	Refrigerant		R410A
	Refrigerant Charge	kg	1.35
Connection Pipe	Connection Pipe Length	m	5
	Connection Pipe Gas Additional Charge	g/m	20
	Outer Diameter of Liquid Pipe(GREE Allocation)(Metric)	mm	Φ6
	Outer Diameter of Gas Pipe(GREE Allocation)(Metric)	mm	Φ12
	Max Distance Height	m	10
	Max Distance Length	m	20
Note: The connection pipe applies metric diameter.			

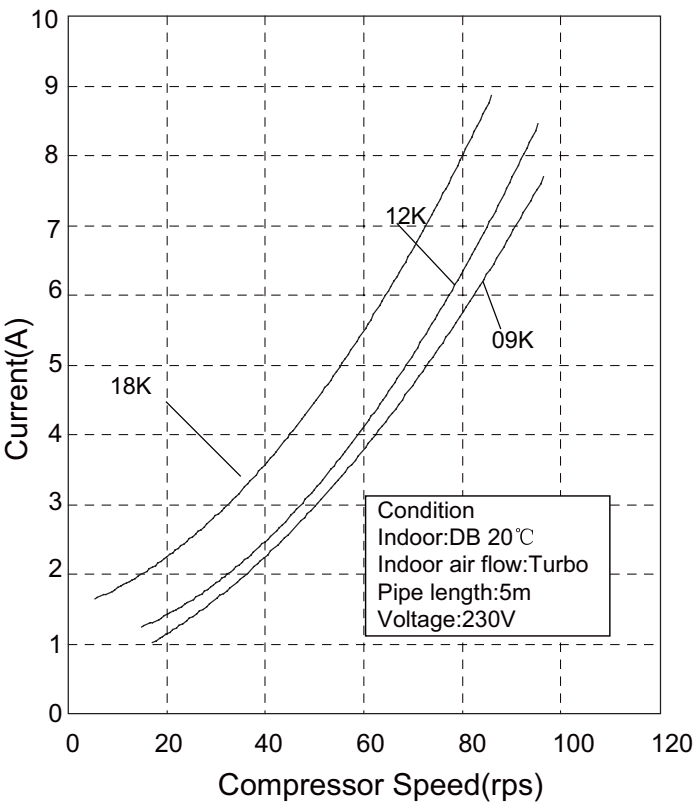
The above data is subject to change without notice; please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

Cooling

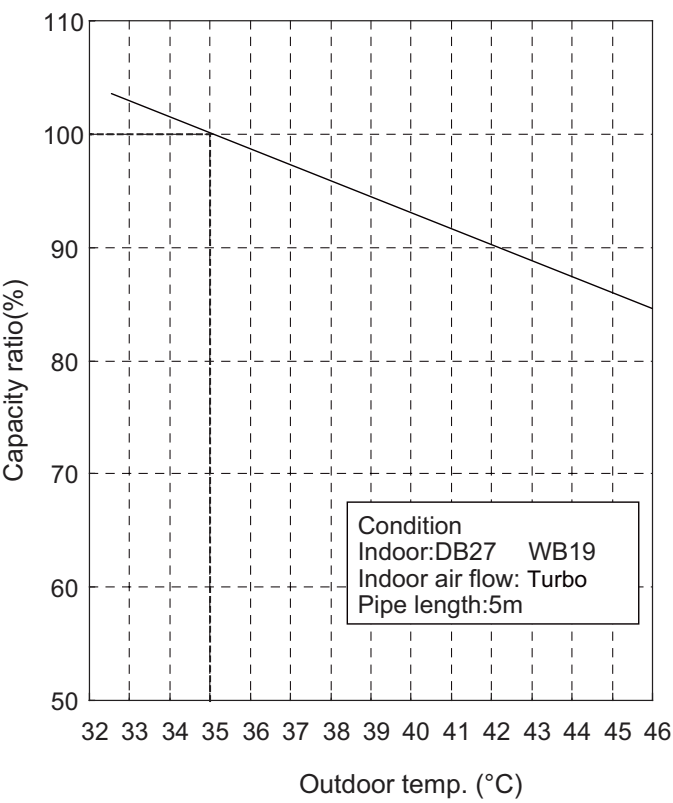


Heating

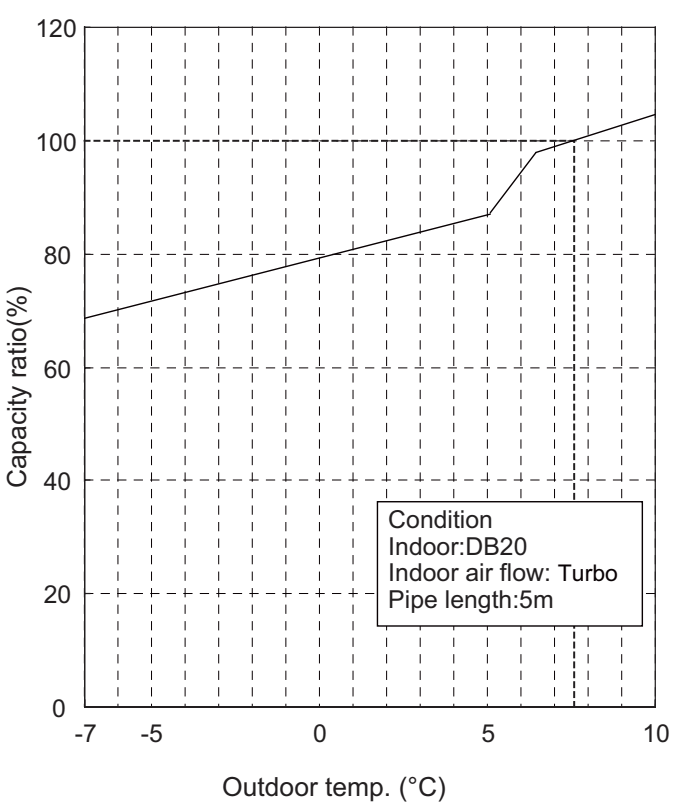


2.3 Capacity Variation Ratio According to Temperature

Cooling



Heating



2.4 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition(℃) (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 (Hz)
Indoor	Outdoor			T1 (℃)	T2 (℃)			
27/19	35/-	09K	1.03	10~11	68~38	Suprt High	High	50
27/19	35/-	12K	0.94	12~12	72~38	Suprt High	High	74
27/19	35/24	18K	0.92	8.2~10.1	55~40	Suprt High	High	80

Heating:

Rated cooling condition(℃) (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 (Hz)
Indoor	Outdoor			T1 (℃)	T2 (℃)			
20/-	7/6	09K	2.6	62~42	3~1	Suprt High	High	60
20/-	7/6	12K	2.7	68~42	4~2	Suprt High	High	73
20/15	7/6	18K	2.98	51~38	-1~2.5	Suprt High	High	74

Instruction:

T1: Inlet and outlet pipe temperature of evaporator

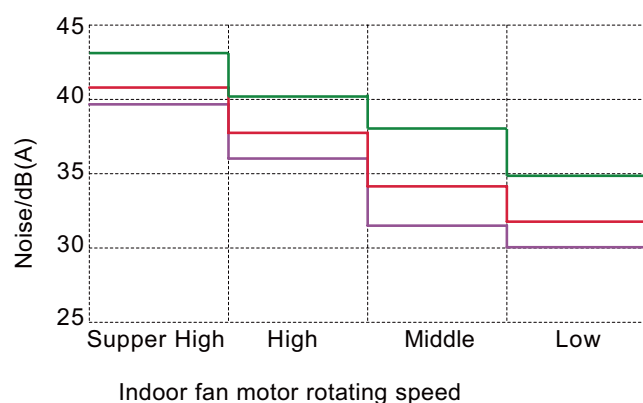
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

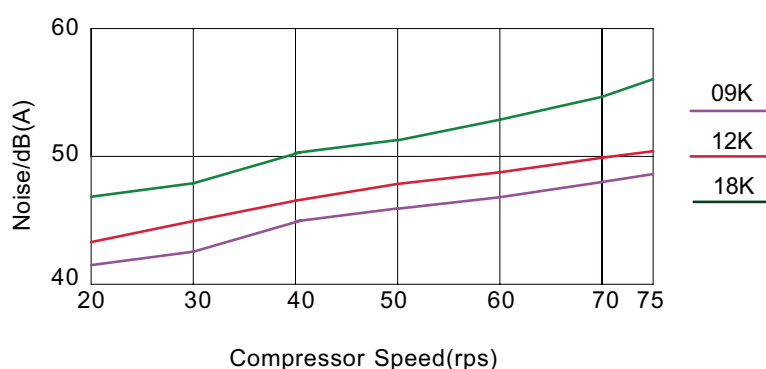
Connection pipe length: 5 m.

2.5 Noise Curve

Indoor side noise when blowing

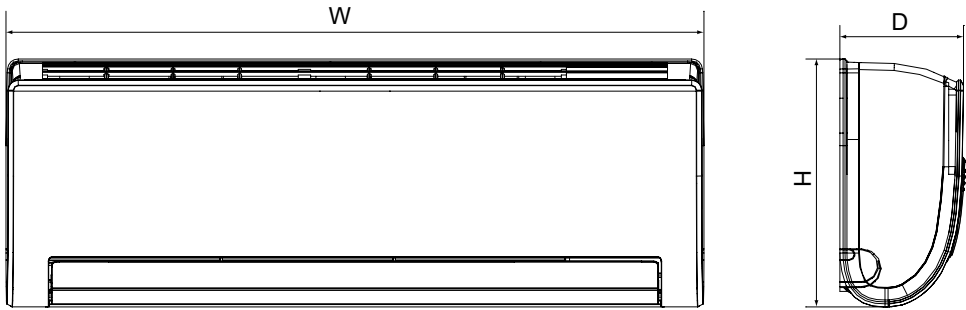


Outdoor side noise when Compressor speed changed

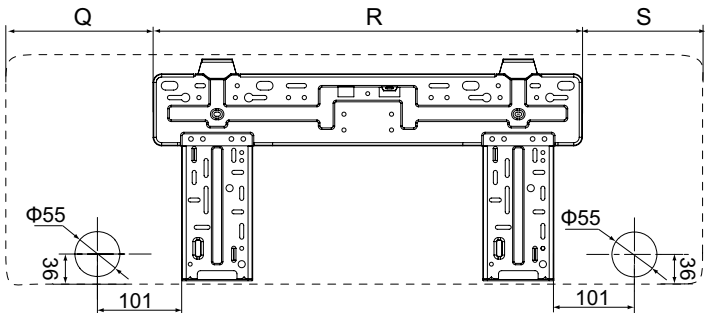


3. Outline Dimension Diagram

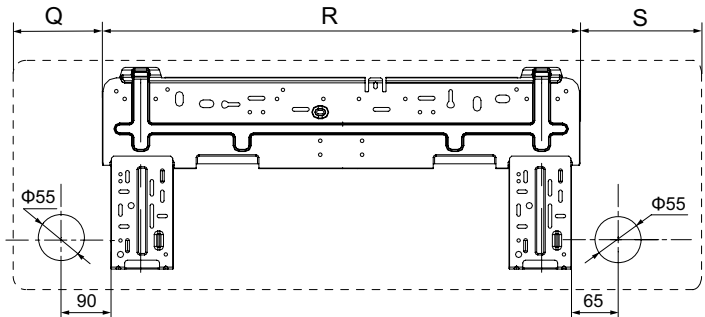
3.1 Indoor Unit



09K/12K



18K

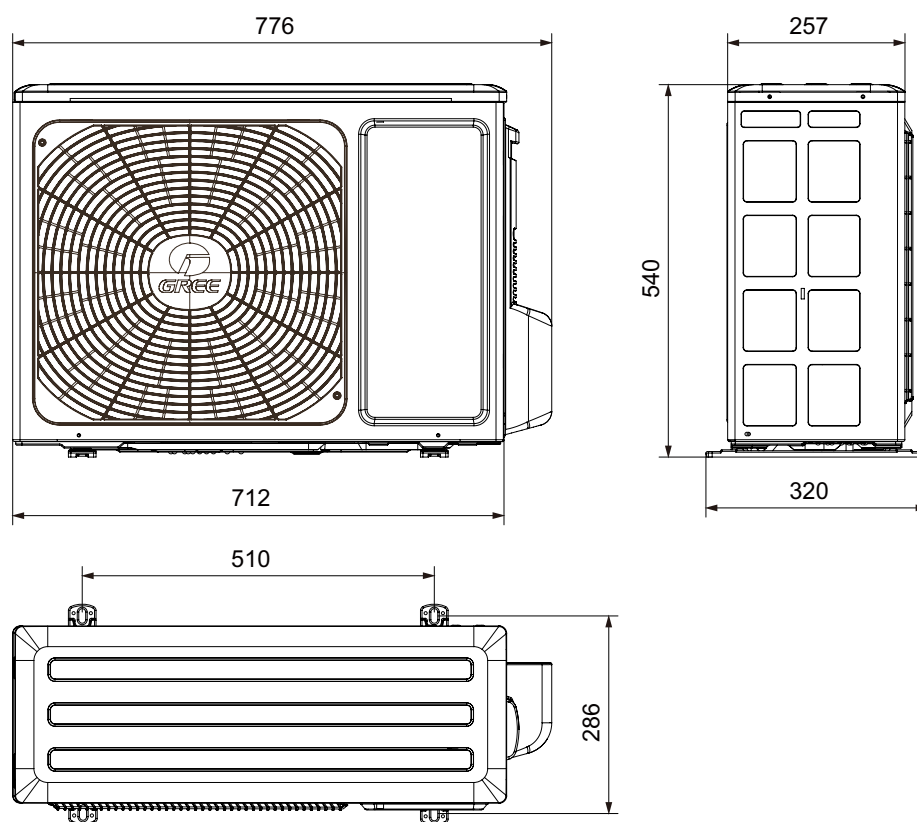


Mode	W	H	D	Q	R	S
9K	896	320	159	184	541	171
12K	896	320	159	184	541	171
18K	998	340	178	112	685	201

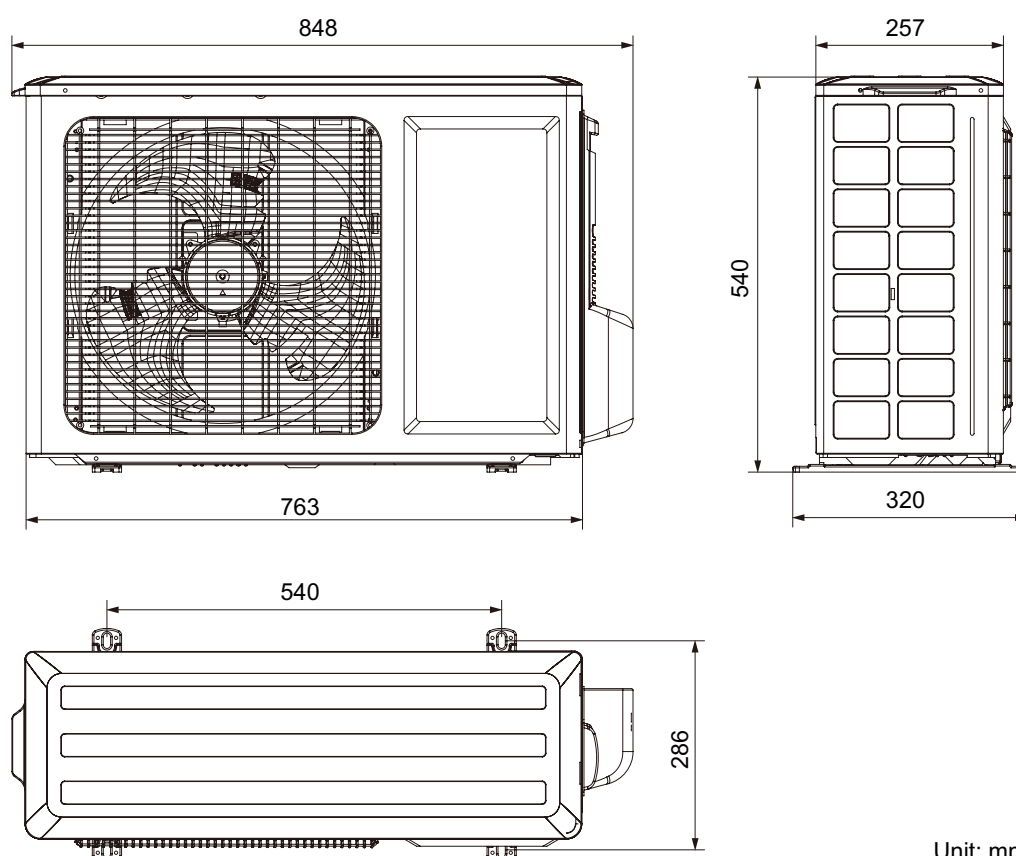
Unit: mm

3.2 Outdoor Unit

GWH09UB-K3DNA2E/O

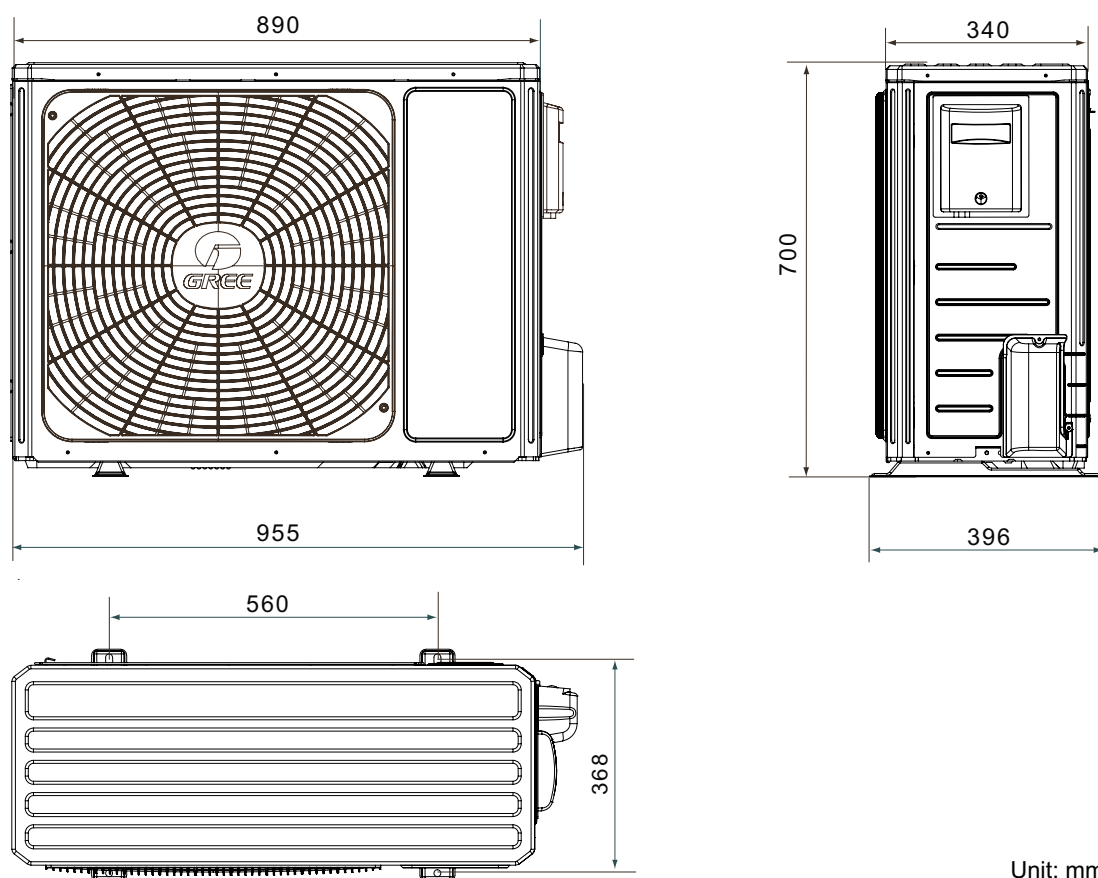


GWH12UB-K3DNA2E/O



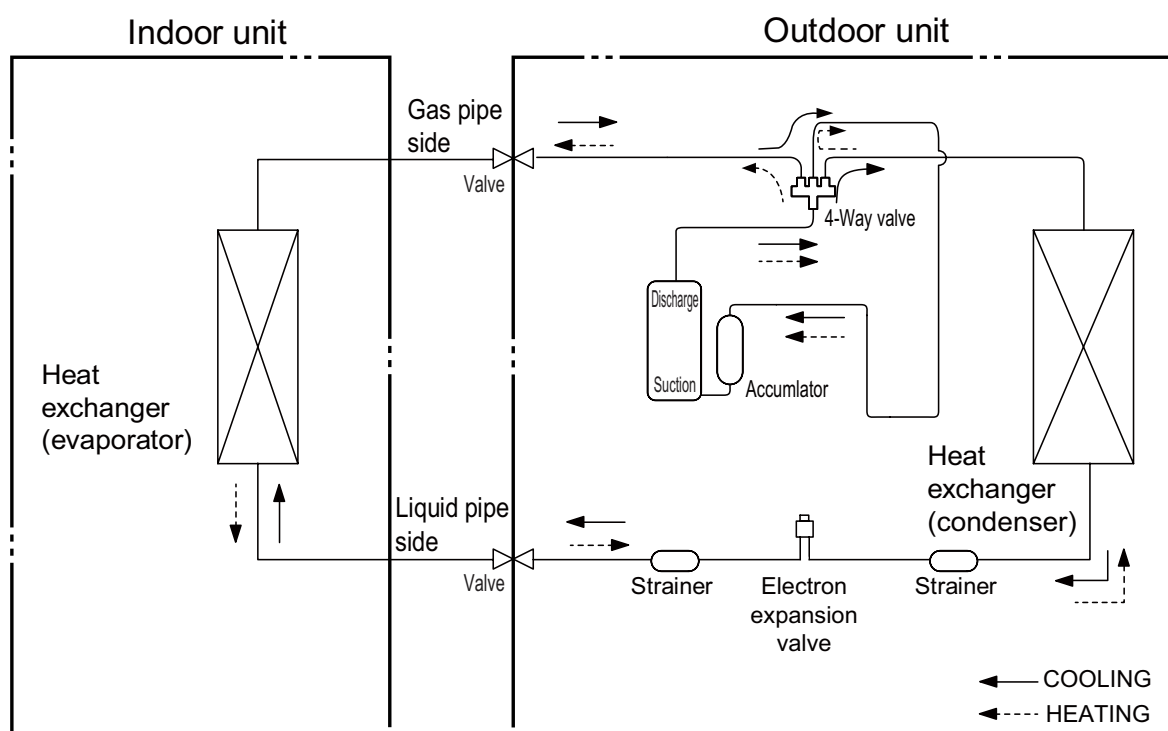
Unit: mm

GWH18UC-K3DNA2E/O



Unit: mm

4. Refrigerant System Diagram



Connection pipe specification:

Liquid : 1/4" (6mm)

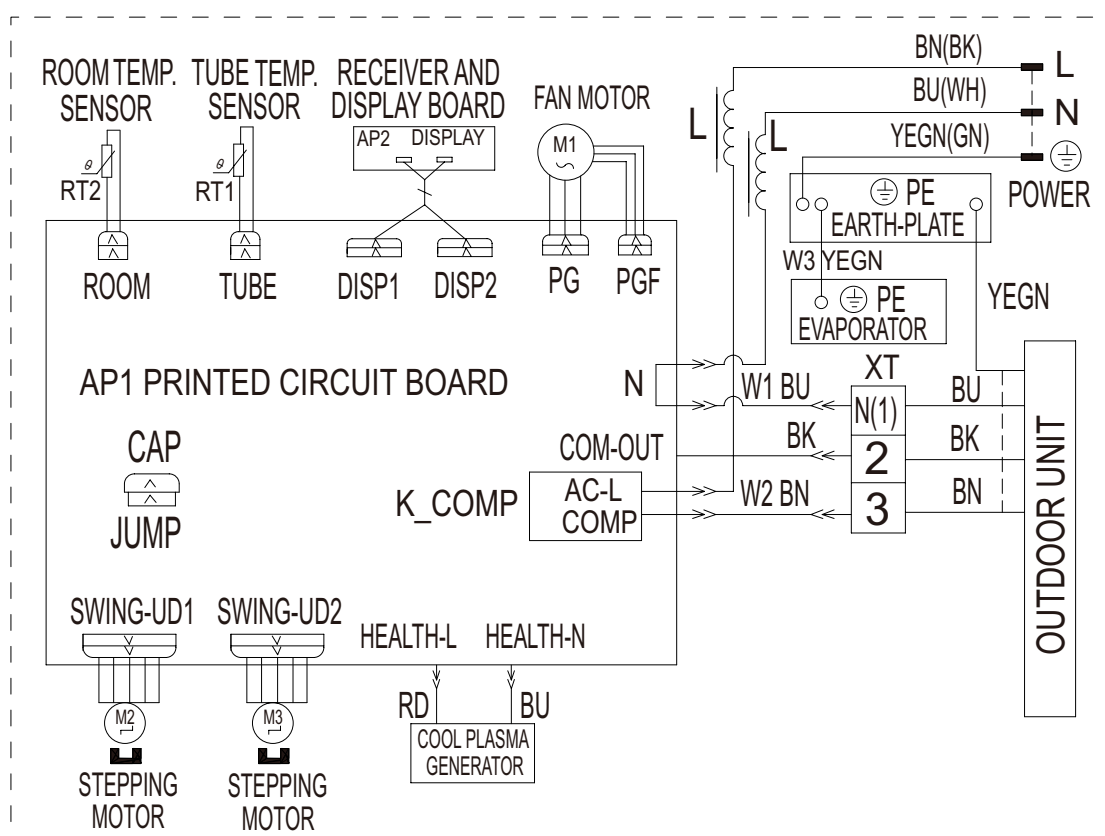
Gas : 3/8" (9.52mm)(09K)

Gas : 1/2" (12mm)(12K/18K)

5.1 Wiring Diagram

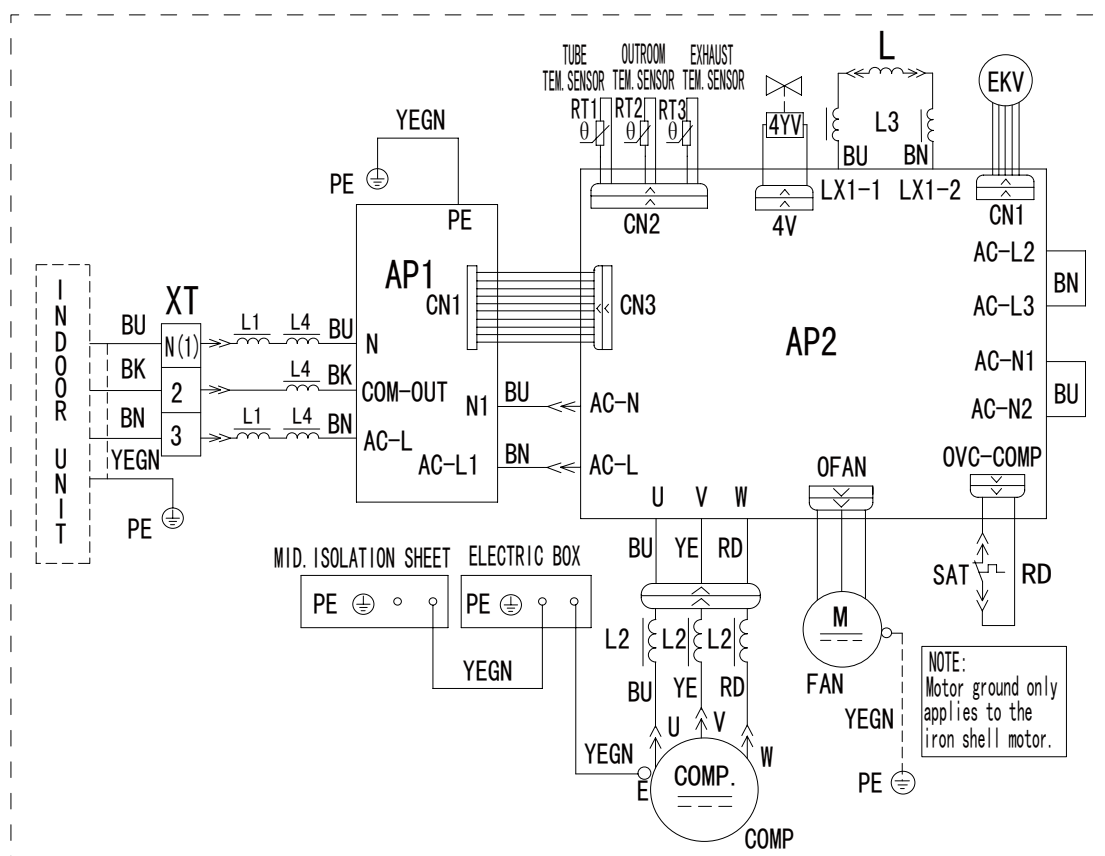
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

