



Service Manual

Models: GWH09MA-K3NNE2A
GWH09MA-K3NNA5A
GWH12MB-K3NNE2A
GWH18MC-K3NNE2A
(Refrigerant R410A)

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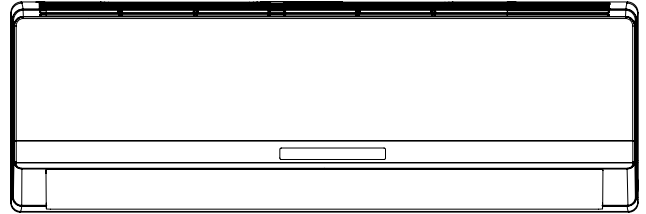
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Part I : Technical Information

1.Summary

Indoor Unit:

GWH09MA-K3NNA5A/I



GWH18MC-K3NNE2A/I

GWH12MB-K3NNE2A/I

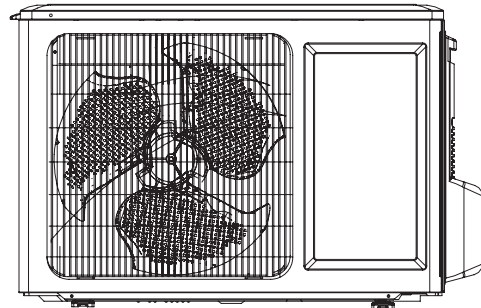
GWH09MA-K3NNE2A/I



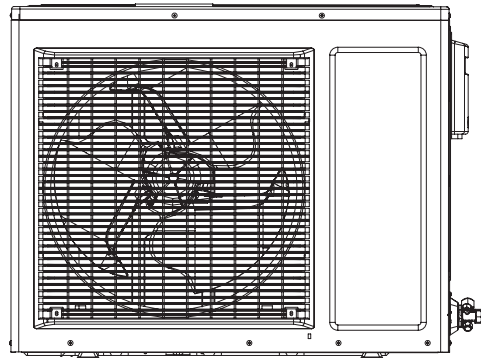
Outdoor Unit:

GWH09MA-K3NNA3A/O

GWH12MB-K3NNE2A/O



GWH18MC-K3NNA3D/O



Remote Controller:

YB1FA



2. Specifications

2.1 Specification Sheet

Parameter		Unit	Value	Value	
Model			1.GWH09MA-K3NNE2A 2.GWH09MA-K3NNA5A	GWH12MB-K3NNE2A	
Product Code			1.CA401000100 2.CA16200370 CA16200372	CA401000400	
Rated Voltage	Rated Voltage	V~	220-240	220-240	
	Rated Frequency	Hz	50	50	
	Phases		1	1	
Power Supply Mode			Indoor	Indoor	
Cooling Capacity		W	2600	3500	
Heating Capacity		W	2800	4000	
Cooling Power Input		W	809	1090	
Heating Power Input		W	775	1108	
Cooling Power Current		A	3.59	4.83	
Heating Power Current		A	3.44	4.92	
Rated Input		W	1120	1500	
Rated Current		A	4.97	6.65	
Air Flow Volume (SH/H/M/L)		m ³ /h	500/440/400/360	630/-/-	
Dehumidifying Volume		L/h	0.8	1.4	
EER		W/W	3.21	3.26	
COP		W/W	3.61	3.64	
SEER		W/W	/	/	
HSPF		W/W	/	/	
Application Area		m ²	12-18	16-24	
Indoor Unit	Model of indoor unit		GWH09MA-K3NNE2A/I GWH09MA-K3NNA5A/I	GWH12MB-K3NNE2A/I	
	Product Code		1.CA401N00100 2.A162N0370 CA162N0372	CA401N00400	
	Fan Type		Cross-flow	Cross-flow	
	Diameter Length(DXL)		mm	Φ85X596	Φ92X645
	Fan Motor Cooling Speed (SH/H/M/L)		r/min	1260/1050/920/730	1290/1070/900/730
	Fan Motor Heating Speed (SH/H/M/L)		r/min	1320/1200/1100/950	1280/1150/1050/920
	Output of Fan Motor		W	10	20
	Fan Motor RLA		A	0.13	0.2
	Fan Motor Capacitor		μF	1	1
	Input of Heater		W	/	/
	Evaporator Form			Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter		mm	Φ7	Φ7
	Row-fin Gap		mm	2-1.5	2-1.4
	Coil Length (LXDXW)		mm	581X25.4X264	645X25.4X267
	Swing Motor Model			MP24AA	MP24AA
	Output of Swing Motor		W	1.5	1.5
	Fuse		A	3.15	3.15
	Sound Pressure Level (SH/H/M/L)		dB (A)	42/39/36/33	42/39/36/33
	Sound Power Level (SH/H/M/L)		dB (A)	52/49/46/43	52/49/46/43
	Dimension (WXHXD)		mm	790X265X170	848X274X189
	Dimension of Carton Box (LXWXH)		mm	870X248X355	915X255X355
	Dimension of Package(LXWXH)		mm	873X251X370	918X258X370
	Net Weight		kg	9	10
Gross Weight		kg	12	13	

Outdoor Unit	Model of Outdoor Unit		GWH09MA-K3NNA3A/O	GWH12MB-K3NNE2A/O
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		QXA-B102uC130	QXA-C133B030gA
	Compressor Oil		PVE(DN HERMITIC FVC 68D)	RB68EP or FVC 68D
	Compressor Type		Rotary	Rotary
	L.R.A.	A	18	32
	Compressor RLA	A	4	5.17
	Compressor Power Input	W	858	1120
	Overload Protector		B210-150-241H	Inner placed
	Throttling Method		Capillary	Capillary
	Operation Temp	°C	16~30	16~30
	Ambient Temp (Cooling)	°C	18~43	18~43
	Ambient Temp (Heating)	°C	-7~24	-7~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	1-1.4	2-1.6
	Coil Length (LXDXW)	mm	741X12.7X495.3	781X25.7X495
	Fan Motor Speed	rpm	830	850±20
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.37	0.45
	Fan Motor Capacitor	μF	2	2
	Air Flow Volume of Outdoor Unit	m ³ /h	1800	1800
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ394.5	Φ394.5
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	3.8	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2	1.2
	Sound Pressure Level (H/M/L)	dB (A)	50/-/-	51/-/-
	Sound Power Level (H/M/L)	dB (A)	60/-/-	61/-/-
	Dimension (WXHXD)	mm	848X540X320	848X540X320
Dimension of Carton Box (LXWXH)	mm	878X360X580	878X360X580	
Dimension of Package(LXWXH)	mm	881X363X595	881X363X595	
Net Weight	kg	26	40	
Gross Weight	kg	30	44	
Refrigerant		R410A	R410A	
Refrigerant Charge	kg	0.75	1.1	
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	20	20
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ12
	Max Distance Height	m	10	10
	Max Distance Length	m	15	20
Note: The connection pipe applies metric diameter.				

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

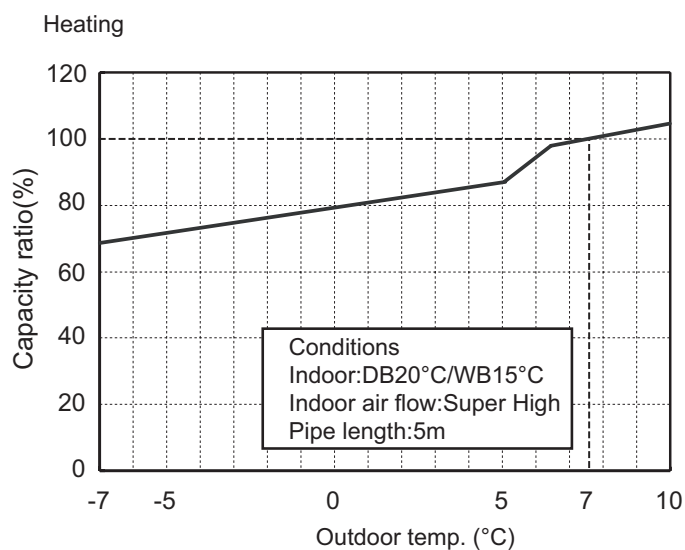
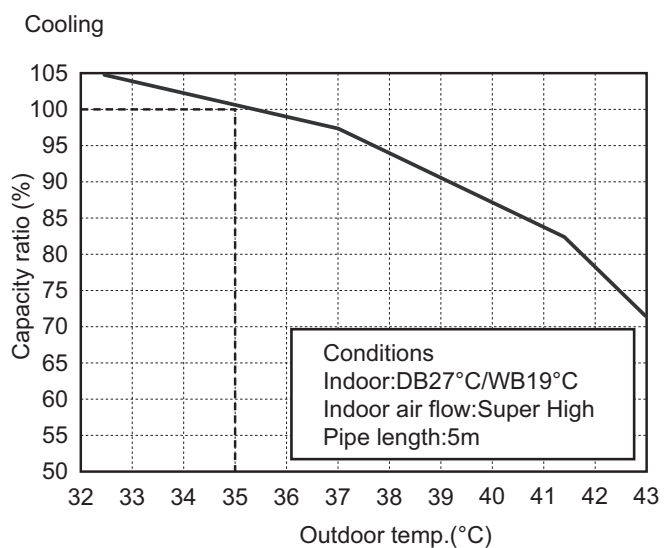
Parameter	Unit	Value
Model		GWH18MC-K3NNE2A
Product Code		CA401000200
Rated Voltage	Rated Voltage	V~
	Rated Frequency	Hz
	Phases	
Power Supply Mode		Indoor
Cooling Capacity	W	5300
Heating Capacity	W	5850
Cooling Power Input	W	1580
Heating Power Input	W	1620
Cooling Power Current	A	7
Heating Power Current	A	7.19
Rated Input	W	2400
Rated Current	A	10.65
Air Flow Volume (SH/H/ML)	m ³ /h	850/780/650/550
Dehumidifying Volume	L/h	1.8
EER	W/W	3.35
COP	W/W	3.61
SEER	W/W	/
HSPF	W/W	/
Application Area	m ²	23-34
Indoor Unit	Model of indoor unit	
	Fan Type	
	Diameter Length(DXL)	mm
	Fan Motor Cooling Speed (SH/H/ML)	r/min
	Fan Motor Heating Speed (SH/H/ML)	r/min
	Output of Fan Motor	W
	Fan Motor RLA	A
	Fan Motor Capacitor	μF
	Input of Heater	W
	Evaporator Form	
	Pipe Diameter	mm
	Row-fin Gap	mm
	Coil Length (LXDXW)	mm
	Swing Motor Model	
	Output of Swing Motor	W
	Fuse	A
	Sound Pressure Level (SH/H/M/L)	dB (A)
	Sound Power Level (SH/H/M/L)	dB (A)
	Dimension (WXHxD)	mm
	Dimension of Carton Box (LXWXH)	mm
	Dimension of Package(LXWXH)	mm
Net Weight	kg	
Gross Weight	kg	

Outdoor Unit	Model of Outdoor Unit		GWH18MC-K3NNA3D/O	
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD.	
	Compressor Model		QXA-D20E090	
	Compressor Oil		HAF68D1 or equivalent	
	Compressor Type		Rotary	
	L.R.A.	A		39
	Compressor RLA	A		7.5
	Compressor Power Input	W		1700
	Overload Protector			Inner placed
	Throttling Method			Capillary
	Operation Temp	°C		16~30
	Ambient Temp (Cooling)	°C		18~43
	Ambient Temp (Heating)	°C		-7~24
	Condenser Form			Aluminum Fin-copper Tube
	Pipe Diameter	mm		Φ7
	Rows-fin Gap	mm		2-1.4
	Coil Length (LXDXW)	mm		775X38.1X660
	Fan Motor Speed	rpm		780
	Output of Fan Motor	W		68
	Fan Motor RLA	A		0.75
	Fan Motor Capacitor	μF		3
	Air Flow Volume of Outdoor Unit	m ³ /h		2900
	Fan Type			Axial-flow
	Fan Diameter	mm		Φ460
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa		1.2
	Sound Pressure Level (H/M/L)	dB (A)		56/-/-
	Sound Power Level (H/M/L)	dB (A)		66/-/-
Dimension (WXHXD)	mm		913X680X378	
Dimension of Carton Box (LXWXH)	mm		994X428X725	
Dimension of Package(LXWXH)	mm		997X431X740	
Net Weight	kg		46	
Gross Weight	kg		50	
Refrigerant			R410A	
Refrigerant Charge	kg		1.4	
Connection Pipe	Length	m	5	
	Gas Additional Charge	g/m	20	
	Outer Diameter Liquid Pipe	mm	Φ6	
	Outer Diameter Gas Pipe	mm	Φ12	
	Max Distance Height	m	10	
	Max Distance Length	m	25	
	Note: The connection pipe applies metric diameter.			

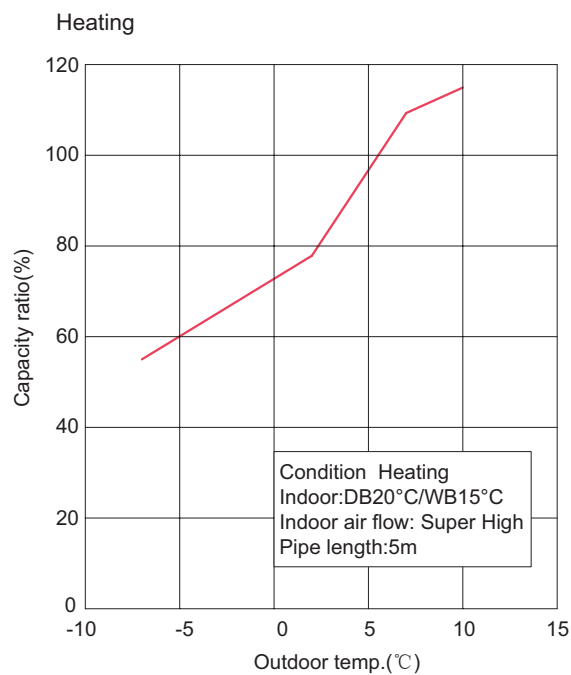
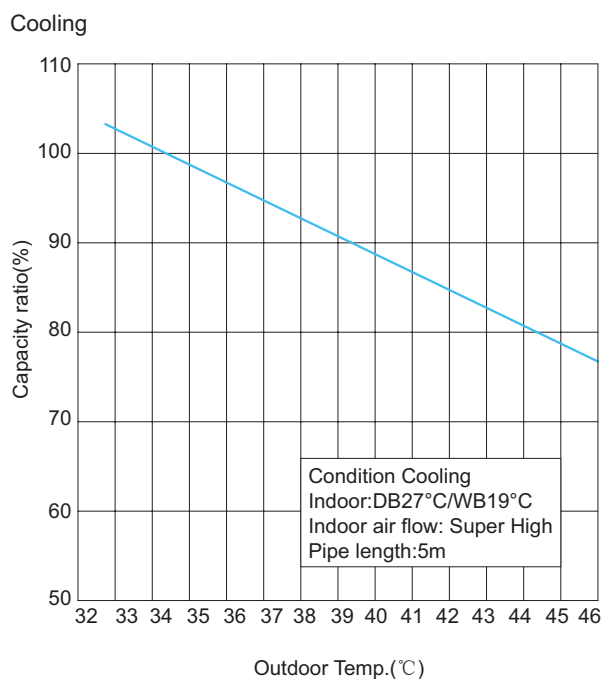
The above data is subject to change without notice; please refer to the nameplate of the unit.

2.2 Capacity Curve in Different Outdoor Temperature

09/12K Unit:

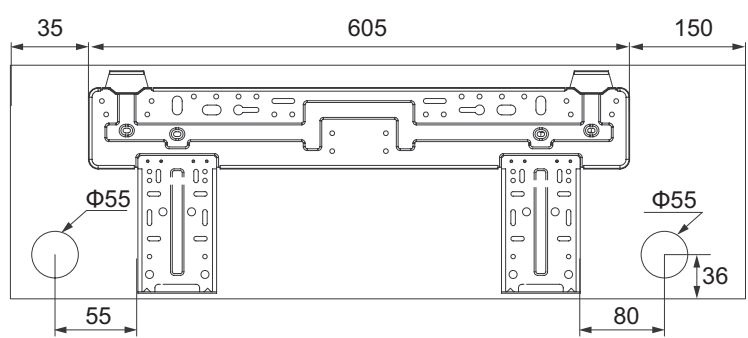
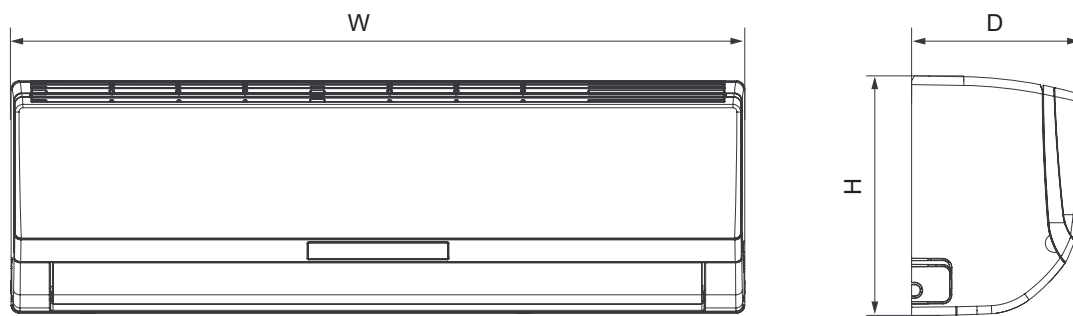


18K Unit:

