

Service Manual

Models: GWH18AAC-K3NNA1A
GWH18AAC-K3NNA2A
GWH24AAD-K3NNA1A
GWH24AAD-K3NNA2A
(Refrigerant R410A)

Table of Contents

Part I : Technical Information	1
1.Summary	1
2. Specifications	2
2.1 Specification Sheet.....	2
2.2 Capacity Curve in Different Outdoor Temperature	4
2.3 Cooling and Heating Data Sheet in Rated Frequency	4
3. Outline Dimension Diagram	5
3.1 Indoor Unit.....	5
3.2 Outdoor Unit.....	6
4. Refrigerant System Diagram	7
5. Electrical Part	8
5.1 Wiring Diagram.....	8
5.2 PCB Printed Diagram	11
6. Function and Control	12
6.1 Remote Controller Introduction	12
6.2 Brief Description of Modes and Functions.....	16
Part II : Installation and Maintenance	21
7. Notes for Installation and Maintenance	21
8. Installation	23
8.1 Installation Dimension Diagram.....	23
8.2 Installation Parts-Checking	25
8.3 Selection of Installation Location.....	25
8.4 Electric Connection Requirement.....	25
8.5 Installation of Indoor Unit.....	25
8.6 Installation of Outdoor unit	28
8.7 Vacuum Pumping and Leak Detection	29
8.8 Check after Installation and Test operation	29

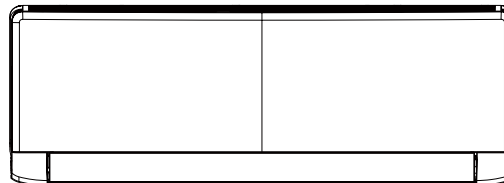
9. Maintenance	30
9.1 Error code	30
9.2 Procedure of Troubleshooting	32
9.3 Maintenance method for normal malfunction	37
10. Exploded View and Parts List	39
10.1 Indoor Unit	39
10.2 Outdoor Unit	43
11. Removal Procedure	47
11.1 Removal Procedure of Indoor Unit	47
11.2 Removal Procedure of Outdoor Unit	52
Appendix:	62
Appendix 1: Reference Sheet of Celsius and Fahrenheit	62
Appendix 2: Configuration of Connection Pipe	62
Appendix 2: Pipe Expanding Method	63
Appendix 4: List of Resistance for Temperature Sensor	64

Part I : Technical Information

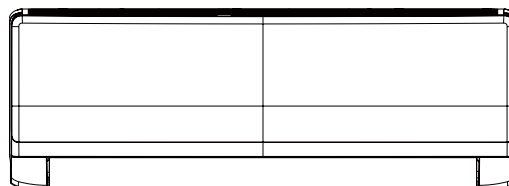
1.Summary

Indoor Unit:

GWH18AAC-K3NNA1A/I
GWH24AAD-K3NNA1A/I

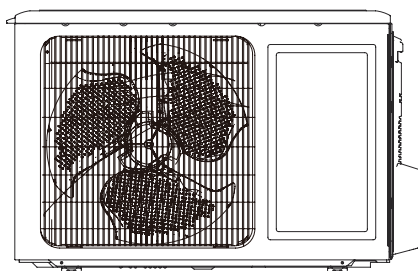


GWH18AAC-K3NNA2A/I
GWH24AAD-K3NNA2A/I

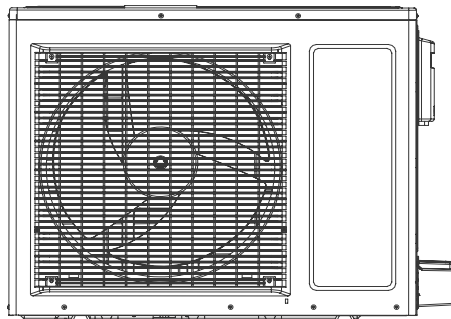


Outdoor Unit:

GWH18AAC-K3NNA1A/O



GWH24AAD-K3NNA1A/O



Remote Controller:

YAW1F



2. Specifications

2.1 Specification Sheet

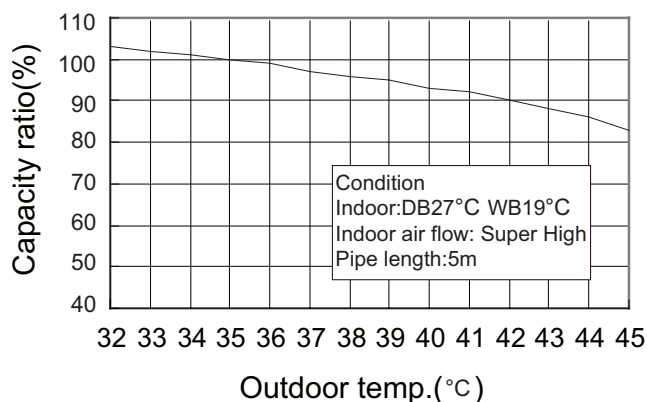
Model			GWH18AAC-K3NNA1A GWH18AAC-K3NNA2A	GWH24AAD-K3NNA1A GWH24AAD-K3NNA2A	
Product Code			CA115014200 CA115014500	CA115014300 CA115014600	
Power Supply	Rated Voltage	V~	220-240	220-240	
	Rated Frequency	Hz	50	50	
	Phases		1	1	
Power Supply Mode			Indoor	Indoor	
Cooling Capacity		W	4800	6150	
Heating Capacity		W	5000	6700	
Cooling Power Input		W	1495	1915	
Heating Power Input		W	1500	1856	
Cooling Power Current		A	6.81	8.49	
Heating Power Current		A	6.72	8.23	
Rated Input		W	2150	13.88	
Rated Current		A	10.96	5.5	
Air Flow Volume(SH/H/M/L/SL)		m ³ /h	650/560/480/350/-	900/800/700/600/-	
Dehumidifying Volume		L/h	1.8	1.8	
EER		W/W	3.21	3.21	
COP		W/W	3.61	3.61	
SEER		W/W	/	/	
HSPF		W/W	/	/	
Application Area		m ²	21-31	23-34	
Indoor Unit	Model of Indoor Unit		GWH18AAC-K3NNA1A/I GWH18AAC-K3NNA2A/I	GWH24AAD-K3NNA1A/I GWH24AAD-K3NNA2A/I	
	Product Code of Indoor Unit		CA115N14200 CA115N14500	CA115N14300 CA115N14600	
	Fan Type		Cross-flow	Cross-flow	
	Diameter Length(DXL)		mm	Φ98X633	Φ106X706
	Fan Motor Cooling Speed(SH/H/M/L/SL)		r/min	1350/1200/1050/950/-	1350/1200/1050/900/-
	Fan Motor Heating Speed(SH/H/M/L/SL)		r/min	1300/1150/1000/900/-	1350/1200/1100/900/-
	Output of Fan Motor		W	20	35
	Fan Motor RLA		A	0.20	0.35
	Fan Motor Capacitor		μF	1.5	2.5
	Input of Heater		W	/	/
	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 (LXD _X W)		mm	715X25.4X304.8	715X25.4X304.8
	Swing Motor Model			MP24HF	MP35CP
	Output of Swing Motor		W	1.5	2.5
	Fuse		A	3.15	3.15
	Sound Pressure Level (SH/H/M/L/SL)		dB (A)	42/38/34/31/-	49/45/41/37/-
	Sound Power Level (SH/H/M/L/SL)		dB (A)	52/48/44/41/-	59/55/51/47/-
	Dimension (WXHXD)		mm	849X289X210	970X300X225
	Dimension of Carton Box (LXWXH)		mm	879X341X268	1017X366X285
Dimension of Package (LXWXH)		mm	902X357X279	1020X369X295	
Net Weight		kg	11	13.5	
Gross Weight		kg	13	16.5	

Outdoor Unit	Model of Outdoor Unit		GWH18AAC-K3NNA1A/O	GWH24AAD-K3NNA1A/O
	Product Code of Outdoor Unit		CA115W14200	CA115W14300
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-D19F030	QXA-F232F050
	Compressor Oil		ATMOS-RB68EP or equivalent	RB68EP
	Compressor Type		Rotary	Rotary
	L.R.A.	A	38.00	40
	Compressor RLA	A	7.10	8.4
	Compressor Power Input	W	1540	1930
	Overload Protector		UP3-A6	UP3-27
	Throttling Method		Capillary	Capillary
	Operation Temp	°C	16~30	16~30
	Ambient Temp (Cooling)	°C	18~48	18~48
	Ambient Temp (Heating)	°C	-7~24	-7~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7.94	Φ7
	Rows-fin Gap	mm	2-1.4	1-1.4
	Coil Length (LXD _X W)	mm	735X38.1X508	613X38.1X660
	Fan Motor Speed	rpm	850	780
	Output of Fan Motor	W	35	68
	Fan Motor RLA	A	0.33	0.75
	Fan Motor Capacitor	μF	2.5	2.5
	Air Flow Volume of Outdoor Unit	m ³ /h	1800	2800
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ394.5	Φ460
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IPX4	IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level (H/M/L)	dB (A)	56/-/-	56/-/-
Sound Power Level (H/M/L)	dB (A)	66/-/-	66/-/-	
Dimension (WXHXD)	mm	848X540X320	913X680X378	
Dimension of Carton Box (LXWXH)	mm	878X360X580	994X428X725	
Dimension of Package (LXWXH)	mm	881X363X595	997X431X740	
Net Weight	kg	39	50	
Gross Weight	kg	41.5	54	
Refrigerant		R410A	R410A	
Refrigerant Charge	kg	1.26	1.45	
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	15	15
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ12	Φ12
	Max Distance Height	m	10	10
	Max Distance Length	m	25	25
Note: The connection pipe applies metric diameter.				

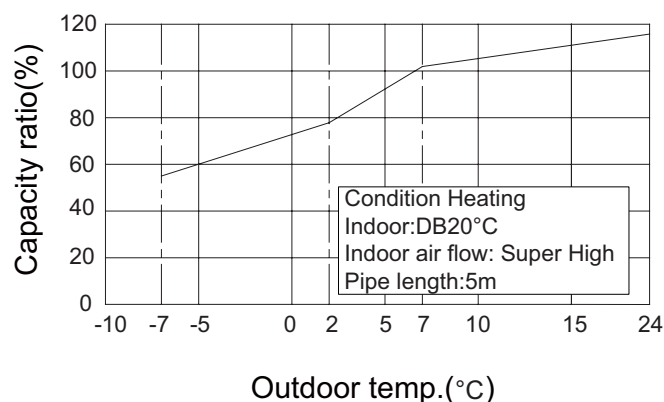
The above data is subject to change without notice; please refer to the nameplate of the unit.

2.2 Capacity Curve in Different Outdoor Temperature

Cooling



Heating



2.3 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 P (MPa)	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor			T1 (°C)	T2 (°C)		
27/19	35/24	18/24K	0.85~1.0	in:8~11 out:11~14	in:75~85 out:37~43	Super High	High

Heating

Rated heating condition(°C) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit P (MPa)	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor			T1 (°C)	T2 (°C)		
20/-	7/6	18/24K	3.5~3.8	in:75~85 out:37~43	in:1~3 out:2~5	Super High	High

Instruction:

T1: Inlet and outlet pipe temperature of evaporator

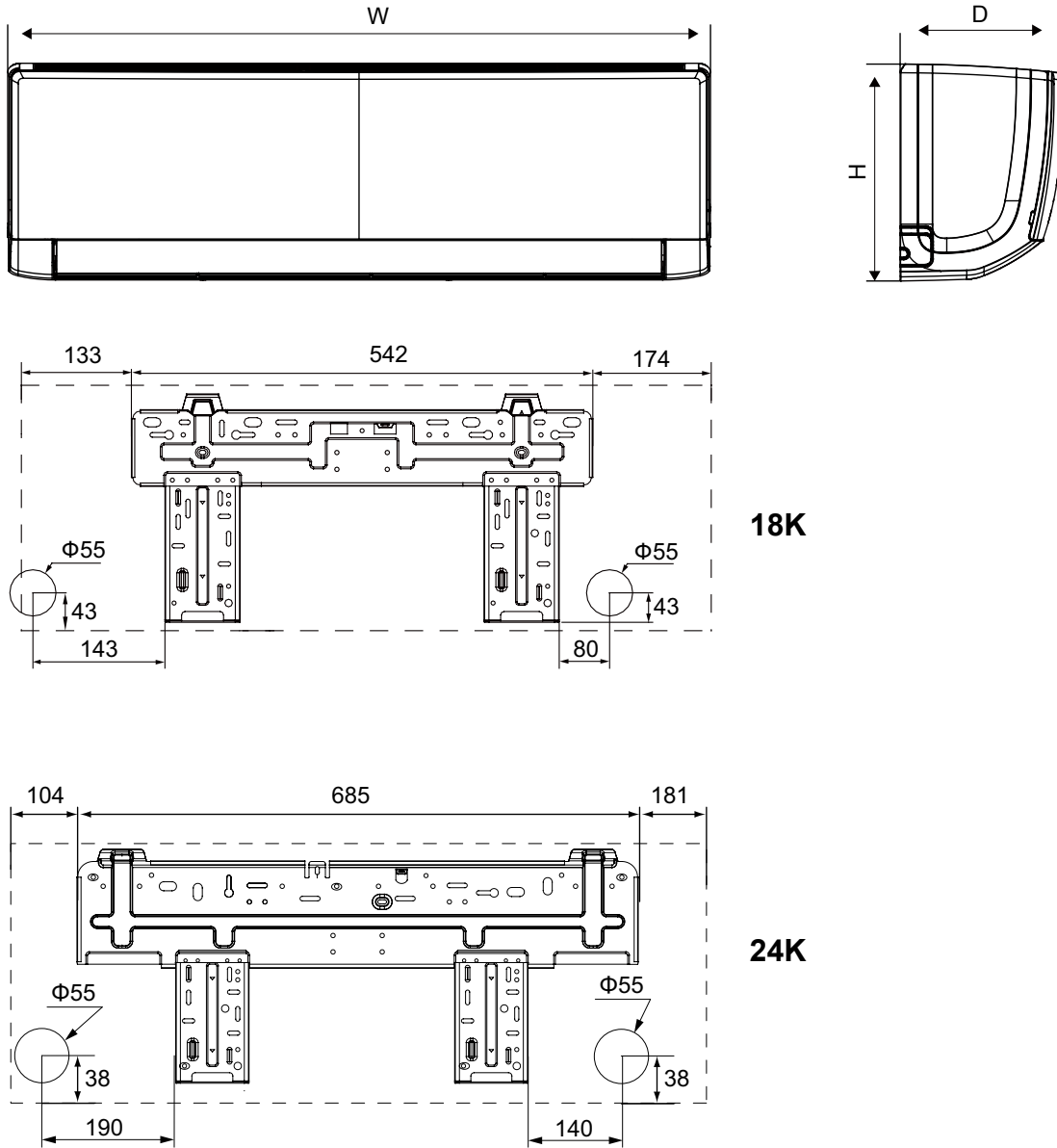
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

Connection pipe length: 5m.

3. Outline Dimension Diagram

3.1 Indoor Unit



18K

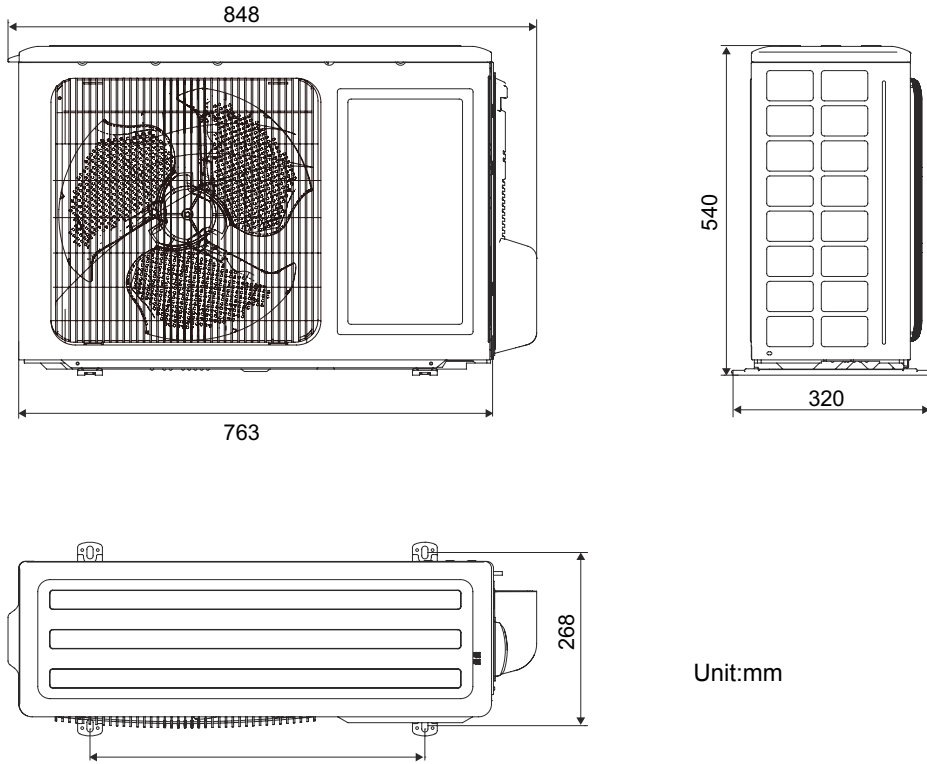
24K

Unit:mm

MODEL	W	H	D
18K	849	289	210
24K	970	300	225

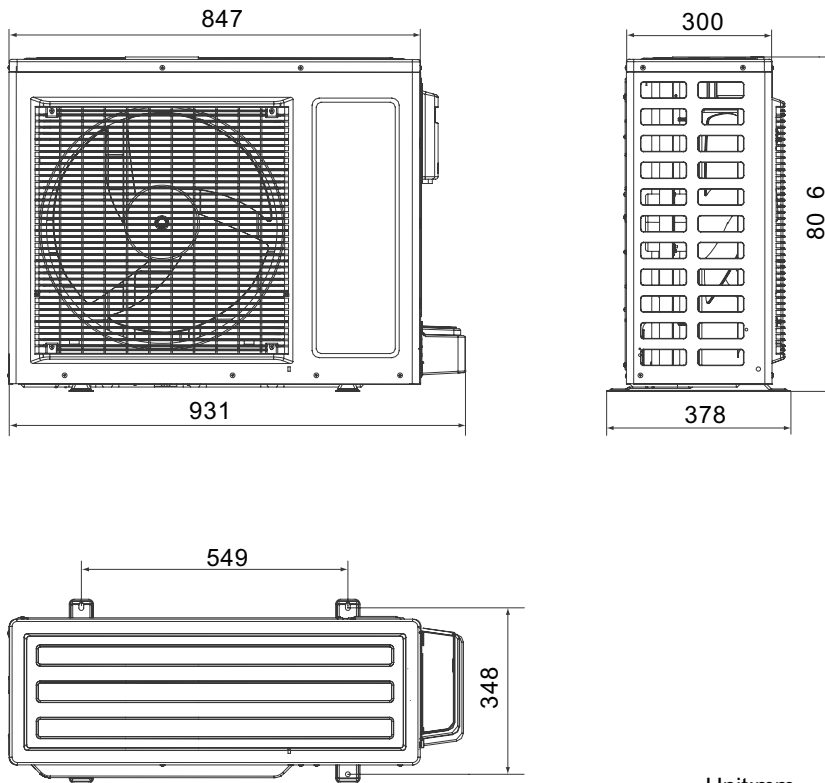
3.2 Outdoor Unit

GWH18AAC-K3NNA1A/O



Unit:mm

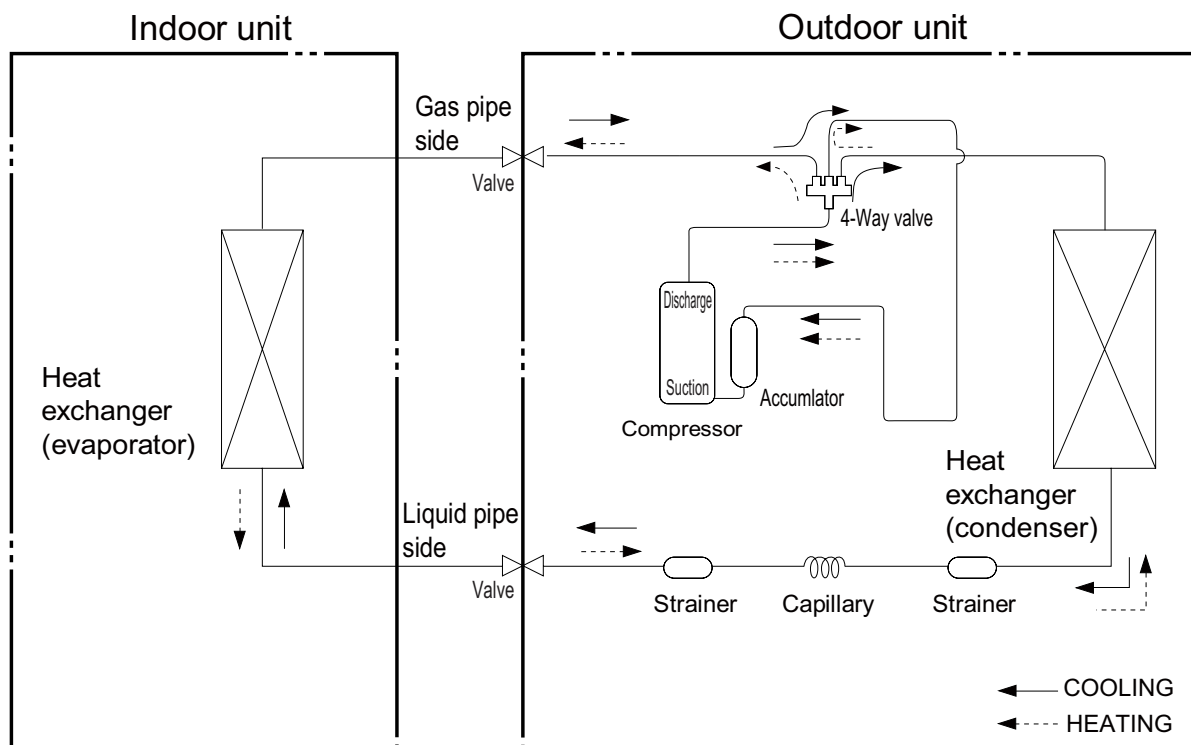
GWH24AAD-K3NNA1A/O



Unit:mm

4. Refrigerant System Diagram

Cooling and heating model



Connection pipe specification:
Liquid pipe: 1/4" (6mm)
Gas pipe: 1/2" (12mm)

