

Service Manual

Models: GWH18MC-K3DNA2G GWH24MD-K3DNA5G
GWH18MC-K3DNA3G GWH24MD-K3DNB3G
GWH18MC-K3DNA5G GWH24MD-K3DNC9G
GWH18MC-K3DNB3G GWH24MD-K3DND3G
GWH18MC-K3DNC9G GWH24MD-K3DNE3G
GWH18MC-K3DND3G (Refrigerant:R410A)
GWH18MC-K3DNE3G
GWH24MD-K3DNA2G
GWH24MD-K3DNA3G

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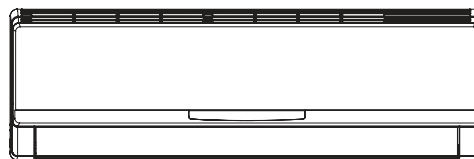
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Part I : Technical Information

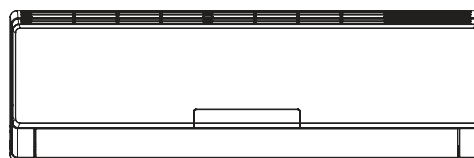
1. Summary

Indoor Unit

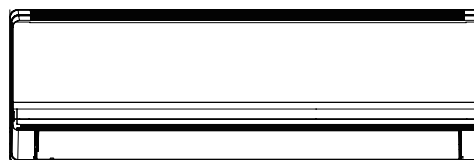
A2 panel



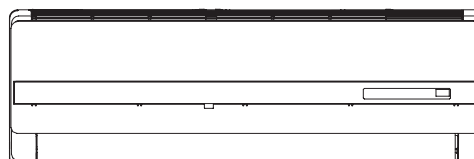
A3 panel



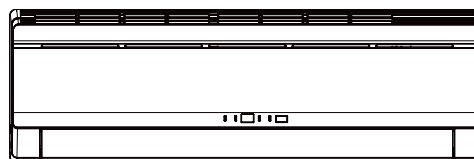
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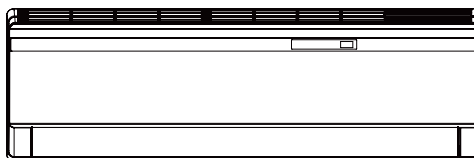
B3 panel



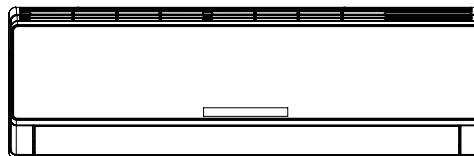
C9 panel



D3 panel

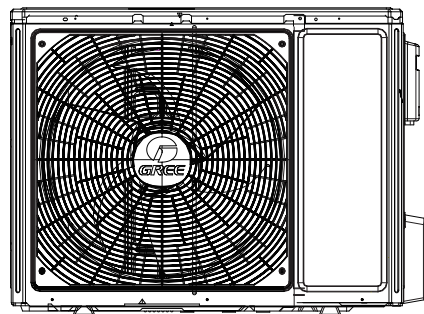


E3 panel

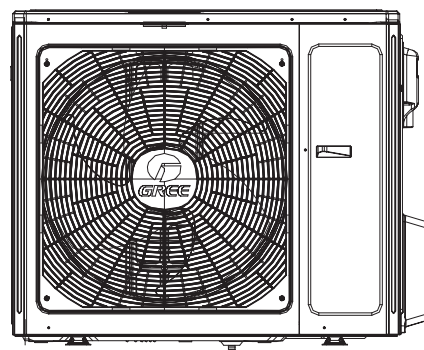


Outdoor Unit

GWH18MC-K3DNE3G/O



GWH24MD-K3DNE3G/O

**Remote Controller**

YT1F(MOTO)



2.1 Specification Sheet

			1 GW/148 MW K2BNA30
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Model			1.GWH18MC-K3DNE3G 2.GWH18MC-K3DNC9G 3.GWH18MC-K3DND3G	1.GWH18MC-K3DNA2G 2.GWH18MC-K3DNA3G 3.GWH18MC-K3DNA5G 4.GWH18MC-K3DNB3G
Product Code			1.CB404003400 2.CB145005900 3.CB405004300	1.CB181007500 2.CB171011700 3.CB180001400 4.CB163006800
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Power Supply Mode			outdoor	outdoor
Cooling Capacity(Min~Max)		W	5275(1260~6600)	5275(1260~6600)
Heating Capacity(Min~Max)		W	5800(1120~6800)	5800(1120~6800)
Cooling Power Input(Min~Max)		W	1625(380~2650)	1625(380~2650)
Heating Power Input(Min~Max)		W	1760(350~2650)	1760(350~2650)
Cooling Power Current		A	7.2	7.2
Heating Power Current		A	7.8	7.8
Rated Input		W	2650	2650
Rated Current		A	11.8	11.8
Air Flow Volume(SH/H/M/L/SL)		m³/h	850/780/650/550/-	850/780/650/550/-
Dehumidifying Volume		L/h	1.80	1.80
EER		W/W	3.25	3.25
COP		W/W	3.30	3.30
SEER		W/W	6.1	6.1
HSPF		W/W	/	/
Application Area		m²	23-34	23-34
Indoor Unit	Model of Indoor Unit		1.GWH18MC-K3DNE3G/I 2.GWH18MC-K3DNC9G/I 3.GWH18MC-K3DND3G/I	1.GWH18MC-K3DNA2G/I 2.GWH18MC-K3DNA3G/I 3.GWH18MC-K3DNA5G/I 4.GWH18MC-K3DNB3G/I
	Product Code of Indoor Unit		1.CB404N03400 2.CB145N05900 3.CB405N04300	1.CB181N07500 2.CB171N11700 3.CB180N01400 4.CB163N06800
	Fan Type		Cross-flow	Cross-flow
	Diameter Length(DXL)	mm	Φ98X710	Φ98X710
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1350/1150/1050/900/-	1350/1150/1050/900/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1420/1250/1150/1050/-	1420/1250/1150/1050/-
	Output of Fan Motor	W	20	20
	Fan Motor RLA	A	0.31	0.31
	Fan Motor Capacitor	μF	1.5	1.5
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Row-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	715X25.4X304.8	715X25.4X304.8
	Swing Motor Model		MP28VB	MP28VB
	Output of Swing Motor	W	2	2
	Fuse	A	3.15	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	48/43/40/35/-	48/43/40/35/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	58/53/50/45/-	58/53/50/45/-
	Dimension (WXHXD)	mm	940X298X200	940X298X200
	Dimension of Carton Box (LXWXH)	mm	1010X380X285	1010X380X285
	Dimension of Package (LXWXH)	mm	1013X383X300	1013X383X300
	Net Weight	kg	12	12
	Gross Weight	kg	15	15

Outdoor Unit	Model of Outdoor Unit		GWH18MC-K3DNE3G/O
	Product Code of Outdoor Unit		CB404W03400
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-B141zF030A
	Compressor Oil		68EP
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	7.2
	Compressor Power Input	W	1440
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°C	16~30
	Ambient temp (cooling)	°C	-15~43
	Ambient temp (heating)	°C	-15~24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	851X38.1X660
	Fan Motor Speed	rpm	750
	Output of Fan Motor	W	60
	Fan Motor RLA	A	/
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	m³/h	3200
	Fan Type		Axial-flow
	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)	66/-/-
	Dimension (WXHDXD)	mm	963X700X396
	Dimension of Carton Box (LXWXH)	mm	1026X455X735
	Dimension of Package (LXWXH)	mm	1029X458X750
	Net Weight	kg	45
	Gross Weight	kg	49.5
	Refrigerant		R410A
	Refrigerant Charge	kg	1.35
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ12
	Max Distance Height	m	10
	Max Distance Length	m	25
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	Model of Indoor Unit		1.GWH18MC-K3DNC9G/I 2.GWH18MC-K3DNE3G/I 3.GWH18MC-K3DNB3G/I 4.GWH18MC-K3DNA2G/I
	Product Code of Indoor Unit		1.CB145N05900 2.CB404N03401 3.CB163N06801 4.CB181N07500
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ98X710
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1350/1150/1050/900/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1420/1250/1150/1050/-
	Output of Fan Motor	W	20
	Fan Motor RLA	A	0.31
	Fan Motor Capacitor	μF	1.5
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	715X25.4X304.8
	Swing Motor Model		MP28VB
	Output of Swing Motor	W	2
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	48/43/40/35/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	58/53/50/45/-
	Dimension (WXHXD)	mm	940X298X200
	Dimension of Carton Box (LXWXH)	mm	1010X380X285
	Dimension of Package (LXWXH)	mm	1013X383X300
	Net Weight	kg	12
	Gross Weight	kg	15

Outdoor Unit	Model of Outdoor Unit		GWH18MC-K3DNE3G/O
	Product Code of Outdoor Unit		CB404W03401
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-B141zF030A
	Compressor Oil		68EP
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	7.2
	Compressor Power Input	W	1440
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°C	16~30
	Ambient temp (cooling)	°C	-15~43
	Ambient temp (heating)	°C	-20~24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	851X38.1X660
	Fan Motor Speed	rpm	750
	Output of Fan Motor	W	60
	Fan Motor RLA	A	/
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	m³/h	3200
	Fan Type		Axial-flow
	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)	66/-/-
	Dimension (WXHDXD)	mm	963X700X396
	Dimension of Carton Box (LXWXH)	mm	1026X455X735
	Dimension of Package (LXWXH)	mm	1029X458X750
	Net Weight	kg	45
	Gross Weight	kg	49.5
	Refrigerant		R410A
	Refrigerant Charge	kg	1.35
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ12
	Max Distance Height	m	10
	Max Distance Length	m	25
	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	Model of Indoor Unit		1.GWH24MD-K3DNC9G/I 2.GWH24MD-K3DNE3G/I 3.GWH24MD-K3DNA2G/I
	Product Code of Indoor Unit		1.CB145N05800 2.CB404N03800 3.CB181N07601
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ100X765
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1350/1150/950/850/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1400/1200/1000/900/-
	Output of Fan Motor	W	35
	Fan Motor RLA	A	0.31
	Fan Motor Capacitor	μF	2.5
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.5
	Coil Length (LXDXW)	mm	765X25.4X342.9
	Swing Motor Model		MP35XX
	Output of Swing Motor	W	2.5
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	51/47/42/39/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	61/57/52/49/-
	Dimension (WXHXD)	mm	1007X315X219
	Dimension of Carton Box (LXWXH)	mm	1073X395X313
	Dimension of Package (LXWXH)	mm	1076X398X328
	Net Weight	kg	15
	Gross Weight	kg	18.5

Outdoor Unit	Model of Outdoor Unit		GWH24MD-K3DNE3G/O
	Product Code of Outdoor Unit		CB404W03801
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-B141zF030A
	Compressor Oil		68EP
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	7.2
	Compressor Power Input	W	1440
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°C	16~30
	Ambient temp (cooling)	°C	-15~43
	Ambient temp (heating)	°C	-20~24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXD _{XW})	mm	984X38.1X748
	Fan Motor Speed	rpm	800
	Output of Fan Motor	W	90
	Fan Motor RLA	A	/
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	m ³ /h	4000
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ552
	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)	58/-/-
	Sound Power Level (H/M/L)	dB (A)	68/-/-
	Dimension (WXH _{XD})	mm	1000X790X427
	Dimension of Carton Box (LXWXH)	mm	1080X485X840
	Dimension of Package (LXWXH)	mm	1083X488X855
	Net Weight	kg	55
	Gross Weight	kg	60
	Refrigerant		R410A
	Refrigerant Charge	kg	1.80
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	50
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ16
	Max Distance Height	m	10
	Max Distance Length	m	25
Note: The connection pipe applies metric diameter.			

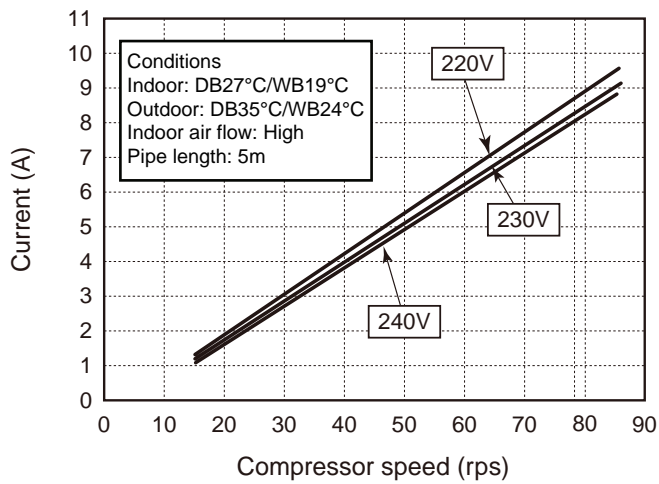
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Outdoor Unit	Model of Outdoor Unit		GWH24MD-K3DNE3G/O
	Product Code of Outdoor Unit		CB404W03800
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-B141zF030A
	Compressor Oil		68EP
	Compressor Type		Rotary
	L.R.A.	A	25
	Compressor RLA	A	7.2
	Compressor Power Input	W	1440
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°C	16~30
	Ambient temp (cooling)	°C	-15~43
	Ambient temp (heating)	°C	-15~24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	984X38.1X748
	Fan Motor Speed	rpm	800
	Output of Fan Motor	W	90
	Fan Motor RLA	A	/
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	m³/h	4000
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ552
	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)	58/-/-
	Sound Power Level (H/M/L)	dB (A)	68/-/-
	Dimension (WXHDXD)	mm	1000X790X427
	Dimension of Carton Box (LXWXH)	mm	1080X485X840
	Dimension of Package (LXWXH)	mm	1083X488X855
	Net Weight	kg	55
	Gross Weight	kg	60
	Refrigerant		R410A
	Refrigerant Charge	kg	1.80
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	50
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ16
	Max Distance Height	m	10
	Max Distance Length	m	25
Note: The connection pipe applies metric diameter.			

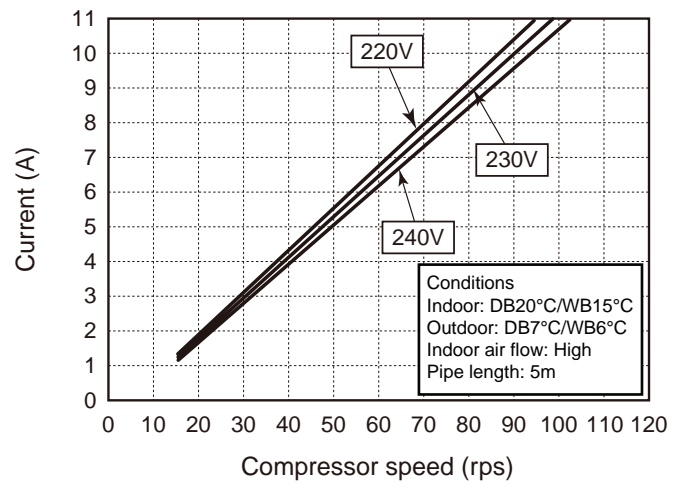
The above data is subject to change without notice; please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

Cooling



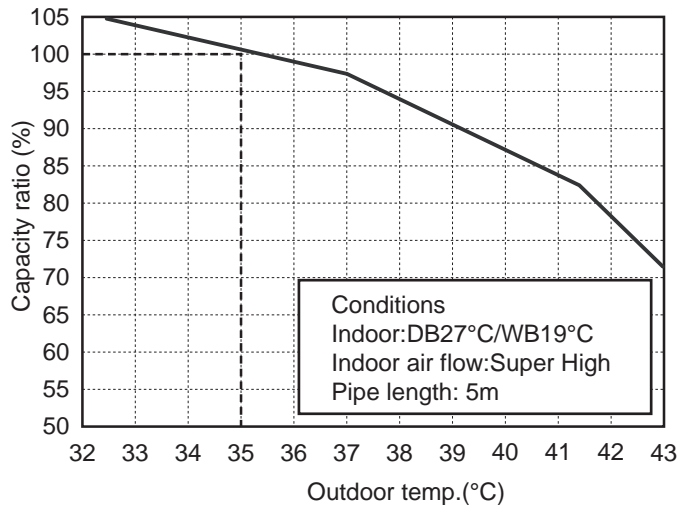
Heating



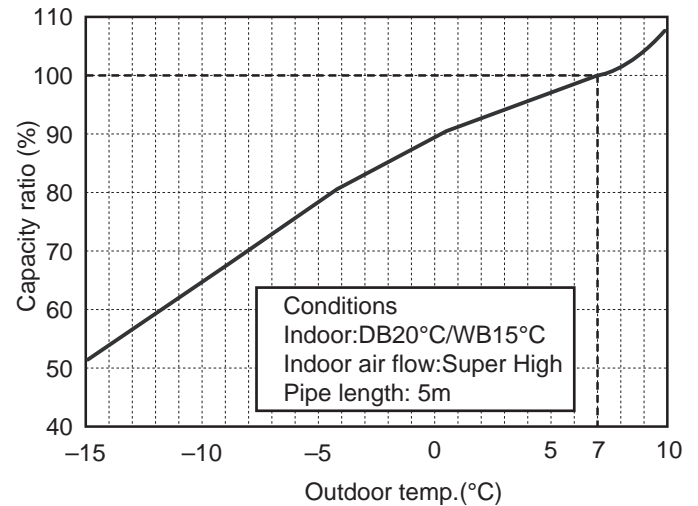
2.3 Capacity Variation Ratio According to Temperature

Heating operation ambient temperature range is -15°C~24°C

Cooling

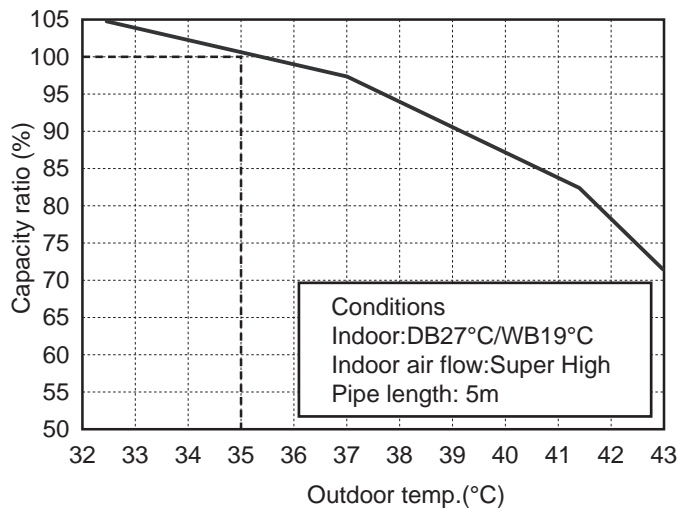


Heating

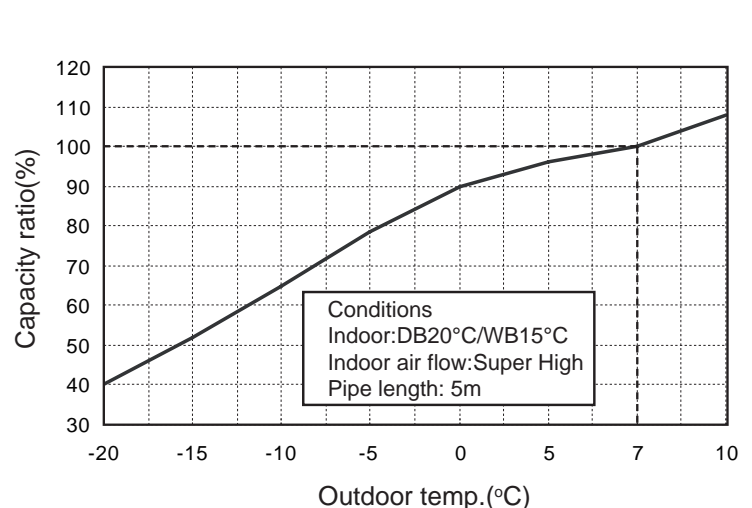


Heating operation ambient temperature range is -20°C~24°C

Cooling



Heating



2.4 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition(°C) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor frequency (Hz)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
27/19	35/24	18K	0.8 to 1.0	12 to 14	80 to 40	Super High	High	70
		24K	0.9 to 1.1	10 to 12	80 to 40	Super High	High	83

Heating:

Rated heating condition(°C) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor frequency (Hz)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
20/15	7/6	18K	2.2 to 2.4	70 to 40	1 to 5	Super High	High	70
		24K	2.5 to 2.7	70 to 40	1 to 5	Super High	High	75

Instruction:

T1: Inlet and outlet pipe temperature of evaporator

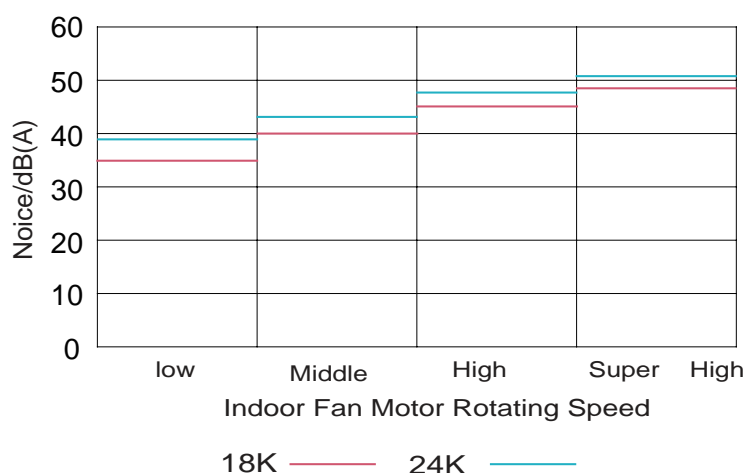
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

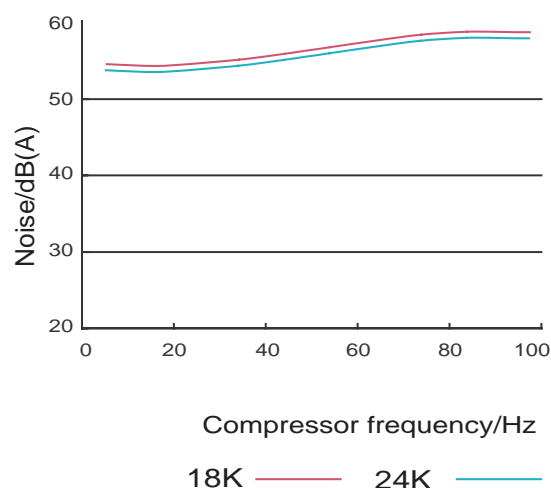
Connection pipe length: 5 m.

2.5 Noise Curve

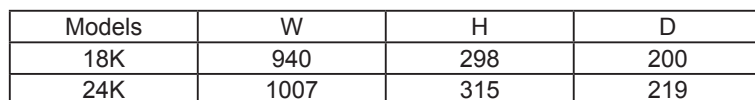
Indoor side noise



Outdoor side noise



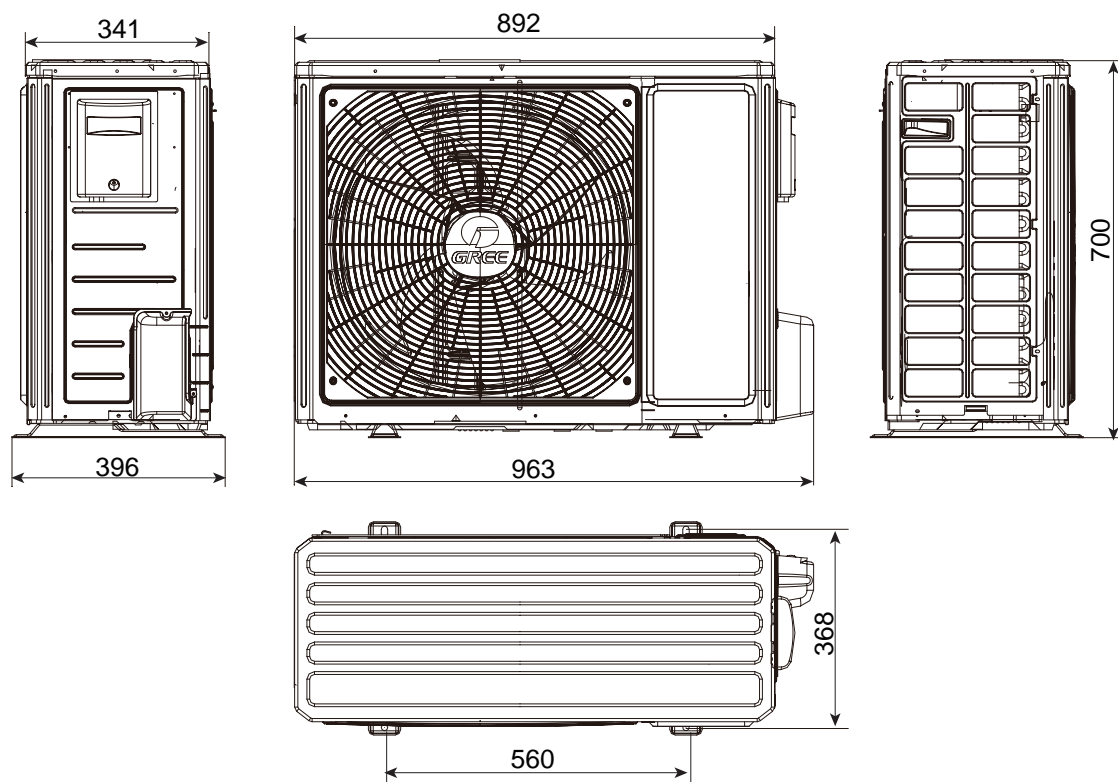
3.1 Indoor Unit



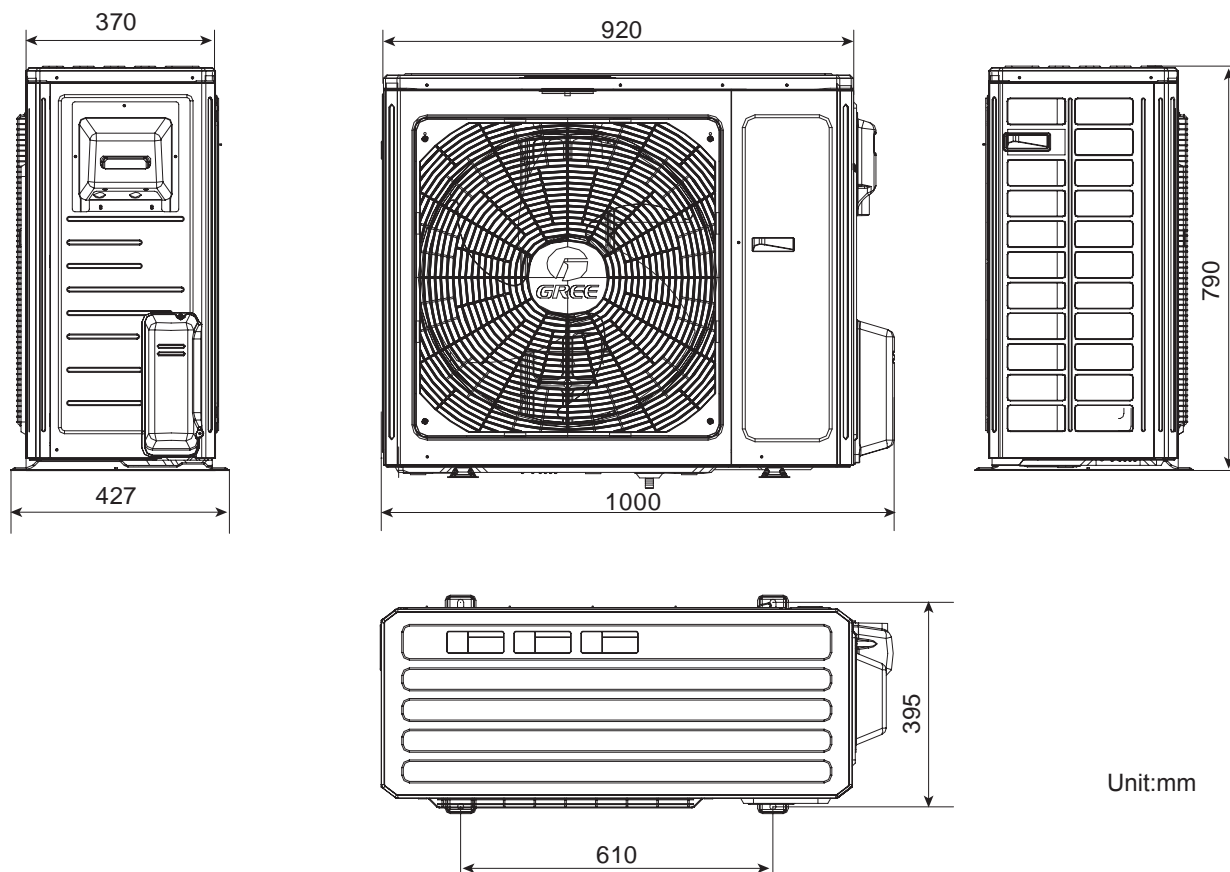
Unit:mm

3.2 Outdoor Unit

18K

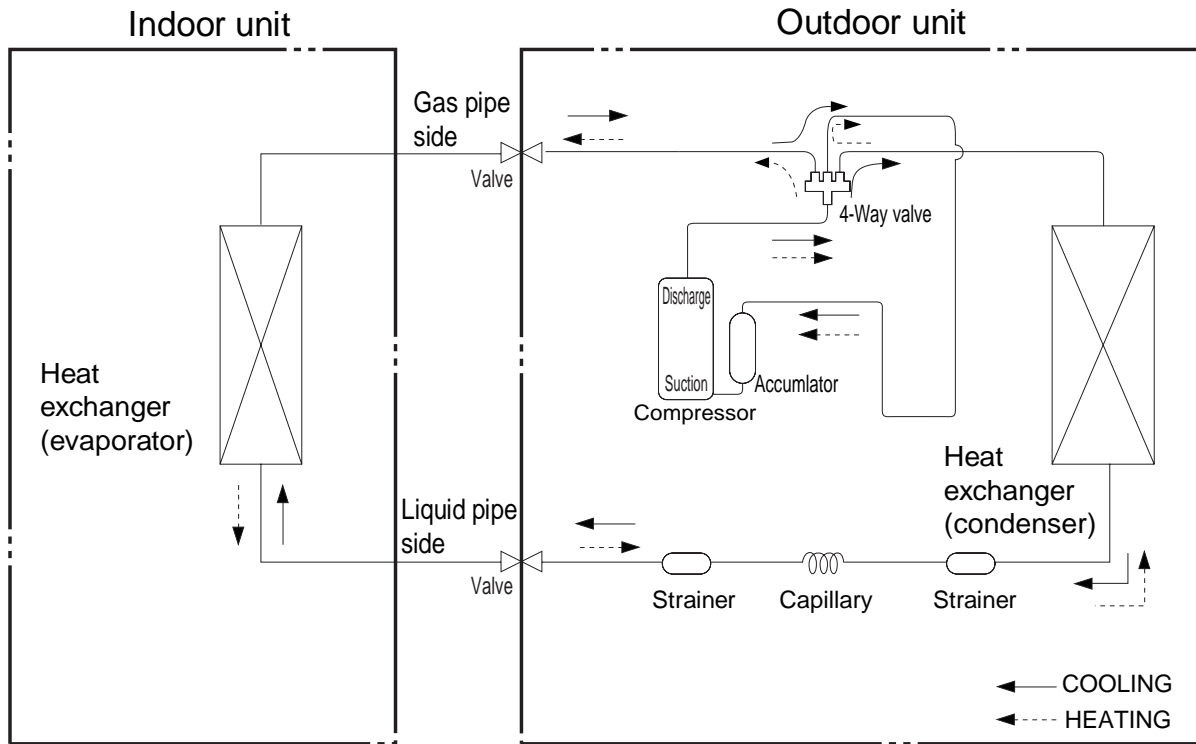


24K



Unit:mm

4. Refrigerant System Diagram



Connection pipe specification:

Liquid pipe: 1/4" (6mm)


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

Gas pipe: 5/8" (16mm)(24K)