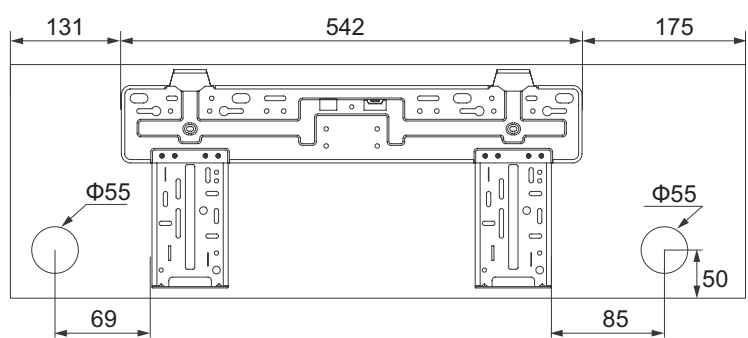


3. Outline Dimension Diagram

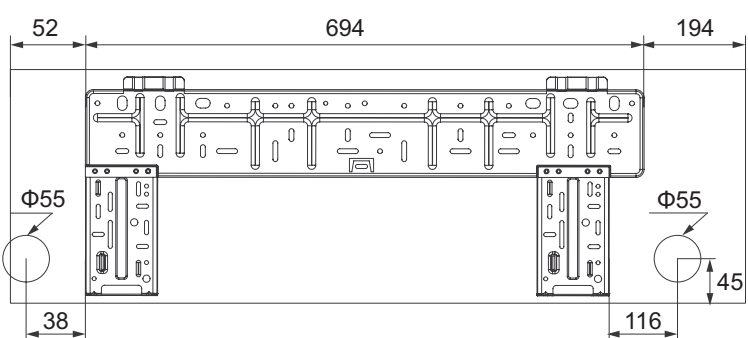
3.1 Indoor Unit



09K Unit



12K Unit

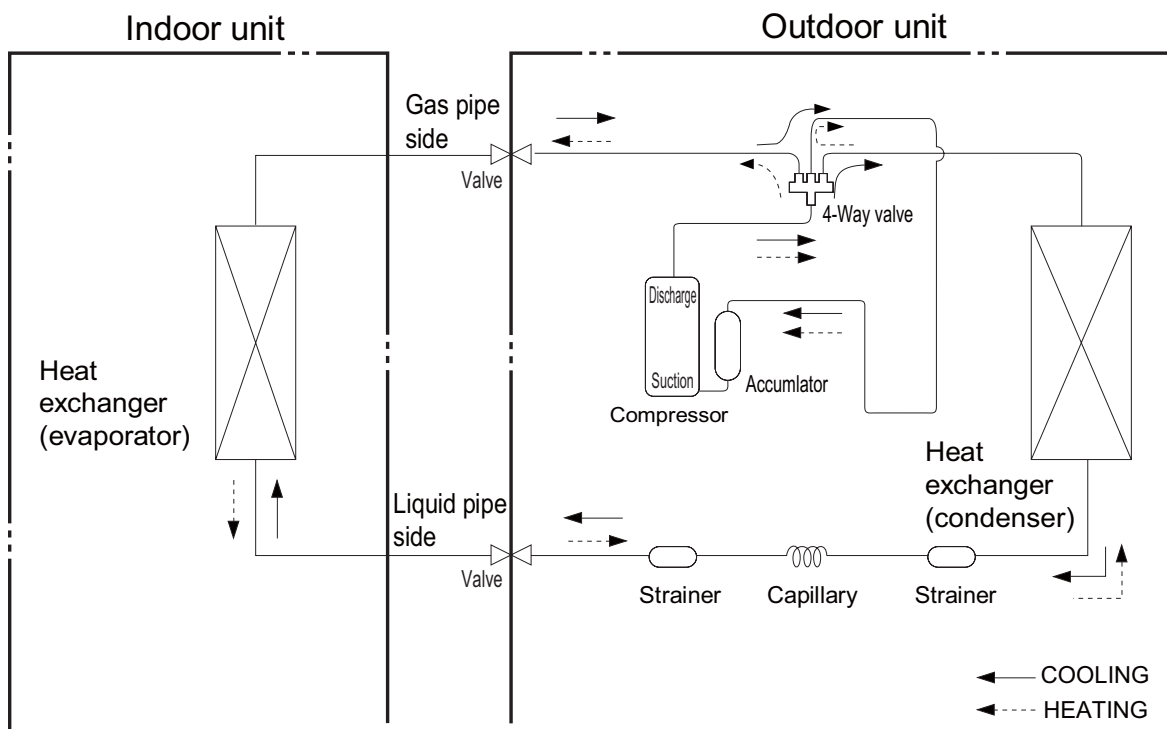


18K Unit

Unit:mm

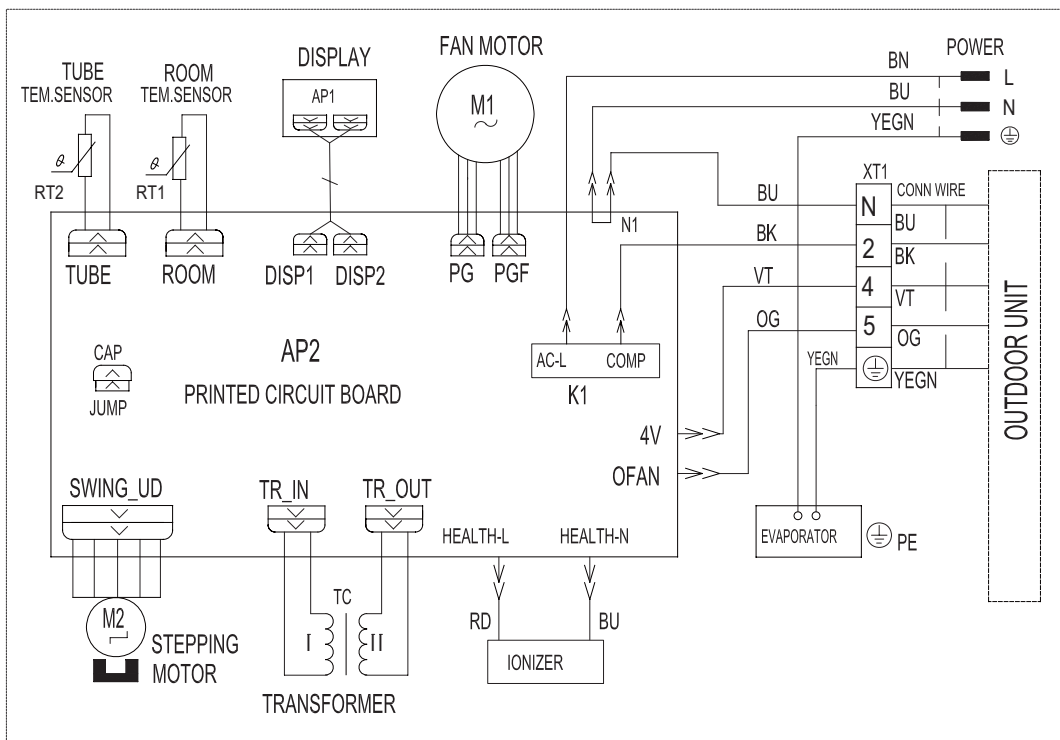
MODEL	W	H	D
09K	790	265	170
12K	848	274	189
18K	940	298	200

4. Refrigerant System Diagram

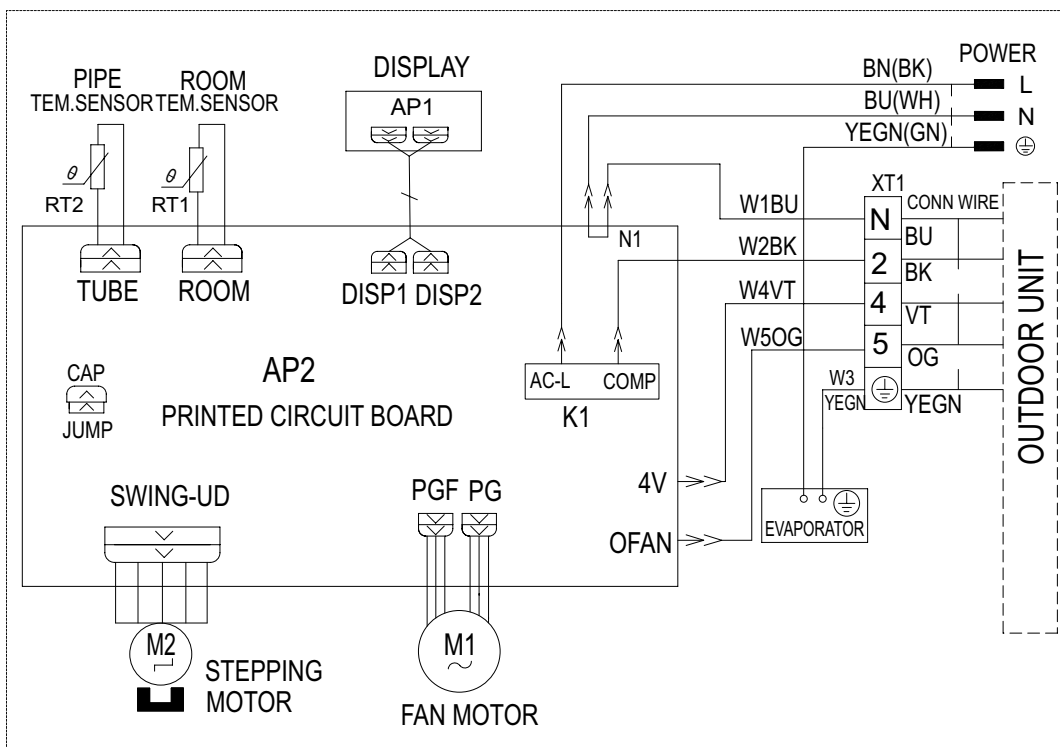


Refrigerant pipe diameter
 Liquid : 1/4" (6mm) Gas : 3/8" (9.52mm)(09K)
 Liquid : 1/4" (6mm) Gas : 1/2" (12mm)(12K&18K)

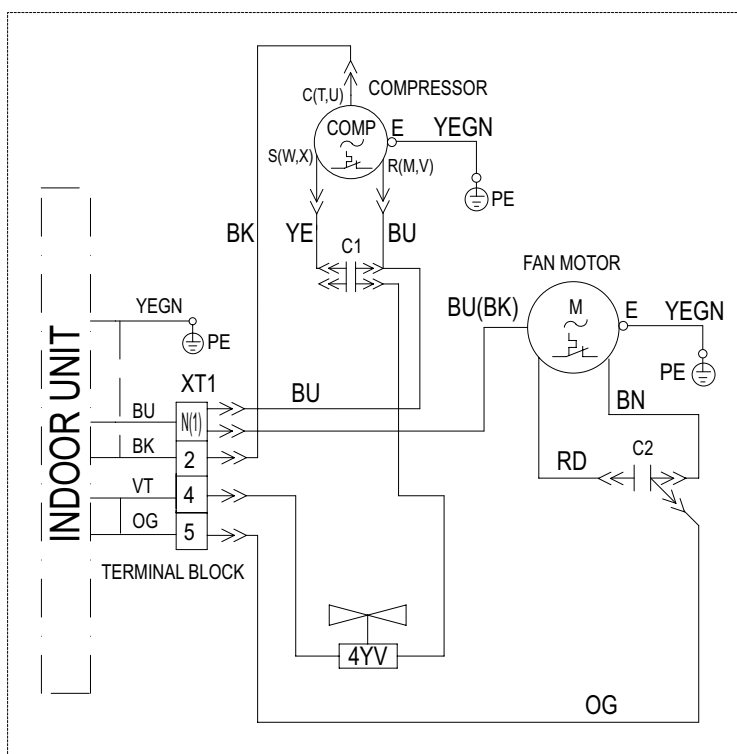
(2)GWH09MA-K3NNA5A/I(CA162N0372)



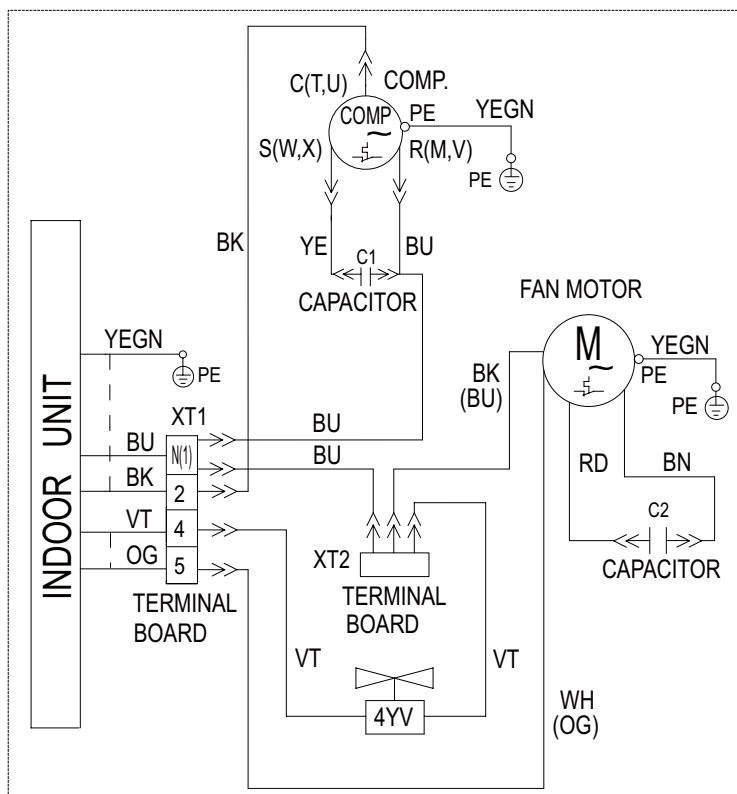
(3)GWH12MB-K3NNE2A/I



(2)GWH12MB-K3NNE2A/O



(3)GWH18MC-K3NNA3D/O

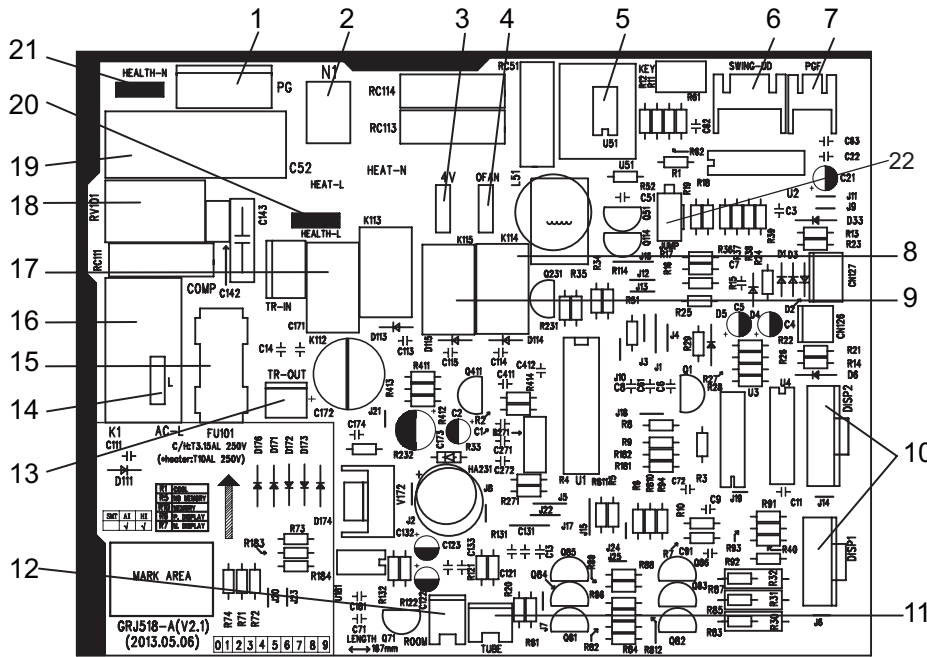


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

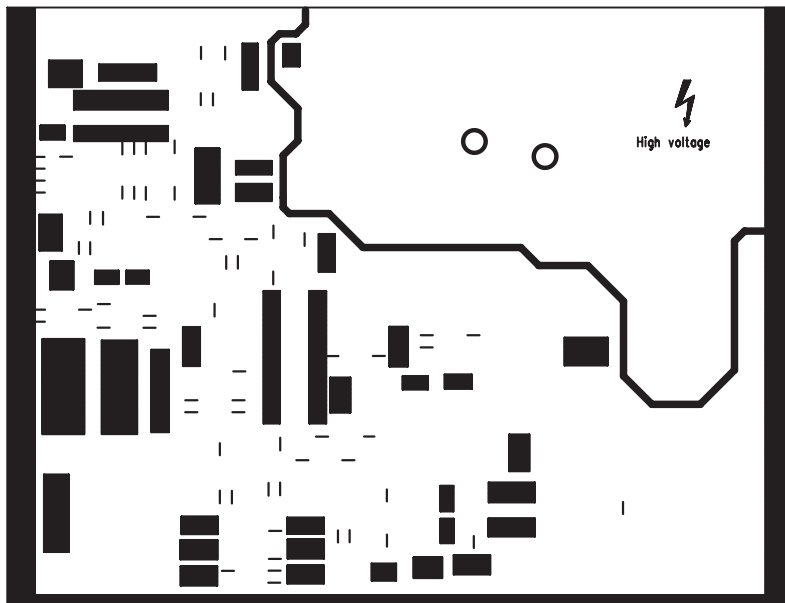
(1)09K Unit

• Top view



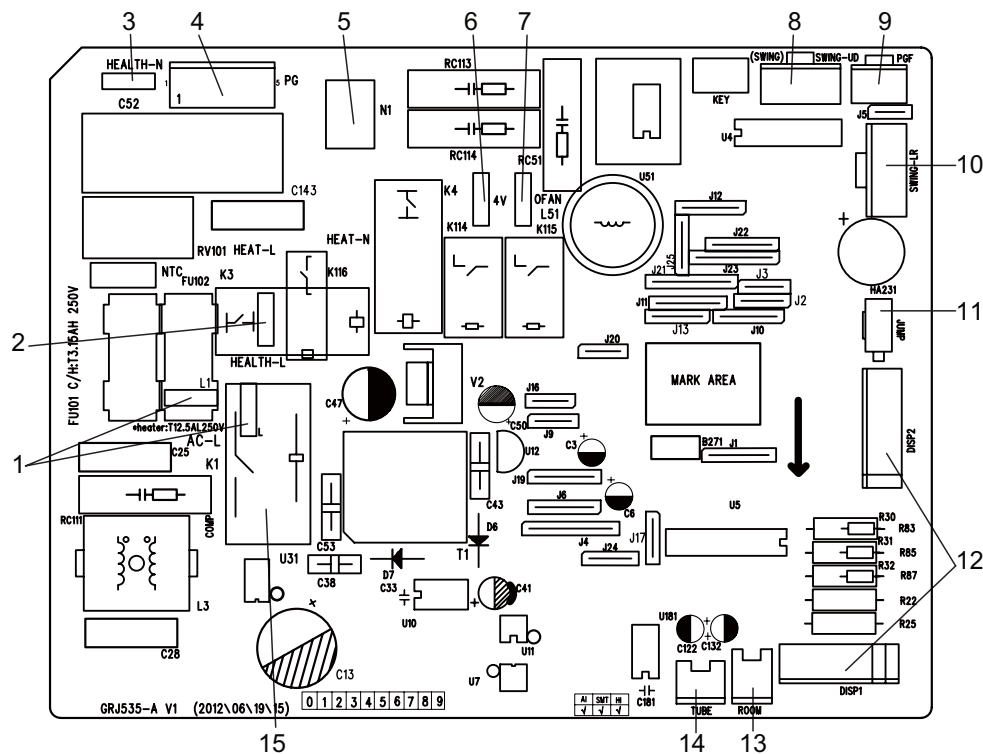
1	Interface of PG motor
2	Neutral wire insert
3	4-way valve insert
4	Outdoor fan insert
5	Solid relay
6	Interface of up&down swing
7	Interface of PG motor feedback
8	Relay of controlling outdoor unit
9	Relay of controlling 4-way valve
10	Connected to display board
11	Terminal of indoor tube temperature sensor
12	Terminal of indoor ambient temperature sensor
13	Ouput of transformer
14	Live wire
15	Fuse
16	Compressor relay and live wire terminal
17	Relay of controlling cold plasma
18	Piezoresistance
19	Fan capacitor
20	Live wire for health function
21	Neutral wire for health function
22	Jumper Cap Interface

• Bottom view



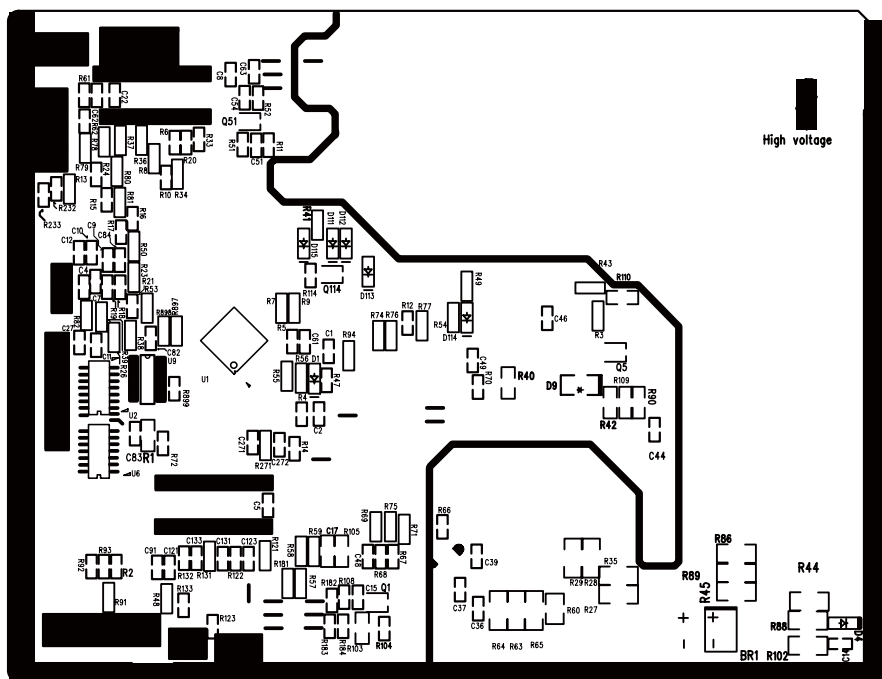
(2)12K Unit

• Top view



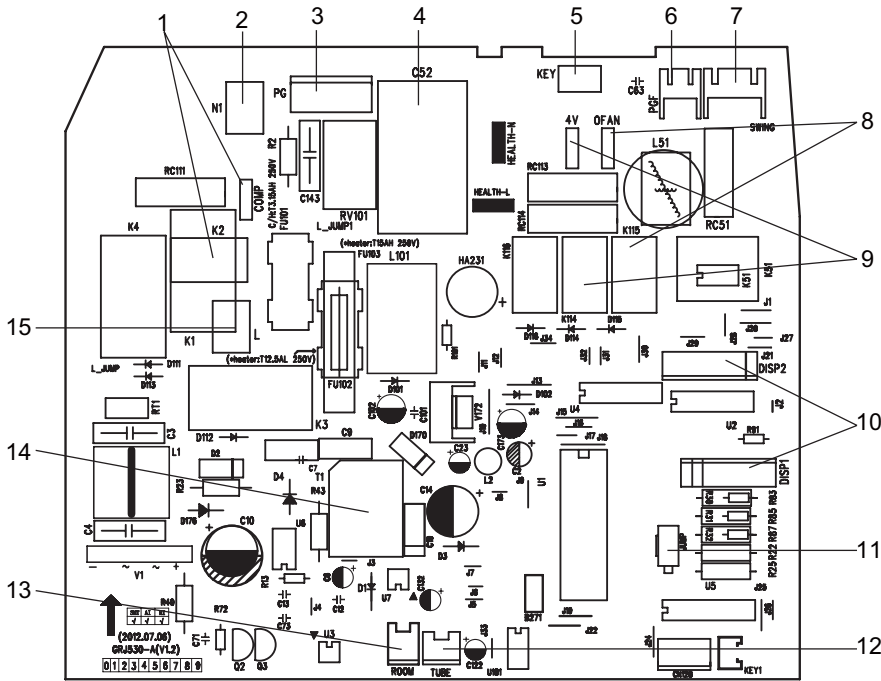
1	Interface of live wire
2	Interface of live wire for health function
3	Interface of neutral wire for health function
4	Control interface of PG motor
5	Interface of neutral wire
6	Interface of 4-way valve
7	Interface of outdoor fan
8	Auto button
9	Up & down swing
10	Feedback of indoor fan
11	Interface of jumper cap
12	Interface of display
13	Interface of ambienttemp sensor
14	Interface of pipe tempensor
15	Interface of compressor