5. Electrical Part

5.1 Wiring Diagram

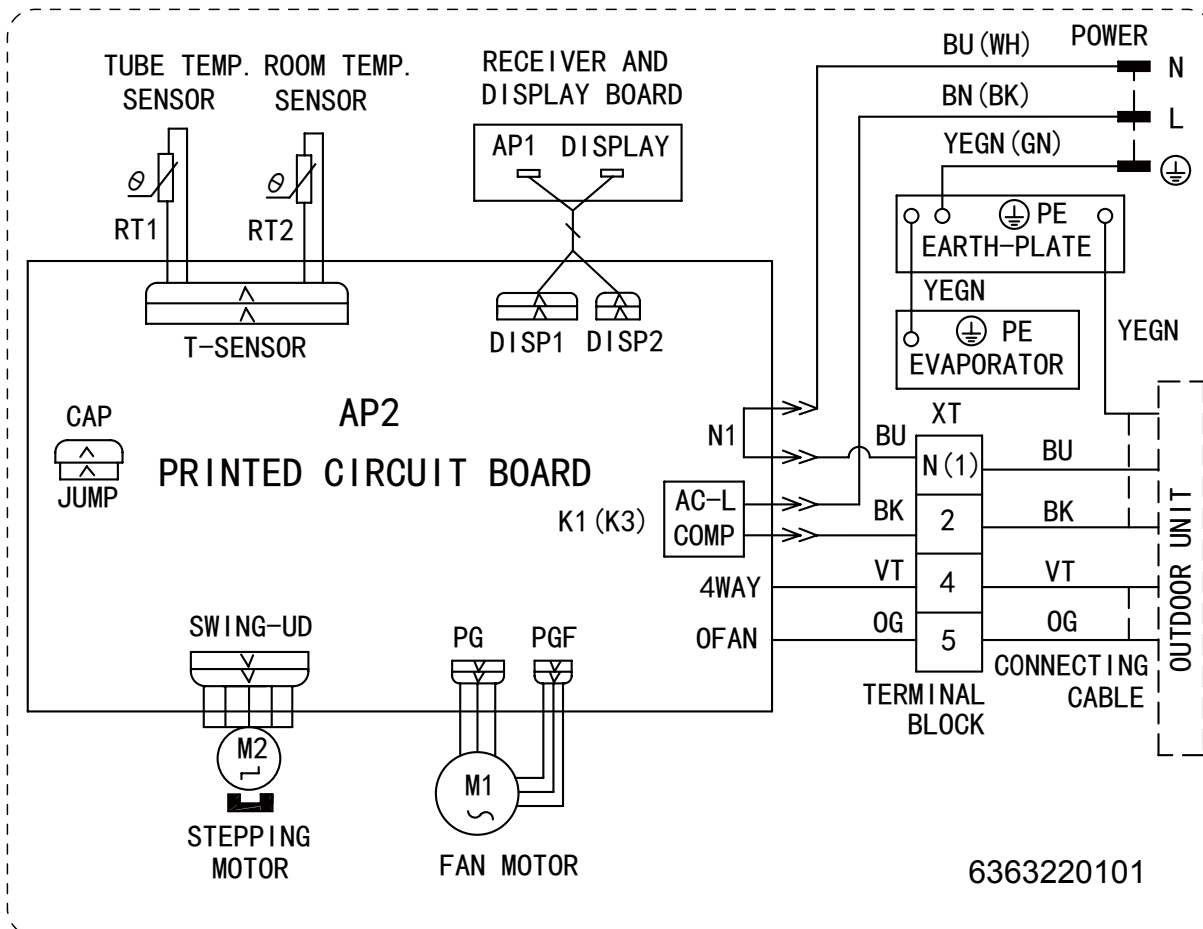
● Instruction

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.

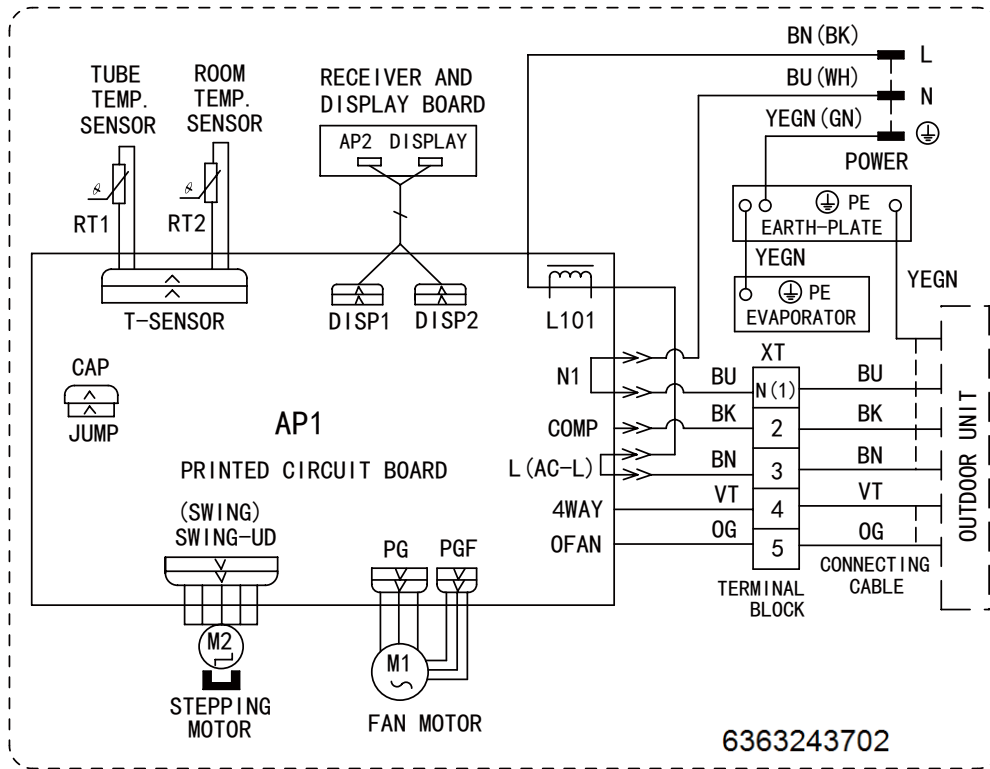
● Indoor Unit

18K



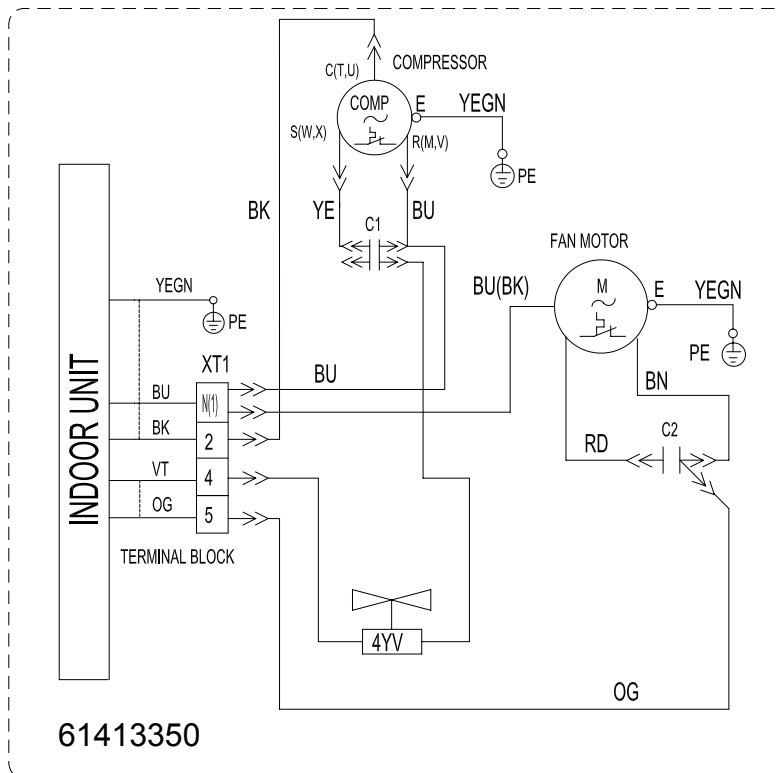
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24K

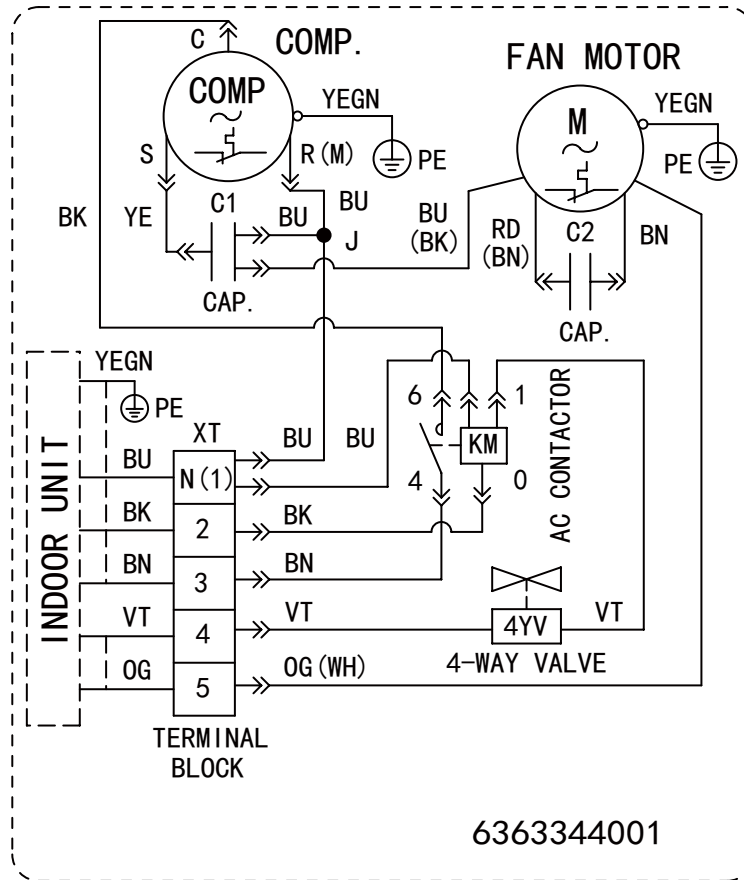


- Outdoor Unit

18K



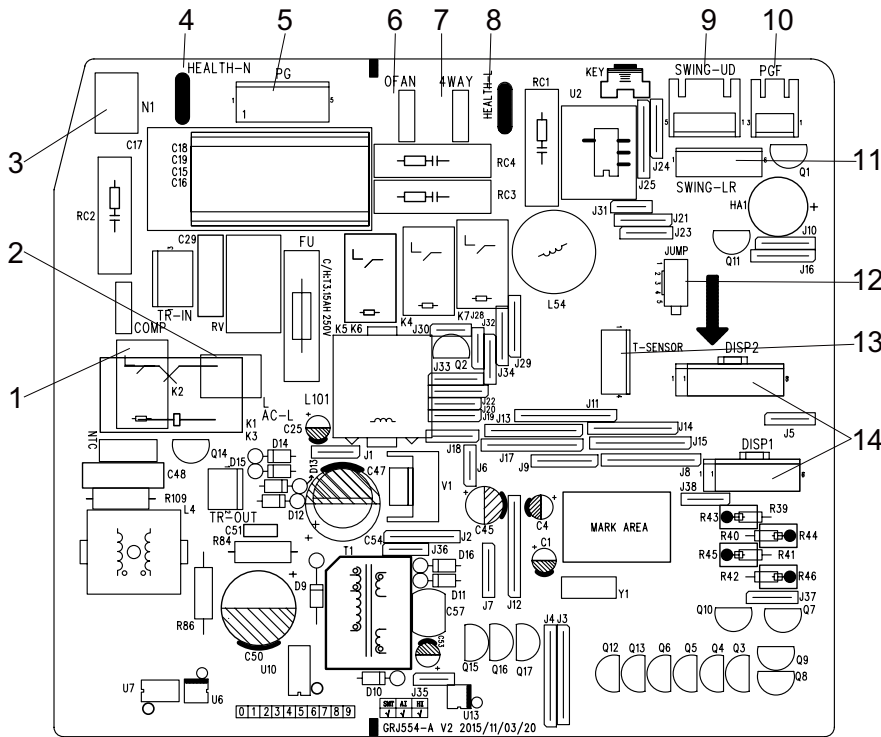
24K



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

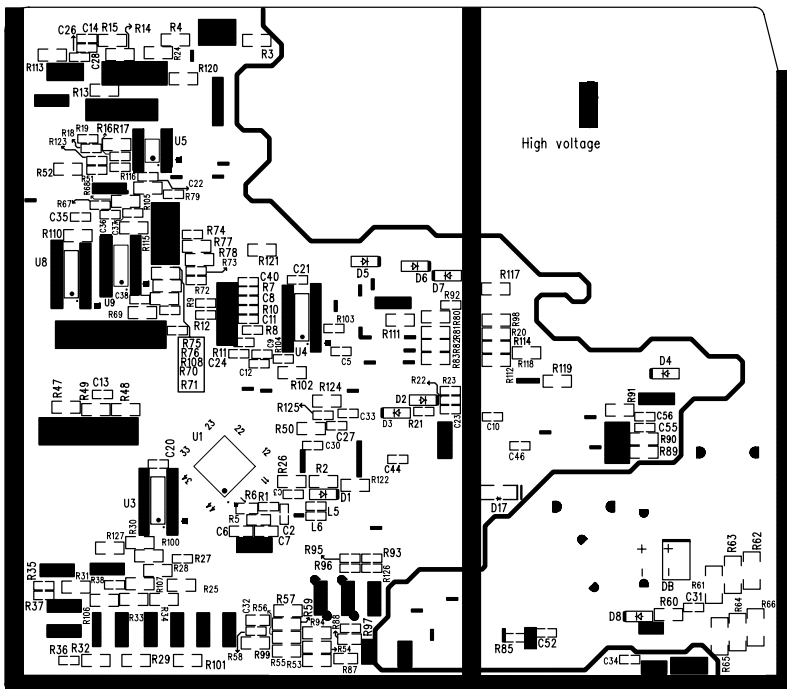
5.2 PCB Printed Diagram

• Top view



No.	Name
1	Compressor interface
2	Interface of power cord live wire
3	Interface of power cord neutral wire
4	Interface of cold plasma neutral wire
5	PG motor interface
6	Outdoor fan interface
7	4-way valve interface
8	Interface of cold plasma live wire
9	Up&down swing interface
10	PG motor feedback interface
11	Left&right swing interface
12	Jumper cap
13	Temperature sensor interface
14	Display board interface

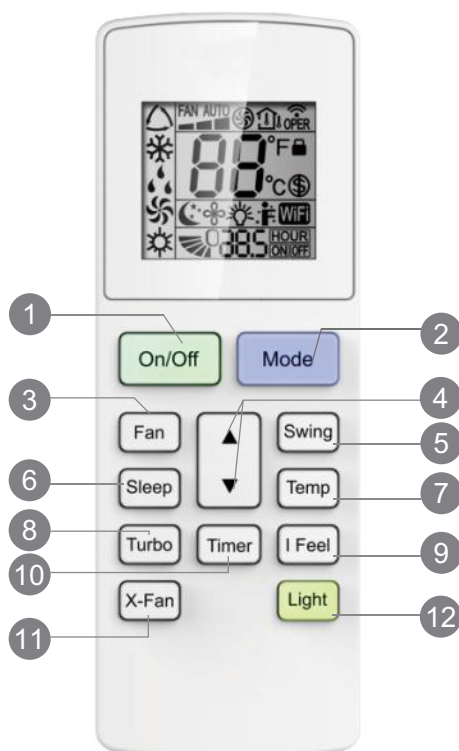
• Bottom view



6. Function and Control

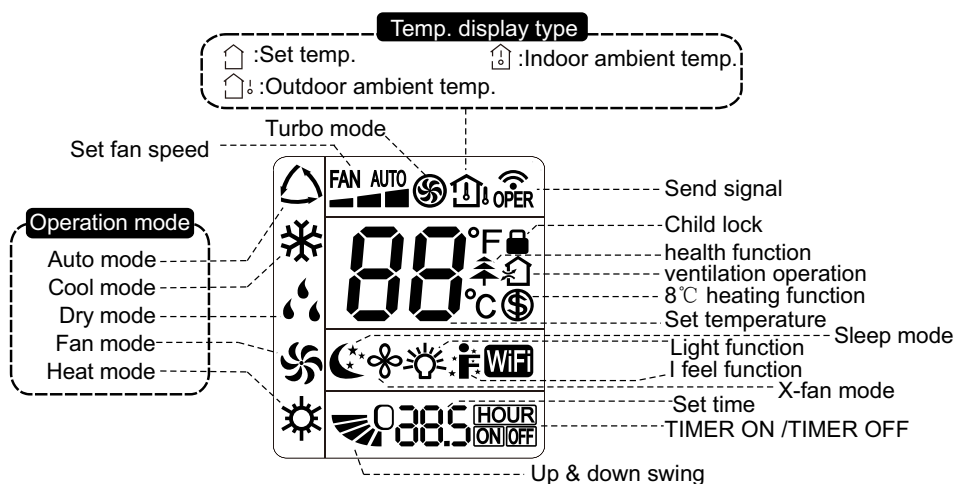
6.1 Remote Controller Introduction

Buttons on Remote Controller



- 1 On/Off button
- 2 Mode button
- 3 Fan button
- 4 ▲/ ▼ button
- 5 Swing button
- 6 Sleep button
- 7 Temp button
- 8 Turbo button
- 9 I Feel button
- 10 Timer button
- 11 X-Fan button
- 12 Light button

Icon Display on Remote Controller



Operation introduction of remote controller

This is a general use remote controller, it could be used for the air conditioners with multifunction; For some function, which the model doesn't have, if press the corresponding button on the remote controller that the unit will keep the original running status.

- This is a general use remote controller, it could be used for the air conditioners with multifunction; For some function, which the model doesn't have, if press the corresponding button on the remote controller that the unit will keep the original running status.
- 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.
- Under on status, pressing the button on the remote controller, the signal icon "📶" on the display of remote controller will blink once and the air conditioner will give out a "de" sound, which means the signal has been sent to the air conditioner.
- Under off status, set temperature and clock icon will be displayed on the display of remote controller (If timer on, timer off and light functions are set, the corresponding icons will be displayed on the display of remote controller at the same time); Under on status, the display will show the corresponding set function icons.

1. ON/OFF button

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

2. MODE button

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

* Note: Only for models with heating function.





- When selecting auto mode, air conditioner will operate automatically according to exfactory setting. Set temperature can't be adjusted and will not be displayed as well. Press "Fan" button can adjust fan speed. Press "Swing" button can adjust fan blowing angle.
- When 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 "Swing" 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 ". Swing" button to adjust fan blowing angle.
- When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. All mode indicators on indoor display are off, Press "Fan" button to adjust fan speed. Press "Swing" 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 "Swing" 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℃ ; Fan speed: auto, low speed, medium speed, high speed.

3. FAN button

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



Note:

- Under AUTO speed, air conditioner will select proper fan speed automatically according to ex-factory setting.
- Fan speed under dry mode is low speed.

4. ▲ / ▼ button

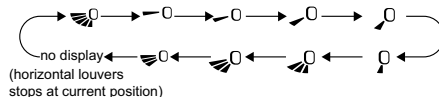
Press ▲ / ▼ button to increase/decrease set temperature. In AUTO mode, set temperature is not adjustable.