5. Electrical Part

5.1 Wiring Diagram

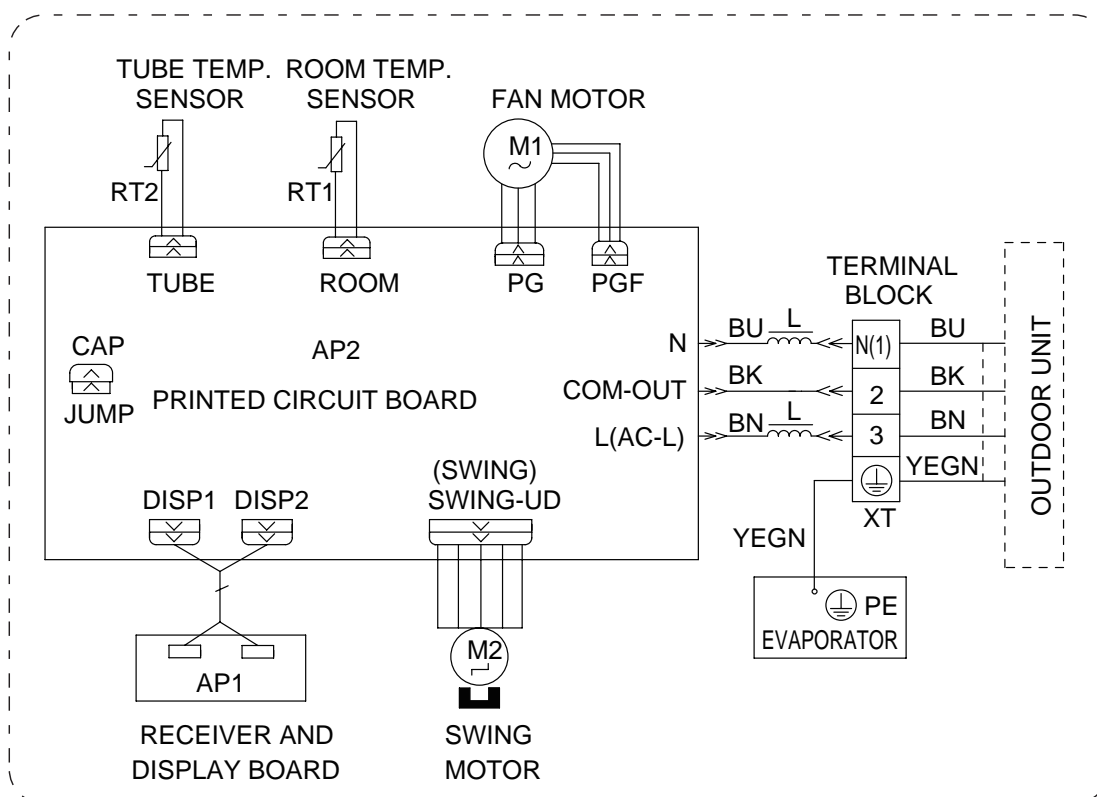
• Instruction

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

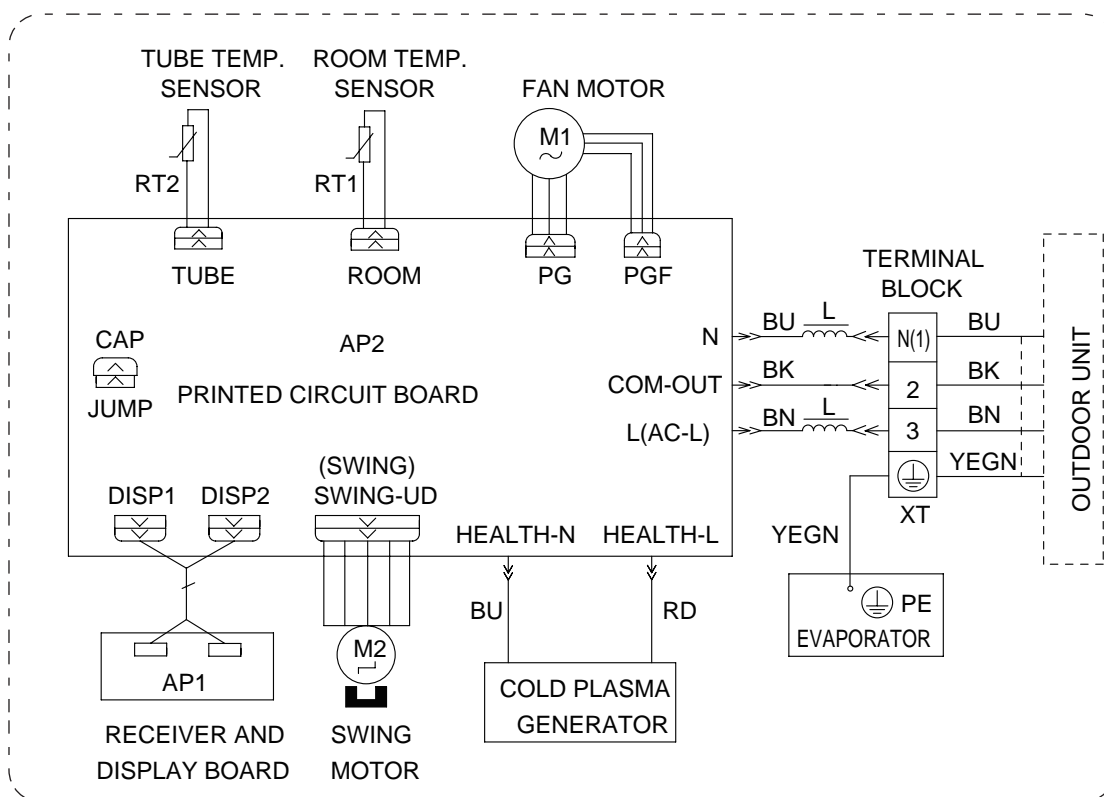
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

• Indoor Unit

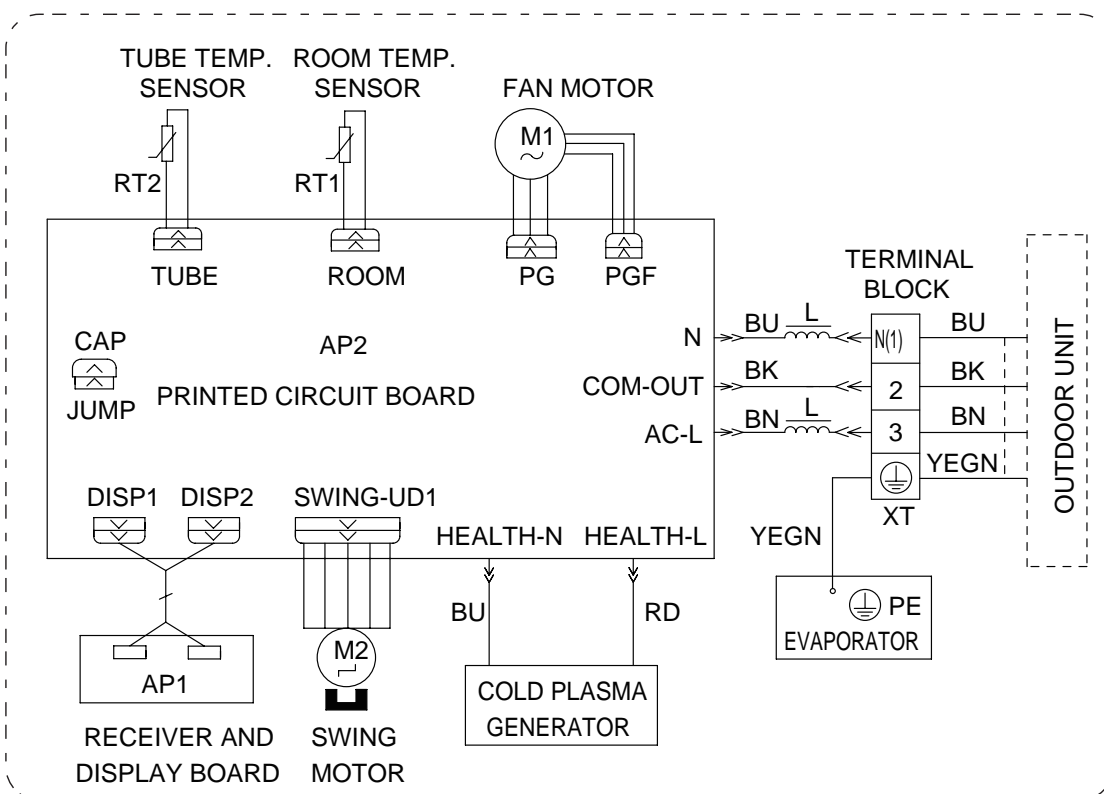
GWH18MC-K3DNE3G/I(CB404N03400) GWH18MC-K3DNA2G/I GWH18MC-K3DNA3G/I GWH18MC-K3DNA5G/I
GWH18MC-K3DNB3G/I(CB163N06800) GWH18MC-K3DNC9G/I GWH18MC-K3DND3G/I



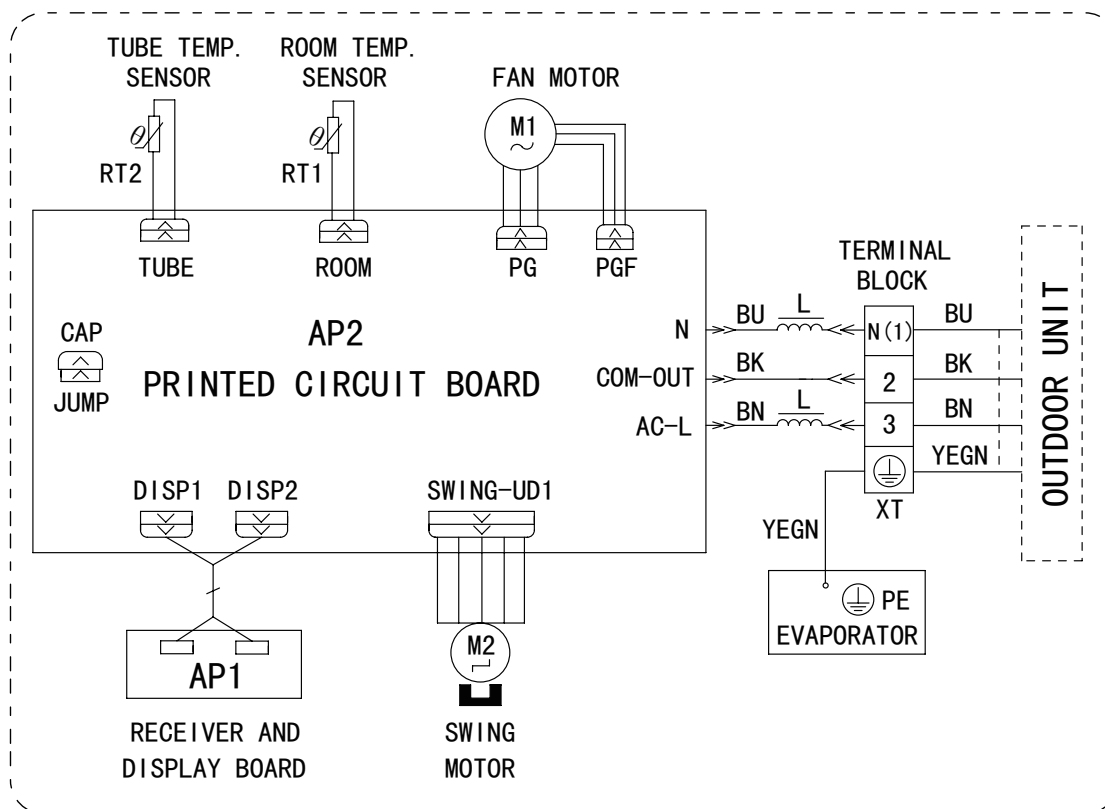
GWH18MC-K3DNE3G/I(CB404N03401) GWH18MC-K3DNB3G/I(CB163N06801)



GWH24MD-K3DNE3G/I GWH24MD-K3DNA5G/I

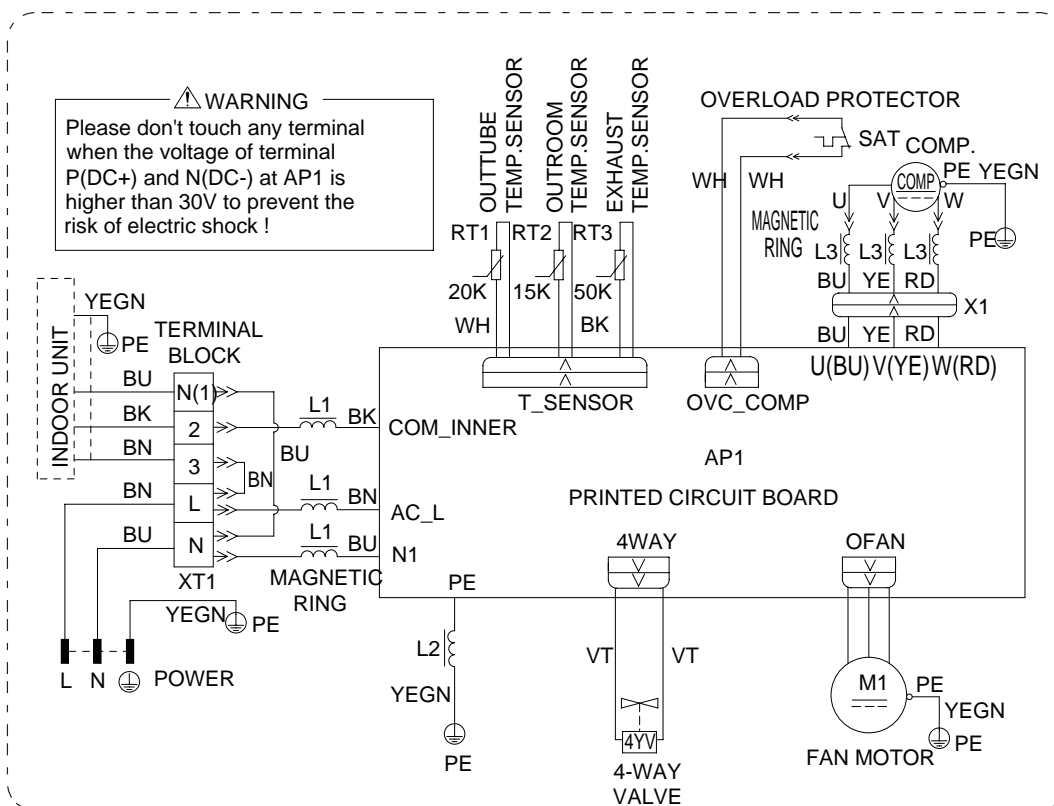


GWH24MD-K3DNA2G/I GWH24MD-K3DNA3G/I GWH24MD-K3DNB3G/I GWH24MD-K3DNC9G/I GWH24MD-K3DND3G/I

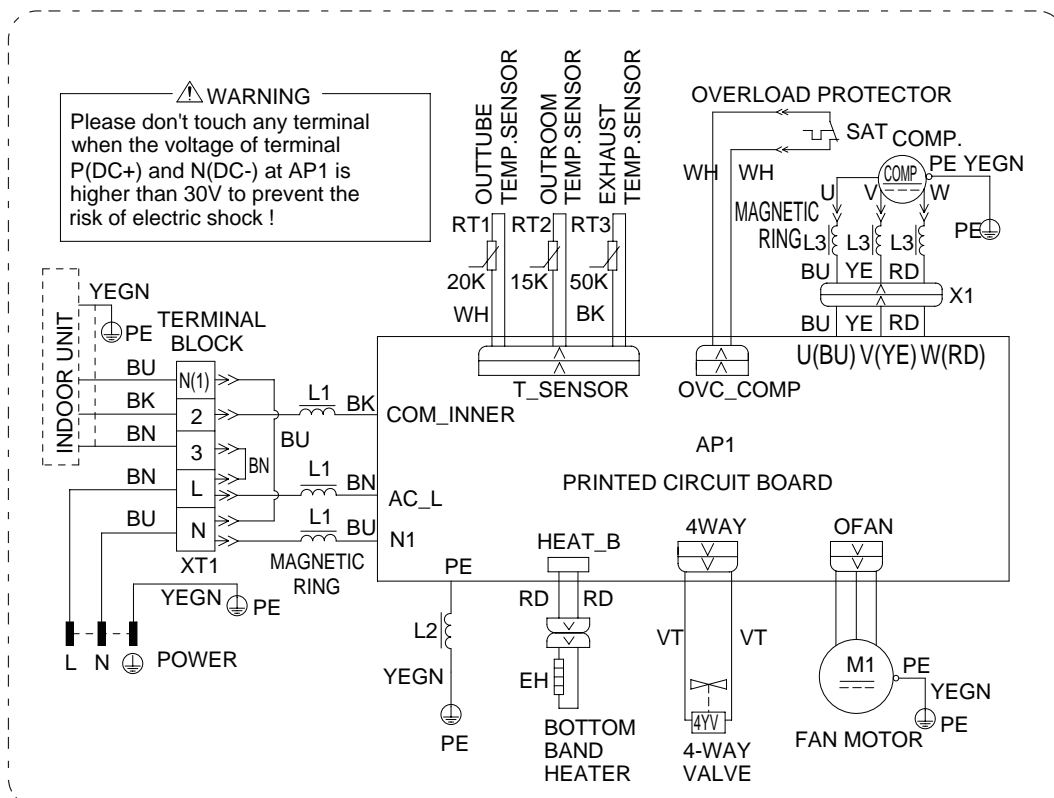


- **Outdoor Unit**

GWH18MC-K3DNE3G/O(CB404W03400) GWH24MD-K3DNE3G/O (CB404W03800)



GWH18MC-K3DNE3G/O(CB404W03401) GWH24MD-K3DNE3G/O(CB404W03801)

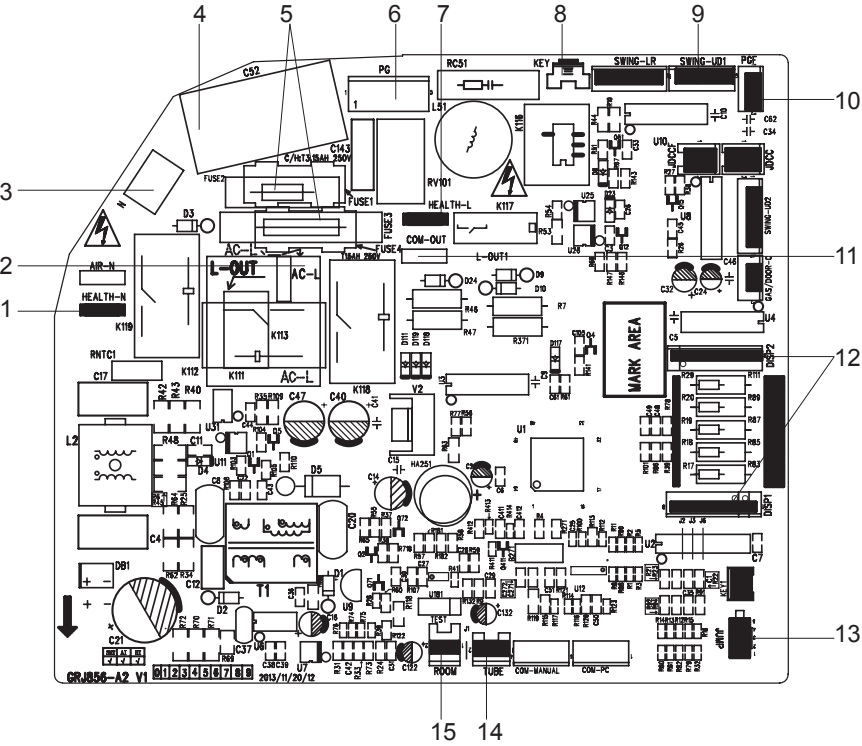


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

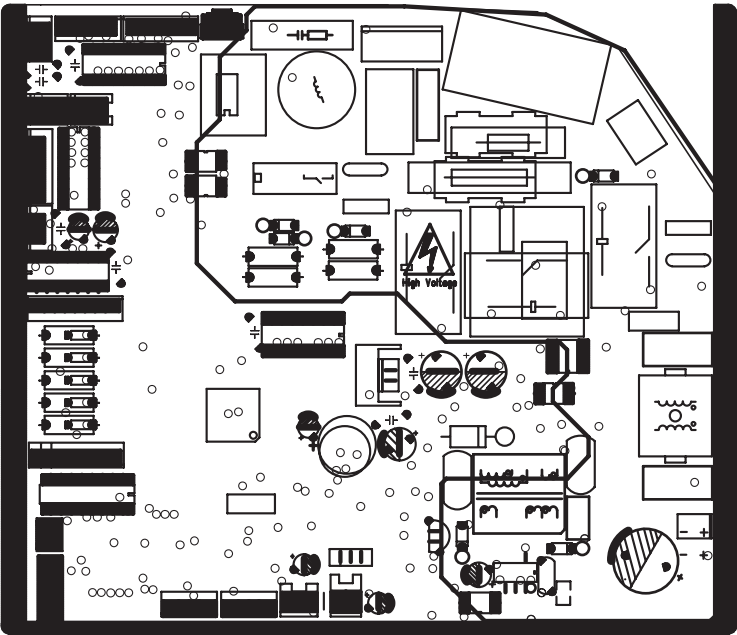
Indoor Unit

• Top view



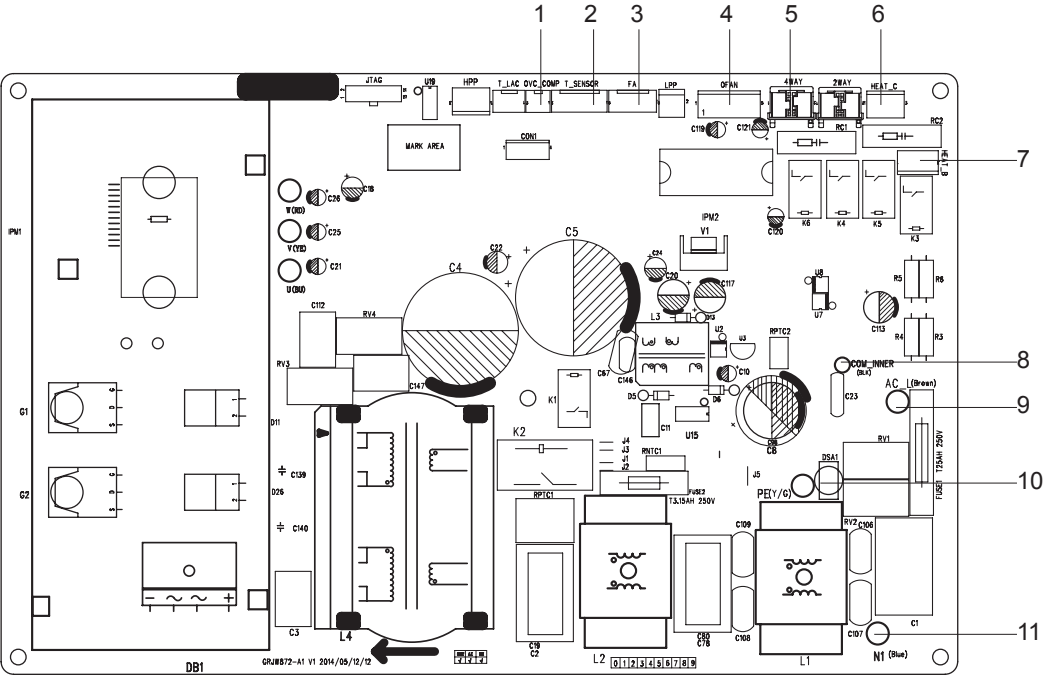
No.	Name
1	Interface of health function neutral wire
2	Interface of live wire
3	Interface of neutral wire
4	Capacitor of fan motor
5	Fuse
6	Interface of PG motor
7	Interface of health function live wire
8	Auto button
9	Up & down swing
10	Feedback interface of PG motor
11	Interface of IDU and ODU communication
12	Display interface
13	Jumper cap
14	Interface of tube temperature sensor
15	Interface of ambient temperature sensor

• Bottom view



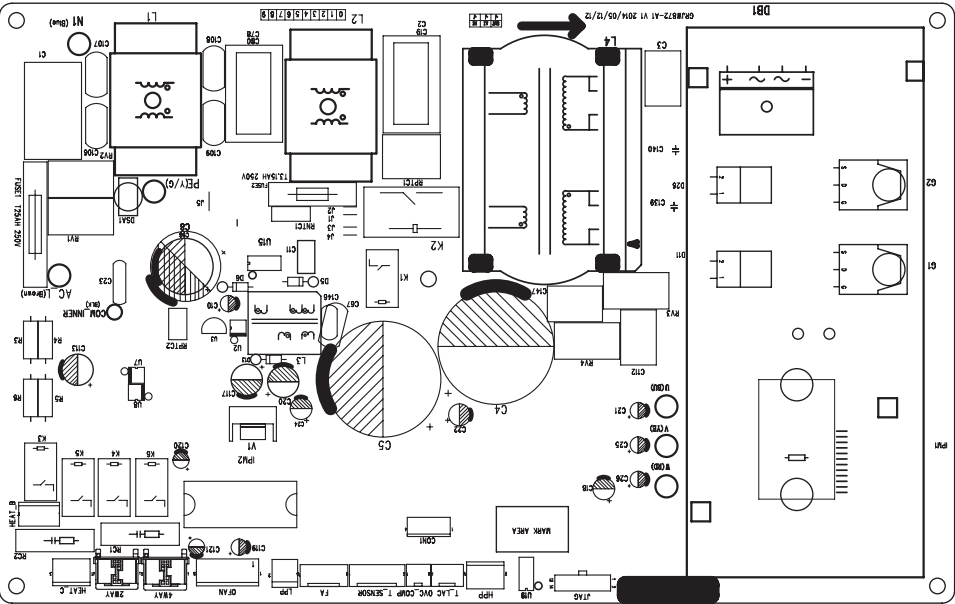
Outdoor Unit

• Top view



No.	Name
1	Terminal of compressor overload protection
2	Terminal of temperature sensor
3	Terminal of electronic expansion valve
4	Terminal of outdoor fan
5	Terminal of 4-way valve
6	Terminal of compressorelectric heating
7	Terminal of chassis electric heating
8	Terminal of indoor unit and outdoor unit communication
9	Power supply live wire
10	Earthing wire
11	Power supply neutral wire

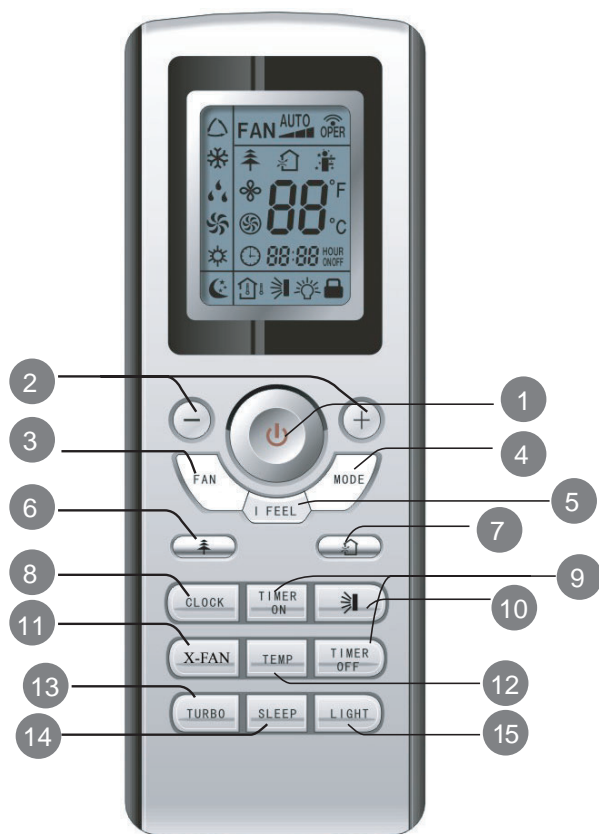
• Bottom view



6. Function and Control

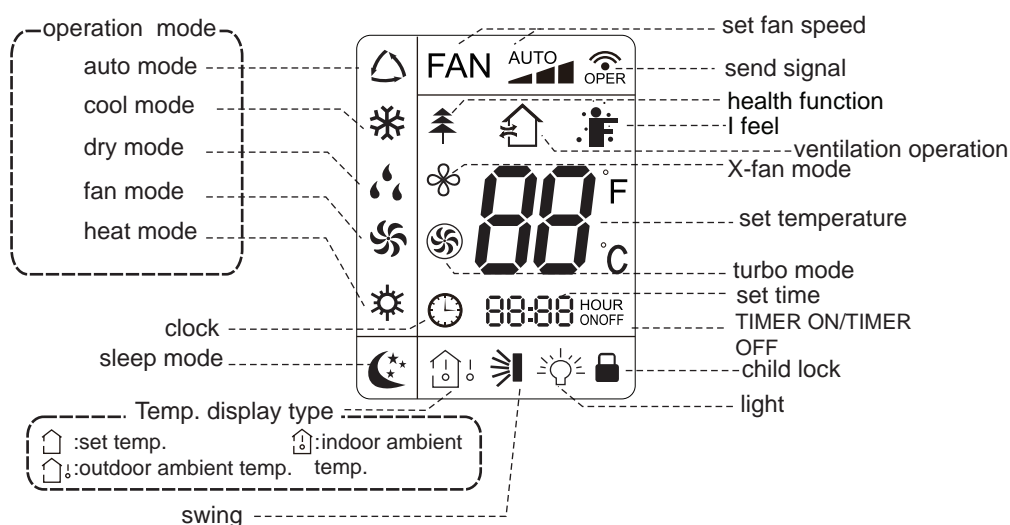
6.1 Remote Controller Introduction

Buttons on Remote Controller



- 1 ON/OFF button
- 2 +/- button
- 3 FAN button
- 4 MODE button
- 5 I FEEL button
- 6 button
- 7 button
- 8 CLOCK button
- 9 TIMER ON/TIMER OFF button
- 10 button
- 11 X-FAN button
(Note: X-FAN is the same with BLOW)
- 12 TEMP button
- 13 TURBO button
- 14 SLEEP button
- 15 LIGHT button

Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

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




1. ON/OFF button

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

2. "+" or "-" button

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









3. FAN button

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

4. MODE button

Press this button to select your required operation mode.



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

Note:

- For preventing cold air, after starting up heating mode, indoor unit will delay 1~5 minutes to blow air (actual delay time is depend on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C(61~86 °F) ; Fan speed: auto, low speed, medium speed, high speed.

5. I FEEL button

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.



6. button

Press this button to set HEALTH function ON or OFF. After the unit is turned on, it defaults to HEALTH function ON.

7. button (Only available for some models)

Press this button to select AIR function ON or OFF.

8. CLOCK button



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

Note:



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

9. TIMER ON/TIMER OFF button

● TIMER ON button

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

● TIMER OFF button

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

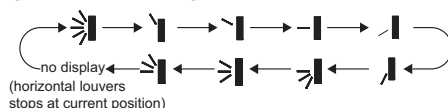
Note:











- Under on and off status, you can set TIMER OFF or TIMER on simultaneously.
- Before setting TIMER ON or TIMER OFF, please adjust the clock time.

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

10. button

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





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

Note:

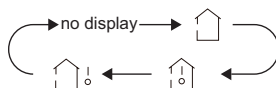
", ,  may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.

11. X-FAN button


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

12. TEMP button

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




When selecting " or no display with remote controller, temperature indicator on indoor unit displays set temperature;

When selecting " with remote controller, temperature indicator on indoor unit displays indoor ambient temperature;

When selecting " with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.



Note:

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



13. TURBO button

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

14. SLEEP button


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

15. LIGHT button

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

Function Introduction for Combination Buttons


Child lock function:

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

Temperature display switchover function:

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

Operation Guide

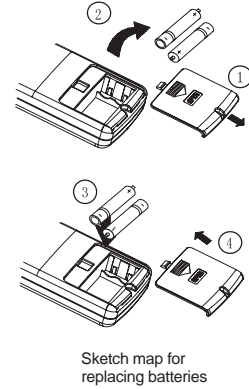
- After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
- Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN, HEAT.
- Press "+" or "-" button to set your required temperature. (Temperature can't be adjusted under auto mode).
-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

Replacement of Batteries in Remote Controller

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

Note:

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



6.2 Brief Description of Modes and Functions

Indoor Unit

1. Basic function of system

(1) Cooling mode

1. Under this mode, fan motor, swing will work under setting status, the temp. range is 16-30°C (61-86 Fahrenheit scale)
2. Outdoor unit malfunction or unit stop running, indoor unit will keep original running status, malfunction displayed.
3. When 0 (Tset-Tamb.), if indoor fan motor is high speed, that the fan motor is running in middle speed, the middle speed or low speed will be maintained; (this condition should be executed when compressor starts up); the super high speed will not rotate; When (Tamb-Tset) ≥ 1°C, the fan will return to the setting fan speed.

(2) Dehumidifying mode

1. Under this mode, fan motor will run at low speed, swing will work at setting status, setting temp. range is 16-30°C (61-86 Fahrenheit scale)
2. Outdoor unit malfunction or protection, unit will stop, indoor unit will keep original running status, malfunction displayed.

