HYUNDAI

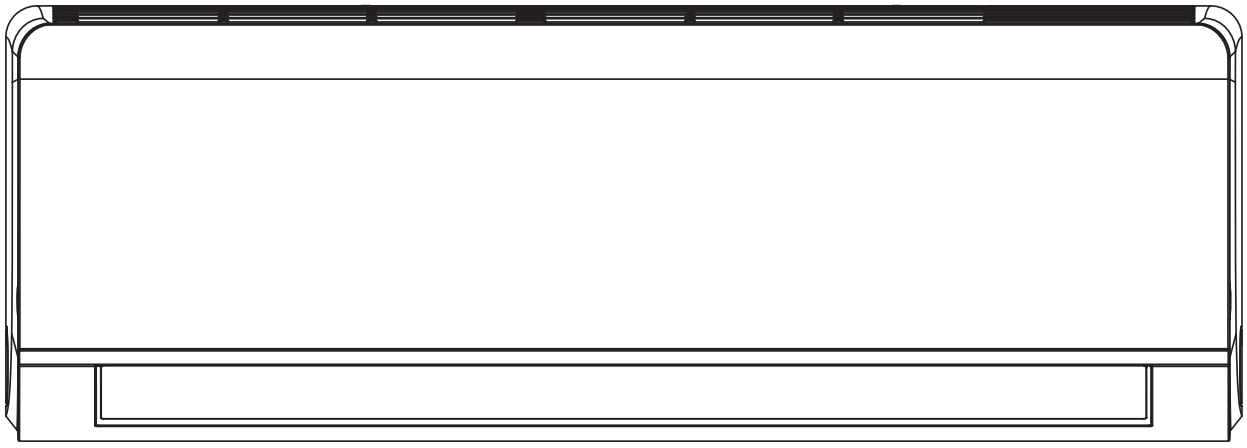
SERVICE MANUAL

MODELS:
HRP-S09WH
HRP-S12WH
HRP-S18WH
HRP-S24WH
(Refrigerant R32)

CONTENT

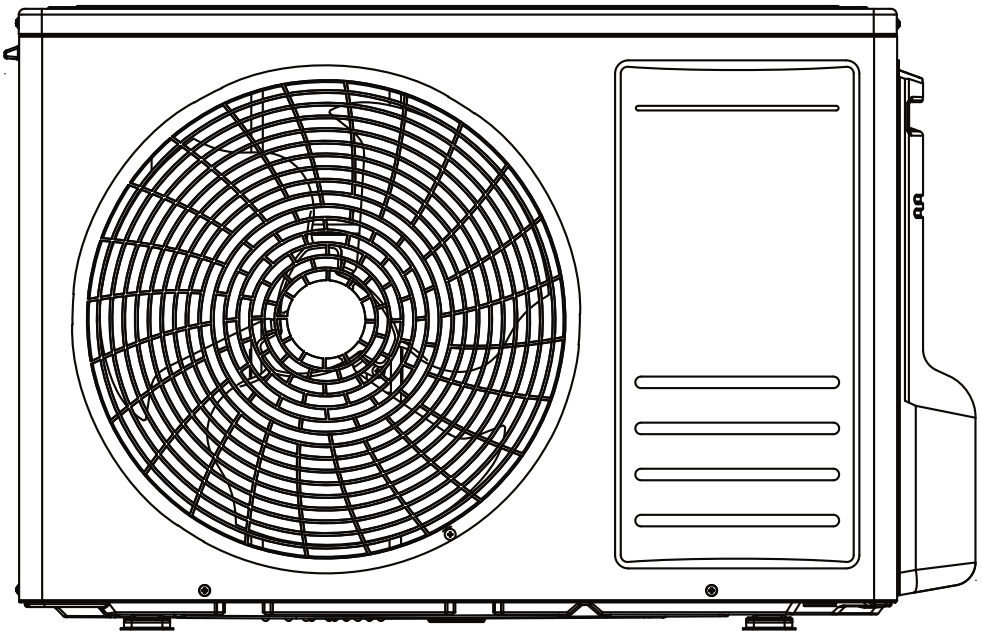
Summary and Features

Indoor Unit



Remote Controller

Outdoor Unit



1. Safety Precautions

Installing, starting up, and servicing air conditioner can behazardous due to system pressure, electrical components, and equipment location, etc.Only trained, qualified installers and service personnel areallowed to install, start-up, and service this equipment.Untrained personnel can perform basic maintenance fun-ctions such as cleaning coils. All other operations should be performed by trained service personnel.When handling the equipment, observe precautions in themanual and on tags, stickers, and labels attached to theequipment. Follow all safety codes. Wear safety glasses andwork gloves. Keep quenching cloth and fire extinguisher nearby when brazing.Read the instructions thoroughly and follow all warnings orcautions in literature and attached to the unit. Consult localbuilding codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

⚠ Warning

Incorrect handling could result inpersonal injury or death.