• Bottom view



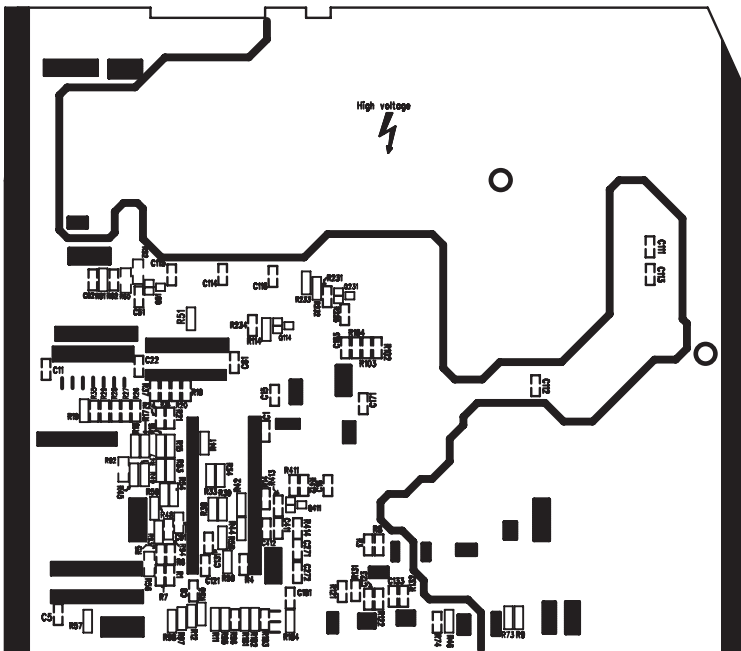
(3)18K Unit

• Top view



1	K2 and control relay Control interface of COMP outdoor AC contactor
2	Interface of neutral wire
3	Interface of indoor fan
4	Drive capacitor of indoor fan
5	Auto button
6	Signal feedback interface of indoor fan
7	Interface of swing motor
8	K115 outdoor fan control interface and control relay
9	K114 four-way valve interface and control relay
10	Display interface
11	Interface of jumper cap
12	Interface of tube temperature sensor
13	Interface of ambient temperature sensor
14	High-frequency T1
15	Interface of live wire

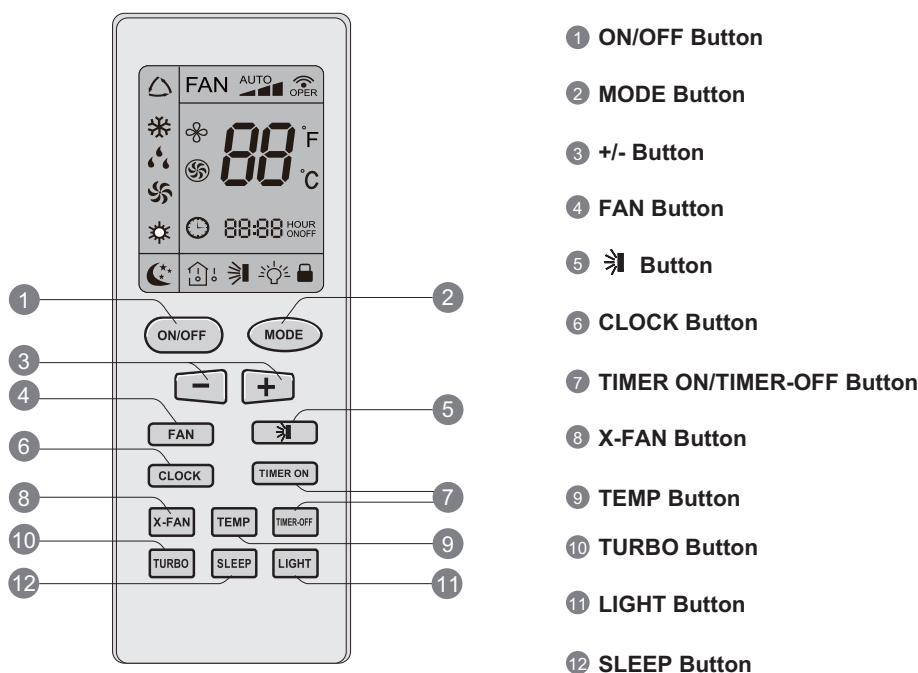
• Bottom view



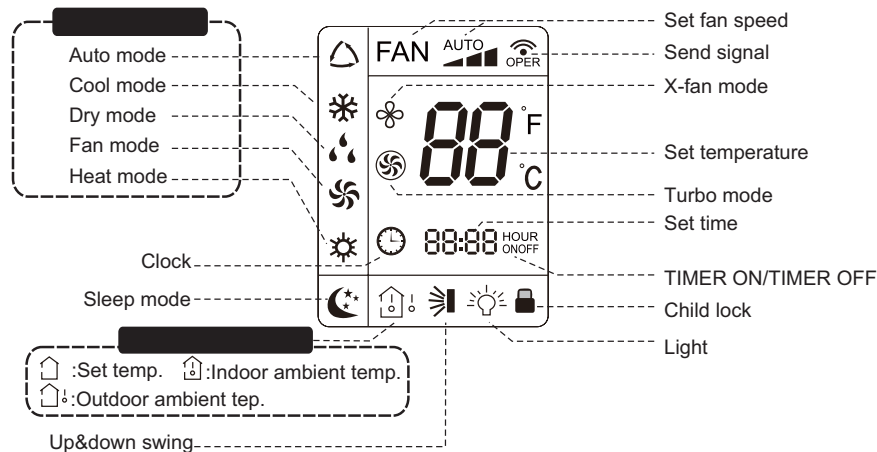
6. Function and Control

6.1 Remote Controller Introduction

Buttons on Remote Controller



Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

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

1. ON/OFF Button

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

2. MODE Button

Press this button to select your required operation mode.



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

Note:

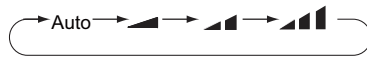
- For preventing cold air, after starting up heating mode, indoor unit will delay 1~5 minutes to blow air (actual delay time is depend on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C ; Fan speed: auto, low speed, medium speed, high speed.

3. "+" or "-" Button

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

4. FAN Button

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

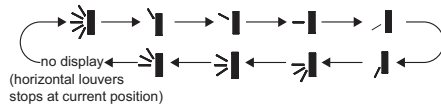


Note:

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

5. ↻ Button

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



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

Note:

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

6. CLOCK Button

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

Note:

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

7. TIMER-ON/TIMER-OFF Button

- TIMER ON button

TIMER ON button

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

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

- **TIMER OFF button**

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

Note:

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

8. X-FAN Button

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

Note:

- When x-fan function is 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.

9. TEMP Button

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



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

10. TURBO Button

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

11. SLEEP Button

Under COOL, HEAT 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.

12. LIGHT Button

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

Function Introduction for Combination Buttons

Child lock function:

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

Temperature display switchover function:

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

6.2 Brief Description of Modes and Functions

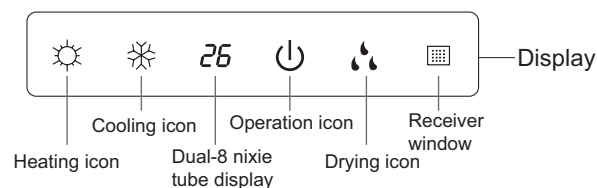
1. Summary

(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).



(Display content or position may be different from above graphics, please refer to actual products)

(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 25°C .
- ◆ Heat pump unit: when $T_{\text{amb}} \leq 22^\circ\text{C}$, the system operates under heating mode; Ex-factory set temperature is 20°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

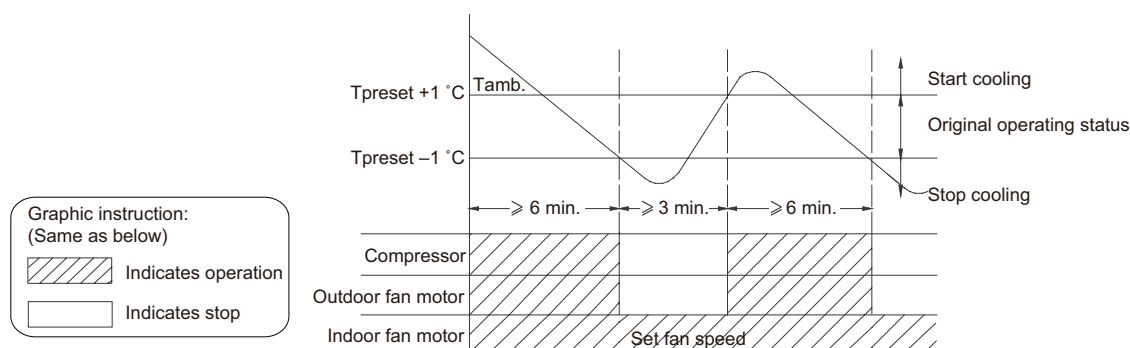
① Operation condition and process for cooling mode

◆ 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

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)

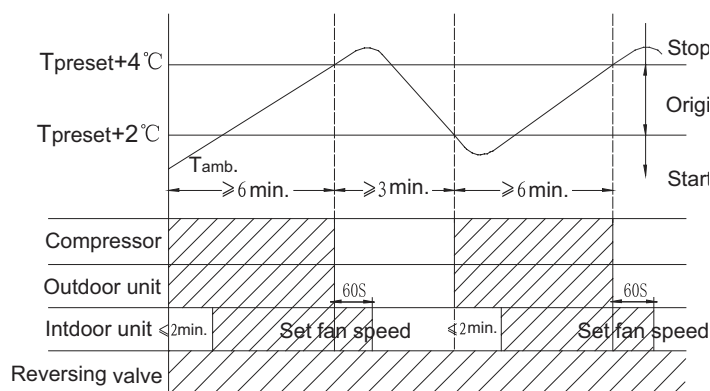
① Operation conditioner and process for heating mode

◆ When $T_{amb.} \leq T_{set} + 2^{\circ}\text{C}$, the system starts heating operation. In this case, the 4-way valve is energized. The compressor and the ODU fan motor operates simultaneously; The IDU fan motor will be started up after delayed for a period of time to make sure the air conditioner won't blow out cold wind.

◆ When $T_{amb.} \geq T_{preset} + 4^{\circ}\text{C}$, the compressor and the ODU motor stop. The 4-way valve is energized all the time. The IDU fan motor will blow residual heat after operating at set speed for a period of time consecutively to make sure the inner temperature of air conditioner won't be too high.

◆ When $T_{preset} < T_{amb.} < T_{preset} + 4^{\circ}\text{C}$, the system will maintain its previous operation 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. Dual-8 nixie tube displays H1 during defrosting. (Heating icon is bright for a period time and then OFF for some models)

④ Protection function

◆ Overheating prevention protection

During operation, when controller is detected that $T_{tube} > 55^{\circ}\text{C}$, the ODU fan motor stops operation; When T_{tube} is resumed normally, the ODU 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 0.5 hour. 24 hours 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 1 minute. 24 hours 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:

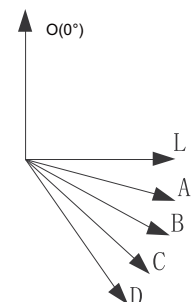
◆ Stay at position C: control by remote controller:

◆ 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
E5	Overcurrent protection
U8	Zero-crossing inspection circuit malfunction of the IDU fan motor

- ◆ When air conditioner defrosts automatically, dual-8 nixie tube displays "H1". (Heating icon is bright for a period time and then OFF for some models)
- ◆ 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 can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.

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

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

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

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

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

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

Installation Safety Precautions:

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

Refrigerant Safety Precautions:

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

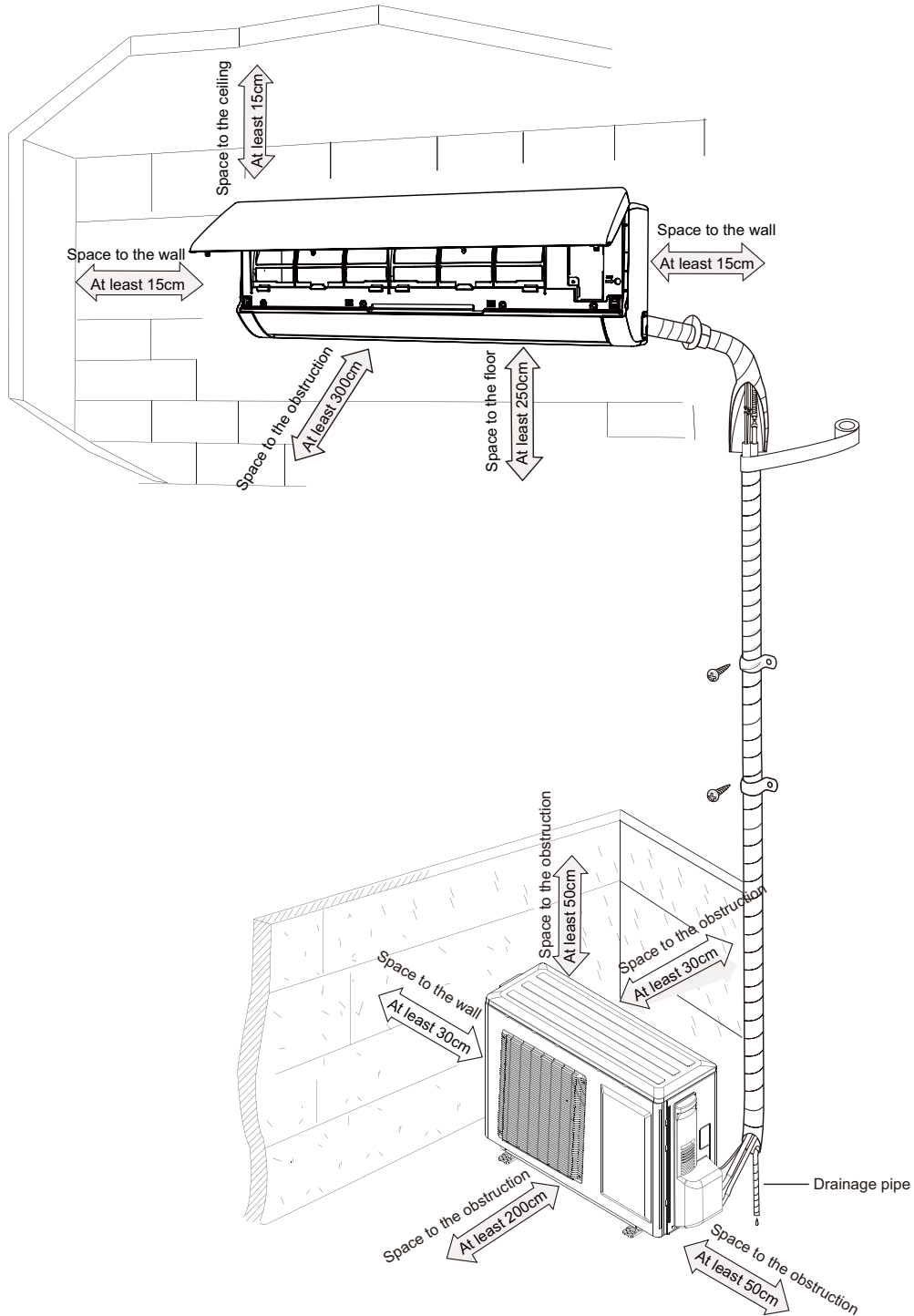
Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

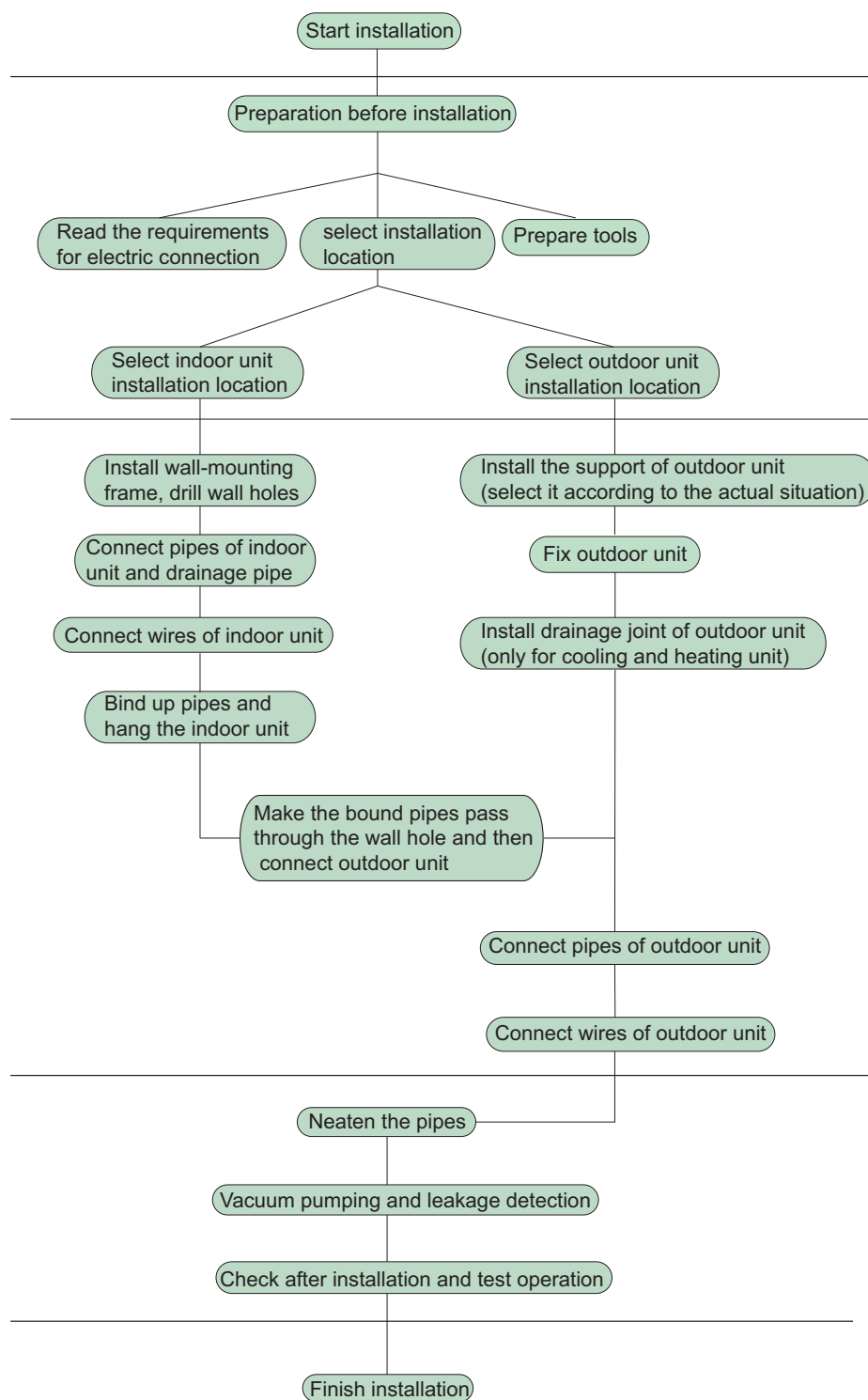
<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure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

8. Installation

8.1 Installation Dimension Diagram



Installation procedures



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

8.2 Installation Parts-checking

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

⚠ Note:

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

8.3 Selection of Installation Location

1. Basic Requirement:

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:
 (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.

- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air. in the air.
- (5) The place with sulfureted gas.
- (6) Other places with special circumstances.

2. Indoor Unit:

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

3. Outdoor unit:

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

8.4 Requirements Forelectric Connection

1. Safety precaution

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

Air-conditioner	Air switch capacity
18K/24K	25A
09K	10A
12K	16A

- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) For appliances with type Y attachment,the instructions shall contain the substance of thefollowing.If the supply cord is damaged,it must be replaced by the manufacturer,its service agent or similarly qualified persons in order to avoid a hazard.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

2. Grounding requirement:

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

8.5 Installation of Indoor Unit

1. Choosing Installation location

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

2. Install Wall-mounting Frame

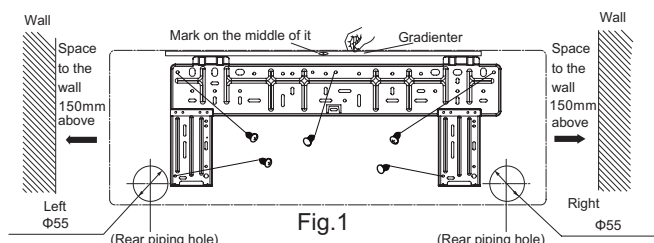
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle)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

in the holes.

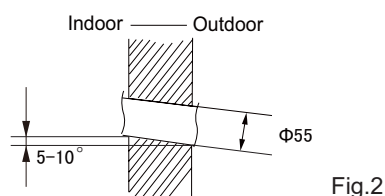
(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Install Wall-mounting Frame

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



(2) Open a piping hole with the diameter of Φ55 on the selected outlet pipe position. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°. (As show in Fig.2)



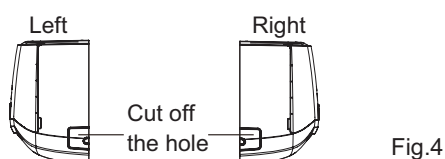
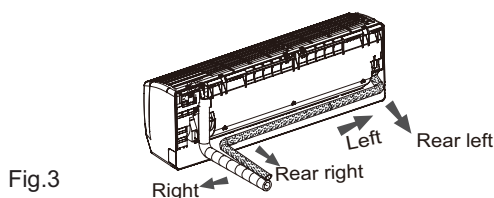
⚠ Note:

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

4. Outlet pipe

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

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



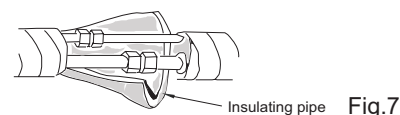
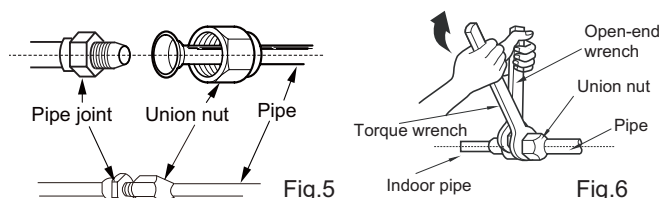
5. Connect the Pipe of Indoor Unit

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

(2) Pretightening the union nut with hand.

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

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



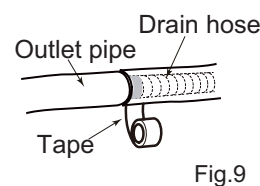
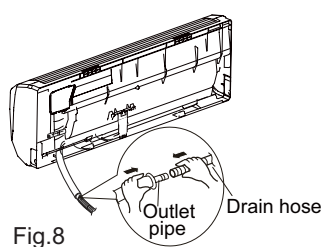
Refer to the following table for wrench moment of force:

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

6. Install Drain Hose

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

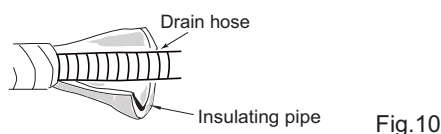
(2) Bind the joint with tape.(As show in Fig.9)



⚠ Note:

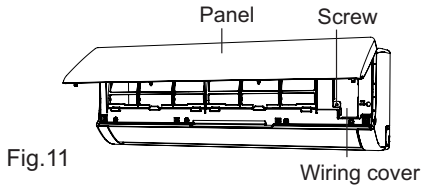
(1) Add insulating pipe in the indoor drain hose in order to prevent condensation.

(2) The plastic expansion particles are not provided. (As show in Fig.10)

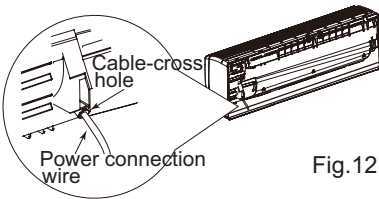


7. Connect Wire of Indoor Unit

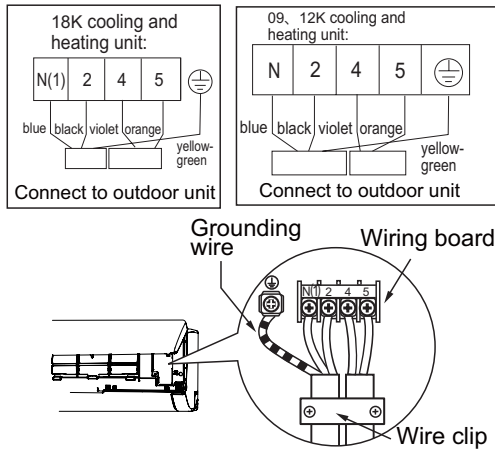
(1) Open the panel, remove the screw on the wiring cover and then take down the cover.(As show in Fig.11)



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



(3) Remove the wire clip; connect the power connection wire and signal 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)



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

Fig.13

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

⚠ Note:

- (1) All wires of indoor unit and outdoor unit should be connected by a professional.
- (2) If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
- (3) For the air conditioner with plug, the plug should be reachable after finishing installation.
- (4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

8. Bind up Pipe

- (1) Bind up the connection pipe, power cord and drain hose with the band.(As show in Fig.14)
- (2) Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose.(As show in Fig.15)
- (3) Bind them evenly.
- (4) The liquid pipe and gas pipe should be bound separately at the end.

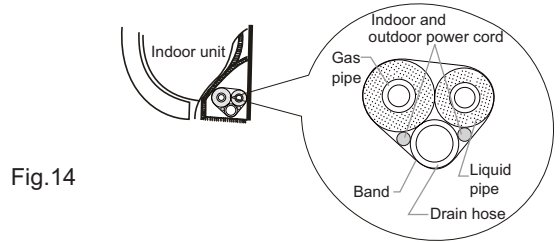


Fig.14

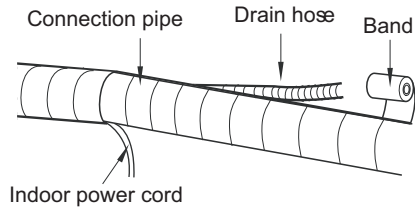


Fig.15

⚠ Note:

- (1) The power cord and control wire can't be crossed or winding.
- (2) The drain hose should be bound at the bottom.

9. Hang the Indoor Unit

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

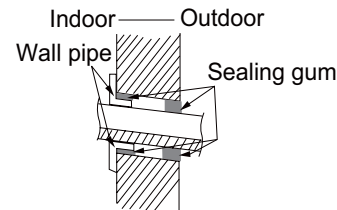


Fig.16

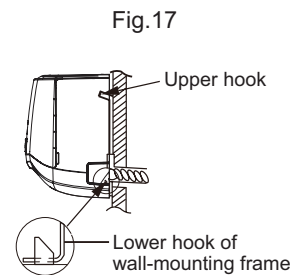


Fig.17

⚠ Note:

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

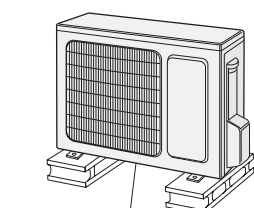
8.6 Installation of Outdoor Unit

1. Fix the support of outdoor unit(select it according to the actual installation situation)

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

⚠ Note:

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



At least 3cm above the floor
Fig.18

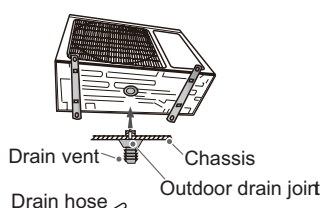


Fig.19

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

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

3. Fix Outdoor Unit

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

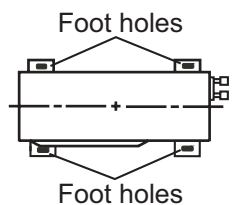


Fig.20

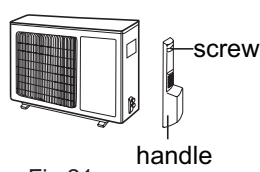


Fig.21

4. Fix Outdoor Unit

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

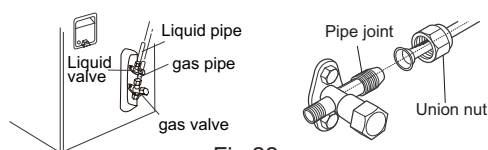


Fig.22

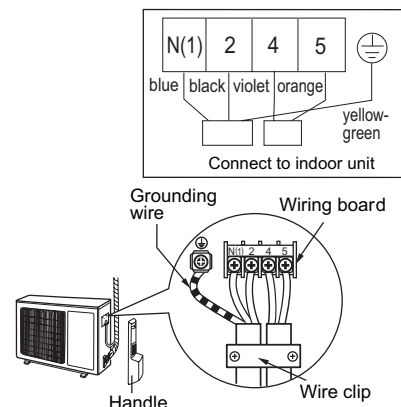
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force :

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

5. Connect Outdoor Electric Wire

- (1) 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)



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

Fig.23

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

⚠ Note:

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

6. Neaten the Pipes

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

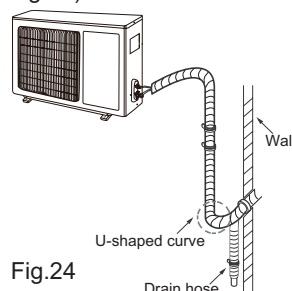


Fig.24

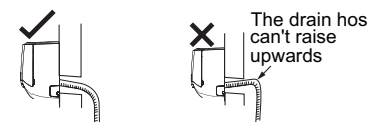
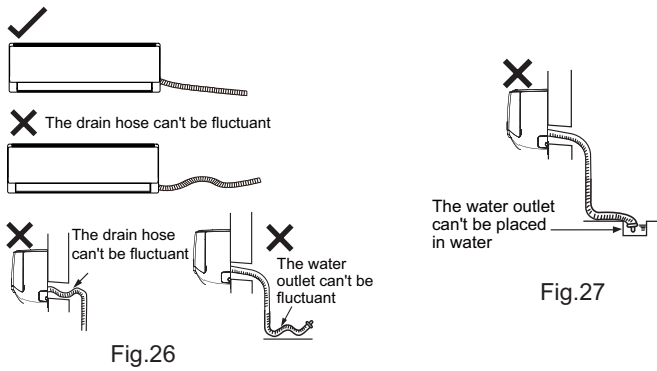


Fig.25

⚠ Note:

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

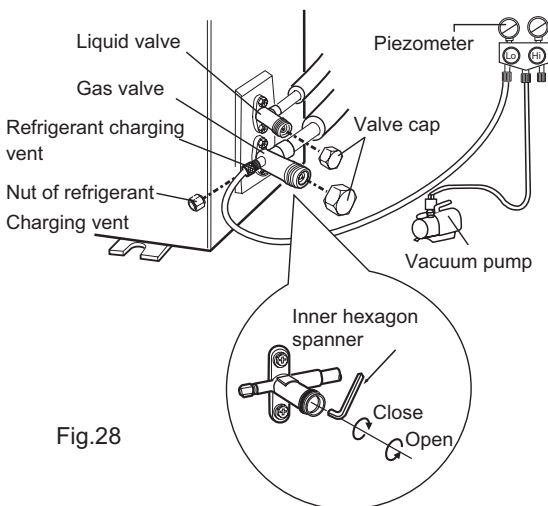
(3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)



8.7 Vacuum Pumping and Leak Detection

1. Use Vacuum Pump

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



2. Leakage detection

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

8.8 Check after Installation and Test operation

1. Check after Installation

Check according to the following requirement after finishing installation.

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

2. Test operation

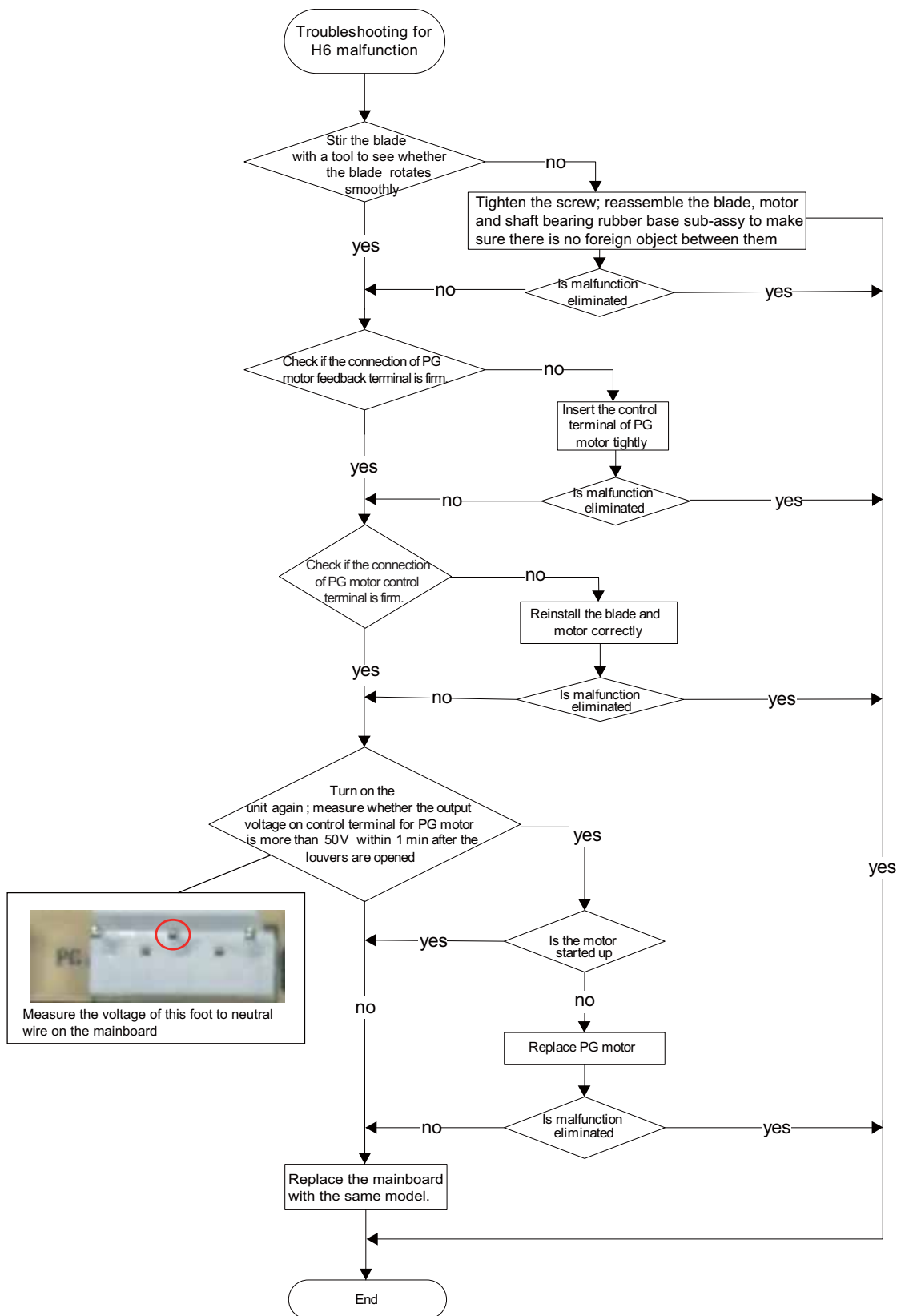
- (1) Preparation of test operation
 - The client approves the air conditioner installation.
 - Specify the important notes for air conditioner to the client.
- (2) Method of test operation
 - Put through the power, press ON/OFF button on the remote controller to start operation.
 - Press MODE button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

9. Maintenance

9.1 Error Code

No.	Malfunction Name	Display Method of Indoor Unit			A/C Status	Possible Causes(For specific maintenance method, please refer to the following procedure of troubleshooting)
		Error Code	Indicator lamp (Only for the unit with indicator; during blinking, ON for 0.5S and OFF for 0.5S)	Operation Lamp		
1	Indoor ambient temperature sensor is open/short-circuited	F1		Blinks once every 3s		<p>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.</p> <ol style="list-style-type: none"> 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		Blinks twice every 3s		<p>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.</p> <ol style="list-style-type: none"> 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	Blinks 11 times every 3s			<p>IDU fan, ODU fan, compressor and electric heat tube stop operation. Horizontal louver stops at the current position.</p> <ol style="list-style-type: none"> 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	Blinks 15 times every 3s			<p>Operation of remote controller or control panel is available, but the unit won't act.</p> <ol style="list-style-type: none"> 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	Overcurrent protection	E5	Blinks 5 times every 3s			<p>During cooling and drying operation, except IDU fan motor operates, other loads stop operation; During heating operation, the system stops operation.</p> <ol style="list-style-type: none"> 1. Unstable supply voltage. Normal fluctuation shall be within 10% of the rated voltage on the nameplate. 2. Supply voltage is too low and load is too high. 3. Measure the current of live wire on main board. If the current isn't higher than the overcurrent protection value, please check the controller. 4. The indoor and outdoor heat exchangers are too dirty, or the air inlet and air outlet are blocked. 5. The fan motor is not running. Abnormal fan speed: fan speed is too low or the fan doesn't run 6. The compressor is not running normally. There is abnormal sound, oil leakage or the temperature of the shell is too high, etc. 7. There's blockage in the system (filth blockage, ice plug, greasy blockage, Y-valve hasn't been opened completely)
6	Zero-crossing inspection circuit malfunction of the IDU fan motor	U8	Blinks 17 times every 3s			<p>Operation of remote controller or control panel is available, but the unit won't act.</p> <ol style="list-style-type: none"> 1. Quick de-energization and energization. Wrong judgement by the controller because the electric-discharging of capacitor is slow. 2. Zero-crossing inspection circuit of main board for controller is abnormal.