(3) Fan mode

Under this mode, indoor fan motor could be set at high, middle, low or auto speed, compressor, outdoor unit and valve will stop to run. Under this mode, temp. range should be 16-30°C (61-86 Fahrenheit scale)

(4) Heating mode

1. Under this mode, temp. range should be 16-30°C (61-86 Fahrenheit scale)
2. Working condition and procedure of heating mode: When unit turn on and enter into heating mode, indoor unit enter into anti-cool wind mode, when unit is stop running, and indoor fan motor turns on, blowing heat will act.
3. Protection function, under heating mode, compressor will stop to run due to malfunction happened, indoor fan motor will blow surplus heat.
4. Defrosting control: When receiving the defrosting signal from outdoor unit, display will Heating indicator on indoor display is off for 0.5s and then on for 10s during blinking, 10s later, indoor fan motor will stop to run.
5. Anti-cool wind function
6. Blow heat air function
 - a. If heating temp. meets the compressor stop running condition, compressors, outdoor fan motor will stop to run, the upper and lower guide louver will rotate to horizontal position L, indoor fan motor run at setting fan speed for 60s, then the indoor fan motor will stop to run.
 - b. Due to PG motor block running, the air guide board will keep the position when it stopping. (under each mode), other malfunction unit will stop to run, the upper and lower air guide louver will rotate to horizontal position L, indoor fan unit will run at setting fan speed and run for 60s, indoor fan unit will stop to run.

(5) Auto mode:

1. When Tamb ≥ 26, select the cooling mode, at this time, the setting temp. is 25°C (77 Fahrenheit scale)
2. Cooling and heating units: T_{amb} ≤ 22°C, will run at heating mode, at this time, the setting temp. is 20 (68 Fahrenheit scale)
3. Cooling only unit: When T_{amb} ≤ 22°C, it will run at Fan mode, the setting temp. is 25°C (77 Fahrenheit scale)
4. When 23°C ≤ T_{indoor amb.} ≤ 25°C, firstly enter into auto mode and run at auto fan speed, other modes will run at auto mode, will keep the previous running mode. (When entering into Dehumidifying mode, it will run at auto fan speed)

(6) Auto fan speed control mode

2. Display state of indoor indicators

(1) State of indoor display board

1. When the unit is powered on, all patterns will be displayed and then only power indicator is on. When the unit is turned on with a remote controller, the operating indicator is on and operation mode which is set currently is displayed.
2. In defrosting mode, heating indicator on indoor display is off for 0.5s and then on for 10s during blinking.
3. Set temperature is displayed on "Double 8".

●Display of operation patterns and mode patterns

When the unit is powered on, all patterns will be displayed and the standby operation indicator will become red. When the unit is turned on through a remote controller, the operation indicator is light. At the same time, operating mode patterns (mode indicators include cooling, heating and dehumidification modes) set currently are displayed, and dynamic display patterns of wind speed are displayed. If the light button is switched off, all display will be turned off.

●Temperature display control mode of separated air conditioner

- ① When user sets the remote controller at set temperature display, currently set temperature will be displayed.
- ② Only when remote signals are converted from other display states into indoor ambient temperature display state, the remote controller will display indoor ambient temperature for 3 seconds and then return to set temperature display.
- ③ Only when remote signals are converted from other display states into outdoor ambient temperature display state, the remote controller will display outdoor ambient temperature for 3 seconds and then return to set temperature display.
- ④ If the controller is lack of outdoor display functions, as the signal is received, set temperature will be displayed.
- ⑤ When the unit is turned off, temperature display will be compulsively set at given temperature by the controller. When the unit is turned on, patterns as set by remote signals will be displayed.
- ⑥ If user does not set up temperature display state, given temperature will be displayed.

(2) Failure display of indoor unit

1. Requirements for failure display

When multiple failures appear at the same time, failure protection codes shall be displayed alternatively.

- ① Hardware failures shall be displayed immediately, referring to requirements in "Failure State Display Table";
- ② Operation states shall be displayed immediately, referring to requirements in "Failure State Display Table";
- ③ Other failures shall be displayed 200s after the compressor stops, referring to requirements in "Failure State Display Table". (Note: in the case that the unit is switched off with the remote controller, or the compressor is switched on again, failure display waiting time (200s) shall be cleared.)
- ④ Frequency limitation and reduction states shall be displayed by means of remote calling.

2. Failure display control

Indicator failure display shall be kept synchronous with Double 8 failure display, that is, during indicator blinking, failure code corresponding to such indicator shall be displayed on Double 8.

3. Method of remote calling of failure display

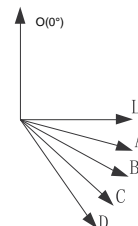
Entering the failure remote calling mode: push the light button six times within 3s to call out relevant failure protection code; Quit the failure remote calling mode: push the light button six times within 3s or call out failure display to enter it for 5 minutes and then quit.

3. Other control targets

(1) Up and down wind blow functions

When the unit is powered on, the up and down wind blow motor will turn a wind deflector anti-clockwise to Position 0 to shut down the air outlet. When the unit is switched on and wind blow function is not preset, under the heating mode, up and down wind blades will turn clockwise to position D; and under other modes, the up and down wind blades will turn clockwise to position L. If wind blow function is set at the same time as the unit is switched on, the wind blades will swing between position L and D. The wind blades can be kept in seven states: position L, position A, position B, position C, position D, swing between position L and D, stop at one position from L to D. When the unit is turned off, the wind deflector will be closed up to position 0. Wind blow action is effective only when wind blow commands are set and the indoor unit is running.

Note: When the wind blades are set at position L to B, position A to C, or position B to D through remote setting, the wind deflector will swing between position L and D. L—A—B—C—D.



(2) Buzzer

When the controller is powered on, signals from a remote controller are received, or the auto button is pushed, a buzzer will give out prompt tone.

(3) Auto button

When the button is pushed, the unit will operate in auto mode and the indoor fan will run in auto state. When the indoor fan is running, the wind blow motor will work. When the button is pushed again, the unit will be switched off. At the same time as the button is pushed, the whole unit will be powered on and enter into fast test mode; when the unit is powered on and detects for continuous 20s (such time shall not be fast tested) that the auto button is pushed, and if the unit is currently at fast test state, the unit will quit the fast test state.

(4) Sleep function

In this mode, the unit will automatically select appropriate sleep curve to operate according to different set temperature.

1. If sleep function is set in cooling, the system will increase set temperature automatically for operation in a certain degree.
2. If sleep function is set in heating mode, the system will decrease set temperature automatically for operation in a certain degree.

(5) Timing function

The main board integrates general timing and moment timing. Such two timing functions can be selected through a remote controller on which different functions are arranged.

1. General timing:

Timing start: timing start can be set when the unit is off. When preset time is reached, the controller will operate in a preset mode. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours. **Timing stop:** timing stop can be set when the unit is on. When preset time is reached, the system will be turned off. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

2. Moment timing

Timing start: if timing start is set when the system is at operation state, the system will continue to operate; if timing start is set when the system is at stop, as the preset time is reached, the system will start to run in preset mode. **Timing stop:** if timing stop is set when the system is at stop state, the system will keep standby; if timing stop is set when the system is in operation, as the preset time is reached, the system will stop running.

Timing change:

When the system is in timing mode, start and stop can be set through the On/Off button on the remote controller; or timing time can be reset and the system will operate according to the latest setting. When the system is in operation and both timing start and stop are set, the system will stay at currently set operation state. When preset timing stop time is reached, the system will stop working. When the system is at stop state and both timing start and stop are set, the system will keep at stop state. When preset timing start time is reached, the system will start operation. From then on, the system will operate in preset mode at a preset start time and stop at a preset stop time everyday. If timing stop time is set as the same as timing start time, a stop command will be executed.

(6) Dry and mildew proof function

Dry and mildew proof function can be set in cooling and dehumidification modes.

(7) Control of indoor fan

Indoor fan can be set at four levels, super-high, high, middle and low, with a remote controller. When one level is set, the fan will thus operate at such level. The fan can also be set at auto state.

(8) Power-failure memory function

What will be memorized includes modes, up and down wind blow, light, preset temperature, preset wind speed, general timing (no memory for moment timing), and Fahrenheit /Celsius degree. When the unit is powered on again after power failure, operation continues according to memorized content. If timing is not set by the last remote control command, the system will memorize the last remote control command and operate in the mode specified in the last remote control command. If timing is set by the last remote control command and power failure happens before the preset time, the system, as powered on again, will memorize the timing function set by the last remote control command. Timing will be re-counted from the time at which the system is powered again. If timing is set by the last remote control command and timing of start or stop is reached before power failure, the system, as powered on again, will memorize operation state before power failure and will not perform timing action. Moment timing is out the range of memory.

(9) Locked Protection of PG Motor

When starting up the fans, if the motor has run at a lower speed continuously for a period, for preventing automatic protection of the motor, stop running, and display the locked operation; if the machine is running at present, the code of the locked fault---H6 of double-eight digital tubes will be displayed; if the machine is shut down at present, the information of the locked fault will not be displayed.

(10) Super Power Function

In cooling and heating modes (automatic, dehumidifying and air-supplying modes are without strong power), press the button of Super Power, the wind speed on the remote controller is displayed as super-high air flow, and the inner fans are also turned to super-high air flow;

(11) Health Function

When the inner fans are running, the remote controller is set at the Health function at this time (if there is no Health button on the remote controller, the Health On order is defaulted), then start the Health function device.

(12) Fault Detection of Thermo-bulb

1. Indoor Environment Thermo-bulb:

Detect the fault of thermo-bulb at any time;

2. Indoor Pipe Temperature Thermo-bulb:

During the defrosting period, the fault of the thermo-bulb will be not detected, which shall be detected in 5 minutes after defrosting is completed; the fault of the thermo-bulb will be detected at other times;

3. Protecting Treatments of Thermo-bulb:

When the thermobulb is detected to be short-circuited continuously for 5 seconds: It is regarded that the temperature detected by the thermo-bulb is over-high (or unlimited), then the whole machine will exert corresponding safety stops according to the over-high temperature sensed by the thermo-bulb, and display corresponding temperature safety stops and faults of the thermo-bulb simultaneously.

When the thermo-bulb is detected in open circuit continuously for 5 seconds: stop the machine in protection, directly display corresponding faults of the thermo-bulb.

(13) Refrigerant recycling function (applicable when changing installation location or in maintenance)

1. Enter refrigerant recycling function

Within 5min after energizing (unit ON or OFF status is ok), continuously press LIGHT button for 3 times within 3s to enter refrigerant recycling mode; Fo is displayed and refrigerant recycling function is started. At this moment, the maintenance people closes liquid valve. After 5min, stick the thimble of maintenance valve with a tool. If there is no refrigerant spraying out, close the gas valve immediately and then turn off the unit to remove the connection pipe.

2. Exit refrigerant recycling function

After entering refrigerant recycling mode, when receive any remote control signal or enter refrigerant recycling mode for 25min, the unit will exit refrigerant recycling mode automatically. If the unit is in standby mode before refrigerant recycling, it will be still in standby mode after finishing refrigerant recycling; if the unit is in ON status before refrigerant recycling, it will still run in original operation mode.

(14) Compulsive Defrosting Function

1. Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 16°C. Press “+, -, +, -, +,-” button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator on indoor unit will ON 10s and OFF 0.5s successively. (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed.)

2. Exit compulsory defrosting mode

After compulsory defrosting is started up, the complete unit will exit defrosting operation according to the actual defrosting result, and the complete unit will resume normal heating operation.

Outdoor Units

1. Input Parameter Compensation and Calibration

(1) Check the ambient temperature compensation function Indoor ambient temperature compensation function.

a. In cooling mode, the indoor ambient temperature participating in computing control = (T_{indoor ambient temperature} - ∠ T_{cooling indoor ambient temperature compensation})

b. In heating mode, the indoor ambient temperature participating in computing control = (T_{indoor ambient temperature} - ∠ T_{heating indoor ambient temperature compensation})

(2) Check effective judgment controls of parameters

Effective judgment function of the outdoor exhaust temperature thermo-bulb When conditions a and b are satisfied, the outdoor exhaust temperature thermo-bulb is judged not to be connected into place, the mainboard of outer units will display failure of the outdoor exhaust temperature thermo-bulb (not connected into place), stop the machine for repairing, and resume the machine by remote controls of ON/OFF.

a. Judgment of exhaust detection temperature change:

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and the rising value T_{exhaust} (T_{exhaust} (after start-up for 10 minutes) - T_{exhaust} (before start-up)) $< 2^\circ\text{C}$, the outdoor exhaust temperature thermo-bulb can be judged not to be connected into place (judging once when the power is on the first time).

b. Comparative judgment of exhaust detection temperature and condenser detection temperature (T_{pipe temperature} = T_{outdoor pipe temperature in cooling mode}, T_{pipe temperature} = T_{indoor pipe temperature in heating mode}): After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and T_{pipe temperature} $\geq (\text{T}_{\text{exhaust}} + 3)$, the outdoor exhaust temperature thermobulb can be judged not to be connected into place (judging once when power is on the first time).

2. Basic Functions

(1) Cooling Mode

1. Conditions and processes of cooling operation:

(1) If the compressor is shut down, and $[T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \angle T_{\text{cooling indoor ambient temperature compensation}})] \leq 0.5^\circ\text{C}$, start up the machine for cooling, the cooling operation will start;

(2) During operations of cooling, if $0^\circ\text{C} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \angle T_{\text{cooling indoor ambient temperature compensation}})] < 2^\circ\text{C}$, the cooling operation will be still running;

(3) During operations of cooling, if $2^\circ\text{C} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \angle T_{\text{cooling indoor ambient temperature compensation}})]$, the cooling operation will stop after reaching the temperature point.

2. Temperature setting range

- (1) If $T_{\text{outdoor ambient temperature}} \geq [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: 16~30°C (Cooling at room temperature);
- (2) If $T_{\text{outdoor ambient temperature}} < [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: 25~30°C (Cooling at low temperature), that is, the minimum setting temperature for outer units judgment is 25°C .

(2) Dehumidifying Mode

1. Conditions and processes of dehumidifying operations: Same as the cooling mode;
2. The temperature setting range is: 16~30°C ;

(3) Air-supplying Mode

1. The compressor, outdoor fans and four-way valves are switched off;
2. The temperature setting range is: 16~30°C.

(4) Heating Mode

1. Conditions and processes of heating operations: ($T_{\text{indoor ambient temperature}}$ is the actual detection temperature of indoor environment thermo-bulb, $T_{\text{heating indoor ambient temperature compensation}}$ is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and $[(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] \leq 0.5^{\circ}\text{C}$, start the machine to enter into heating operations for heating;

(2) During operations of heating, if $0^{\circ}\text{C} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 2^{\circ}\text{C}$, the heating operation will be still running;

(3) During operations of heating, if $2^{\circ}\text{C} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}]$, the heating operation will stop after reaching the temperature point.

2. The temperature setting range in this mode is: 16~30°C .

3. Special Functions

Defrosting Control

① Conditions for starting defrosting

After the time for defrosting is judged to be satisfied, if the temperature for defrosting is satisfied after detections for continuous 3minutes, the defrosting operation will start.

② Conditions of finishing defrosting

The defrosting operation can exit when any of the conditions below is satisfied:

③ $T_{\text{outdoor pipe temperature}} \geq (T_{\text{outdoor ambient temperature}} - [T_{\text{temperature 1 of finishing defrosting}}])$;

④ The continuous running time of defrosting reaches $[t_{\text{max. defrosting time}}]$.

4. Control Logic

(1) Compressor Control

Start the compressor after starting cooling, heating, dehumidifying operations, and the outer fans start for 5s; When the machine is shutdown, in safety stops and when switching to air-supplying mode, the compressor will stop immediately. In all modes: once the compressor starts up, it will not be allowed to stop until having run for the $[t_{\text{min. compressor running time}}]$ (Note: including cases of shutdown when the temperature point is reached; except the cases requiring stopping the compressor such as fault protection, remote shutdown, mode switching etc.); In all modes: once the compressor stops, it will be allowed be restart after 3-minute delay (Note: The indoor units have a function of power memory, the machine can be restarted after remote shutdown and powering up again without delay).

1. Cooling mode

Start the machine to enter into cooling operation for cooling, the compressor is switched on.

2. Dehumidifying mode

Same as the cooling mode.

3. Air-supplying mode

The compressor is switched off.

4. Heating mode

(1) Start the machine to enter into heating operation for heating, the compressor is switched on.

(2) Defrosting:

a. Defrosting starts: the compressor is shut down, and restarts it after 55-second delay.

b. Defrosting ends: the compressor stops, then starts it after 55-second delay.

(2) Outer Fans Control

Notes:

Only the outer fans run for at least 80s in each air flow speed can the air flow be switched;

After the outer fans run compulsively in high speed for 80s when the machine starts up, control the air flow according to the logic.

After remote shutdown, safety stops, and when the machine stops after reaching the temperature point, as well as after the compressor stops,

extend 1 minute, the outer fans will stop (During the period in the 1 minute, the air flow of outer fans can be changed according to the outdoor ambient temperature changes); When running with force, the outdoor fans shall run in the highest air flow.

(3) 4-way valve control

1. The 4-way valve control under the modes of Cooling, dehumidification and supplying air: closing;

2. The status of 4-way valve control under the heating mode: getting power;

(1) 4-way valve power control under heating mode

a. Starts the machine under heating mode, the 4-way valve will get power immediately.

(2) 4-way valve power turn-off control under heating mode

a. When you should turn off the power or switch to other mode under heating mode, the power of 4-way valve will be cut after 2 minutes of the compressor stopped.

b. When all kinds of protection stops, the power of 4-way valve will be cut after delaying 4 minutes.

(3) Defrosting control under heating mode:

a. Defrosting begins: The power of 4-way valve will be cut after 50s of entering into the defrosting compressor.

b. Defrosting stops: The 4-way valve will get power after 50s of exiting the defrosting compressor.

(4) Evaporator frozen-preventing protection function

At the mode of Cooling, dehumidifying:

Evaporator frozen-preventing protection function is allowed to begin after 6 min of starting the compressor.

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{inner pipe}} > [T_{\text{frozen-preventing frequency-limited temperature}}]$ (the temperature of hysteresis is 2 °C), the machine is only allowed to start for operating, otherwise it should not be started, and should be stopped to treat according to the frozen-preventing protection: Clear the trouble under the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{frozen-preventing normal speed frequency-reducing temperature}}] \leq T_{\text{inner pipe}} [T_{\text{frozen-preventing frequency-limited temperature}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed:

If $[T_{\text{frozen-preventing high speed frequency-reducing temperature}}] \leq T_{\text{inner pipe}} [T_{\text{frozen-preventing normal speed frequency-reducing temperature}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit;

4. Reducing frequency at high speed:

If $[T_{\text{frozen-preventing power turn-off temperature}}] \leq T_{\text{inner pipe}} [T_{\text{frozen-preventing high speed frequency-reducing temperature}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit;

5. Power turn-off:

If the $T_{\text{inner pipe}} < [T_{\text{frozen-preventing power turn-off temperature}}]$, then frozen-preventing protect to stop the machine; If $T_{\text{frozen-preventing frequency-limited temperature}} < T_{\text{inner pipe}}$, and the compressor has stopped working for 3 minutes, the whole machine should be allowed to operate.

6. If the frozen-preventing protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t evaporator frozen-preventing protection times zero clearing time, the times of frozen-preventing power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, mode transferring will not clear it).

(5) Overload protection function

Overload protection function at the mode of Cooling and dehumidifying

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{outer pipe}} < [T_{\text{Cooling overload frequency-limited temperature}}]$ (the temperature of hysteresis is 2°C), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection: Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Cooling overload frequency-limited temperature}}] \leq [T_{\text{outer pipe}} T_{\text{Cooling overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and power turn-off:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}} < [T_{\text{Cooling overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Reducing frequency at high speed and stop machine:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}} [T_{\text{Cooling overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq [T_{\text{outer pipe}}]$, then Cooling overload protects machine stopping;

5. Power turn-off:

If the $[T_{\text{Cooling overload power turn-off temperature}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping; If $[T_{\text{outer pipe}}] < [T_{\text{Cooling overload frequency-limited temperature}}]$ and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

6. If the Cooling overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it).

Overload protection function at the mode of heating

Starting estimation :

After the compressor stopped working for 180s, if $T_{\text{inner pipe}} T_{\text{heating overload frequency-limited temperature}}$ (the temperature of hysteresis is 2), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection:

Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

1. Frequency limited

If $[T_{\text{heating overload frequency-limited temperature}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

2. Reducing frequency at normal speed and stopping machine:

If $T_{\text{heating overload frequency reducing temperature at normal speed}} \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at high speed}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $T_{\text{heating overload frequency reducing temperature at normal speed}} \leq T_{\text{inner pipe}}$, then overload protects machine stopping;

3. Reducing frequency at high speed and power turn-off:

If $[T_{\text{heating overload frequency reducing temperature at high speed}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $T_{\text{heating overload frequency reducing temperature at normal speed}} \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Power turn-off:

If the $[T_{\text{heating overload power turn-off temperature}}] \leq T_{\text{inner pipe}}$, then overload protects machine stopping; If $T_{\text{inner pipe}} T_{\text{heating overload frequency-limited temperature}}$ and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

5. If the overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it). Protective function for discharge temperature of compressor

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{Discharge}} < T_{\text{Discharge limited temperature}}$ (the temperature of hysteresis is 2°C), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the discharge temperature:

The machine should be stopped or transferred to supply air, the trouble should be cleared immediately, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Limited frequency temperature during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at normal speed during discharging}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and stopping machine:

If $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at high speed during discharging}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping;

4. Reducing frequency at high speed and power turn-off:

If $[T_{\text{frequency reducing temperature at high speed of module}}] \leq T_{\text{Module}} < [T_{\text{Power turn-off temperature of module}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection;

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection; If $T_{\text{Module}} < [T_{\text{Limited frequency temperature of module}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

6. If protection continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Protection times clearing of module}}]$, the discharge protection is cleared to recount. Stopped or transferred to supply air mode will clear the trouble times immediately (if the trouble can not be resumed, mode transferring also will not clear it).

(10) Compressor overloads protection

If you measure the compressor overload switch action in 3s, the compressor should be stopped for overloading. The machine should be allowed to operate after overload protection was measured to resume. If the overloading protection continuously occurs for three times, it should not be resumed automatically, and you should press the ON/OFF button to resume. The protection times of compressor is allowed to clear after the compressor run $[t_{\text{Protection times clearing of compressor overloading}}]$ 30 minutes.

(11) Phase current overcurrent protection of compressor

During the running process of compressor, you could measure the phase current of the compressor, and control it according to the following steps:

1. Frequency limited

If $[I_{\text{Limited frequency phase current}}] \leq [I_{\text{Phase current T frequency reducing phase current}}]$, you should limit the frequency raising of compressor.

2. Reducing Frequency

If $[I_{\text{Frequency Reducing Phase Current}}] \leq I_{\text{Phase Current}} < [I_{\text{Power Turn-Off Phase Current}}]$, the compressor shall continue to reduce frequency till the lowest frequency limit or out of the condition of reducing frequency;

3. Power turn-off

If $[I_{\text{Phase Current}}] \geq [I_{\text{Power Turn-Off Phase Current}}]$, the compressor phase current shall stop working for overcurrent protection; if $[I_{\text{Phase Current}}] \leq [I_{\text{Frequency Reducing Phase Current}}]$, and the compressor have stopped working for 3 min, the machine shall be allowed to operate;

4. If the overcurrent protection of compressor phase current continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Clearing Time of Compressor Phase Current Times}}]$, the overcurrent protection is cleared to recount.

(12) Starting-up Failure Protection for Compressor

Stop the compressor after its starting-up fails, restart it after 20s if the fault doesn't shows, and if they are all failing for the successive start 3 times, it shall be reported as Starting-up Failure, and then restart up it after 3 min. When it still not be able to operate through carry out the above process for 5 times, it is available if press ON/OFF. And the compressor should be cleared the times after it run 2 min.

(13) Out-of-Step Protection for Compressor

The out-of-step protection signal should be detected immediately after starting-up compressor, and once find the out-of-step protection signal, the out-of-step protection shall be stopped; if it can run for lasting power turn-off 3 min, the machine shall be allowed to operate. If it still can't run automatically when the out-of-step protection for compressor happens to stop working for 6 times in succession, it needs to press ON/OFF to operate. And if the running time is more than 10 min, the power turn-off times for out-of-step protection shall be cleared and recounted.

(14) Voltage Abnormity Protection for DC Bus

To detect voltage abnormity protection for dc bus after completing the pre-charge:

1. Over-High Voltage Protection for DC Bus:

If it found the DCbus voltage $U_{\text{DC}} > [U_{\text{DC Jiekuangchun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-high voltage failure; it should clear out the failure when the voltage dropped to $U_{\text{DC}} < [U_{\text{DC Jiekuangchun Recovery}}]$ and the compressor stopped for 3 min.

2. Over-Low Voltage Protection for DC Bus:

If it found the DC bus voltage $U_{\text{DC}} < [U_{\text{DC Wantuochun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-low voltage; and it should clear out the failure when the voltage raised to $U_{\text{DC}} > [U_{\text{DC Wantuochun Recovery}}]$ and the compressor stopped for 3 min.

3.To detect voltage abnormality protect for DC bus when getting electricity:

If it found the DC bus voltage $U_{DC} > [U_{DC-Over-High Voltage}]$, turn off the relay at once, and shows voltage abnormality failure for DC Bus. And the failure can't recover except to break off and get the electricity.

(15)Abnormity Protection for Four-way Valve

Under the model of heating operation in good condition: the compressor is detected [$T_{Inner Tube} < (T_{Inner Ring} - T_{Abnormity Temperature Difference For Four-Way Valve Reversion})$], during the running, it should be regarded as four-way valve reversion abnormality. And then it can run if stop the reversion abnormality protection for four-way valve 3 min; and if it still can't run when the reversion abnormality protection for four-way valve happens to stop working for 3 times in succession, it is available if presses ON/OFF.

Attention: the protection shall be shielded during the testing mode and defrosting process, and it shall be cleared out the failure and its times immediately when turning off or delivering wind / cooling / dehumidifying mode conversed (the inverted mode don't clear out the failure when it can't recover to operate).

(16) PFC Protection

1. After start up the PFC, it should detect the protection signal of PFC immediately; under the condition of PFC protection, it should turn off the PFC and compressor at one time;
2. It shows the failure is cleared out if PFC Protection stopped working 3 min and recovers to run automatically;
3. If it still can't run when it occurs PFC protection for 3 times in succession, it is available if presses ON/OFF; and clear the PFC Protection times when start up PFC for 10min.

(17) Failure Detection for Sensor

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.
2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.
3. Outdoor Exhaust Sensor:
 - (a) The compressor only detect the sensor failure after it start up 3 min in normal mode;
 - (b) It should detect the exhaust sensor failure immediately in the testing mode.
4. Module Temperature Sensor:
 - (a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;
 - (b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).
 - (c) Detect the sensor failure at all times in the testing mode.
5. Disposal for Sensor Protection
 - (1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).
 - (2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.
6. Electric Heating Function of Chassis
 - (1) When $T_{outdoor amb.} \leq 0^{\circ}C$, the electric heating of chassis will operate;
 - (2) When $T_{outdoor amb.} > 2^{\circ}C$, the electric heating of chassis will stop operation;
 - (3) When $0^{\circ}C < T_{outdoor amb.} \leq 2^{\circ}C$, the electric heating of chassis will keep original status.
7. Electric Heating Function of Compressor
 - (1) When $T_{outdoor amb.} \leq -5^{\circ}C$, compressor stops operation, while the electric heating of compressor starts operation;
 - (2) When $T_{outdoor amb.} > -2^{\circ}C$, the electric heating of compressor stops operation;
 - (3) When $-5^{\circ}C < T_{outdoor amb.} \leq -2^{\circ}C$, the electric heating of compressor will keep 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.

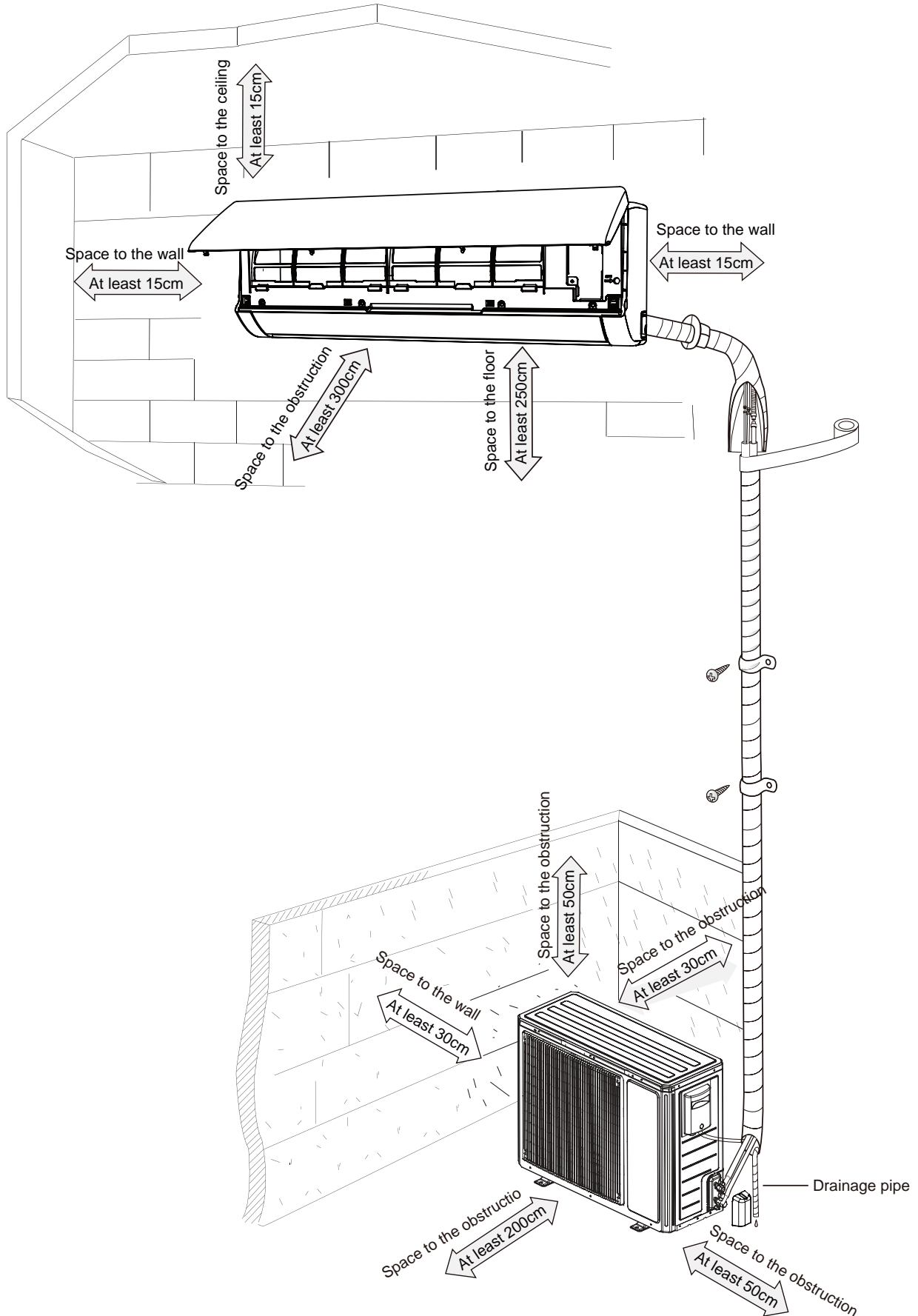
Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