GWH18UC-K3DNA1E/I, GWH18UC-K3DNA2E/I

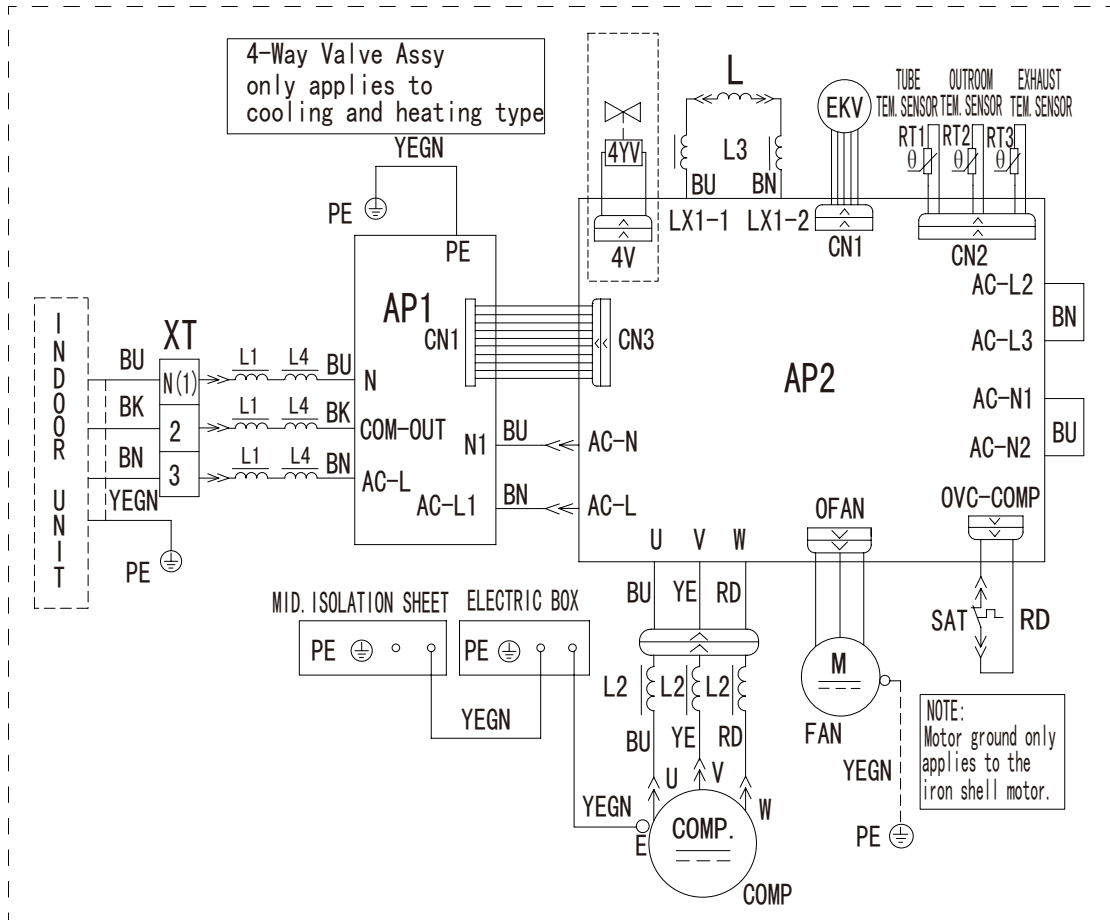


• Outdoor Unit

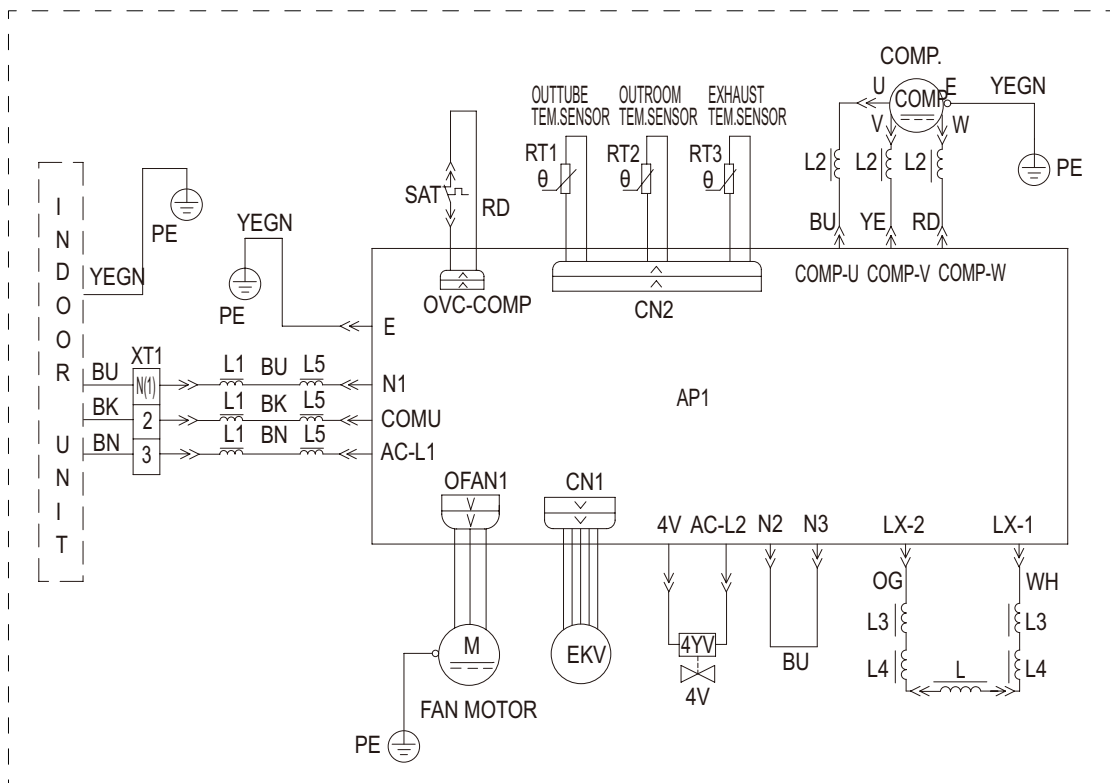
GWH09UB-K3DNA2E/O



GWH12UB-K3DNA2E/O



GWH18UC-K3DNA2E/O



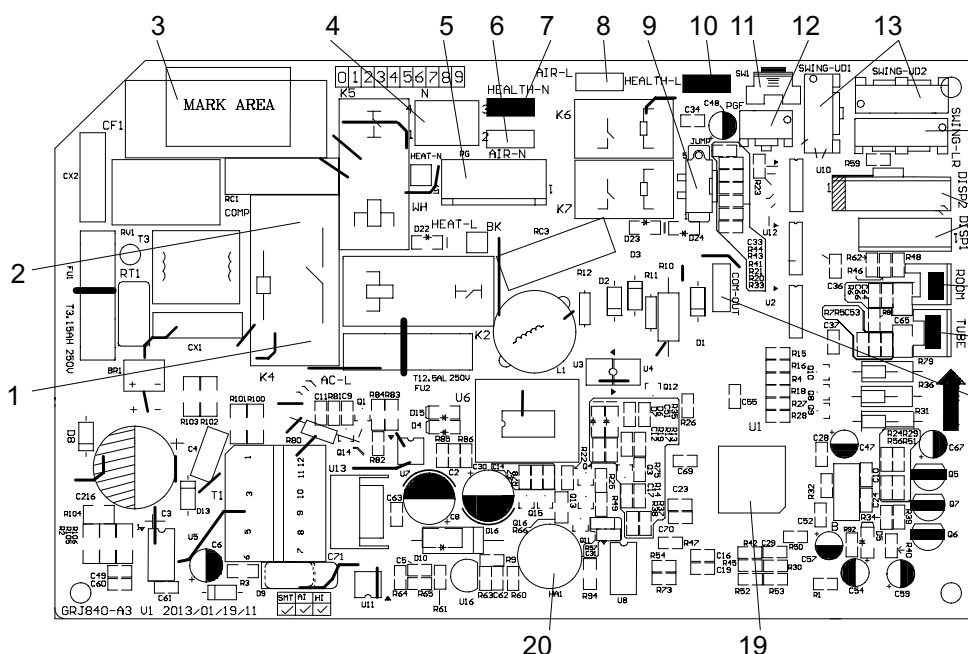
These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

Indoor Unit

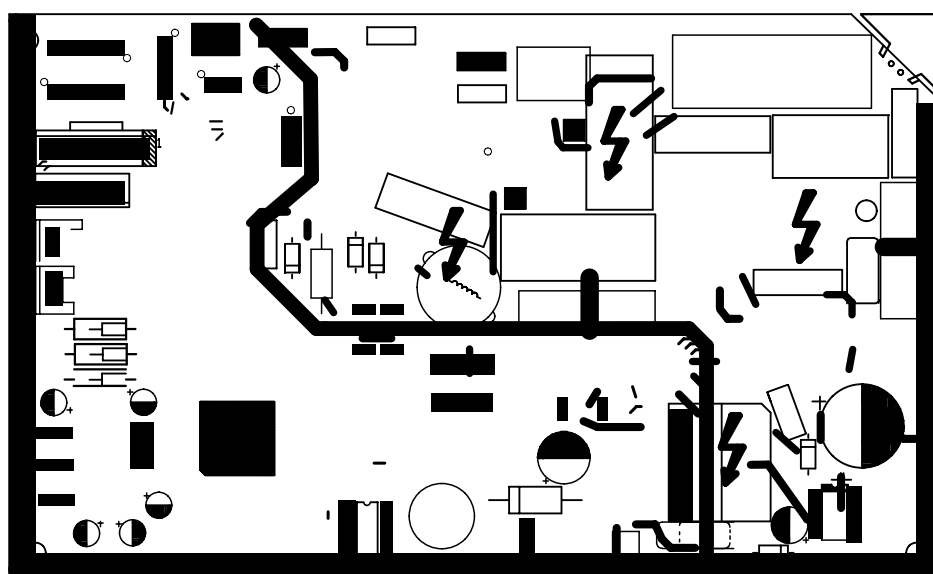
GWH09UB-K3DNA1E/I, GWH09UB-K3DNA2E/I, GWH09UB-K3DNA3E/I, GWH12UB-K3DNA1E/I
GWH12UB-K3DNA2E/I, GWH12UB-K3DNA3E/I

• Top view

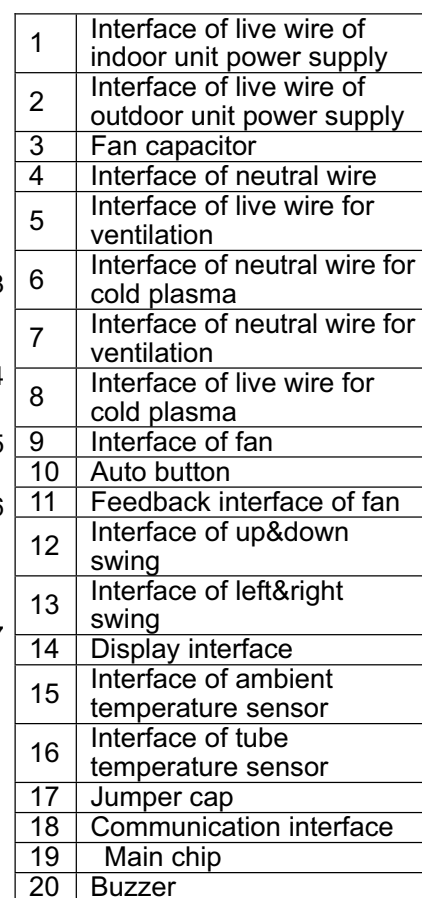


1	Interface of live wire of indoor unit power supply
2	Interface of live wire of outdoor unit power supply
3	Fan capacitor
4	Interface of neutral wire
5	Interface of fan
6	Interface of neutral wire for ventilation
7	Interface of neutral wire for cold plasma
8	Interface of live wire for ventilation
9	Jumper cap
10	Interface of live wire for cold plasma
11	Auto button
12	Feedback interface of fan
13	Interface of up&down swing
14	Interface of left&right swing
15	Display interface
16	Interface of ambient temperature sensor
17	Interface of tube temperature sensor
18	Communication interface
19	Main chip
20	Buzzer

• Bottom view

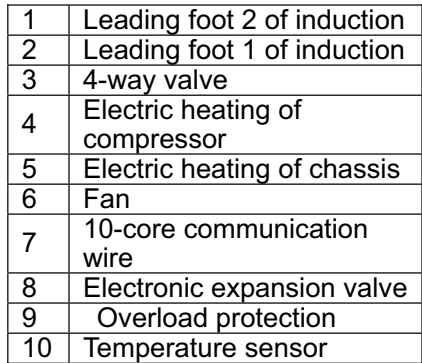


- **Top view**

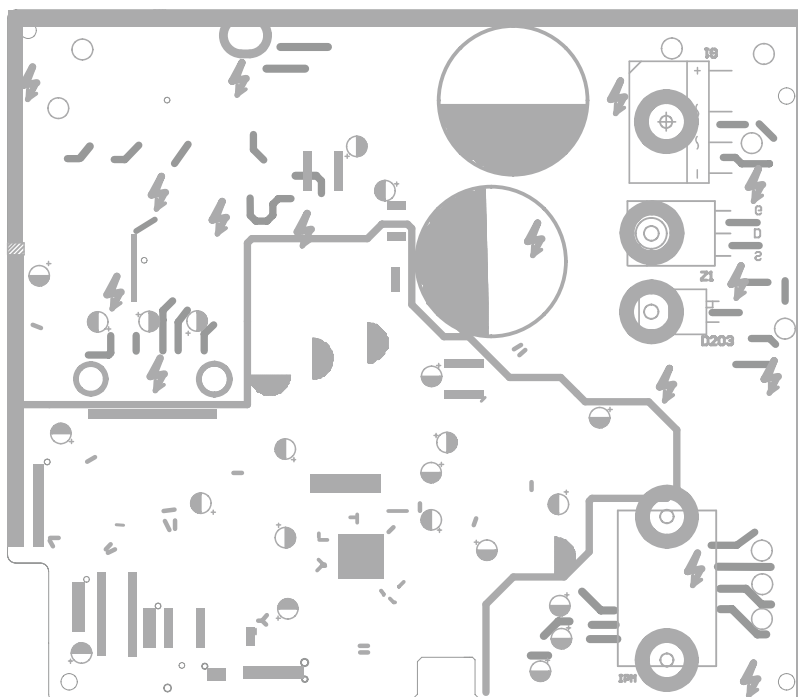


GWH09UB-K3DNA2E/O, GWH12UB-K3DNA2E/O

2

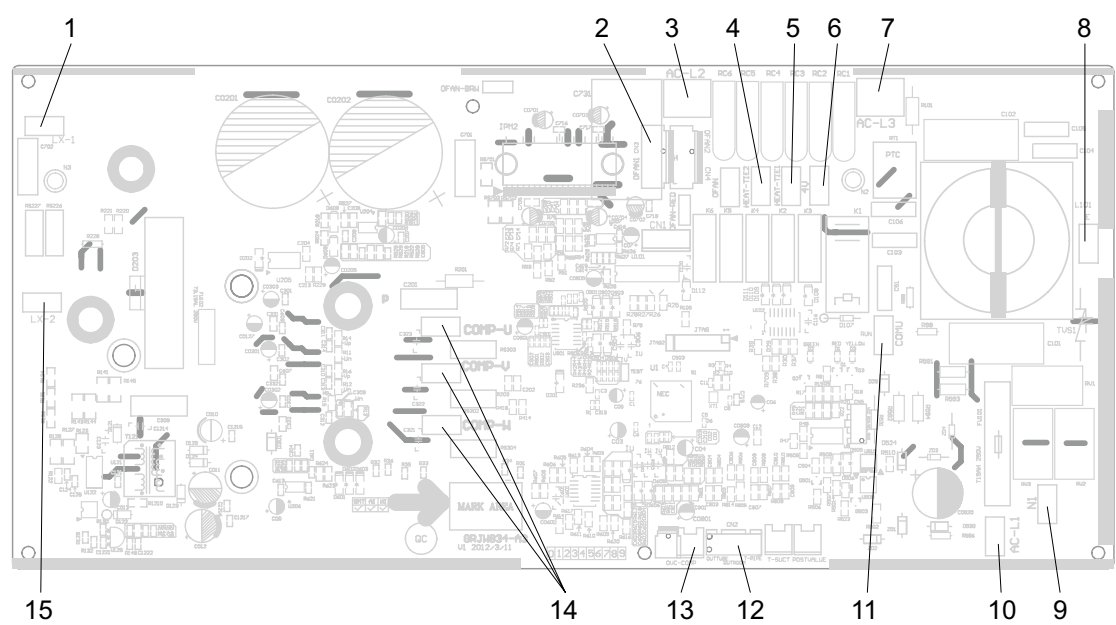


100



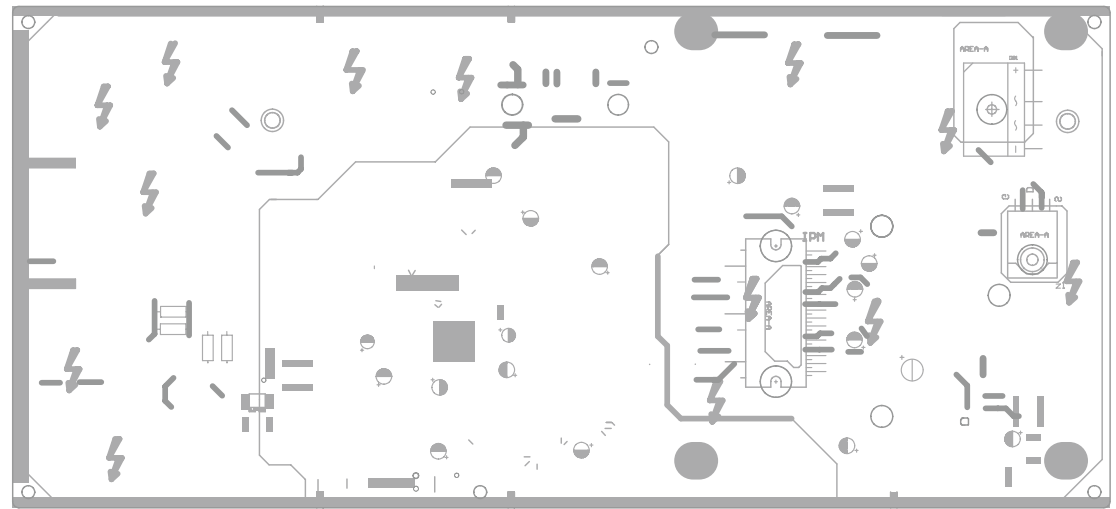
GWH18UC-K3DNA2E/O

• Top view



1	Interface 1 of reactor	6	Neutral wire of 4-way valve	11	Communication interface
2	Interface of fan	7	Live wire of electric heating belt	12	Temperature sensor
3	Interface of live wire for 4-way valve	8	Earthing wire input of power	13	Overload input
4	Neutral wire for electric heating of chassis	9	Neutral wire input of power	14	U, V, W three-phase of compressor
5	Neutral wire for electric heating of compressor	10	Live wire input of power	15	Interface 2 of reactor

• Bottom view



6. Function and Control

6.1 Remote Controller Introduction

Buttons on Remote Controller



- 1 ON/OFF**
Press it to start or stop operation.
- 2 -**
Press it to decrease temperature setting.
- 3 +**
Press it to increase temperature setting.
- 4 MODE**
Press it to select operation mode(AUTO/COOL/DRY/FAN/HEAT).
- 5 FAN**
Press it to set fan speed.
- 6 SWING**
Press it set swing angle.
- 7 I FEEL**
- 8 /** (applicable for some models)
Press it to set HEALTH or AIR function.
- 9 SLEEP**
- 10 TEMP**
- 11 QUIET**
Pressitto set QUIET function.
- 12 CLOCK**
Press it set clock.
- 13 T-ONIT-OFF**
Press it to set auto-off/auto-on timer.
- 14 TURBO**
- 15 LIGHT**
Press it to turn on/off the light.
- 16 X-FAN**

1 ON/OFF

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

2 -

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

3 +

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

4 MODE

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

AUTO ► COOL ► DRY ► FAN ► HEAT*



*Note: Only for models with heating function.

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

5 FAN

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



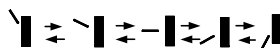
Low speed Low-Medium speed Medium speed
 Medium-High speed High speed

6 SWING

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



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



7 I FEEL

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

8 (applicable for some models)

Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays "". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays " " and "". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display "". Press this button again to repeat the operation above.

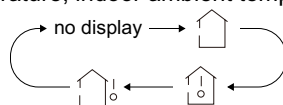
9 SLEEP

- Press this button, can select Sleep 1 (), Sleep 2 (), Sleep 3 () and cancel the Sleep, circulate between these, after electrified, Sleep Cancel is defaulted.
- Sleep 1 is Sleep mode 1, in Cool modes: sleep status after run for one hour, the main unit setting temperature will increase 1 °C, setting temperature increased 2 °C, the unit will run at this setting temperature; In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1 °C, 2 hours, setting temperature will decrease 2 °C, then the unit will run at this setting temperature.
- Sleep 2 is sleep mode 2, that is air conditioner will run according to the presetting a group of sleep temperature curve.
- Sleep 3- the sleep curve setting under Sleep mode by DIY:
 - (1) Under Sleep 3 mode, press "Turbo" button for a long time, remote control enters into user individuation sleep setting status, at this time, the time of remote control will display "1hour", the setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink (The first entering will display according to the initial curve setting value of original factory);
 - (2) Adjust "+" and "-" button, could change the corresponding setting temperature, after adjusted, press "Turbo" button for confirmation;
 - (3) At this time, 1hour will be automatically increased at the timer position on the remote control, (that are "2hours" or "3hours" or "8hours"), the place of setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink;
 - (4) Repeat the above step (2) ~ (3) operation, until 8hours temperature setting finished, sleep curve setting finished, at this time, the remote control will resume the original timer display; temperature display will resume to original setting temperature.
- Sleep 3- the sleep curve setting under Sleep mode by DIY could be inquired:

The user could accord to sleep curve setting method to inquire the presetting sleep curve, enter into user individuation sleep setting status, but do not change the temperature, press "Turbo" button directly for confirmation. Note: In the above presetting or enquiry procedure, if continuously within 10s, there is no button pressed, the sleep curve setting within 10s, there is no button pressed, the sleep curve setting status will be automatically quit and resume to display the original displaying. In the presetting or enquiry procedure, press "ON/OFF" button, "Mode" button, "Timer" button or "Sleep" button, the sleep curve setting or enquiry status will quit similarly.

10 TEMP

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



When selecting "🏠" with remote controller or no display, temperature indicator on indoor unit displays set temperature; When selecting "🏠+" with remote controller, temperature indicator on indoor unit displays indoor ambient temperature; 3s later or within 3s it receives other remote control signal that will return to display the setting temperature.

Caution:

This model hasn't outdoor ambient temperature display function. While remote controller can operate "🏠+" and indoor unit display set temperature.

It's defaulted to display set temperature when turning on the unit.

Only for the models with temperature indicator on indoor unit.

11 QUIET

Press this button, the Quiet status is under the Auto Quiet mode (display "🔊" signal) and Quiet mode (display "🔇" signal) and Quiet OFF (there is no signal of "🔊" displayed), after powered on, the Quiet OFF is defaulted. Note: the Quiet function cannot be set up in Fan and Dry mode; Under the Quiet mode (Display "🔇" Under the Quiet mode (Display "🔊" signal), the fan speed is not available.

12 CLOCK

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

13 T-ON/T-OFF

Press T-ON button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again.

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

14 TURBO

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

15 LIGHT

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

16 X-FAN

Pressing X-FAN button in COOL or DRY mode, the icon 🌀 is displayed and the indoor fan will continue operation for 2 minutes in order to dry the indoor unit even though you have turned off the unit.

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

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

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

18 Combination of "MODE" and "-" buttons: About switch between Fahrenheit and centigrade

At unit OFF, press "MODE" and "-" buttons simultaneously to switch between °F and °C.

19 Combination of "TEMP" and "CLOCK" buttons: About Energy-saving Function

Press "TEMP" and "CLOCK" simultaneously in COOL mode to start energy-saving function. Nixie tube on the remote controller displays "SE". Repeat the operation to quit the function.

20 Combination of "TEMP" and "CLOCK" buttons: About 8 Heating Function

Press "TEMP" and "CLOCK" simultaneously in HEAT mode to start 8 Heating Function Nixie tube on the remote controller displays "8" and a selected temperature of "8" (46 if Fahrenheit is adopted). Repeat the operation to quit the function.

21 About Back-lighting Function

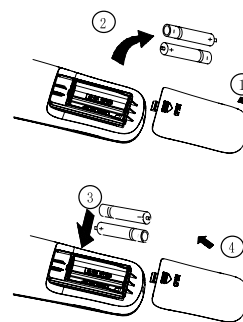
The unit lights for 4s when energizing for the first time, and 3s for later press.

Replacement of Batteries

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

Notes:

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



Sketch map for
replacing batteries

6.2 Brief Description of Modes and Functions

For 09K/12K unit:

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) Cooling Mode

① Working conditions and process of cooling

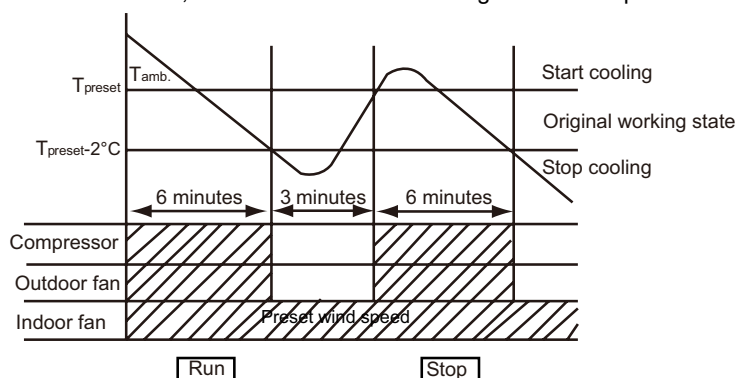
When $T_{\text{amb.}} \geq T_{\text{preset}}$, the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When $T_{\text{amb.}} \leq T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will run at preset speed.

When $T_{\text{preset}} - 2^\circ\text{C} < T_{\text{amb.}} < T_{\text{preset}}$, the unit will remain at its previous state.

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

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



② Protection

◆ Freeze protection

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

If $T_{\text{evap}} \leq 2^\circ\text{C}$, the compressor will operate at reduced frequency.

If $T_{\text{evap}} \leq -1^\circ\text{C}$ is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If $T_{\text{evap.}} \geq 10^\circ\text{C}$ and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

(2) Drying Mode

① Working conditions and process of drying

If $T_{\text{amb.}} > T_{\text{preset}}$, the unit will enter cooling and drying 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) Heating Mode

① Working conditions and process of heating

If $T_{\text{amb.}} \leq T_{\text{preset}} + 2^\circ\text{C}$, 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 $T_{\text{amb.}} \geq T_{\text{preset}} + 5^\circ\text{C}$, 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 $T_{\text{preset}} + 2^\circ\text{C} < T_{\text{amb.}} < T_{\text{preset}} + 5^\circ\text{C}$, 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) $-10^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < -5^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq (T_{\text{outdoor ambient}} - 3)^{\circ}\text{C}$.
 (5) $T_{\text{外环}} < -10^{\circ}\text{C}$, $T_{\text{外管}} - T_{\text{补}} \leq (T_{\text{外环}} - 3^{\circ}\text{C})$ 。

9K: In that case, indoor fan and compressor stop operation, in 30s later, outdoor fan stop operation and in another 30s later, 4-way valve stop operation; in 30s later, compressor increases its frequency for defrosting. When compressor operates for defrosting for 9min, or $T_{\text{B outdoor pipe}} \geq 10^{\circ}\text{C}$, the target frequency will be set as 46Hz and in 30s later, compressor will stop operation and in another 30s, 4-way valve will start operation; in 60s later, compressor and outdoor fan will operate while indoor fan operates at cold-air prevention operation. DRY indicator will be displayed on display panel and the defrosting frequency is 85Hz.

12K: In that case, indoor fan and compressor stop operation, in 30s later, outdoor fan stop operation and in another 30s later, 4-way valve stop operation; in 30s later, compressor increases its frequency for defrosting. When compressor operates for defrosting for 7.5min, or $T_{\text{B outdoor pipe}} \geq 10^{\circ}\text{C}$, the compressor will decrease its frequency and in 30s later, compressor will stop operation and in another 30s, 4-way valve will start operation; in 60s later, compressor and outdoor fan will operate The defrosting frequency is 80Hz.

③ Protection

◆ Cold air prevention

In heating mode, compressor operates or enters defrosting mode, and horizontal louver will turn to P7 position of heating upper .When the horizontal louver is not at swing status, if $T_{\text{pipe}} > 31^{\circ}\text{C}$, horizontal louver will rotate the default degree or the previous position. Such operation will be only executed once. If $T_{\text{pipe}} \leq 31^{\circ}\text{C}$ and cold air prevention operation finishes, horizontal louver will rotate to P3 position of heating and stop at the position until $T_{\text{pipe}} \geq 35^{\circ}\text{C}$. Then horizontal louver will rotate the default degree or the previous position. Such operation will be only executed once. In other conditions, when cold air prevention operation quit, horizontal louver will return to previous status. Within 9min, when $T_{\text{pipe}} \leq T_{\text{indoor amb.}} + 5^{\circ}\text{C}$, indoor fan will not operate. After 9min, or when $T_{\text{pipe}} > T_{\text{indoor amb.}} + 5^{\circ}\text{C}$, such condition will not be detected to avoid frequent startup and turning off of the fan. And also, the unit will operate at the following mode:

① When $T_{\text{indoor amb.}} < 24^{\circ}\text{C}$:

Within 2min: if $T_{\text{pipe}} \leq 40^{\circ}\text{C}$, indoor fan will not operate; after 2min, if $T_{\text{pipe}} > 27^{\circ}\text{C}$, indoor fan will operate at low speed for 2min or 3min, the cold air prevention will quit and the unit will operate at heating control mode of indoor fan. Within 5min of cold air prevention, if $T_{\text{pipe}} > 40^{\circ}\text{C}$, cold air prevention will quit immediately, and the unit will operate at heating control mode of indoor fan.