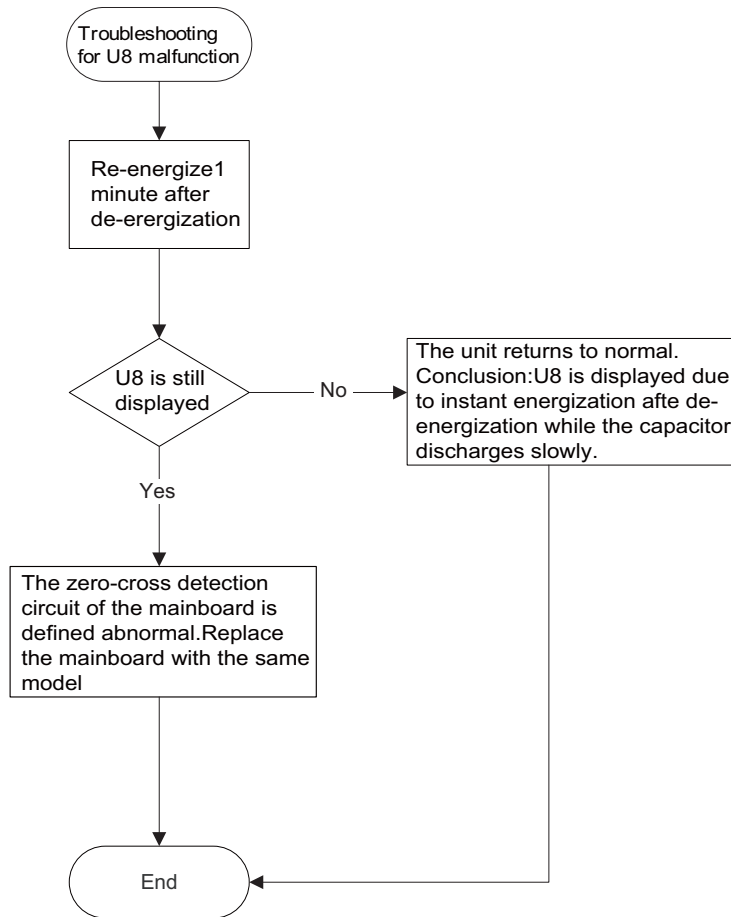
2. Malfunction of Blocked Protection of IDU Fan Motor H6



4. Malfunction of Overcurrent Protection E5



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



9.3 Maintenance Method for Normal Malfunction

1. Air Conditioner Can't be Started Up

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

2. Poor Cooling (Heating) for Air Conditioner

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

3. Horizontal Louver Can't Swing

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

4. ODU fan Motor Can't Operate

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

5. Compressor Can't Operate

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

6. Air Conditioner is Leaking

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

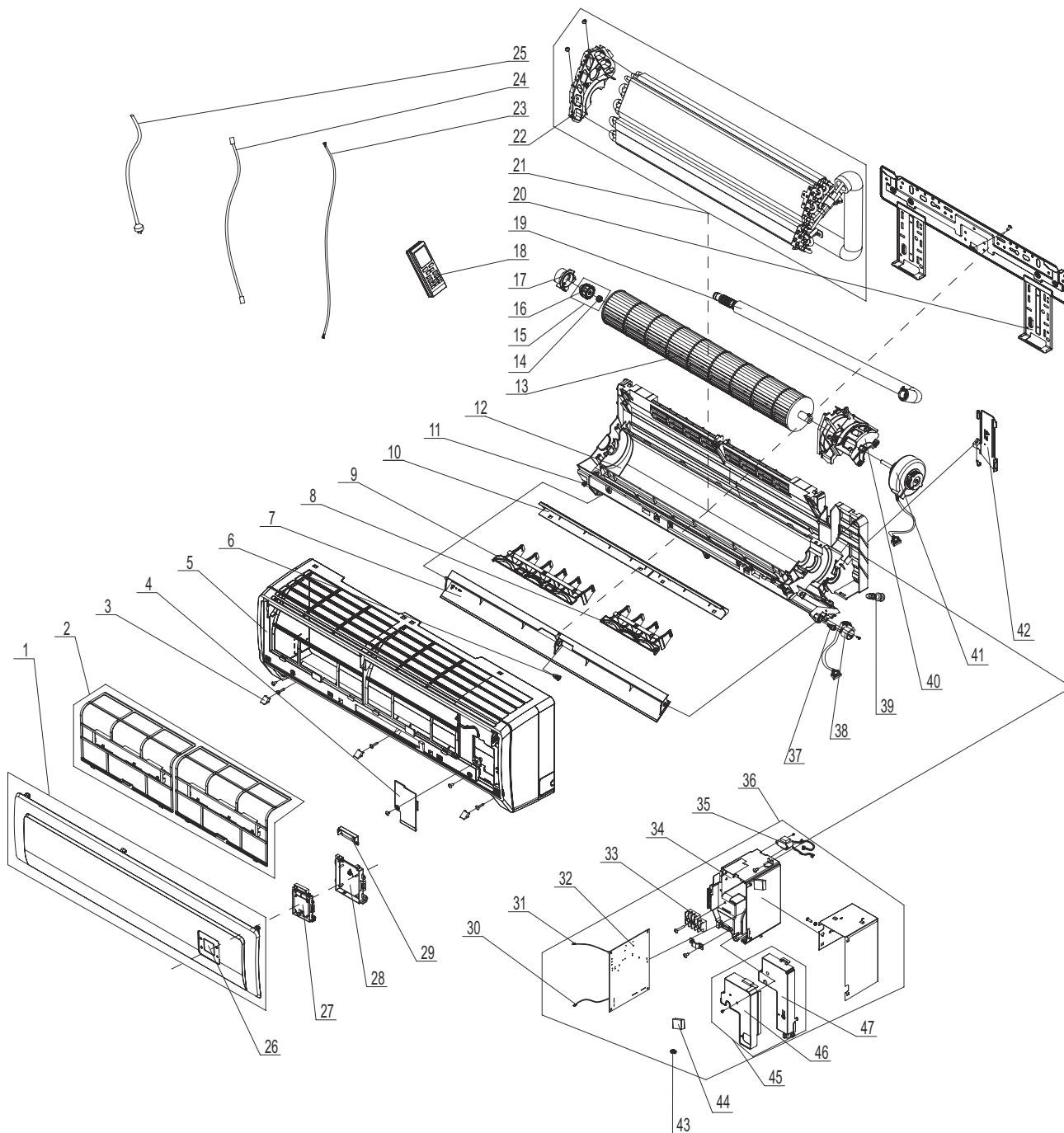
7. Abnormal Sound and Vibration

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

10. Exploded View and Parts List

10.1 Indoor Unit

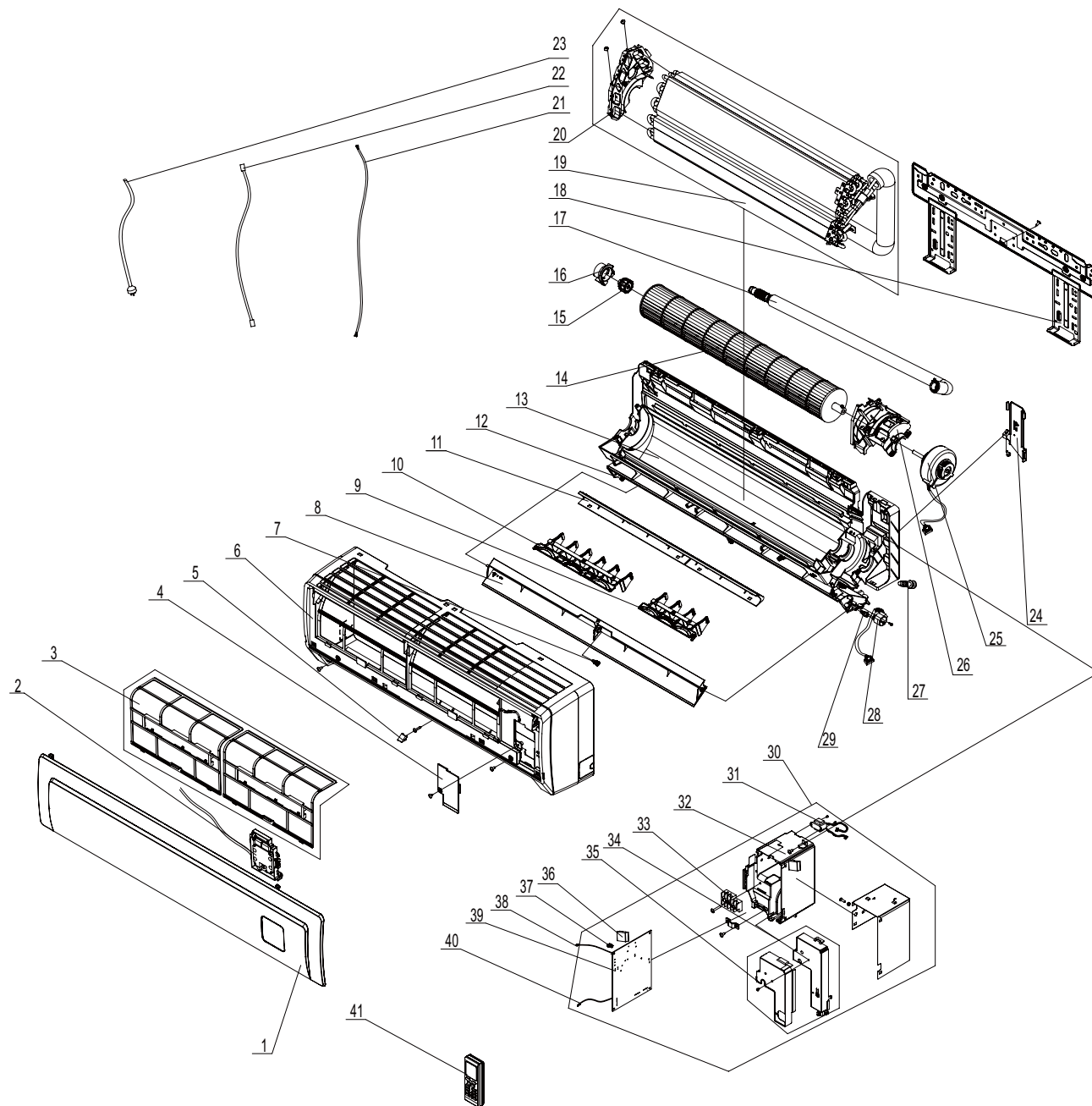
GWH09MA-K3NNE2A/I



NO.	Description	Part Code		Qty
		GWH09MA-K3NNE2A/I		
		CA401N00100		
1	Front Panel Assy	20012816	1	
2	Filter Sub-Assy	11122081	2	
3	Screw Cover	24252016	3	
4	Electric Box Cover2	20122075	1	
5	Front Case	20012179	1	
6	Axile Bush	10542008	1	
7	Guide Louver	10512111	1	
8	Air Louver 1	10512113	1	
9	Air Louver 2	10512114	1	
10	Helicoid tongue	26112162	1	
11	Axile Bush	10542704	1	
12	Rear Case assy	2220210101	1	
13	Cross Flow Fan	10352018	1	
14	Fan Bearing	76512210	1	
15	O-Gasket sub-assy of Bearing	76512051	1	
16	O-Gasket of Cross Fan Bearing	76512203	1	
17	Ring of Bearing	26152022	1	
18	Remote Controller	30510041	1	
19	Drainage hose	0523001406	1	
20	Wall Mounting Frame	01252015	1	
21	Evaporator Assy	0100255202	1	
22	Evaporator Support	24212090	1	
23	Connecting Cable	40020540	0	
24	Connecting Cable	40020536	0	
25	Power Cord	400220113	1	
26	Receiver Window	22432268	1	
27	Display Board	30565126	1	
28	Display Box	20122041	1	
29	Display Cover	20122042	1	
30	Tube Sensor	390000591	1	
31	Ambient Temperature Sensor	390000453	1	
32	Main Board	30035564	1	
33	Terminal Board	42010262	1	
34	Electric Box	20112082	1	
35	Transformer	43110236	1	
36	Electric Box Assy	20202698	1	
37	Crank	10582070	1	
38	Step Motor	1521210801	1	
39	Rubber Plug (Water Tray)	76712012	1	
40	Motor Press Plate	26112160	1	
41	Fan Motor	15012115	1	
42	Pipe Clamp	26112164	1	
43	Jumper	4202300128	1	
44	Capacitor CBB61	33010002	1	
45	Shield cover of Electric Box sub-assy	0159207301	1	
46	Shield cover of Electric Box	0141203601	1	
47	Electric Box Cover1	20122103	1	

Above data is subject to change without notice.

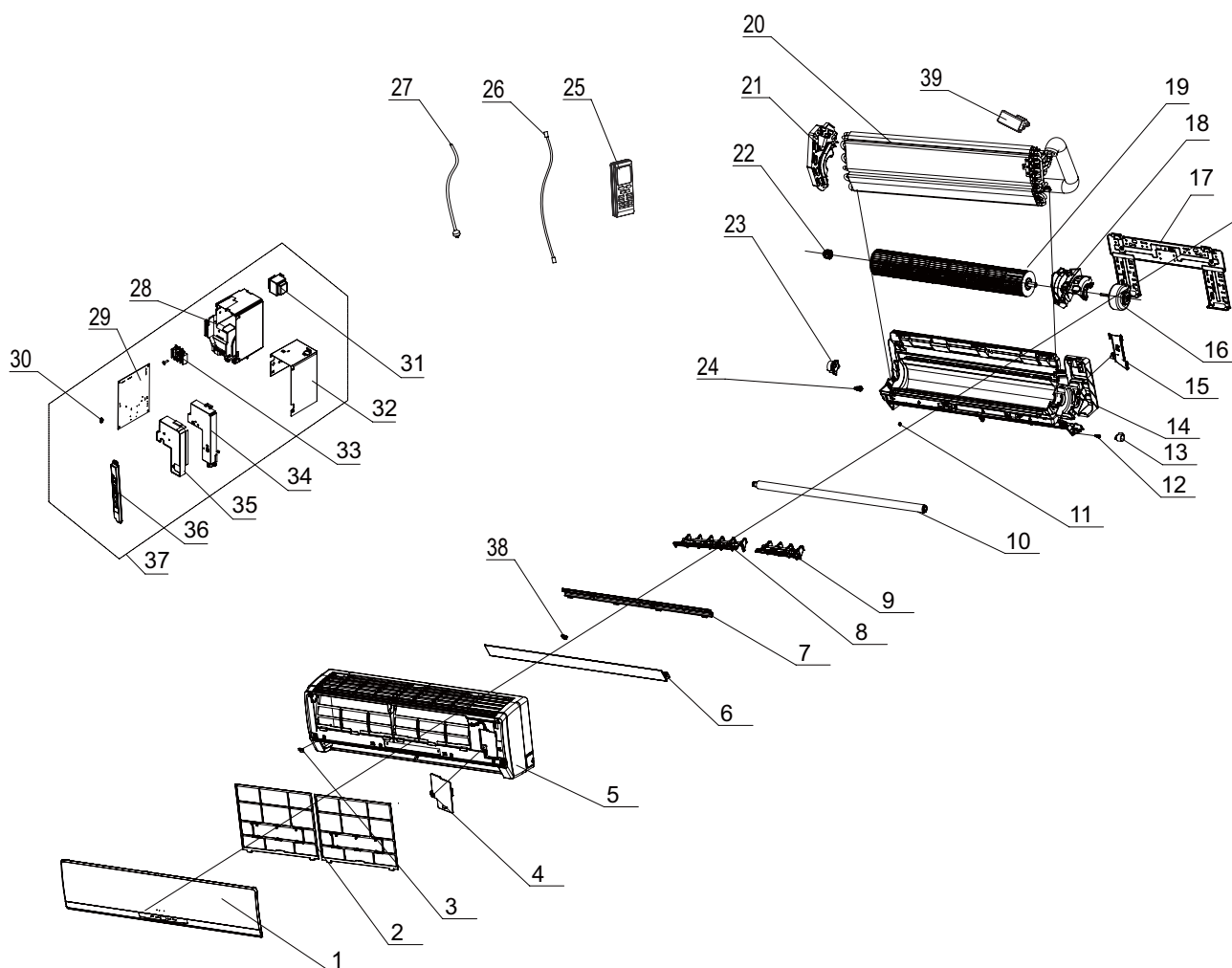
GWH12MB-K3NNE2A/I



NO.	Description	Part Code		Qty
		GWH12MB-K3NNE2A/I		
		CA401N00400		
1	Front Panel Assy	20012882	1	
2	Display Board	30565126	1	
3	Filter Sub-Assy	1112220403	2	
4	Electric Box Cover2	20122075	1	
5	Screw Cover	24252016	1	
6	Front Case Sub-assy	2001213901	1	
7	Axile Bush	10542036	1	
8	Guide Louver	10512157	1	
9	Air Louver 1	10512156	1	
10	Air Louver 2	10512155	1	
11	Helicoid Tongue	26112163	1	
12	Left Axile Bush	10512037	1	
13	Rear Case assy	2220210301	1	
14	Cross Flow Fan	10352017	1	
15	O-Gasket sub-assy of Bearing	76512051	1	
16	Ring of Bearing	26152022	1	
17	Drainage Hose	0523001401	1	
18	Wall Mounting Frame	01252021	1	
19	Evaporator Assy	01002574	1	
20	Evaporator Support	24212091	1	
21	Connecting Cable	40020536	0	
22	Connecting Cable	400205401	0	
23	Power Cord	400220112	1	
24	Connecting pipe clamp	26112164	1	
25	Fan Motor	150120874	1	
26	Motor Press Plate	26112161	1	
27	Rubber Plug (Water Tray)	76712012	1	
28	Stepping Motor	1521212901	1	
29	Crank	10582070	1	
30	Electric Box Assy	20202758	1	
31	Transformer	/	/	
32	Electric Box	2011216701	1	
33	Terminal Board	42010262	1	
34	Shield Cover of Electric Box Sub-assy	0159207301	1	
35	Electric Box Cover1	22242135	1	
36	Capacitor CBB61	33010002	1	
37	Jumper	4202300130	1	
38	Temperature Sensor	390000453	1	
39	Main Board	30135741	1	
40	Temperature Sensor	390000591	1	
41	Remote Controller	30510041	1	

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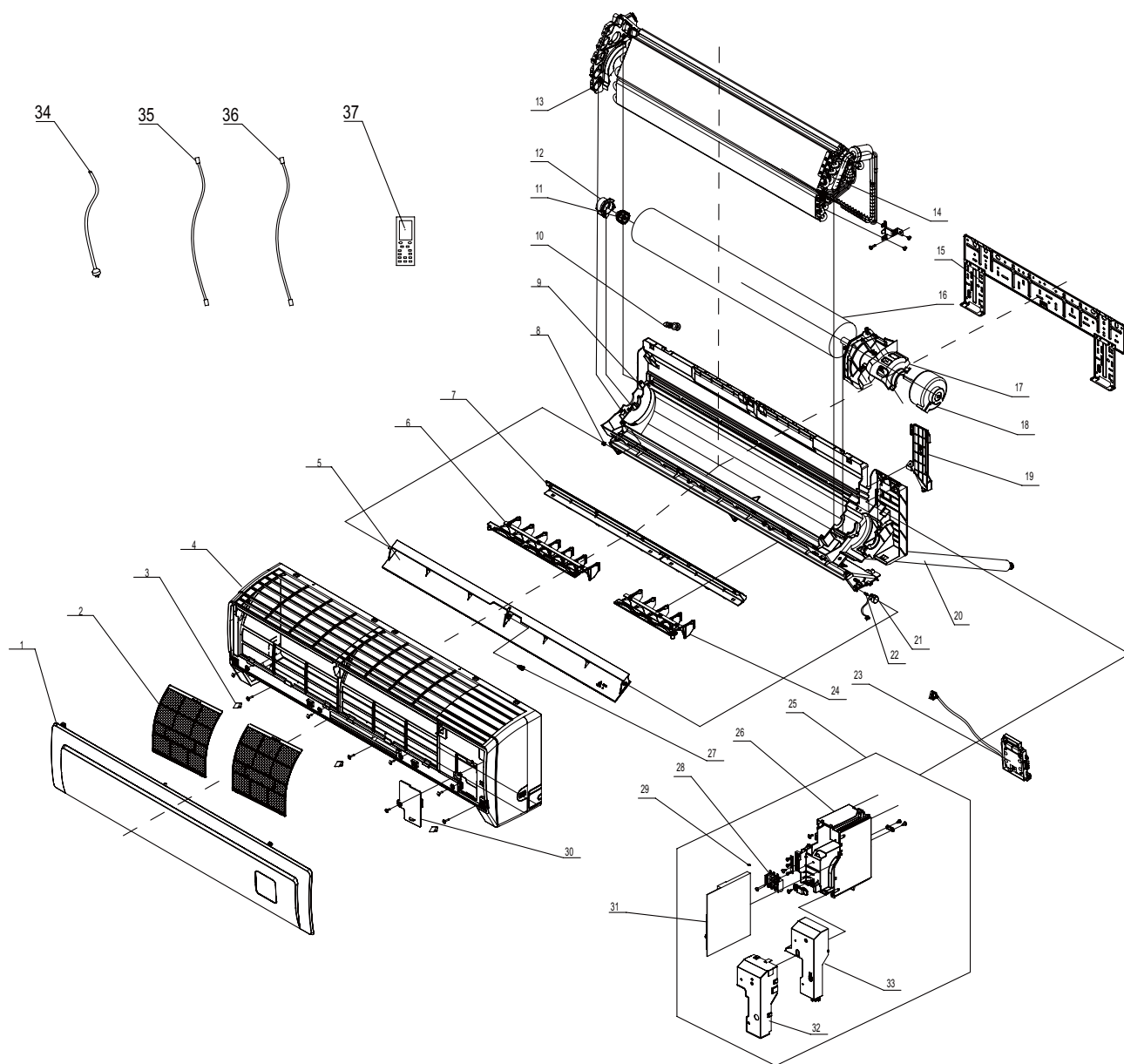
GWH09MA-K3NNA5A/I



NO.	Description	Part Code		Qty
		GWH09MA-K3NNA5A/I		
		CA162N0370	CA162N0372	
1	Front Panel Sub-Assy	20012287	20012287	1
2	Filter Sub-Assy	11122081	11122081	2
3	Screw Cover	24252016	24252016	3
4	Electric Box Cover2	20122075	20122075	1
5	Front Case	20012120	20012120	1
6	Guide Louver	10512111	10512111	1
7	Helicoid Tongue	26112162	26112162	1
8	Air Louver 2	10512114	10512114	1
9	Air Louver 1	10512113	10512113	1
10	Drainage Hose	0523001406	0523001406	1
11	Axile Bush	10542036	10542036	1
12	Crank	10582070	10582070	1
13	Stepping Motor	1521212901	1521212901	1
14	Rear Case assy	2220210101	2220210101	1
15	Connecting pipe clamp	26112164	26112164	1
16	Fan Motor	15012115	15012115	1
17	Wall Mounting Frame	01252015	01252015	1
18	Motor Press Plate	26112160	26112160	1
19	Cross Flow Fan	10352018	10352018	1
20	Evaporator Assy	0100255202	0100255202	1
21	Evaporator Support	24212090	24212090	1
22	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
23	Ring of Bearing	26152022	26152022	1
24	Rubber Plug (Water Tray)	76712012	76712012	1
25	Remote Controller	30510041	30510516	1
26	Connecting Cable	40020536/40020540	40020536/40020540	1
27	Power Cord	400220113	400220113	1
28	Electric Box	2011208201	2011208201	1
29	Main Board	30035564	30035566	1
30	Jumper	4202300128	4202300128	1
31	Transformer	43110236	43110053	1
32	Lower Shield Sub-assy of Electric Box	01592072	01592072	1
33	Terminal Board	42010262	42010262	1
34	Electric Box Cover1	22242135	22242135	1
35	Shield Cover of Electric Box Sub-assy	0159207301	0159207301	1
36	Display Board	30565073	30565073	1
37	Electric Box Assy	2020203711	10000200501	1
38	Axile Bush	10542704	10542036	1
39	Cold Plasma Generator	/	1114001602	1

Above data is subject to change without notice.