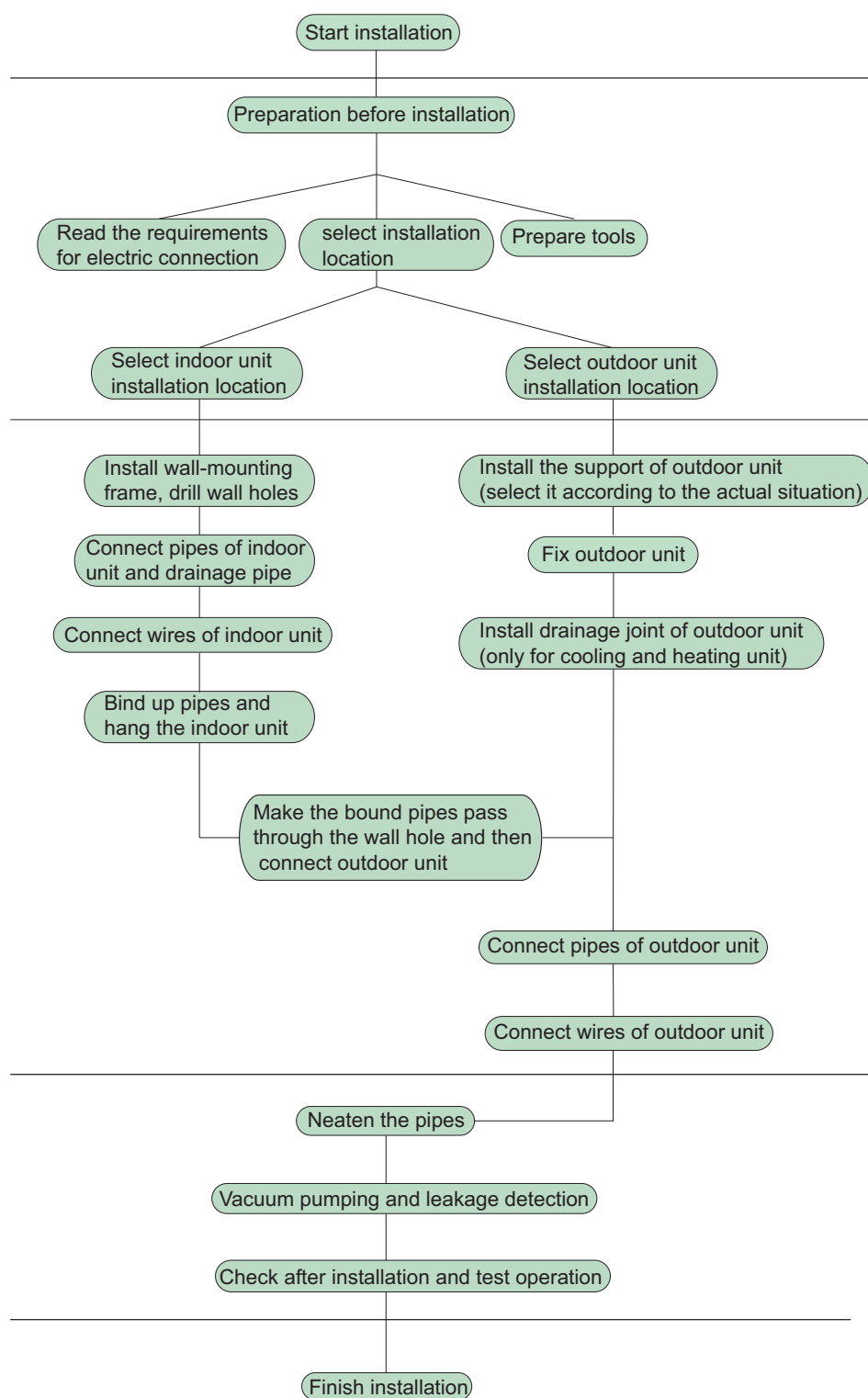
<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure 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 procedures



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

8.2 Installation Parts-checking

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

⚠ Note:

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

8.3 Selection of Installation Location

1. Basic Requirement:

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

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

2. Indoor Unit:

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

3. Outdoor Unit:

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

8.4 Electric Connection Requirement

1. Safety Precaution

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

Air-conditioner	Air switch capacity
18K/24K	16A

- (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

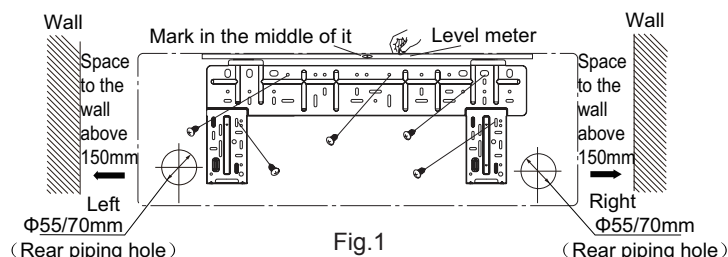
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) 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 Φ55mm or Φ70mm 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)

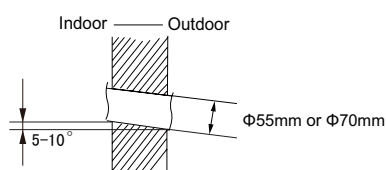


Fig.2

⚠ 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)

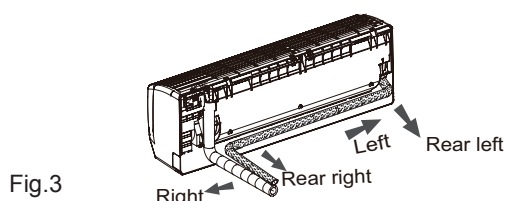


Fig.3

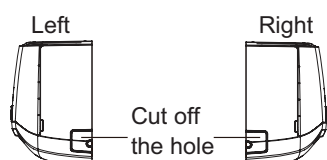


Fig.4

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)

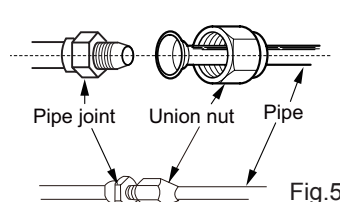


Fig.5

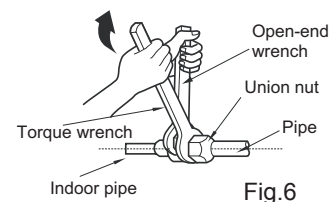


Fig.6

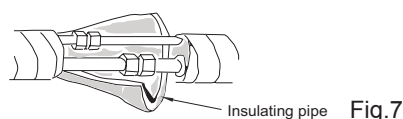


Fig.7

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)

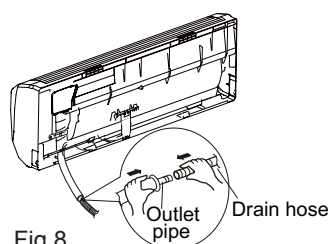


Fig.8

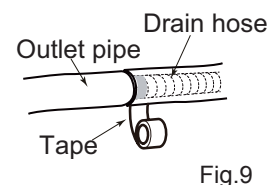


Fig.9

⚠ 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)

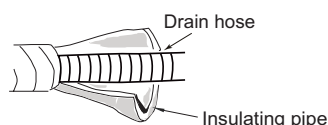
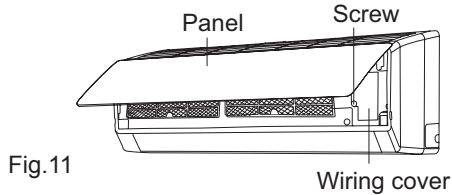


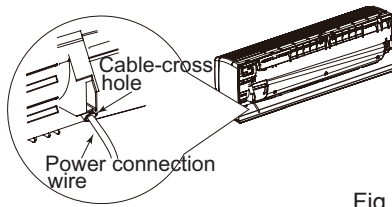
Fig.10

7. Connect Wire of Indoor Unit

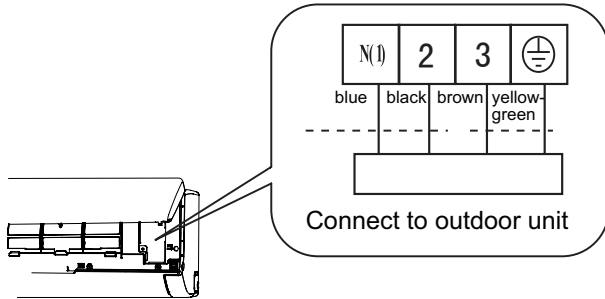
(1) Open the panel, remove the screw on the wiring cover and then take down the cover.(As show in Fig.11)



(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.

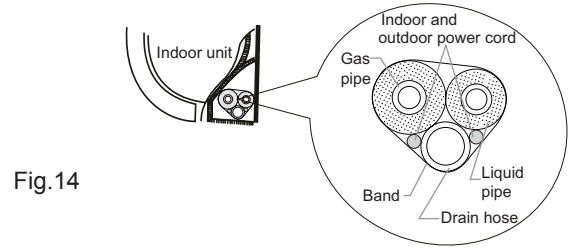


Fig.14

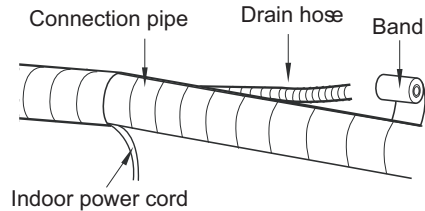


Fig.15

⚠ 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. (As show in Fig.16)

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

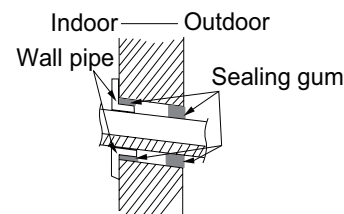


Fig.16

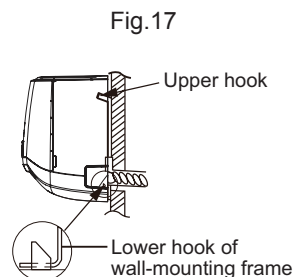


Fig.17

⚠ Note:

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

8.6 Installation of Outdoor Unit

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

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

⚠ Note:

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

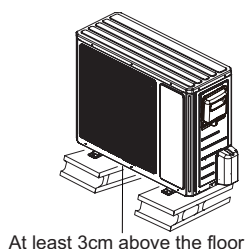


Fig.18

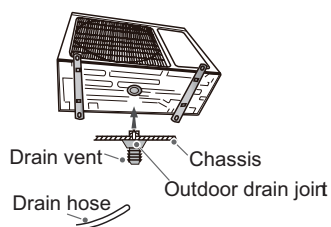


Fig.19

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

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

3. Fix Outdoor Unit

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

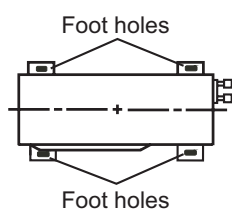


Fig.20

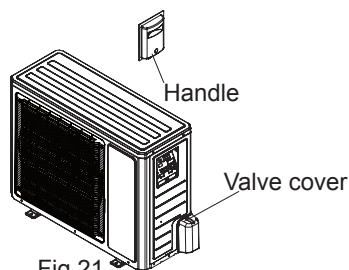


Fig.21

4. Connect Indoor and Outdoor Pipes

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

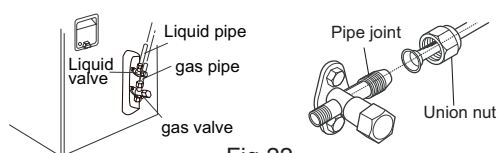


Fig.22

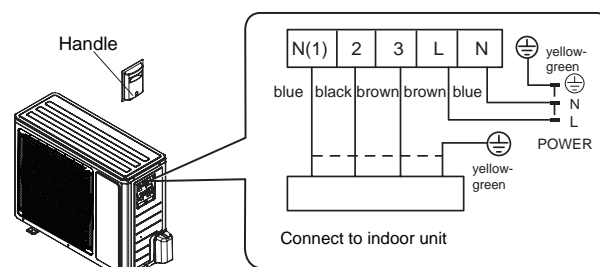
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force:

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

5. Connect Outdoor Electric Wire

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



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

Fig.23

- (2) Fix the power connection wire with wire clip.

⚠ 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)

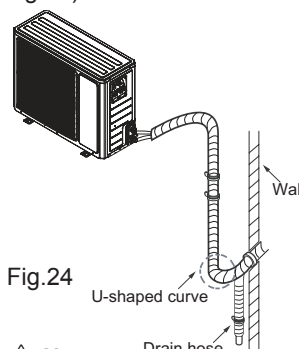


Fig.24

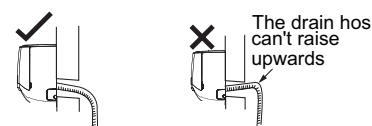
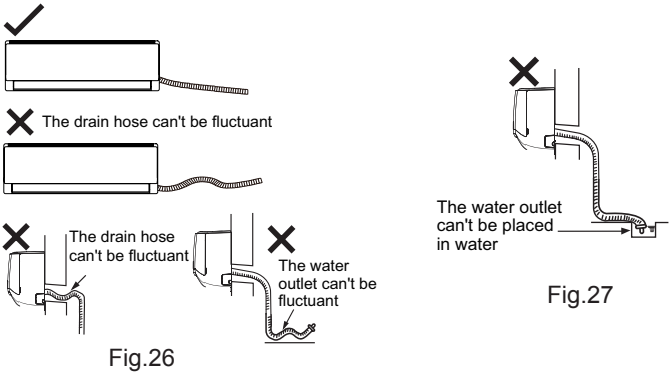


Fig.25

⚠ 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)

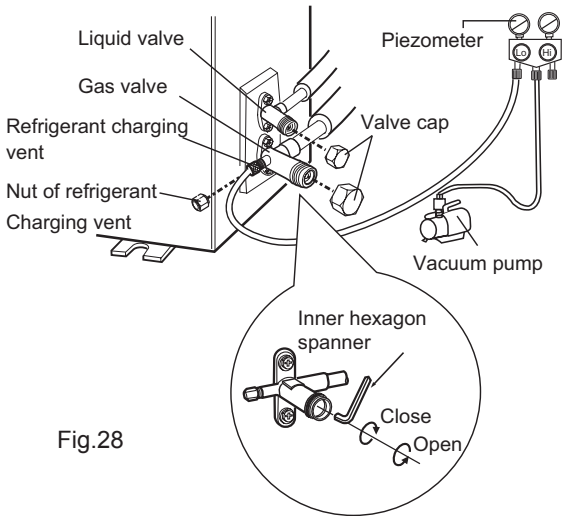
(3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)



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℃ , the air conditioner can't start cooling.

9. Maintenance

9.1 Malfunction Display of Indoor Unit

1. Malfunction display requirement

When there are several malfunctions, they will be displayed circularly.

2. Malfunction display method

(1) Hardware malfunction: immediate display; refer to "malfunction display table";

(2) Operation state: immediate display; refer to "malfunction display table";

(3) Other malfunctions: it is displayed after the compressor stops for 200s; refer to "malfunction display table".

Note: when the compressor is restarted, the malfunction display delay time (200s) is cleared.

(4) When the unit is under limit frequency or frequency drop state, the display can be controlled via remote controller.

3. Display control via remote controller

Enter display control: press light button successively for 6 times within 3s to display the corresponding malfunction code;

Exit display control: pressing light button successively for 6 times within 3s or after display is shown for 5min, the display will terminate.

4. Display under test state

Dual 8 nixie tube display: minimum cooling (heating)-P0; middle cooling (heating)-P3

Nominal cooling (heating) -P1; maximum cooling (heating) -P2;

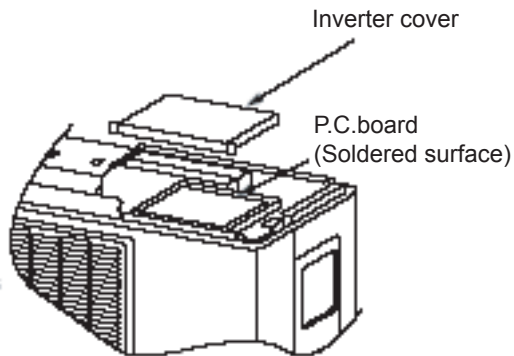
●Error Code List

Malfunction Name	Dual-8 Nixie Tube
Malfunction of jumper cap	C5
No feedback from indoor unit's motor	H6
Circuit malfunction of zero crossing detection	U8
Indoor ambient temperature sensor is open/short-circuited	F1
Indoor evaporator temperature sensor is open/short-circuited	F2
Module temperature sensor is open/short-circuited	P7
Outdoor ambient temperature sensor is open/short-circuited	F3
Outdoor condenser tube temperature sensor is open/short-circuited	F4
Outdoor discharge temperature sensor is open/short-circuited	F5
Communication malfunction between indoor and outdoor units	E6
Malfunction of phase current circuit detection for compressor	U1
Module temperature protection	P8
Charging malfunction of capacitor	PU
Overload protection of compressor	H3
Freon recovery mode	Fo
Failure start-up of compressor	LC
Discharge high-temperature protection of compressor	E4
Overload protection	E8
Overcurrent protection of the complete unit	E5
Overcurrent protection of phase current	P5
Desynchronizing of compressor	H7
Module current protection (IPM protection)	H5
Low voltage protection of DC bus bar	PL
High voltage protection of DC bus bar	PH
PFC protection	HC
Limit/decrease frequency due to current protection of the complete unit	F8
Limit/decrease frequency due to module current protection (phase current)	En
Limit/decrease frequency due to discharge	F9
Limit/decrease frequency due to freeze protection	FH
Limit/decrease frequency due to overload	F6
Limit/decrease frequency due to module temperature protection	EU
Cold air prevention protection	E9
Freeze protection	E2
Malfunction of ODU DC fan	L3

Note: Please refer to service manual for the troubleshooting procedure for outdoor unit.

- Discharging method

(1) remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge resistance(approx.100Ω20W)or plug of the sold ering iron to voltage between + - terminals of the electrolytic capacitor on PC Board for 30s, and then performedischarging.

NOTE:

A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter).Therefore,if the power supply is turned off,charge(charging voltage DC280V to 380V)remains and disc harging takes a lot of time.. After turning off the power source,if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrol ytic capacitor completely by using soldering iron,etc.

9.2 Procedure of Troubleshooting

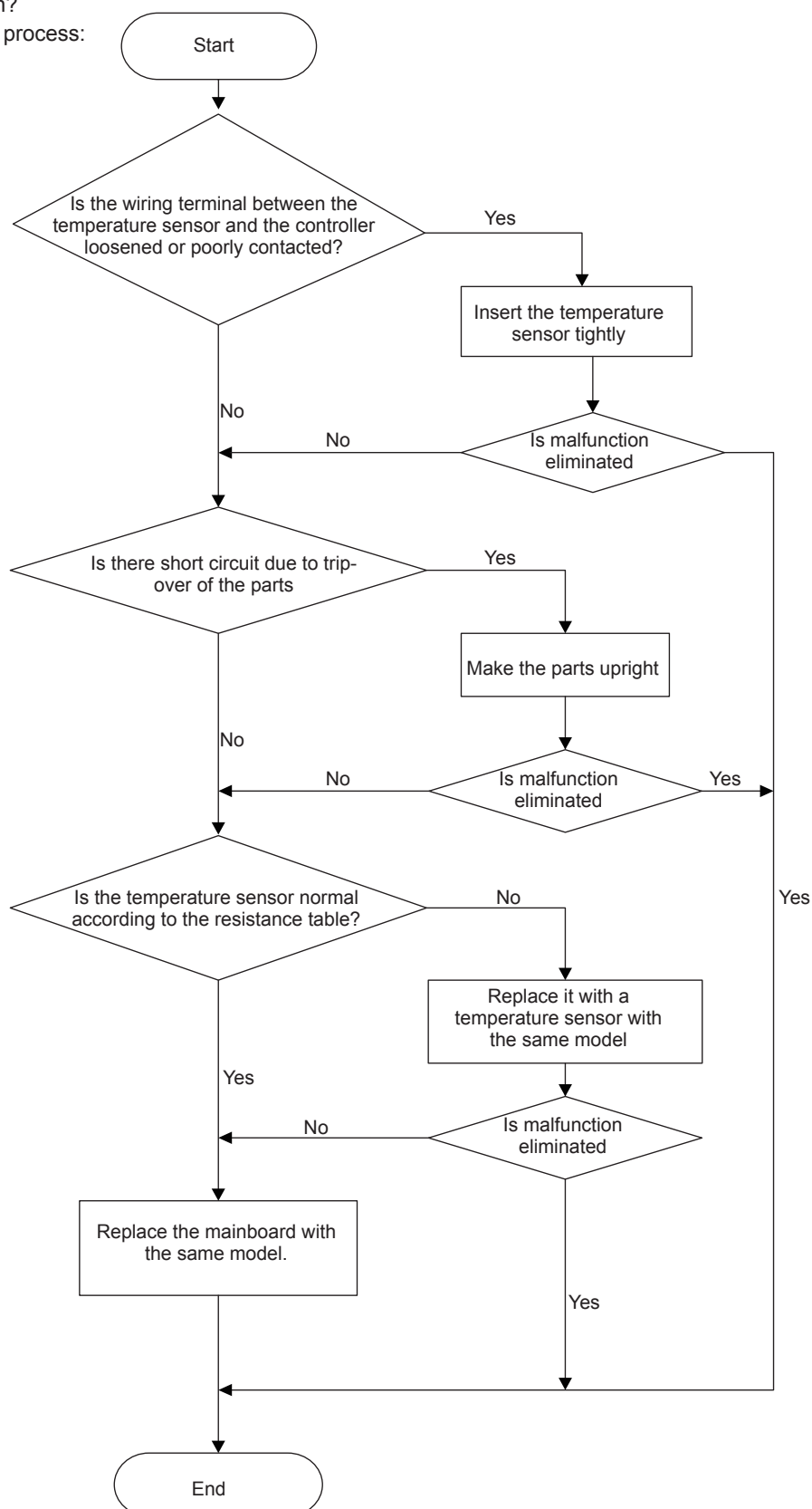
Indoot Unit

(1) Malfunction of Temperature Sensor (F1, F2)

Main detection points:

- Is the wiring terminal between the temperature sensor and the controller loosened or poorly contacted?
- Is there short circuit due to trip-over of the parts?
- Is the temperature sensor broken?
- Is mainboard broken?

Malfunction diagnosis process:

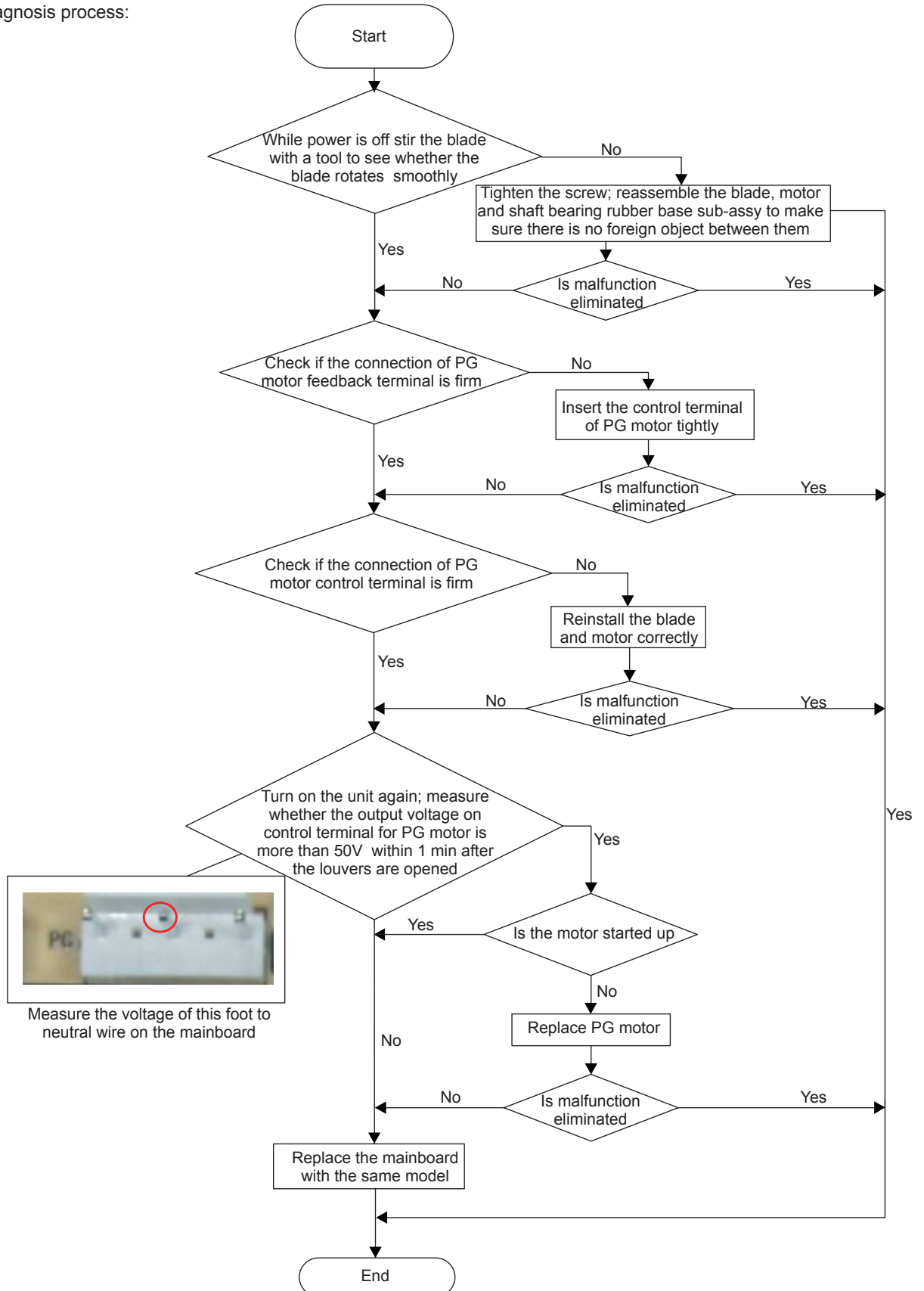


(2) Malfunction of Blocked Protection of IDU Fan Motor (H6)

Main detection points:

- Smoothly Is the control terminal of PG motor connected tightly?
- Smoothly Is the feedback interface of PG motor connected tightly?
- The fan motor can't operate?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

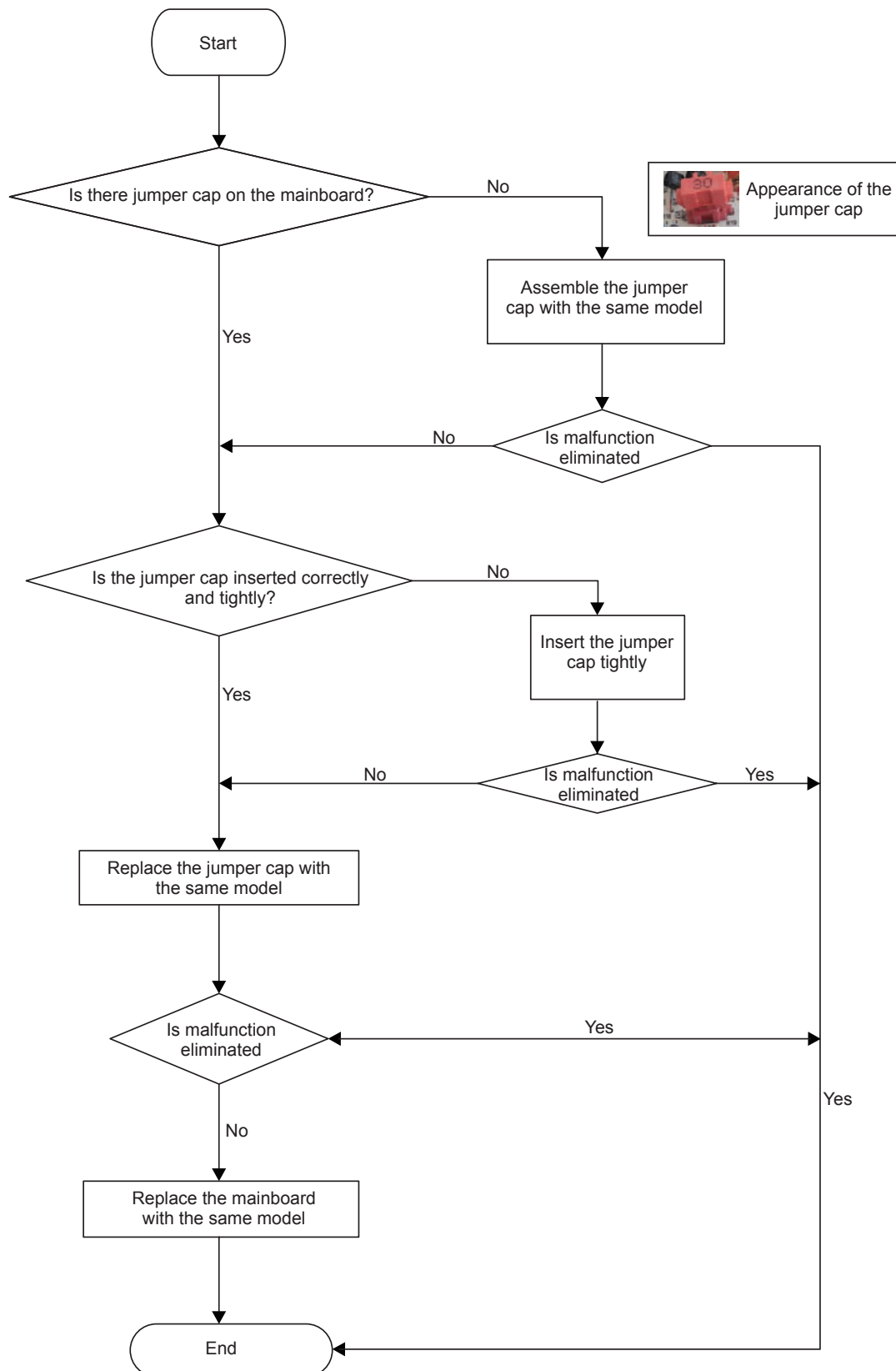


(3) Malfunction of Protection of Jumper Cap (C5)

Main detection points:

- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- The jumper is broken?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

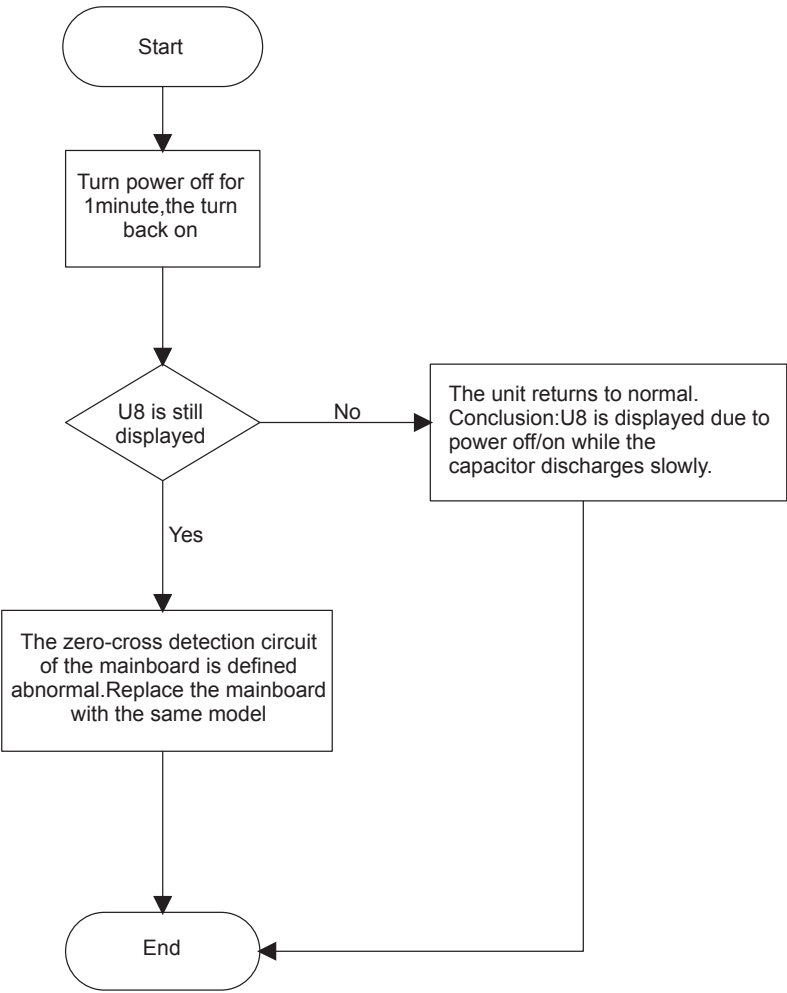


(4) Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor (U8)

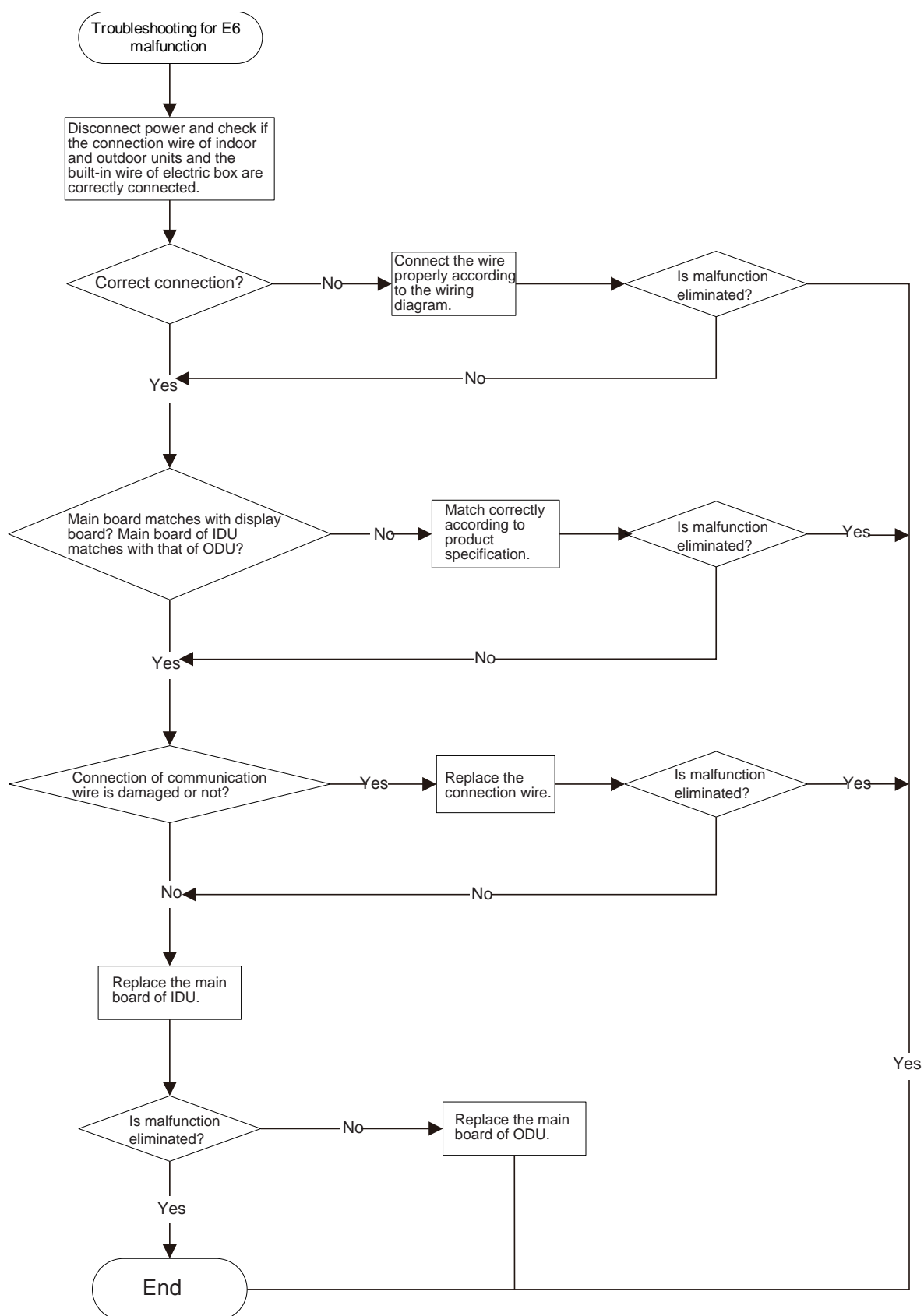
Main detection points:

- Instant energization afte de-energization while the capacitordischarges slowly?
- The zero-cross detectioncircuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



(5) Communication malfunction (E6)



Outdoor Unit

(1) Malfunction of Desynchronizing of Compressor (H7)

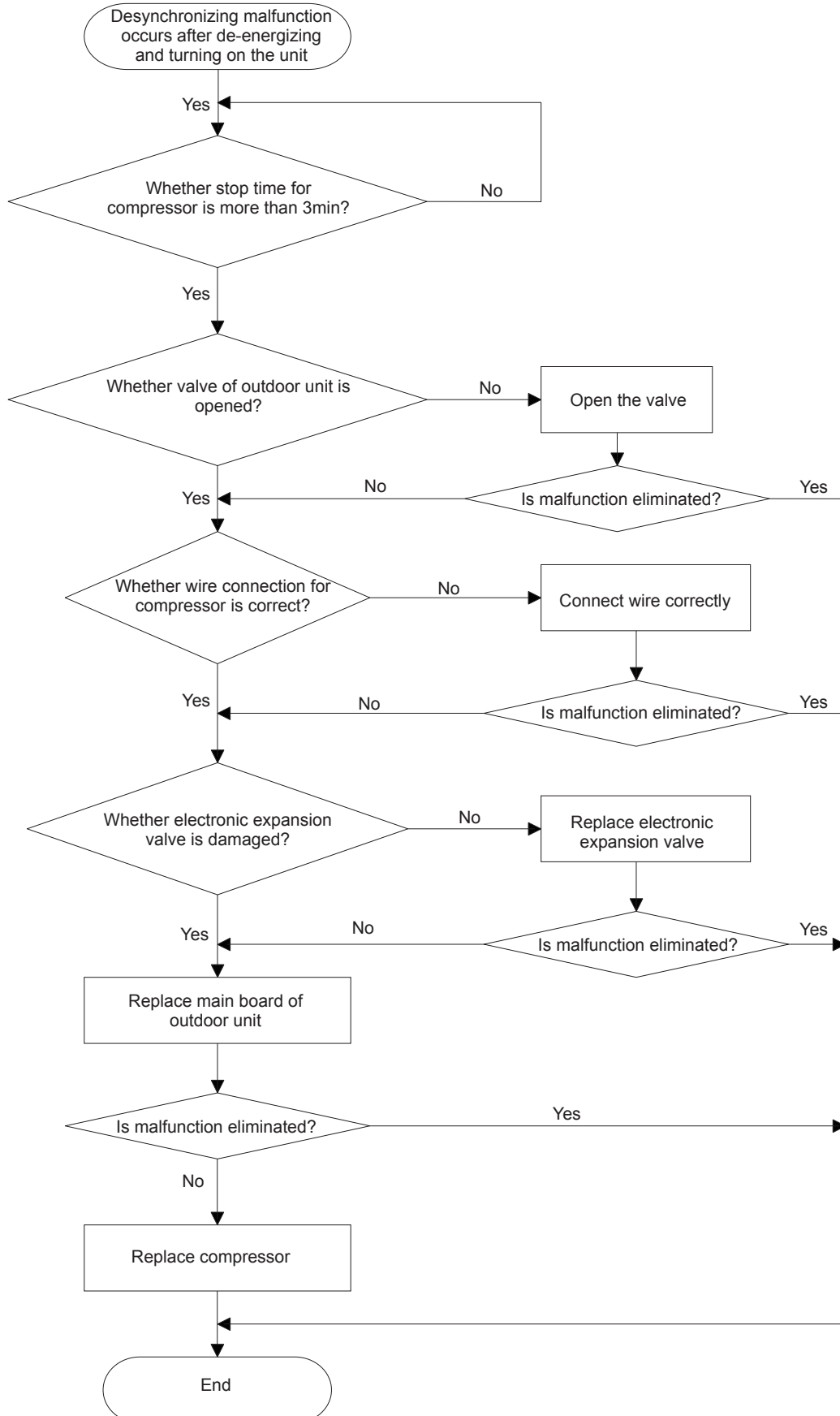
Main check point:

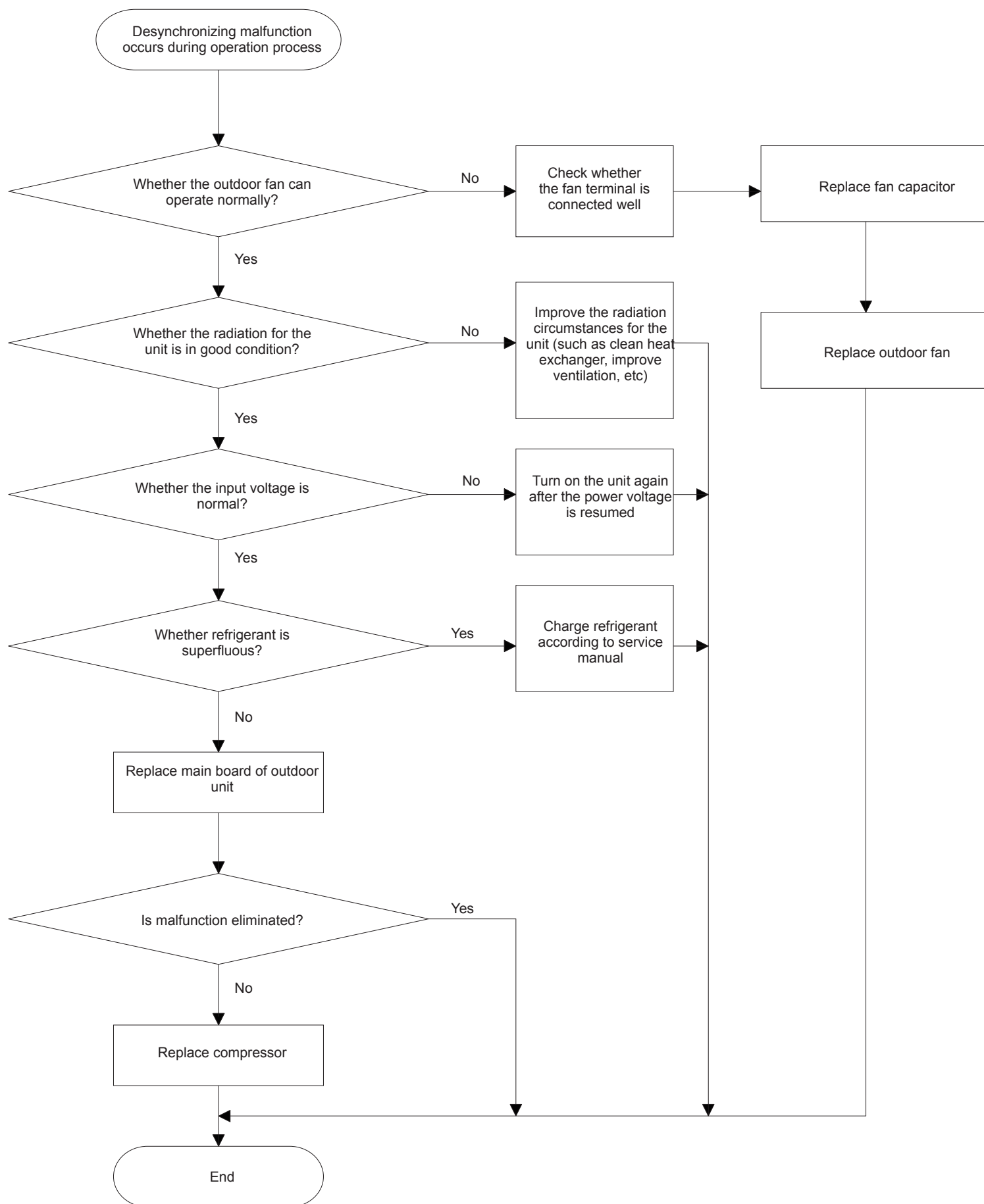
Whether the system pressure is too high?

Whether the electronic expansion valve can work normally?

Whether the radiation for the unit is in good condition?

Check flow chart:



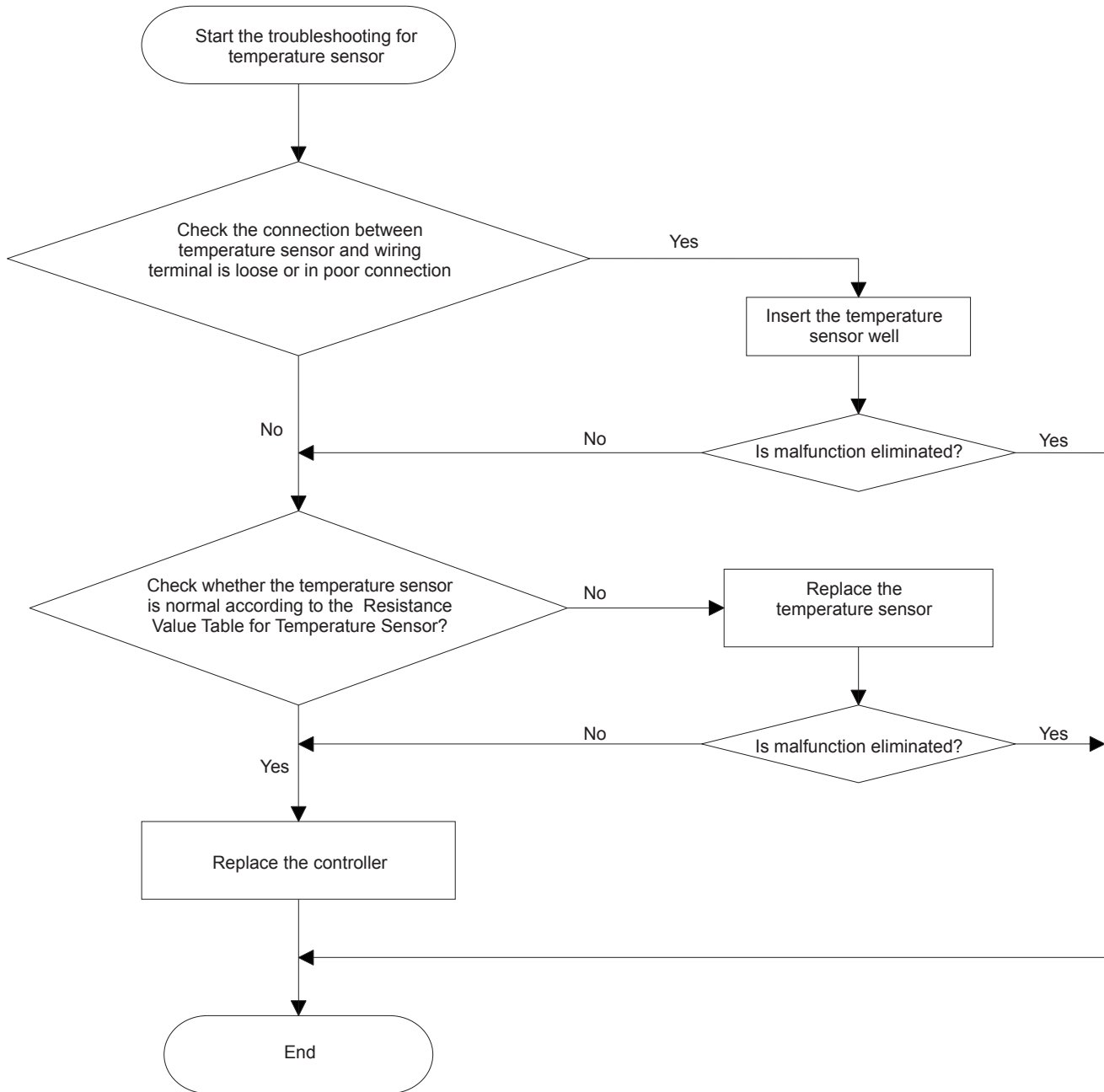


(2) Malfunction of Temperature Sensor (F3/F4/F5)**Main check point:**

Whether the temperature sensor is damaged?

Whether the terminal of temperature sensor is loose or not connected?

Whether the main board is damaged?

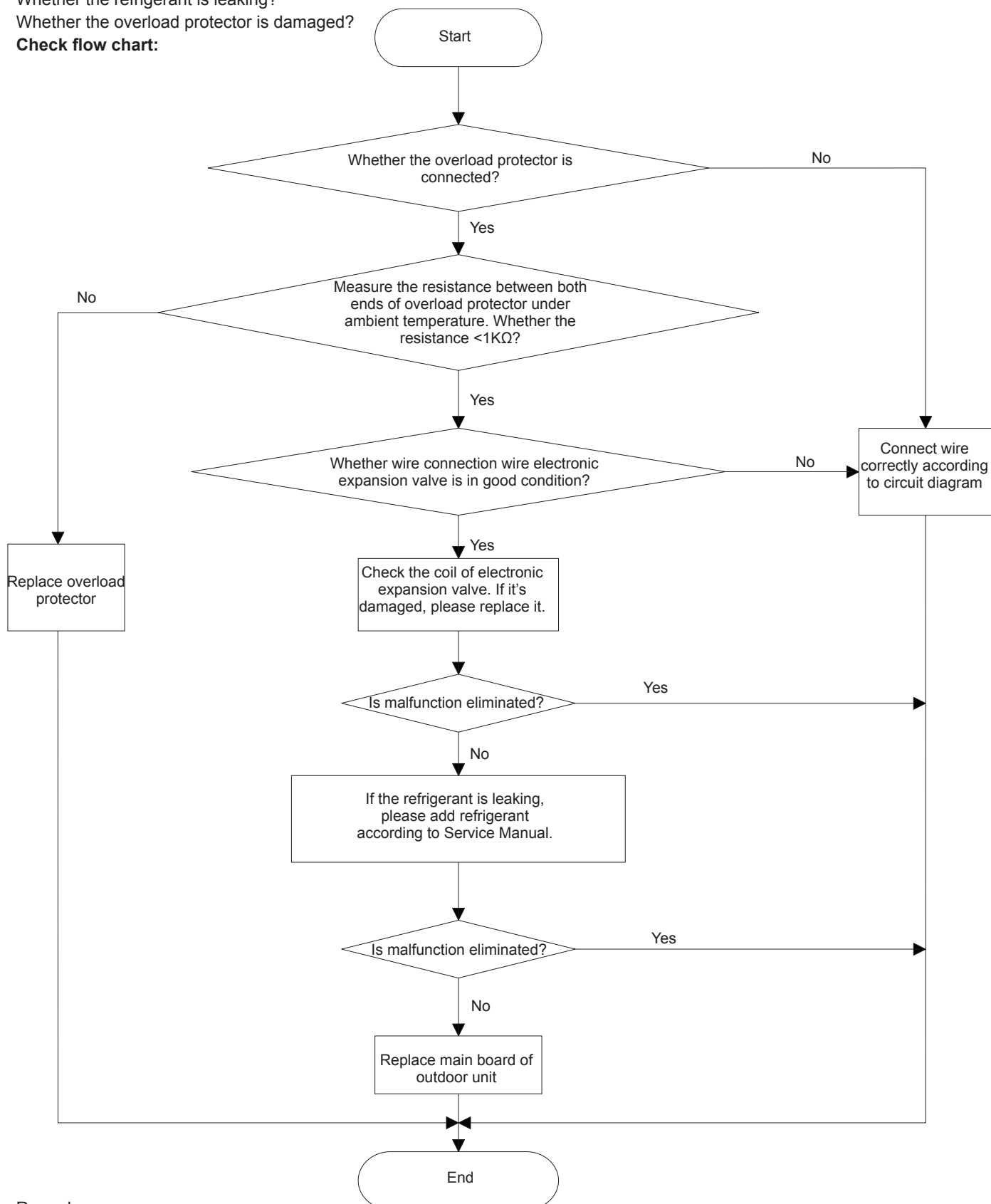
Check flow chart:

(3) Malfunction of Overload Protection of Compressor (H3) and Discharge High-temperature Protection of Compressor (E4)**Main check point:**

Whether the electronic expansion valve is connected well and whether it's damaged?

Whether the refrigerant is leaking?

Whether the overload protector is damaged?

Check flow chart:**Remark:**

Detection method for electronic expansion valve: There are 5 wires for the coil of electronic expansion valve and one of them are common port (the left or the right wire) .The resistance for other terminals are all most the same (about 100Ω). You can measure those resistance values to judge whether the electronic expansion valve is damaged or not.

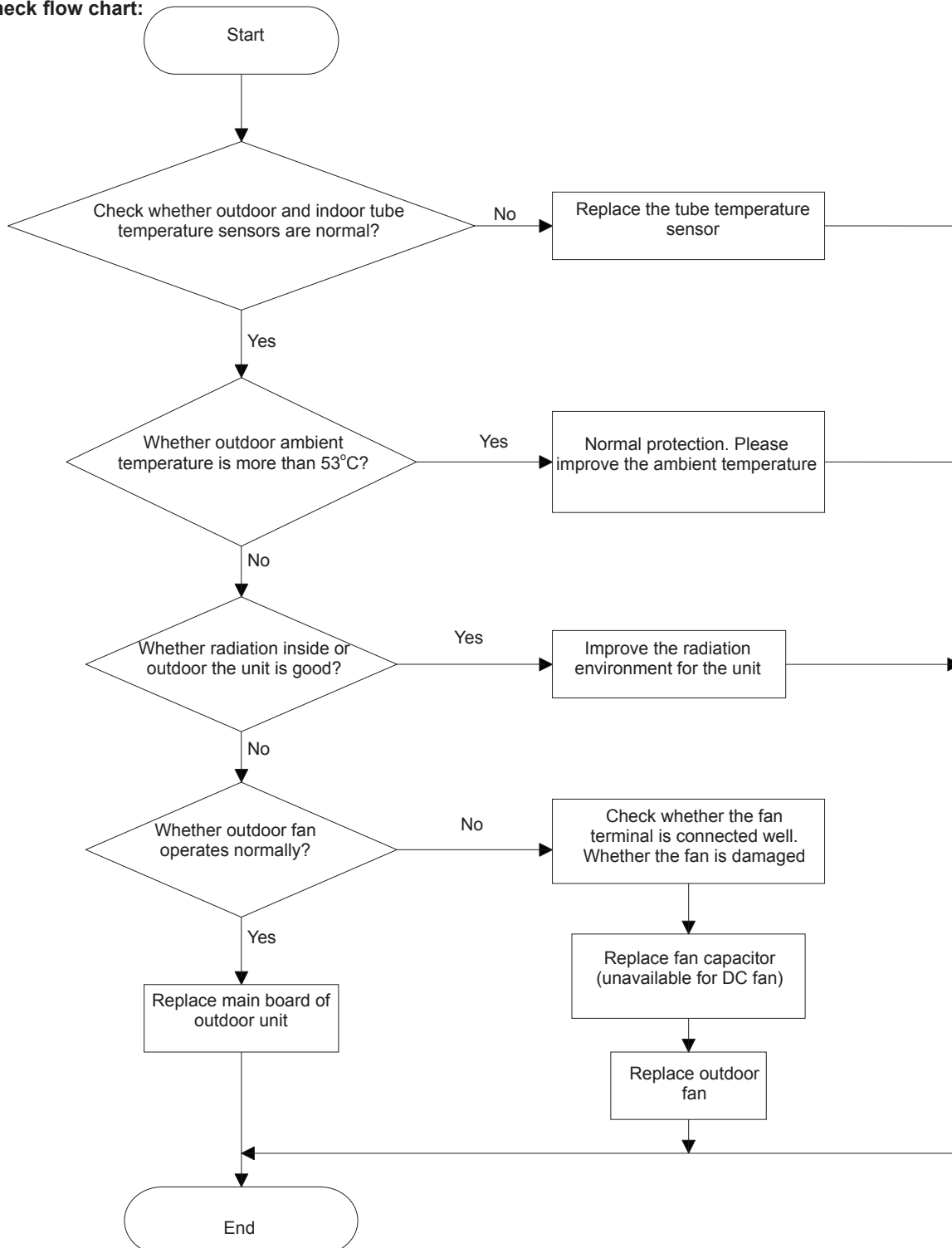
(5) Malfunction of Overload Protection (E8)**Main check point:**

Whether the tube temperature sensor is normal?

Whether the outdoor ambient temperature is within the normal range?

Whether indoor fan and outdoor fan can operate normally?

Whether radiation environment inside or outside the unit is good?

Check flow chart:**Remark:**

When overload protection occurs under cooling mode, it's because the main board detected the outdoor tube temperature sensor exceeds limited temperature and then the unit stops operation. Please check outdoor tube temperature sensor;

When overload protection occurs under heating mode, it's because the main board detected the indoor tube temperature sensor exceeds limited temperature and then the unit stops operation. Please check indoor tube temperature sensor;

(6) Malfunction of IPM Protection (H5)**Main check point:**

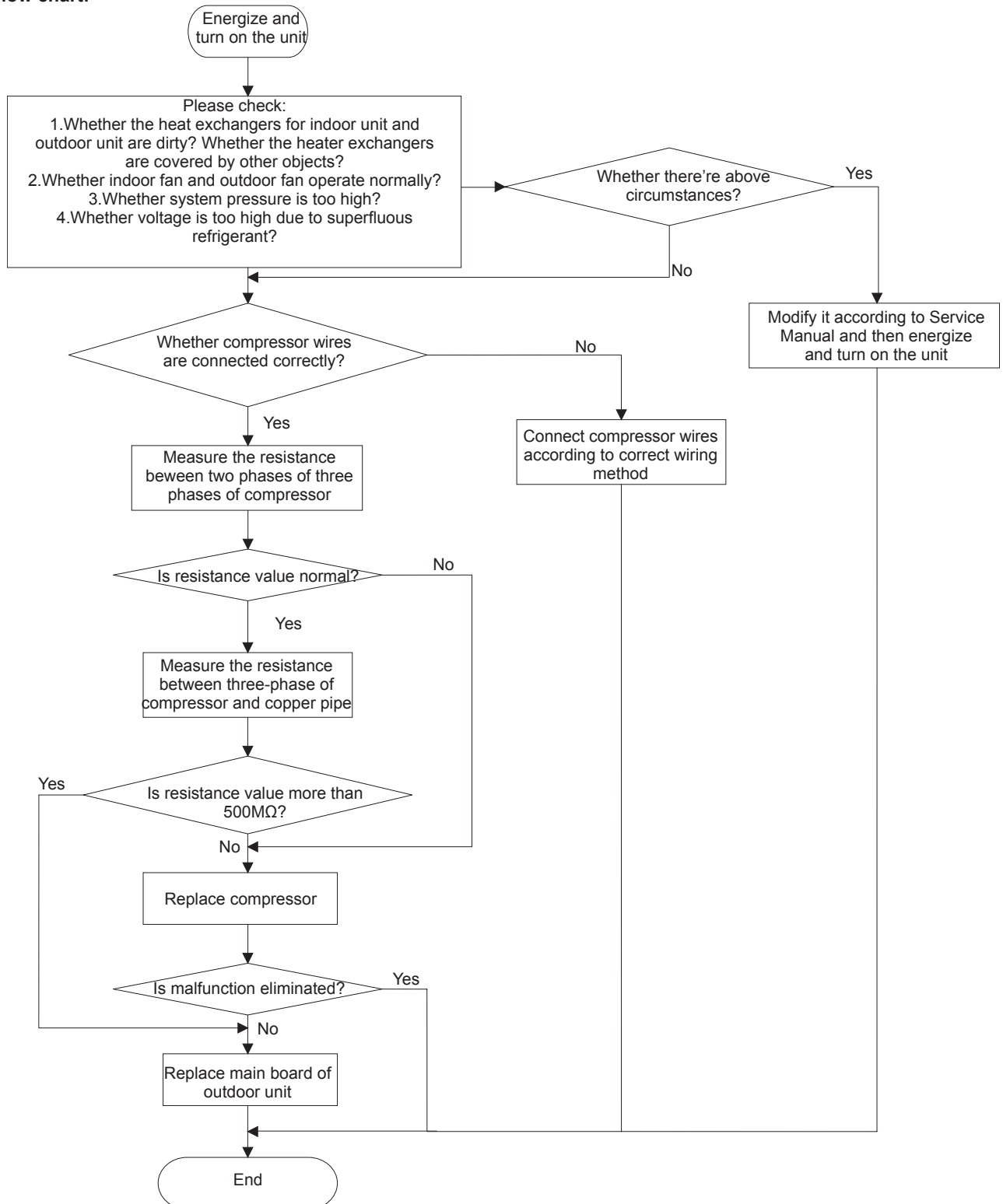
Whether input voltage is within the normal range?

Whether wires of compressor are connected reliably, tightly or correctly?

Whether the resistance of compressor coil is normal? Whether the insulation between compressor coil and copper pipe is in good condition?

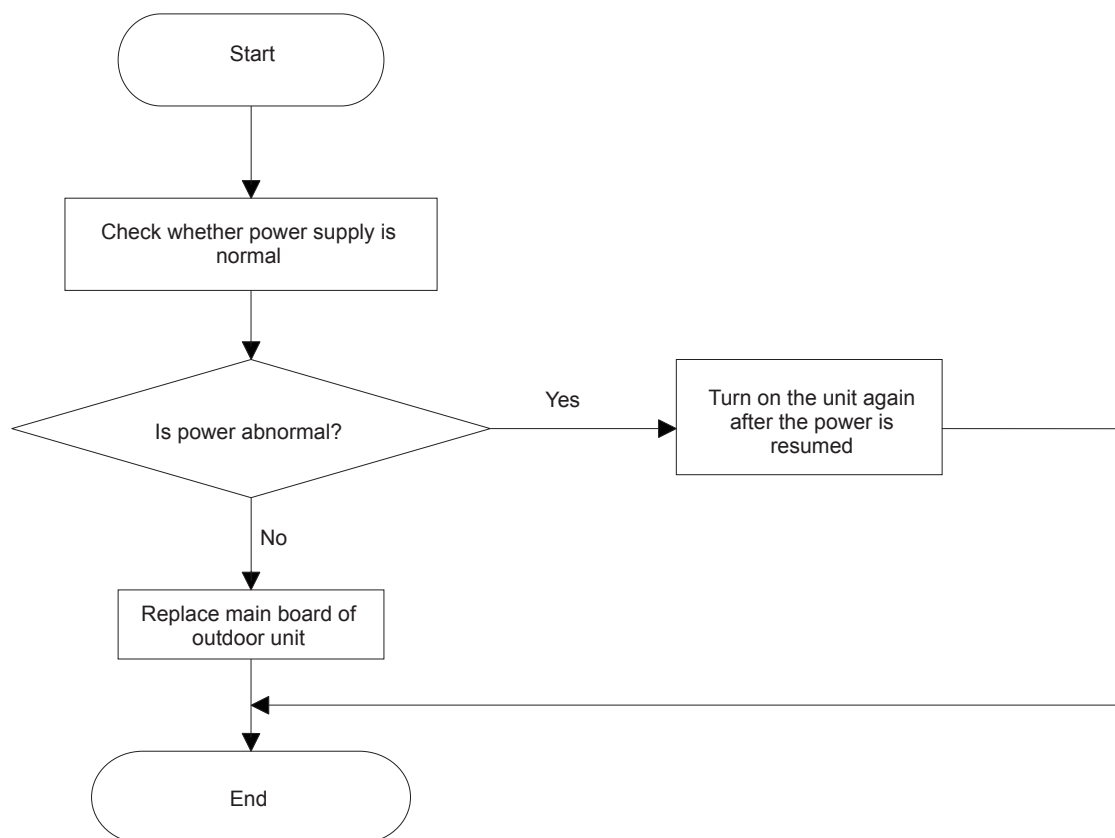
Whether the unit is overloading? Whether the radiation for the unit is in good condition?

Whether the volume of charged refrigerant is proper?

Check flow chart:

(7) Malfunction of PFC Protection (HC)**Main check point:**

Whether power supply is normal?

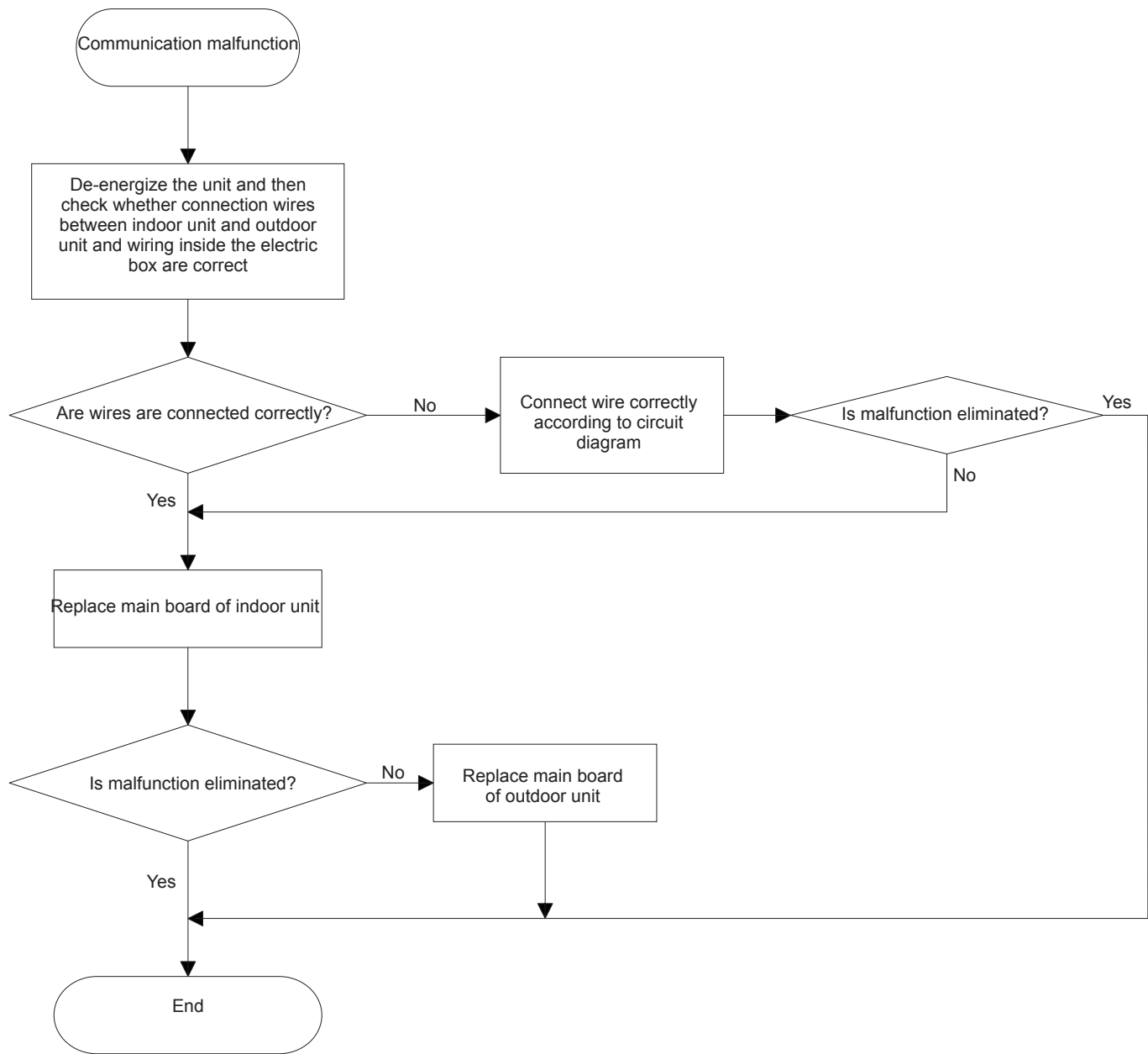
Check flow chart:

(8) Malfunction of Communication (E6)

Main check point:

Check whether connection wires between indoor unit and outdoor unit and wiring inside the unit are connected well?
Check the main board of indoor unit or main board of outdoor unit is damaged?