② When $T_{\text{indoor amb.}} \geq 24^{\circ}\text{C}$, if $T_{\text{pipe}} \leq 27^{\circ}\text{C}$, indoor fan will not operate; if $T_{\text{pipe}} > 27^{\circ}\text{C}$ or in 2min later, cold air prevention will quit and the unit will operate at heating control mode of heating.

When the unit stop operation due to protection or reaching set temperature, the horizontal louver will stop at the position when indoor unit stops. Note: 1. the text with underlined is applicable to the one-to-two unit and not applicable to one-to-one unit. 2. $T_{\text{indoor amb.}}$ means the indoor ambient temperature before starting compressor under heating mode or the indoor ambient temperature before clearing defrosting mark after defrosting operation quits.

◆ Protection when total current increases and frequency decreases:

When total current $I_{\text{total}} \leq W$, frequency is allowed to increase;

When total current $I_{\text{total}} \geq X$, frequency is prohibited to increase;

When total current $I_{\text{total}} \geq Y$, the compressor decreases frequency;

When total current $I_{\text{total}} \geq Z$, compressor stops operation and in 30s later, outdoor fan stops operation.

$W=6\text{A}$, $X=7\text{A}$, $Y=8\text{A}$, $Z=9\text{A}$

◆ Protection of compressor power:

When $P_c \geq 1500\text{w}$, frequency is prohibited to increase;

When $P_c \geq 1600\text{w}$, the compressor decreases frequency;

When $P_c \geq 1700\text{w}$, compressor stops operation;

When $P_c \leq 1400\text{w}$, protection will be removed.

(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 $16 - 30^{\circ}\text{C}$.

(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. When the unit operates in Auto mode, the compressor frequency during cooling operation is the same with that of 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 Models

① Overload protection

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

1) Cooling overload

- a. If T tube $\leq 52^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If T tube $\geq 55^{\circ}\text{C}$, frequency rise is not allowed.
- c. If T tube $\geq 58^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If T 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 tube $\leq 50^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If T tube $\geq 53^{\circ}\text{C}$, frequency rise is not allowed.
- c. If T tube $\geq 56^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If T 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 $^{\circ}\text{C}$.

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.

⑥ Faults of temperature sensors

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

3. Other Controls**(1) ON/OFF**

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

(2) Mode Selection

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

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C . Regulating Range: $16\sim 30^{\circ}\text{C}$, 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. Sleep mode 1**

1.1 In cooling mode, in 1 hour after setting sleep mode, Tpreset increases 1°C ; in 2 hours later, Tpreset increases 2°C ; After that, Tpreset will not change.

1.2 In heating mode, in 1 hour after setting sleep mode, Tpreset decreases 1°C ; in 2 hours later, Tpreset decreases 2°C ; After that, Tpreset will not change.

1.3 In auto and drying mode, Tpreset will not change after setting sleep mode.

2. Sleep mode 2**2.1 Cooling mode:**

When initial set temperature range is $16\sim 23^{\circ}\text{C}$, if turning on sleep mode, temperature will increase 1°C for every hour. After 3°C has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1°C . After that, the unit will keep operating at that temperature.

When initial set temperature range is $24\sim 27^{\circ}\text{C}$, if turning on sleep mode, temperature will increase 1°C for every hour. After 2°C has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1°C . After that, the unit will keep operating at that temperature.

When initial set temperature range is 28~29℃, if turning on sleep mode, temperature will increase 1℃ for every hour. After 1℃ has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1℃. After that, the unit will keep operating at that temperature.

When initial set temperature range is 30℃, the unit will operate at that temperature. In 7 hours later, temperature will decrease 1℃. After that, the unit will keep operating at that temperature.

2.2 Heating mode:

- 1) When original setting temperature is 16℃, the unit will keep operation under this temperature;
- 2) When original setting temperature is 17~20℃, the temperature will drop 1℃ after one hour and the unit will keep operation under this temperature;
- 3) When original setting temperature is 21~27℃, the temperature will drop 1℃ per hour and stop dropping 2 hours later, the unit will keep operation under that temperature;
- 4) When original setting temperature is 28~30℃, the temperature will drop 1℃ per hour and stop dropping 3 hour later, the unit will keep operation under that temperature.

(6) Indoor Fan Control

(1) Under heating mode: auto fan speed will operate as following mode under auto heating or normal heating mode:

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

(2) Under fan mode and heating mode: auto fan speed will operate as following mode under auto cooling or normal cooling mode:

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

(7) Buzzer Control

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

(8) Auto button

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

(9) Up & Down Swing

- ① After energization, the upper horizontal louver will firstly open to a certain degree and then the up & down horizontal louver will rotate to P0 to close the air outlet.
- ② Swing function has not been set after startup of the unit Start up the unit, after finishing swinging and rotating to P0, the horizontal louver will firstly open to a certain degree and then the up & down horizontal louver will rotate at the same time. In other modes except heating mode, the up & down horizontal louver will rotate to P7. In heating mode, the up & down horizontal louver will rotate to P4.

③ Swing function is set when starting up the unit

In other modes except heating mode, the set degrees of swinging are: P7-P6-P5-P4-P3. In heating mode, the set degrees of swinging are: P2-P3-P4-P5-P6.

④ Auto swing

When receive the order of auto swing from the remote controller, under other modes except heating mode, the up & down horizontal louver will rotate from P7 to P3; under heating mode, the up & down horizontal louver will rotate from P2 to P6. If auto swing is cancelled, the horizontal louver will stop at the present position.

⑤ Anti-moisture protection (available in cooling, auto cooling and dry modes)

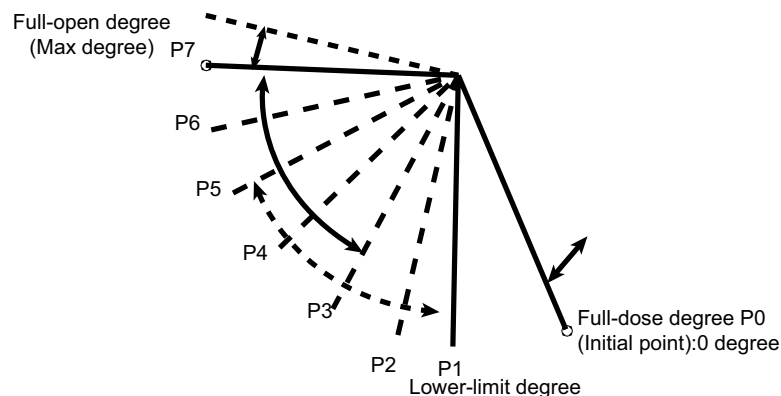
When the indoor fan runs in quiet speed, the rotation range of the upper horizontal louver is from P6-P4.

⑥ Anti-noise function

The indoor fan, the compressor and the outdoor fan are able to be energized when the horizontal louver rotates to P2.

⑦ Swing function after turning off the unit

After turning off the unit, the horizontal louver will close at P0.



(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. Setting temperature is 25°C under auto cooling and fan modes while is 20°C under auto heating mode. Defrosting indicator is ON during 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

P4: Minimum + medium cooling and heating P5: Minimum + nominal cooling and heating

P6: Minimum + maximum cooling and heating P7: Medium+ nominal cooling and heating

P8: Medium + maximum cooling and heating P9: Nominal+ maximum cooling and heating

(12) Drying Function

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

(13) Memory function when interrupting the power supply

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

(14) Protection function will start after 3 minutes' delay of compressor

Under cooling, drying and heating modes, when ODU is powered off, the compressor will restart with 3 minutes delay every time start it.

(15) Control of ODU electric heating band (preserved for low temperature unit)

When temp. sensor is with malfunction or under other modes except heating, the electric heating band of compressor and condenser will stop operation; or it will control as following logic.

1. Control of compressor electric heating band:

The compressor electric heating band will stop operation if the compressor start operation; If compressor stop operation and it is detected for consecutively 5 seconds that Toutdoor amb. $\leq -5^{\circ}\text{C}$, compressor electric heating band will start operation; if it is detected for consecutively 5 seconds that Toutdoor amb. $> -2^{\circ}\text{C}$, electric heating band will stop operation. If $-5^{\circ}\text{C} < \text{Toutdoor amb.} \leq -2^{\circ}\text{C}$, electric heating band will keep its original operation status.

② Electric heating belt control of condenser

a. When Toutdoor amb. $\leq 1^{\circ}\text{C}$, electric heating belt of condenser operates;

- b. From entering into defrosting and defrosting is finished, and within 3min after compressor is started up, electric heating belt of chassis operates. When compressor operates for 3min and Toutdoor amb. $\geq 3^{\circ}\text{C}$, electric heating belt stops operation;
- c. When Toutdoor amb. $\geq 3^{\circ}\text{C}$, electric heating belt of condenser doesn't operate.
- d. When $1^{\circ}\text{C} < \text{Toutdoor amb.} < 3^{\circ}\text{C}$. Electric heating belt of condenser keeps original status.

When the outdoor ambient temperature sensor has malfunction, electric heating belt stops operation. Once electric heating belt is stopped, it can be started up after 2min.

(16) Compulsory defrosting function

1. Entry condition of compulsory defrosting function

When the unit is turned on under heating mode and the set temperature is 16°C , press "+, -, +, -, +, -" successively within 5s, indoor fan will enter into compulsory defrosting setting status. Indoor unit sends compulsory defrosting mode signal to outdoor unit, after outdoor unit received the compulsory defrosting signal from indoor unit, the unit operates under normal defrosting mode. After indoor unit received the signal that outdoor unit has entered into defrosting status, it will cancel to send compulsory defrosting mode to outdoor unit. Defrosting indicator on indoor unit is ON;

2. Exit condition of compulsory defrosting mode

After defrosting is finished, outdoor unit will send normal operation mode to indoor unit. When indoor unit received the normal operation mode from outdoor unit, the unit will operate at normal mode.

① Entry condition of refrigerant recovery (Freon recovery mode) function

Enter into refrigerant recovery (Freon recovery mode): Within 5min after energization, turn on the unit under cooling mode and set temperature is 16°C , press light button on remote controller for 3 times successively within 3s to enter into Freon recovery mode. Fo is displayed and Freon recovery mode will be send to outdoor unit.

② Exit conditioner of refrigerant recovery (Freon recovery mode) function

Exit refrigerant recovery ((Freon recovery mode): after entering into Freon recovery mode, if receiving any signal from remote controller, button signal or Freon mode has been started up for 25min, the unit will exit Freon recovery mode.

The action entering into Freon mode: indoor unit is turned on under cooling mode: fan speed is high speed and set temperature is 16°C . Horizontal louver is at minimum operation angle.

The action exit from Freon mode: indoor unit operates at previous remote control setting status.

For 18K unit:

1. Temperature Parameters

◆ Indoor preset temperature (T_{preset})

◆ Indoor ambient temperature (T_{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) Cooling Mode

① Working conditions and process of cooling

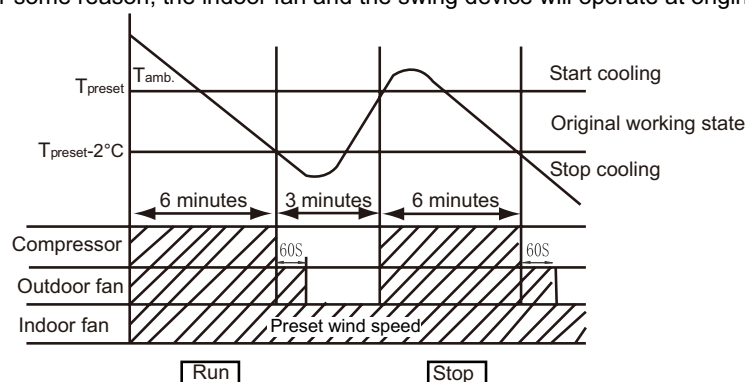
When $T_{\text{amb}} \geq T_{\text{preset}}$, the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When $T_{\text{amb}} \leq T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will run at preset speed.

When $T_{\text{preset}} - 2^\circ\text{C} < T_{\text{amb}} < T_{\text{preset}}$, the unit will remain at its previous state.

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

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



② Protection

◆ Freeze protection

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

If $T_{\text{evap}} \leq 2^\circ\text{C}$, the compressor will operate at reduced frequency.

If $T_{\text{evap}} \leq -1^\circ\text{C}$ is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If $T_{\text{evap}} \geq 6^\circ\text{C}$ and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

◆ Total current up and frequency down protection

If $I_{\text{total}} \leq 9\text{A}$, frequency rise will be allowed; if $I_{\text{total}} \geq 10\text{A}$, frequency rise will not be allowed; if $I_{\text{total}} \geq 11\text{A}$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq 13\text{A}$, the compressor will stop and the outdoor fan will stop with a time lag of 60s.

(2) Drying Mode

① Working conditions and process of drying

If $T_{\text{amb}} > T_{\text{preset}}$, the unit will enter cooling and drying 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 60s, and the indoor fan will operate at low speed.

② Protection

Protection is the same as that under the cooling mode.

(3) Heating Mode

① Working conditions and process of heating

If $T_{\text{amb}} \leq T_{\text{preset}} + 2^\circ\text{C}$, 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 $T_{\text{amb}} \geq T_{\text{preset}} + 5^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will stop after 60-second blow at low speed

If $T_{\text{preset}} + 2^\circ\text{C} < T_{\text{amb}} < T_{\text{preset}} + 5^\circ\text{C}$, 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) $-5^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < -2^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq -10^{\circ}\text{C}$;
- (4) $-10^{\circ}\text{C} \leq T_{\text{outdoor ambient}} < -5^{\circ}\text{C}$, $T_{\text{outdoor tube}} \leq (T_{\text{outdoor ambient}} - 6)^{\circ}\text{C}$.

At that time, the indoor fan stops and the compressor stops, and after 60 seconds the outer fan will stop, and then after 15 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 $T_{\text{out tube}} \geq 10^{\circ}\text{C}$, 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 DRY indicator will be displayed at temperature display area on the display panel. Defrost frequency is 75Hz.

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 $I_{\text{total}} \leq 9\text{A}$, frequency rise will be allowed; if $I_{\text{total}} \geq 10\text{A}$, frequency rise will not be allowed; if $I_{\text{total}} \geq 11\text{A}$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq 13\text{A}$, the compressor will stop and the outdoor fan will stop with a time lag of 60s.

◆ Protection of compressor power:

When $P_c \geq 2300\text{w}$, frequency is prohibited to increase;

When $P_c \geq 2500\text{w}$, the compressor decreases frequency;

When $P_c \geq 2800\text{w}$, compressor stops operation;

When $P_c \leq 2100\text{w}$, protection will be removed.

(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 $16 - 30^{\circ}\text{C}$.

(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. When the unit operates in Auto mode, the compressor frequency during cooling operation is the same with that of 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

- If $T_{\text{tube}} \leq 52^{\circ}\text{C}$, the unit will return to its original operation state.
- If $T_{\text{tube}} \geq 55^{\circ}\text{C}$, frequency rise is not allowed.
- If $T_{\text{tube}} \geq 58^{\circ}\text{C}$, the compressor will run at reduced frequency.
- If $T_{\text{tube}} \geq 62^{\circ}\text{C}$, 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.

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.

⑥ Faults of temperature sensors

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

3. Other Controls

(1) ON/OFF

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

(2) Mode Selection

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

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C . Regulating

Range: $16\sim 30^{\circ}\text{C}$, 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. Sleep mode 1

1.1 In cooling mode, in 1 hour after setting sleep mode, T_{preset} increases 1°C ; in 2 hours later, T_{preset} increases 2°C ; After that, T_{preset} will not change.

1.2 In heating mode, in 1 hour after setting sleep mode, T_{preset} decreases 1°C ; in 2 hours later, T_{preset} decreases 2°C ; After that, T_{preset} will not change.

1.3 In auto and drying mode, T_{preset} will not change after setting sleep mode.

2. Sleep mode 2

2.1 Cooling mode:

When initial set temperature range is $16\sim 23^{\circ}\text{C}$, if turning on sleep mode, temperature will increase 1°C for every hour. After 3°C has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1°C . After that, the unit will keep operating at that temperature.

When initial set temperature range is $24\sim 27^{\circ}\text{C}$, if turning on sleep mode, temperature will increase 1°C for every hour. After 2°C has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1°C . After that, the unit will keep operating at that temperature.

When initial set temperature range is $28\sim 29^{\circ}\text{C}$, if turning on sleep mode, temperature will increase 1°C for every hour. After 1°C has been increased, the temperature will not change. In 7 hours later, temperature will decrease 1°C . After that, the unit will keep operating

at that temperature.

When initial set temperature range is 30°C , the unit will operate at that temperature. In 7 hours later, temperature will decrease 1°C .

After that, the unit will keep operating at that temperature.

2.2 Heating mode:

- 1) When original setting temperature is 16°C , the unit will keep operation under this temperature;
- 2) When original setting temperature is 17~20°C , the temperature will drop 1°C after one hour and the unit will keep operation under this temperature;
- 3) When original setting temperature is 21~27°C , the temperature will drop 1°C per hour and stop dropping 2 hours later, the unit will keep operation under that temperature;
- 4) When original setting temperature is 28~30°C , the temperature will drop 1°C per hour and stop dropping 3 hour later, the unit will keep operation under that temperature.

(6) Indoor Fan Control

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

Cooling mode: $T_{ring} \geq T_{setting} + 2$, high speed; $T_{setting} - 2 < T_{ring} < T_{setting} + 2$, medium speed; $T_{ring} \leq T_{setting} - 2$, low speed.

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

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

Heating mode: $T_{ring} \leq T_{setting} + 1$ high speed; $T_{setting} + 1 < T_{ring} < T_{setting} + 5$, medium speed; $T_{ring} \geq T_{setting} + 5$, low speed.

(7) Buzzer Control

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

(8) Auto button

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

(9) Up-and-Down Swinging Control

- ① After energization, the upper horizontal louver will firstly open to a certain degree and then the up & down horizontal louver will rotate to P0 to close the air outlet.

- ② Swing function has not been set after startup of the unit

Start up the unit, after finishing swinging and rotating to P0, the horizontal louver will firstly open to a certain degree and then the up & down horizontal louver will rotate at the same time. In other modes except heating mode, the up & down horizontal louver will rotate to P7. In heating mode, the up & down horizontal louver will rotate to P4.

- ③ Swing function is set when starting up the unit

In other modes except heating mode, the set degrees of swinging are: P7-P6-P5-P4-P3. In heating mode, the set degrees of swinging are: P2-P3-P4-P5-P6.

- ④ Auto swing

When receive the order of auto swing from the remote controller, under other modes except heating mode, the up & down horizontal louver will rotate from P7 to P3; under heating mode, the up & down horizontal louver will rotate from P2 to P6. If auto swing is cancelled, the horizontal louver will stop at the present position.

- ⑤ Anti-moisture protection (available in cooling, auto cooling and dry modes)

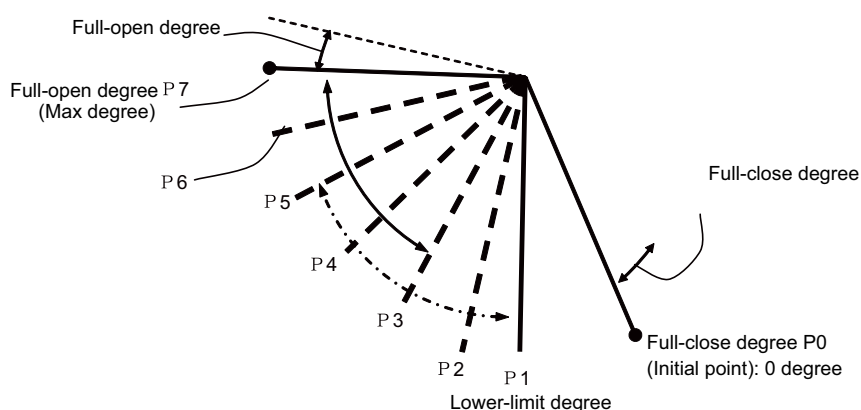
When the indoor fan runs in quiet speed, the rotation range of the upper horizontal louver is from P6-P4.

- ### ⑥ Anti-noise function

The indoor fan, the compressor and the outdoor fan are able to be energized when the horizontal louver rotates to P2.

- ⑦ Swing function after turning off the unit

After turning off the unit, the horizontal louver will close at P0.



(10) Display

- ① Operation pattern and mode pattern display

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

② Double-8 display

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

(11) Protection function and failure display

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

E6: Communication failure 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

P4: Minimum + medium cooling and heating P5: Minimum + nominal cooling and heating

P6: Minimum + maximum cooling and heating P7: Medium+ nominal cooling and heating

P8: Medium + maximum cooling and heating P9: Normal+ maximum cooling and heating

(12) 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.

(13) Quiet Mode

① Auto quiet: If auto quiet fan speed is selected, the fan speed will be adjusted according to the change of ambient temperature.

When the temperature meets the setting requirement, it will run at low speed.

② Quiet mode: If quiet fan speed is selected, it will run at low speed directly.

(14) Energy-saving Mode

If energy-saving mode is set, the set temperature will be adjusted automatically in order to achieve the purposes of comfort and energy saving.

(15) Compulsory defrosting function

1. Entry condition of compulsory defrosting function

When the unit is turned on under heating mode and the set temperature is 16°C, press "+, -, +, -, +, -" successively within 5s, indoor fan will enter into compulsory defrosting setting status. Indoor unit sends compulsory defrosting mode signal to outdoor unit, after outdoor unit received the compulsory defrosting signal from indoor unit, the unit operates under normal defrosting mode. After indoor unit received the signal that outdoor unit has entered into defrosting status, it will cancel to send compulsory defrosting mode to outdoor unit. Defrosting indicator on indoor unit is ON;

2. Exit condition of compulsory defrosting mode

After defrosting is finished, outdoor unit will send normal operation mode to indoor unit. When indoor unit received the normal operation mode from outdoor unit, the unit will operate at normal mode.

① Entry condition of refrigerant recovery (Freon recovery mode) function

Enter into refrigerant recovery (Freon recovery mode): Within 5min after energization, turn on the unit under cooling mode and set temperature is 16°C, press light button on remote controller for 3 times successively within 3s to enter into Freon recovery mode. Fo is displayed and Freon recovery mode will be send to outdoor unit.

② Exit conditioner of refrigerant recovery (Freon recovery mode) function

Exit refrigerant recovery ((Freon recovery mode): after entering into Freon recovery mode, if receiving any signal from remote controller, button signal or Freon mode has been started up for 25min, the unit will exit Freon recovery mode.

The action entering into Freon mode: indoor unit is turned on under cooling mode: fan speed is high speed and set temperature is 16°C. Horizontal louver is at minimum operation angle.

The action exit from Freon mode: indoor unit operates at previous remote control setting status.

(16) Electric heating belt control of condenser

When Toudoor amb.≤3°C, electric heating belt of condenser operates; when Toudoor amb.>6°C, electric heating belt of condenser doesn't operate. 3°C<Toudoor amb. ≤6°C, electric heating belt of condenser keeps original status.

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. Wear 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.

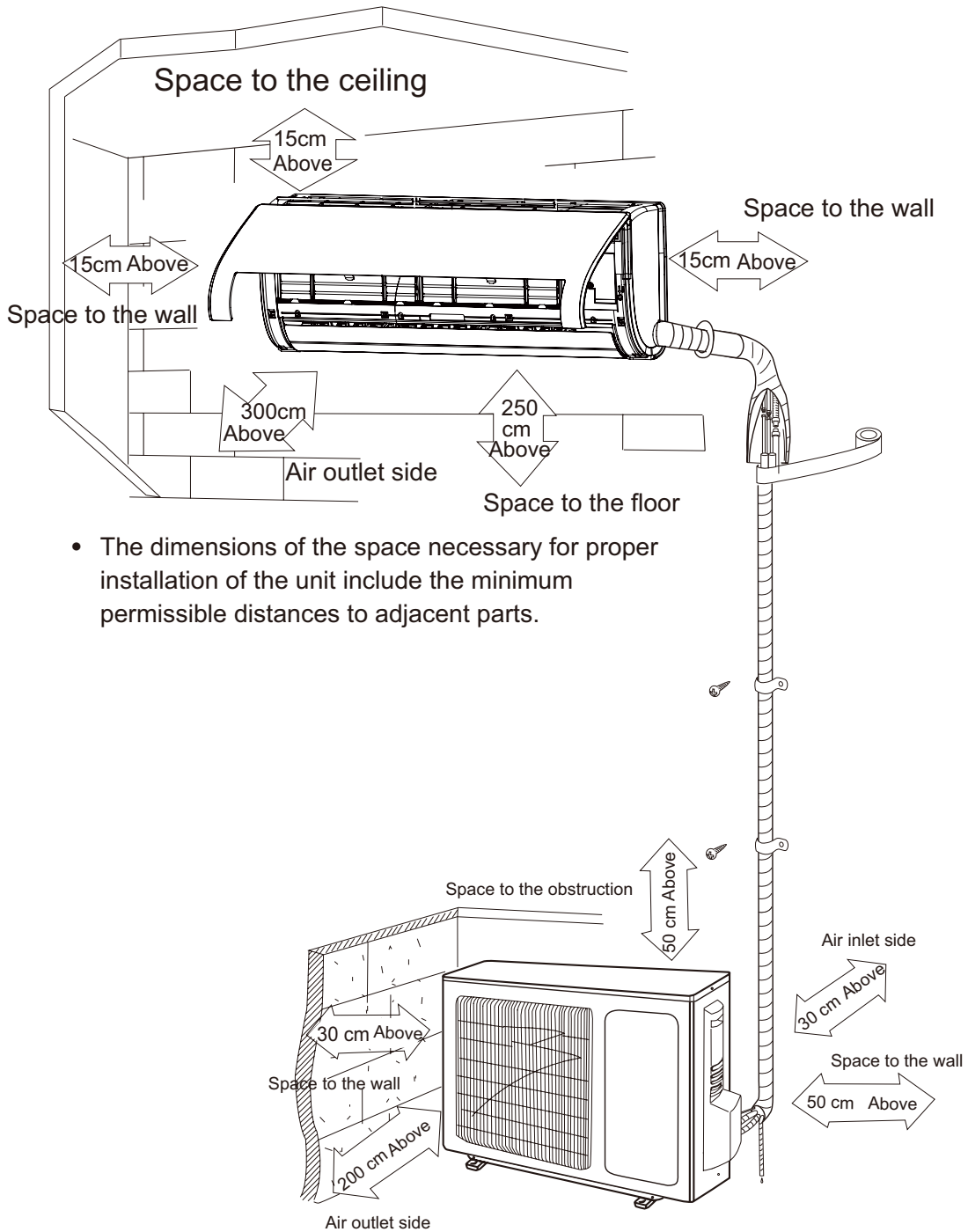
Main Tools for Installation and Maintenance

<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

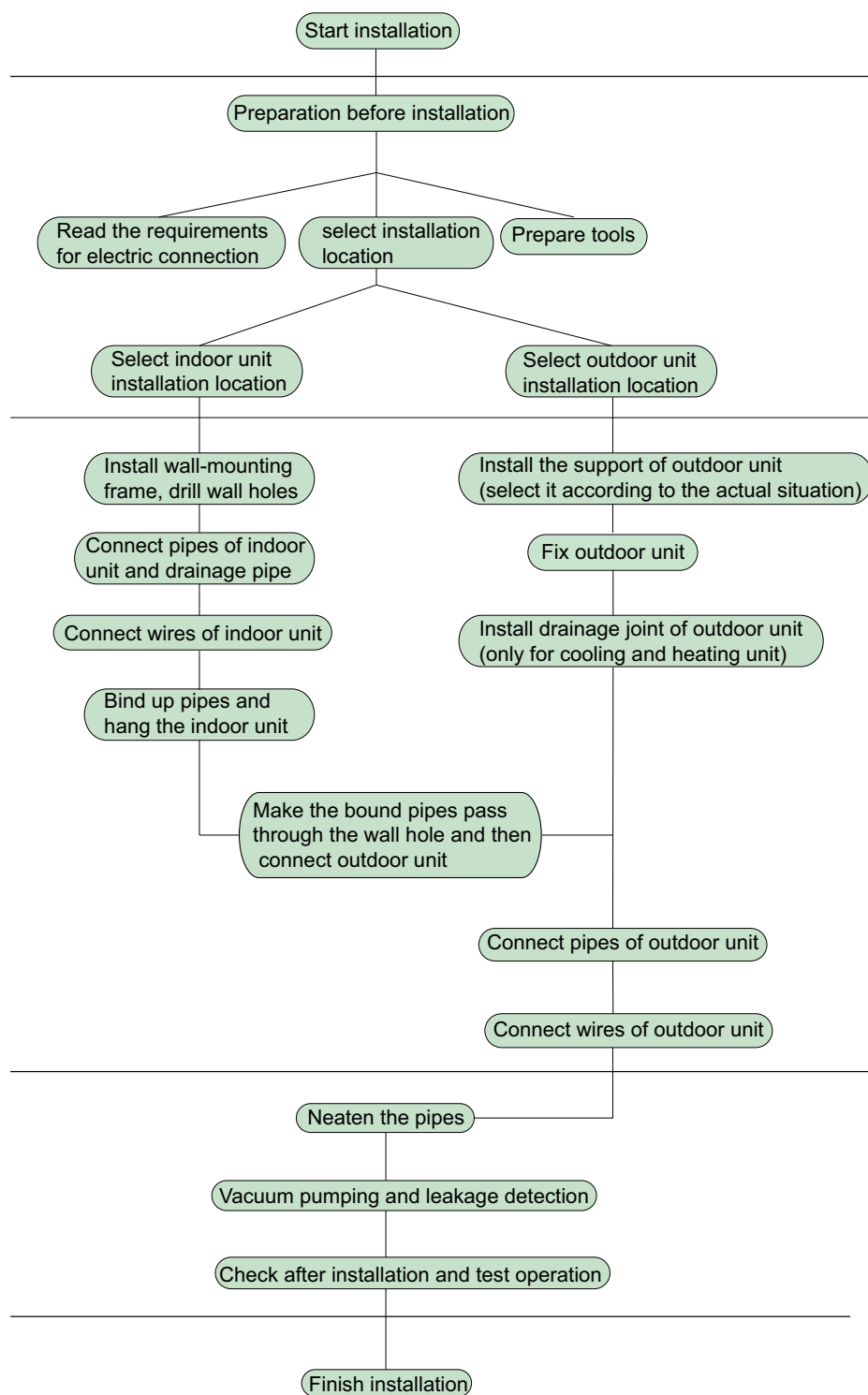
8.1 Installation Dimension Diagram

Installation dimension diagram



- The dimensions of the space necessary for proper installation of the unit include the minimum permissible distances to adjacent parts.