- Press "+" or "-" button once increase or decrease set temperature 1℃ .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 or Timer Off, press ▲ or ▼ button to adjust the time. (See TIMER Button for setting details)

5. SWING button

Press this button to set up & down swing angle.

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 "0、↙、↘、↖、↗", air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- When selecting "↖、↗、↘、↙", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold "🌀" button above 2s to set your required swing angle. When reaching your required angle, release the button.

Note:

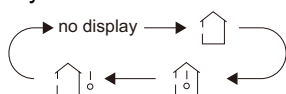
"↖、↗、↘、↙" may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.

6. SLEEP button

Under COOL, HEAT or DRY 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.

7. TEMP button

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



When selecting "🏠" 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

8. TURBO button

Press this button to activate / deactivate the Turbo function.

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.

9. I FEEL button

Press this button to start I FEEL function and "🌡️" will be displayed on the remote controller. After this function is set, the remote controller will send the detected ambient temperature to the controller and the unit will automatically adjust the indoor temperature according to the detected temperature. Press this button again to close I FEEL function and "🌡️" will disappear.

10. Timer button

- When unit is on, press this button to set Timer Off. OFF and HOUR icon will be blinking. Within 5s, press ▲ or ▼ button to adjust the time for Timer Off. Pressing ▲ or ▼ button once will increase or decrease the time by 0.5h. Hold ▲ or ▼ button for 2s, time will change quickly. Release the button after your required set time is reached. Then press TIMER button to confirm it. OFF and HOUR icon will stop blinking.
- When unit is off, press this button to set Timer On. ON and HOUR icon will be blinking. Within 5s, press ▲ or ▼ button to adjust the time for Timer On. Pressing ▲ or ▼ button once will increase or decrease the time by 0.5h. Hold ▲ or ▼ button for 2s, time will change quickly. Release the button after your required set time is reached. Then press TIMER button to confirm it. ON and HOUR icon will stop blinking.
- Cancel Timer On/Off: If Timer function is set up, press TIMER button once to cancel this function.

Note:

- Range of time setting is: 0.5~24h
- The interval between two motions can't exceed 5s, otherwise the remote controller will exit setting status.

11. X-FAN button (NOTE:X-FAN is the alternative expression of BLOW for the purpose of understanding.)

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

Note:

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

12. LIGHT button

Turn on the display's light and press this button again to turn off the display's light.

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

NOTICE:

As for the detailed content of remote controller, please refer to QR code on the cover.

Function introduction for combination buttons

Combination of "▲" and "▼" buttons: About lock

Press "▲" and "▼" buttons simultaneously 3s to lock or unlock the keypad. If the remote controller is locked, 🔒 is displayed. In this case, pressing any button, 🔒 blinks three times.

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

At unit OFF, press "MODE" and "▼" buttons simultaneously to switch between ℃ and ℉.

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

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

Combination of "TEMP" and "TIMER" buttons: About 8 °C Heating Function

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

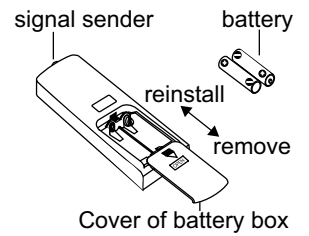
WiFi Function

Press this button to turn on the unit. Press this button again to turn off the unit. Press "MODE" and "TURBO" button simultaneously to turn on or turn off WiFi function. When WiFi function is turned on, the "WiFi" icon will be displayed on remote controller; Long press "MODE" and "TURBO" buttons simultaneously for 10s, remote controller will send WiFi reset code and then the WiFi function will be turned on. WiFi function is defaulted ON after energization of the remote controller.

- This function is only available for some models.

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.



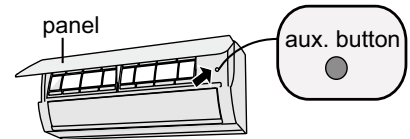
Emergency operation

If remote controller is lost or damaged, please use auxiliary button to turn on or turn off the air conditioner.

The operation in details are as below:

As shown in the fig. Open panel, press aux. button to turn on or turn off the air conditioner.

When the air conditioner is turned on, it will operate under auto mode.



⚠ WARNING:

Use insulated object to press the auto button

6.2 Brief Description of Modes and Functions

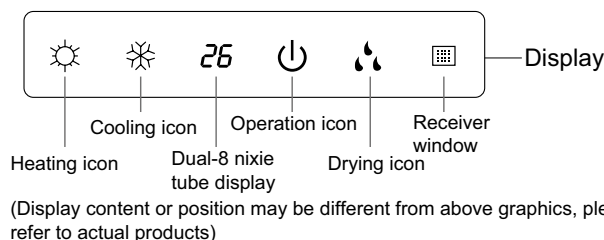
1. Summary

(1) Buzzer

When the controller is energized or receives signal from button (emergency operation switch on air conditioner) or remote controller, the buzzer will give out a beep.

(2) Display

After energization, all icons will be displayed once. Operation icon is in red under standby status. After turning on the unit by remote controller, operation icon is bright and corresponding set operation mode icon will be displayed (Mode icon include: cooling, heating, drying).



(3) Temperature parameter

- ◆ Indoor set temperature (T_{preset})
- ◆ Indoor ambient temperature (T_{amb})
- ◆ Inner tube temperature of indoor evaporator (T_{tube})

2. Introduction of Basic Mode Function

- ◆ Once the compressor is energized, there should be a minimum interval of 3 mins between two start-ups.
 - ◆ If the unit is with memory function and is off before power failure, the compressor can be restarted without an interval of 3 mins; if the unit is on before power failure, the compressor will be restarted with an interval of 3 mins.
- Once compressor is started, it won't stop within 6 mins according to the change of room temp.

(1) Auto mode

① Operation condition and process for auto mode

Under auto mode, the system will automatically select operation mode (cooling, heating, and fan) according to indoor ambient temperature. There will be 30s delayed for protection between mode switchover.

- ◆ When $T_{\text{amb}} \geq 26^\circ\text{C}$, the system operates under cooling mode; Ex-factory set temperature is 20°C .
- ◆ Heat pump unit: when $T_{\text{amb}} \geq 22^\circ\text{C}$, the system operates under heating mode; Ex-factory set temperature is 25°C .
- ◆ $22^\circ\text{C} < T_{\text{amb}} < 26^\circ\text{C}$: The system operates under fan mode if turn on the unit to enter into auto mode for the first time; If switch to auto mode from cooling, heating or fan mode, the system keeps previous operation mode; If switch to auto mode from drying mode, the system operates under fan mode.

② Display: Operation icon, actual operation mode icon, set temperature (that's the display content of dual-8 nixie tube)

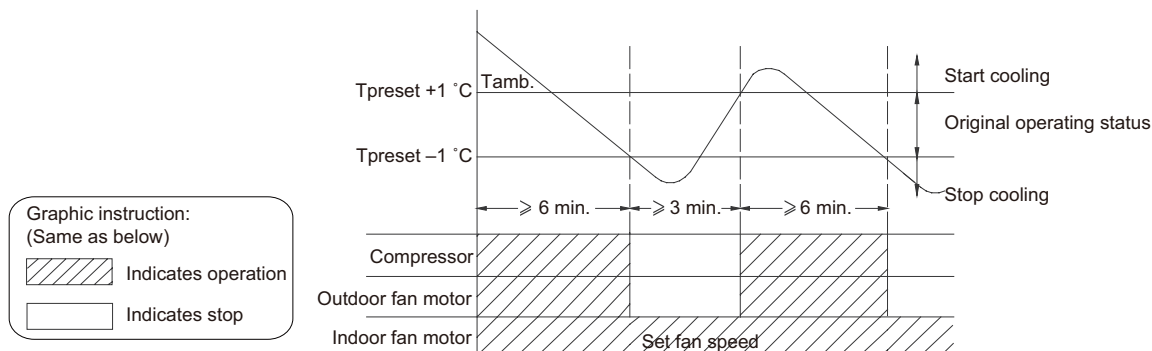
③ Protection function is same as that under each mode.

(2) Cooling mode

① Operation condition and process for cooling mode

- ◆ When $T_{\text{amb}} \geq T_{\text{set}} + 1^\circ\text{C}$, the system operates under cooling mode. In this case, the compressor, the ODU fan motor and the IDU fan motor operates at set speed.
- ◆ When $T_{\text{amb}} \leq T_{\text{set}} - 1^\circ\text{C}$, the compressor and the ODU fan motor stop, while the IDU fan motor operates at set speed.
- ◆ When $T_{\text{set}} - 1^\circ\text{C} < T_{\text{amb}} < T_{\text{set}} + 1^\circ\text{C}$, the system will maintain its previous operation status.

In cooling mode, the 4-way valve is de-energized (4-way valve is not available for cooling only unit). Temperature setting range is $16\sim 30^\circ\text{C}$.



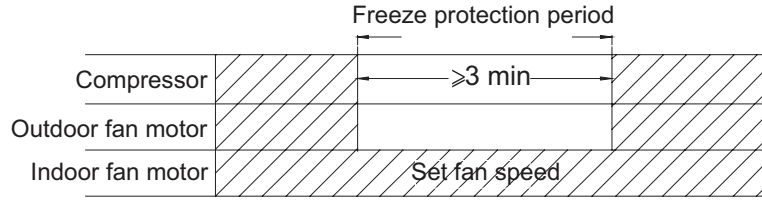
② Display: Operation icon, cooling icon, set temperature.

③ Protection function

- ◆ Freeze protection

During operation, when controller detected that $T_{\text{tube}} \leq 0^\circ\text{C}$ for a consecutive period of time, the system enters into freeze protection. In that case, the compressor and the ODU fan stop operation, while the IDU operates at set fan speed. If freeze protection is released and

the compressor has been out of operation for 3 mins, the unit will resume its previous operation status.



◆ Overcurrent protection (this protection function is not available for those models whose cooling capacity $\leq 12000\text{Btu/h}$)

During operation process, if controller detected that system current exceeds the limit value for 3s consecutively (overcurrent), only the fan operates. About 3 mins later, if overcurrent is released, the system will resume original operation.

If overcurrent protection occurs for 6 times consecutively, and resume operation time won't exceed 6min every time, overcurrent protection information will be displayed. After turning off the unit, display won't be displayed.

If turn on the unit again, the system will be restated up again. Overcurrent protection information will be eliminated.

Please refer to maintenance part for display information and disposal method for details.

◆ Locked protection to IDU fan motor

During operation of IDU fan motor, if controller detected that the rotation speed of IDU fan motor less than 300/min or stop rotation, the motor operates abnormally. In order to prevent damage to motor, controller will protect automatically, the system stops operation and blocked information of IDU fan motor will be displayed. After turning off the unit, display won't be displayed.

If turn on the unit again, the system will be restated up again. Blocked information of IDU fan motor will be eliminated. (For some models, they can only be restated up after re-energized)

Please refer to maintenance part for display information and disposal method for details.

(3) Drying mode

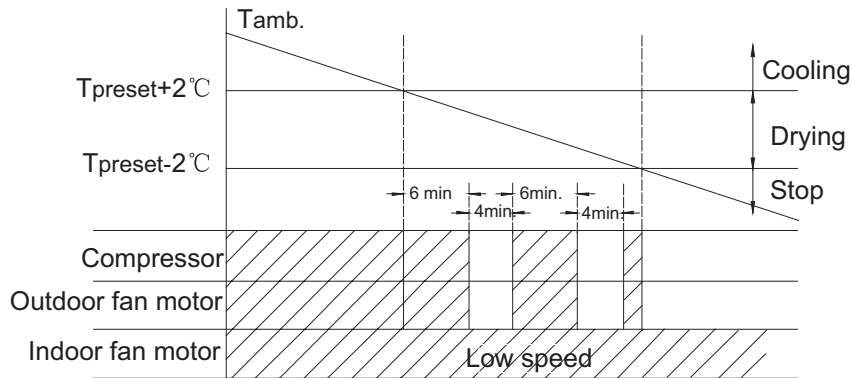
① Operation condition and process for drying mode

◆ When $T_{amb.} > T_{set} + 2^{\circ}\text{C}$, the system starts drying and cooling. In this case, the compressor and the ODU fan motor operate, and the IDU fan motor operates at low speed.

◆ When $T_{set} - 2^{\circ}\text{C} \leq T_{amb.} \leq T_{set} + 2^{\circ}\text{C}$, the system will start drying. In this case, the IDU fan motor operates at low speed; the compressor and the ODU fan motor operate for 6 minutes and stop for 4 minutes in cycle.

◆ When $T_{amb.} < T_{set} - 2^{\circ}\text{C}$, the compressor and the ODU fan motor stop, while the IDU fan motor runs at low speed.

In drying mode, the 4-way valve is de-energized (4-way valve is not available for cooling only unit); Temperature setting range is $16\sim 30^{\circ}\text{C}$. Fan speed can't be adjusted.



② Display: Operation icon, drying icon, set temperature.

③ Protection function

◆ Freeze protection

During drying and cooling operation, when the controller detected that $T_{tube} \leq 0^{\circ}\text{C}$ for a period of time consecutively, the system will enter into freeze protection. In that case, the compressor and the ODU fan motor stops operation, while the IDU fan motor operates at low speed. When freeze protection is release and the compressor has stopped for 3min, the system will resume original operation.

During drying operation, when the controller detected that $T_{tube} \leq 0^{\circ}\text{C}$ for a period of time consecutively, the system enters into freeze protection. In that case, the compressor, the ODU fan motor stops operation, while the IDU fan motor operates at low speed. When freeze protection is release and the compressor has stopped for 4min, the system will resume original operation.

◆ Other protection is same as that under cooling mode.

(4) Fan mode

① Operation condition and process for fan mode

In fan mode, the IDU fan motor operates at set speed, while the compressor and the ODU fan motor stop. 4-way valve is de-energized (4-way valve is not available for cooling only unit). Temperature setting range is 16~30°C .

② Display: Operation icon, set temperature.

③ Protection function

In fan mode, there are overcurrent protection and blocked protection of IDU fan motor. Please refer to corresponding protection function under cooling mode for details.

(5) Heating mode(no heating mode is not available for cooling only unit)

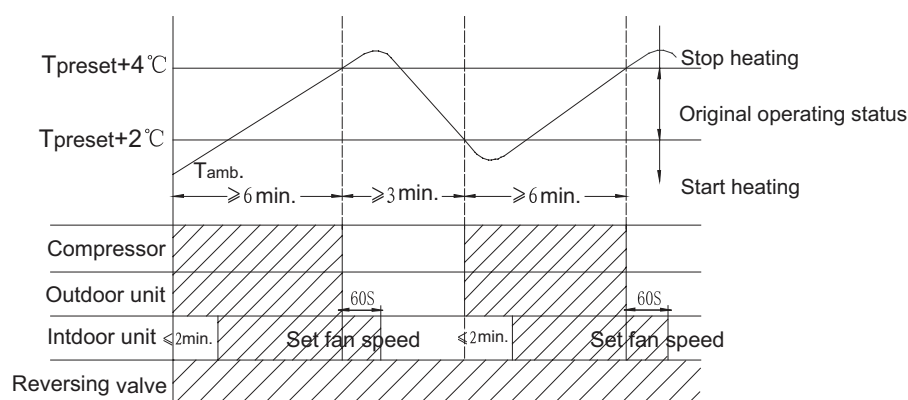
① Operation conditioner and process for heating mode

◆ When $T_{amb.} - T_{supplementary} \leq T_{set} - 1^{\circ}\text{C}$, the unit starts heating operation. In this case, the 4-way valve, compressor and ODU fan motor run simultaneously; the IDU fan motor will run after a while to prevent blowing cold air.

◆ When $T_{amb.} - T_{supplementary} \geq T_{set} + 1^{\circ}\text{C}$, the compressor and ODU fan motor stop; the 4-way valve remains energized; the IDU fan motor blows residual heat for a while in set speed.

◆ When $T_{set} - 1^{\circ}\text{C} < T_{amb.} - T_{supplementary} < T_{set} + 1^{\circ}\text{C}$, the unit will maintain its previous running status.

In heating mode, 4-way valve is energized. Temperature setting range is 16~30°C .



② Display: Operation icon, heating icon, set temperature.

③ Defrosting condition and process

For ensuring heating effect, air conditioner will defrost automatically according to defrosting status on outdoor unit. During defrosting, the heating icon is on for a while and then extinguish.

④ Protection function

◆ Overheating prevention protection

During operation, if the controller detects that $T_{tube} \geq 55^{\circ}\text{C}$ or 56°C , the ODU fan motor stops operation; When T_{tube} returns to normal, fan motor resumes operation.

◆ Noise silencing protection

When turning off the unit or during mode switchover, the 4-way valve is closed. In order to decrease noise, the 4-way valve will delay 2mins to be closed.

◆ Overcurrent protection (this protection function is not available for those models whose cooling capacity $\leq 12000\text{Btu/h}$)

During operation process, if controller detected that system current exceeds the limit value for 3s consecutively(overcurrent), the system stops operation. About 3mins later, if overcurrent is released, the system will resume original operation. If overcurrent protection occurs for 6 times consecutively, and resume operation time won't exceed 6min every time, overcurrent protection information will be displayed. After turning off the unit, display won't be displayed.

If turn on the unit again, the system will be restated up again. Overcurrent protection information will be eliminated.

Please refer to maintenance part for display information and disposal method for details.

◆ Locked protection to IDU fan motor

During operation of IDU fan motor, if controller detected that the rotation speed of IDU fan motor less than 300/min or stop rotation, the motor operates abnormally. In order to prevent damage to motor, controller will protect automatically, the system stops operation and blocked information of IDU fan motor will be displayed. After turning off the unit, display won't be displayed.

If turn on the unit again, the system will be restated up again. Blocked information of IDU fan motor will be eliminated. (For some models, they can only be restated up after re-energized)

Please refer to maintenance part for display information and disposal method for details.

3. Other Control Function Introduction

(1) Timer function

Controller has general timer function and clock timer function. When you select the remote controller with general timer function, only the general timer function of controller can be activated; when you select the remote controller with clock timer, only the clock timer function of controller can be activated.

① General timer: The precision of general timer is 0.5hour. 24hours circulated timer can't be set.

◆ Timer ON: Timer ON can be set at unit OFF. If selected ON time is reached, the unit will start to operate according to previous setting status. Time setting range is 0.5~24hr in 30-minute increments.

◆ Timer OFF: Timer OFF can be set at unit ON. If selected OFF time is reached, the unit will stop. Time setting range is 0.5~24hr in 30-minute increments.

② Clock timer: The precision of clock timer is 0.5hour. 24hours circulated timer can be set.

◆ Timer ON: If timer ON is set during operation of the unit, the unit will continue to operate. If timer ON is set at unit OFF, upon ON time reaches, the unit will start to run according to previous setting status.

◆ Timer OFF: If timer OFF is set at unit OFF, the system will keep standby status. If timer OFF is set at unit ON, upon OFF time reaches, the unit will stop operation.

◆ Timer change:

Although timer has been set, the unit still can be turned on/off by pressing ON/OFF button on the remote controller. You can also reset the timer.

If timer ON and timer OFF are set at the same time during operation of the unit, the unit will keep running at current status till OFF time reaches. Upon ON time reached, the system will be turned on automatically. The unit will operate circularly like that every 24hours.

If timer ON and timer OFF are set at unit OFF status, the system keep OFF status till ON time reaches. Upon OFF time reaches, the system will be turned OFF automatically. The unit will operate circularly like that every 24hours.

(2) Emergency operation switch

After pressing this button, the system will operate according under auto mode and the IDU fan motor operates at auto speed. Swing motor operates when the IDU fan motor operates. Press this button again to turn off the unit.



(3) Sleep function

In this mode, the system will select proper sleep curve to operate according to different set temperature.

① If start up sleep function under cooling or drying mode, the system will increase set temperature automatically within a certain range to operate.

② If start up sleep function under heating mode, the system will decrease set temperature automatically within a certain range to operate.

(4) Turbo function

Turbo function can be set under cooling and heating modes. During operation of turbo function, the system operates at the maximum fan speed.

(5) Dry function

Dry function can be set under cooling and drying modes. During operation of drying function, the fan will stop operation after operating for a period of time when turning off the unit.

(6) Auto fan speed control

Auto fan speed control can be set under cooling, heating and fan mode. During operation of auto fan speed control, the IDU fan motor will adjust the fan speed (high, medium or low speed) according to ambient temperature.

(7) Up&down swing control

① After energization, up & down swing motor will firstly have the horizontal louver rotate anticlockwise to position O to close air outlet. If swing function has not been set after start-up of the unit, horizontal louver will turn clockwise to position D in heating mode, or turn clockwise to level position L in other modes.

② If swing function is set when turning on the unit, the horizontal louver will swing between L and D.