GWH18MC-K3NNE2A/I

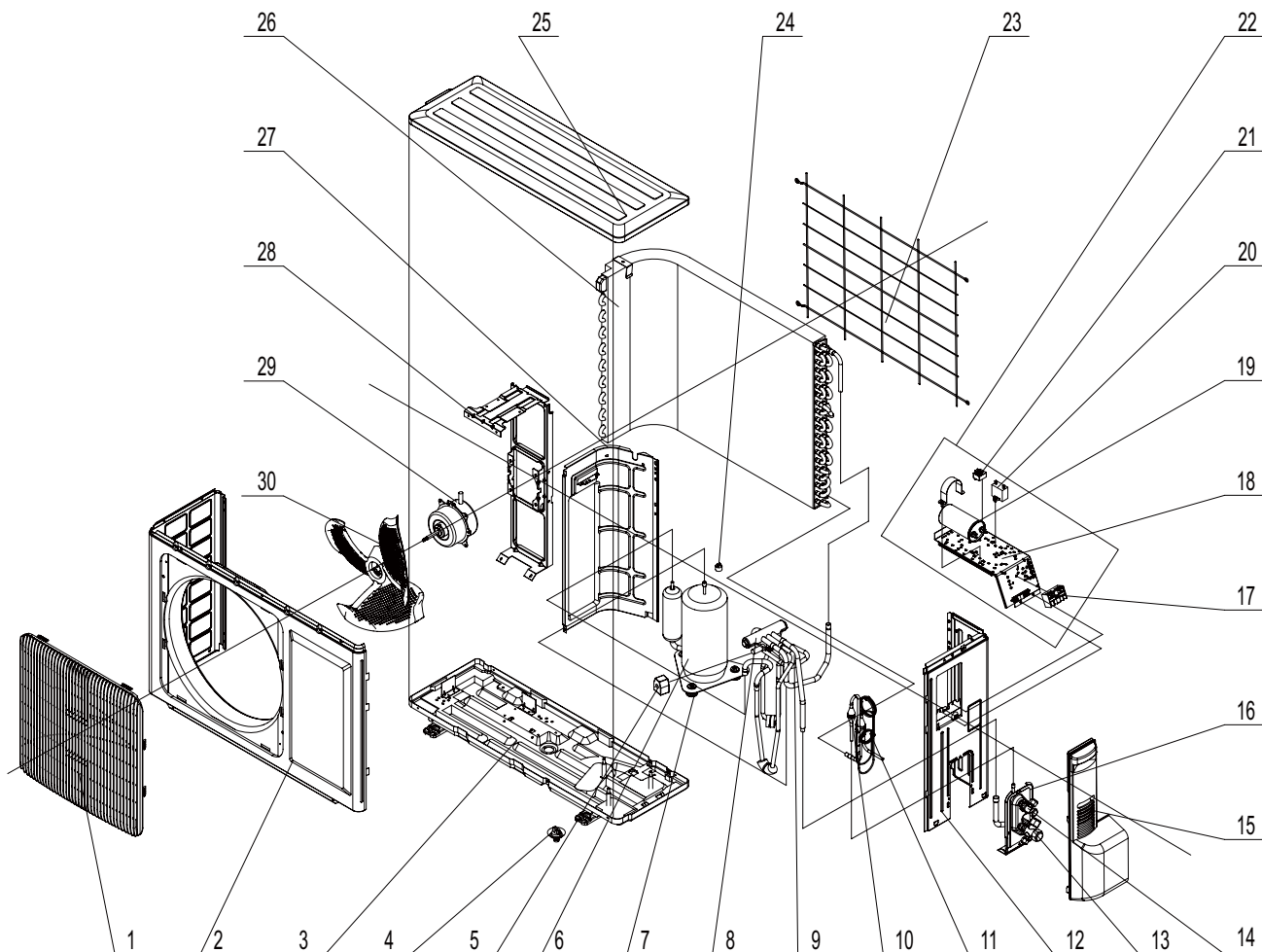


NO.	Description	Part Code		Qty
		GWH18MC-K3NNE2A/I		
		CA401N00200		
1	Front Panel Assy	20012869		1
2	Filter Sub-Assy	1112208901		2
3	Screw Cover	24252016		3
4	Front Case Sub-Assy	20012766		1
5	Guide Louver	10512115		1
6	Air Louver 1	10512116		1
7	Helicoid tongue	26112238		1
8	Left Axile Bush	10512037		1
9	Rear Case assy	12312214		1
10	Rubber Plug (Water Tray)	76712012		1
11	O-Gasket of Cross Fan Bearing	76512203		1
12	O-Gasket sub-assy of Bearing	76512051		1
13	Evaporator Support	24212100		1
14	Evaporator Assy	01002590		1
15	Wall Mounting Frame	01252218		1
16	Cross Flow Fan	10352019		1
17	Motor Press Plate	26112178		1
18	Fan Motor	15012116		1
19	Pipe Clamp	26112164		1
20	Drainage hose	05230014		1
21	Step Motor	15012086		1
22	Crank	10582070		1
23	Display Board	30565126		1
24	Air Louver 2	10512117		1
25	Electric Box Assy	20202750		1
26	Electric Box	20112108		1
27	Axile Bush	10542008		1
28	Terminal Board	42010268		1
29	Jumper	4202300109		1
30	Electric Box Cover2	20112081		1
31	Main Board	30135454		1
32	Shield cover of Electric Box	01592091		1
33	Electric Box Cover1	20122128		1
34	Power Cord	4002048716		1
35	Connecting Cable	4002053603		0
36	Connecting Cable	400205401		0
37	Remote Controller	30510041		1

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10.2 Outdoor Unit

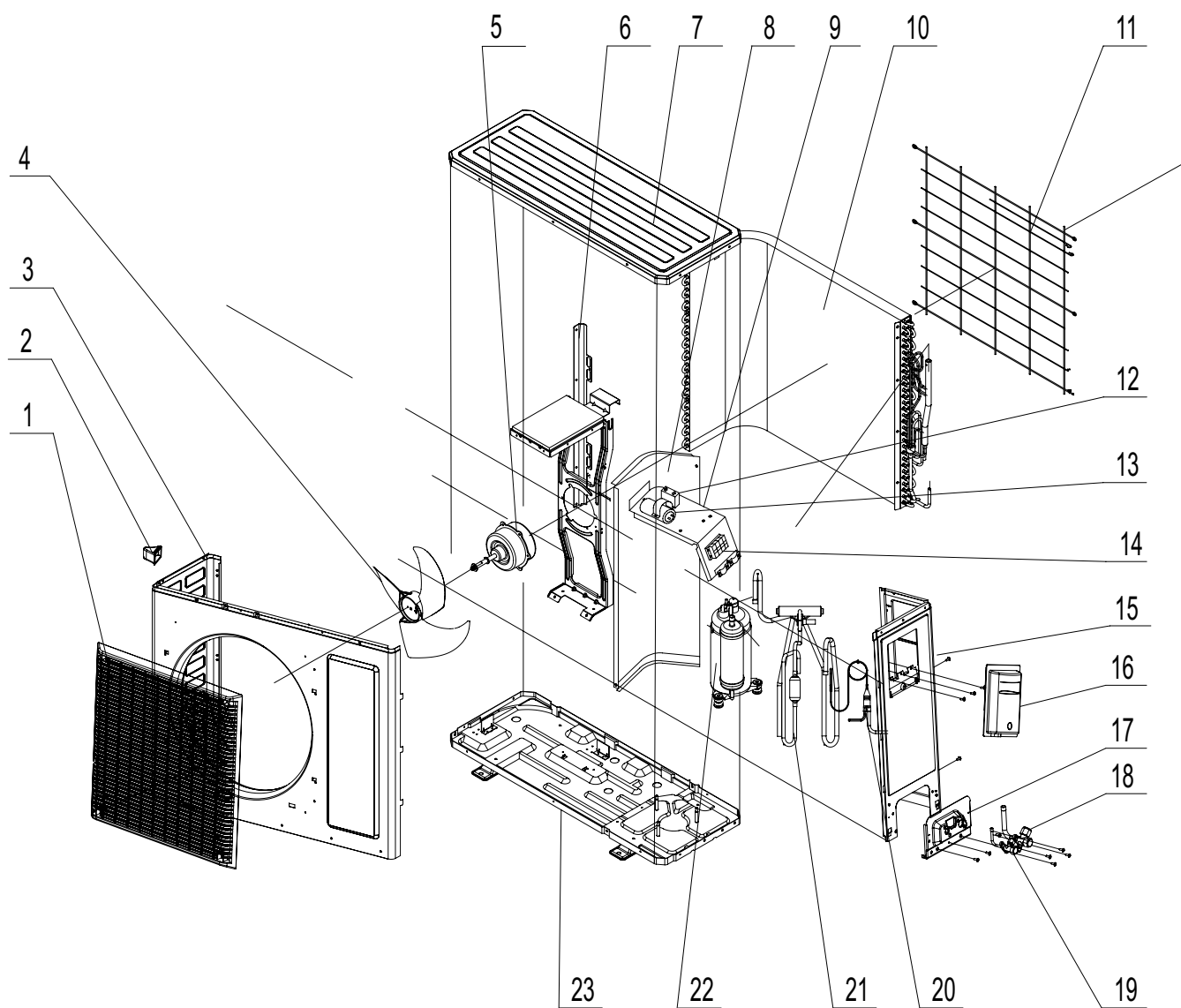
GWH09MA-K3NNA3A/O GWH12MB-K3NNE2A/O



NO.	Description	Part Code		Qty
		GWH09MA-K3NNA3A/O	GWH12MB-K3NNE2A/O	
		Product Code	Product Code	
		CA155W0070	CA401W00400	
1	Front grill	22413433	22413433	1
2	Front Panel	015330124	0153303204P	1
3	Chassis Sub-assy	01203659P	0120324510	1
4	Drainage Connector	06123401	06123401	1
5	Magnet Coil	43000400	43000400	1
6	Compressor and fittings	00103082	00103781G	1
7	Compressor Gasket	76711004	76710247	3
8	4-way Valve	430004022	430004032	1
9	4-way Valve Assy	03123018	03123662	1
10	StrainerA	07210022	07210022	1
11	Capillary Sub-Assy	0310349702	03063567	1
12	Right Side Plate Assy	0130200403	0130200404	1
13	Valve	07100005	07100005	1
14	Valve	07100003	07100004	1
15	Big Handle	26233433	26233433	1
16	Valve Support	01713041	01713041	1
17	Terminal Board	42010265	42010265	1
18	Electric Box Sub-Assy	01403117	01403117	1
19	Capacitor CBB65	33000018	33010743	1
20	Capacitor CBB61	33010025	33010025	1
21	Terminal Board	42011147	/	1
22	Electric Box Assy	0140386101	02603488	1
23	Rear grill	11123205	11123205	1
24	Overload Protector	00183009	/	1
25	Top Cover Plate	01253443	01253443	1
26	Condenser Assy	0110395702	01163089	1
27	Clapboard Sub-Assy	012334172	012334172	1
28	Motor Support Sub-Assy	01703053	0170310301	1
29	Fan Motor	150130671	15013067	1
30	Axial Flow Fan	10333004	10333427	1

Above data is subject to change without notice.


GWH18MC-K3NNA3D/O



NO.	Description	Part Code		Qty
		GWH18MC-K3NNA3D/O		
		CA171W0780		
1	Front Grill	22415001		1
2	Left Handle	26235401		1
3	Front Panel	01305015		1
4	Axial Flow Fan	10335261		1
5	Fan Motor	15015057		1
6	Motor Support Sub-Assy	0170305901		1
7	Coping	01255001		1
8	Clapboard Sub-Assy	01233035		1
9	Electric Box Assy	02603341		1
10	Condenser Assy	01113642		1
11	Rear Grill	0147500401		1
12	Capacitor CBB61	33010027		1
13	Capacitor CBB65	33000012		1
14	Terminal Board	42010265		1
15	Right Side Plate	01305095P		1
16	Handle	26235254		1
17	Valve Support Sub-Assy	01713075		1
18	Valve	07100003		1
19	Cut off Valve	07130213		1
20	Capillary Sub-assy	03063173		1
21	4-Way Valve Assy	03123375		1
22	Compressor and Fittings	00101079		1
23	Chassis Sub-assy	01203932P		1

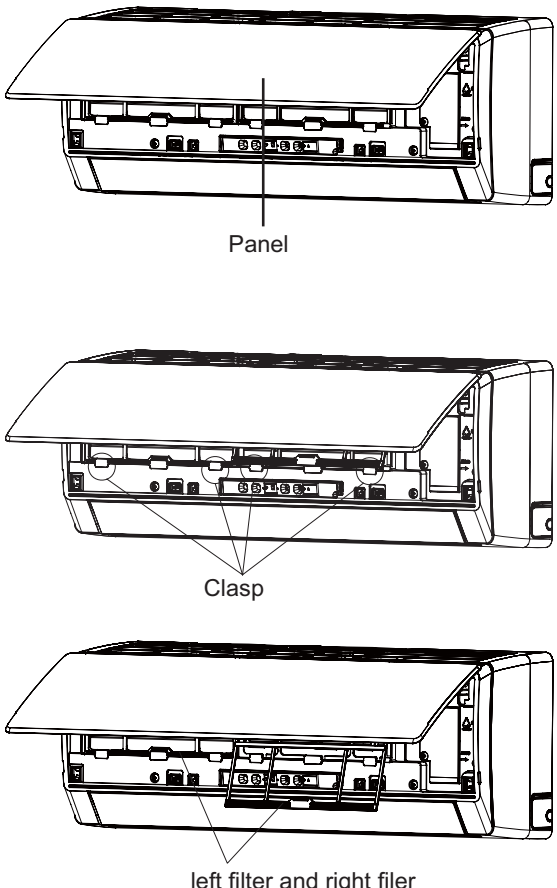
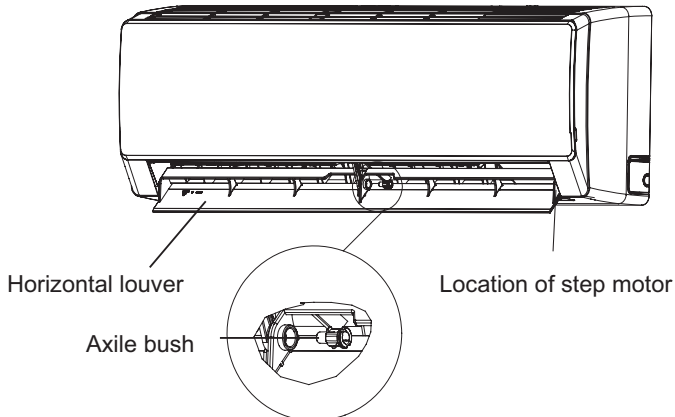
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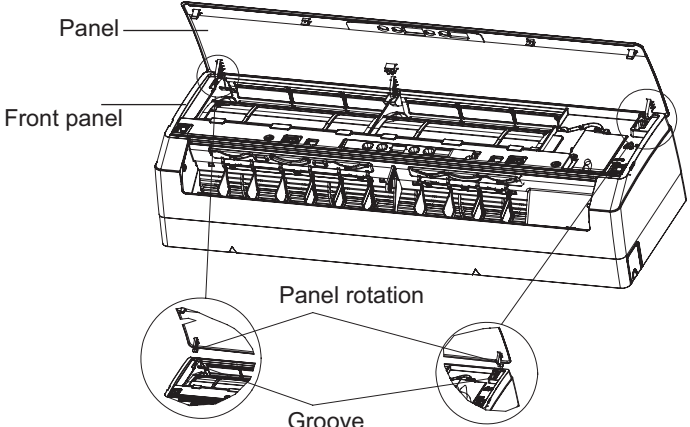
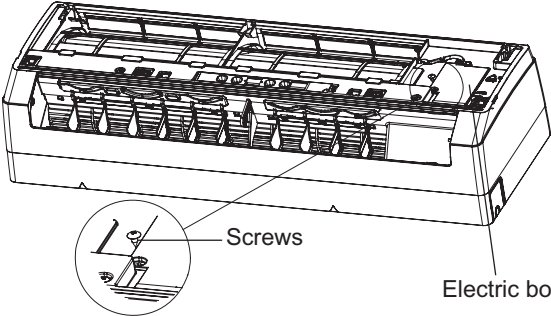
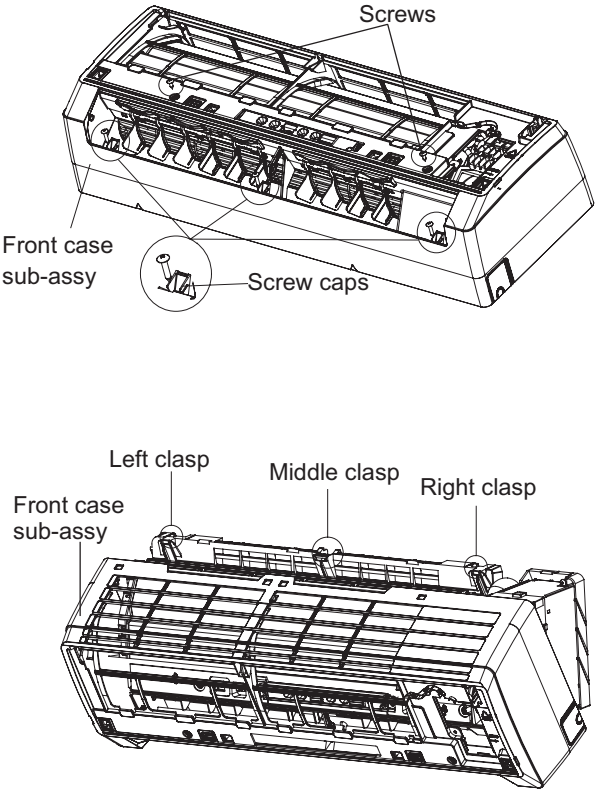
11. Removal Procedure