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. 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 height of indoor unit should be between 230-260cm from the floor in order to provide sufficient space for maintenance.
- (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 Requirements Forelectric Connection

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	16A
12K	16A
18K	25A

- (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

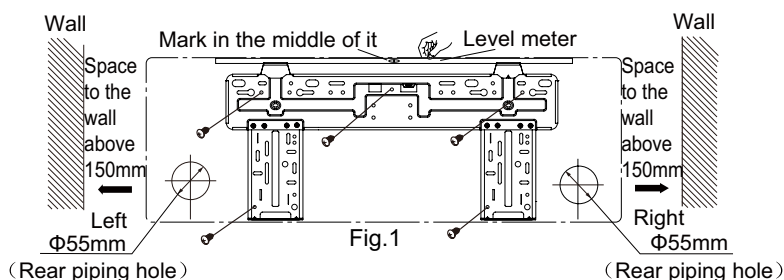
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle)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

in the holes.

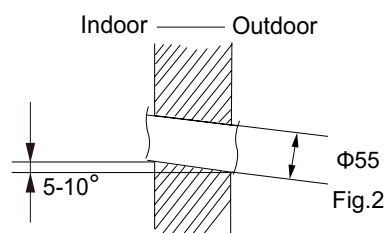
(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

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 Φ55 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°. (As show in Fig.2)

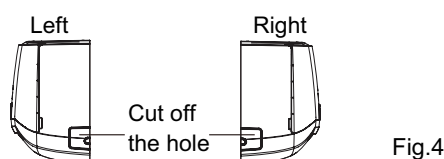
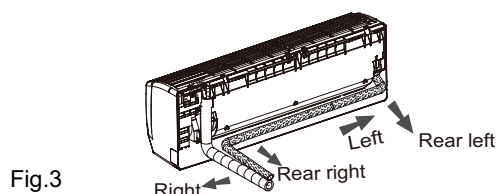


⚠ Note:

- (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.

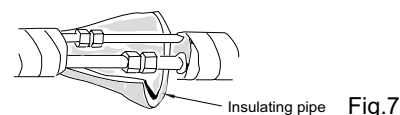
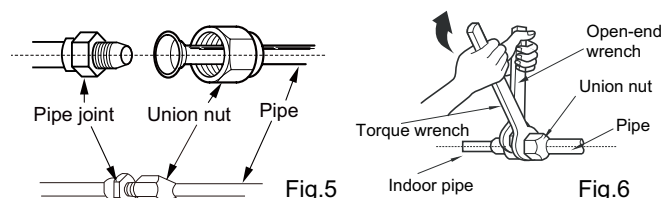
4. Outlet pipe

- (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)

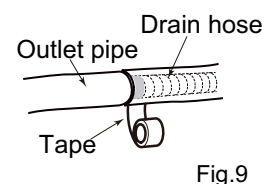
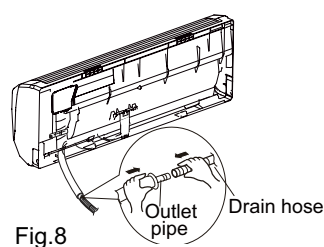


Refer to the following table for wrench moment of force:

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

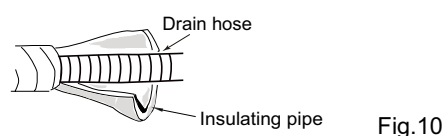
6. Install Drain Hose

- (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)



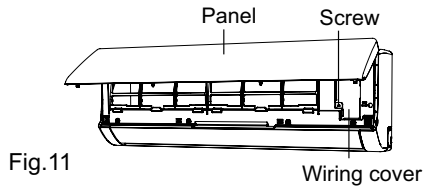
⚠ Note:

- (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)

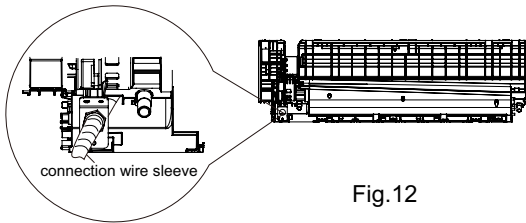


7. Connect Wire of Indoor Unit

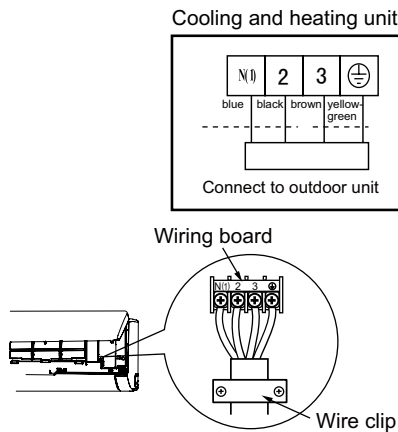
(1) Open the panel, remove the screw on the wiring cover and then take down the cover.(As show in Fig.11)



(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)



(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.

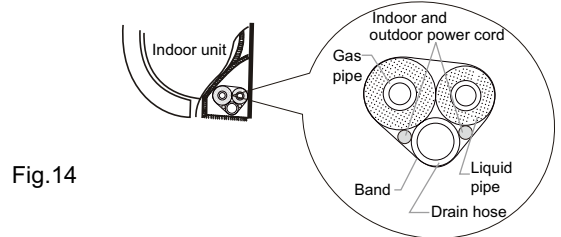


Fig.14

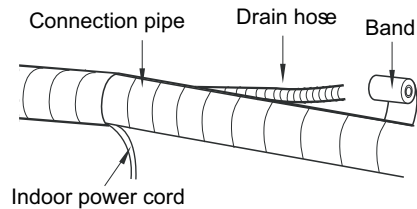


Fig.15

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

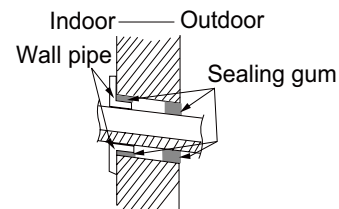


Fig.16

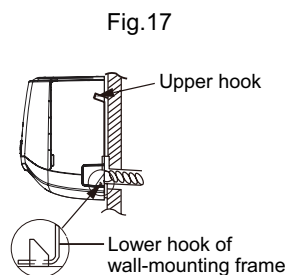


Fig.17

⚠ 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.

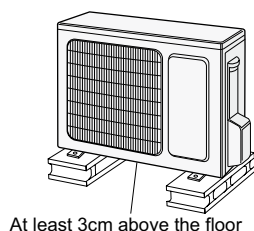


Fig.18

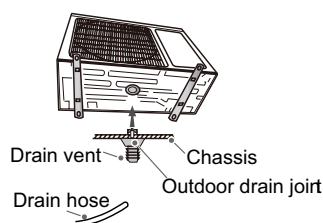


Fig.19

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)

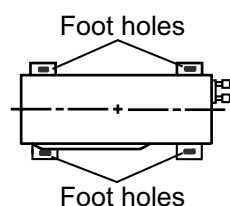


Fig.20

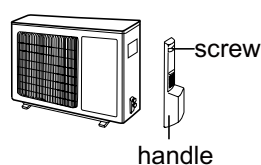


Fig.21

4. Fix Outdoor Unit

- (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)

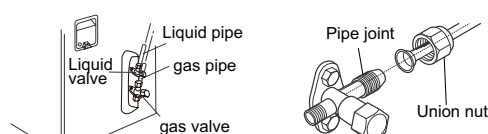


Fig.22

- (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) Let the connection wire sleeve go through the two holes of baffle; tighten the connection joint of sleeve and baffle; remove the wire clip; connect the power connection wire to the wiring terminal according to the color; fix them with screws.(As show in Fig.23)

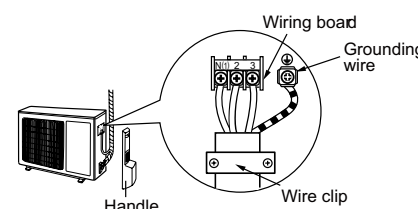
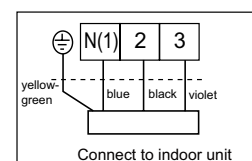


Fig.23

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

- (2) Fix the power connection wire with wire clip (only for cooling and heating unit).

⚠ 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)

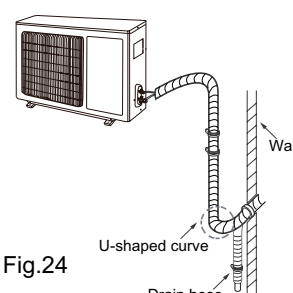


Fig.24

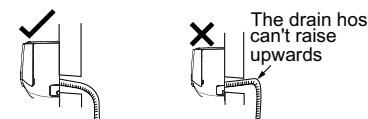
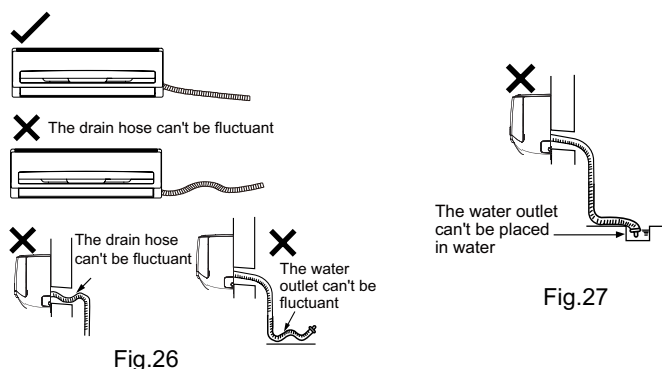


Fig.25

⚠ 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)

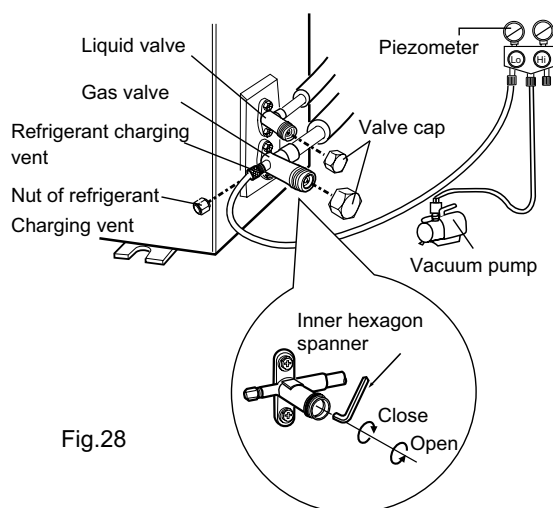
(3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)



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 has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			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 exchange and bad radiating environment);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	Refrigerant leakage protection	F0		OFF 1S and blink 9 times		The Dual-8 Code Display will show F0 and the complete unit stops.	1.Refrigerant leakage; 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 suffcient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.

NO.	Malfunction Name	Display Method of Indoor Unit	Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Yellow Indicator	Red Indicator	Green Indicator		
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.
11	Gathering refrigerant	F0	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

NO.	Malfunction Name	Display Method of Indoor Unit	Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Yellow Indicator	Red Indicator	Green Indicator		
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
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					Showing during min. cooling or min. heating test
24	Compressor rated frequency in test state	P1					Showing during nominal cooling or nominal heating test
25	Compressor maximum frequency in test state	P2					Showing during max. cooling or max. heating test

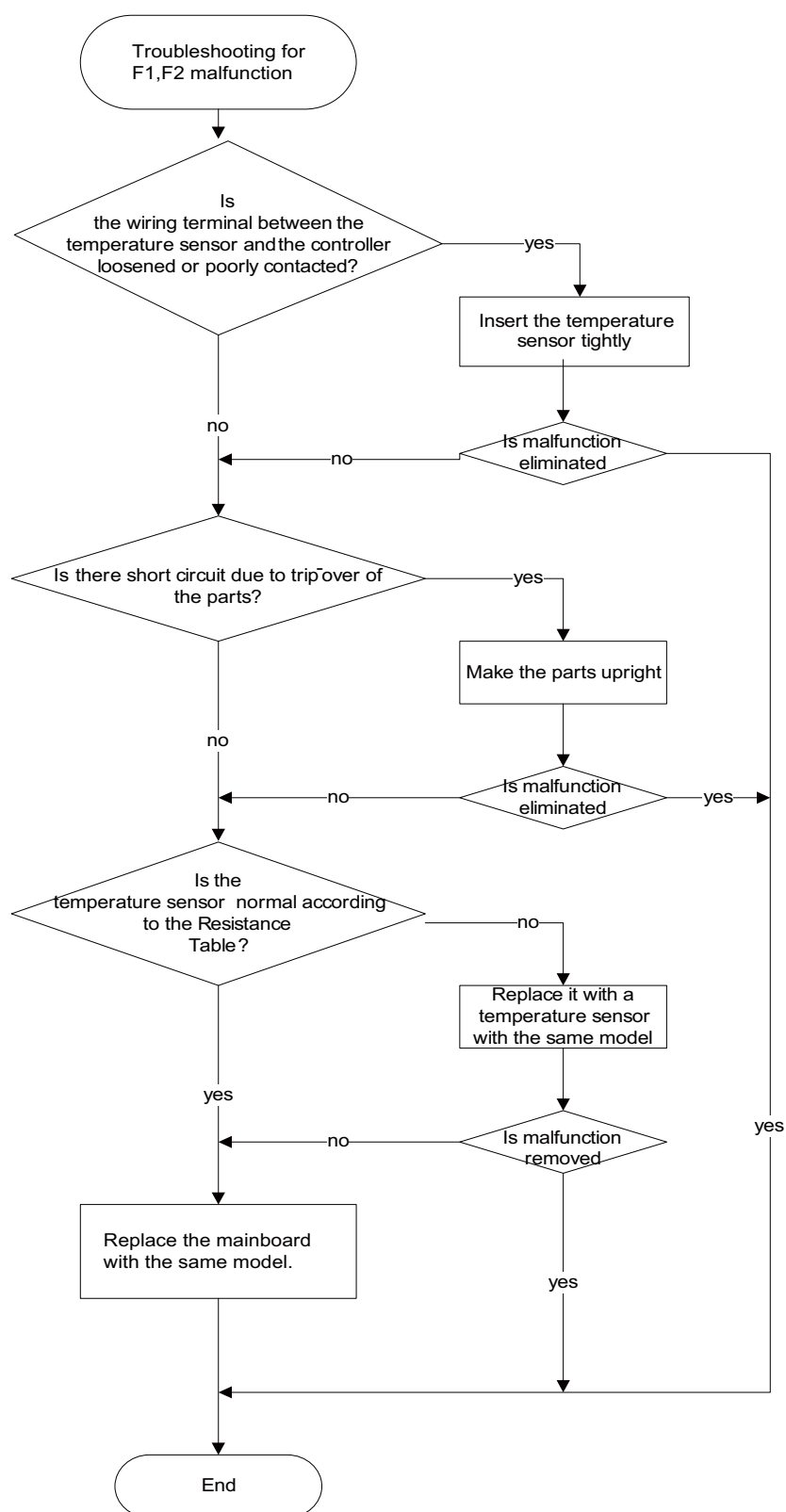
NO.	Malfunction Name	Display Method of Indoor Unit	Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Yellow Indicator	Red Indicator	Green Indicator		
26	Compressor intermediate frequency in test state	P3					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 deenergized 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	H0				All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
32	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)
33	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.
34	Module temperature is too high	H5	OFF 1S and blink 10 times				

NO.	Malfunction Name	Display Method of Indoor Unit	Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Yellow Indicator	Red Indicator	Green Indicator		
35	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.
36	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.
37	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
38	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
39	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 electronical components when detect high power
40	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
41	Failure startup	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
42	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
43	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
44	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.

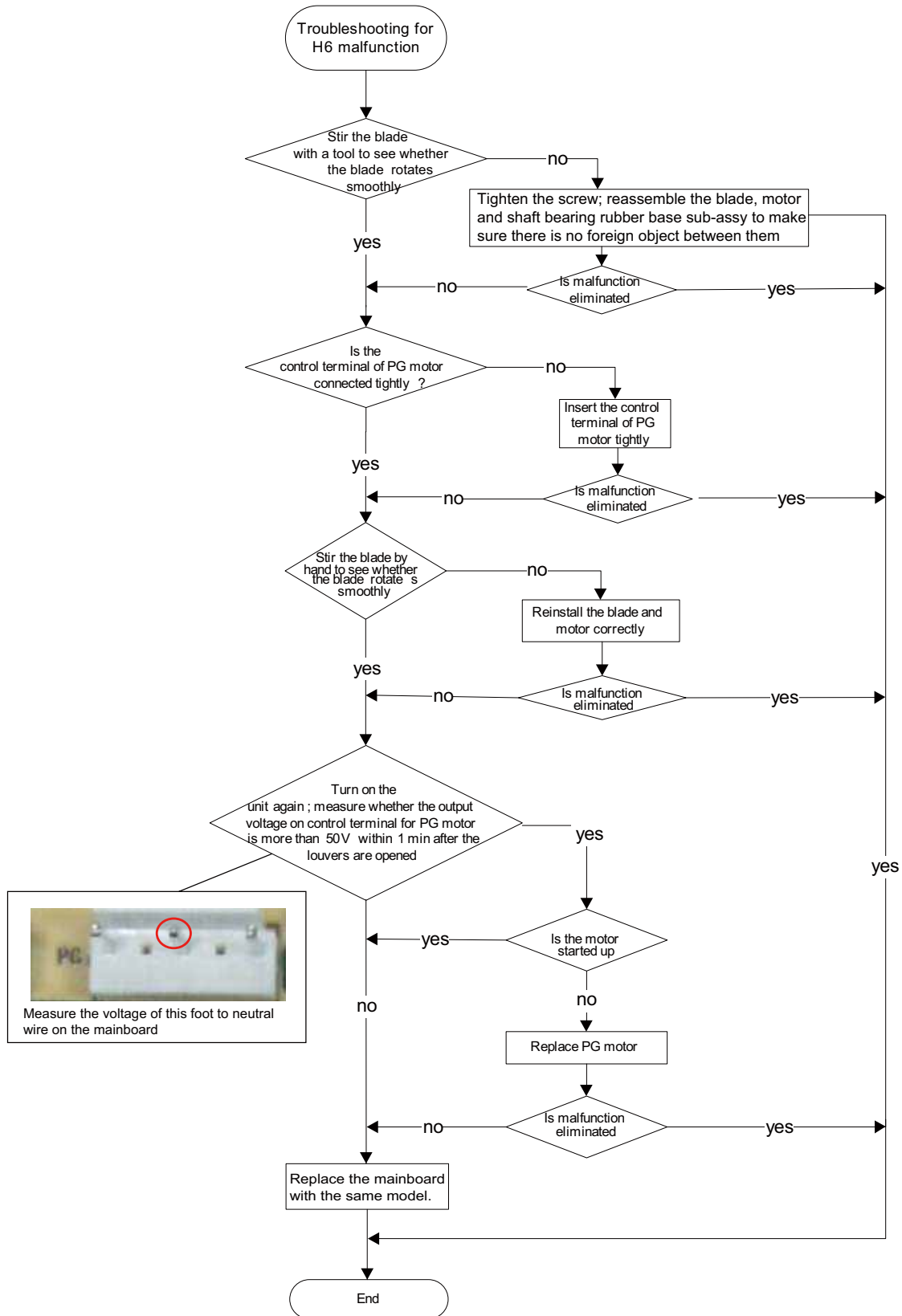
NO.	Malfunction Name	Display Method of Indoor Unit	Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Yellow Indicator	Red Indicator	Green Indicator		
45	The four-way valve is abnormal	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.
46	Malfunction of zero-cross detection circuit	U8	OFF 3S and blink 17 times			The complete unit stops	1.Power supply is abnormal; 2.Detection circuit of indoor control mainboard is abnormal.
47	Frequency limiting (power)			OFF 1S and blink 13 times			
48	Compressor running		OFF 1S and blink once				
49	The temperature for turning on the unit is reached			OFF 1S and blink 8 times			
50	Frequency limiting (module temperature)			OFF 1S and blink 11 times			
51	Normal communication				OFF 0.5S and blink once		
52	Defrosting		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

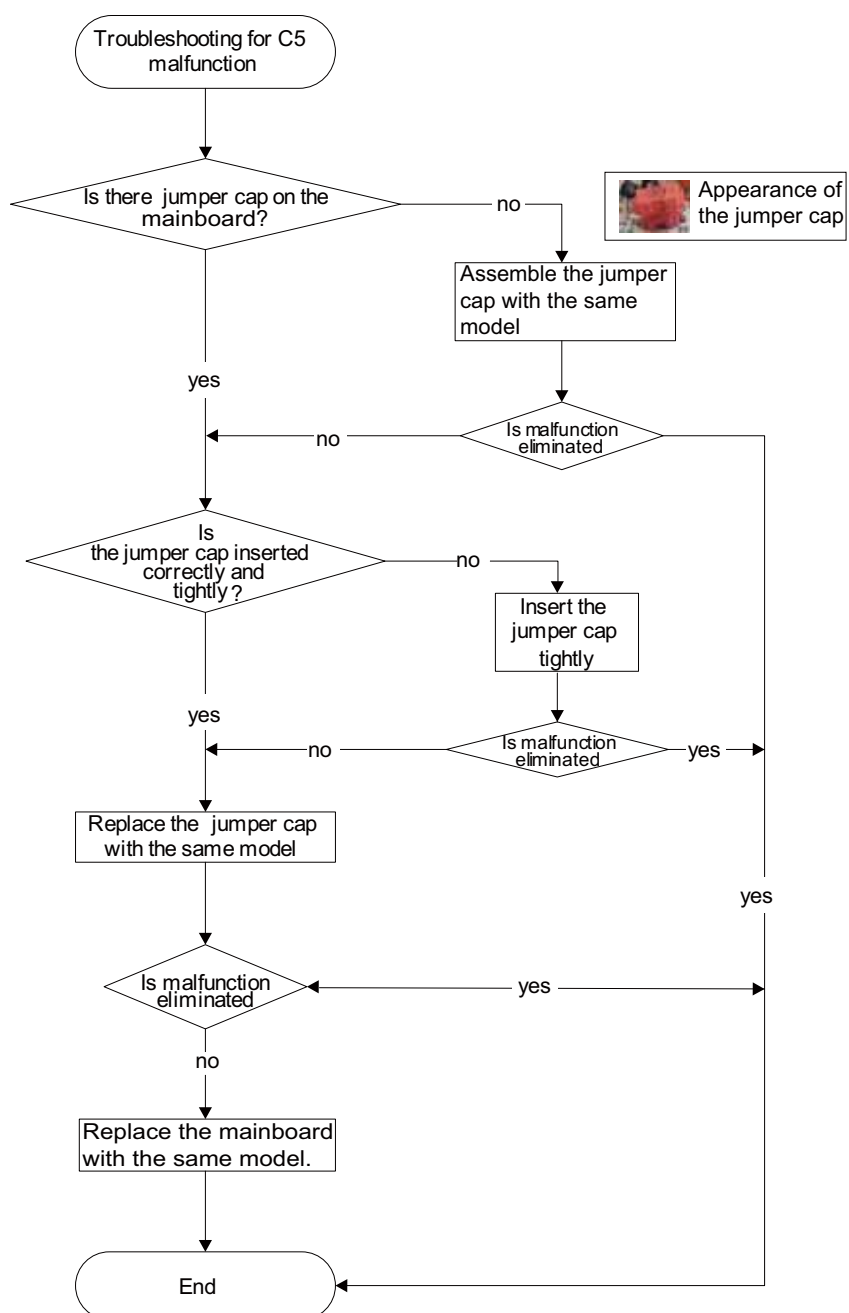
1. Malfunction of Temperature Sensor F1, F2



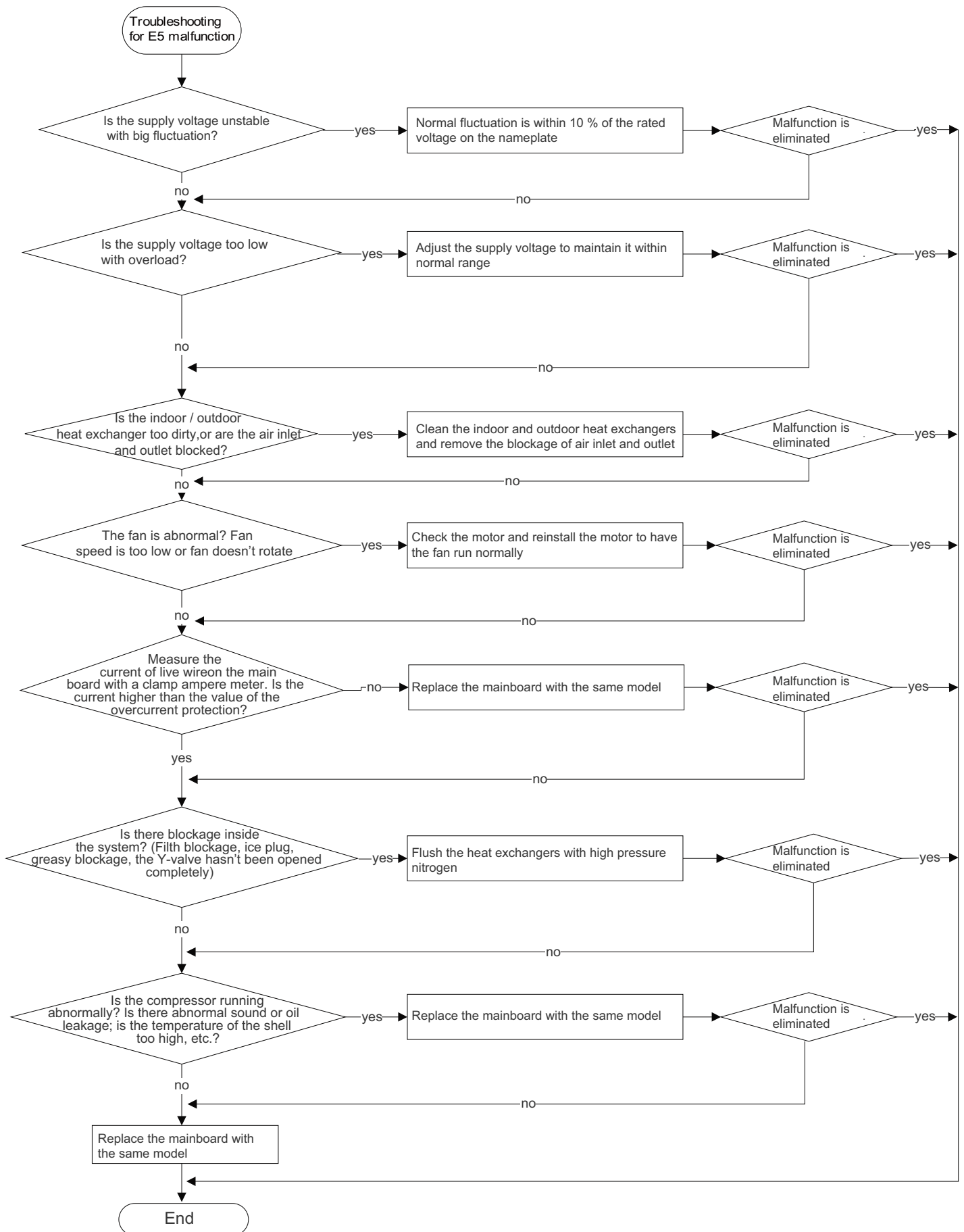
2. Malfunction of Blocked Protection of IDU Fan Motor H6



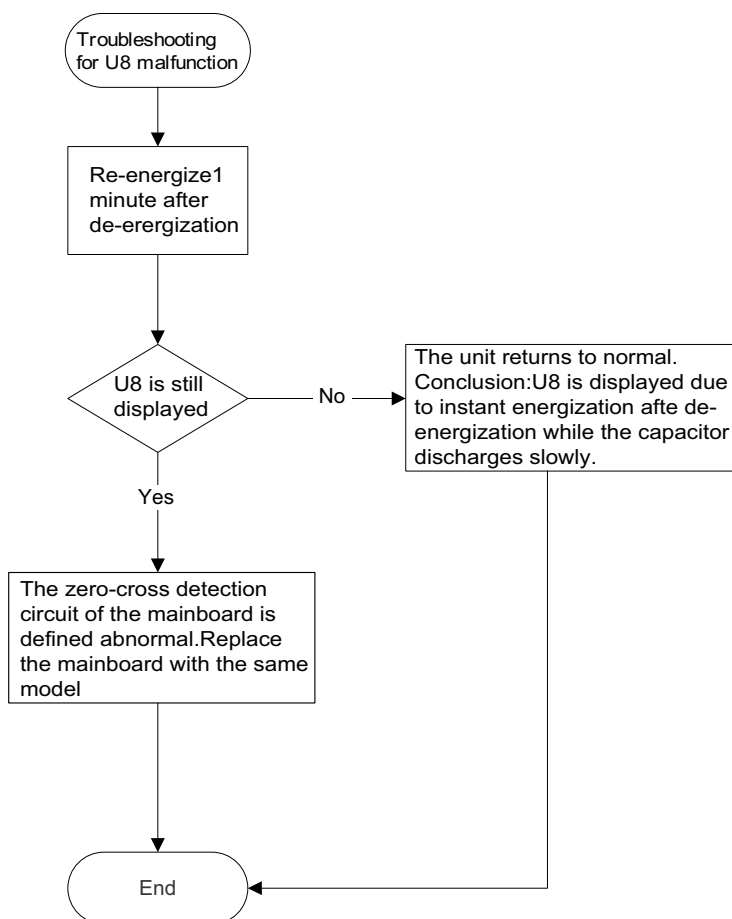
3. Malfunction of Protection of Jumper Cap C5