Horizontal louver has 7 swing statuses:

◆ Stay at position L: control by remote controller:

◆ Stay at position A: control by remote controller:

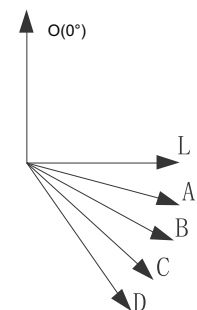
◆ Stay at position B: control by remote controller:

◆ Stay at position C: control by remote controller:

◆ Stay at position D: control by remote controller:

◆ Swing between L and D: control by remote controller:

◆ Stop at any position between L and D (angles between L and D are equiangular) and no display on remote controller.



- ③ When turning off the unit, horizontal louver will close at position O.
- ④ Swing action is valid only when set swing command and the IDU fan motor is operating.

(8) Dual-8 nixie tube display

- ◆ When the air conditioner is turned on for the first time, dual-8 nixie tube defaulted to display current set temperature.
- ◆ When controller receives signal of display set temperature, dual-8 nixie tube displays set temperature. When received remote control signal is switched to indoor ambient temperature display status signal from other display status, dual-8 nixie tube will display indoor ambient temperature for 3-5s, and then turn back to display set temperature. If remote control to set other status, the display keeps the same.
- ◆ When air conditioner has a malfunction, dual-8 nixie tube will show relevant error code.

F1	Indoor ambient temperature sensor is open/short-circuited
F2	Indoor evaporator temperature sensor is open/short-circuited
H6	Blocked protection of IDU fan motor
C5	Malfunction protection of jumper cap
U8	Zero-crossing inspection circuit malfunction of the IDU fan motor
F0	Lack of refrigerant or block protection for the system(not applicable to residential air conditioner)
E8	Overload malfunction

- ◆ When air conditioner is in auto defrosting, the heating icon will be on for a while and then extinguish. No display for some models without mode indicator.
- ◆ If turn off light button, all display will be turned off.

(9) Memory function

- ① Power failure when turning on the unit
 - ◆ Memory content: ON status, mode, up&down swing, light, set temperature, set fan speed, general timer, Fahrenheit/ Celsius
 - ◆ General timer can be memorized. Time of timer is calculated again from energization.
 - ◆ Clock timer can't be memorized.
- ② Power failure when turning off the unit
 - ◆ Memory content: OFF status, mode, up&down swing, light, set temperature, set fan speed, general timer, Fahrenheit/ Celsius
 - ◆ General timer can be memorized. Time of timer is calculated again from energization.
 - ◆ Clock timer can't be memorized.

4. Special Function

(1) Health function (for the model with health function)

During operation of the IDU fan motor, press health button on the remote controller to start health function (If there is not health button on the remote controller, the unit defaults health function ON).

(2) I Feel function (for all models, but it needs the remote controller which can set this function)

When I FEEL command is received, the controller will operate according to the ambient temperature sent by the remote controller (For defrosting and cold air prevention, the unit operates according to the ambient temperature sensed by the air conditioner). The remote controller will regularly send ambient temperature data to the controller. When the data has not been received for a long time, the unit will operate according to the temperature sensed by the air conditioner. If I FEEL function is not set, the ambient temperature will be that sensed by the air conditioner.

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 cant 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 cant 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; dont replace it with a cooper wire or conducting wire.

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

Installation Safety Precautions:

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

Refrigerant Safety Precautions:

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

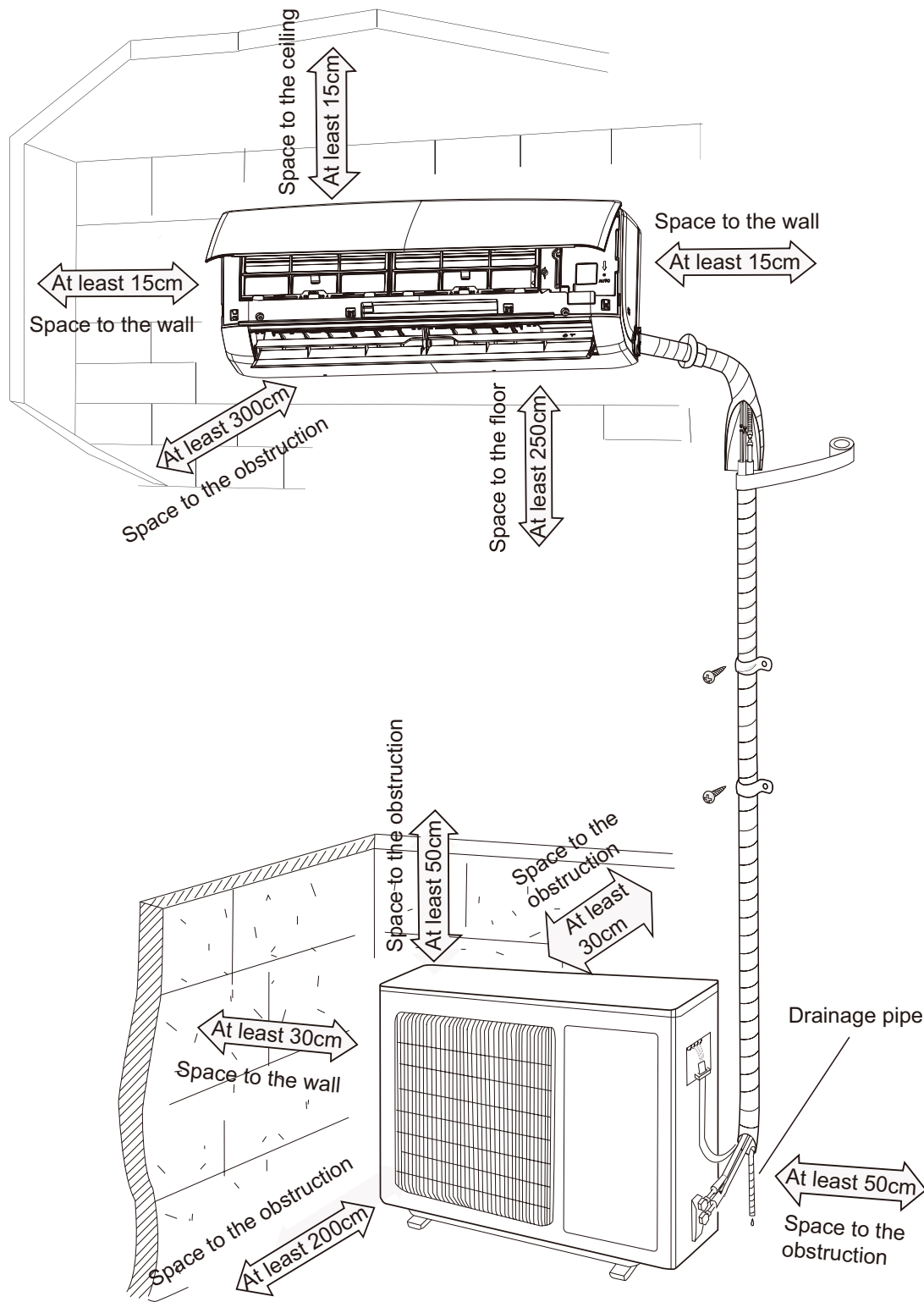
Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

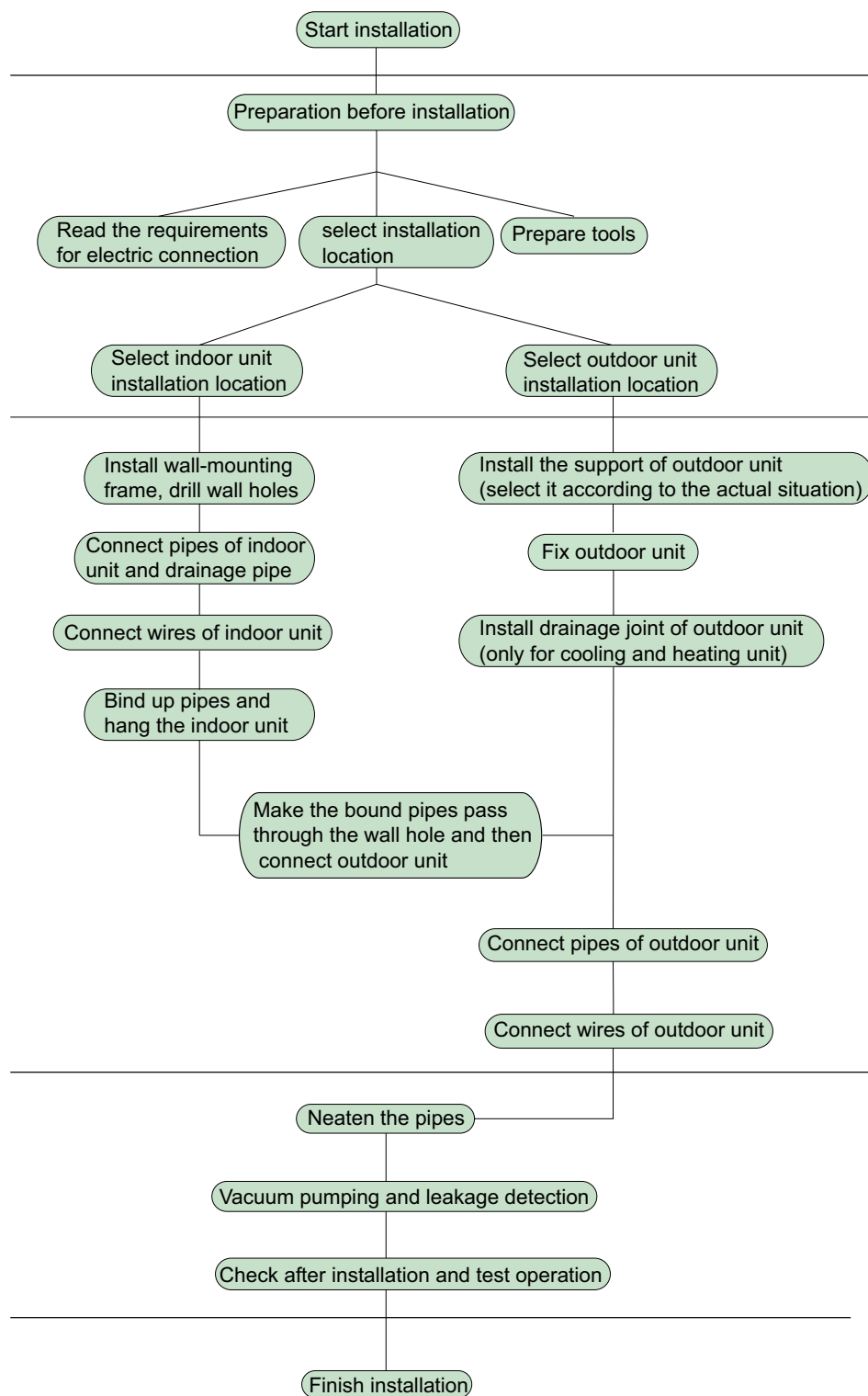
<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure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

8. Installation

8.1 Installation Dimension Diagram



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	Owners manual, remote controller
7	Wall pipe		

⚠ Note:

- 1.Please contact the local agent for installation.
- 2.Dont use unqualified power cord.

8.3 Selection of Installation Location

1. Basic Requirement:

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

- (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air.
- (5) The place with sulfureted gas.
- (6) Other places with special circumstances.
- (7) The appliance shall not be installed in the laundry.

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 wont 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 wont increase noise and vibration.
- (6) The appliance must be installed 2.5m above floor.
- (7) Dont install the indoor unit right above the electric appliance.
- (8) Please try your best to keep way from fluorescent lamp.

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 wont 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.
- (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.
- (9) The appliance shall be installed in accordance with national wiring regulations.

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 cant 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)

Air-conditioner	Air switch capacity
18K	16A
24K	25A

8.5 Installation of Indoor Unit

1. Choosing Installation location

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

2. Install Wall-mounting Frame

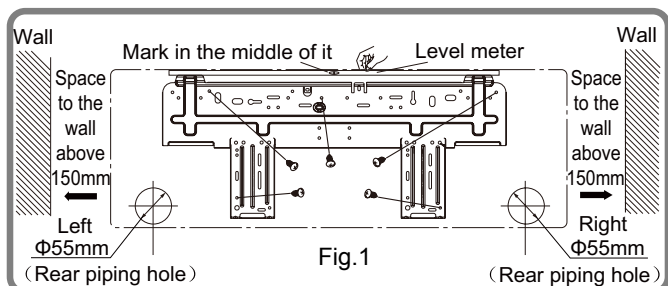
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle)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

in the holes.

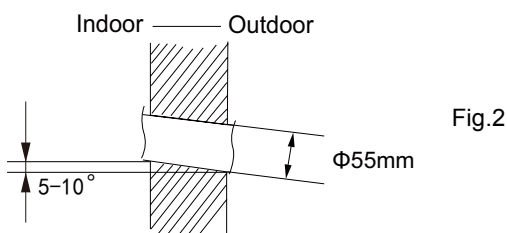
(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Install Wall-mounting Frame

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



(2) Open a piping hole with the diameter of $\Phi 55\text{mm}$ 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 $5\text{--}10^\circ$. (As show in Fig.2)



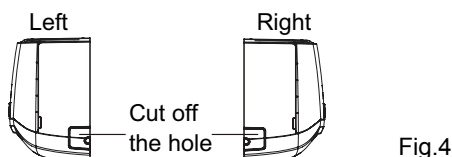
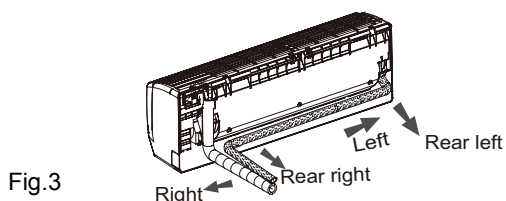
⚠ Note:

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

4. Outlet Pipe

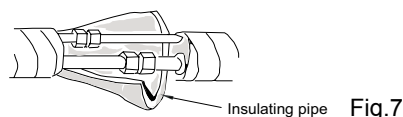
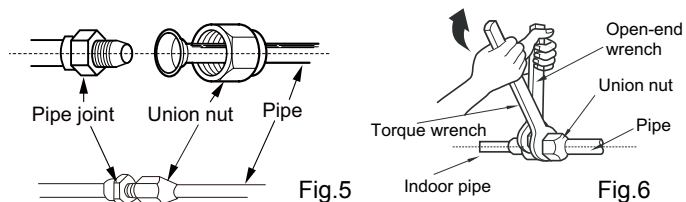
(1) The pipe can be led out in the direction of right, rear right, left or rear left. (As show in Fig.3)

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



5. Connect the Pipe of Indoor Unit

- (1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)
- (2) Pretightening the union nut with hand.
- (3) Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench. (As show in Fig.6)
- (4) Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape. (As show in Fig.7)

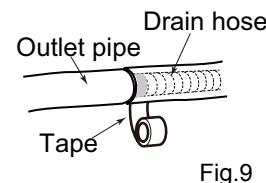
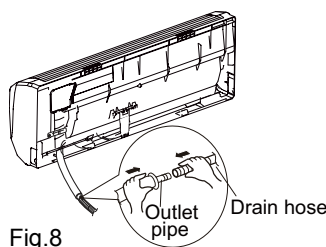


Refer to the following table for wrench moment of force:

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

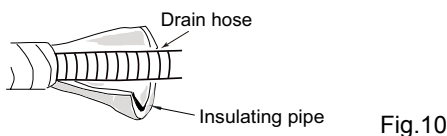
6. Install Drain Hose

- (1) Connect the drain hose to the outlet pipe of indoor unit. (As show in Fig.8)
- (2) Bind the joint with tape. (As show in Fig.9)



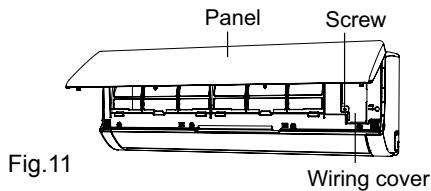
⚠ Note:

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

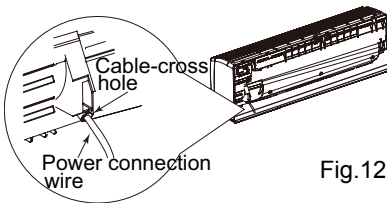


7. Connect Wire of Indoor Unit

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



(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 wiresignal control wire (only for cooling and heating unit) 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)

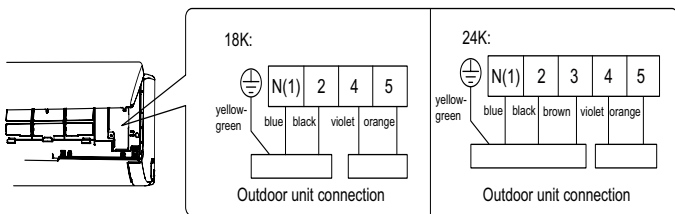


Fig.13

(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.

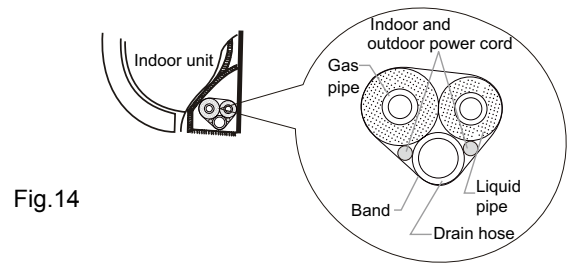


Fig.14

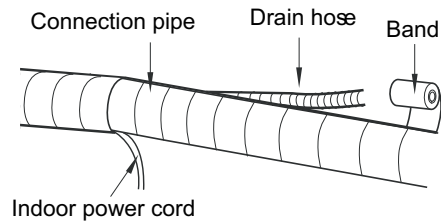


Fig.15

⚠ Note:

- (1) The power cord and control wire cant be crossed or winding.
- (2) The drain hose should be bound at the bottom.

9. Hang the Indoor Unit

- (1) Put the bound pipes in the wall pipe and then make them pass through the wall hole.
- (2) Hang the indoor unit on the wall-mounting frame.
- (3) Stuff the gap between pipes and wall hole with sealing gum.
- (4) Fix the wall pipe.(As show in Fig.16)
- (5) Check if the indoor unit is installed firmly and closed to the wall.(As show in Fig.17)

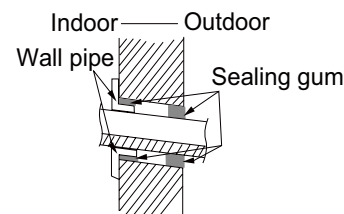


Fig.16

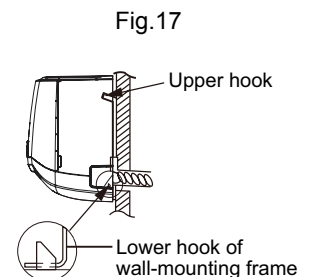


Fig.17

⚠ Note:

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

8.6 Installation of Outdoor unit

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

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

⚠ Note:

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

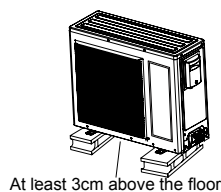


Fig.18

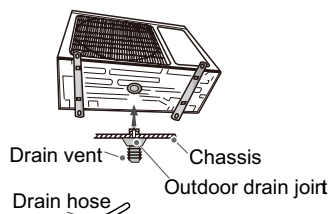


Fig.19

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

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

3. Fix Outdoor Unit

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

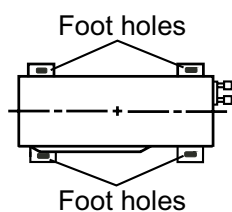


Fig.20

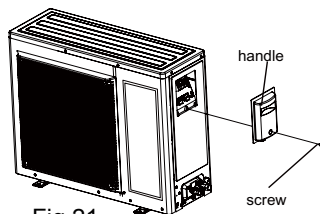


Fig.21

4. Connect Indoor and Outdoor Pipes

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

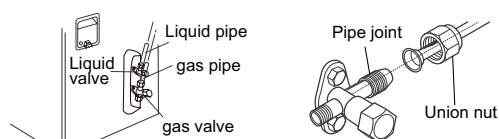


Fig.22

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

Refer to the following table for wrench moment of force:

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

5. Connect Outdoor Electric Wire

- (1) Remove the wire clip; connect the power connection wire and signal control wire (only for cooling and heating unit) to the wiring terminal according to the color; fix them with screws.(As show in Fig.23)

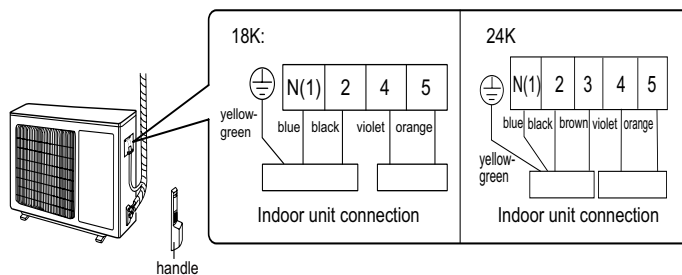


Fig.23

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

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

⚠ Note:

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

6. Neaten the Pipes

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

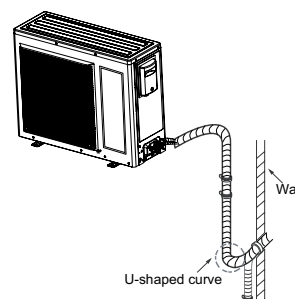


Fig.24

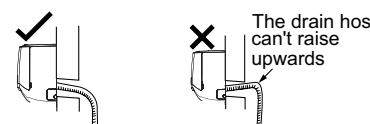
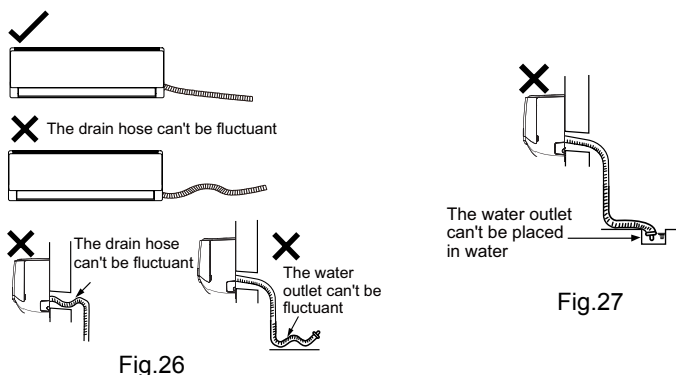


Fig.25

⚠ Note:

- (1) The through-wall height of drain hose shouldnt 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 cant be curved, raised and fluctuant, etc.(As show in Fig.26)

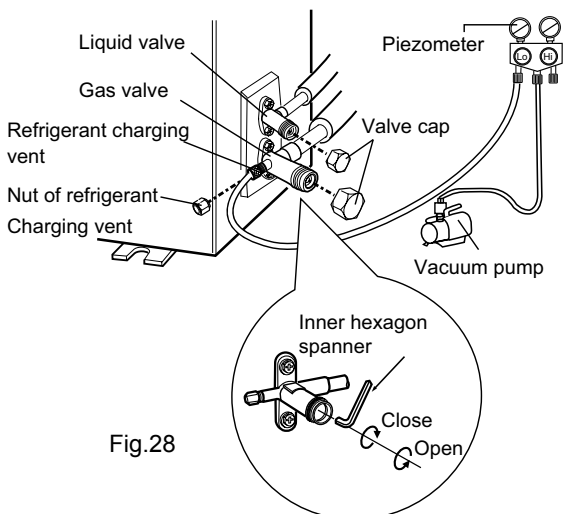
(3) The water outlet cant be placed in water in order to drain smoothly.(As show in Fig.27)



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 -0.1 MPa.
- (4) Close the vacuum pump and maintain this status for 1-2min to check if the pressure of piezometer remains in -0.1 MPa. 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, theres 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) capacity.
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.
12	Is the inlet and outlet of piping hole been covered?	It may cause insufficient cooling (heating) capacity or waster eletricity.