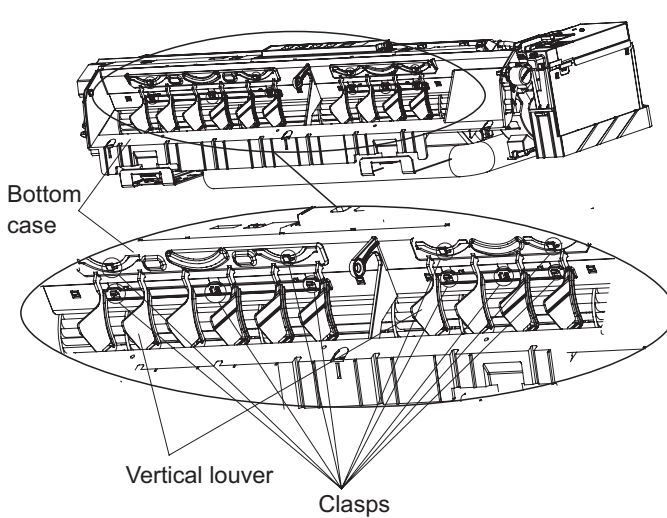
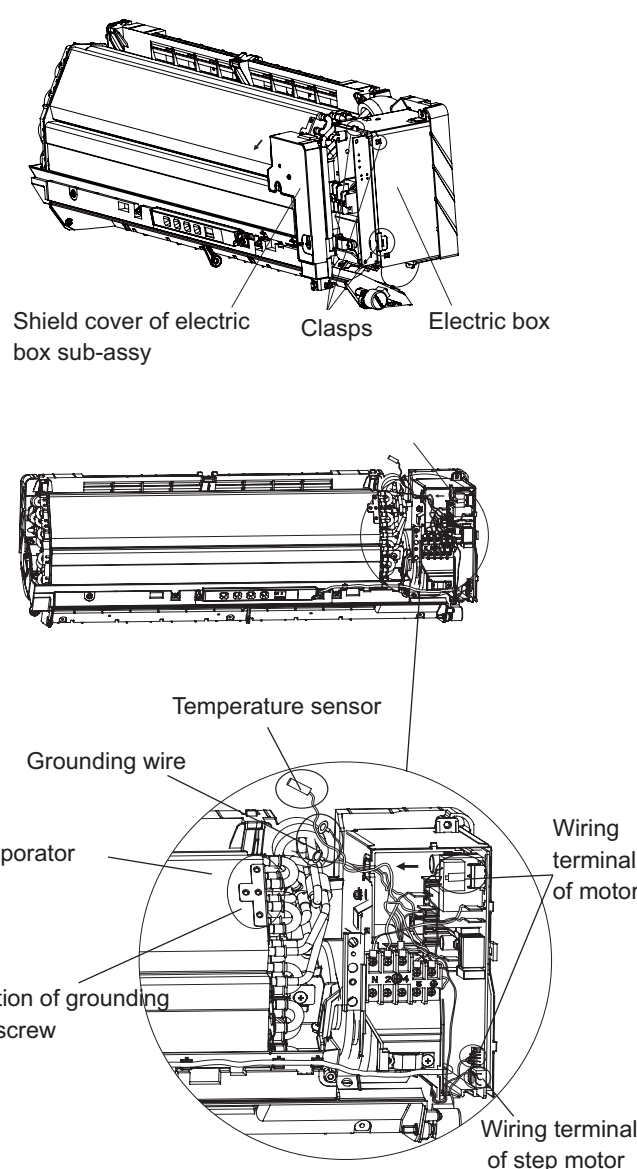
 **Caution: discharge the refrigerant completely before removal.**

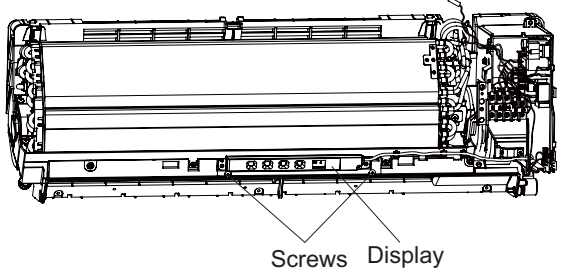
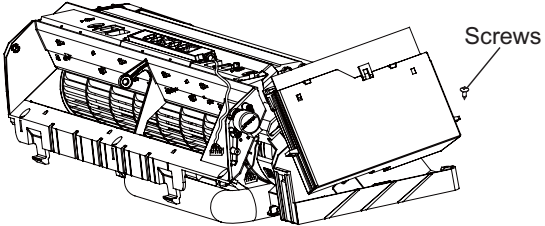
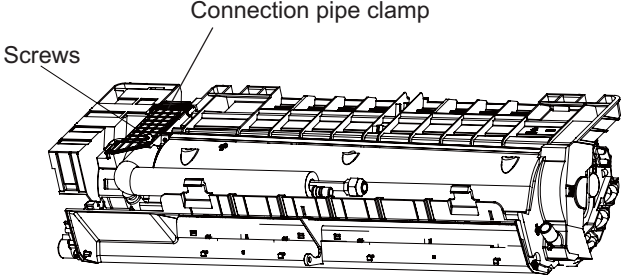
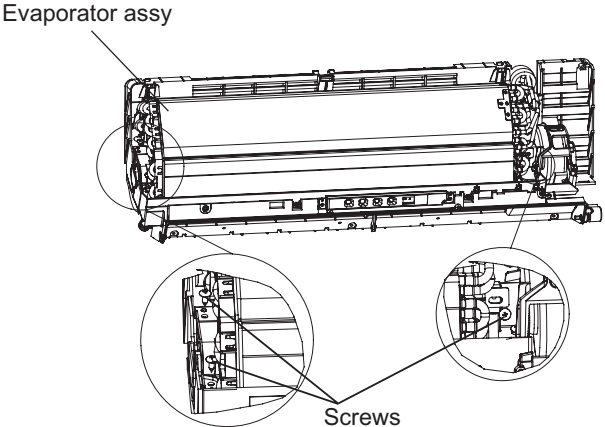
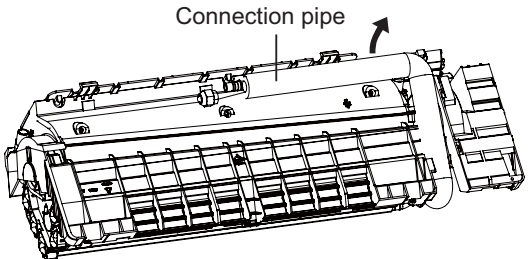
11.1 Removal Procedure of Indoor Unit

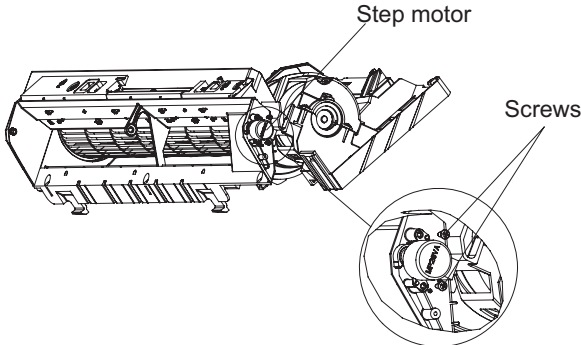
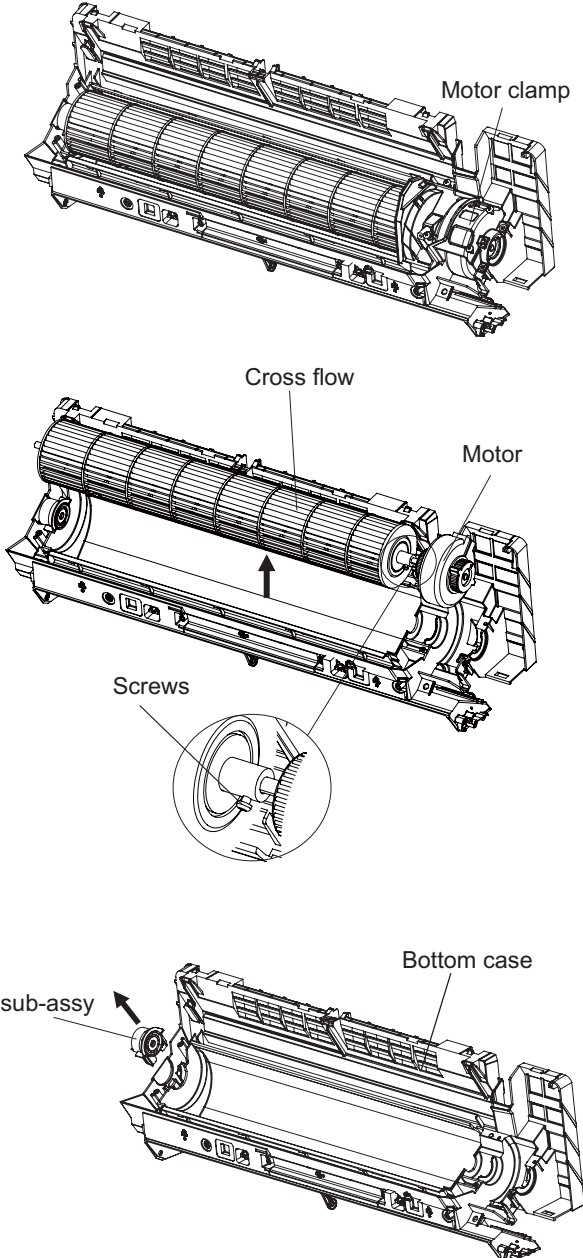
Note: Take A5 plane for example.

Steps	Procedure
1. Remove filter	 <p style="text-align: center;">Panel</p> <p style="text-align: center;">Clasp</p> <p style="text-align: center;">left filter and right filter</p>
<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>2. Remove horizontal louver</p> <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 style="text-align: center;">Horizontal louver</p> <p style="text-align: center;">Axile bush</p> <p style="text-align: right;">Location of step motor</p>

Steps	Procedure	Procedure
3. Remove panel		
	<p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>	 <p>Panel</p> <p>Front panel</p> <p>Panel rotation</p> <p>Groove</p>
4. Remove electric box cover		
	<p>Remove the screws on the electric box cover to remove the electric box cover.</p>	 <p>Screws</p> <p>Electric box cover</p>
5. Remove front case sub-assy		
<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>		 <p>Screws</p> <p>Front case sub-assy</p> <p>Screw caps</p> <p>Left clasp</p> <p>Middle clasp</p> <p>Right clasp</p> <p>Front case sub-assy</p>

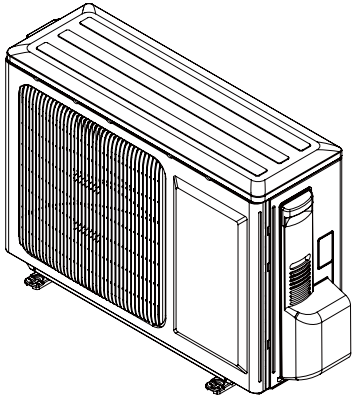
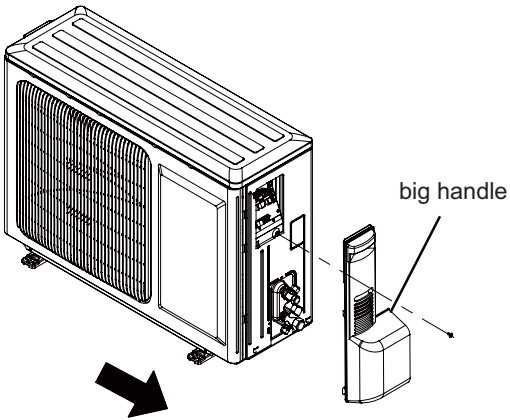
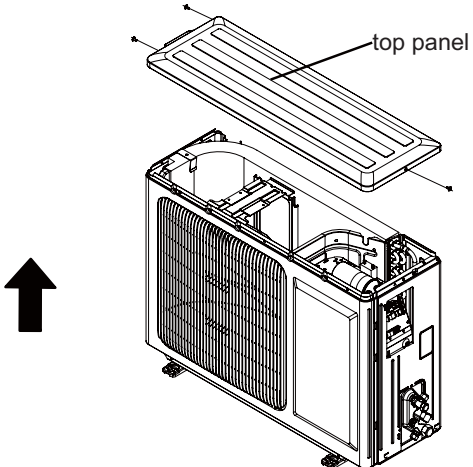
Steps	Procedure	Procedure
6. Remove vertical louver	<p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p>	
7. Remove electric box assy	<p>a Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the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

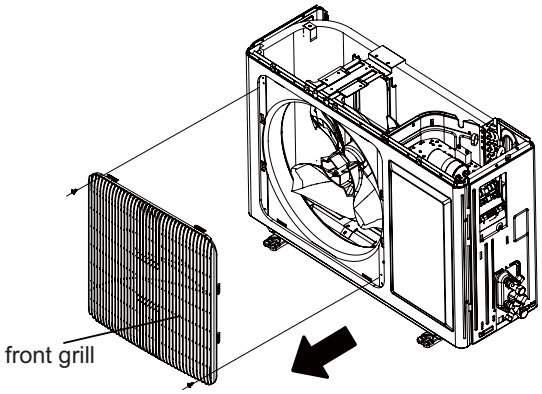
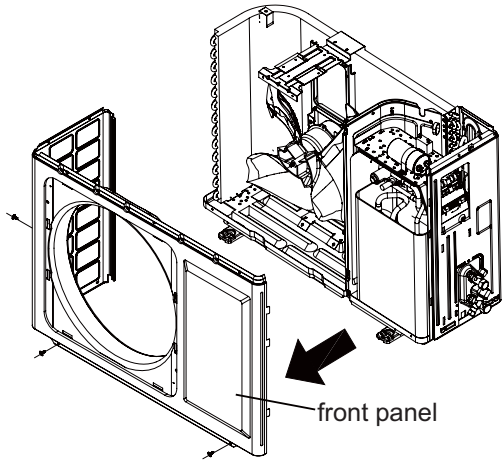
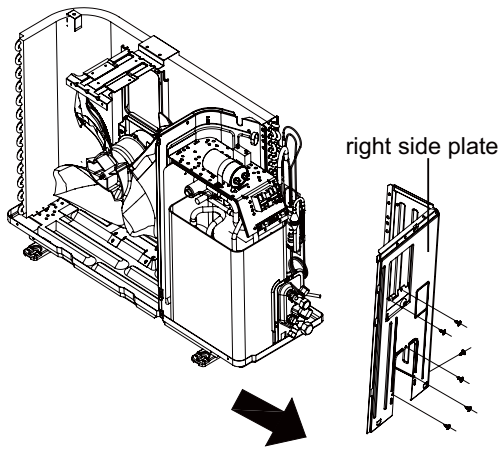
Steps		Procedure
c	<p>Remove two screws fixing display.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>	 <p>Screws Display</p>  <p>Screws</p>
8. Remove evaporator assy		
a	<p>At the back of the unit, remove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

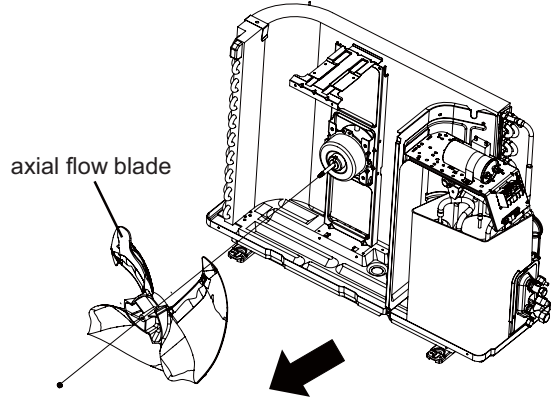
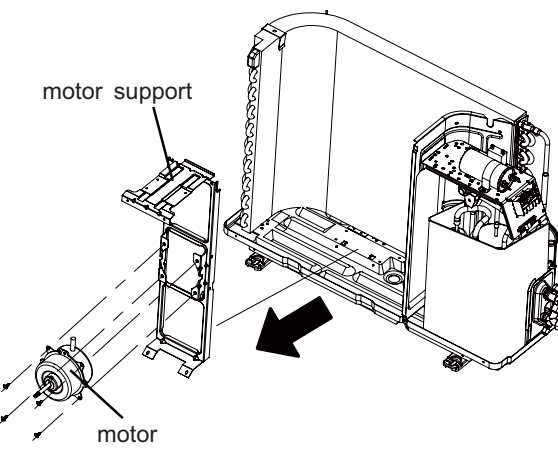
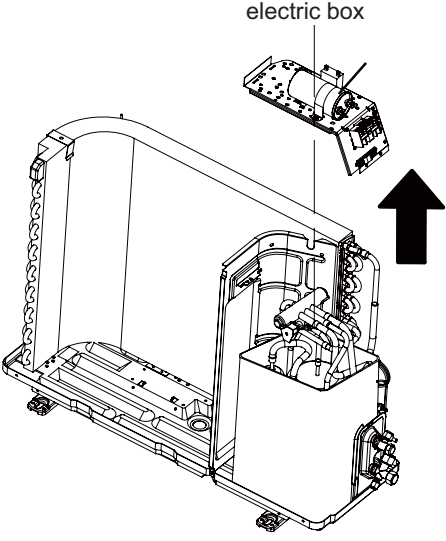
Steps	Procedure	Procedure
9. Remove stepping motor	Remove the screw fixing step motor and then remove the step motor.	
10. Remove motor and cross flow blade	<p>a Remove the screws fixing motor clamp and then remove the motor clamp.</p> <p>b Remove the screws at the connection place of cross flow blade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

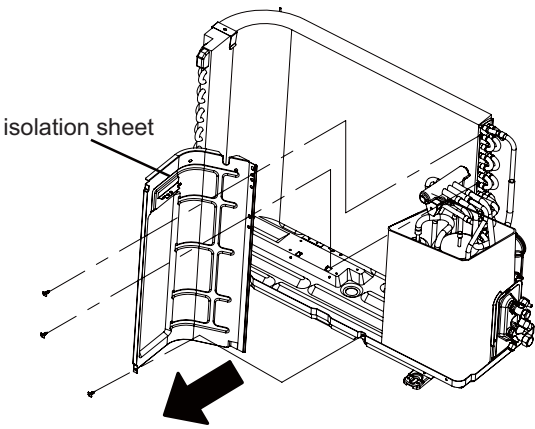
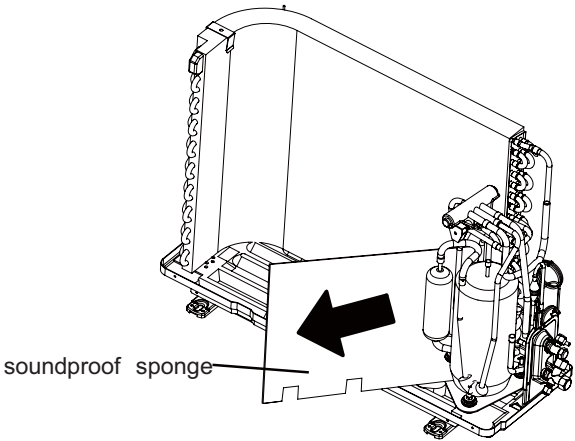
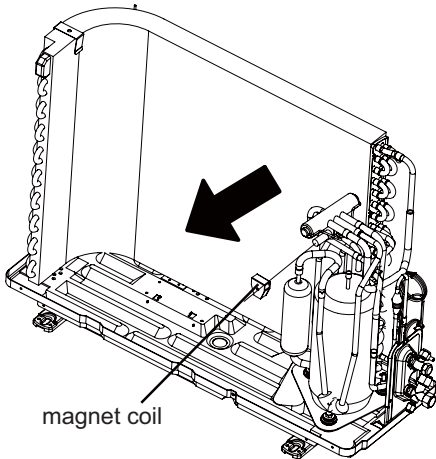
11.2 Removal Procedure of Outdoor Unit