4. Malfunction of Overcurrent Protection E5



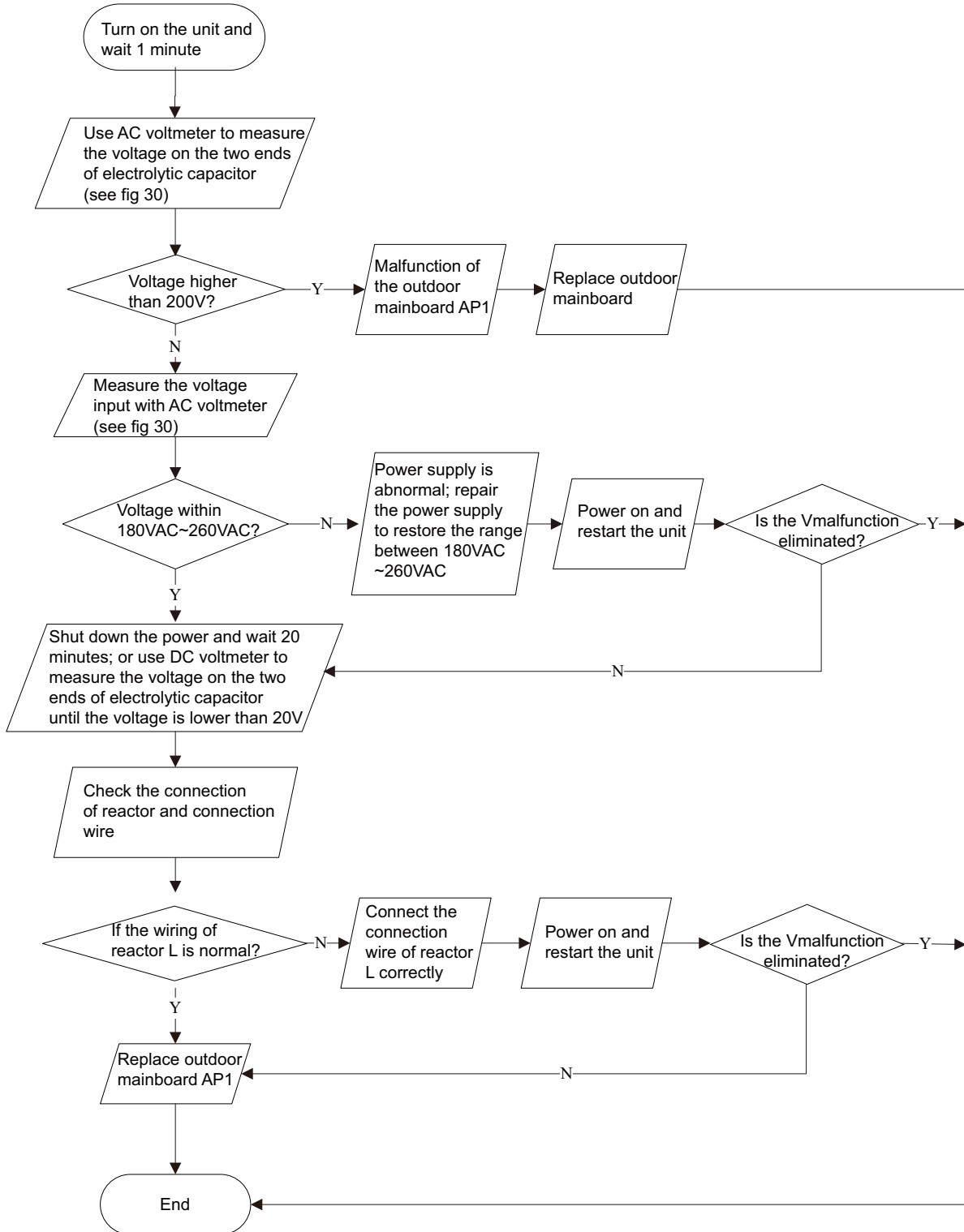
5. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8



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?

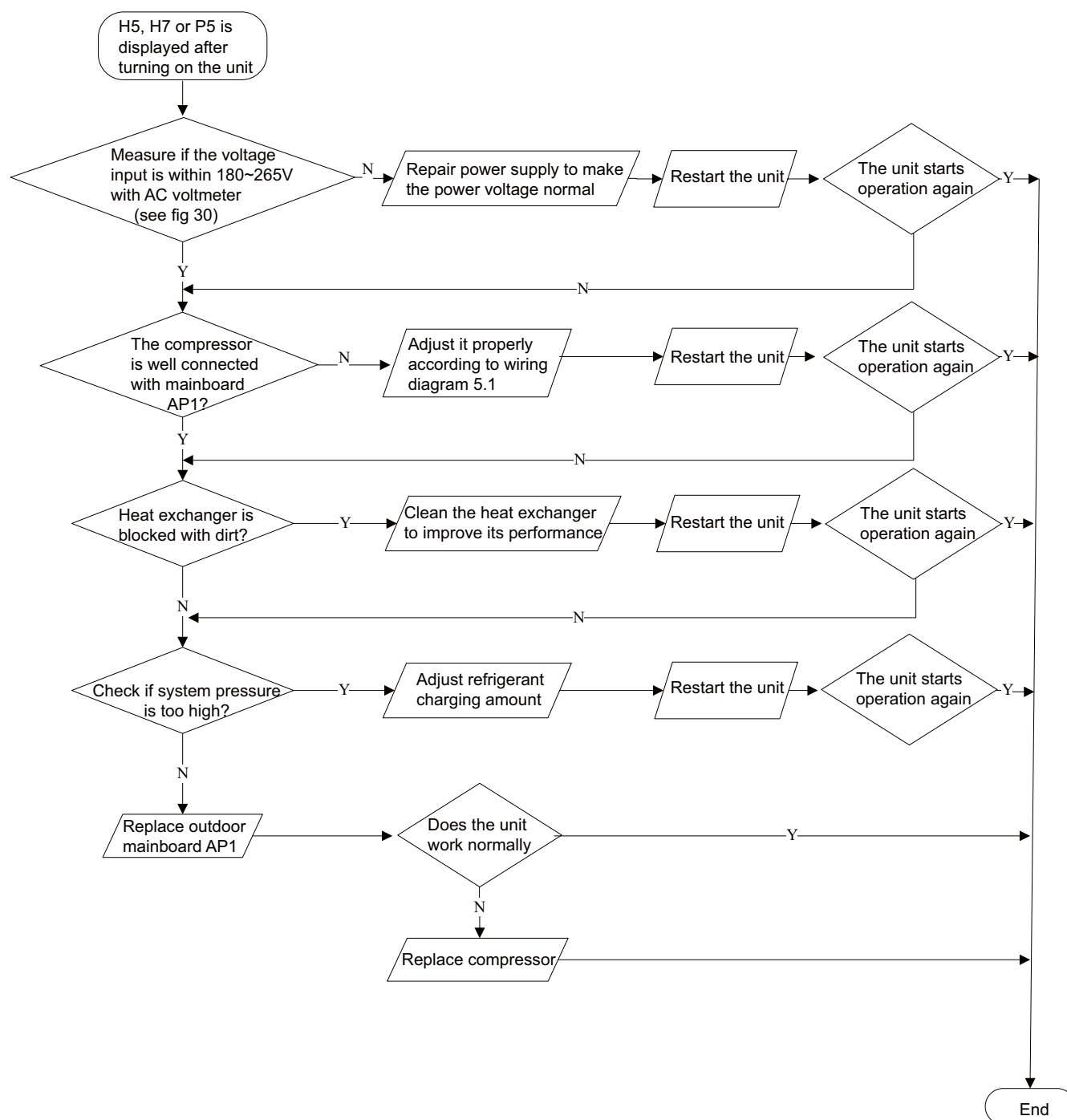


7. IPM protection (H5), desynchronizing malfunction (H7), overcurrent of compressor phase current (P5) (AP1 below means control board of outdoor unit)

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?

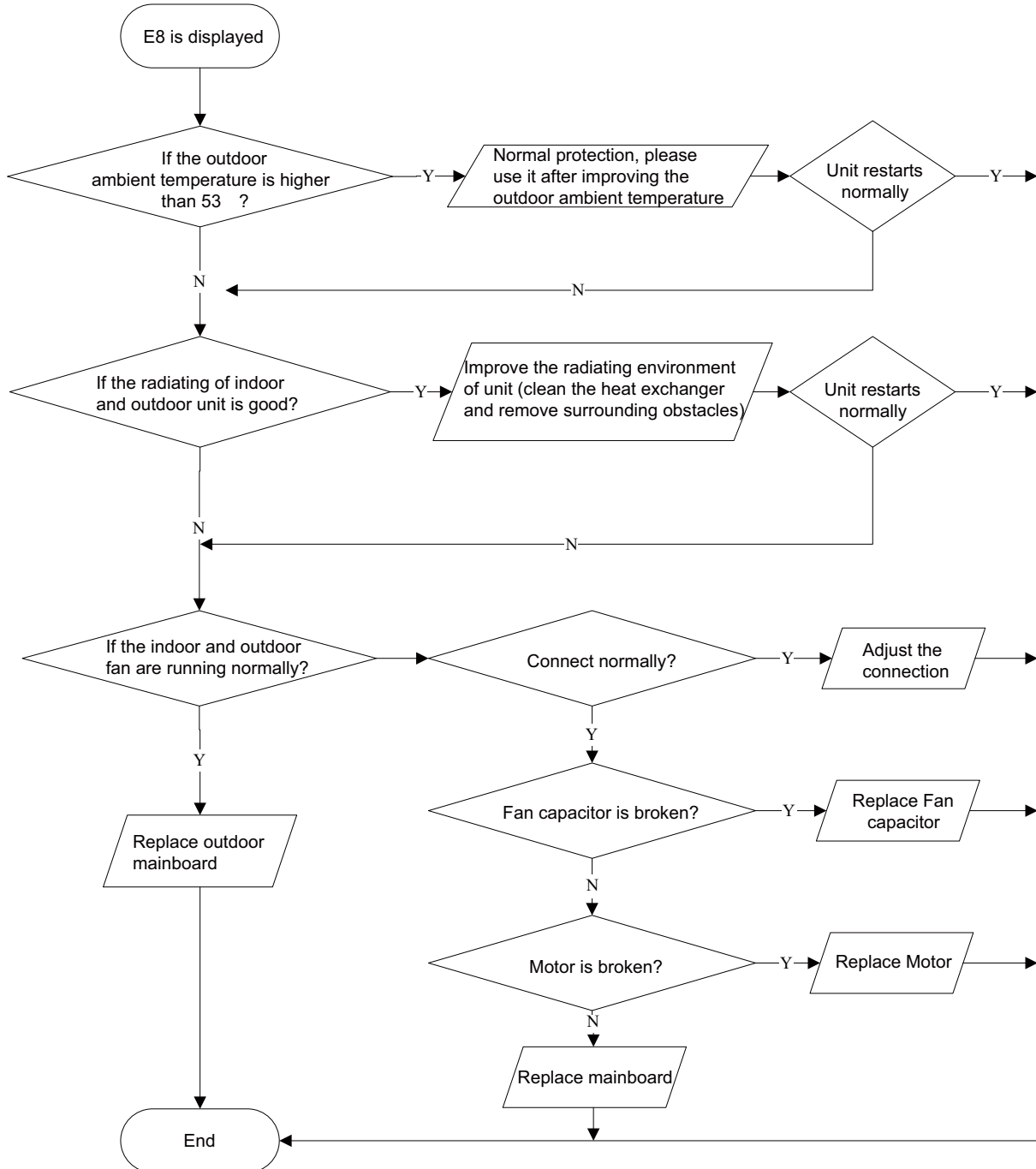
Malfunction diagnosis process:



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

Main detection points:

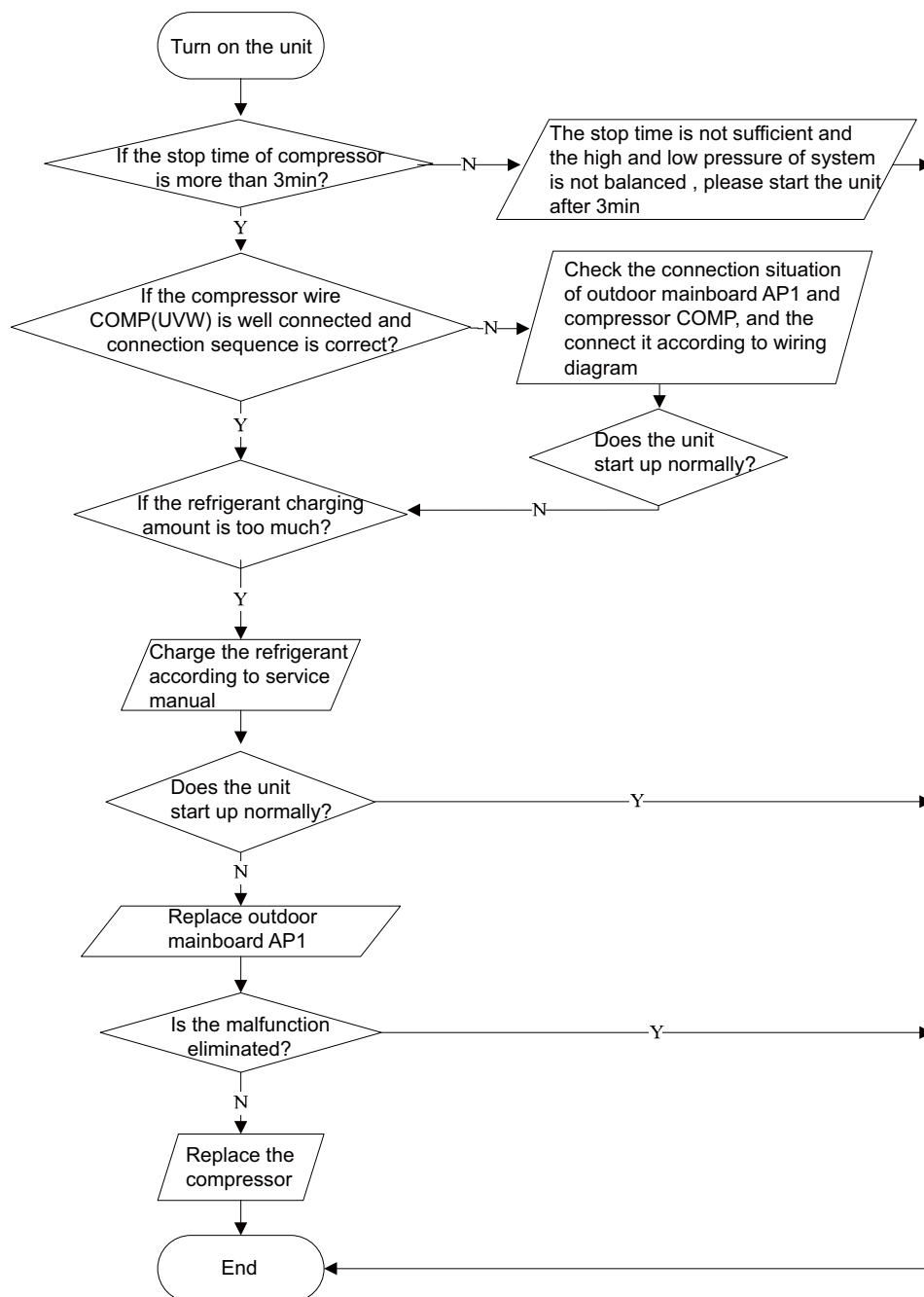
- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan are running normally;
- If the radiating environment of indoor and outdoor unit is good.

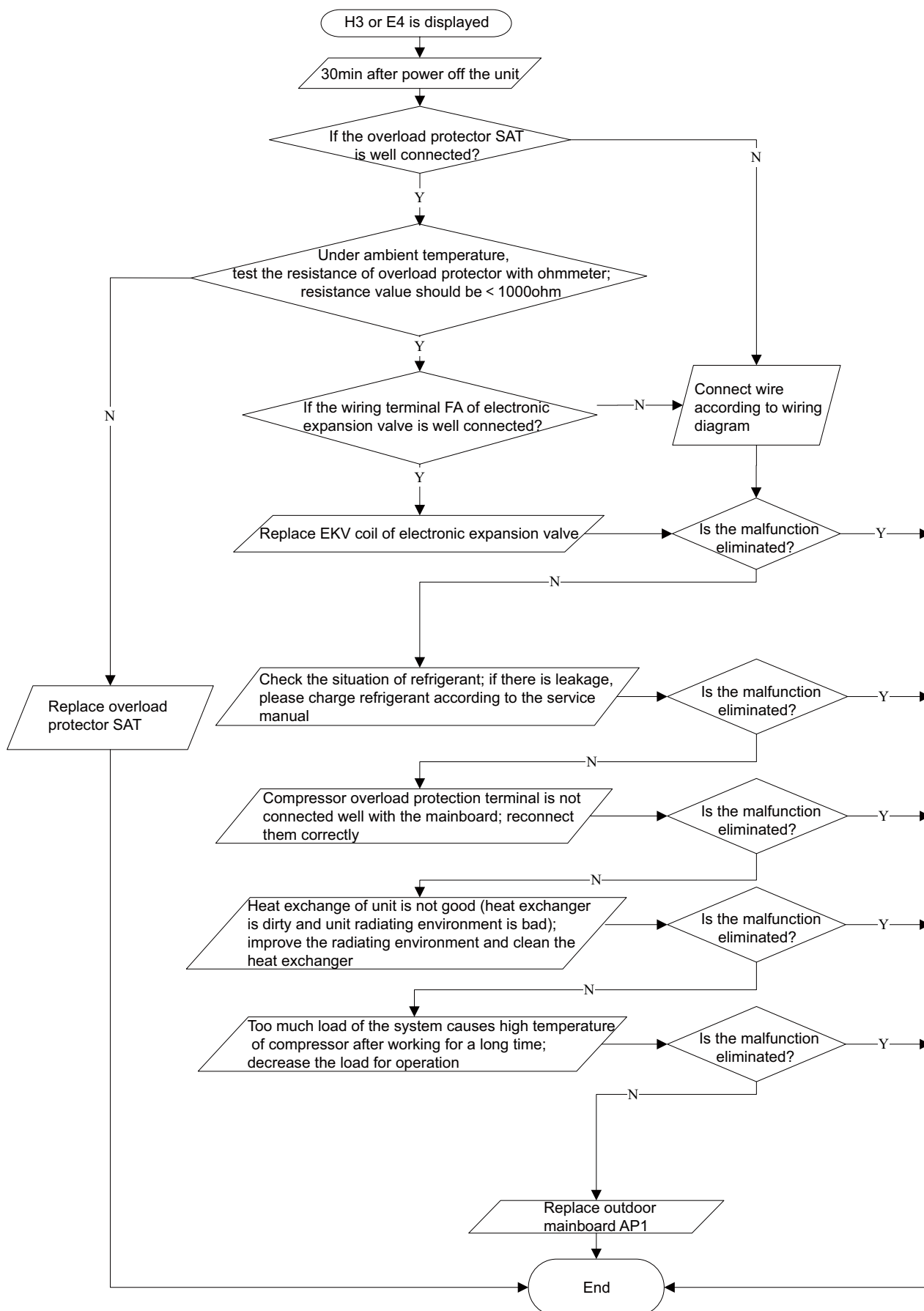


9.Start-up failure (LC) (AP1 below means control board of outdoor unit)

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?



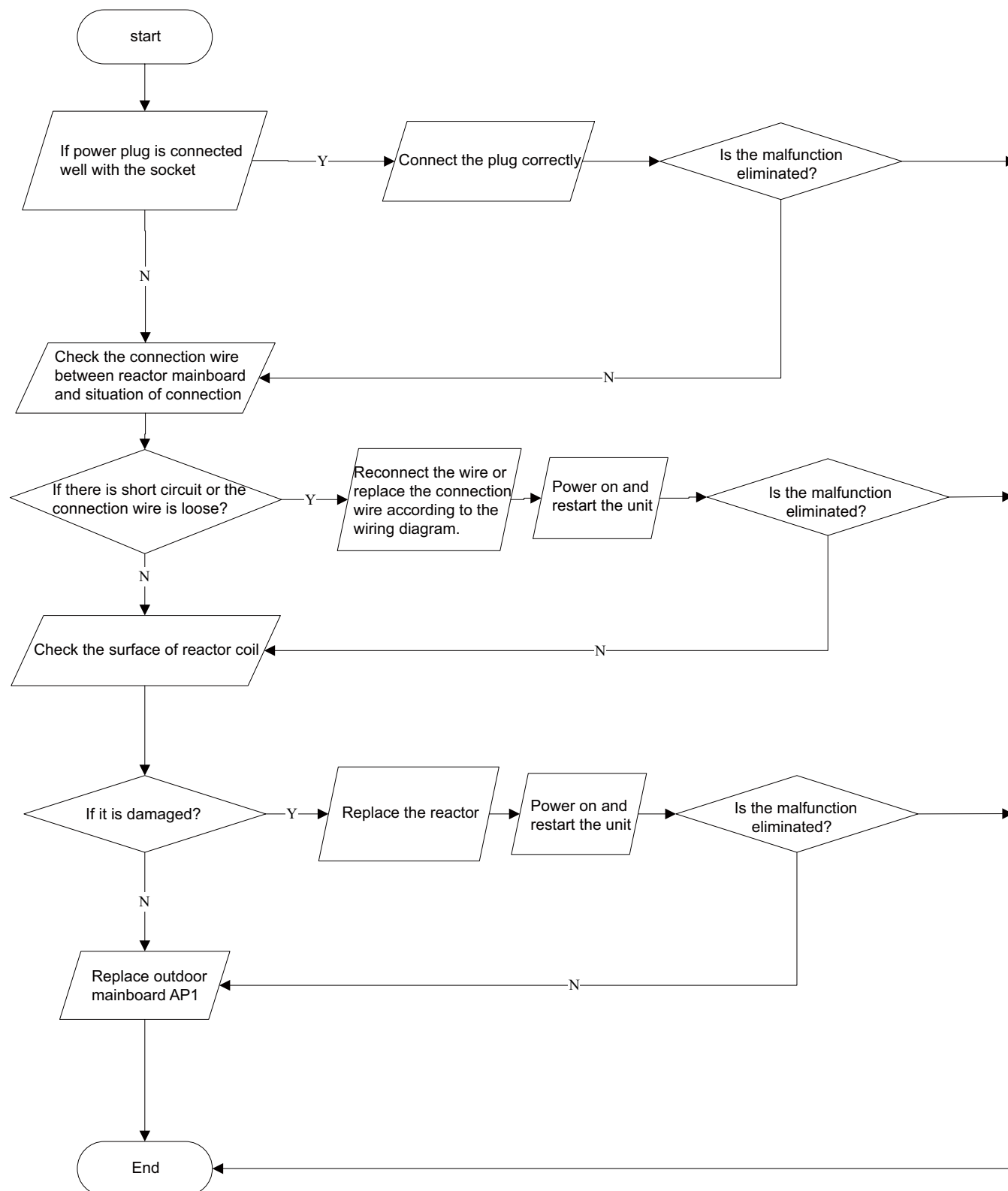


11.PFC (correction for power factor) malfunction (outdoor unit malfunction)

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:

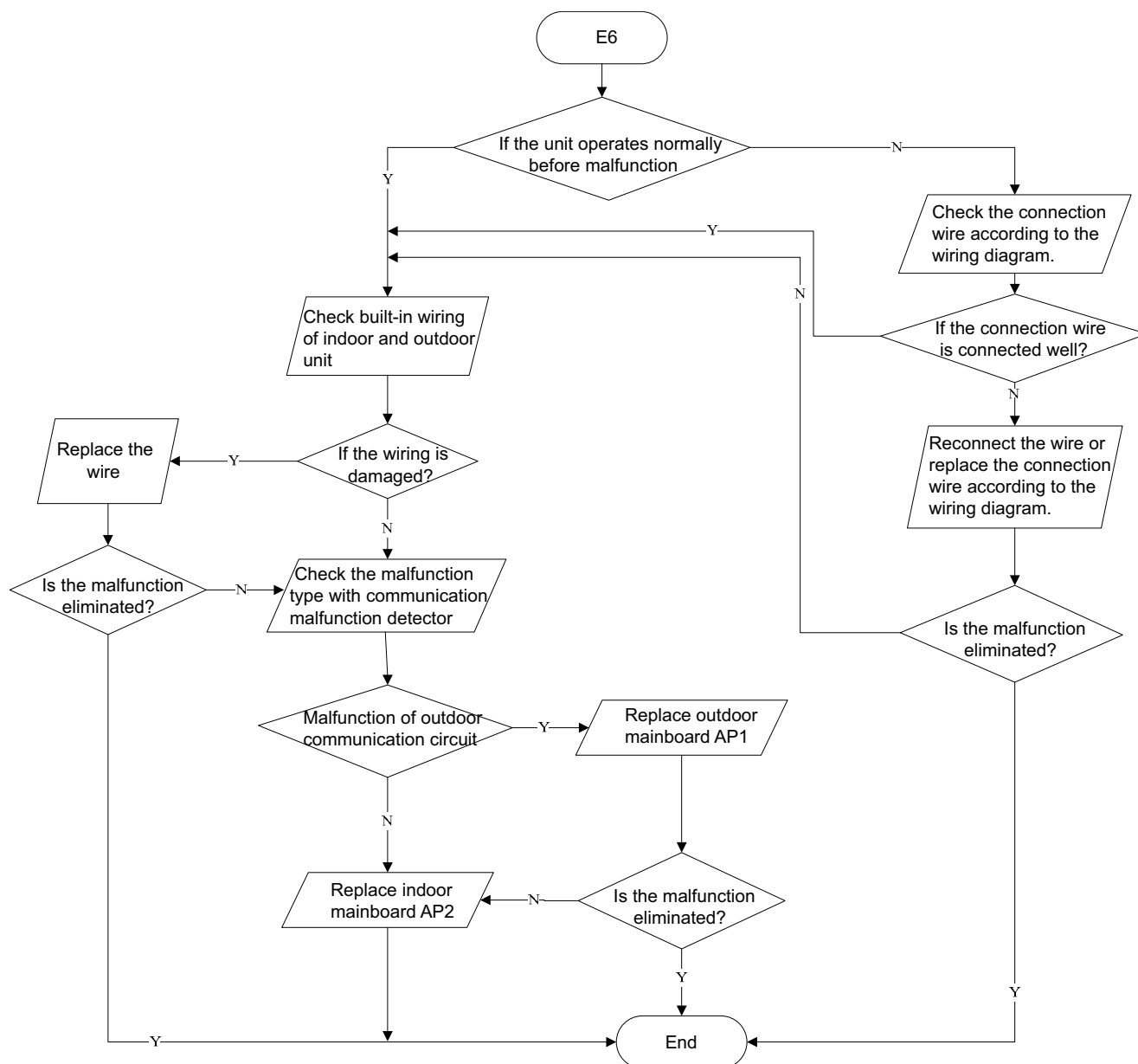


12. Communication malfunction (E6)

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:



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	Pressure at the valve is much lower than the regulated range	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