2. Test Operation

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

9. Maintenance

9.1 Error code

No.	Malfunction Name	Display Method of Indoor Unit (Error Code)	A/C Status	Possible Causes(For specific maintenance method, please refer to the following procedure of troubleshooting)
1	Indoor ambient temperature sensor is open/short-circuited	F1	The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except IDU fan motor operates, other loads stop operation; During heating operation, the system stops operation.	1.The wiring terminal between indoor ambient temperature sensor and main board is loosened or poorly contacted; 2.There's short circuit due to trip-over of the parts on controller; 3.Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
2	Indoor evaporator temperature sensor is open/short-circuited	F2	The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except IDU fan operates, other loads stop operation; During heating operation, the complete unit stops operation.	1.The wiring terminal between indoor evaporator temperature sensor and main board is loosened or poorly contacted; 2.There's short circuit due to the trip-over of the parts on controller; 3.Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
3	Blocked protection of IDU fan motor	H6	IDU fan, ODU fan, compressor and electric heat tube stop operation. Horizontal louver stops at the current position.	1.The feedback terminal of PG motor is not connected tightly. 2.The control terminal of PG motor is not connected tightly. 3.Fan blade rotates unsmoothly. 4.Malfunction of motor 5.Main board is broken.
4	Malfunction protection of jumper cap	C5	Operation of remote controller or control panel is available, but the unit won't act.	1.There's not jumper cap on the main board. 2.Jumper cap is not inserted properly and tightly. 3.Jumper cap is damaged. 4.Controller is damaged.
5	Overload malfunction	E8	The entire unit stops.	1.Indoor and outdoor heat exchanger is too dirty? Or air inlet/outlet is blocked? 2.Fan motor is not working. Abnormal fan speed; fan speed is too low or the fan doesn't run. 3.Compressor operates normally or not? Is there any abnormal noise or oil leak? Casing is too hot? 4.System is blocked inside? (Dirt blockage? Ice blockage? Oil blockage? Y-valve is not fully open?) 5.Main board temperature sensor detects wrongly.

6	Zero-crossing inspection circuit malfunction of the IDU fan motor	U8	Operation of remote controller or control panel is available, but the unit won't act.	<p>1.Quick de-energization and energization. Wrong judgement by the controller because the electric-discharging of capacitor is slow.</p> <p>2.Zero-crossing inspection circuit of main board for controller is abnormal.</p>
7	Lack of refrigerant or block protection for the system(not applicable to residential air conditioner) or Overload protection compressor	F0	The Dual-8 Code Display will show F0 and the complete unit stops.	<p>1.Refrigerant leakage;</p> <p>2.Indoor evaporator temperature sensor works abnormally;</p> <p>3.The unit has been plugged up somewhere;</p> <p>4.The compressor can't be started up normally. Because the power voltage for the complete unit is too low, and the outdoor working condition is too high.</p>

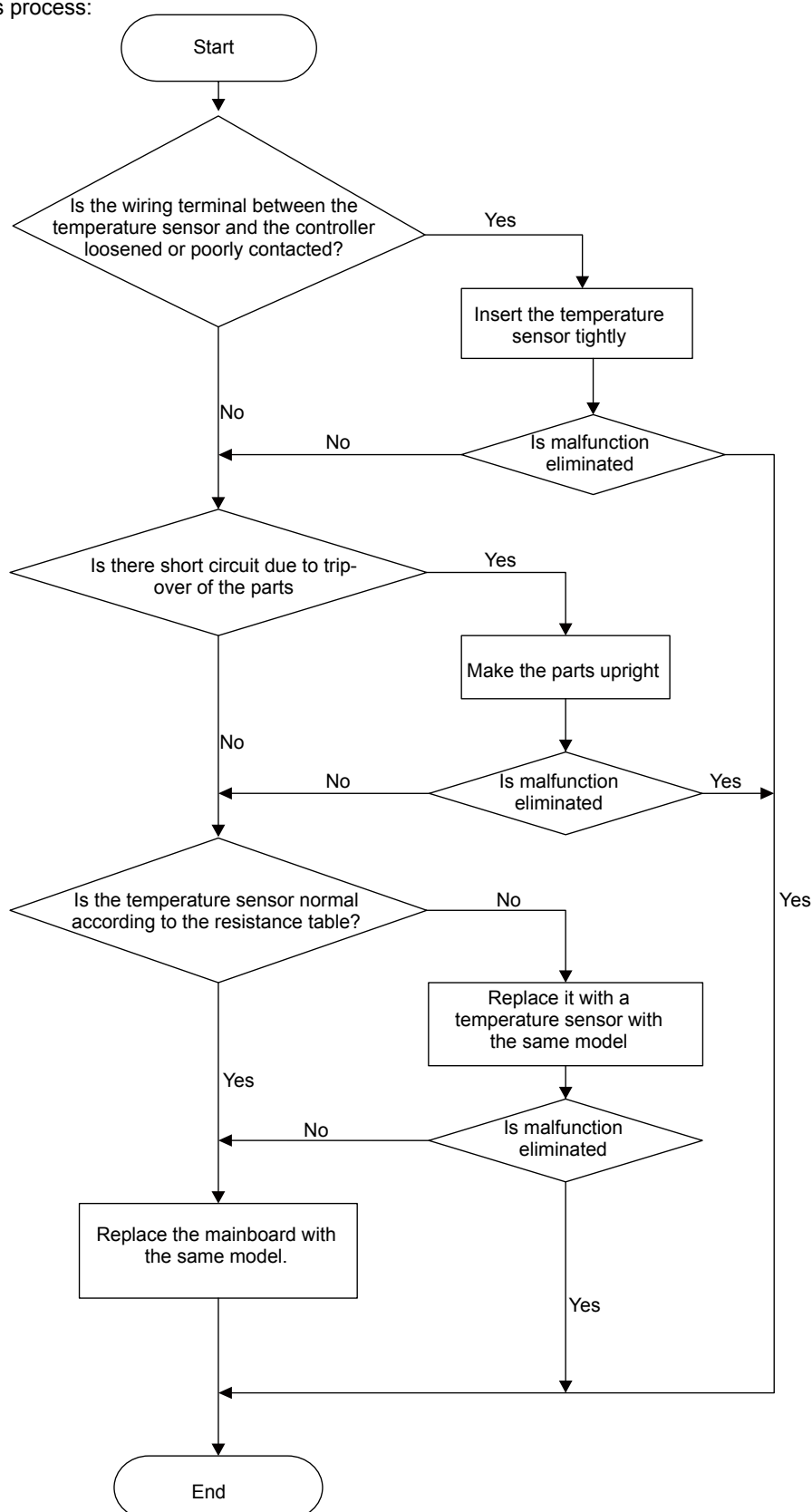
9.2 Procedure of Troubleshooting

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:

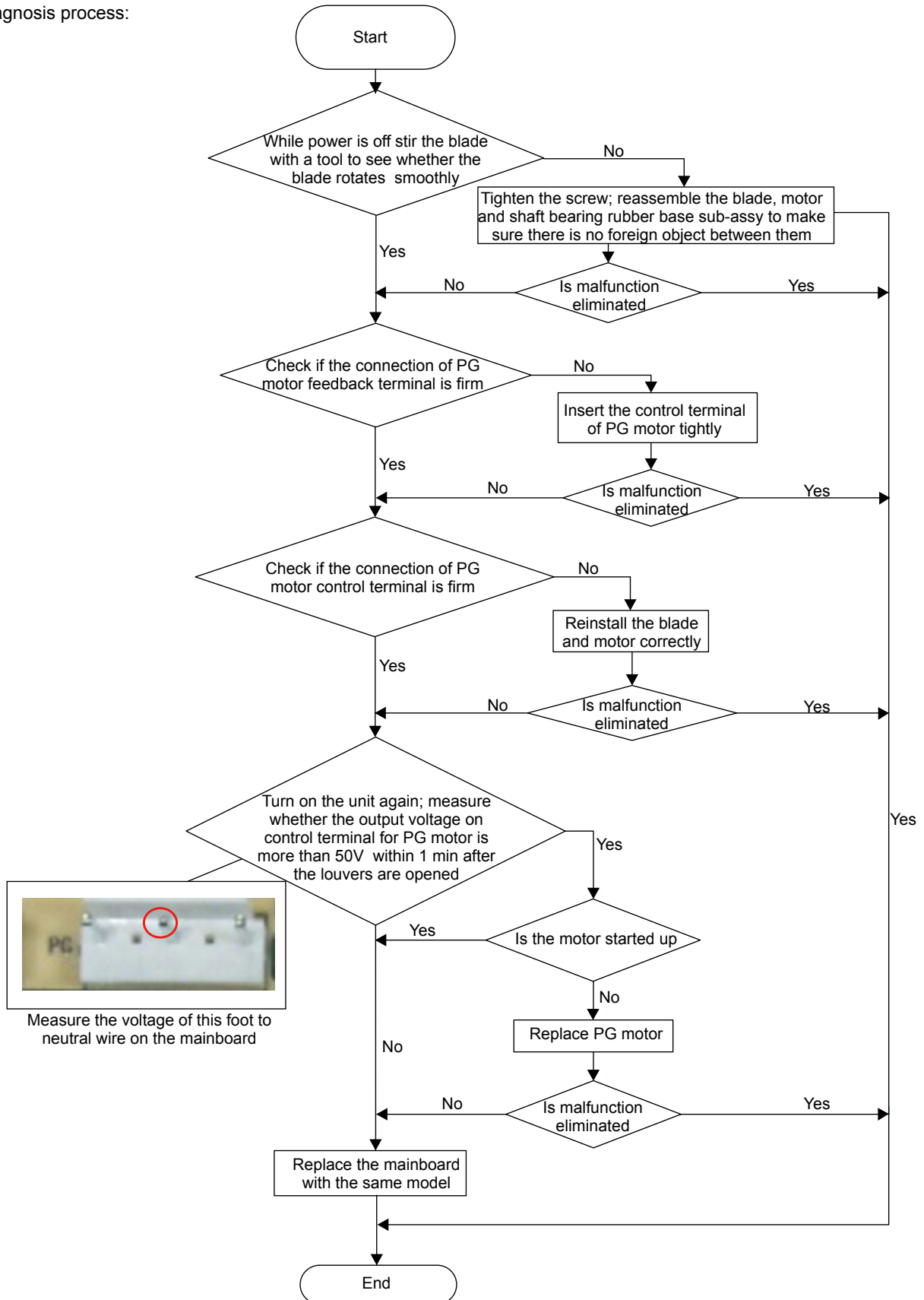


2. Malfunction of Blocked Protection of IDU Fan Motor H6

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:

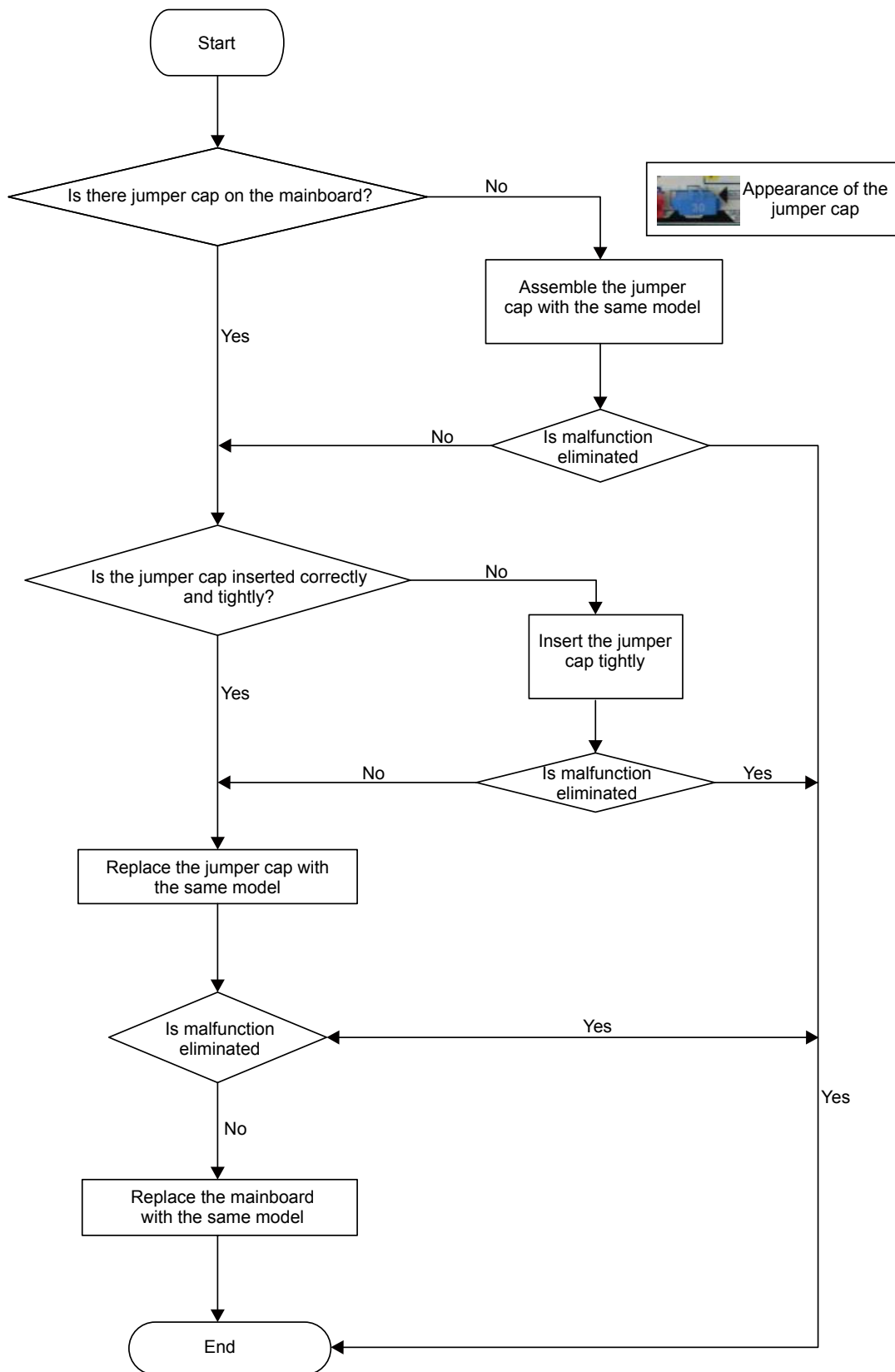


3. Malfunction of Protection of Jumper Cap C5

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:

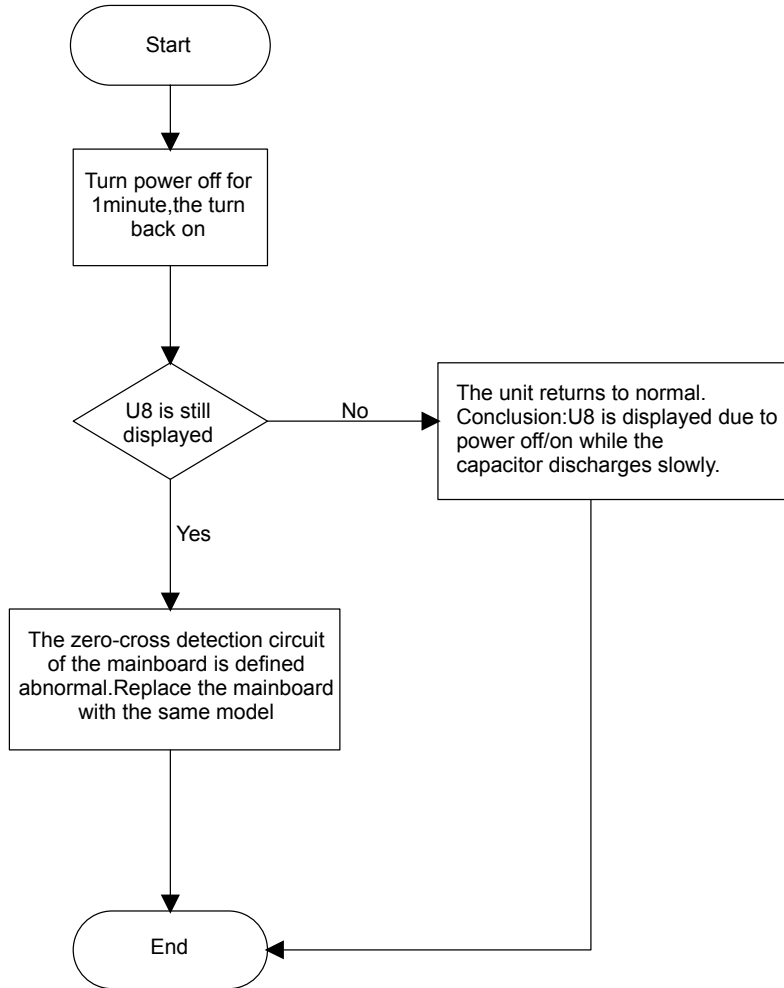


4. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8

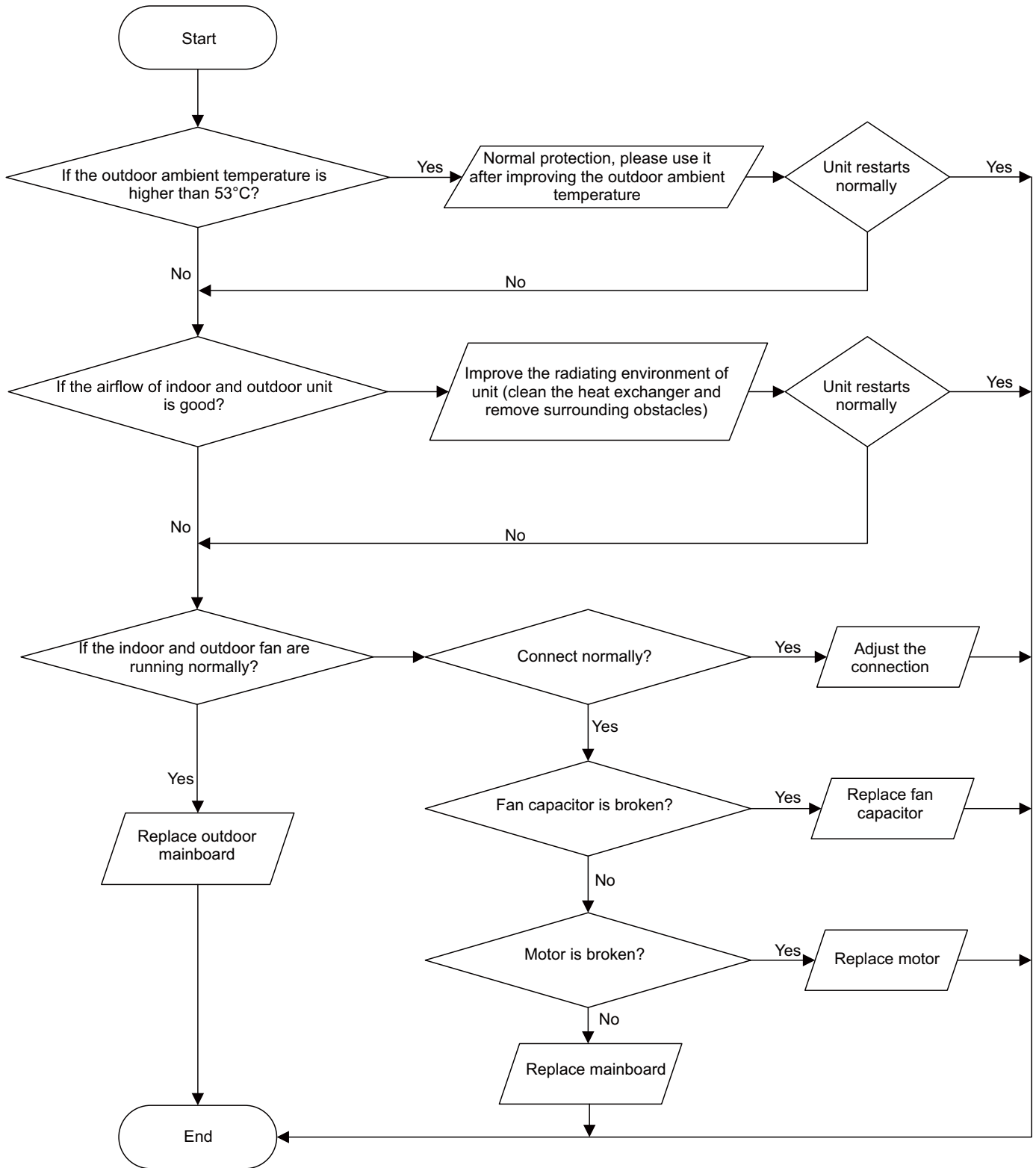
Main detection points:

- Instant energization after de-energization while the capacitor discharges slowly?
- The zero-cross detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



5. High Temperature and Overload Protection (AP1 below means control board of outdoor unit) E8



9.3 Maintenance method for normal malfunction

1. Air Conditioner Cant be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isnt bright and the buzzer cant give out sound	Confirm whether its 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 isnt 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 its 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; Units 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 pressure is much lower than regulated range. If refrigerant isnt 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 cant swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor cant operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor cant operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor cant operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver Cant 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 cant operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver cant operate	Replace the main board with the same model

4. ODU Fan Motor Cant Operate

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

5. Compressor Cant Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and its 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor cant operate	Repair or replace compressor

6. Air Conditioner is Leaking

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

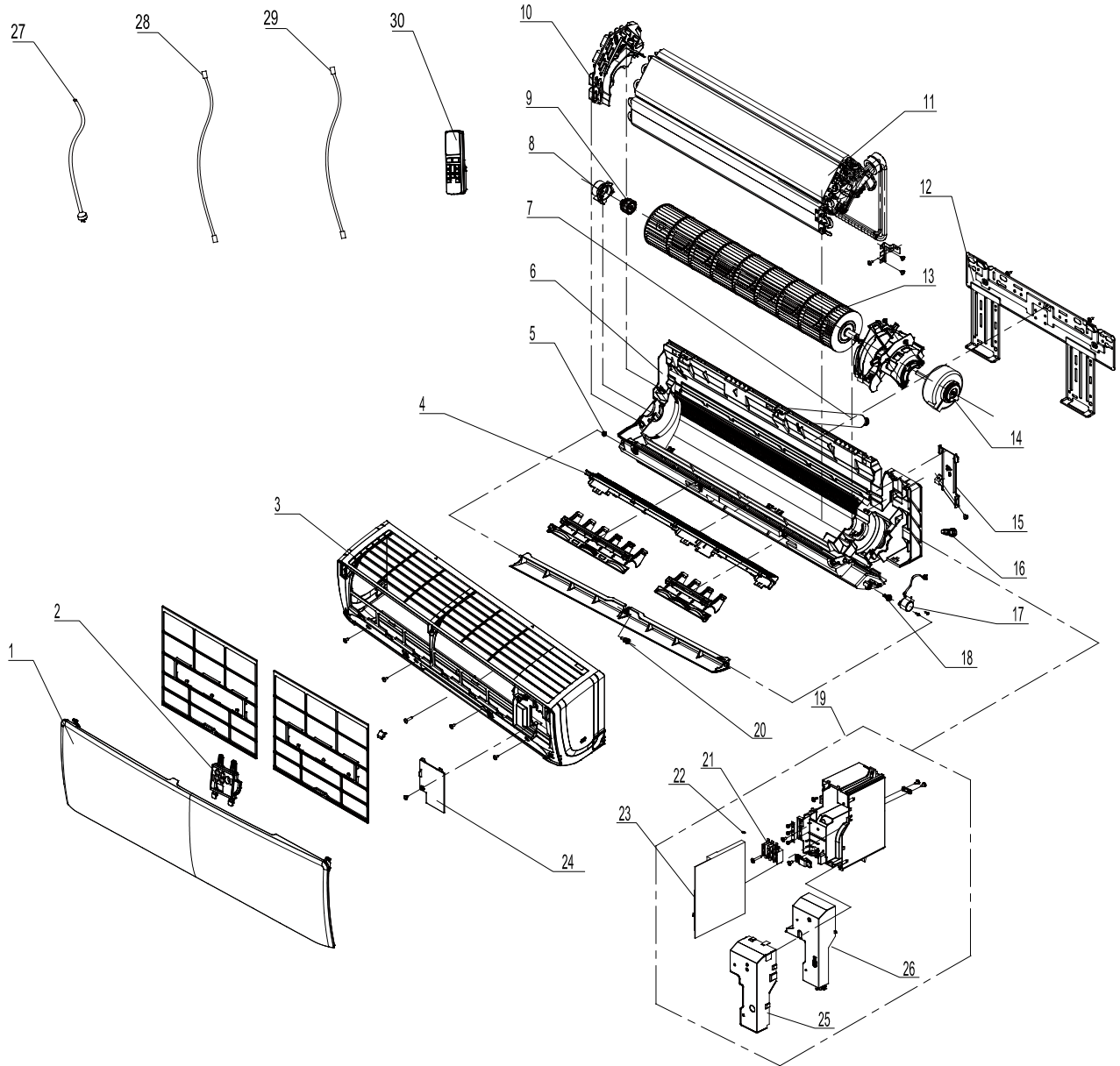
7. Abnormal Sound and Vibration

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

10. Exploded View and Parts List

10.1 Indoor Unit

18K



NO.	Description	Part Code		Qty
		GWH18AAC-K3NNA1A/I	GWH18AAC-K3NNA2A/I	
		Product Code	Product Code	
1	Front Panel	20000300003801T	20000300008001T	1
2	Display Board	300001000037	300001000037	1
3	Front Case	20000200000901	20000200000901	1
4	Helicoid Tongue	26112436	26112436	1
5	Left Axile Bush	10512037	10512037	1
6	Rear Case assy	000001000010	000001000010	1
7	Drainage Hose	05230014	05230014	1
8	Ring of Bearing	26152022	26152022	1
9	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
10	Evaporator Support	24212174	24212174	1
11	Evaporator Assy	01002695	01002695	1
12	Wall Mounting Frame	01252484	01252484	1
13	Cross Flow Fan	10352056	10352056	1
14	Fan Motor	1501214603	1501214603	1
15	Connecting pipe clamp	2611216401	2611216401	1
16	Rubber Plug (Water Tray)	76712012	76712012	1
17	Stepping Motor	1521210703	1521210703	1
18	Crank	73012005	73012005	1
19	Electric Box Assy	100002000561	100002000561	1
20	Axile Bush	10542036	10542036	1
21	Terminal Board	42010268	42010268	1
22	Jumper	4202300123	4202300123	1
23	Main Board	30135000133	30135000133	1
24	Electric Box Cover Sub-Assy	0140206501	0140206501	1
25	Shield Cover of Electric Box Cover	01592150	01592150	1
26	Electric Box Cover	20112207	20112207	1
27	Power Cord	4002048740	4002048740	1
28	Connecting Cable	400205401	400205401	0
29	Connecting Cable	40020536	40020536	0
30	Remote Controller	305001000009	305001000009	1

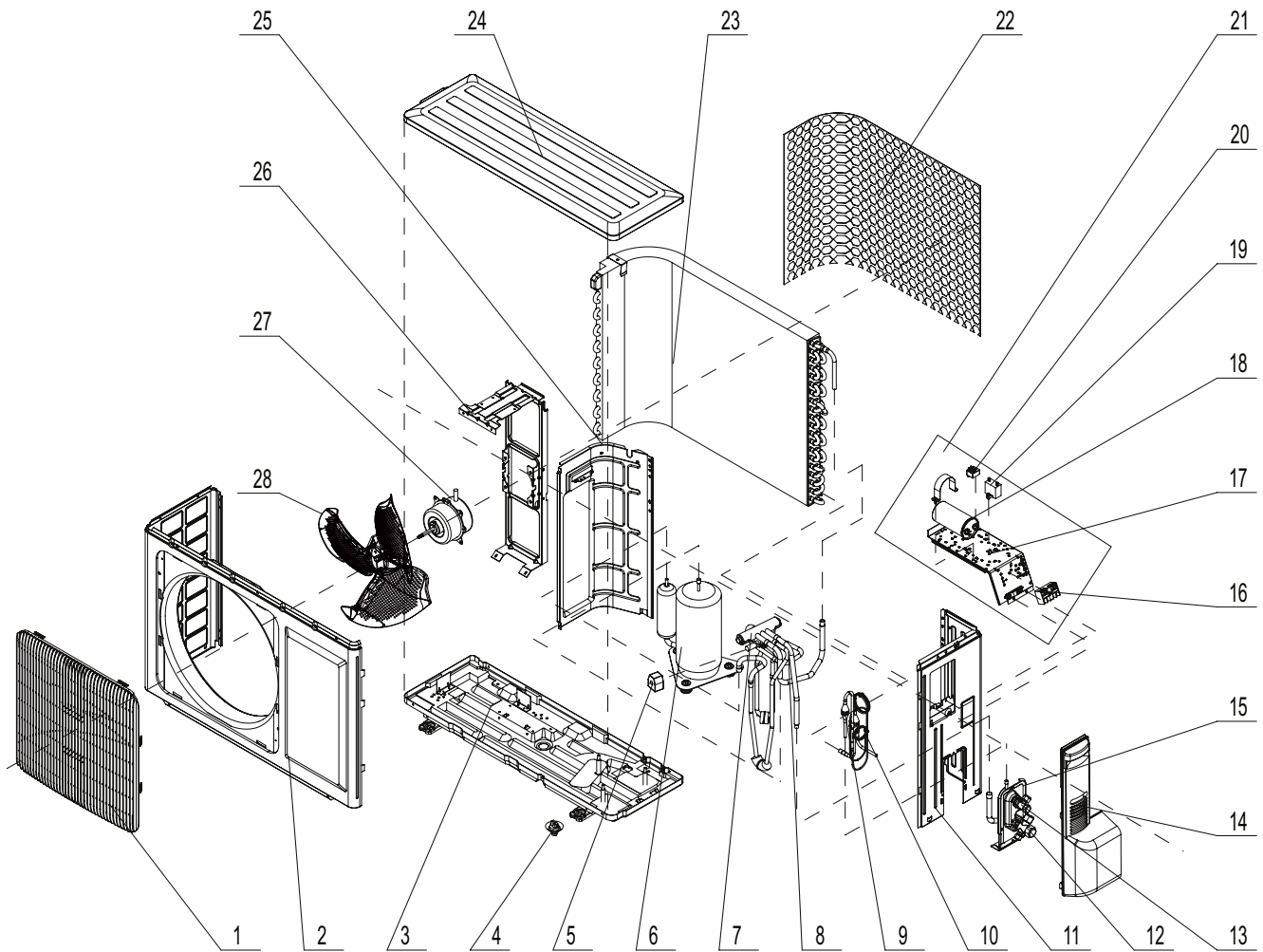
Above data is subject to change without notice.

NO.	Description	Part Code		Qty
		GWH24AAD-K3NNA1A/I	GWH24AAD-K3NNA2A/I	
		Product Code	CA115N14300	
1	Front Panel	20000300003101T	20000300008101T	1
2	Display Board	300001000037	300001000037	1
3	Filter Sub-Assy	11122089	11122089	1
4	Front Case	20000200000801	20000200000801	1
5	Guide Louver	20000400000401	20000400000401	1
6	Axile Bush	10542036	10542036	2
7	Air Louver	10512732	10512732	3
8	Helicoid Tongue	26112512	26112512	1
9	Left Axile Bush	10512037	10512037	1
10	Rear Case assy	000001000009	000001000009	1
11	Rubber Plug (Water Tray)	76712012	76712012	1
12	O-Gasket of Cross Fan Bearing	76512203	76512203	1
13	Ring of Bearing	26152025	26152025	1
14	Evaporator Support	24212177	24212177	1
15	Evaporator Assy	01002686	01002686	1
16	Cross Flow Fan	10352060	10352060	1
17	Fan Motor	1501214502	1501214502	1
18	Motor Press Plate	26112511	26112511	1
19	Wall Mounting Frame	01362026	01362026	1
20	Connecting pipe clamp	2611218801	2611218801	1
21	Crank	73012005	73012005	1
22	Stepping Motor	1521240210	1521240210	1
23	Drainage Hose	05230014	05230014	1
24	Electric Box Assy	1000020000567	1000020000567	1
25	Lower Shield of Electric Box	01592139	01592139	1
26	Electric Box	20112211	20112211	1
27	Jumper	4202300114	4202300114	1
28	Main Board	30135979	30135979	1
29	Shield Cover of Electric Box	01592176	01592176	1
30	Electric Box Cover	20112209	20112209	1
31	Terminal Board	4201026201	4201026201	1
32	Screw Cover	242520179	242520179	3
33	Electric Box Cover2	20112210	20112210	1
34	Power Cord	4002048716	4002048716	1
35	Connecting Cable	40020536	40020536	0
36	Connecting Cable	400205382	400205382	0
37	Remote Controller	305001000009	305001000009	1

Above data is subject to change without notice.

10.2 Outdoor Unit

18K



The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		GWH18AAC-K3NNA1A/O	
	Product Code	CA115W14200	
1	Front Grill	22413008	1
2	Front Panel	0153303204P	1
3	Chassis Sub-assy	017000000042P	1
4	Drainage Connector	06123401	1
5	Magnet Coil	4300040047	1
6	Compressor and Fttings	009001000074	1
7	4-way Valve	430004032	1
8	4-way Valve Assy	030152000185	1
9	StrainerA	07210022	1
10	Capillary Sub-Assy	030006000254	1
11	Right Side Plate Assy	0130200404	1
12	Valve	07100003	1
13	Valve	07100006	1
14	Big Handle	262334332	1
15	Valve Support	01713041	1
16	Terminal Board	42010265	1
17	Electric Box Sub-Assy	02613089	1
18	Capacitor CBB65	3300008104	1
19	Capacitor CBB61	3301074710	1
20	Terminal Board	42010265	1
21	Electric Box Assy	100002000583	1
22	Rear grill	11123205	1
23	Condenser Assy	011002000273	1
24	Top Cover Plate	01253443	1
25	Clapboard Sub-Assy	012334172	1
26	Motor Support Sub-Assy	0170310401	1
27	Fan Motor	150130676	1
28	Axial Flow Fan	10333427	1

Above data is subject to change without notice.

NO.	Description	Part Code	Qty
		GWH24AAD-K3NNA1A/O	
		Product Code	
		CA115W14300	
1	Front Grill	22415001	1
2	Left Handle	/	/
3	Cabinet	01435001P	1
4	Axial Flow Fan	10335261	1
5	Fan Motor	15015057	1
6	Chassis Sub-assy	02803108P	1
7	Motor Support Sub-Assy	0170305901	1
8	Coping	01255001	1
9	Condenser Assy	01163524	1
10	Rear Grill	01473069	1
11	Electric Box Assy	100002000839	1
12	AC Contactor	44010245	1
13	Capacitor CBB65	3300008105	1
14	Capacitor Clamp	02141375	1
15	Capacitor CBB61	3301074710	1
16	Terminal Board	42010194	1
17	Wire Clamp	71010102	1
18	Wire Clamp	71010103	1
19	Handle	26235253	1
20	Cut off Valve	07130213	1
21	Valve Cover	22243003	1
22	Cut off Valve	07100003	1
23	Right Side Plate	01305095P	1
24	Valve Support Sub-Assy	01713075	1
25	4-Way Valve Assy	030152000220	1
26	Compressorand Fittings	00103872	1
27	Clapboard Sub-Assy	01233035	1
28	Drainage Plug	06813401	3
29	Drainage Connector	06123401	1

Above data is subject to change without notice.

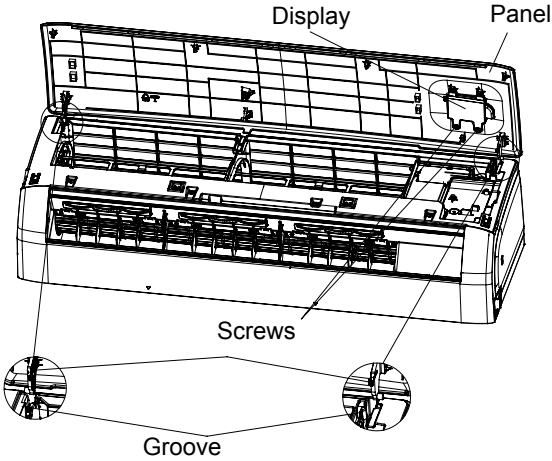
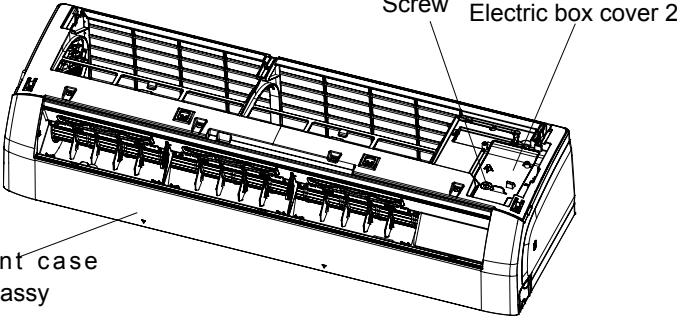
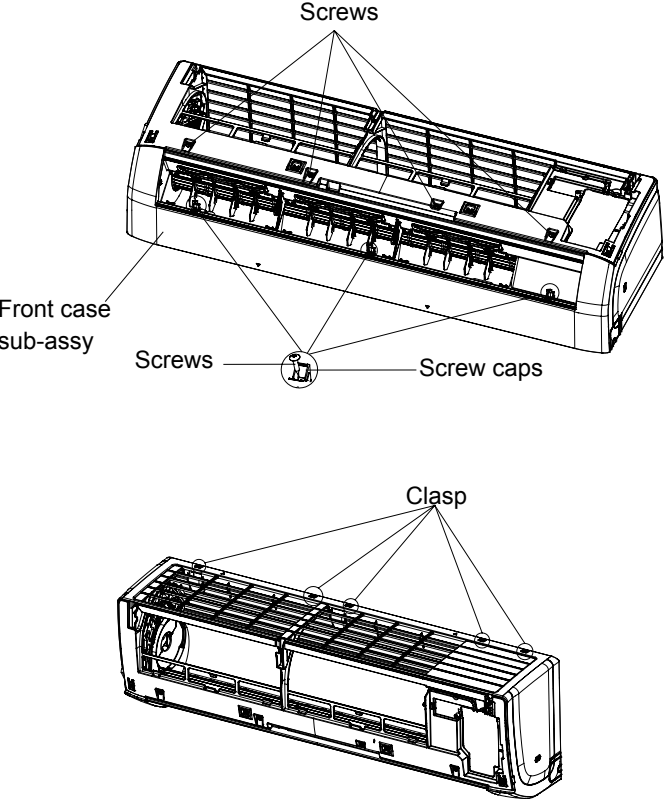
11. Removal Procedure