⚠ Caution

Incorrect handling may result inminor injury,or damage to product or property.

- ◆ Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- ◆ Make sure the ceiling/wall is strong enough to bear the weight of the unit.
- ◆ Make sure the noise of the outdoor unit does not disturb neighbors.
- ◆ Follow all the installation instructions to minimize the risk of damage from earth quakes, typhoons or strong winds.
- ◆ Avoid contact between refrigerant and fire as it generate spoisonous gas.
- ◆ 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 and other hazards.
- ◆ Make sure no refrigerant gas is leaking out when installation is completed.
- ◆ Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
- ◆ Keep your fingers and clothing away from any moving parts.
- ◆ Clear the site after installation. Make sure no foreign objects are left in the unit.
- ◆ Always ensure effective grounding for the unit.

⚠ Warning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

□efore installing, modifying, or servicing system, mainelectrical disconnect switch must be in the OFF position. □here may be more than □ disconnect switch. □ock out and tag switch with a suitable warning label.

Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.

□his system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.

□ave the unit adequately grounded in accordance with local electrical codes.

□ave all wiring connected tightly. □oose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

⚠ Caution

Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.

Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.

□rovide an electric leak breaker when it is installed in a watery place.

Never wash the unit with water.

□andle unit transportation with care. □he unit should not be carried by only one person if it is more than □□kg.

Never touch the heat exchanger fins with bare hands.

Never touch the compressor or refrigerant piping without wearing glove.

□o not have the unit operate without air filter.

Should any emergency occur, stop the unit and disconnect the power immediately.

□roperly insulate any tubing running inside the room to prevent the water from damaging the wall.

Please read this operating manual carefully before operating the unit.


Appliance filled with flammable gas R32.


Before use the appliance, read the owner's manual first.


Befoer install the appliance,read the installation manual first.


Befoer repair the appliance ,read the service manual first.

The figures in this manual may be different with the material objects ,please refer to the material objects for reference.

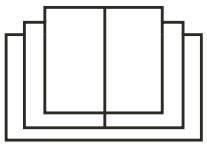
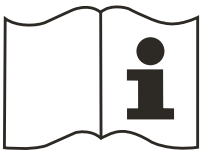
The Refrigerant

To realize the function of the air conditioner unit, a special refrigerant circulates in the system.The used refrigerant is the fluoride R32,which is specially cleaned.The refrigerant is flammable and inodorous. Furthermore,it can leads to explosion under certain condition.But the flammability of the refrigerant is very low. It can be ignited only by fire.

Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere.The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

WARNING:

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacture.Should repair be necessary, contact your nearest authorized Service Center.
Any repairs carried out by unqualified personnel may be dangerous.
The appliance shall be stored in a room without continuously operating ignition sources.
(For example: open flames, an operating gas appliance or an operating electric heater.)
Do not pierce or burn.
Appliance shall be installed, operated and stored in a room with a floor area larger than "X"m^2(see table 1).(only applies to appliances that are not fixed appliances)
Appliance filled with flammable gas R32. For repairs,strictly follow manufacturer's instructions only.
Be aware that refrigerants not contain odour.
Read specialist’s manual.