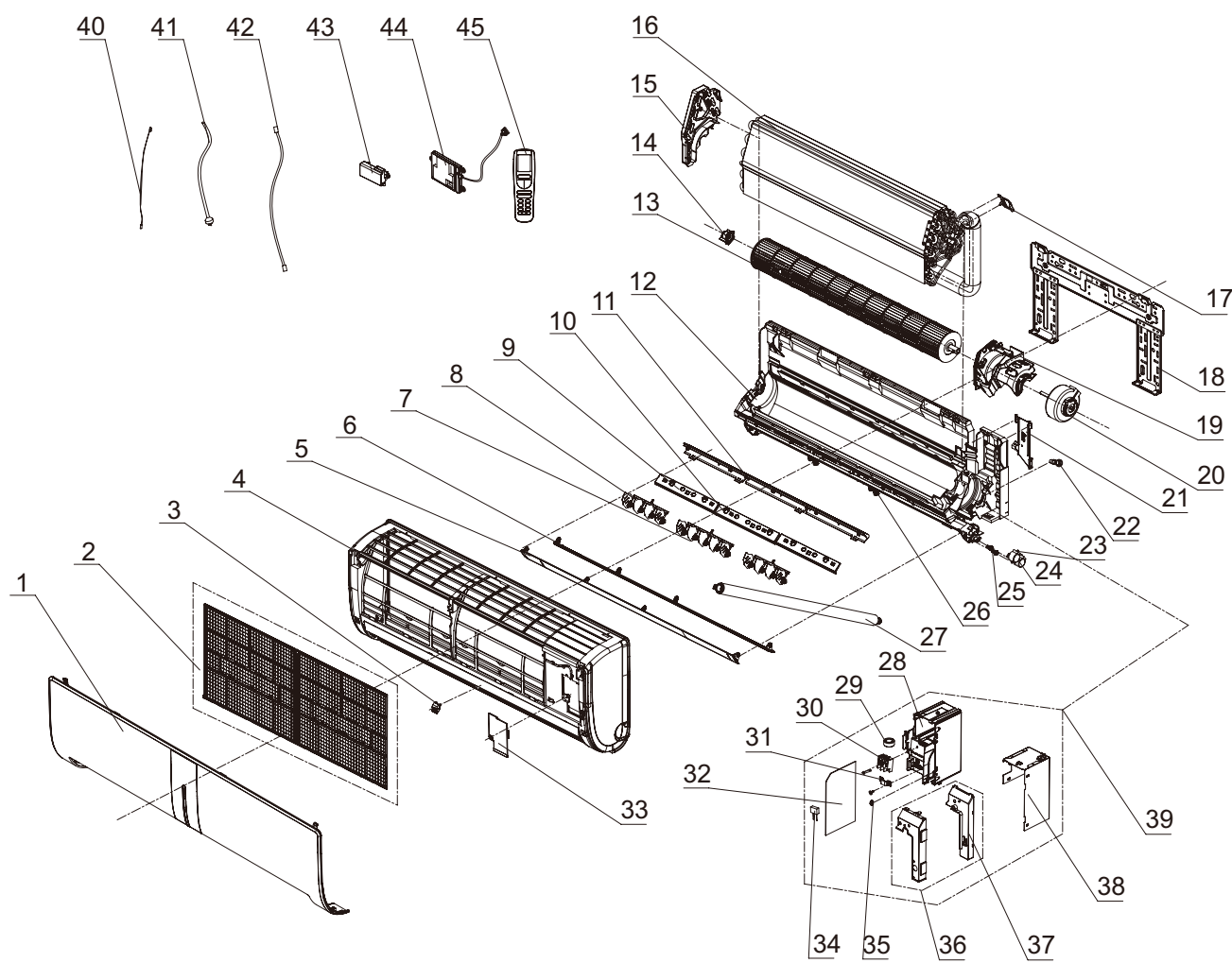
7. Abnormal Sound and Vibration

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

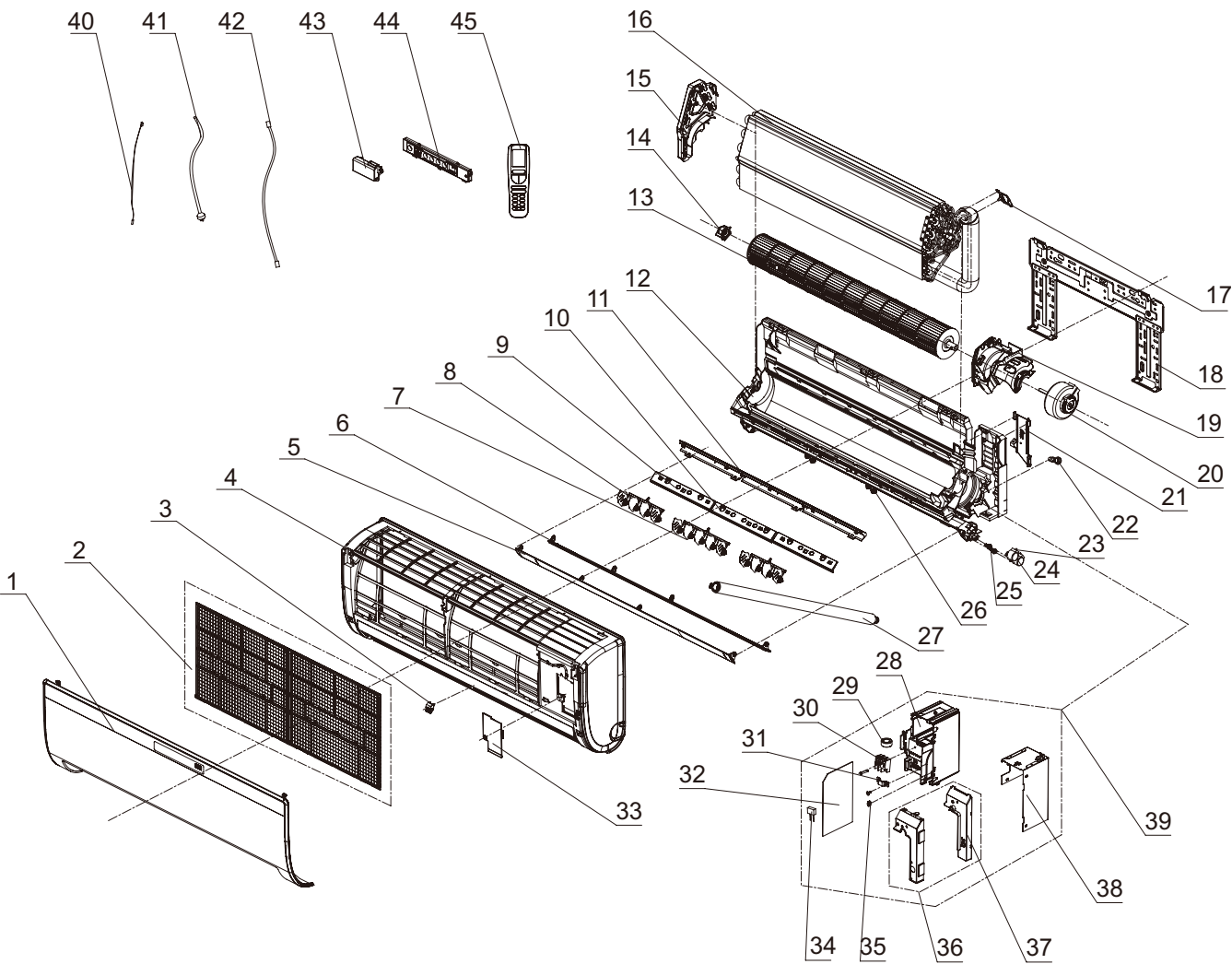
GWH09UB-K3DNA1E/I, GWH12UB-K3DNA1E/I



NO.	Description	Part Code		Qty
		GWH09UB-K3DNA1E/I	GWH12UB-K3DNA1E/I	
	Part Code	CB204N02300	CB204N02400	
1	Front Panel Assy	2001285901	2001285901	1
2	Filter Sub-Assy	11122134	11122134	2
3	Screw Cover	24252024	24252024	1
4	Front Case Sub-assy	20012727	20012727	1
5	Guide Louver 1	10512214	10512214	1
6	Guide Louver 2	10512215	10512215	1
7	Air Louver 2	10512185	10512185	1
8	Air Louver 1	10512184	10512184	1
9	Louver Clamp1	26112263	26112263	1
10	Louver Clamp2	26112264	26112264	1
11	Helicoid Tongue	26112262	26112262	1
12	Rear Case assy	22202220	22202220	1
13	Cross Flow Fan	10352041	10352041	1
14	Axile Bush Sub-assy	10542024	10542024	1
15	Evaporator Support	24212128	24212128	1
16	Evaporator Assy	0100229401	01002359	1
17	Shield Board (Elbow)	01382010	01382010	1
18	Wall Mounting Frame	01252121	01252121	1
19	Motor Press Plate	26112261	26112261	1
20	Fan Motor	1501208904	1501208904	1
21	Connecting pipe clamp	26112164	26112164	1
22	Rubber Plug (Water Tray)	76712012	76712012	1
23	SteppingMotor	1521210804	1521210804	1
24	SteppingMotor	1521212201	1521212201	1
25	Crank	73012005	73012005	2
26	Shaft of Guide Louver	1054202001	1054202001	6
27	Drainage Hose	05230014	05230014	1
28	Electric Box	20112121	20112121	1
29	Magnetic Ring	49010104	49010104	1
30	Terminal Board	420111041	420111041	1
31	Wire Clamp	71010003	71010003	1
32	Main Board	30148919	30148919	1
33	Electric Box Cover2	2012207507	2012207507	1
34	Capacitor CBB61	33010002	33010002	1
35	Jumper	4202300102	4202300104	1
36	Upper Shield Cover Sub-assy of Electric Box	01592301	01592301	1
37	Electric Box Cover	20122133	20122133	1
38	Lower Shield Sub-assy of Electric Box	01592300	01592300	1
39	Electric Box Assy	20402954	20402952	1
40	Temperature Sensor	390000453	390000453	1
41	Power Cord	4002046422	4002046422	1
42	Connecting Cable	400204055	400204055	0
43	Cold Plasma Generator	1114001601	1114001601	1
44	Display Board	30565133	30565133	1
45	Remote Controller	30510134	30510134	1

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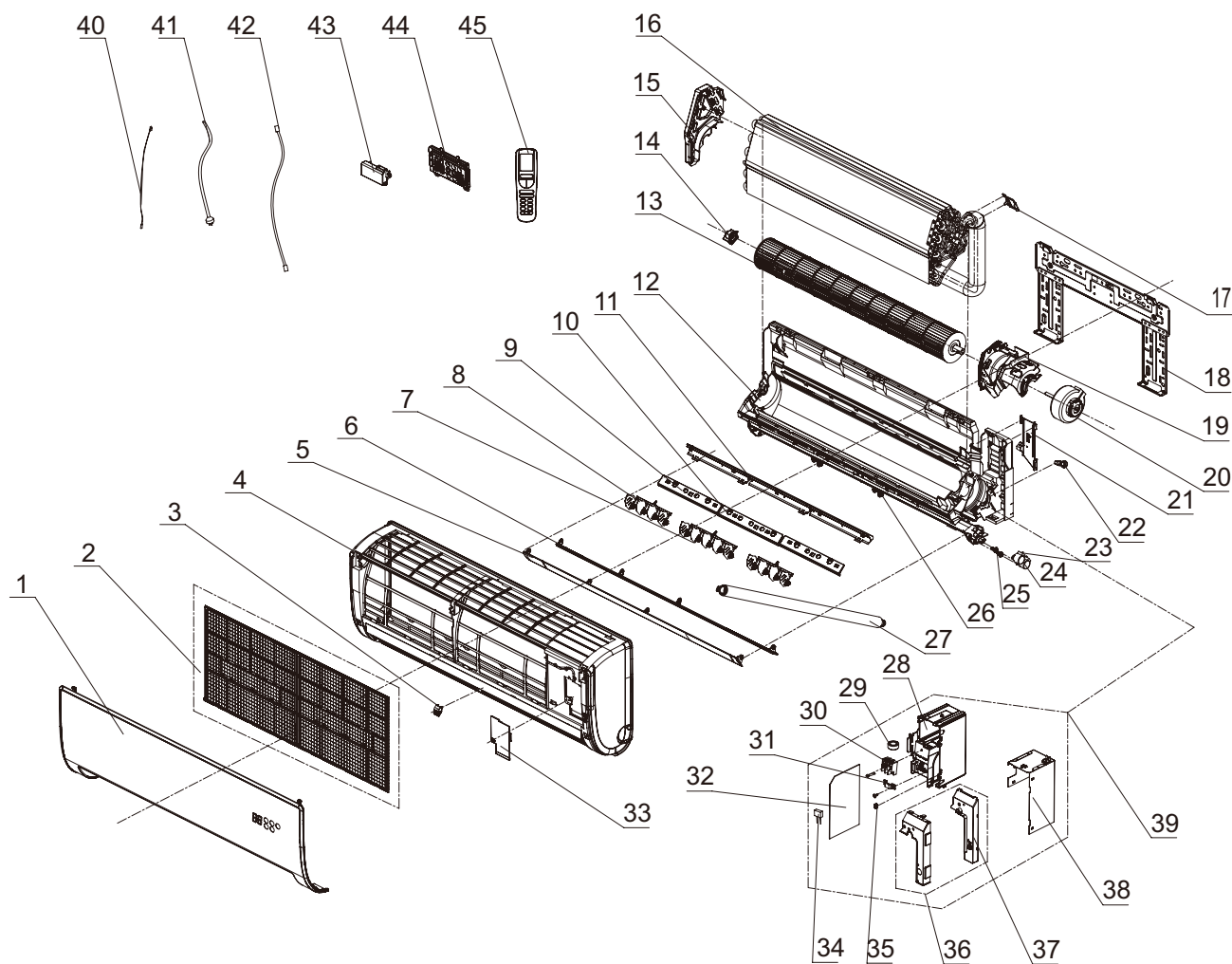
GWH09UB-K3DNA2E/I, GWH12UB-K3DNA2E/I



NO.	Description	Part Code		Qty
		GWH09UB-K3DNA2E/I	GWH12UB-K3DNA2E/I	
	Part Code	CB221N01601	CB221N01701	
1	Front Panel Assy	2002210901	2002210901	1
2	Filter Sub-Assy	11122134	11122134	2
3	Screw Cover	24252024	24252024	1
4	Front Case Sub-assy	20012727	20012727	1
5	Guide Louver 1	10512214	10512214	1
6	Guide Louver 2	10512215	10512215	1
7	Air Louver 2	10512185	10512185	1
8	Air Louver 1	10512184	10512184	1
9	Louver Clamp1	26112263	26112263	1
10	Louver Clamp2	26112264	26112264	1
11	Helicoid Tongue	26112262	26112262	1
12	Rear Case assy	22202220	22202220	1
13	Cross Flow Fan	10352041	10352041	1
14	Axile Bush Sub-assy	10542024	10542024	1
15	Evaporator Support	24212128	24212128	1
16	Evaporator Assy	0100229401	01002359	1
17	Shield Board (Elbow)	01382010	01382010	1
18	Wall Mounting Frame	01252121	01252121	1
19	Motor Press Plate	26112261	26112261	1
20	Fan Motor	1501208904	1501208904	1
21	Connecting pipe clamp	26112164	26112164	1
22	Rubber Plug (Water Tray)	76712012	76712012	1
23	SteppingMotor	1521210804	1521210804	1
24	SteppingMotor	1521212201	1521212201	1
25	Crank	73012005	73012005	2
26	Shaft of Guide Louver	1054202001	1054202001	6
27	Drainage Hose	05230014	05230014	1
28	Electric Box	20112121	20112121	1
29	Magnetic Ring	49010104	49010104	1
30	Terminal Board	420111041	420111041	1
31	Wire Clamp	71010003	71010003	1
32	Main Board	30148919	30148919	1
33	Electric Box Cover2	2012207507	2012207507	1
34	Capacitor CBB61	33010002	33010002	1
35	Jumper	4202300102	4202300104	1
36	Upper Shield Cover Sub-assy of Electric Box	01592301	01592301	1
37	Electric Box Cover	20122133	20122133	1
38	Lower Shield Sub-assy of Electric Box	01592300	01592300	1
39	Electric Box Assy	20402696	20402695	1
40	Temperature Sensor	390000453	390000453	1
41	Power Cord	4002046422	4002046422	1
42	Connecting Cable	400204055	400204055	0
43	Cold Plasma Generator	1114001601	1114001601	1
44	Display Board	30565152	30565152	1
45	Remote Controller	30510134	30510134	1

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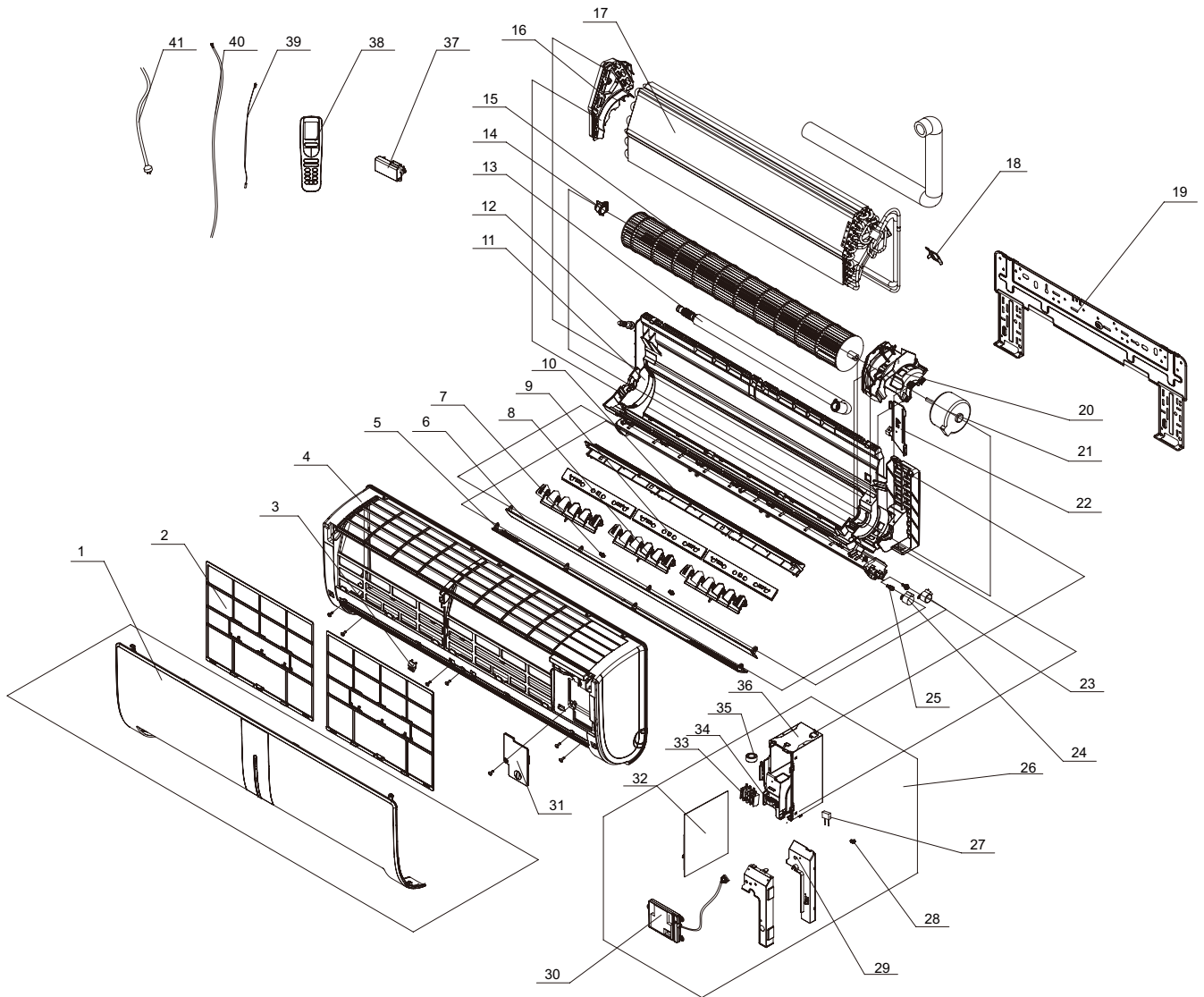
GWH09UB-K3DNA3E/I, GWH12UB-K3DNA3E/I



NO.	Description	Part Code		Qty
		GWH09UB-K3DNA3E/I	GWH12UB-K3DNA3E/I	
	Part Code	CB205N01700	CB205N01800	
1	Front Panel Sub-Assy	2001264509	2001264509	1
2	Filter Sub-Assy	1112213402	1112213402	2
3	Screw Cover	2425202407P	2425202407P	1
4	Front Case Sub-assy	2001263109	2001263109	1
5	Guide Louver 1	1051221407P	1051221407P	1
6	Guide Louver 2	1051221508P	1051221508P	1
7	Air Louver 2	1051218501	1051218501	1
8	Air Louver 1	1051218401	1051218401	1
9	Louver Clamp1	2611226301	2611226301	1
10	Louver Clamp2	2611226401	2611226401	1
11	Helicoid Tongue	2611226201	2611226201	1
12	Rear Case assy	2220222001	2220222001	1
13	Cross Flow Fan	10352041	10352041	1
14	Axile Bush Sub-assy	10542024	10542024	1
15	Evaporator Support	24212128	24212128	1
16	Evaporator Assy	0100229401	01002359	1
17	Shield Board (Elbow)	01382010	01382010	1
18	Wall Mounting Frame	01252121	01252121	1
19	Motor Press Plate	26112261	26112261	1
20	Fan Motor	1501208904	1501208904	1
21	Connecting pipe clamp	26112164	26112164	1
22	Rubber Plug (Water Tray)	76712012	76712012	1
23	SteppingMotor	1521210804	1521210804	1
24	SteppingMotor	1521212201	1521212201	1
25	Crank	73012005	73012005	2
26	Shaft of Guide Louver	10542020	10542020	6
27	Drainage Hose	05230014	05230014	1
28	Electric Box	20112121	20112121	1
29	Magnetic Ring	49010104	49010104	1
30	Terminal Board	420111041	420111041	1
31	Wire Clamp	71010003	71010003	1
32	Main Board	30148919	30148919	1
33	Electric Box Cover2	2012207513P	2012207513P	1
34	Capacitor CBB61	33010002	33010002	1
35	Jumper	4202300102	4202300104	1
36	Upper Shield Cover Sub-assy of Electric Box	01592301	01592301	1
37	Electric Box Cover	20122133	20122133	1
38	Lower Shield Sub-assy of Electric Box	01592300	01592300	1
39	Electric Box Assy	20402955	20402953	1
40	Temperature Sensor	390000453	390000453	1
41	Power Cord	4002046422	4002046422	1
42	Connecting Cable	400204055	400204055	0
43	Cold Plasma Generator	1114001601	1114001601	1
44	Display Board	30565131	30565131	1
45	Remote Controller	30510134	30510134	1

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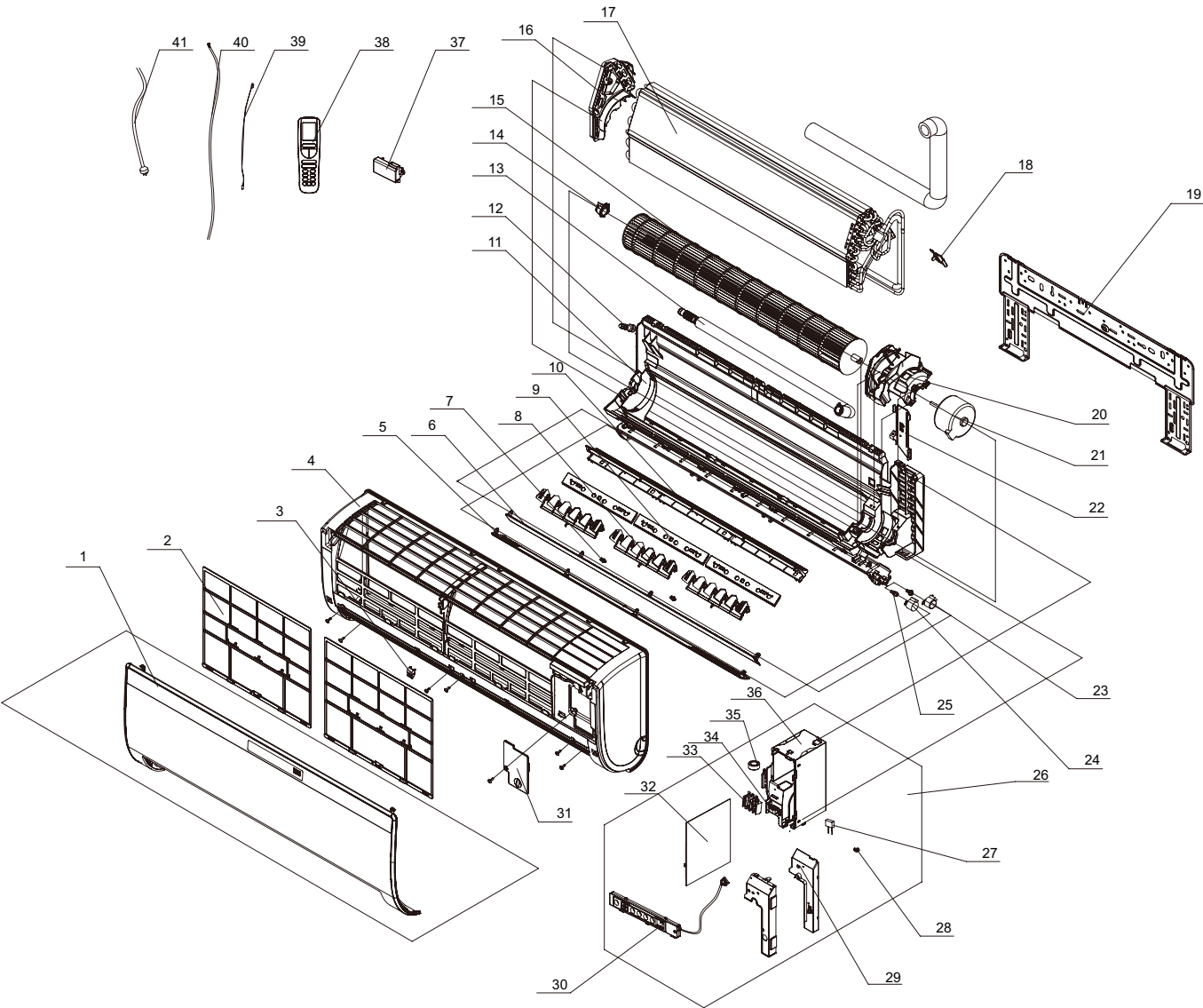
GWH18UC-K3DNA1E/I



NO.	Description	Part Code	Qty
		GWH18UC-K3DNA1E/I	
	Part Code	CB204N02500	
1	Front Panel Assy	2001280401	1
2	Filter Sub-Assy	11122133	2
3	Screw Cover	24252024	1
4	Front Case Sub-assy	20012805	1
5	Guide Louver 2	10512223	1
6	Guide Louver 1	10512222	1
7	Shaft of Guide Louver	1054202001	1
8	Air Louver(Manual)	10512221	1
9	Louver Clamp	26112493	1
10	Helicoid Tongue	26112495	1
11	Rear Case assy	22202472	1
12	Rubber Plug (Water Tray)	76712012	1
13	Drainage Hose	0523001406	1
14	Axile Bush Sub-assy	10542024	1
15	Cross Flow Fan	10352030	1
16	Evaporator Support	24212135	1
17	Evaporator Assy	01002956	1
18	Shield Board (Elbow)	01382010	1
19	Wall Mounting Frame	01252032	1
20	Motor Press Plate	26112295	1
21	Fan Motor	1501209802	1
22	Connecting pipe clamp	26112164	1
23	SteppingMotor	15212125	1
24	SteppingMotor	15212126	1
25	Crank	73012005	2
26	Electric Box Assy	20402971	6
27	Capacitor CBB61	33010034	1
28	Jumper	4202300111	1
29	Electric Box Cover	20122158	1
30	Display Board	30565134	1
31	Electric Box Cover2	20122159	1
32	Main Board	30148920	1
33	Terminal Board	420111041	1
34	Wire Clamp	71010102	1
35	Magnetic Ring	49010104	1
36	Electric Box	20112134	1
37	Cold Plasma Generator	1114001601	1
38	Remote Controller	30510134	1
39	Temperature Sensor	390000453	1
40	Connecting Cable	40020553	1
41	Power Cord	400204877	1

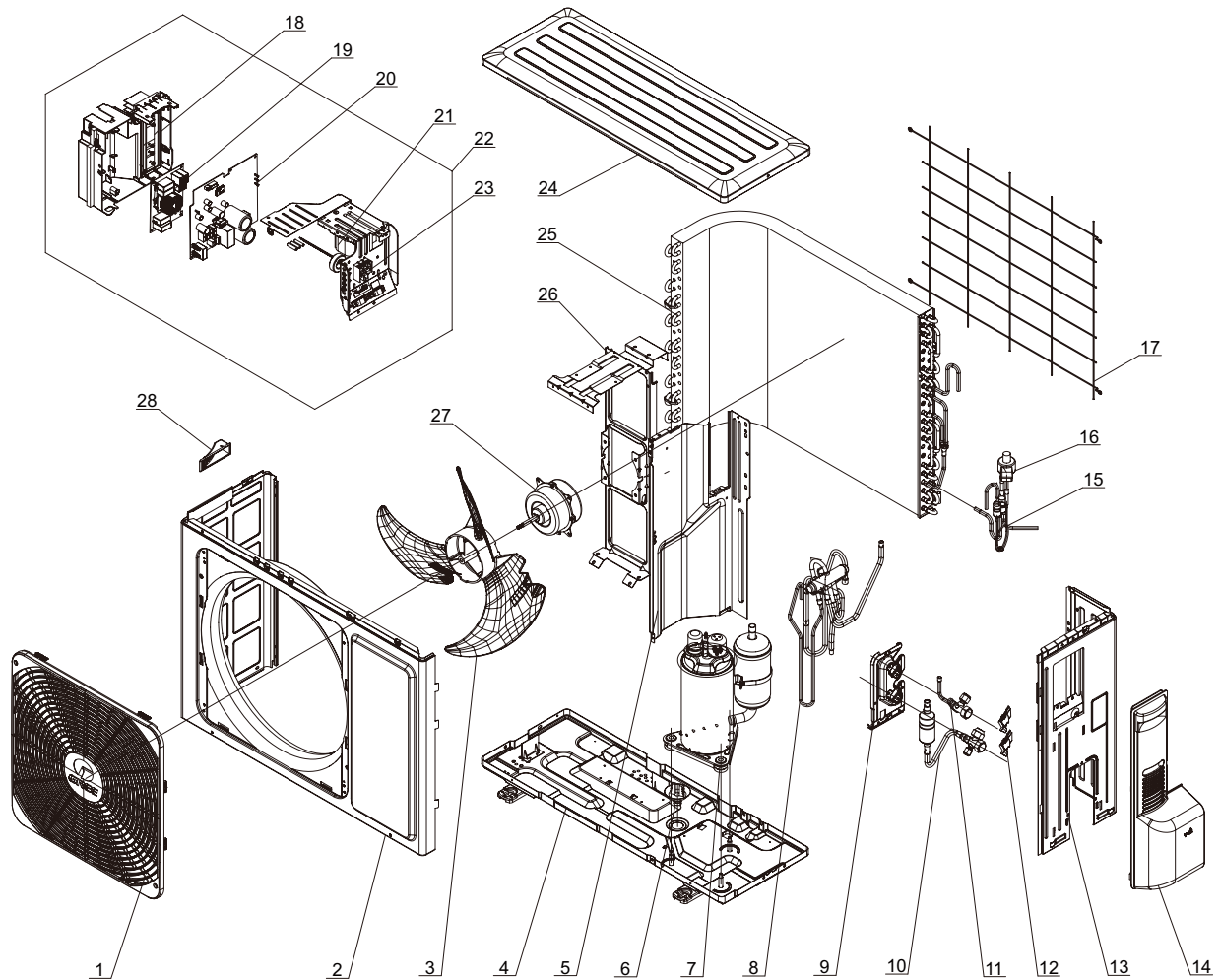
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GWH18UC-K3DNA2E/I