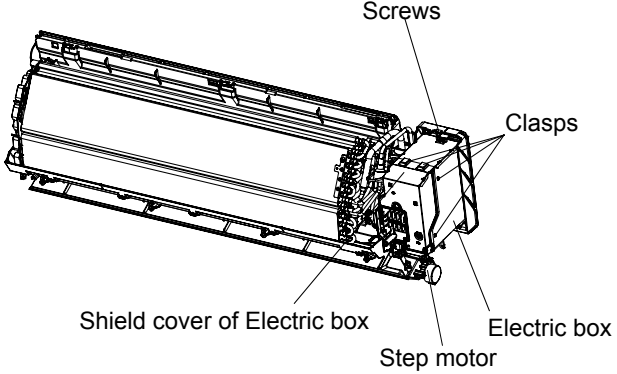
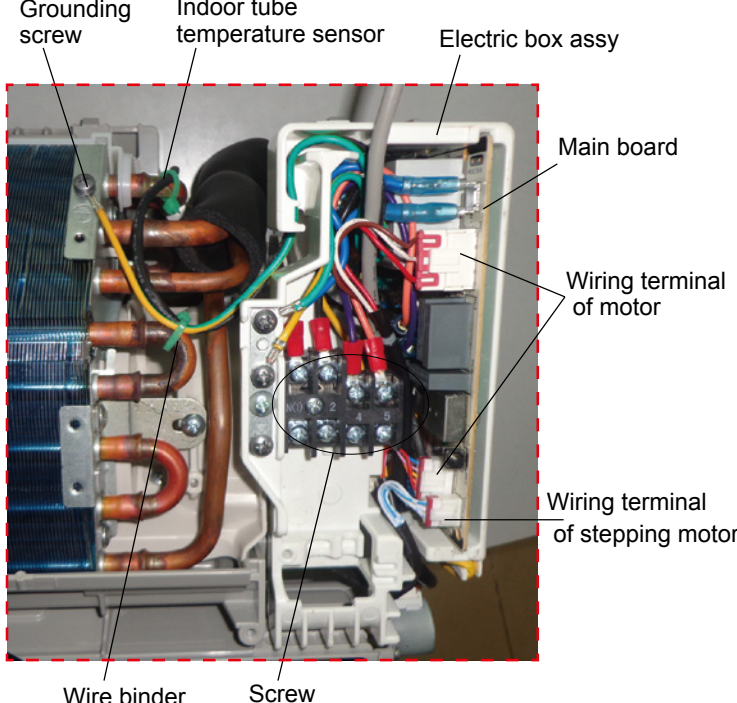
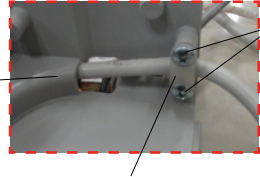

11.1 Removal Procedure of Indoor Unit

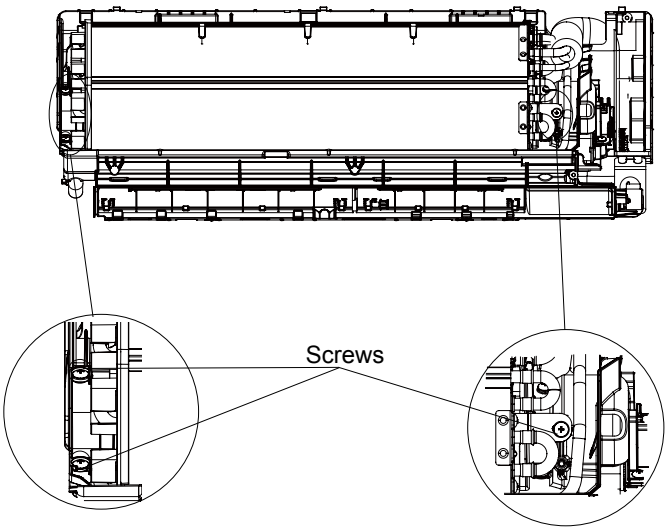
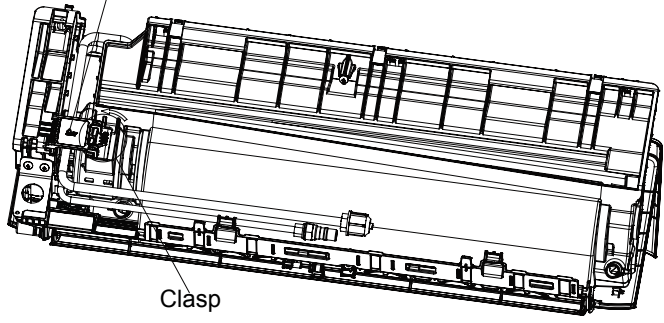
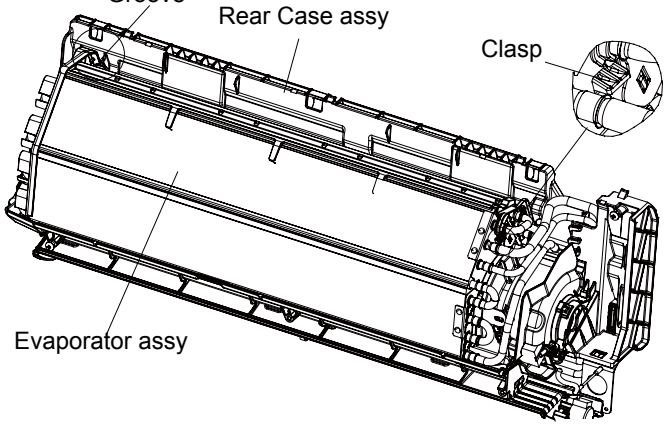
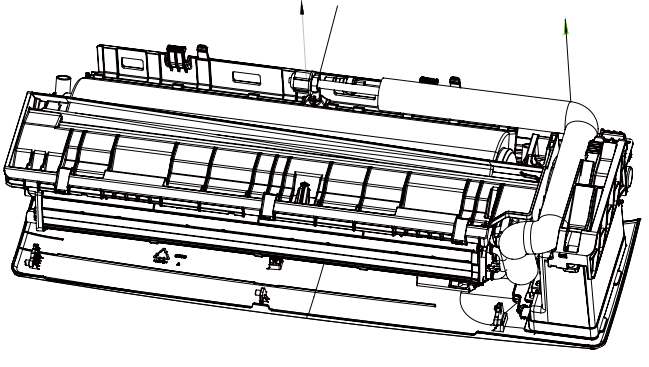


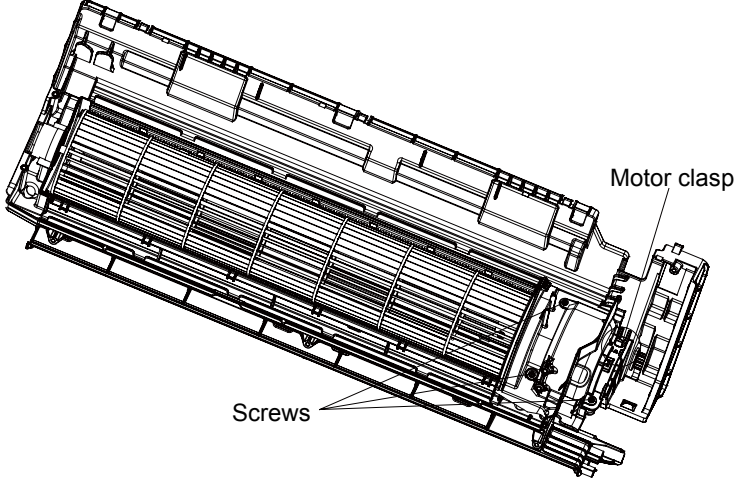
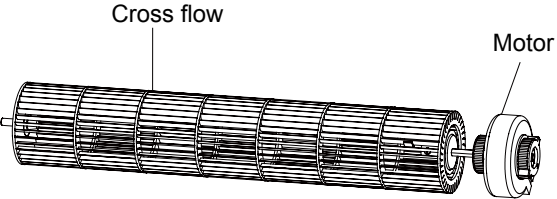
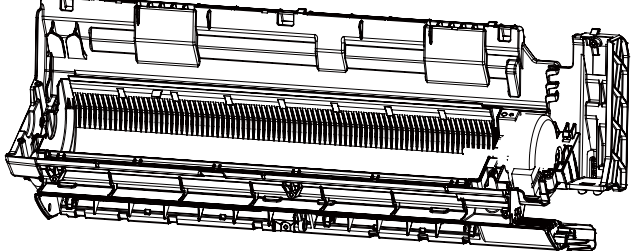
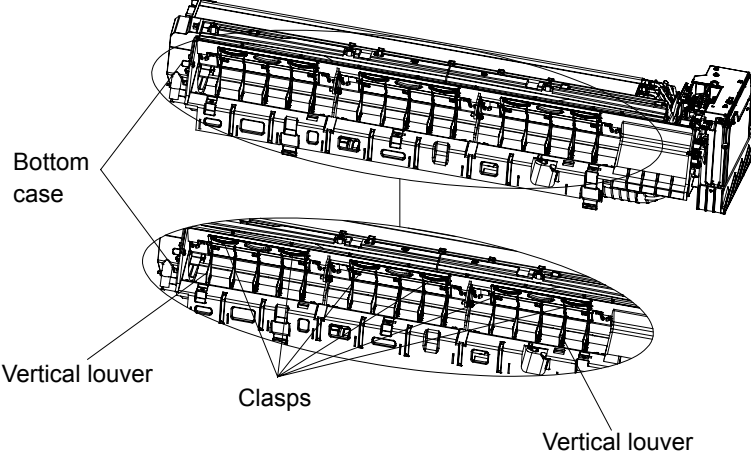
Caution: discharge the refrigerant completely before removal.

Step	Procedure	Diagram
1. Remove filter	<p>a Open the panel.</p> <p>b Loosen the clasp shown in the fig and then pull the left filter and right filter outwards to remove them.</p>	<p>Panel</p> <p>Clasps</p> <p>Left filter and right filter</p>
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>18K</p> <p>Location of step motor</p> <p>Horizontal louver</p> <p>Axle bush</p> <p>24K</p> <p>Horizontal louver</p> <p>Axle bush</p> <p>Location of step motor</p>

Step	Procedure
<p>3. Remove panel</p>	<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> 
<p>4. Remove electric box cover 2</p>	<p>Remove the screws on the electric box cover 2 to remove the electric box cover 2.</p> 
<p>5. Remove front case sub-assy</p> <p>a</p> <p>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</p> <p>Loosen the clasps at left, middle and right sides of front case. Lift the front case sub-assy upwards to remove it.</p>	

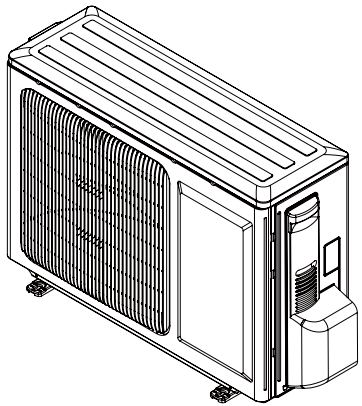
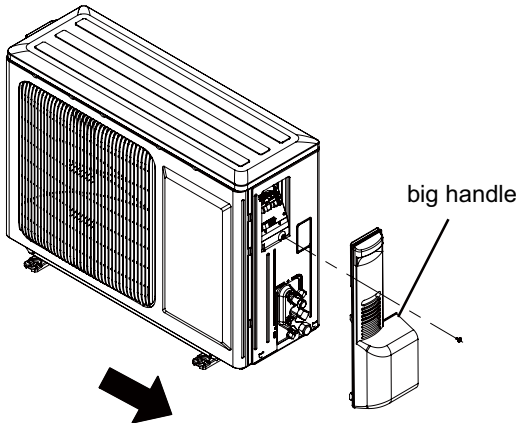
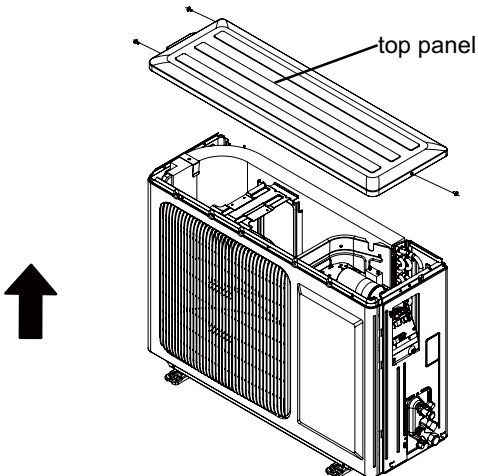
Step	Procedure
6. Remove electric box assy	
a	<p>Loosen the connection clasps between Cold plasma generator and electric box, and then remove the cold plasma generator.</p> 
b	<p>① Cut off the wire binder and pull out the indoor tube temperature sensor. ② Screw off one grounding screw. ③ Remove the wiring terminals of motor and stepping motor. ④ Remove the electric box assy. ⑤ Screw off the screws that are locking each.</p> 
c	<p>Rotate the electric box assy. Twist off the screws that are locking the wire clip and loosen the power cord. Remove the wiring terminal of power cord. Lift up the main board and take it off.</p>  <p>Instruction: Some wiring terminal of this product is with lock catch and other devices. The pulling method is as below: 1.Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals. 2.Pull out the holder for some terminals at first (holder is not available for some wiring terminal), hold the connector and then pull the terminal.</p> 

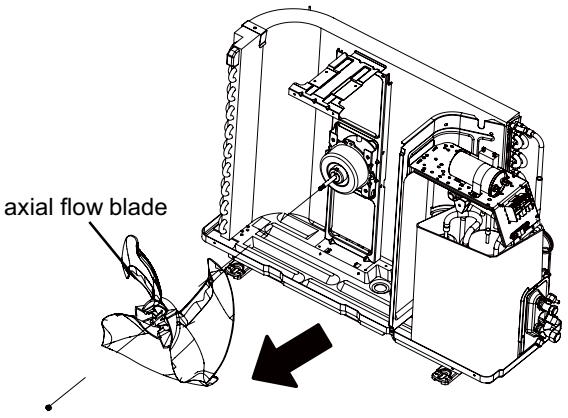
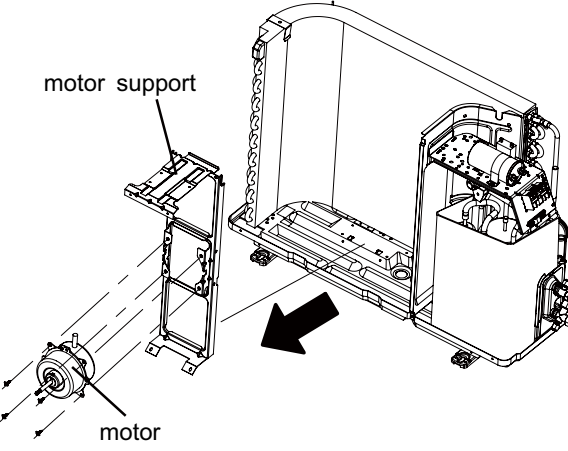
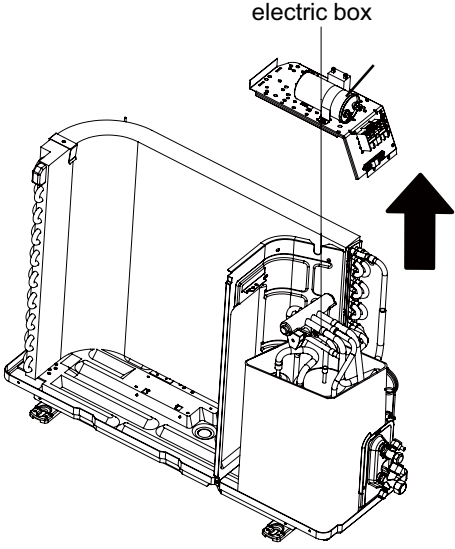
Step	Procedure
7. Remove evaporator assy	
a	<p>Remove 3 screws fixing evaporator assy.</p>  <p>Screws</p>
b	<p>At the back of the unit, Loosen the clasp, connection pipe clamp and then remove the connection pipe clamp.</p>  <p>Connection pipe clamp</p> <p>Clasp</p>
c	<p>First remove the left side of evaporator from the groove of bottom shell and then remove the right side from the clasp on the bottom shell.</p>  <p>Groove</p> <p>Rear Case assy</p> <p>Clasp</p> <p>Evaporator assy</p>
d	<p>Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.</p>  <p>Connection pipe</p>

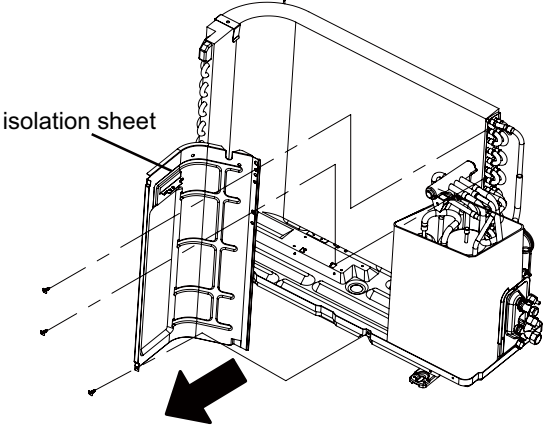
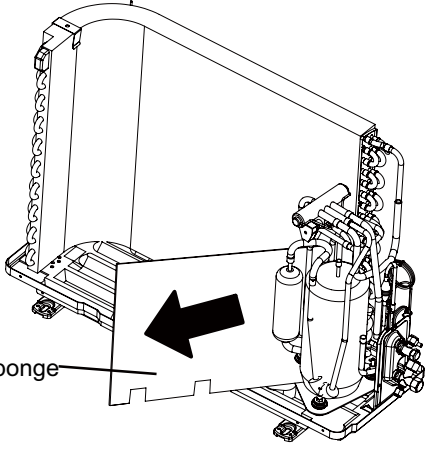
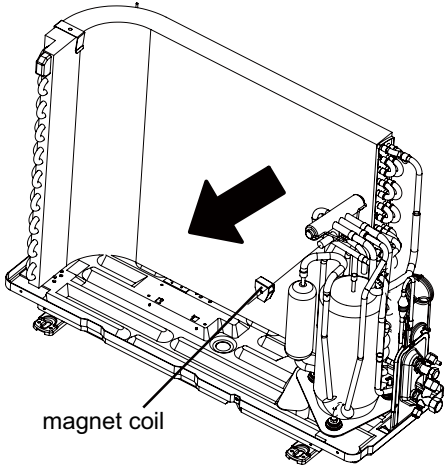
Step	Procedure
8. Remove motor and cross flow blade	
a	<p>Remove 3 screws fixing motor clamp and then remove the motor clamp.</p>
b	<p>Remove the at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.</p>
 <p>Motor clamp</p> <p>Screws</p>	 <p>Cross flow</p> <p>Motor</p> 
9. Remove vertical louver	
	<p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p>
 <p>Bottom case</p> <p>Vertical louver</p> <p>Clasps</p> <p>Vertical louver</p>	

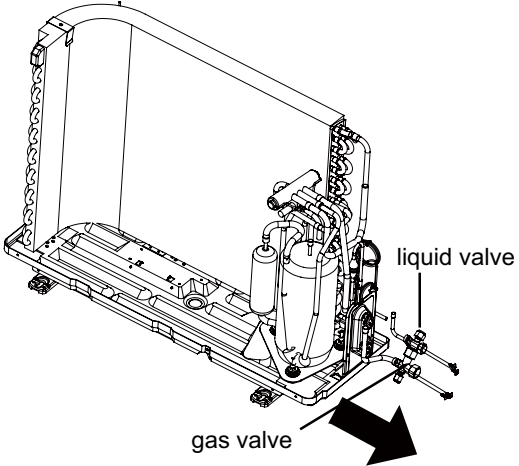
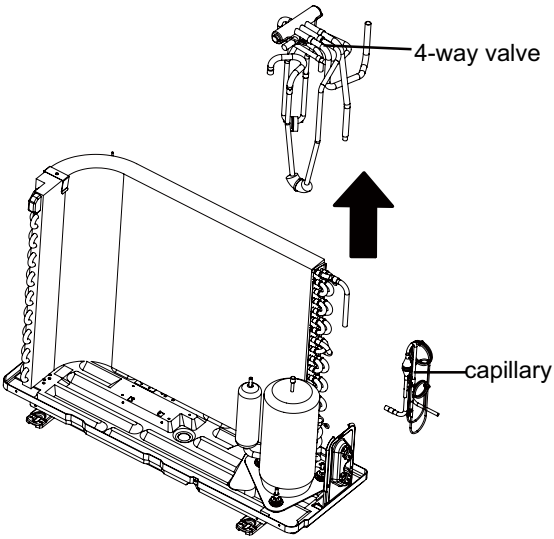
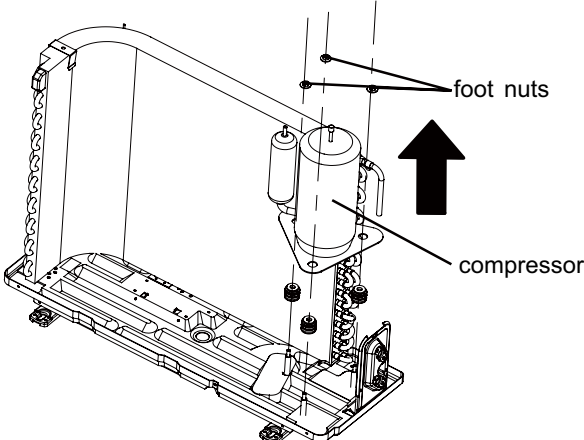
11.2 Removal Procedure of Outdoor Unit