2. Specifications

2.1 Unit Specifications

Parameter		Unit	Value	
Model		--	HRP-S09WH	HRP-S12WH
Product Code		--	KEB001Z2190	KEB001Z2200
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases	--	1	1
Power Supply Mode		--	outdoor	outdoor
Cross-sectional Area of Power Cable Conductor		mm^2	1	1
Recommended Power Cable(Core)		--	3	3
Min/Max. Voltage		V~	198/264	198/264
Cooling Capacity		W	2500	3400
Min. Cooling Capacity		W	780	1300
Max. Cooling Capacity		W	2900	3900
Pdesignc		KW	2.5	3.4
Heating Capacity		W	2800	3600
Min. Heating Capacity		W	730	800
Max. Heating Capacity		W	3300	4200
Pdesignh(Average)/(Warmer)/(Colder)		KW	2.5 /2.7/4	3.0 /3.6/4.8
Cooling Power Input		W	750	1020
Min. Cooling Power Input		W	75	90
Max. Cooling Power Input		W	1430	1560
Heating Power Input		W	775	995
Min. Heating Power Input		W	135	140
Max. Heating Power Input		W	1550	1650
Cooling Current		A	3.3	4.5
Heating Current		A	3.4	4.4
Rated Input		W	1550	1650
Rated Current		A	6.9	7.3
EER /COP		W/W	3.33 /3.61	3.33/3.62
SEER		--	6.1	6.1
Tbiv/Tol		℃	-7/-10	-7/-10
SCOP(Average)/(Warmer)/(Colder)		--	4.0 /5.1/3.3	4.0/ 5.1 /3.3
Energy Class		--	A++<Cooling>/A+<Average>/ A+++<Warmer>/A+<Colder>	A++<Cooling>/A+<Average>/ A+++<Warmer>/A+<Colder>
Air Flow Volume(SH/H/L/SL)		m^3/h	520/440/230/150	550/470/250/180
Dehumidifying Volume		L/h	0.80	1.40
Application Area		m^2	12-18	16-24
Indoor Unit	Indoor Unit Model	--	HRP-S09WH(I)	HRP-S12WH(I)
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	mm	Φ97.5×579	Φ97.5×579
	Cooling Speed(SH/H/L/SL)	r/min	1300/1150/750/600	1350/1200/800/650
	Heating Speed(SH/H/L/SL)	r/min	1300/1150/850/800	1350/1200/900/850
	Fan Motor Power Output	W	18	18
	Fan Motor RLA	A	0.2	0.2
	Fan Motor Capacitor	μF	1	1
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ5	Φ5
	Evaporator Row-fin Gap	mm	2-1.4	2-1.4
	Evaporator Coil Length (L×D×W)	mm	584.4×22.8×266.7	584.4×22.8×266.7
	Swing Motor Model	--	24BJ-A1	24BJ-A1
	Swing Motor Power Output	W	1.5	1.5
	Fuse Current	A	3.15	3.15
	Set Temperature Range	℃	16~31	16~31
	Sound Pressure Level(SH/H/L/SL)	dB (A)	40/36/24/19	41/37/25/20
	Sound Power Level(SH/H/L/SL)	dB (A)	54/39/36/30	55/40/37/31
	Dimension (W×H×D)	mm	821x283x200	821x283x200
	Dimension of Carton Box (W×H×D)	mm	895x281x350	895x281x350
	Dimension of Package(W×H×D)	mm	898x291x353	898x291x353
	Stacked Layers	--	7	7
	Net Weight	kg	9	9
	Gross Weight	kg	11	11