NO.	Description	Part Code	Qty
		GWH18UC-K3DNA2E/I	
	Part Code	CB221N01801	
1	Front Panel Assy	2001286703	1
2	Filter Sub-Assy	11122133	2
3	Screw Cover	24252024	1
4	Front Case Sub-assy	20012805	1
5	Guide Louver 2	10512223	1
6	Guide Louver 1	10512222	1
7	Shaft of Guide Louver	1054202001	1
8	Air Louver(Manual)	10512221	1
9	Louver Clamp	26112493	1
10	Helicoid Tongue	26112495	1
11	Rear Case assy	22202472	1
12	Rubber Plug (Water Tray)	76712012	1
13	Drainage Hose	0523001406	1
14	Axile Bush Sub-assy	10542024	1
15	Cross Flow Fan	10352030	1
16	Evaporator Support	24212135	1
17	Evaporator Assy	01002956	1
18	Shield Board (Elbow)	01382010	1
19	Wall Mounting Frame	01252032	1
20	Motor Press Plate	26112295	1
21	Fan Motor	1501209802	1
22	Connecting pipe clamp	26112164	1
23	SteppingMotor	15212125	1
24	SteppingMotor	15212126	1
25	Crank	73012005	2
26	Electric Box Assy	20402694	6
27	Capacitor CBB61	33010034	1
28	Jumper	4202300111	1
29	Electric Box Cover	20122158	1
30	Display Board	30565153	1
31	Electric Box Cover2	20122159	1
32	Main Board	30148920	1
33	Terminal Board	420111041	1
34	Wire Clamp	71010102	1
35	Magnetic Ring	49010104	1
36	Electric Box	20112134	1
37	Cold Plasma Generator	1114001601	1
38	Remote Controller	30510134	1
39	Temperature Sensor	390000453	1
40	Connecting Cable	40020553	1
41	Power Cord	400204877	1

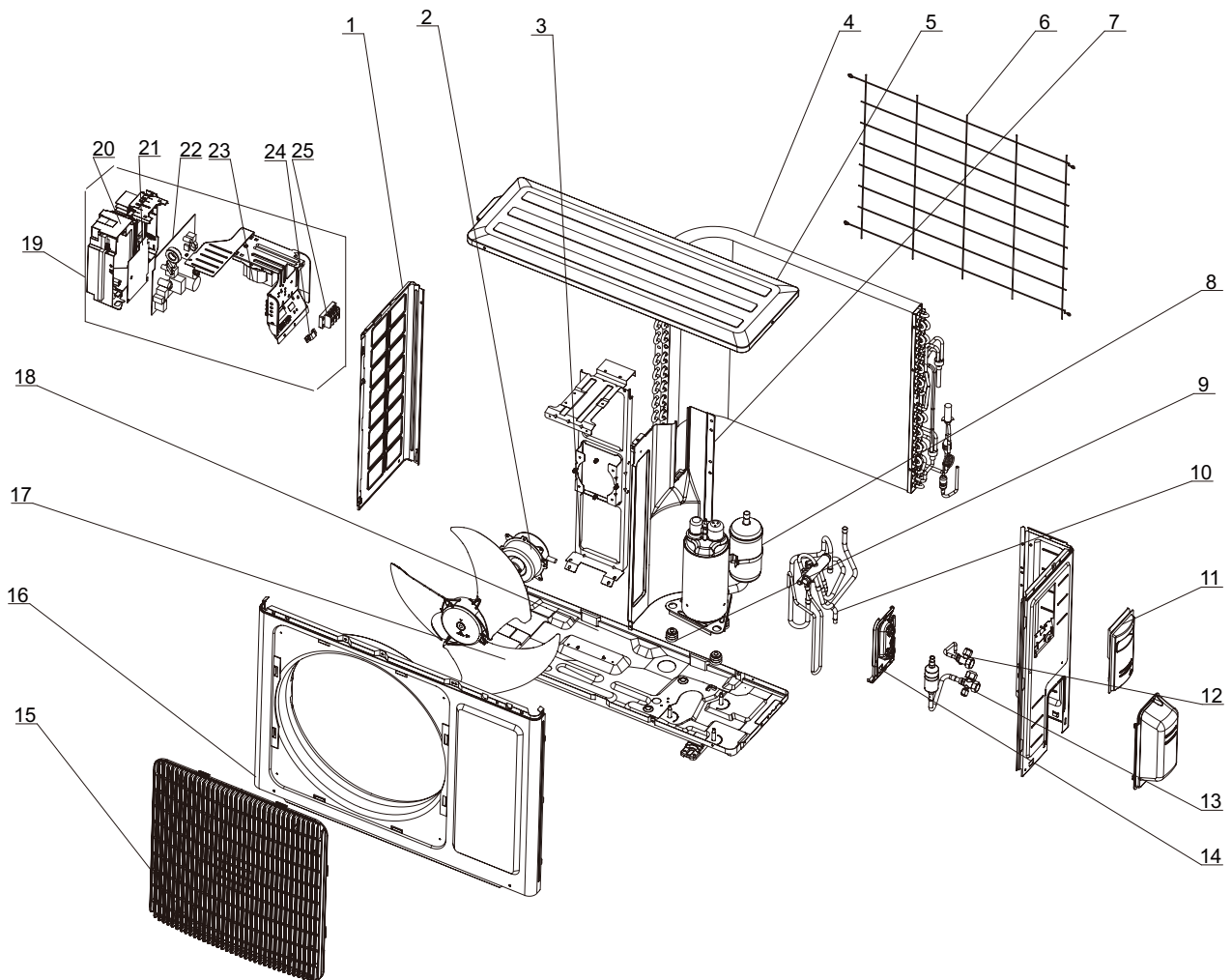
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NO.	Description	Part Code	Qty
		GWH09UB-K3DNA2E/O	
		Part Code	
		CB221W01601	
1	Front Grill	22413027	1
2	Cabinet Sub-assy	01433062	2
3	Axial Flow Fan	10333004	1
4	Chassis Sub-assy	02803151	1
5	Clapboard Sub-Assy	01233385	1
6	Drainage Connector	06123401	1
7	Compressor and Fittings	00103897G	1
8	4-Way Valve Assy	03073178	1
9	Valve Support	0171314201	1
10	Cut off Valve Assy	07133474	1
11	Valve	07100003	1
12	Valve Support Block	26113017	1
13	Right Side Plate Sub-Assy	0130317801	1
14	Big Handle	26233433	1
15	Magnet Coil	4300040050	1
16	Electric Expand Valve Fitting	4300876701	1
17	Rear Grill	01473009	1
18	Electric Box	20113014	1
19	Filter Board	30033084	1
20	Main Board	30148984	1
21	Reactor	43130184	1
22	Electric Box Assy	02613785	1
23	Terminal Board	42011113	1
24	Top Cover Sub-Assy	01253073	1
25	Condenser Assy	01163789	2
26	Motor Support	0170310401	6
27	Fan Motor	1501308502	1
28	Small Handle	26233100	1

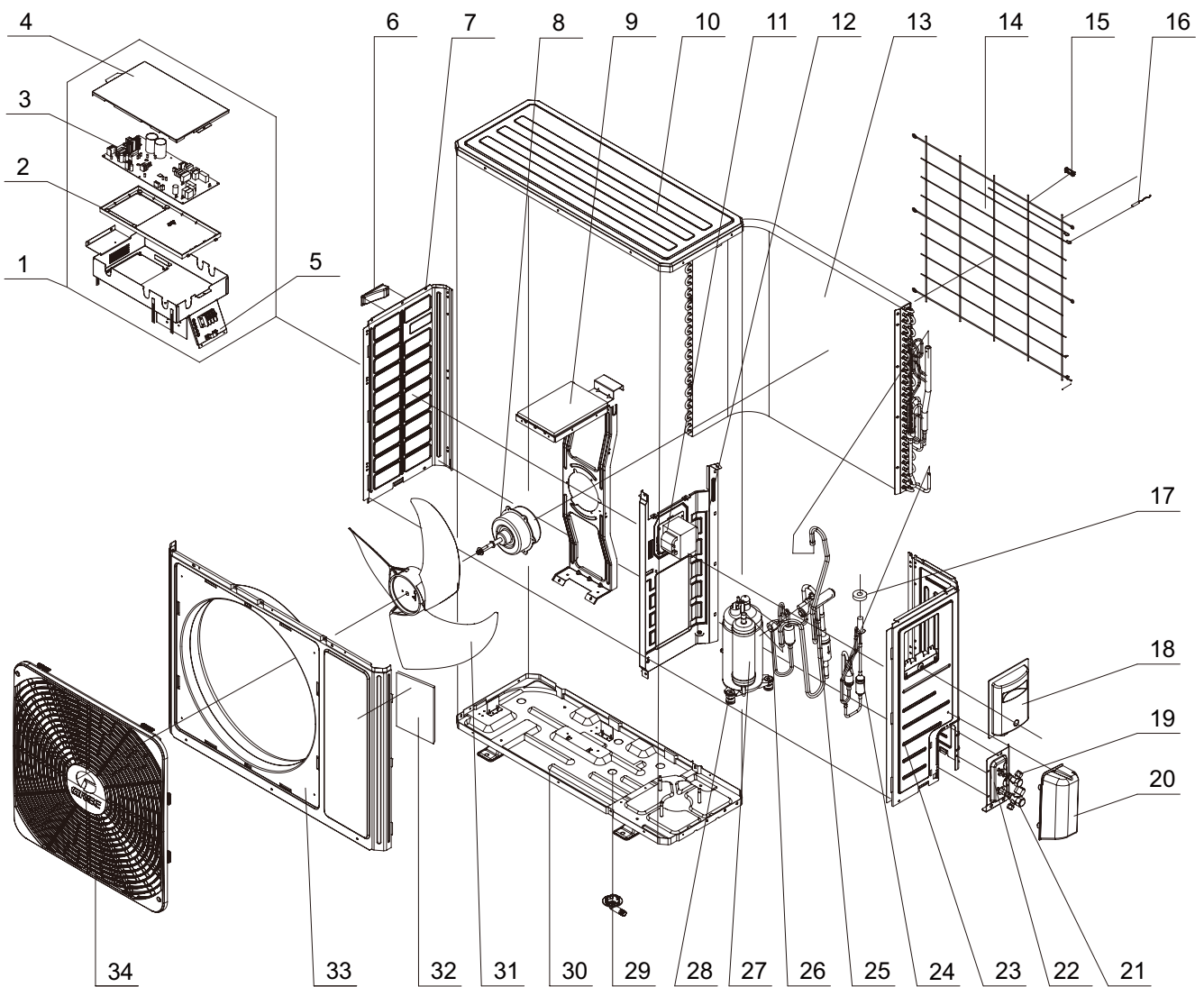
Above data is subject to change without notice.

GWH12UB-K3DNA2E/O



NO.	Description	Part Code	Qty
		GWH12UB-K3DNA2E/O	
	Part Code	CB221W01700	
1	Left Side Plate	01303200P	1
2	Fan Motor	15013085	2
3	Motor Support	01703136	1
4	Condenser Assy	01163413	1
5	Top Cover Sub-Assy	01253081	1
6	Rear Grill	01475014	1
7	Clapboard Sub-Assy	01233180	1
8	Compressor and Fittings	00103896G	1
9	Compressor Gasket	76710302	1
10	4-Way Valve Assy	03073079	1
11	Big Handle	26233431	1
12	Cut off Valve Assy	0713386501	1
13	Cut off Valve Assy	0713380601	1
14	Valve Support	0171314201	1
15	Front Grill	22413014	1
16	Cabinet	01433033P	1
17	Axial Flow Fan	10333011	1
18	Chassis Sub-assy	02803241P	1
19	Electric Box Assy	02613924	1
20	Electric Box	20113014	1
21	Filter Board	30033084	1
22	Main Board	30148985	1
23	Reactor	43130184	1
24	Wire Clamp	71010003	1
25	Terminal Board	420111041	2


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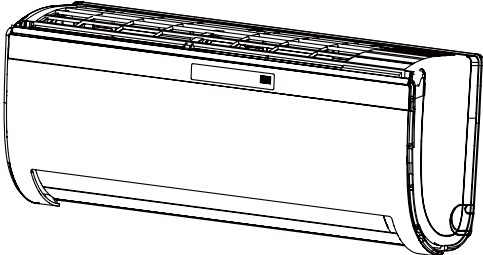
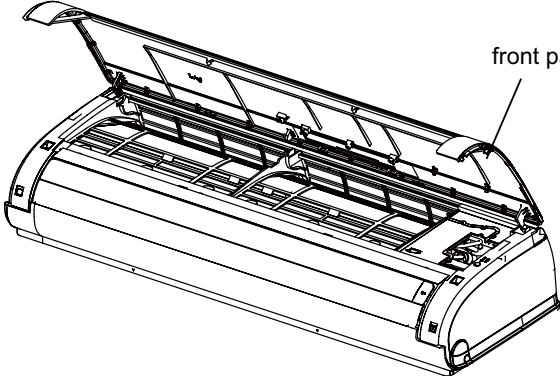
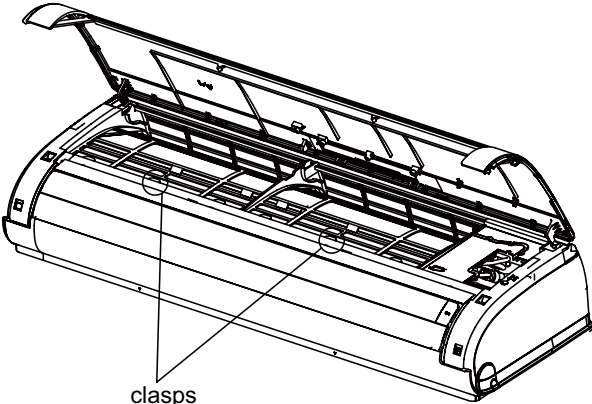
NO.	Description	Part Code	Qty
		GWH18UC-K3DNA2E/O	
	Part Code	CB221W01801	
1	Electric Box Assy	02613783	1
2	Electric Box 1	20113005	1
3	Main Board	30148983	1
4	Electric Box Cover	01413171	1
5	Terminal Board	42011113	1
6	Left Handle	26235401	1
7	Left Side Plate	01305093P	1
8	Fan Motor	15013309	1
9	Motor Support Sub-Assy	0170512001	1
10	Coping	01255005P	1
11	Reactor	43130192	1
12	Clapboard Sub-Assy	01232902	1
13	Condenser Assy	01103000004	1
14	Rear Grill	01473043	1
15	Wiring Clamp	26115004	1
16	Temperature Sensor	3900030901	1
17	Electric Expand Valve Fitting	4304413208	1
18	Handle	26235254	1
19	Cut off Valve Sub-Assy	07133472	1
20	Valve Cover	22245002	1
21	Cut off Valve Sub-Assy 1/2	07133881	1
22	Valve Support Assy	01715010P	1
23	Right Side Plate	0130509402P	1
24	Electric Expansion Valve Sub-Assy	07133870	1
25	4-Way Valve Assy	03073208	1
26	Magnet Coil	4300040047	1
27	Compressor and fittings	00205262	1
28	Compressor Gasket	76715021	3
29	Drainage Connector	06123401	1
30	Chassis Sub-assy	02803295P	1
31	Axial Flow Fan	10335012	1
32	Insulated Board (Cover of Electric Box)	20113003	1
33	Front Panel	01535013P	1
34	Front Grill	22413025	1

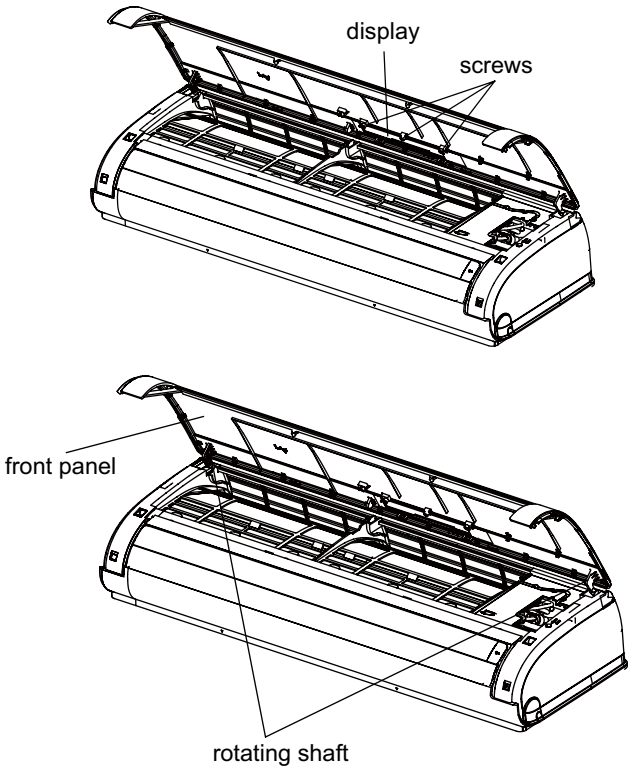
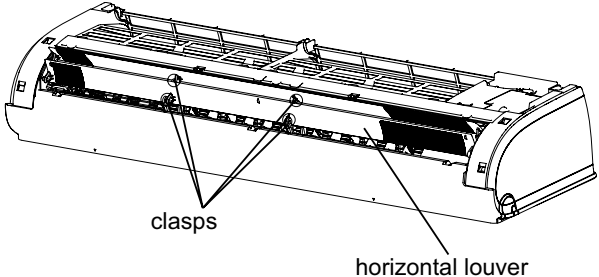
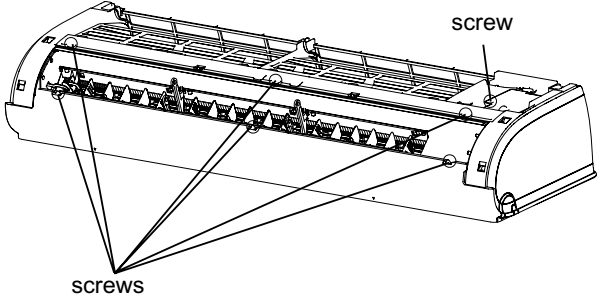
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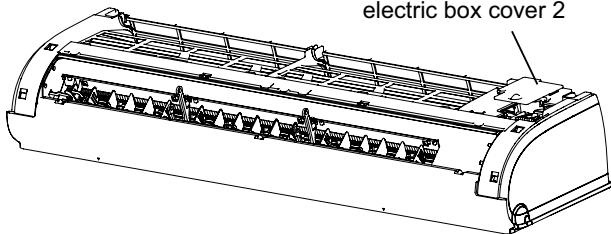
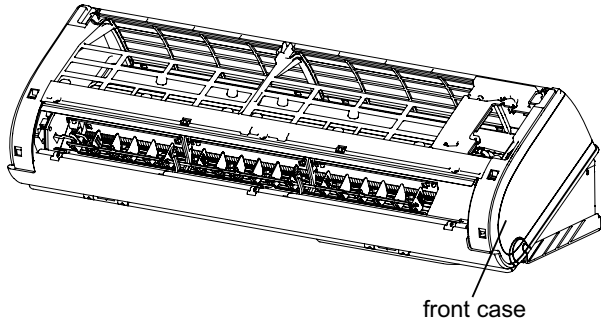
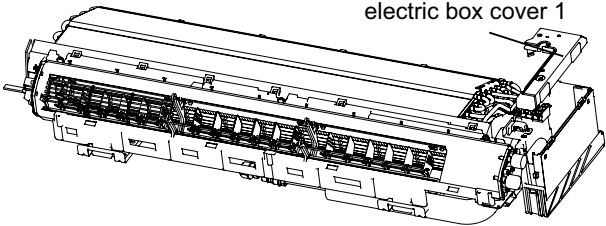
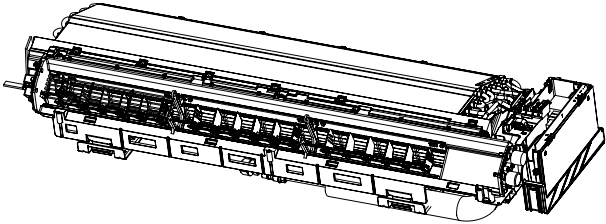
11. Removal Procedure

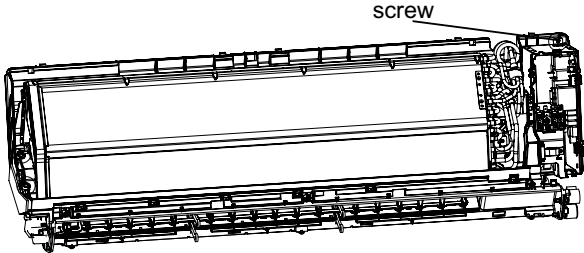
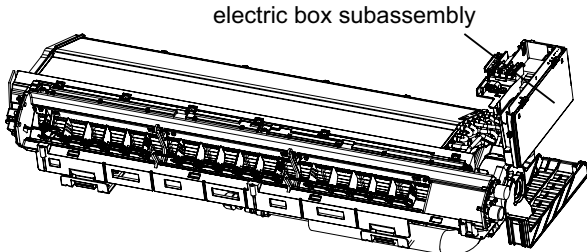
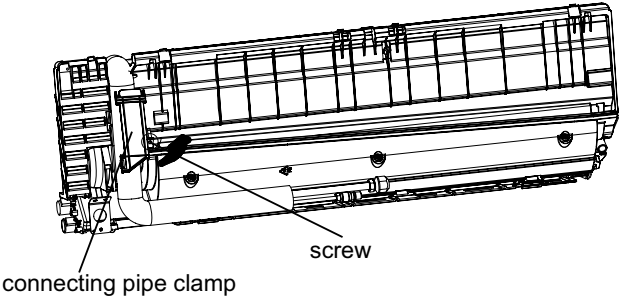
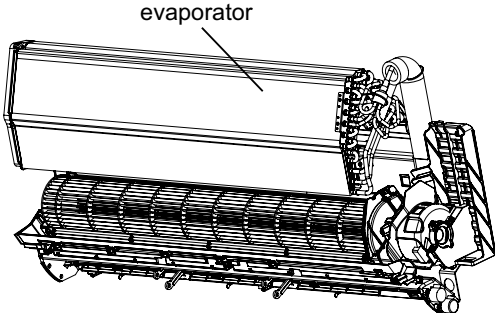
 **Caution:** discharge the refrigerant completely before removal.

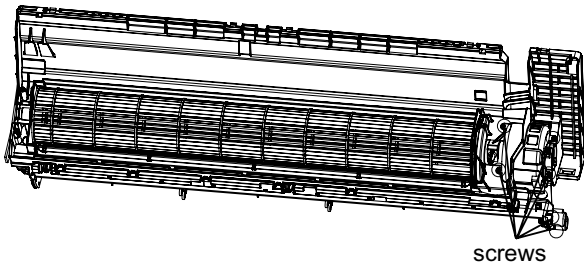
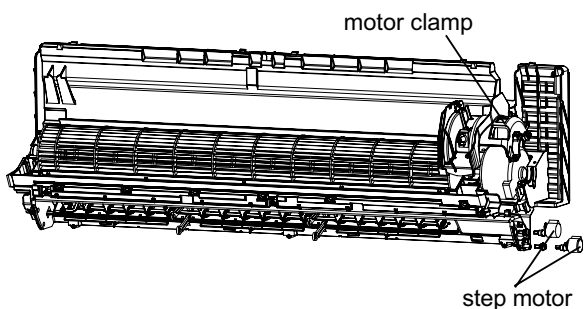
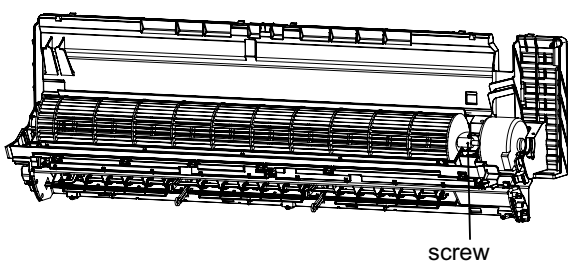
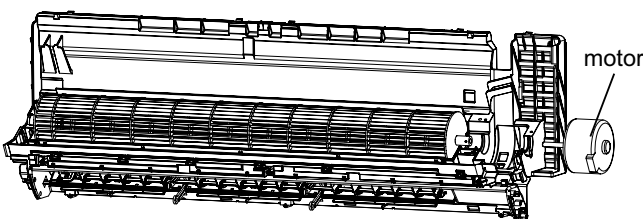
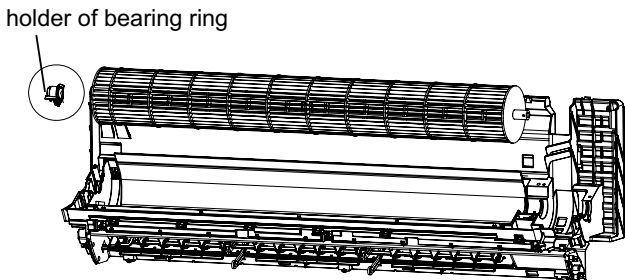
11.1 Removal Procedure of Indoor Unit

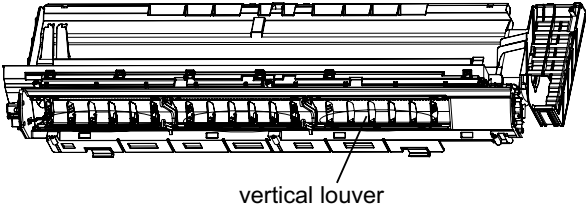
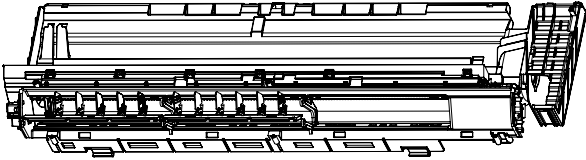
Steps	Procedure	
1. Before disassembly		
2. Remove filter		 
1	Loosen clasps on both sides of front panel and open front panel.	
2	Loosen clasps on filter and push the filter inwards. Then lift it up to remove it.	

Steps	Procedure
<p>3. Remove front panel</p> <p>Remove screws fixing display on front panel. Slide rotating shaft of front panel along the groove to remove the front panel.</p>	
<p>4. Remove horizontal louver</p> <p>Remove axle sleeve of horizontal louver and bend the horizontal louver. Then draw it outwards to remove it.</p>	
<p>5. Remove front case</p> <p>1 Open screw caps and remove 6 screws fixing front case and 1 screw on electric box cover 2.</p>	

Steps	Procedure	
2	Remove electric box cover 2	 <p>electric box cover 2</p>
3	Loosen clasps on the rear of front case. Lift the front case up to remove it.	 <p>front case</p>
6. Remove electric box subassembly		
1	Loosen clasps on the joint of electric box cover 1 and electric box. Then remove electric box cover 1.	 <p>electric box cover 1</p>
2	Unplug splicing ear of motor and step motor inside electric box.	