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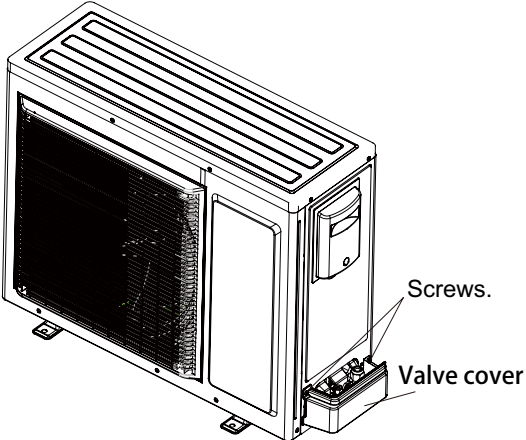
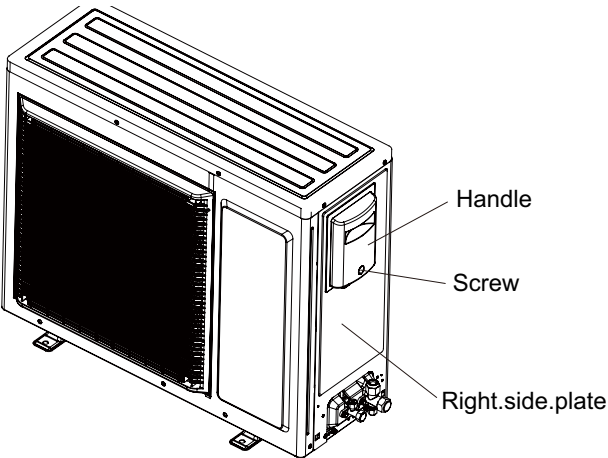
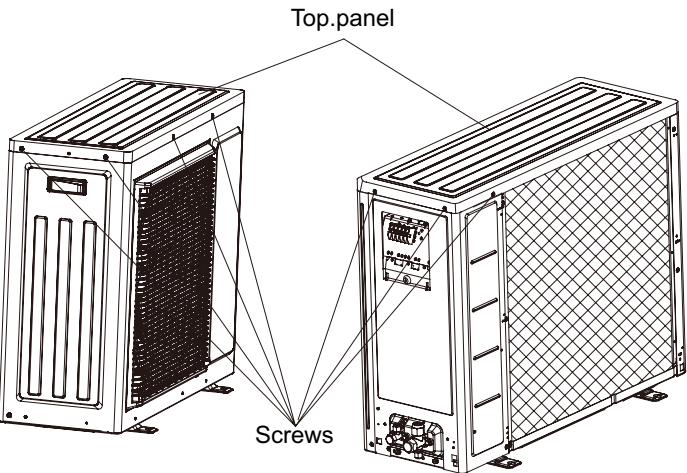
Steps	Procedure
1. Before disassembly	
2. Remove big handle	<p data-bbox="207 978 686 1037">Remove the connection screw fixing the big handle and then remove the handle.</p> 
3. Remove top cover plate	<p data-bbox="207 1530 730 1611">Remove connection screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p> 

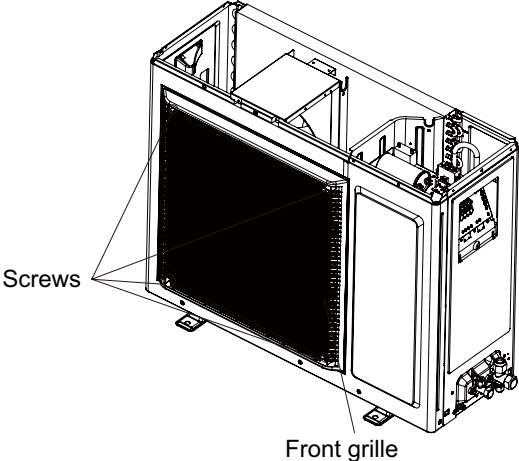
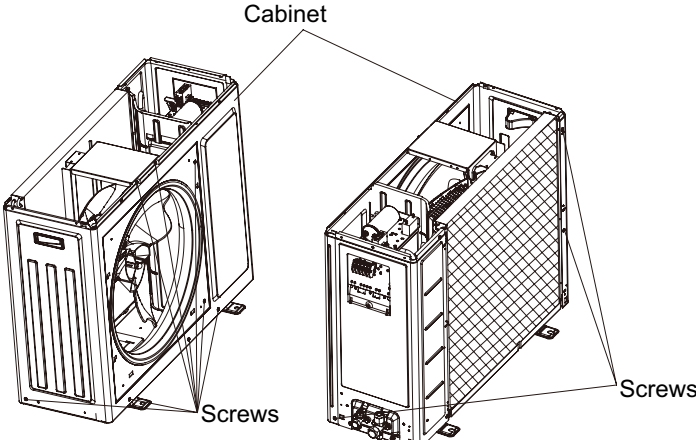
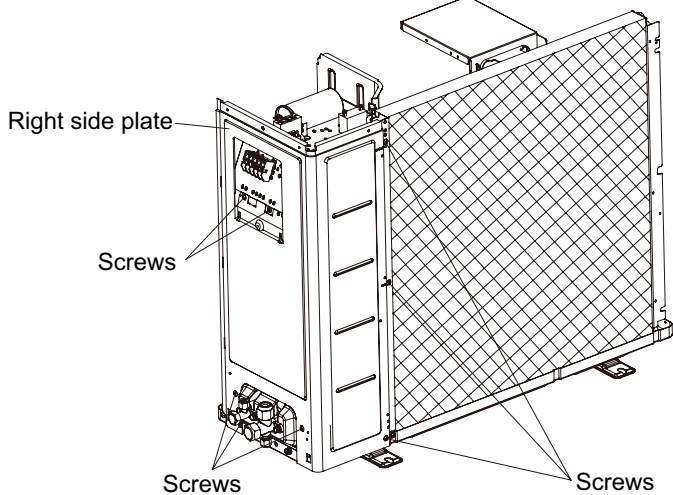
Steps	Procedure
<p>7. Remove axial flow blade</p>	<p>Remove the nut on the blade and then remove the axial flow blade.</p>  <p>axial flow blade</p>
<p>8. Remove motor and motor support</p>	<p>Remove the 4 tapping screws fixing the motor and disconnect the leading wire insert of the motor. Then remove the motor. Remove the 2 tapping screws fixing the motor support and lift the motor support to remove it.</p>  <p>motor support</p> <p>motor</p>
<p>9. Remove electric box</p>	<p>Remove screws fixing the electric box subassembly; loosen the wire bundle and unplug the wiring terminals. Then lift the electric box to remove it.</p>  <p>electric box</p>

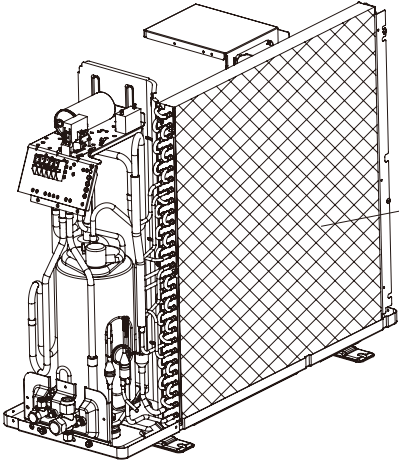
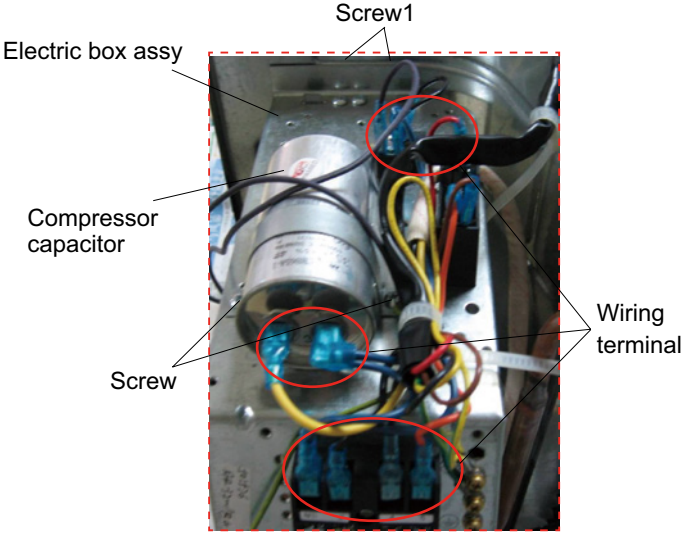
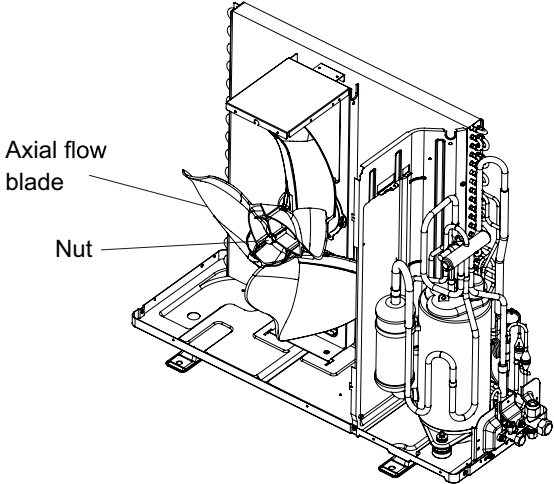
Steps	Procedure
<p>10. Remove isolation sheet</p>	<p>Remove the 3 screws fixing the isolation sheet and then remove the isolation sheet.</p>  <p>isolation sheet</p>
<p>11. Remove soundproof sponge</p>	<p>Remove the soundproof sponge wrapping the compressor.</p>  <p>soundproof sponge</p>
<p>12. Remove magnet coil</p>	<p>Remove the screw fixing the magnet coil and then remove the coil.</p>  <p>magnet coil</p>

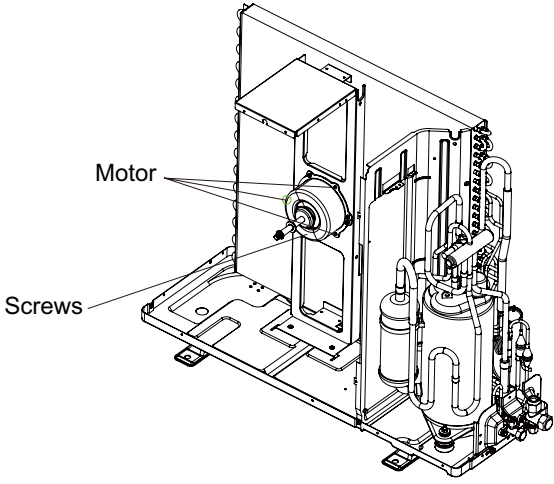
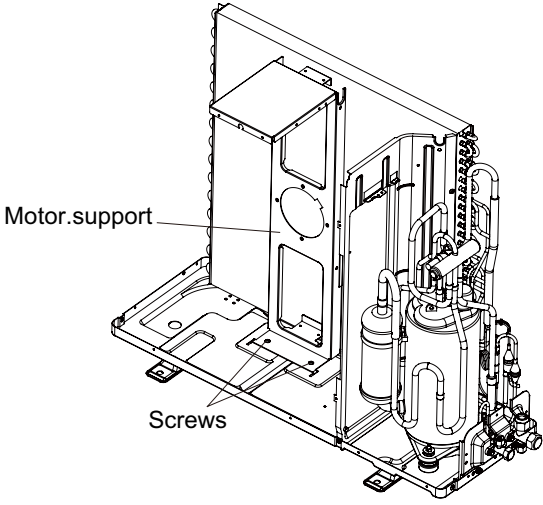
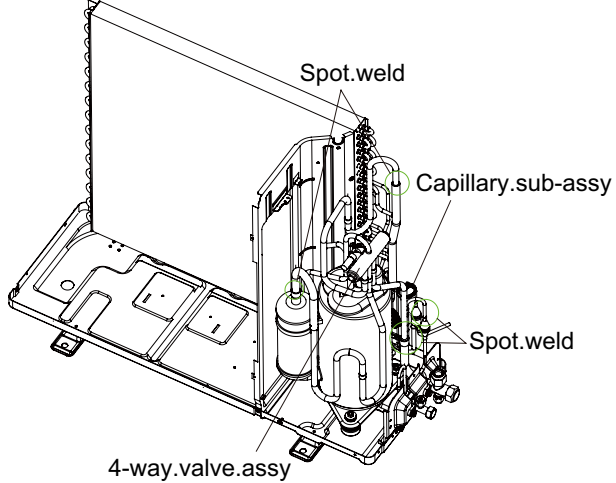
Steps	Procedure
<p>13. Remove liquid valve and gas valve</p>	<p>Unsolder the welding joint connecting the capillary, valves and the outlet pipe of condenser to remove the capillary. Do not block the capillary with welding slag during unsoldering.</p> <p>Remove the 2 screws fixing the gas valve and unsolder the welding joint between the gas valve and the air-return pipe to remove the gas valve. (NOTE: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature).</p> <p>Remove the 2 screws fixing the liquid valve and unsolder the welding joint connecting the liquid valve to the Y-type pipe to remove the liquid valve.</p> 
<p>14. Remove compressor</p>	<p>a Unsolder pipes connecting with compressor.</p>  <p>b Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 

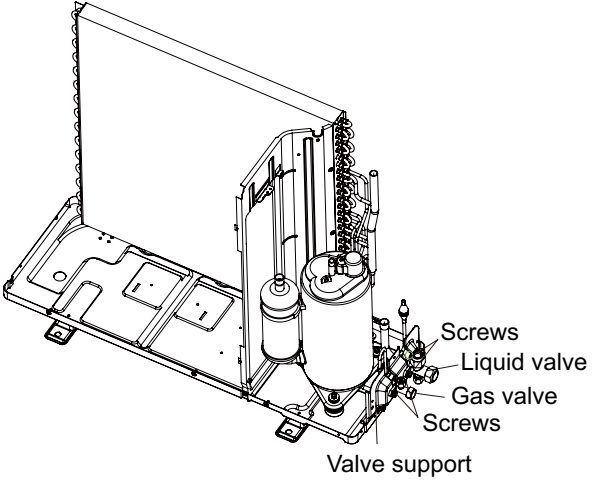
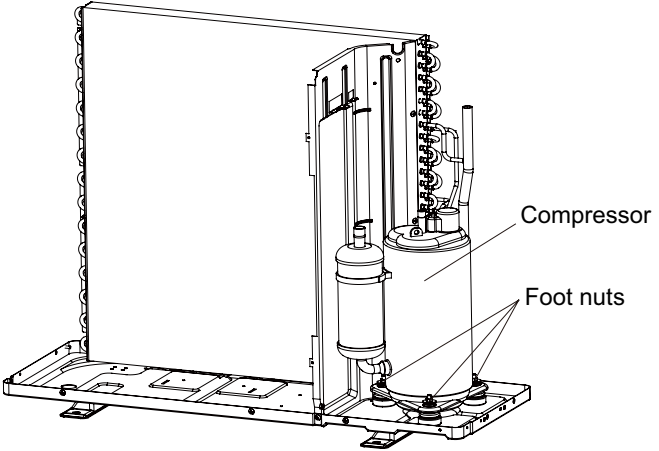
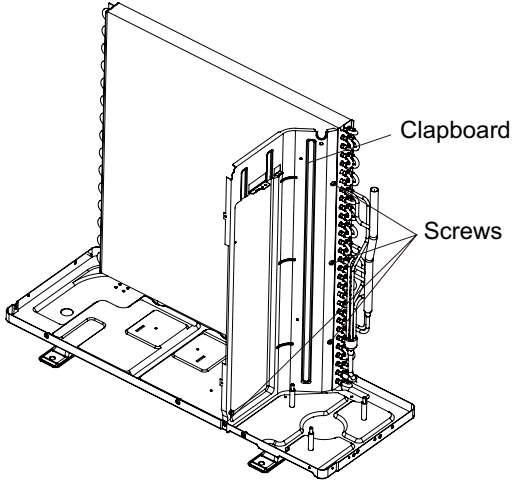
24K

Step	Procedure
<p>1. Remove valve cover</p>	<p>Remove the 2 screws fixing valve cover and then remove the valve cover.</p>  <p style="text-align: right;">Screws. Valve cover</p>
<p>2. Remove handle</p>	<p>Remove the screw fixing handle; slide out the handle upwards to make the clasp of handle separate from the groove of right side plate, and then remove the handle.</p>  <p style="text-align: right;">Handle Screw Right side plate</p>
<p>3. Remove top panel</p>	<p>Remove the screws fixing top panel and then remove the top panel.</p>  <p style="text-align: right;">Top panel Screws</p>

Step	Procedure
4. Remove front grille	<p>Remove the screws of grille and then remove the front grille.</p> 
5. Remove cabinet	<p>Remove the cabinet by screwing off the locking screws on cabinet.</p> 
6. Remove right side plate	<p>Remove the screws fixing right side plate and then remove the right side plate.</p> 

Step	Procedure	
7. Remove protective grille	<p>Cut off the wire binder fixing the protective grille and then remove the protective grille.</p>	
8. Remove electric box assy	<p>Remove the wiring terminals on electric box. Screw off screw 1 fixing the electric box assy and then remove the electric box assy. Screw off the screws fixing compressor capacitor. Then remove the compressor capacitor.</p>	
9. Remove axial flow blade	<p>Remove the nut fixing axial flow blade and then remove the axial flow blade.</p>	

Step	Procedure
10..Remove.motor	<p>Remove.the.screws.fixing.motor.and.then.remove.the.motor.</p> 
11..Remove.motor.support	<p>Remove.the.screws.fixing.motor.support.and.then.remove.the.motor.support.</p> 
12..Remove.4-way.valve.assy.and.capillary.sub-assy	<p>Unsolder.the.spot.weld.of.4-way.valve.assy.,capillary,.compressor.and.condenser,.and.then.remove.the.4-way.valve.assy.and.capillary.sub-assy.</p> <p>Note: When.unsoldering.the.spot.weld,.wrap.the.4-way.valve.with.wet.cloth.completely.to.avoid.damaging.the.valve.due.to.high.temperature.</p> 

Step	Procedure	Procedure
13. Remove gas valve and liquid valve	<p>Remove two screws fixing the gas valve, then remove the gas valve.</p> <p>Remove two screws fixing the liquid valve, then remove the liquid valve.</p> <p>Screw off the screws fixing the valve support and then remove the valve support.</p>	
14. Remove compressor	<p>Remove 3 foot nuts on compressor, and then remove the compressor.</p> <p>Note: Protect the ports of discharge pipe and suction pipe to avoid foreign objects to enter it.</p>	
15. Remove clapboard	<p>Remove the screws fixing clapboard and then remove the clapboard.</p>	

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

Set temperature

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

Ambient temperature

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

Appendix 2: Configuration of Connection Pipe

1. Standard length of connection pipe

- 5m, 7.5m, 8m.

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

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

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

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

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

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	15 m	5 m
7000 Btu/h(2051 W)	15 m	5 m
9000 Btu/h(2637 W)	15 m	5 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

- Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. 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	Φ9.52 or Φ12	15	20
Φ6 or Φ9.5	Φ16 or Φ19	15	50
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	/	250	250
Φ22.2	/	350	350

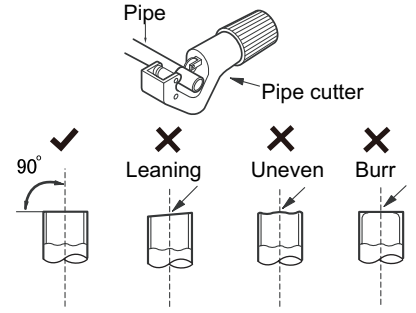
Appendix 3: Pipe Expanding Method

⚠ Note:

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

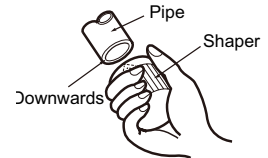
A: Cut the pipe

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



B: Remove the burrs

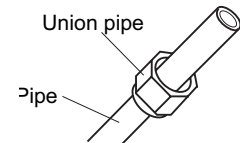
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

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



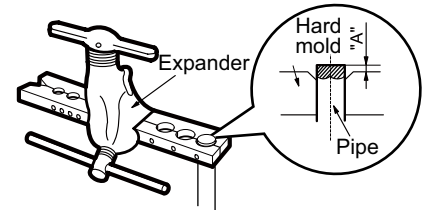
E: Expand the port

- Expand the port with expander.

⚠ Note:

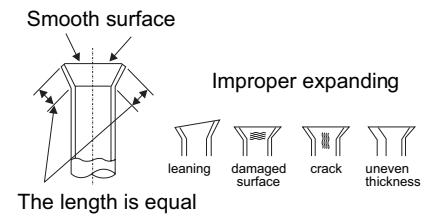
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35 (1/4")	1.3	0.7
Φ9.52 (3/8")	1.6	1.0
Φ12 - 12.7 (1/2")	1.8	1.0
Φ15.8 - 16 (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 Outdoor and Indoor (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

JF00303051



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