Check flow chart:



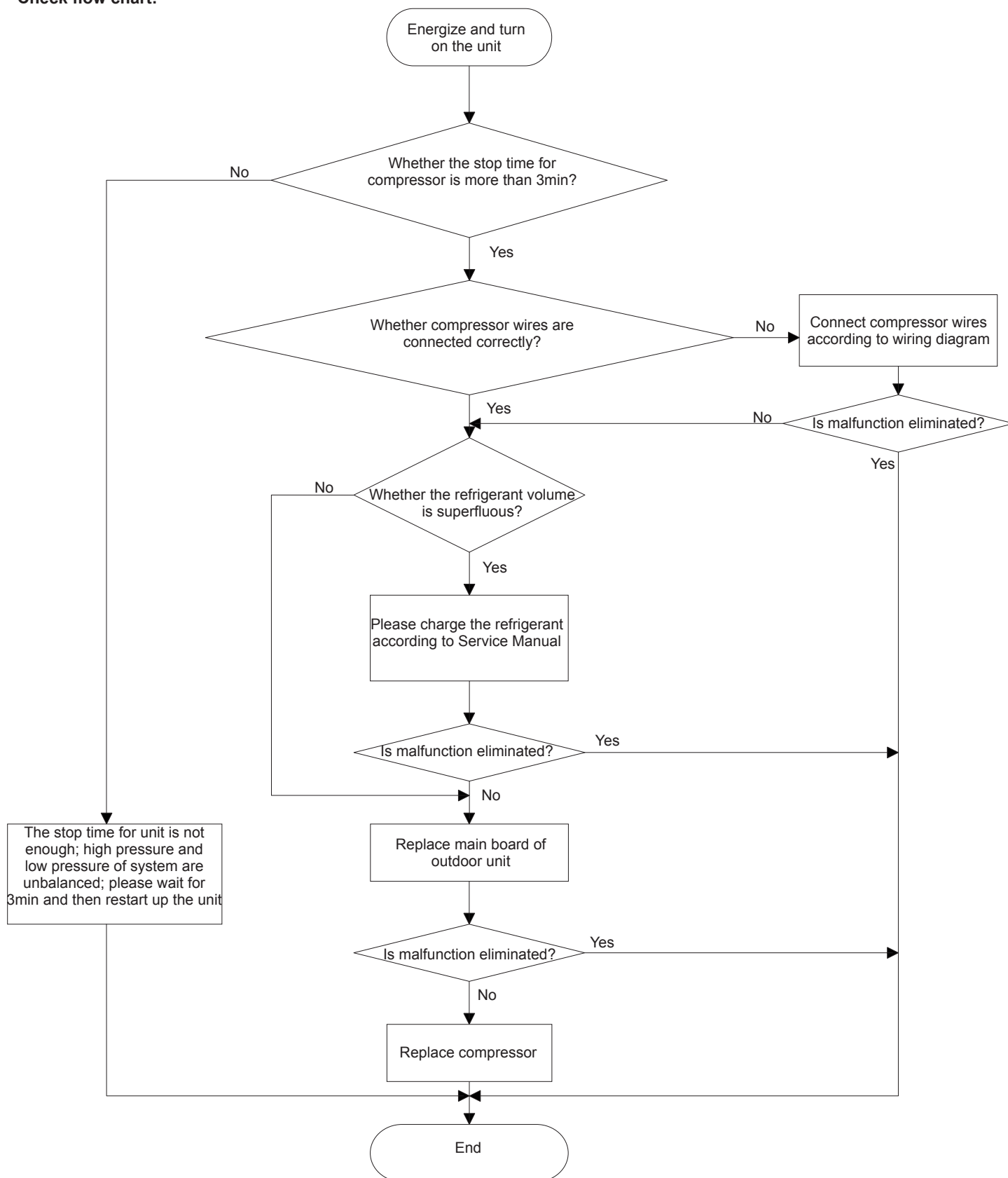
(9) Malfunction of Failure Start-up of Compressor (LC)**Main check point:**

Whether the compressor wires are connected correctly?

Whether the stop time for compressor is enough?

Whether compressor is damaged?

Whether the refrigerant-charging volume is superfluous?

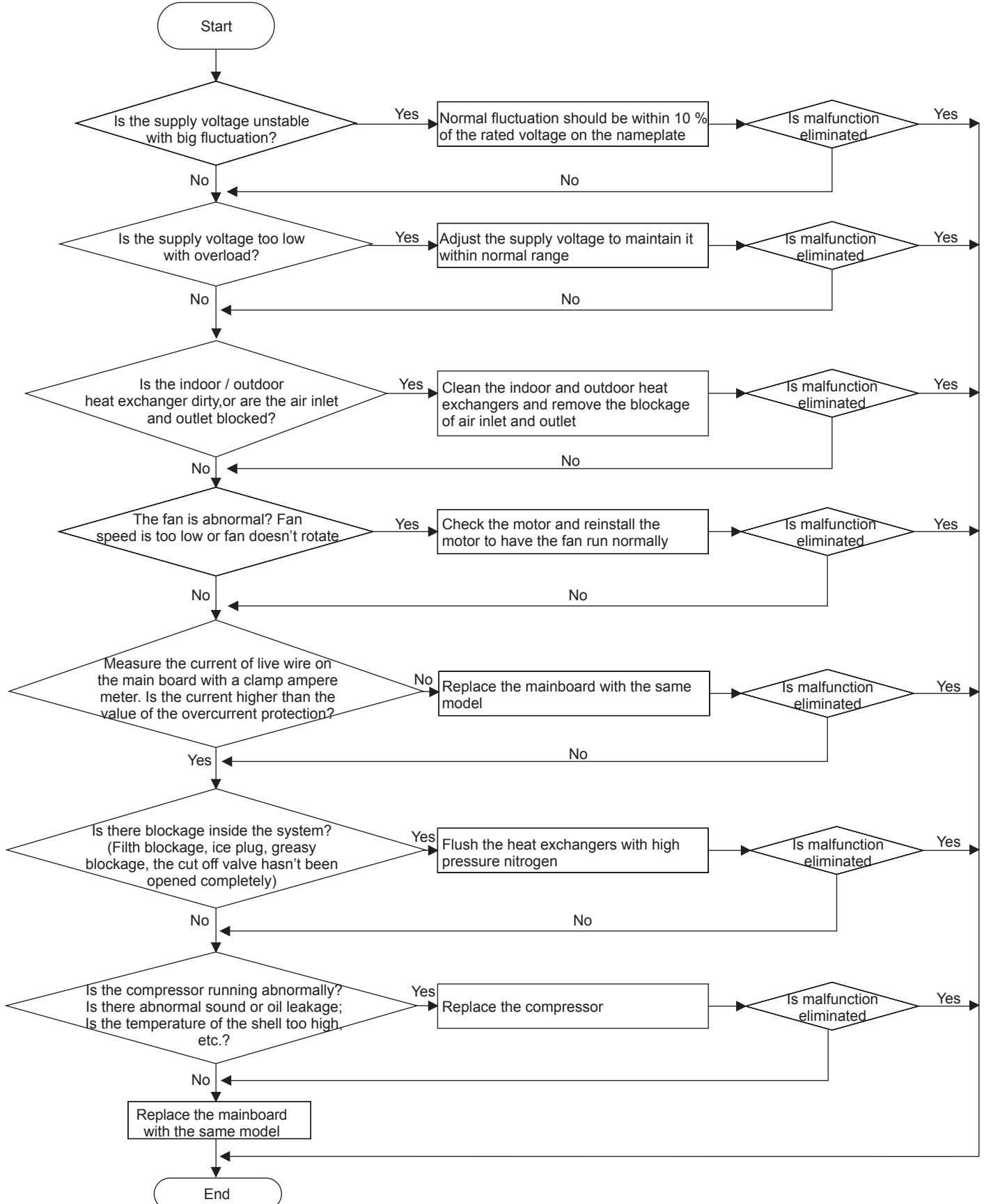
Check flow chart:

(10) Malfunction of Overcurrent Protection (E5)

Main detection points:

- Is the supply voltage unstable with big fluctuation?
- Is the supply voltage too low with overload?
- Hardware trouble?

Malfunction diagnosis process:



(9) Other Malfunction**1. IPM module temperature sensor is open-circuited (P7)**

Hardware of main board is damaged. Please replace main board.

2. Overheating protection of IPM module (P8)

- ① Poor radiation because the module radiator is dirty;
- ② IPM module is damaged;
- ③ Malfunction of outdoor fan, etc;

3. Detection circuit malfunctions of phase-current of compressor (U1)

Hardware of main board is damaged. Please replace main board.

4. DC busbar voltage is too high (PH)

- ① Input voltage is too high or unstable;
- ② Hardware of main board is damaged;

5. DC busbar voltage is too low (PL)

- ① Input voltage is too low or unstable;
- ② Hardware of main board is damaged;

6. Malfunction of ODU DC fan (L3)

- ① The wire terminal of outdoor fan motor is loosed, fix the terminal.
- ② Motor damaged, replace the motor.
- ③ Fan motor module on mainboard is damaged, replace the main board AP1

9.4 Troubleshooting for Normal Malfunction

1. Air Conditioner Can't be Started Up

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

2. Poor Cooling (Heating) for Air Conditioner

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

3. Horizontal Louver Can't Swing

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

4. Air Conditioner is Leaking

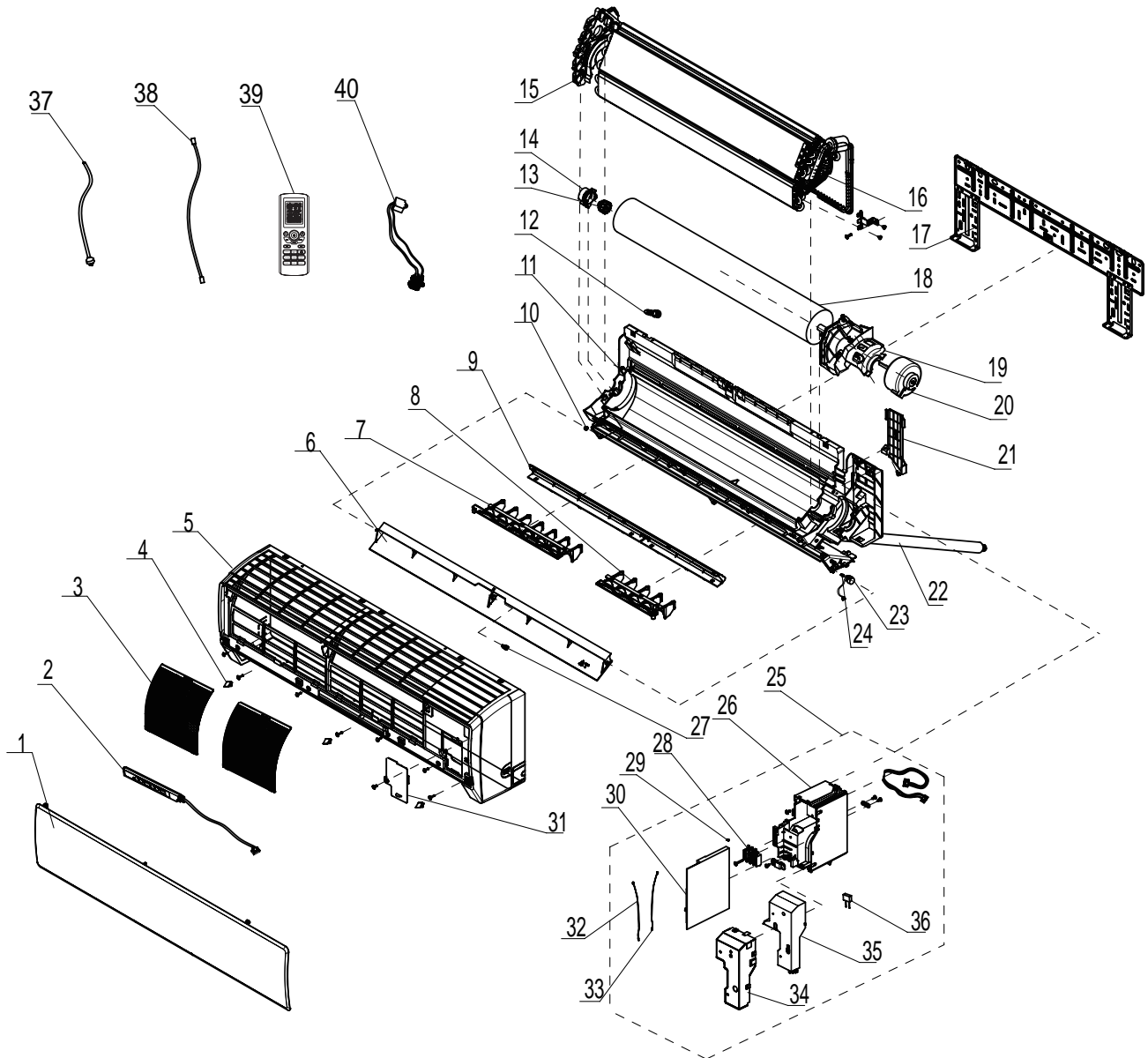
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe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

5. 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.

10.1 Indoor Unit

18K



NO.	Description	Part Code		Qty
		GWH18MC-K3DNE3G/I	GWH18MC-K3DNE3G/I	
	Product Code	CB404N03400	CB404N03401	
1	Front Panel Assy	20012962	20012962	1
2	Display Board	30565144	30565144	1
3	Filter Sub-Assy	1112208901	1112208901	2
4	Screw Cover	242520172	242520172	3
5	Front Case Sub-Assy	2001281201	2001281201	1
6	Guide Louver	1051211501	1051211501	1
7	Air Louver 1	1051211601	1051211601	1
8	Air Louver 2	1051211701	1051211701	1
9	Helicoid tongue	2611223801	2611223801	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	20022564	20022564	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
15	Evaporator Support	24212133	24212133	1
16	Evaporator Assy	01002575	01002575	1
17	Wall Mounting Frame	01252218	01252218	1
18	Cross Flow Fan	10352019	10352019	1
19	Motor Press Plate	26112494	26112494	1
20	Fan Motor	15012146	15012146	1
21	Connecting pipe clamp	2611216402	2611216402	1
22	Drainage hose	05230014	05230014	1
23	Stepping Motor	15012086	15012086	1
24	Crank	1058207002	1058207002	1
25	Electric Box Assy	10000201043	10000201042	1
26	Electric Box	2011210801	2011210801	1
27	Axile Bush	10542036	10542036	1
28	Terminal Board	42011233	42011233	1
29	Jumper	4202300108	4202300108	1
30	Main Board	30138000403	30138000411	1
31	Electric Box Cover2	2011208101	2011208101	1
32	Temperature Sensor	390000451	390000451	1
33	Temperature Sensor	390000597	390000597	1
34	Shield cover of Electric Box	01592092	01592092	1
35	Electric Box Cover1	20122154	20122154	1
36	Capacitor CBB611A	3301074712	3301074712	1
37	Power Cord	/	/	/
38	Connecting Cable	4002052317	4002052317	0
39	Remote Controller	305100491	305100491	1
40	Cold Plasma Generator	/	1114001602	1

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NO.	Description	Part Code		Qty
		GWH18MC-K3DNA3G/I	GWH18MC-K3DNA5G/I	
	Product Code	CB171N11700	CB180N01400	
1	Front Panel Assy	20012260	20012286	1
2	Display Board	30565038	30565093	1
3	Filter Sub-Assy	1112208901	1112208901	2
4	Screw Cover	24252016	24252016	3
5	Front Case Sub-Assy	20022172	20022172	1
6	Guide Louver	10512115	10512115	1
7	Air Louver 1	10512116	10512116	1
8	Air Louver 2	10512117	10512117	1
9	Helicoid tongue	26112238	26112238	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	12312214	12312214	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
15	Evaporator Support	24212133	24212133	1
16	Evaporator Assy	01002575	01002575	1
17	Wall Mounting Frame	01252218	01252218	1
18	Cross Flow Fan	10352019	10352019	1
19	Motor Press Plate	26112494	26112494	1
20	Fan Motor	15012146	15012146	1
21	Connecting pipe clamp	26112164	26112164	1
22	Drainage hose	05230014	05230014	1
23	Stepping Motor	15012086	15012086	1
24	Crank	10582070	10582070	1
25	Electric Box Assy	10000201998	10000202071	1
26	Electric Box	2011210801	2011210801	1
27	Axile Bush	10542036	10542036	1
28	Terminal Board	42011233	42011233	1
29	Jumper	4202300108	4202300108	1
30	Main Board	30138000403	30138000403	1
31	Electric Box Cover2	20112081	20112081	1
32	Temperature Sensor	390000451	390000451	1
33	Temperature Sensor	390000597	390000597	1
34	Shield cover of Electric Box	01592092	01592092	1
35	Electric Box Cover1	20122154	20122154	1
36	Capacitor CBB611A	3301074712	3301074712	1
37	Power Cord	/	/	/
38	Connecting Cable	4002052317	4002052317	0
39	Remote Controller	305100491	305100491	1
40	Cold Plasma Generator	/	/	/

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NO.	Description	Part Code		Qty
		GWH18MC-K3DNB3G/I	GWH18MC-K3DNB3G/I	
	Product Code	CB163N06800	CB163N06801	
1	Front Panel Assy	20012467	20012467	1
2	Display Board	30565037	30565037	1
3	Filter Sub-Assy	1112208901	1112208901	2
4	Screw Cover	24252016	24252016	3
5	Front Case Sub-Assy	20022205	20022205	1
6	Guide Louver	10512115	10512115	1
7	Air Louver 1	10512116	10512116	1
8	Air Louver 2	10512117	10512117	1
9	Helicoid tongue	26112238	26112238	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	12312214	12312214	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
15	Evaporator Support	24212133	24212133	1
16	Evaporator Assy	01002575	01002575	1
17	Wall Mounting Frame	01252218	01252218	1
18	Cross Flow Fan	10352019	10352019	1
19	Motor Press Plate	26112494	26112494	1
20	Fan Motor	15012146	15012146	1
21	Connecting pipe clamp	26112164	26112164	1
22	Drainage hose	05230014	05230014	1
23	Stepping Motor	15012086	15012086	1
24	Crank	10582070	10582070	1
25	Electric Box Assy	10000202256	10000202472	1
26	Electric Box	2011210801	2011210801	1
27	Axile Bush	10542036	10542036	1
28	Terminal Board	42011233	42011233	1
29	Jumper	4202300108	4202300108	1
30	Main Board	30138000403	30138000411	1
31	Electric Box Cover2	20112081	20112081	1
32	Temperature Sensor	390000451	390000451	1
33	Temperature Sensor	390000597	390000597	1
34	Shield cover of Electric Box	01592092	01592092	1
35	Electric Box Cover1	20122154	20122154	1
36	Capacitor CBB611A	3301074712	3301074712	1
37	Power Cord	/	/	/
38	Connecting Cable	4002052317	4002052317	0
39	Remote Controller	305100491	305100491	1
40	Cold Plasma Generator	/	1114001602	1

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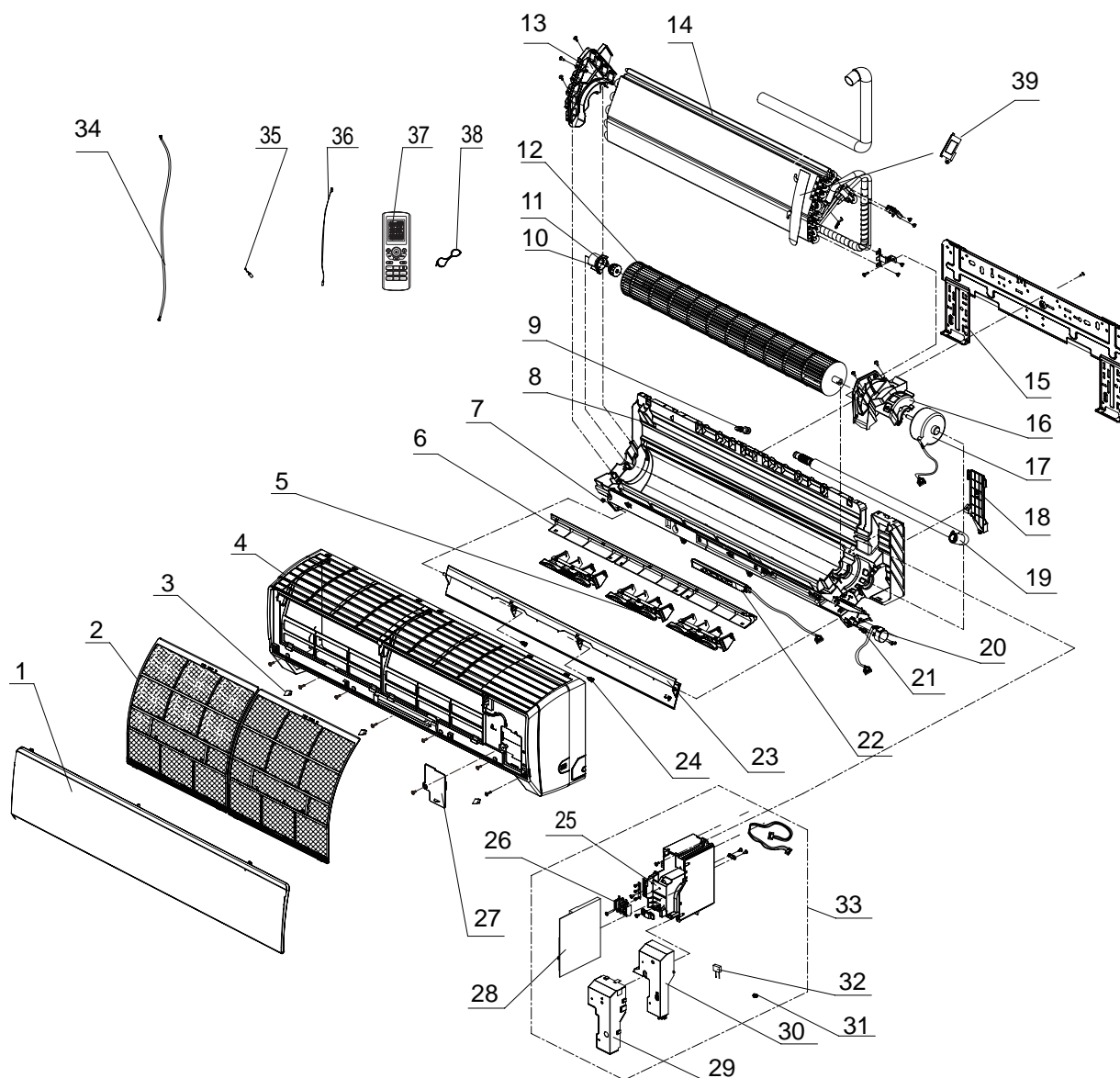
NO.	Description	Part Code		Qty
		GWH18MC-K3DNA2G/I	GWH18MC-K3DNC9G/I	
	Product Code	CB181N07500	CB145N05900	
1	Front Panel Assy	20012283	20012714	1
2	Display Board	30565039	30565108	1
3	Filter Sub-Assy	1112208901	1112208901	2
4	Screw Cover	24252016	24252016	3
5	Front Case Sub-Assy	20022172	20022172	1
6	Guide Louver	10512115	10512115	1
7	Air Louver 1	10512116	10512116	1
8	Air Louver 2	10512117	10512117	1
9	Helicoid tongue	26112238	26112238	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	12312214	12312214	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
15	Evaporator Support	24212133	24212133	1
16	Evaporator Assy	01002575	01002575	1
17	Wall Mounting Frame	01252218	01252218	1
18	Cross Flow Fan	10352019	10352019	1
19	Motor Press Plate	26112494	26112494	1
20	Fan Motor	15012146	15012146	1
21	Connecting pipe clamp	26112164	26112164	1
22	Drainage hose	05230014	05230014	1
23	Stepping Motor	15012086	15012086	1
24	Crank	10582070	10582070	1
25	Electric Box Assy	10000201999	10000202431	1
26	Electric Box	2011210801	2011210801	1
27	Axile Bush	10542036	10542036	1
28	Terminal Board	42011233	42011233	1
29	Jumper	4202300108	4202300108	1
30	Main Board	30138000403	30138000403	1
31	Electric Box Cover2	20112081	20112081	1
32	Temperature Sensor	390000451	390000451	1
33	Temperature Sensor	390000597	390000597	1
34	Shield cover of Electric Box	01592092	01592092	1
35	Electric Box Cover1	20122154	20122154	1
36	Capacitor CBB611A	3301074712	3301074712	1
37	Power Cord	/	/	/
38	Connecting Cable	4002052317	4002052317	0
39	Remote Controller	305100491	305100491	1
40	Cold Plasma Generator	/	/	/

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NO.	Description	Part Code	Qty
		GWH18MC-K3DND3G/I	
	Product Code	CB405N04300	
1	Front Panel Assy	20012926	1
2	Display Board	30565145	1
3	Filter Sub-Assy	1112208901	2
4	Screw Cover	24252016	3
5	Front Case Sub-Assy	20022205	1
6	Guide Louver	10512115	1
7	Air Louver 1	10512116	1
8	Air Louver 2	10512117	1
9	Helicoid tongue	26112238	1
10	Left Axile Bush	10512037	1
11	Rear Case assy	12312214	1
12	Rubber Plug (Water Tray)	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	1
15	Evaporator Support	24212133	1
16	Evaporator Assy	01002575	1
17	Wall Mounting Frame	01252218	1
18	Cross Flow Fan	10352019	1
19	Motor Press Plate	26112494	1
20	Fan Motor	15012146	1
21	Connecting pipe clamp	26112164	1
22	Drainage hose	05230014	1
23	Stepping Motor	15012086	1
24	Crank	10582070	1
25	Electric Box Assy	10000202432	1
26	Electric Box	2011210801	1
27	Axile Bush	10542036	1
28	Terminal Board	42011233	1
29	Jumper	4202300108	1
30	Main Board	30138000403	1
31	Electric Box Cover2	20112081	1
32	Temperature Sensor	390000451	1
33	Temperature Sensor	390000597	1
34	Shield cover of Electric Box	01592092	1
35	Electric Box Cover1	20122154	1
36	Capacitor CBB611A	3301074712	1
37	Power Cord	/	/
38	Connecting Cable	4002052317	0
39	Remote Controller	305100491	1
40	Cold Plasma Generator	/	/

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24K



NO.	Description	Part Code		Qty
		GWH24MD-K3DNA2G/I	GWH24MD-K3DNA2G/I	
	Product Code	CB181N07601	CB181N07600	
1	Front Panel Assy	20012369	20012369	1
2	Filter Sub-Assy	11122091	11122091	2
3	Screw Cover	24252016	24252016	3
4	Front Case Assy	20012329	20012329	1
5	Air Louver 1	10512159	10512159	3
6	Helicoid Tongue	26112187	26112187	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	00000100013	00000100013	1
9	Rubber Plug (Water Tray)	76712012	76712012	1
10	Ring of Bearing	26152025	26152025	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Cross Flow Fan	10352045	10352045	1
13	Evaporator Support	24212139	24212139	1
14	Evaporator Assy	01100100032	01100100032	1
15	Wall Mounting Frame	01252032	01252032	1
16	Motor Press Plate	26112330	26112330	1
17	Fan Motor	15012098	15012098	1
18	Connecting pipe clamp	26112188	26112188	1
19	Drainage Hose	0523001405	0523001405	1
20	Stepping Motor	1521300101	1521300101	1
21	Crank	10582070	10582070	1
22	Display Board	30565039	30565039	1
23	Guide Louver	10512118	10512118	1
24	Axile Bush	10542036	10542036	2
25	Electric Box	2011210801	2011210801	1
26	Terminal Board	42011233	42011233	1
27	Shield Cover of Electric Box	01592092	01592092	1
28	Main Board	30138000402	30138000402	1
29	Electric Box Cover1	20122154	20122154	1
30	Electric Box Cover2	20112081	20112081	1
31	Jumper	4202300110	4202300110	1
32	Capacitor CBB61S	3301074703	3301074703	1
33	Electric Box Assy	10000202003	10000202003	1
34	Connecting Cable	4002052317	4002052317	0
35	Temperature Sensor	390000451	390000451	1
36	Temperature Sensor	390000597	390000597	1
37	Remote Controller	305100491	305100491	1
38	Power Cord	/	/	/
39	Cold Plasma Generator	/	/	/

Above data is subject to change without notice.

NO.	Description	Part Code		Qty
		GWH24MD-K3DNB3G/I	GWH24MD-K3DNC9G/I	
	Product Code	CB163N06900	CB145N05800	
1	Front Panel Assy	20012483	20012702	1
2	Filter Sub-Assy	11122091	11122091	2
3	Screw Cover	24252016	24252016	3
4	Front Case Assy	2001232905	20012329	1
5	Air Louver 1	10512159	10512159	3
6	Helicoid Tongue	26112187	26112187	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	00000100013	00000100013	1
9	Rubber Plug (Water Tray)	76712012	76712012	1
10	Ring of Bearing	26152025	26152025	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Cross Flow Fan	10352045	10352045	1
13	Evaporator Support	24212139	24212139	1
14	Evaporator Assy	01100100032	01100100032	1
15	Wall Mounting Frame	01252032	01252032	1
16	Motor Press Plate	26112330	26112330	1
17	Fan Motor	15012098	15012098	1
18	Connecting pipe clamp	26112188	26112188	1
19	Drainage Hose	0523001405	0523001405	1
20	Stepping Motor	1521300101	1521300101	1
21	Crank	10582070	10582070	1
22	Display Board	30565037	30565107	1
23	Guide Louver	10512118	10512118	1
24	Axile Bush	10542036	10542036	2
25	Electric Box	2011210801	2011210801	1
26	Terminal Board	42011233	42011233	1
27	Shield Cover of Electric Box	01592092	01592092	1
28	Main Board	30138000402	30138000402	1
29	Electric Box Cover1	20122154	20122154	1
30	Electric Box Cover2	20112081	20112081	1
31	Jumper	4202300110	4202300110	1
32	Capacitor CBB61	3301074703	3301074703	1
33	Electric Box Assy	10000202257	10000202430	1
34	Connecting Cable	4002052317	4002052317	0
35	Temperature Sensor	390000451	390000451	1
36	Temperature Sensor	390000597	390000597	1
37	Remote Controller	305100491	305100491	1
38	Power Cord	/	/	/
39	Cold Plasma Generator	/	/	/

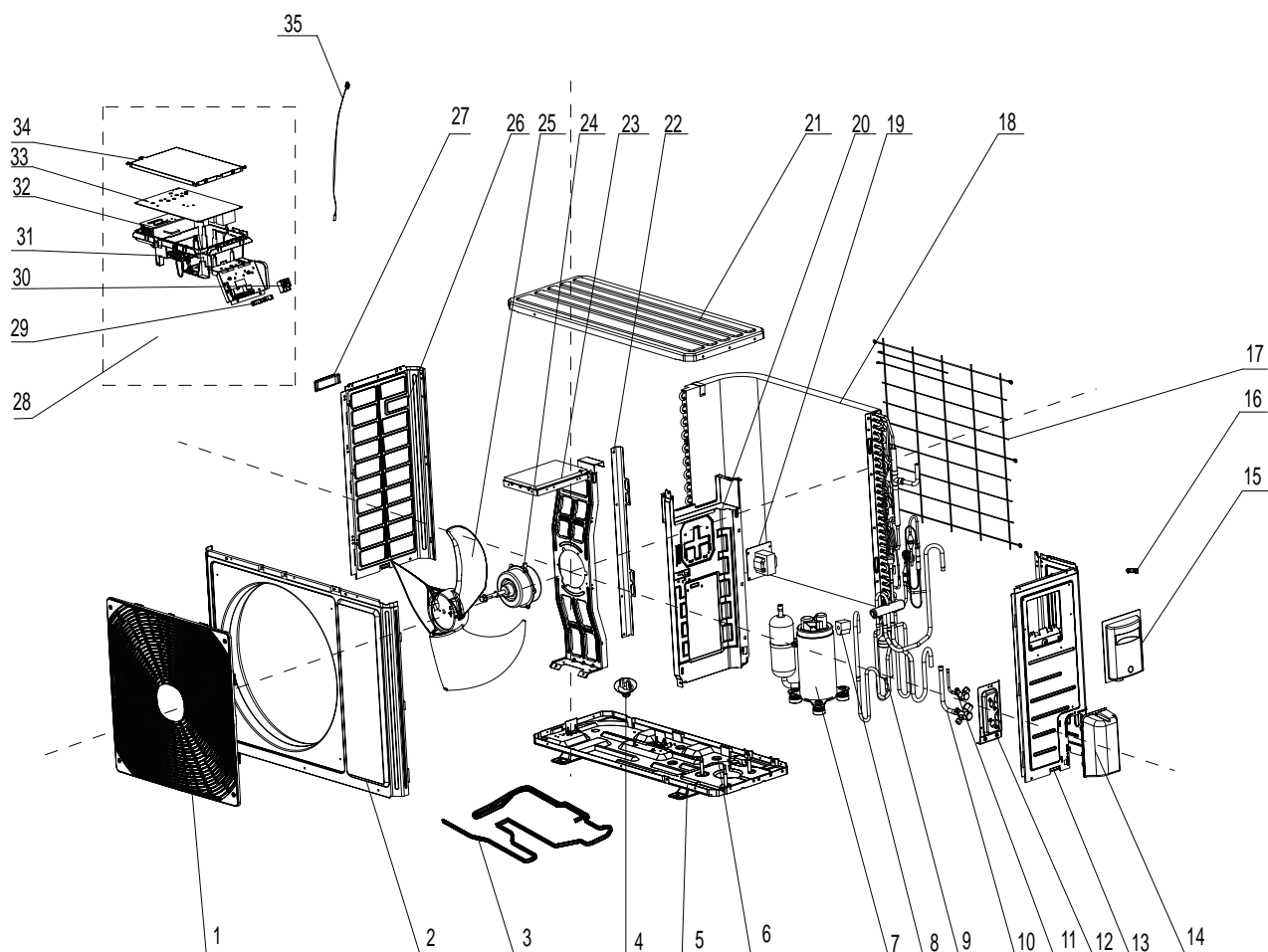
Above data is subject to change without notice.