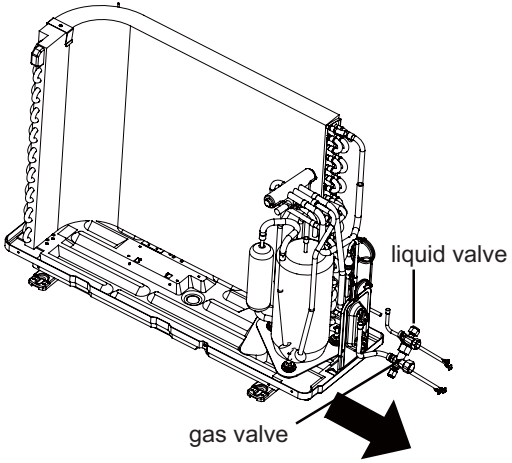
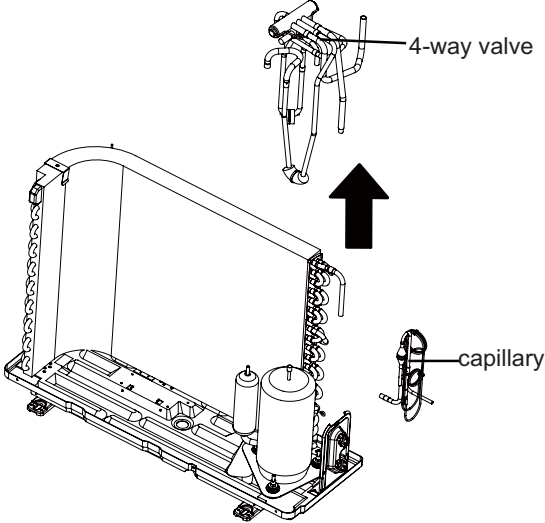
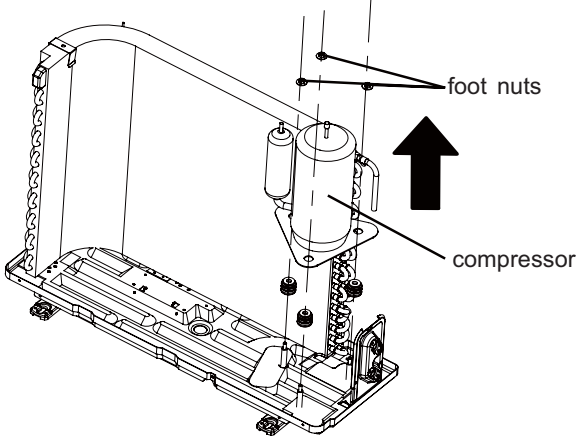
GWH09MA-K3NNA3A/O
GWH12MB-K3NNE2A/O

Steps	Procedure
<p>1. Before disassembly</p>	
<p>2. Remove big handle</p>	<p>Remove the connection screw fixing the big handle and then remove the handle.</p> 
<p>3. Remove top cover plate</p>	<p>Remove connection screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p> 

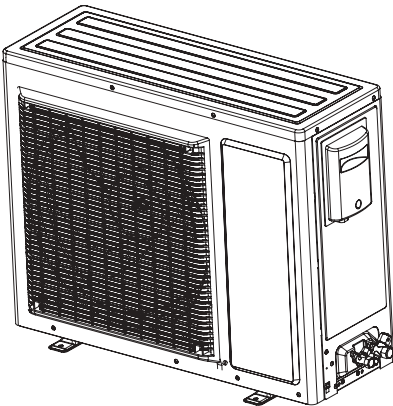
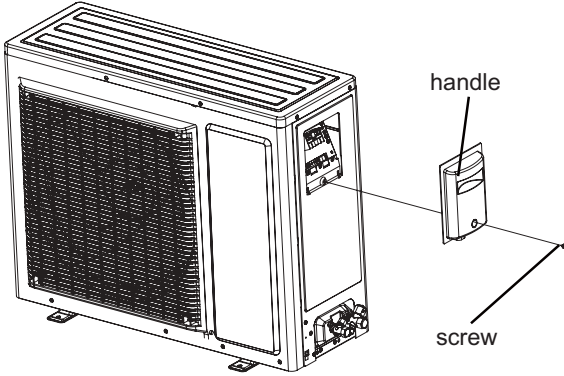
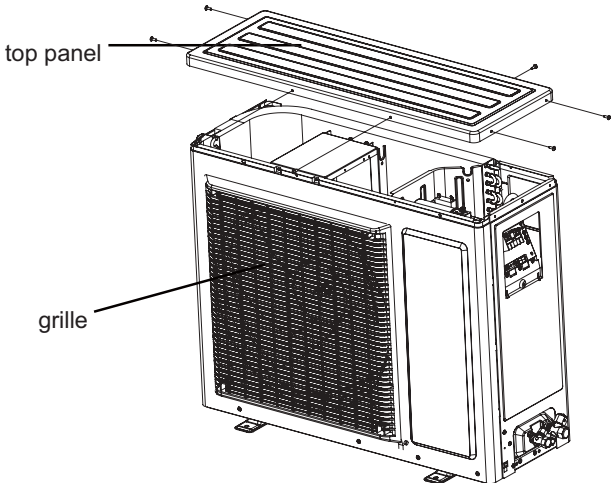
Steps	Procedure
<p>4. Remove front grille</p>	<p>Remove connection screws between the front grille and the front panel. Then remove the front grille.</p> 
<p>5. Remove front panel</p>	<p>Remove connection screws connecting the front panel with the chassis and the motor support and then remove the front panel.</p> 
<p>6. Remove right side plate</p>	<p>Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.</p> 

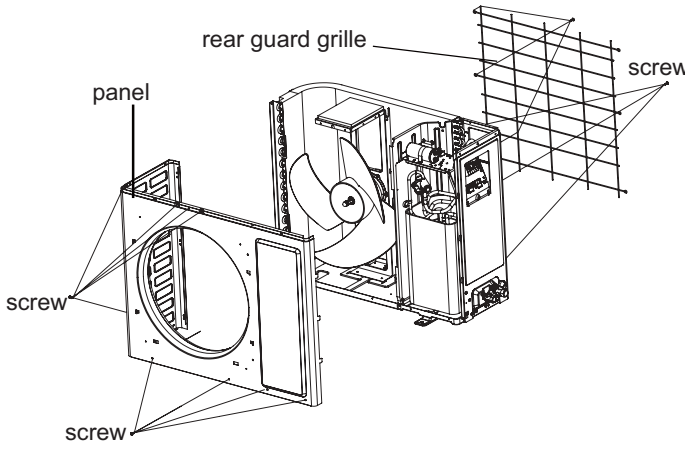
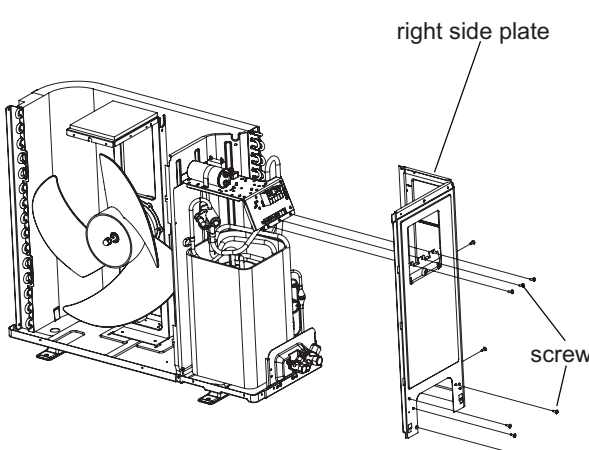
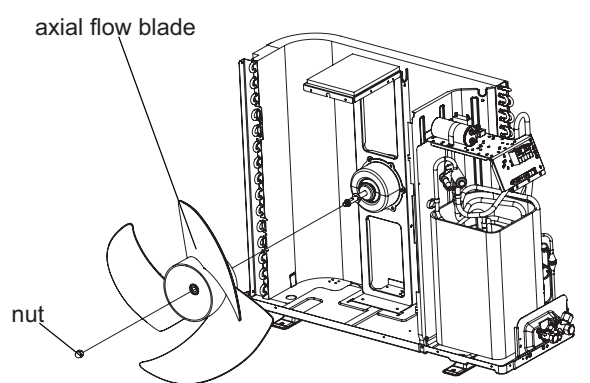
Steps	Procedure
<p>7. Remove axial flow blade</p>	<p>Remove the nut on the blade and then remove the axial flow blade.</p> 
<p>8. Remove motor and motor support</p>	<p>Remove the 4 tapping screws fixing the motor and disconnect the leading wire insert of the motor. Then remove the motor. Remove the 2 tapping screws fixing the motor support and lift the motor support to remove it.</p> 
<p>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> 

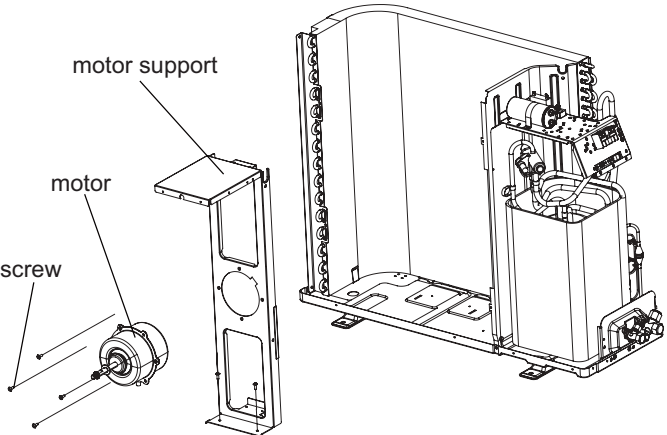
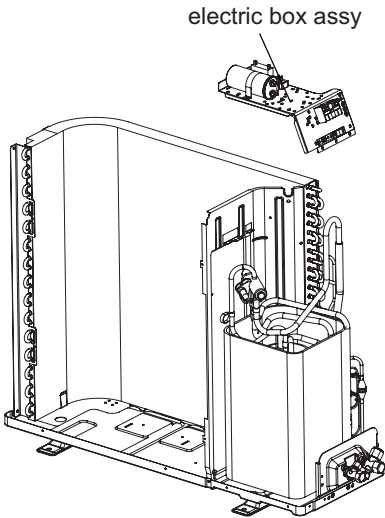
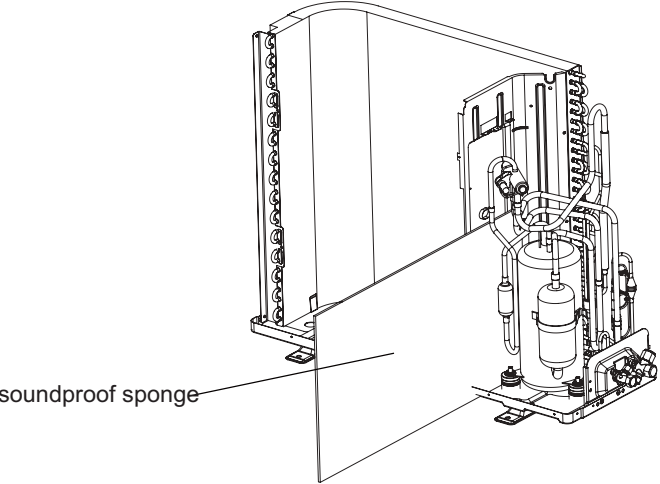
Steps	Procedure
<p>10. Remove isolation sheet</p>	<p>Remove the 3 screws fixing the isolation sheet and then remove the isolation sheet.</p> 
<p>11. Remove soundproof sponge</p>	<p>Remove the soundproof sponge wrapping the compressor.</p> 
<p>12. Remove magnet coil</p>	<p>Remove the screw fixing the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

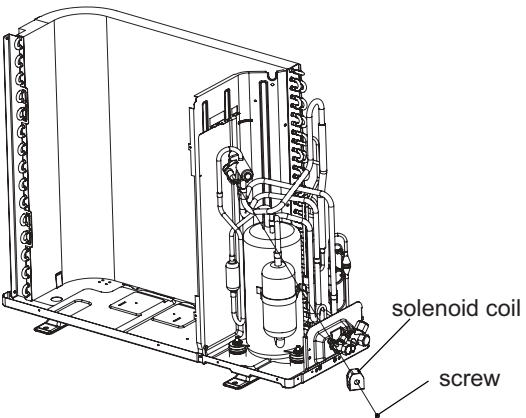
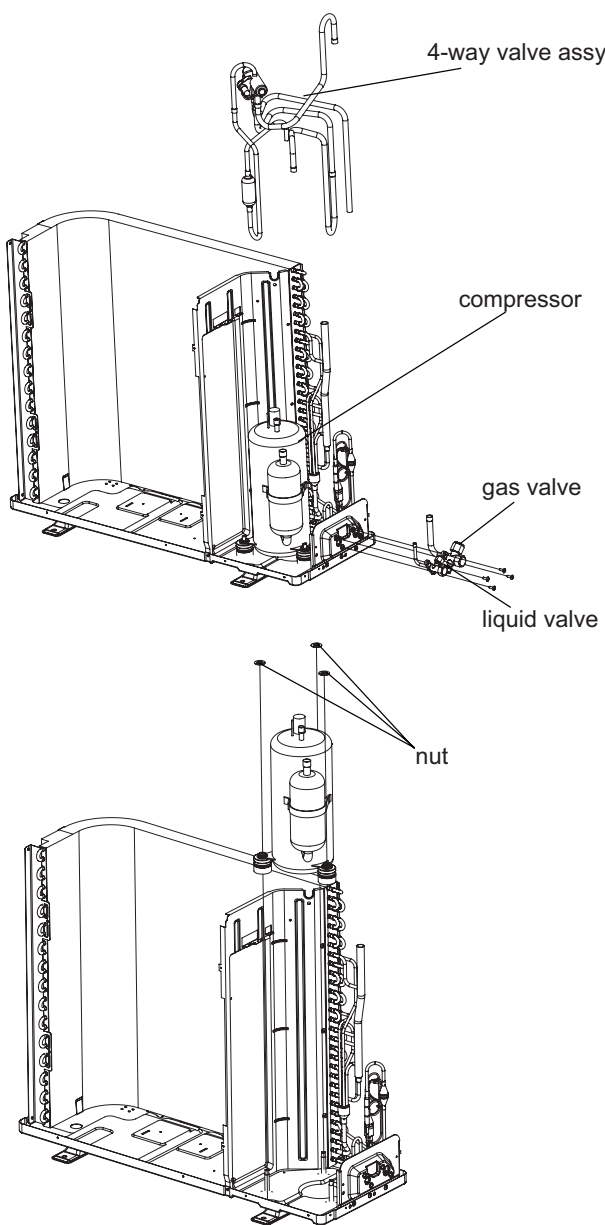
Steps	Procedure
<p>13. Remove liquid valve and gas valve</p>	<p>Unsolder the welding joint connecting the capillary, valves and the outlet pipe of condenser to remove the capillary. Do not block the capillary with welding slag during unsoldering.</p> <p>Remove the 2 screws fixing the gas valve and unsolder 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> 

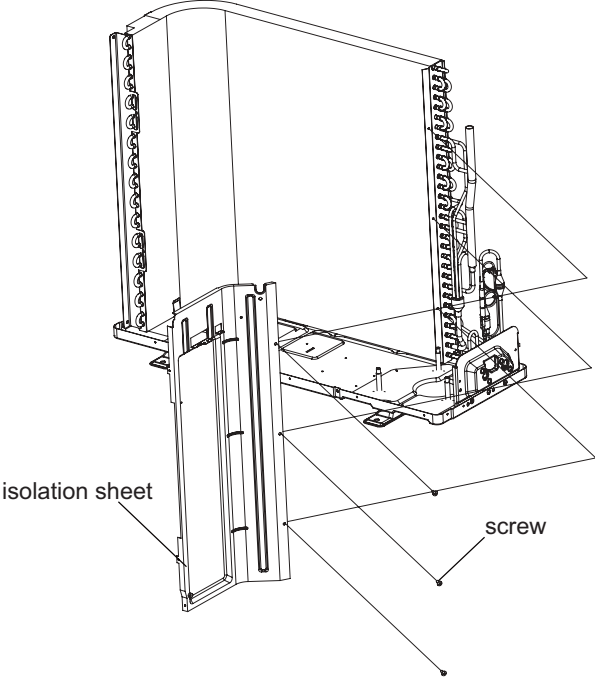
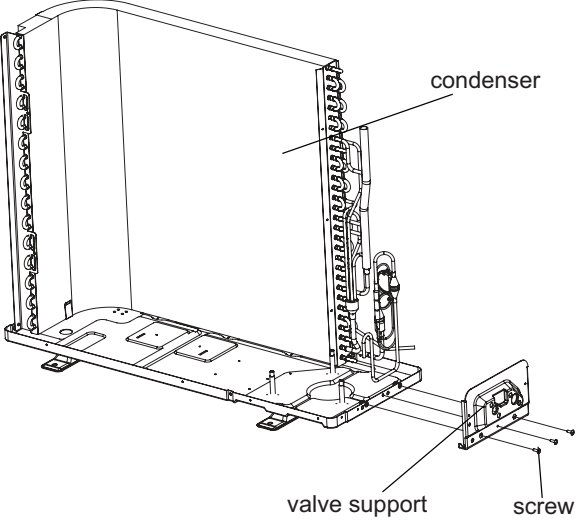
GWH18MC-K3NNA3D/O

Steps	Procedure	
1. Before disassembly		
2. Remove handle	<p>Remove the screw fixing the handle and then remove the handle.</p>	
3. Remove top panel and grille	<p>Remove screws fixing the top panel and the grille respectively, and then remove the top panel and the grille.</p>	

Steps	Procedure
<p>4. Remove front panel and rear guard grille</p>	<p>Remove screws fixing the front panel and the rear guard grille respectively, and then remove the front panel and the rear guard grille.</p> 
<p>5. Remove right side plate</p>	<p>Remove screws connecting the front panel with the chassis and the motor support, and then remove the right side plate.</p> 
<p>6. Remove axial flow blade</p>	<p>Remove nut fixing the blade and then remove the blade.</p> 

Steps	Procedure
7. Remove motor and motor support	<p data-bbox="197 461 651 568">Remove screws on the motor and the motor support, and then remove the motor and the motor support.</p> 
8. Remove electric box	<p data-bbox="197 972 651 1122">Remove the 2 screws fixing the electric box; loosen the wire bundle; pull out the wiring terminals and then pull electric box upwards to remove it.</p> 
9. Remove soundproof sponge	<p data-bbox="197 1630 651 1697">Remove the soundproof sponge wrapping the compressor.</p> 

Steps	Procedure	
10. Remove solenoid coil	Remove the screw on the solenoid coil, and then remove the solenoid coil.	 <p>solenoid coil</p> <p>screw</p>
11. Remove compressor	<p>1 Unsolder the pipes (including the soldering joint among the 4-way valve, the compressor, the condenser, the gas valve and the liquid valve) connected to the compressor at first. (NOTE: Before unsoldering the joints, discharge the refrigerant completely)</p> <p>2 Remove the 3 foot nuts fixing the compressor with wrench, and then remove the compressor.</p>	 <p>4-way valve assy</p> <p>compressor</p> <p>gas valve</p> <p>liquid valve</p> <p>nut</p>

Steps	Procedure
12. Remove isolation sheet	<p data-bbox="196 566 647 633">Remove the 3 screws fixing the isolation sheet and then remove the isolation sheet.</p>  <p data-bbox="772 869 927 898">isolation sheet</p> <p data-bbox="1257 909 1321 938">screw</p>
13. Remove valve support and condenser	<p data-bbox="196 1328 647 1514">Remove screws fixing the valve support and then remove the valve support; Remove the screw fixing the condenser and then pull the condenser upwards to remove it.</p>  <p data-bbox="1270 1335 1382 1364">condenser</p> <p data-bbox="1126 1753 1270 1783">valve support</p> <p data-bbox="1350 1753 1414 1783">screw</p>

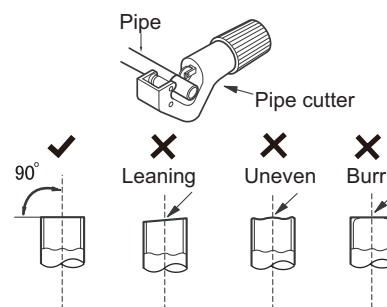
Appendix 2: Pipe Expanding Method

⚠ Note:

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

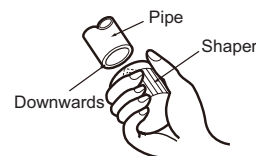
A: Cut the pipe

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



B: Remove the burrs

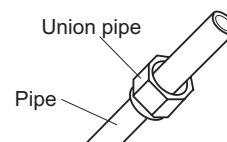
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

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



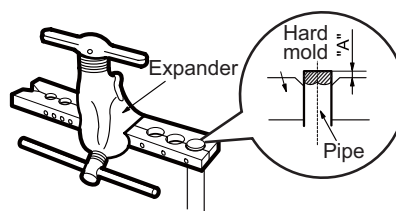
E: Expand the port

- Expand the port with expander.

⚠ Note:

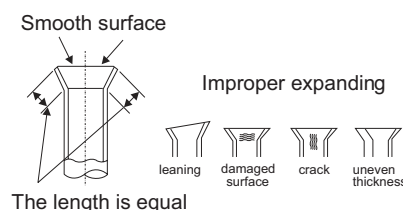
- "A" is different according to the diameter, please refer to the sheet below:

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



F: Inspection

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



Appendix 4: List of Resistance for Ambient Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(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 Ambient Temperature Sensor for Indoor and Outdoor Units(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

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