Steps	Procedure	
3	Remove screw fixing electric box.	 <p>A perspective view of the rear of the unit. A line points to a screw on the right side, labeled 'screw'.</p>
4	Remove electric box subassembly.	 <p>A perspective view of the rear of the unit. A line points to the electric box subassembly on the right side, labeled 'electric box subassembly'.</p>
7. Remove evaporator		
1	Remove screws on connecting pipe clamp and then remove the connecting pipe clamp.	 <p>A perspective view of the rear of the unit. A line points to a screw on the left side, labeled 'screw'. Another line points to the connecting pipe clamp, labeled 'connecting pipe clamp'.</p>
2	Remove screws on the joint of evaporator and rear case. Slightly adjust pipe of evaporator and then remove evaporator.	 <p>A perspective view of the rear of the unit. A line points to the evaporator on the left side, labeled 'evaporator'.</p>

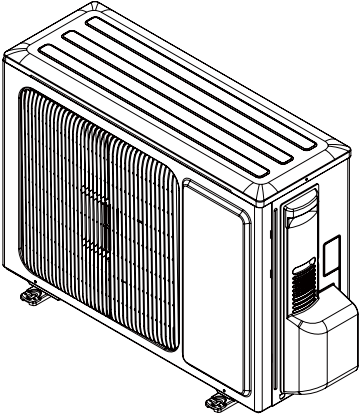
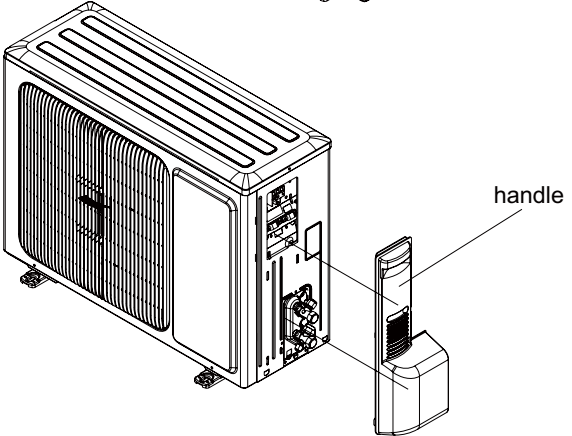
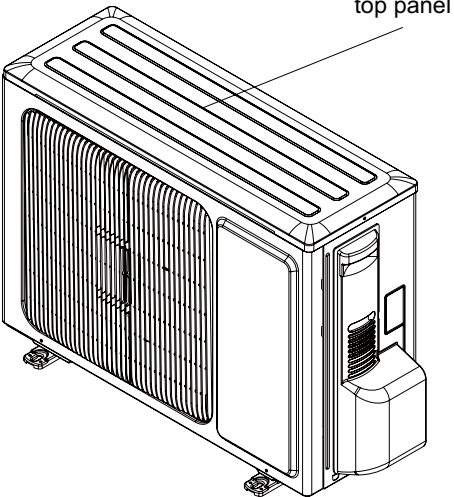
Steps		Procedure
8. Remove cross flow fan blade and motor		
1	Remove screws fixing motor clamp and step motor.	 <p>screws</p>
2	Remove motor clamp and step motor.	 <p>motor clamp</p> <p>step motor</p>
3	Remove screws on the joint of cross flow fan blade and motor.	 <p>screw</p>
4	Remove motor.	 <p>motor</p>
5	Unplug holder of bearing ring.	 <p>holder of bearing ring</p>

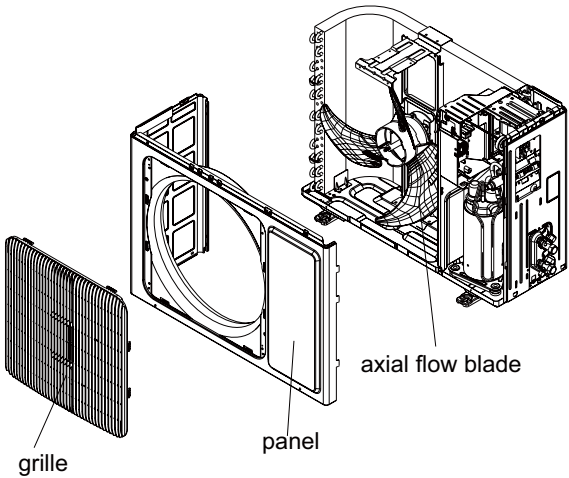
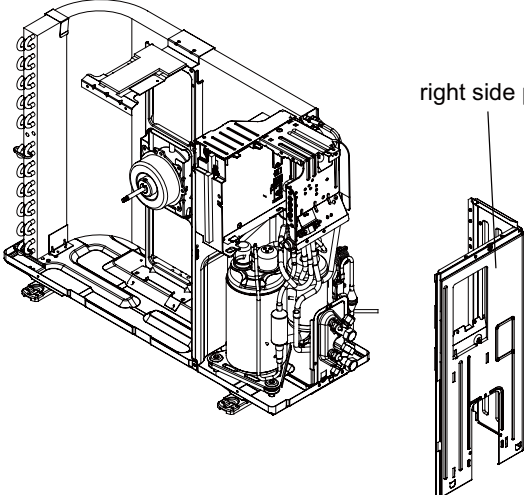
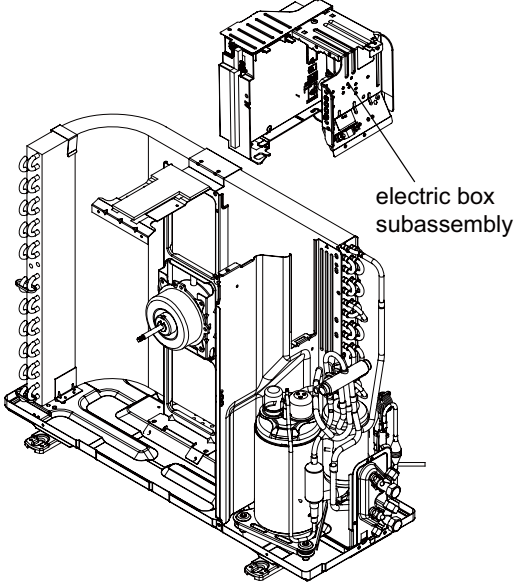
Steps	Procedure	
9. Remove vertical louver	<p>Loosen clasps between vertical louver and rear case. Then remove vertical louver.</p>	
		

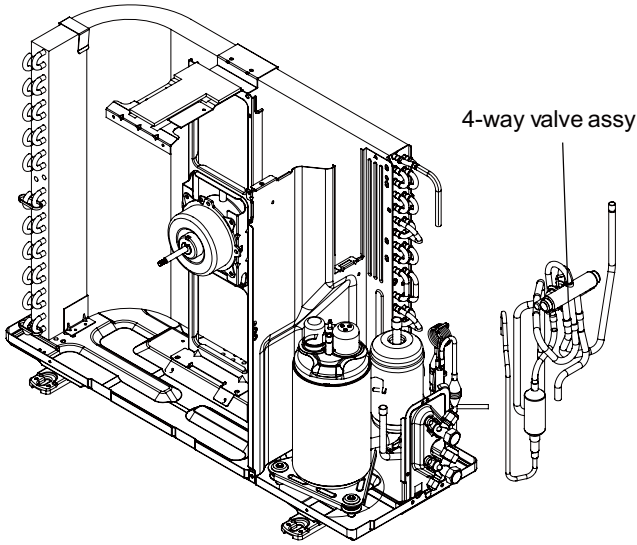
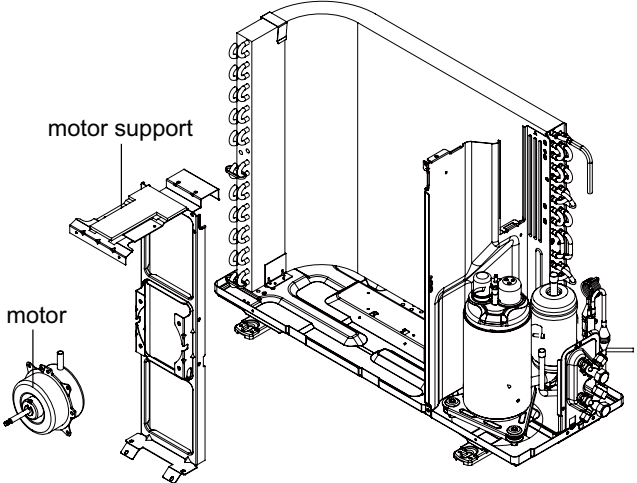
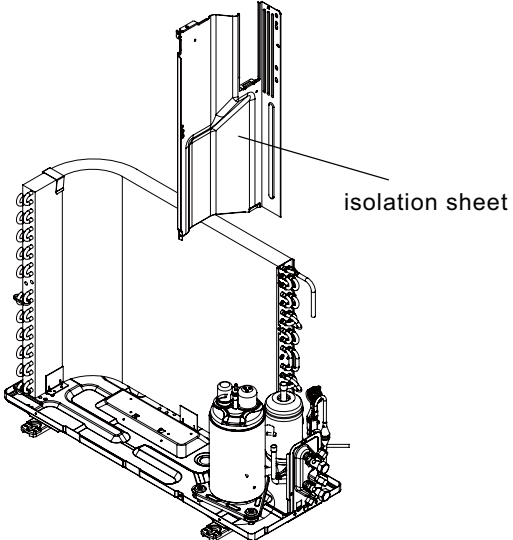
11.2 Removal Procedure of Outdoor Unit

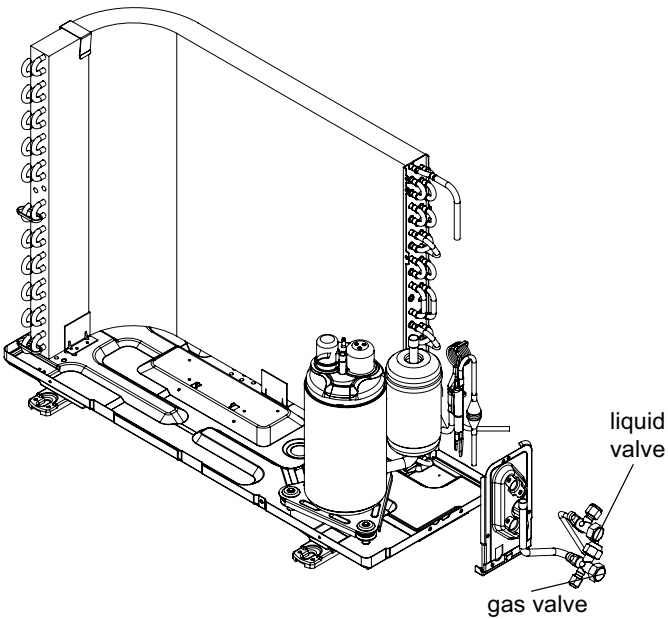
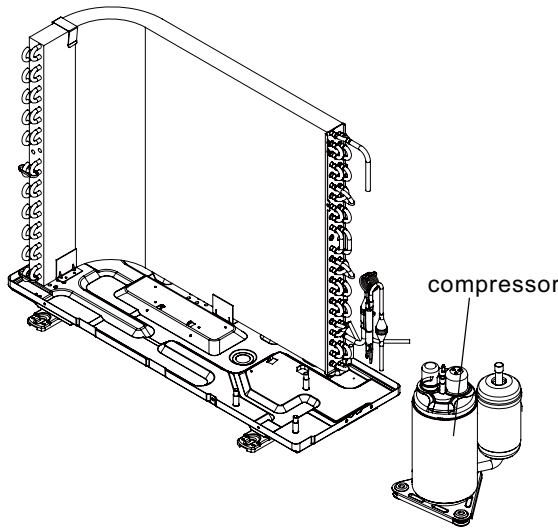
Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

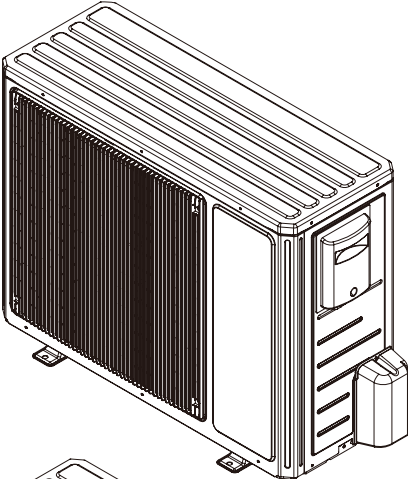
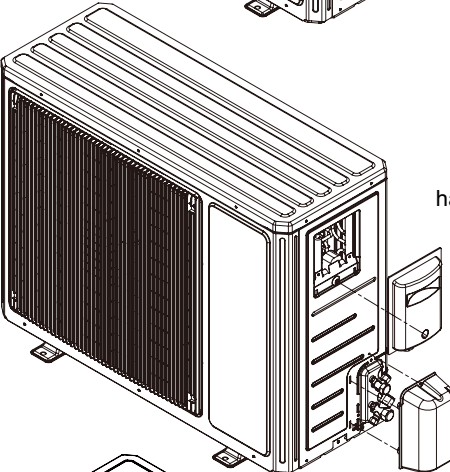
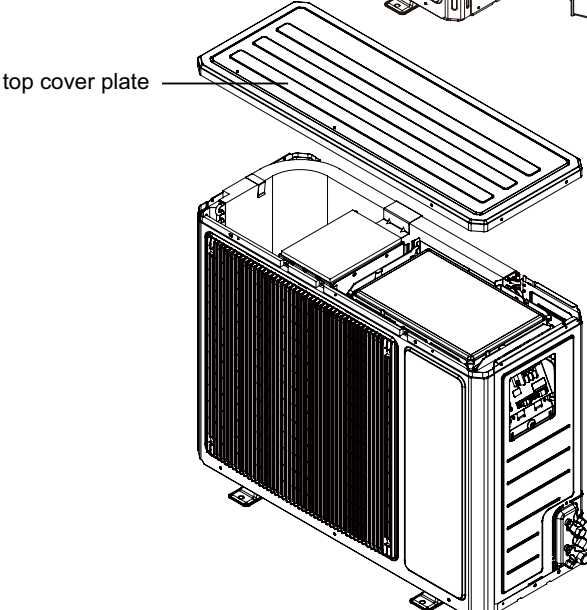
GWH09UB-K3DNA2E/O, GWH12UB-K3DNA2E/O

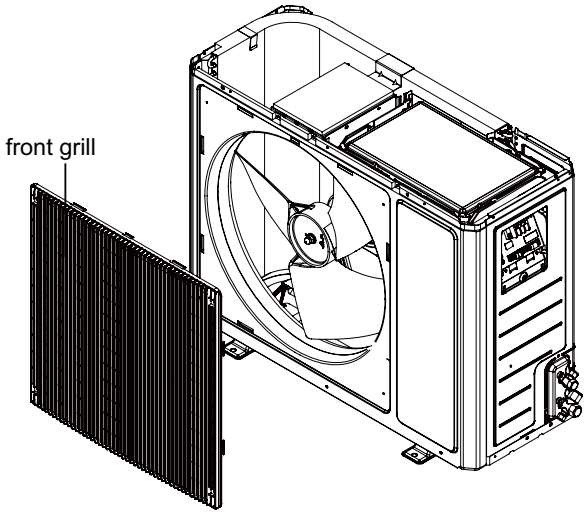
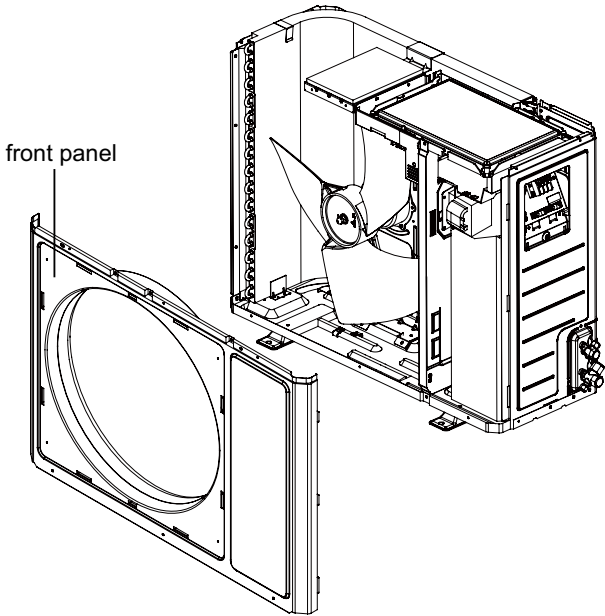
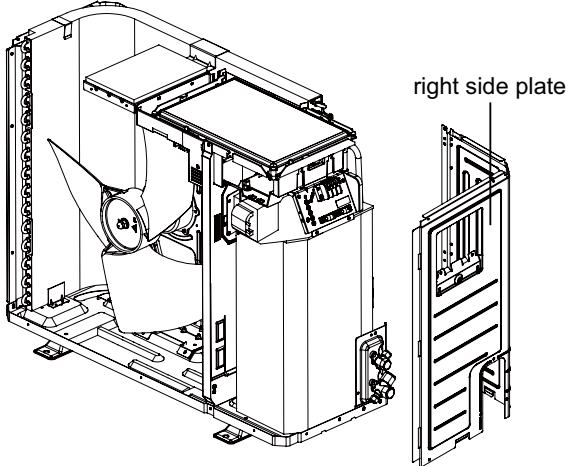
Steps		Procedure
1.Remove big handle		
1	Before disassembly.	 
2	Remove the connection screw fixing the big handle and then remove the handle.	
2. Remove top cover		
	Remove connection screws connecting the top cover plate with the front panel and the right side plate, and then remove the top panel.	

Steps	Procedure
3.Remove grille 、 axial flow blade and front panel	<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. Remove the nut fixing the blade and then remove the axial flow blade.</p>  <p>grille</p> <p>panel</p> <p>axial flow blade</p>
4.Remove right side plate	<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>right side plate</p>
5.Remove electric box subassembly	<p>Remove screws fixing electric box cover, and then remove the electric box cover. Cut off the tieline, pull out all wiring terminals and remove all connection wires, and then separate connection wires and electric box. Remove screws connecting electric box and middle isolation sheet, motor support, and then remove the electric box.</p>  <p>electric box subassembly</p>

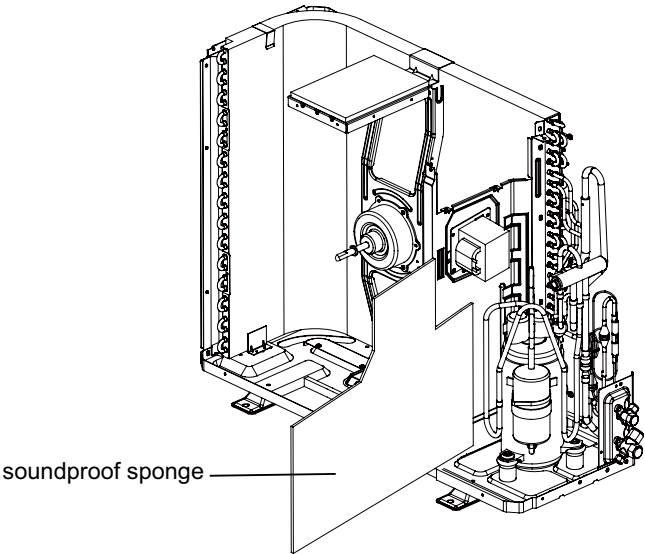
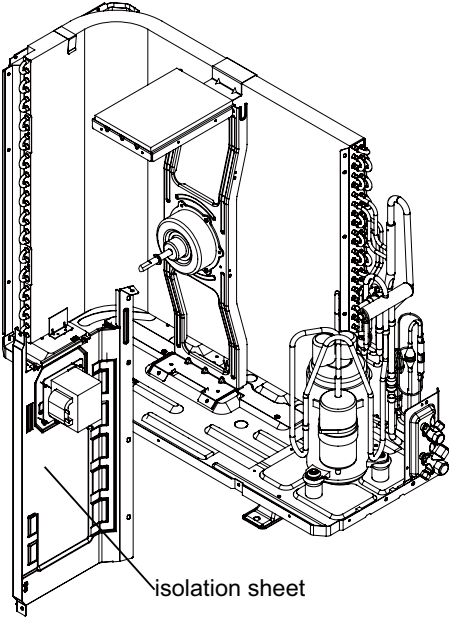
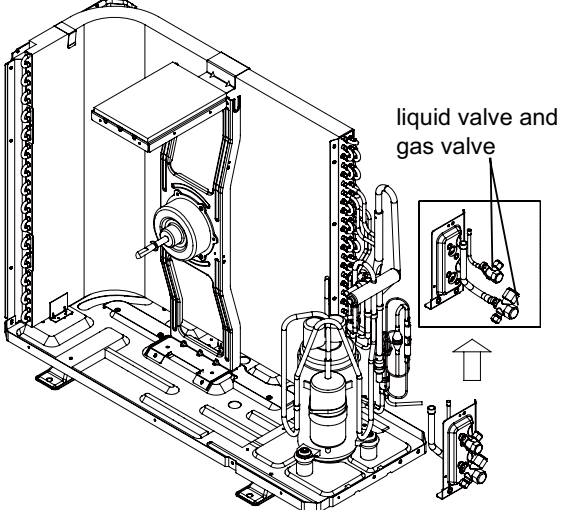
Steps	Procedure	
6.Remove 4-way valve assy	<div>Unscrew the fastening nut of the 4-way valve assy coil and remove the coil. Wrap the 4 way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way valve assy to take it out.(Note: Refrigerant shouldbe discharged firstly.) Welding process 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.</div> <div></div>	
7.Remove motor and motor support	<div>Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove themotor. Remove the 2 tapping screws fixingthe motor support. Lift motor support to re-move it.</div> <div></div>	
8.Remove the isolation sheet	<div>Remove the screws fixing the isolation sheet and then remove the isolation sheet.</div> <div></div>	

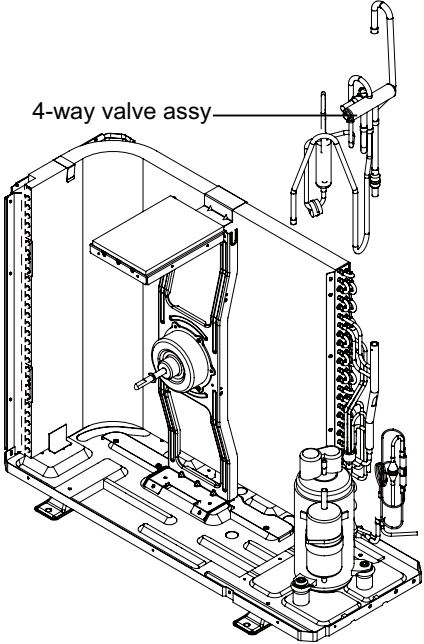
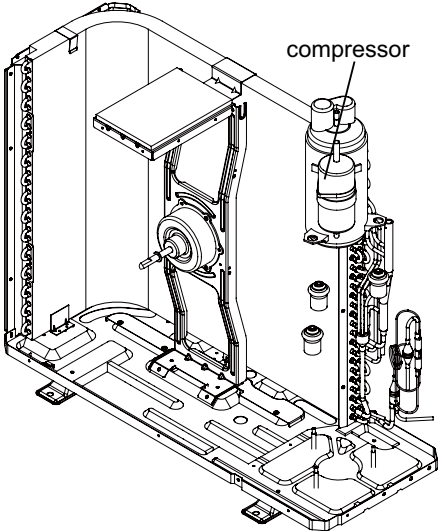
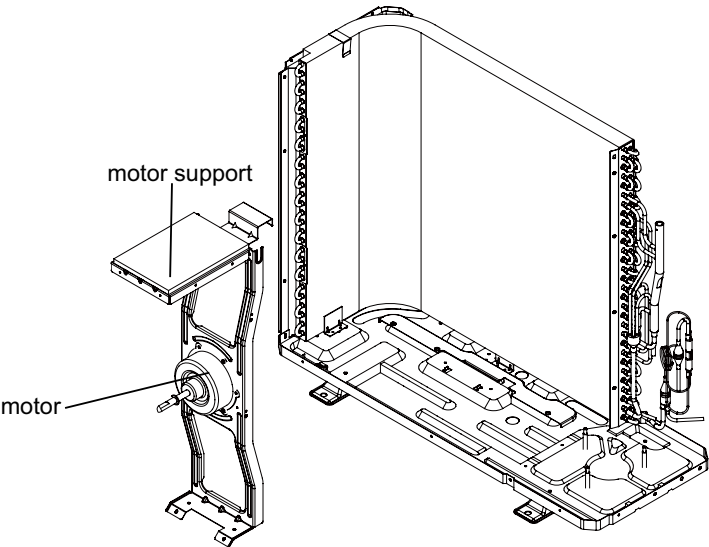
Steps	Procedure	
9.Remove the valves		
	<p>Remove the 2 screws fixing the gas valve and unsolder the welding point between the gas valve and the air-return pipe to remove the gas valve.</p> <p>Remove the 2 screws fixing the liquid valve and unsolder the welding joint connecting the liquid valve to the Y-type pipe to remove the liquid valve.</p>	
10.Remove compressor		
	<p>Remove the foot nuts on the compressor and then remove the compressor.</p>	

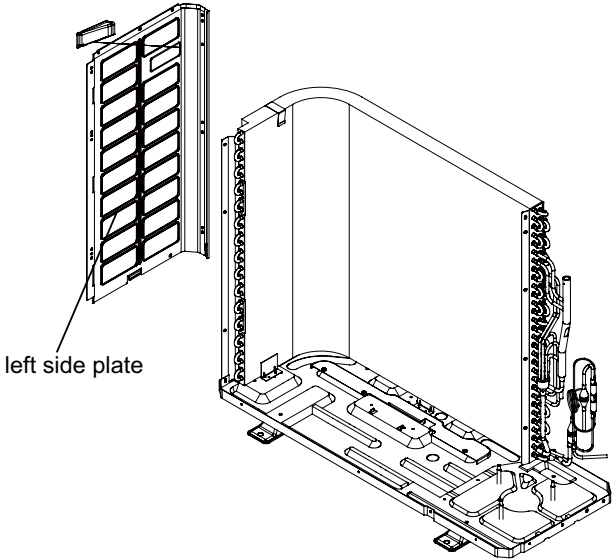
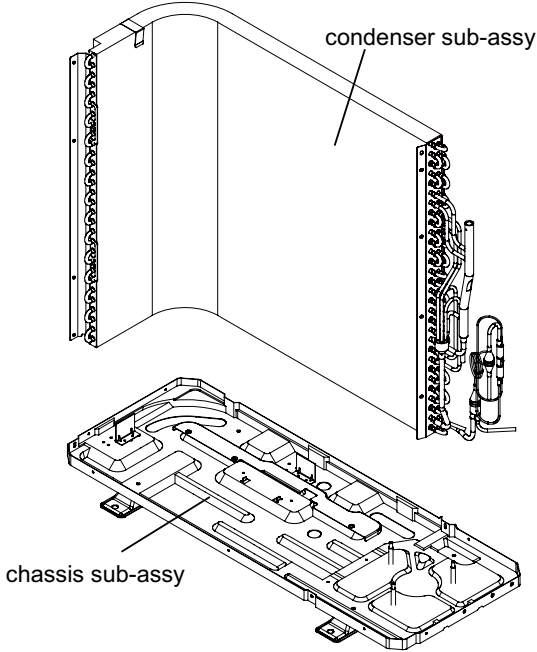
Steps		Procedure
1.Remove handle and top cover		
a	Before disassembly.	
b	Twist off the screws used for fi xing the handle, pull the handle upward to remove it.	 <p>handle</p>
c	Twist off the screws used for fi xing the top cover, pull the top cover upward to remove it.	 <p>top cover plate</p>

Steps	Procedure
2.Remove front grill	
	<p>Remove the screws connecting the front grille and the front panel. Remove the front grille.</p> 
3.Remove front panel	
	<p>Twist off the screws fi xing the panel, pull it upward,loosen the clasp on the right side, rotate it to the left and then remove the front panel.</p> 
4.Remove right side plate	
	<p>Remove the screws connecting the right side plate with the chassis,the valve support and the electric box, and then remove the right side plate.</p> 

axial flow fan

Steps	Procedure
<p>8.Remove soundproof sponge</p> <p>Remove the soundproof sponge wrapping the compressor.</p>	 <p>soundproof sponge</p>
<p>9.Remove isolation sheet</p> <p>Remove screws fixing isolation sheet and then remove the isolation sheet.</p>	 <p>isolation sheet</p>
<p>10.Remove liquid valve and gas valve</p> <p>Remove the 2 bolts fixing the gas valve and unsolder the welding joint between the gas valve and the air-return pipe to remove the gas valve. (NOTE: Discharge the refrigerant completely before unsoldering;when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature). Remove the 2 bolts fixing the liquid valve and unsolder the welding joint connecting the liquid valve to the Y-type pipe to remove the liquid valve.</p>	 <p>liquid valve and gas valve</p>

Steps	Procedure	
11.Remove 4-way valve assy	<p>unsolder the pipeline connecting the compressor and the condenser assy,and then remove the 4-way valve assy.</p>	 <p>4-way valve assy</p>
12.Remove compressor		
13.Remove motor support and motor	<p>Twist off the three foot nuts on compressor and then remove the compressor.</p>	 <p>compressor</p>
	<p>Remove the 4 tapping screws fixing the motor;disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.</p>	 <p>motor support</p> <p>motor</p>

Steps	Procedure	
14.Remove left side plate	 <p>left side plate</p>	
15.Remove chassis sub-assy and condenser sub-assy.	 <p>condenser sub-assy</p> <p>chassis sub-assy</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):

- 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

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

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

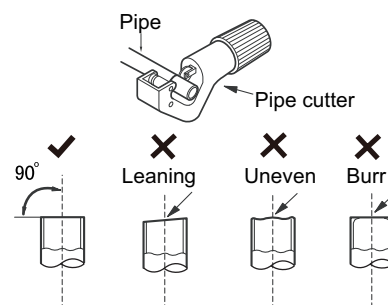
Appendix 3: Pipe Expanding Method

⚠ Note:

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

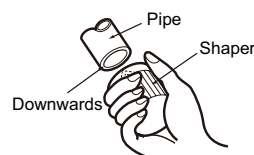
A: Cut the pipe

- 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

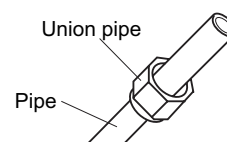
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



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.



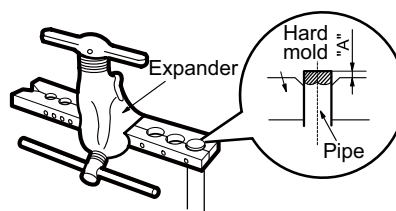
E: Expand the port

- Expand the port with expander.

⚠ Note:

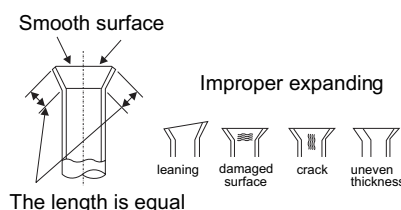
- "A" is different according to the diameter, please refer to the sheet below:

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.



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

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

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

Resistance Table of Outdoor Discharge Temperature Sensor(50K)

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

Note: The information above is for reference only.