NO.	Description	Part Code		Qty
		GWH24MD-K3DND3G/I	GWH24MD-K3DNE3G/I	
	Product Code	CB405N04200	CB404N03800	
1	Front Panel Assy	20012995	20022138	1
2	Filter Sub-Assy	11122091	11122091	2
3	Screw Cover	24252016	242520172	3
4	Front Case Assy	2001232905	20022105	1
5	Air Louver 1	10512159	1051215902	3
6	Helicoid Tongue	26112187	2611218701	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	00000100013	00000100021	1
9	Rubber Plug (Water Tray)	76712012	76712012	1
10	Ring of Bearing	26152025	26152025	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Cross Flow Fan	10352045	10352045	1
13	Evaporator Support	24212139	24212139	1
14	Evaporator Assy	01100100032	01100100032	1
15	Wall Mounting Frame	01252032	01252032	1
16	Motor Press Plate	26112330	26112330	1
17	Fan Motor	15012098	15012098	1
18	Connecting pipe clamp	26112188	26112188	1
19	Drainage Hose	0523001405	0523001405	1
20	Stepping Motor	1521300101	1521300101	1
21	Crank	10582070	10582070	1
22	Display Board	30565145	30565120	1
23	Guide Louver	10512118	1051211801	1
24	Axile Bush	10542036	10542036	2
25	Electric Box	2011210801	2011210801	1
26	Terminal Board	42011233	42011233	1
27	Shield Cover of Electric Box	01592092	01592092	1
28	Main Board	30138000402	30138000406	1
29	Electric Box Cover1	20122154	20122154	1
30	Electric Box Cover2	20112081	2011208101	1
31	Jumper	4202300110	4202300110	1
32	Capacitor CBB61	3301074703	3301074703	1
33	Electric Box Assy	10000202429	10000200795	1
34	Connecting Cable	4002052317	4002052317	0
35	Temperature Sensor	390000451	390000451	1
36	Temperature Sensor	390000597	390000597	1
37	Remote Controller	305100491	305100491	1
38	Power Cord	/	/	/
39	Cold Plasma Generator	/	1114001602	1

Above data is subject to change without notice.

10.2 Outdoor Unit

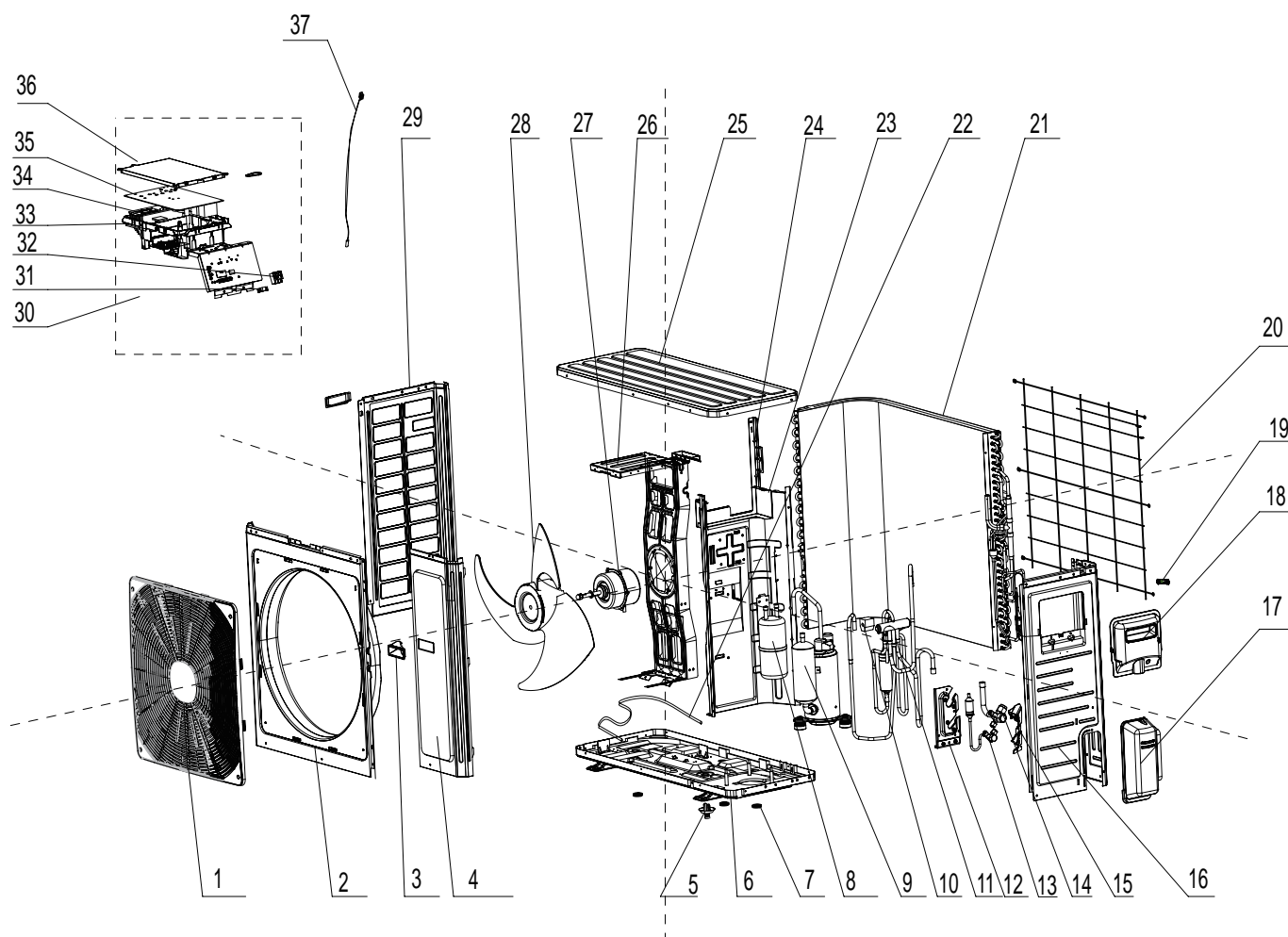
GWH18MC-K3DNE3G/O



NO.	Description	Part Code		Qty
		GWH18MC-K3DNE3G/O		
	Product Code	CB404W03400	CB404W03401	
1	Front Grill	22413025	22413025	1
2	Front Panel	01535013P	01535013P	1
3	Electrical Heater (Chassis)	/	765100045	1
4	Drainage Connector	06123401	06123401	1
5	Chassis Sub-assy	02803231P	02803270P	1
6	Drainage hole Cap	06813401	06813401	1
7	Compressor and fittings	00105249G	00105249G	1
8	Magnet Coil	4300040045	4300040045	1
9	4-Way Valve Assy	03073203	03073203	1
10	Cut off Valve Assy 1/2	07133774	07133774	1
11	Cut off Valve Sub-Assy	07133204	07133204	1
12	Valve support assy	01715010P	01715010P	1
13	Right Side Plate	0130509402P	0130509402P	1
14	Valve cover	22245002	22245002	1
15	Handle	26235254	26233053	1
16	Wiring Clamp	26115004	26115004	1
17	Rear Grill	01473043	01473043	1
18	Condenser Assy	01163865	01163865	1
19	Reactor	/	/	/
20	Clapboard Assy	01233153	01233153	1
21	Coping	01255005P	01255005P	1
22	Supporting Board(Condenser)	01795010	01795010	1
23	Motor Support Sub-Assy	01705036	01705036	1
24	Fan Motor	1501506402	1501506402	1
25	Axial Flow Fan	10335008	10335008	1
26	Left Side Plate	01305093P	01305093P	1
27	left handle	26233053	26233053	1
28	Electric Box Assy	10000100112	10000100111	1
29	Wire Clamp	71010003	71010003	1
30	Terminal Board	420101943	420101943	1
31	Electric Box	20113027	20113027	1
32	Radiator	49010252	49010252	1
33	Main Board	30138000416	30138000415	1
34	Insulated Board (Cover of Electric Box)	20113003	20113003	1
35	Temperature Sensor	3900030901	3900030901	1

Above data is subject to change without notice.

GWH24MD-K3DNE3G/O

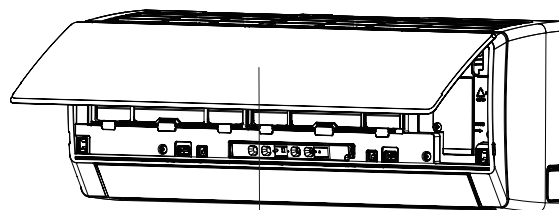


11. Removal Procedure

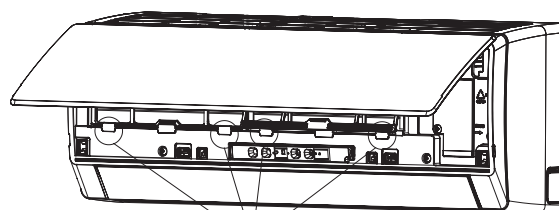
⚠ Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

11.1 Removal Procedure of Indoor Unit

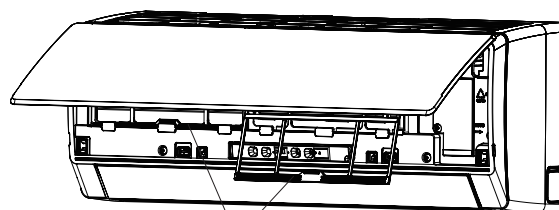
Steps	Procedure
1. Remove filter	
a	Open the panel.
b	Loosen the clasp shown in the fig and then pull the left filter and right filter outwards to remove them.
2. Remove horizontal louver	
	<p>Push out the axle bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p> <p>Note: The quantity of axle bush is different for different models.</p>



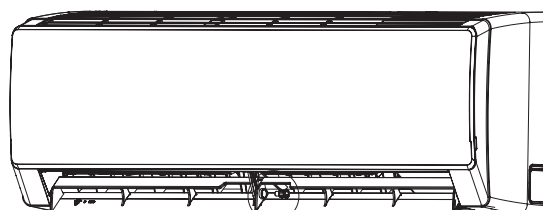
Panel



Clasp



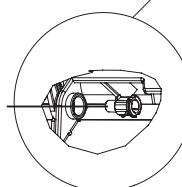
Left filter and right filter

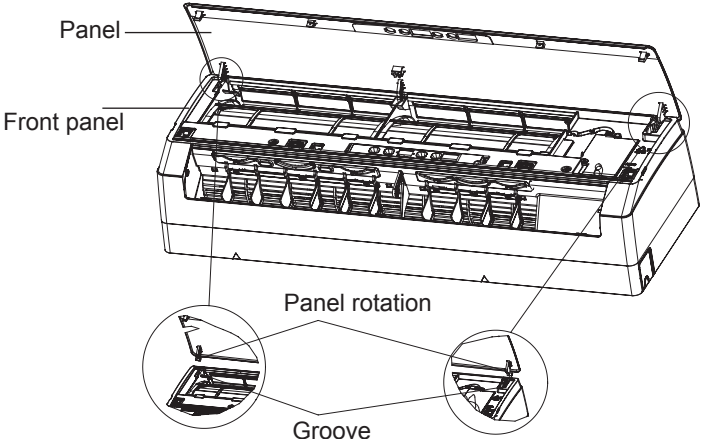
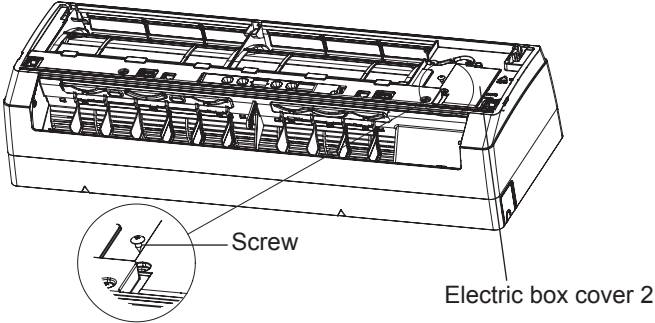
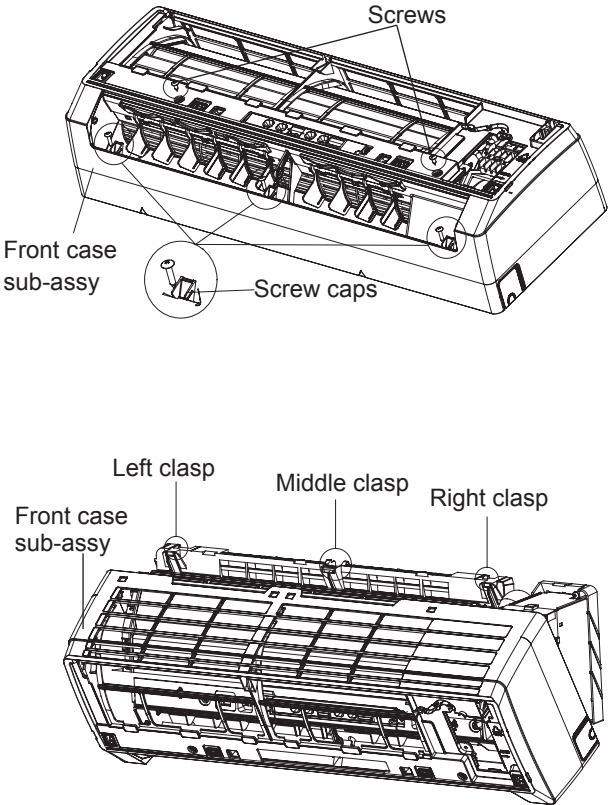


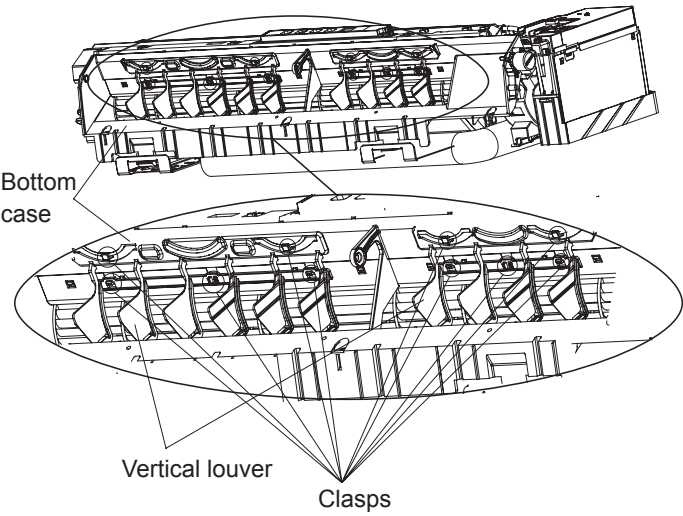
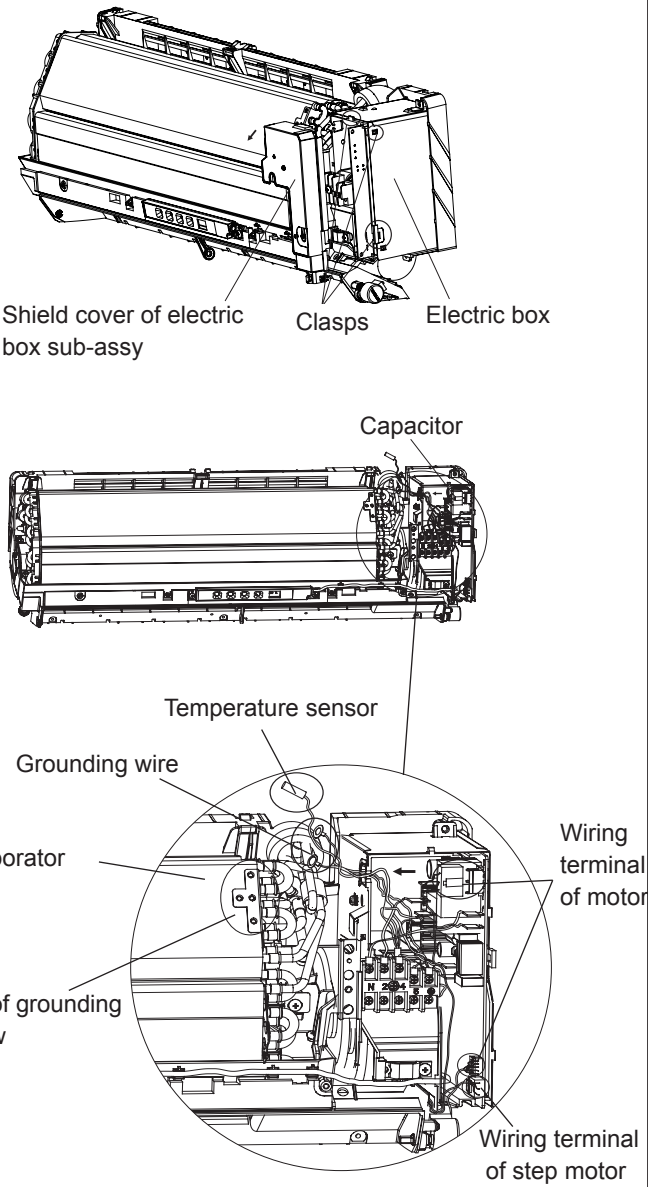
Horizontal louver

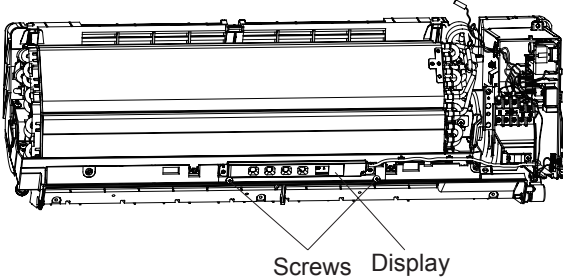
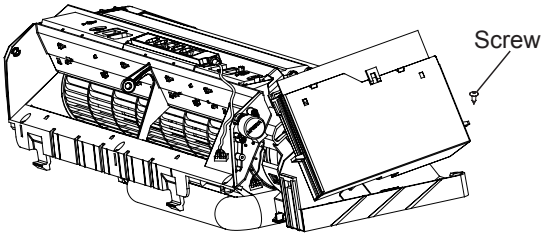
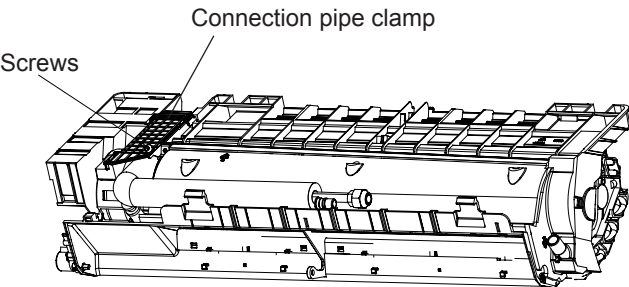
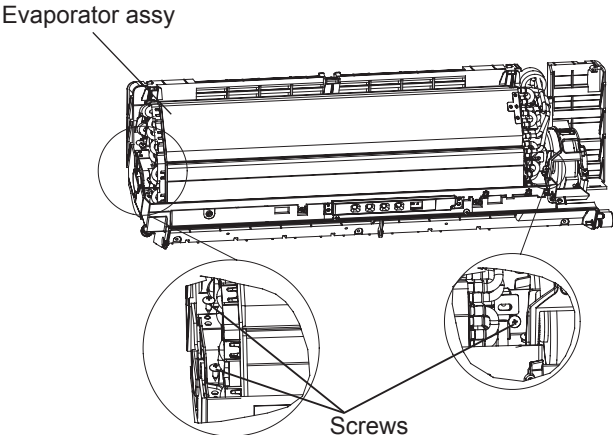
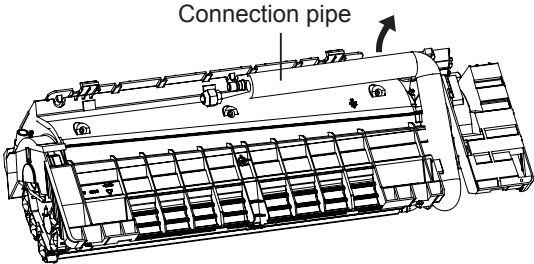
Axle bush

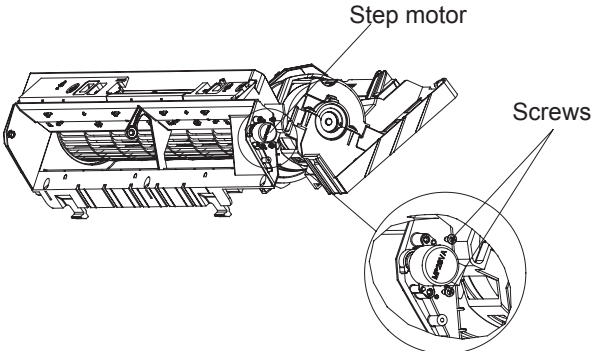
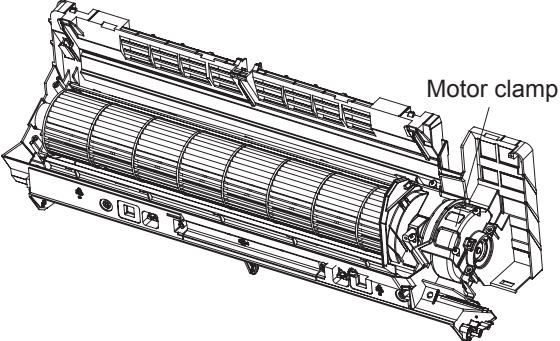
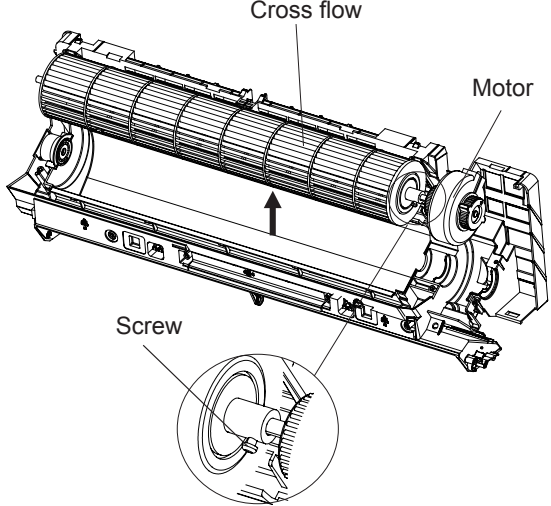
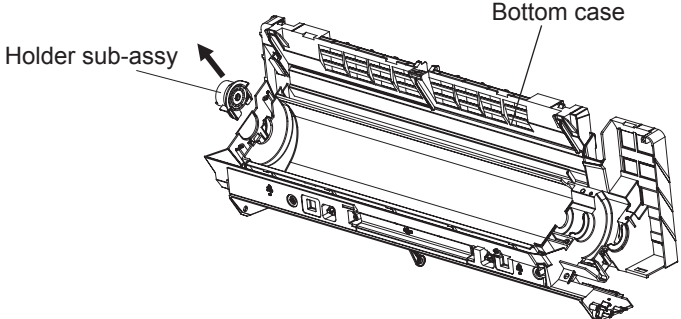
Location of step motor



Steps	Procedure	
3. Remove panel	<p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>	
		
4. Remove electric box cover 2	<p>Remove the screw on the electric box cover to remove the electric box cover 2.</p>	
		
5. Remove front case sub-assy	<p>a Remove the screws fixing front case.</p> <p>Note: 1.Open the screw caps before removing the screws around the air outlet. 2.The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the clasps at left, middle and right sides of front case. Lift the front case sub-assy upwards to remove it.</p>	
		

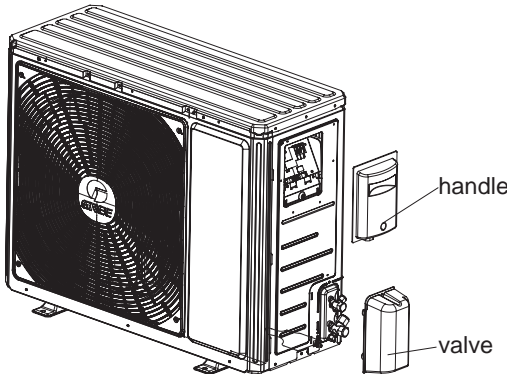
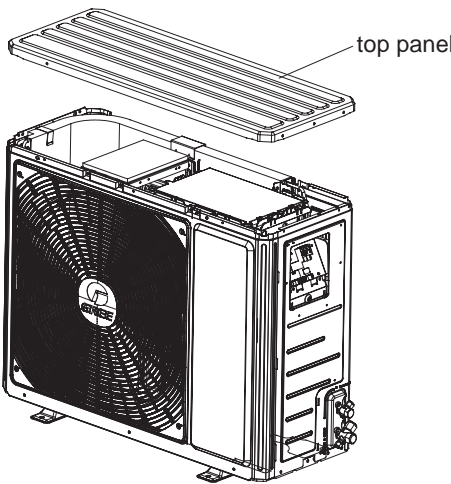
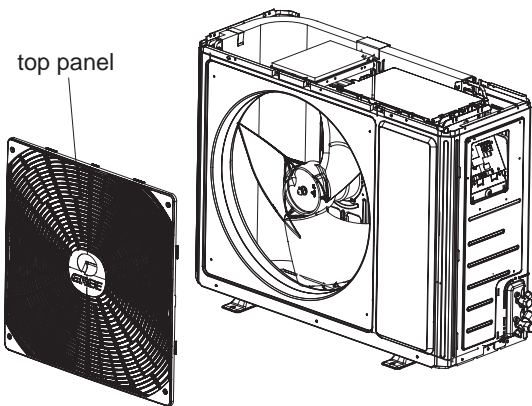
Steps	Procedure
6. Remove vertical louver	
7. Remove electric box assy	<div data-bbox="118 967 743 1098"> <p>a Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy.</p> </div> <div data-bbox="118 1338 743 1688"> <p>b Cut off the tieline which binding the temperature sensor and grounding wire on the evaporator, and then pull out the indoor tube temperature sensor from the evaporator. Remove the screws at the connection place between grounding wire and evaporator. Pull out the wiring terminal of motor and wiring terminal of step motor from the mainboard.</p> <p>Note: 1.Location of tube temperature sensor and tieline on the evaporator is different for different models. 2.When pulling out the wiring terminal, pay attention to loose the clasp and don't pull it so hard.</p> </div> <div data-bbox="865 858 1515 2039">  </div>

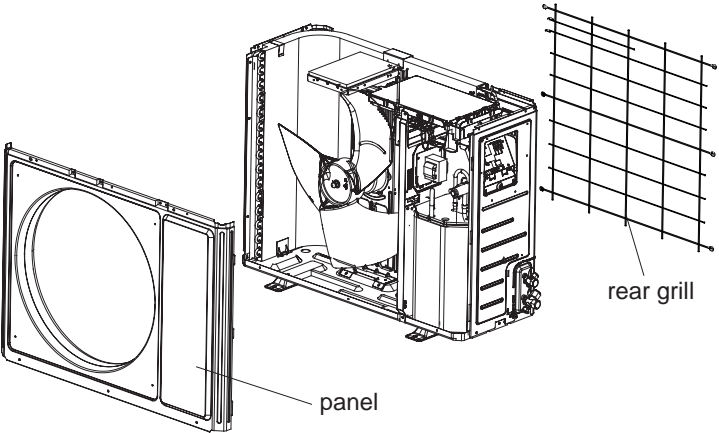
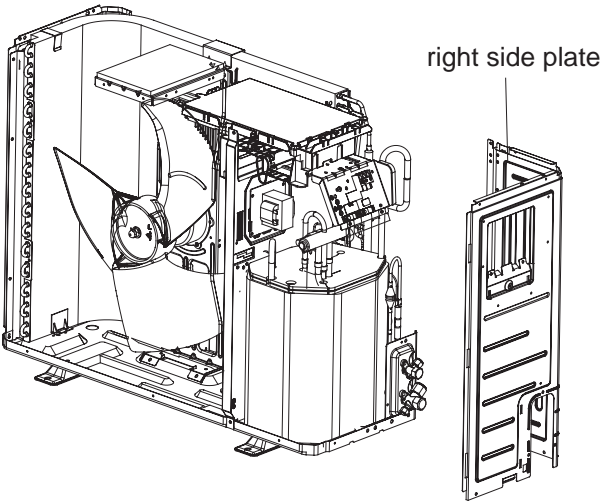
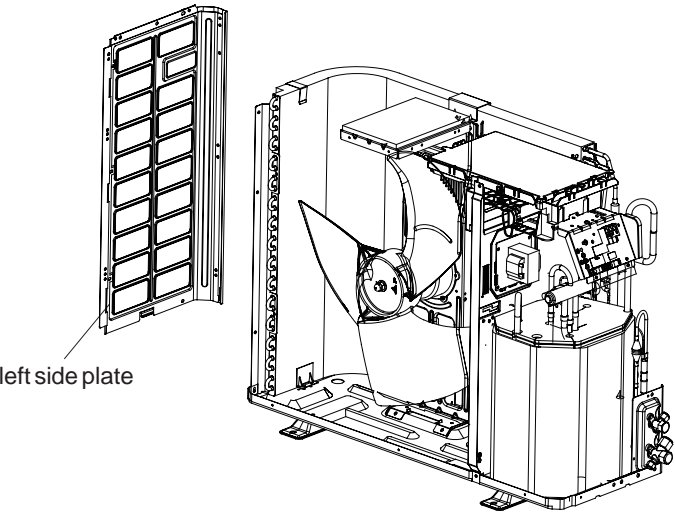
Steps	Procedure	
c	Remove two screws fixing display. Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.	 Screws Display
d	Remove the screw fixing electric box assy and then remove the electric box assy.	 Screw
8. Remove evaporator assy		
a	At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.	 Screws Connection pipe clamp
b	Remove 3 screws fixing evaporator assy.	 Evaporator assy Screws
c	Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.	 Connection pipe

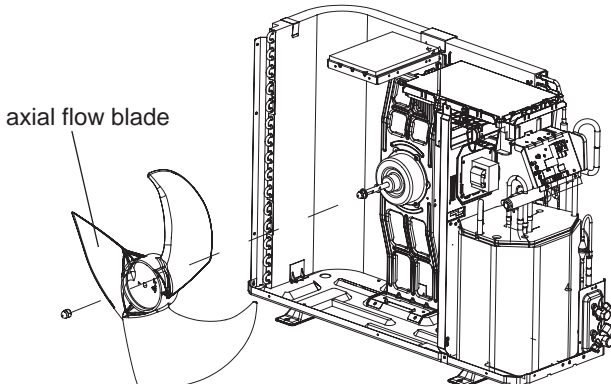
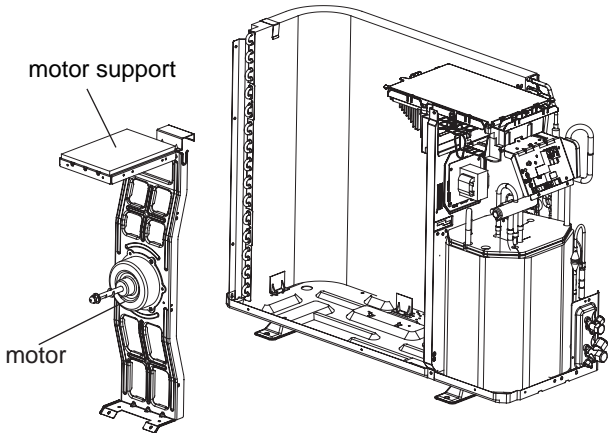
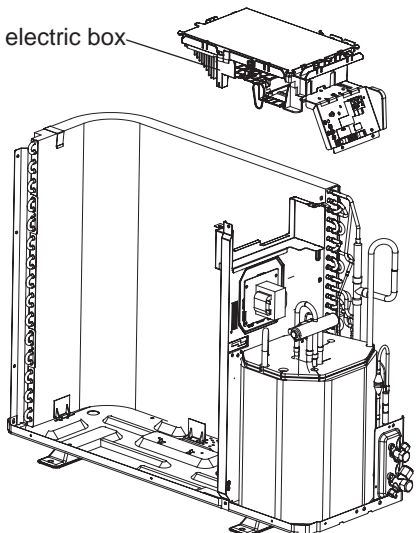
Steps	Procedure	
9. Remove stepping motor		
	Remove the screw fixing step motor and then remove the step motor.	
10. Remove motor and cross flow blade		
a	Remove the screws fixing motor clamp and then remove the motor clamp.	
b	Remove the screw at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.	
c	Remove the bearing holder sub-assy.	

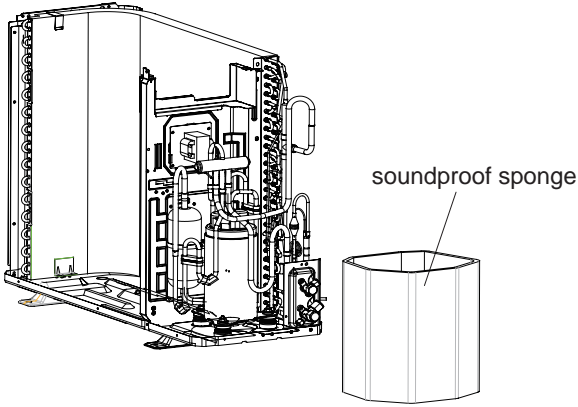
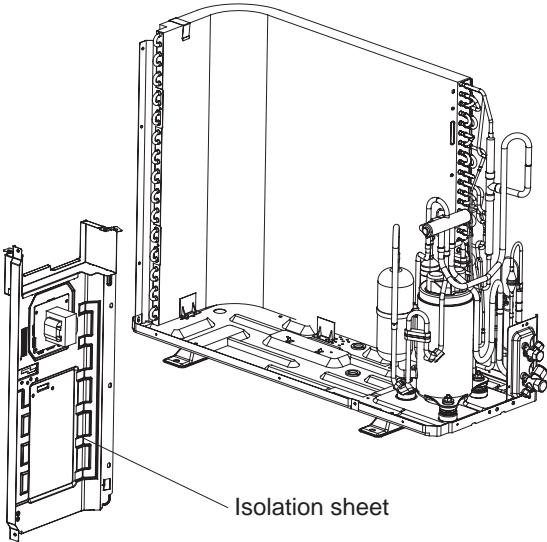
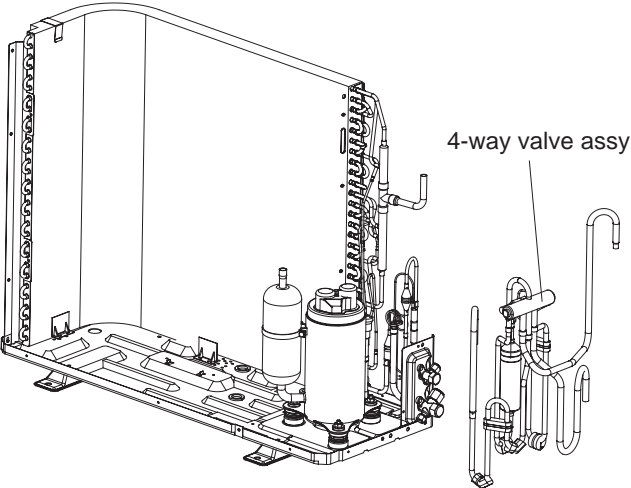
11.2 Removal Procedure of Outdoor Unit

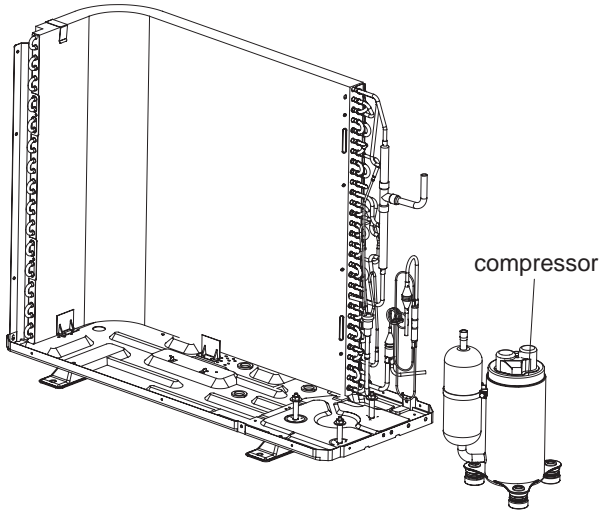
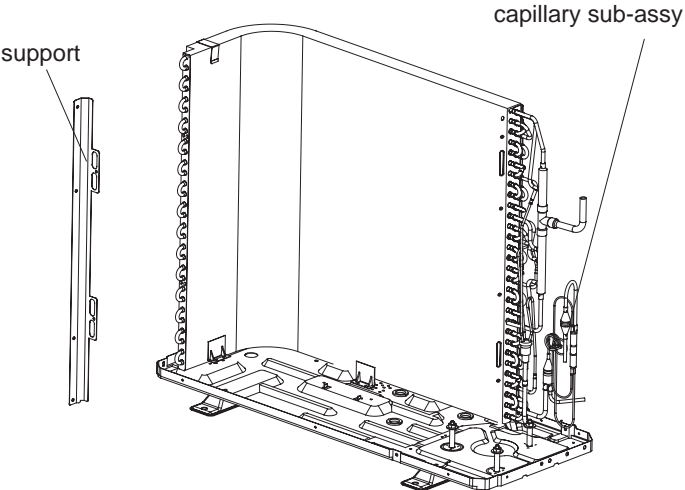
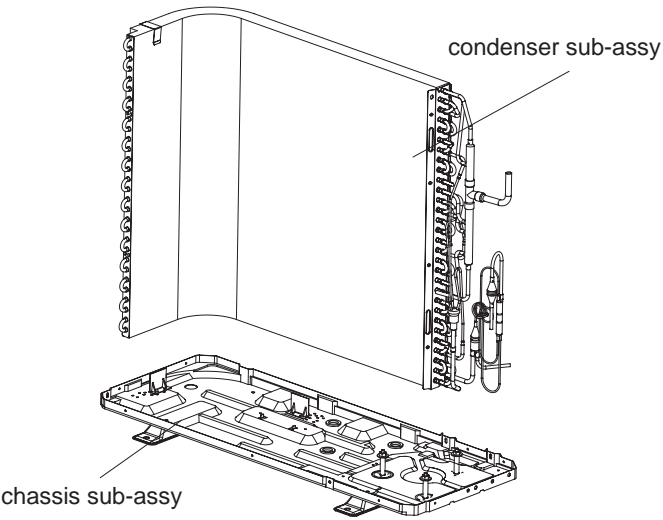
18K
Electric heater band is not shown.

Steps	Procedure	
1. Remove top panel		
a	Twist off the screws used for fixing the handle and valve cover, pull the handle and valve cover up ward to remove it.	
b	Remove the 3 screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.	
2. Remove grille , panel and rear grill		
a	Remove the 2 screws connecting the grille and the panel, and then remove the grille.	

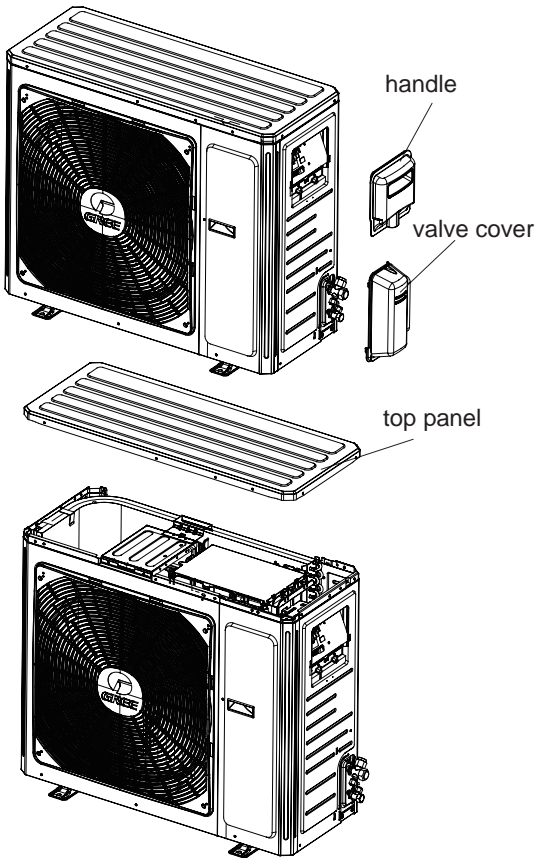
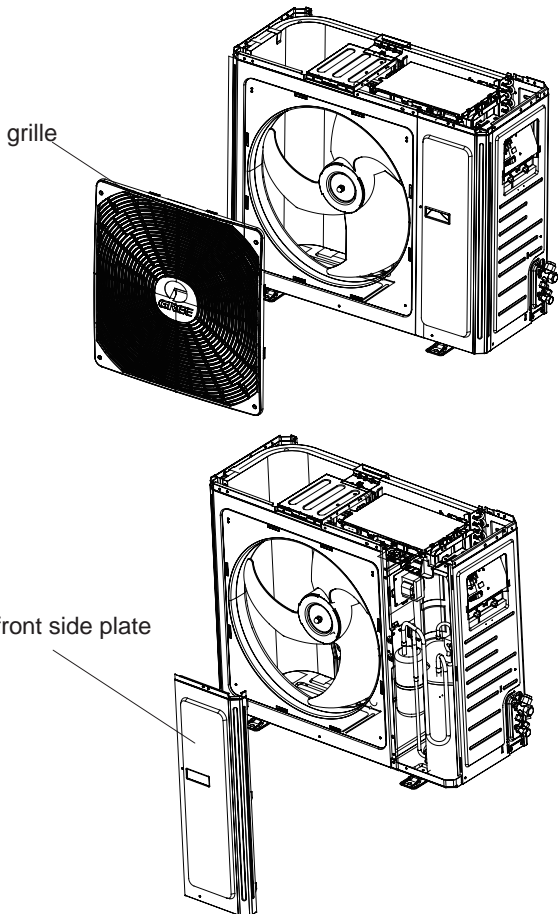
Steps	Procedure	
b	<p>Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.</p> <p>Remove the 6 screws connecting the left side plate and right side plate and then remove rear grill</p>	 <p>Diagram illustrating the removal of the front panel and rear grill. The front panel is shown detached from the chassis. The rear grill is shown detached from the back of the unit. Labels 'panel' and 'rear grill' point to their respective parts.</p>
3. Remove left side plate and right side plate		
a	<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 assy.</p>	 <p>Diagram illustrating the removal of the right side plate. The right side plate is shown detached from the chassis. Label 'right side plate' points to the detached part.</p>
b	<p>Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy.</p>	 <p>Diagram illustrating the removal of the left side plate. The left side plate is shown detached from the chassis. Label 'left side plate' points to the detached part.</p>

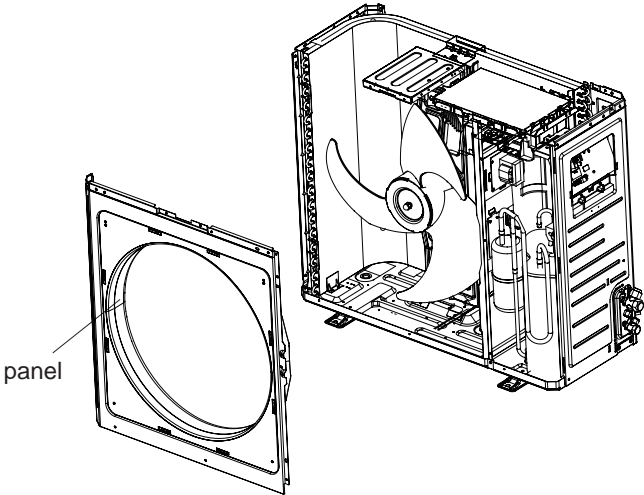
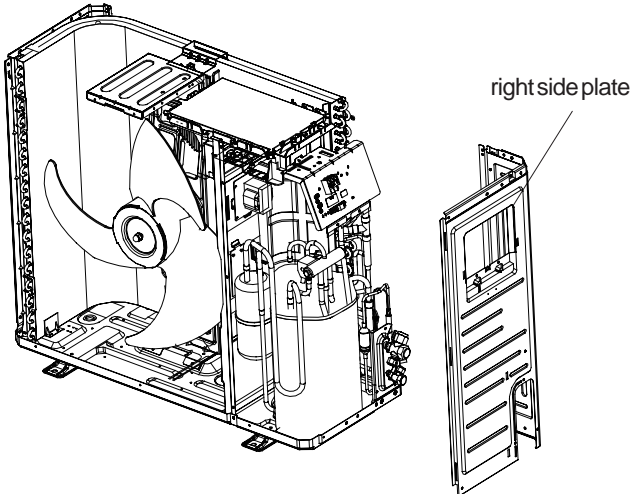
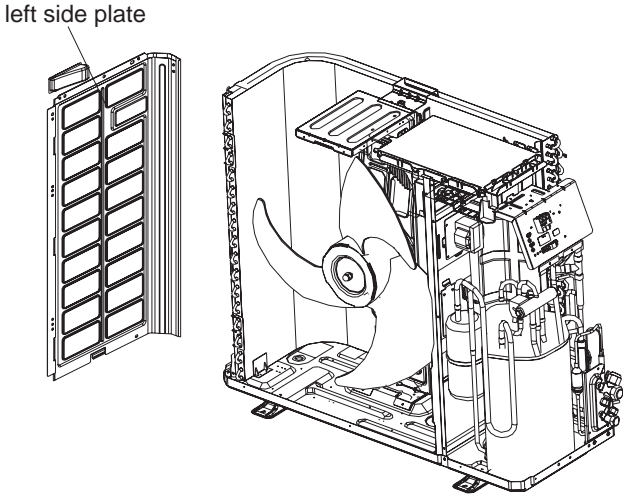
Steps	Procedure	
4. Remove fan motor		
a	Remove the nuts fixing the blade and then remove the axial flow blade.	
b	Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.	
5. Remove electric box		
	Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.	

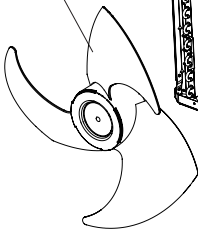
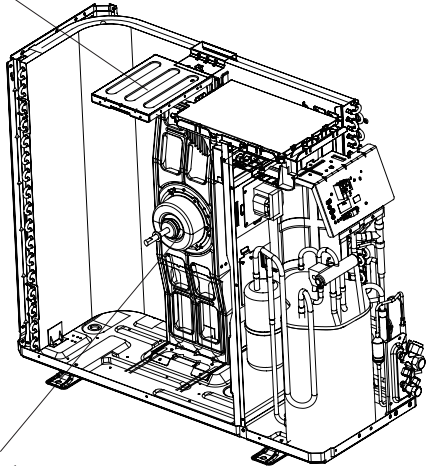
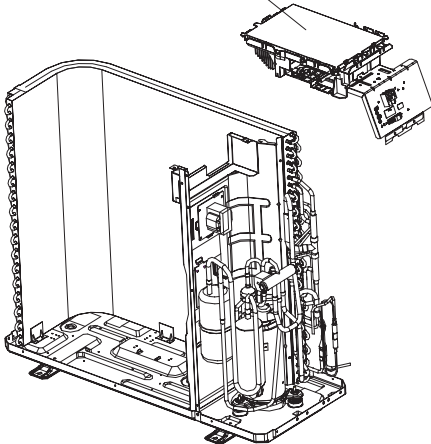
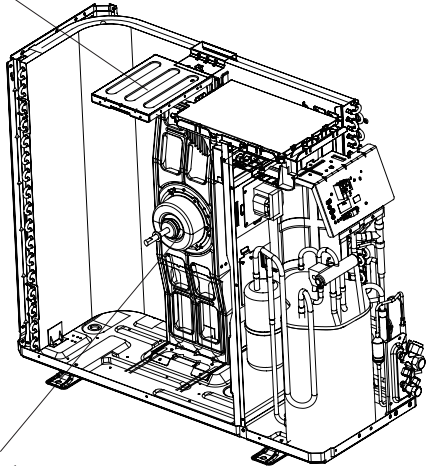
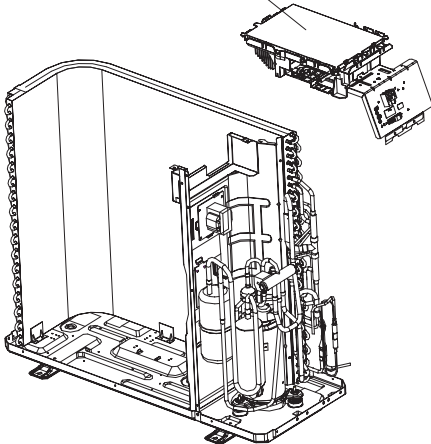
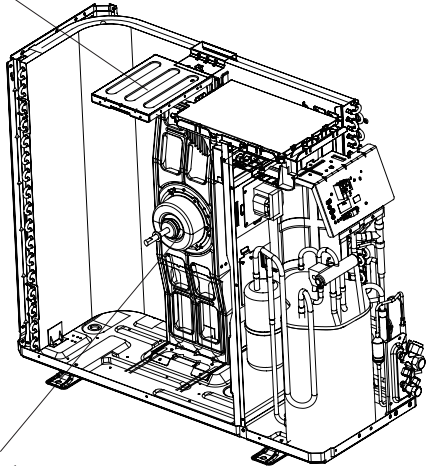
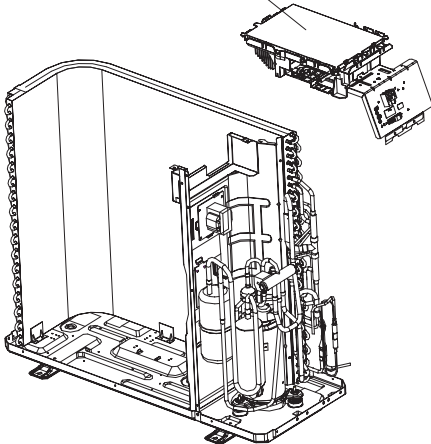
Steps	Procedure
<p>6.Remove soundproof sponge</p> <p>Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully</p>	 <p>soundproof sponge</p>
<p>7. Remove Isolation sheet</p> <p>Remove the 3 screws fixing the isolation sheet and then remove the Isolation sheet.</p>	 <p>Isolation sheet</p>
<p>8. Remove 4-way valve assy</p> <p>Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.</p>	 <p>4-way valve assy</p>

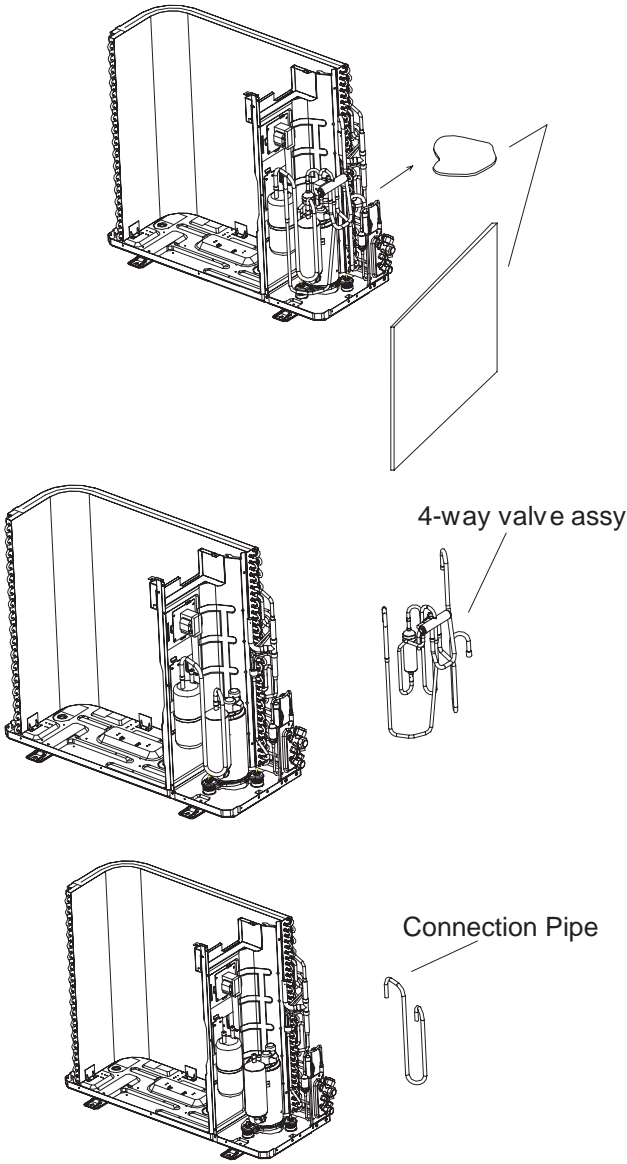
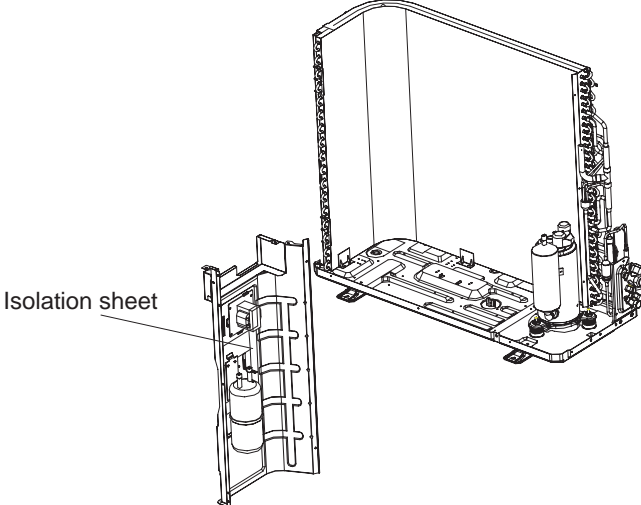
Steps	Procedure	
9. Remove e compressor		
	Remove the 3 foot nuts fixing the compressor and then remove the compressor.	
10.Remove condenser sub-assy		
a	Remove the screws connecting the support (condenser) and condenser assy,and then remove the support(condenser).	
b	Remove the chassis sub-assy and condenser sub-assy.	

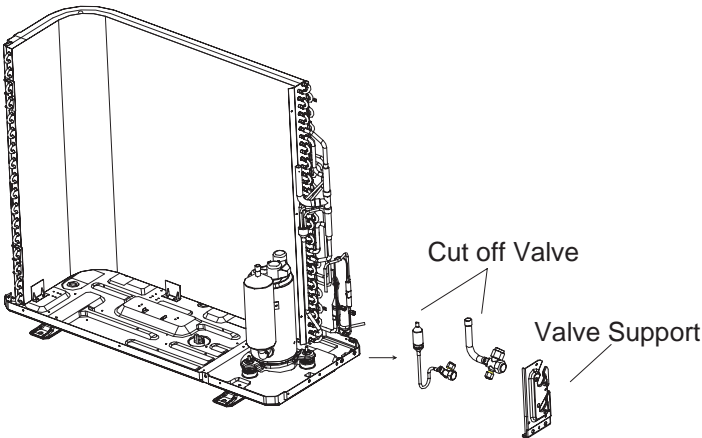
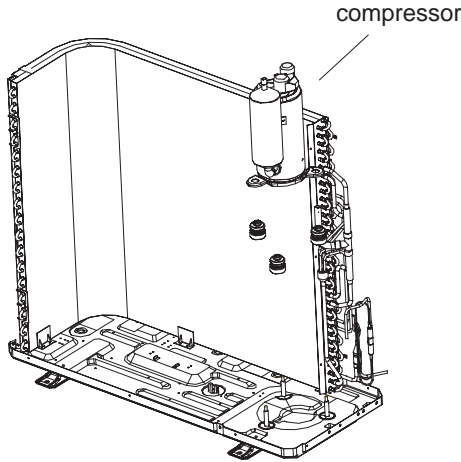
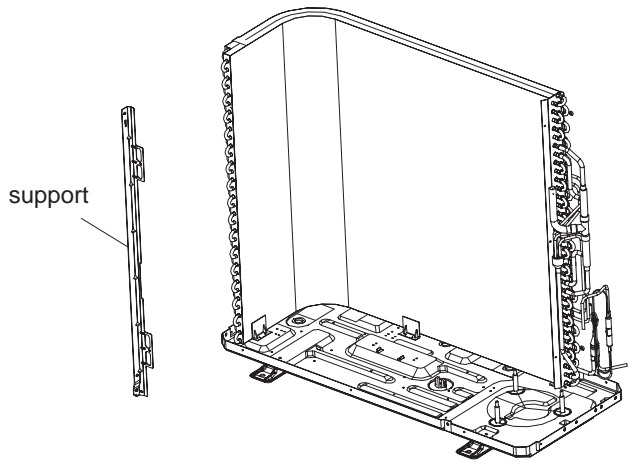
24K
Electric heater band is not shown.

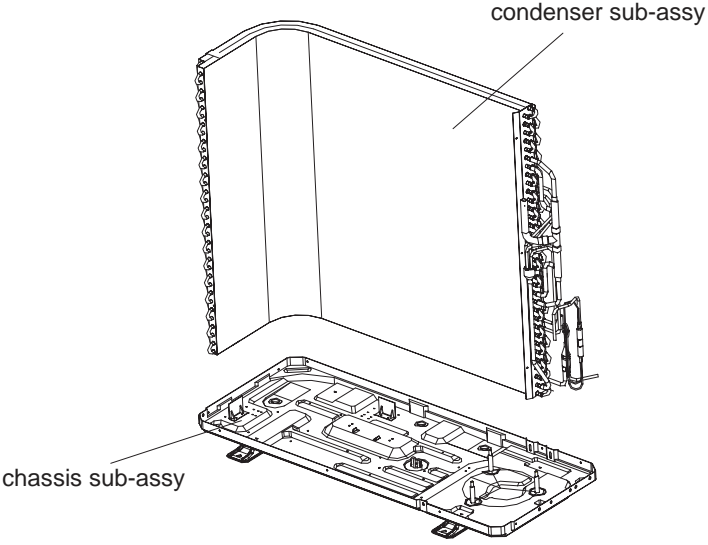
Steps	Procedure	
1. Remove top panel		
a	Twist off the screws used for fixing the handle and valve cover, pull the handle and valve cover upward to remove it.	
b	Remove the 3 screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.	
2. Remove grille, front side plate and panel.		
a	Remove the 2 screws connecting the grille and the panel, and then remove the grille.	
b	Remove the 1 screw connecting the front side plate and the panel, and then remove the front side plate.	

Steps	Procedure	
c	Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.	
3. Remove right side plate and left side plate		
a	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 assy.	
b	Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy.	

Steps	Procedure						
4. Remove fan motor and axial flow blade							
a	<div data-bbox="224 406 690 476"><p>Remove the nuts fixing the blade and then remove the axial flow blade.</p></div> <div data-bbox="849 399 1015 425">axial flow blade</div> <div data-bbox="867 467 1065 694"></div> <div data-bbox="906 832 1143 860">fan motor fixing frame</div> <tr><td data-bbox="77 1415 203 1987">b</td><td data-bbox="203 1415 1539 1987"><div data-bbox="224 1078 690 1312"><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></div><div data-bbox="976 1338 1078 1365">fan motor</div><div data-bbox="1040 882 1468 1345"></div></td></tr> <tr><td colspan="2" data-bbox="77 1415 797 1480">5. Remove electric box</td></tr> <tr><td data-bbox="77 1480 203 1987"></td><td data-bbox="203 1480 1539 1987"><div data-bbox="224 1613 690 1764"><p>Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.</p></div><div data-bbox="1052 1452 1175 1478">electric box</div><div data-bbox="907 1520 1338 1961"></div></td></tr>	b	<div data-bbox="224 1078 690 1312"><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></div> <div data-bbox="976 1338 1078 1365">fan motor</div> <div data-bbox="1040 882 1468 1345"></div>	5. Remove electric box			<div data-bbox="224 1613 690 1764"><p>Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.</p></div> <div data-bbox="1052 1452 1175 1478">electric box</div> <div data-bbox="907 1520 1338 1961"></div>
b	<div data-bbox="224 1078 690 1312"><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></div> <div data-bbox="976 1338 1078 1365">fan motor</div> <div data-bbox="1040 882 1468 1345"></div>						
5. Remove electric box							
	<div data-bbox="224 1613 690 1764"><p>Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.</p></div> <div data-bbox="1052 1452 1175 1478">electric box</div> <div data-bbox="907 1520 1338 1961"></div>						

Steps	Procedure	
6.Remove soundproof sponge and 4-way valve assy		
a	Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully	
b	Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.	
7. Remove Isolation sheet		
	Remove the 3 screws fixing the isolation sheet and then remove the Isolation sheet.	

Steps	Procedure
<p>8. Remove Cut off Valve and Valve Support</p> <p>Remove the 2 bolts fixing the valve subassemblies. Unsolder the welding joint connecting the gas valve and the return air pipe. Remove the gas valve. (Note: When unsoldering the soldering joint, wrap the gas valve with wet cloth completely to avoid damage to the valve caused by high temperature.) Unsolder the welding joint connecting the liquid valve and the connecting pipe. Remove the liquid valve. Remove screws fixing valve support and then remove the valve support; remove the screw fixing the condenser and then pull the condenser upwards to remove it.</p>	
<p>9. Remove compressor</p> <p>Remove the 3 foot nuts fixing the compressor and then remove the compressor.</p>	
<p>10. Remove support</p> <p>Remove the screws connecting the support and condenser assy, and then remove the support.</p>	

Steps		
11.Remove condenser sub-assy		
	<p>Remove the chassis sub-assy and condenser sub-assy.</p>	 <p>The diagram illustrates the removal of two sub-assemblies from a unit. The 'condenser sub-assy' is shown as a vertical component with a curved top, being lifted away from the unit. The 'chassis sub-assy' is shown as a flat, rectangular component with various internal components, being lifted away from the unit. Labels with leader lines point to each component.</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

- Standard length of connection pipe
 - 5m, 7.5m, 8m.
- Min. length of connection pipe is 3m.
- Max. length of connection pipe and max. high difference.
- The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
 - After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
 - The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):

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

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

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

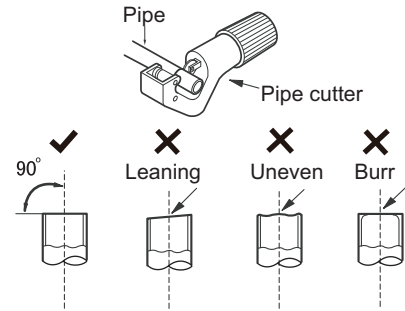
Appendix 3: Pipe Expanding Method

⚠ Note:

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

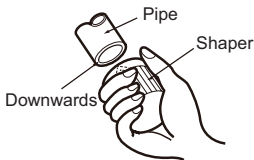
A: Cut the pip

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



B: Remove the burrs

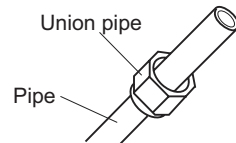
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

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



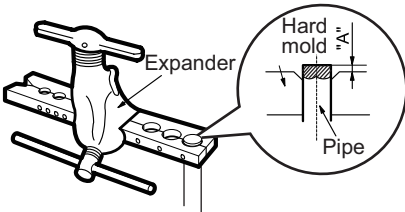
E: Expand the port

- Expand the port with expander.

⚠ Note:

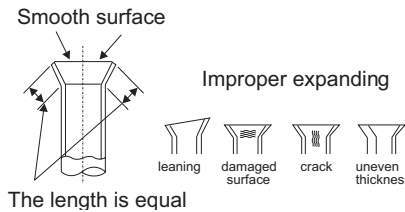
- "A" is different according to the diameter, please refer to the sheet below:

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



F: Inspection

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



Appendix 4: List of Resistance for Temperature Sensor

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

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	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 of Tube Temperature Sensors for Indoor and Outdoor (20K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	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 Discharge Temperature Sensor for Outdoor (50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64

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For product improvement, specifications and appearance in this manual are subject to change without prior notice.