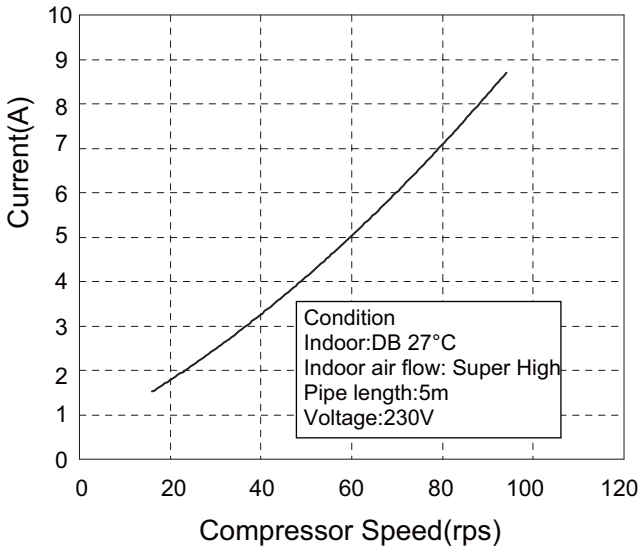
Outdoor Unit	Outdoor Unit Model	--	HRP-S09WH(O)	HRP-S12WH(O)
	Compressor Trademark		CRSS	CRSS
	Compressor Manufacturer	--	ELECTROMECHANICAL (SHENYANG) SANYO REFRIGERATION EQUIPMENT CO.,LTD.	ELECTROMECHANICAL (SHENYANG) SANYO REFRIGERATION EQUIPMENT CO.,LTD.
	Compressor Model	--	C-1RZ110H3AAF	C-1RZ110H3AAF
	Compressor Oil	--	FW50S	FW50S
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	25	25
	Compressor RLA	A	3	3
	Compressor Power Input	W	770	770
	Compressor Overload Protector	--	--	--
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	405	405
	Fan Diameter	inch	15.9	15.9
	Fan Motor Speed	rpm	880	880
	Fan Motor Power Output	W	30	30
	Fan Motor RLA	A	0.4	0.4
	Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	m^3/h	1800	1800
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7.94	Φ7
	Condenser Rows-fin Gap	mm	1-1.4	2-1.4
	Condenser Coil Length (L×D×W)	mm	742×19.05×506	719×38.1×506
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Maximum Allowable Pressure	MPa	4.3	4.3
	Cooling Operation Ambient Temperature Range	℃	-20~52	-20~52
	Heating Operation Ambient Temperature Range	℃	-20~30	-20~30
	Throttling Method	--	Capillary	Capillary
	Defrosting Method	--	Automatic Defrosting	Automatic Defrosting
	Climate Type	--	T1	T1
	Climate Zone	--	Temperate Zone	Temperate Zone
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	52	53
	Sound Power Level	dB (A)	61	62
	Dimension (W×H×D)	mm	830X540X325	830X540X325
	Dimension of Carton Box (W×H×D)	mm	876x585x363	876x585x363
	Dimension of Package(W×H×D)	mm	879x605x366	879x605x366
	Stacked Layers	--	5	5
	Net Weight	kg	27	29
	Gross Weight	kg	29.5	31.5
	Refrigerant	--	R32	R32
	Refrigerant Charge	kg	0.59	0.77
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	20	20
	Outer Diameter of Liquid Pipe(Hyundai Allocation)(Metric)	mm	Φ6	Φ6
	Outer Diameter of Liquid Pipe(British System Allocation)	inch	1/4"	1/4"
	Outer Diameter of Gas Pipe(Hyundai Allocation)(Metric)	mm	Φ9.52	Φ9.52
	Outer Diameter of Gas Pipe(British System Allocation)	inch	3/8"	3/8"
	Max Distance Height	m	10	10
	Max Distance Length	m	20	20

Parameter		Unit	Value	
Model		--	HRP-S18WH	HRP-S24WH
Product Code		--	KEB001Z1550	KEB001Z1560
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases	--	1	1
Power Supply Mode		--	outdoor	outdoor
Cross-sectional Area of Power Cable Conductor		mm^2	1.5	2.5
Recommended Power Cable(Core)		N	3	3
Min/Max. Voltage		V	198/264	198/264
Cooling Capacity		W	5270	6450
Min. Cooling Capacity		W	1000	1400
Max. Cooling Capacity		W	6700	7000
Pdesignc		kW	5.2	6.4
Heating Capacity		W	5500	6600
Min. Heating Capacity		W	1100	1500
Max. Heating Capacity		W	6800	7900
Pdesignh(Average)		kW	5	6.2
Cooling Power Input		W	1540	1840
Min. Cooling Power Input		W	320	380
Max. Cooling Power Input		W	2460	2800
Heating Power Input		W	1480	1750
Min. Heating Power Input		W	350	400
Max. Heating Power Input		W	2300	2500
Cooling Current		A	7.0	8.9
Heating Current		A	6.3	8.4
Rated Input		W	2300	2500
Rated Current		A	10.20	11.09
EER		W/W	3.42	3.51
COP		W/W	3.72	3.77
SEER		--	6.3	6.4
SCOP(Average)		--	4.0	4.0
Energy Class		--	A++<Cooling>/A+<Average>	A++<Cooling>/A+<Average>
Air Flow Volume (cooling SH/H/L/SL)		m^3/h	850/760/570/480	1090/930/670/560
Dehumidifying Volume		L/h	1.80	2.40
Application Area		m^2	25-36	37-54
Indoor Unit	Indoor Unit Model	--	HRP-S18WH	HRP-S24WH
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	mm	Φ106×706	Φ108×830
	Cooling Speed (SH/H/L/SL)	r/min	1230/1130/900/800	1250/1100/850/750
	Heating Speed (SH/H/L/SL)	r/min	1350/1200/900/850	1250/1100/900/800
	Fan Motor Power Output	W	40	55
	Fan Motor RLA	A	0.36	0.47
	Fan Motor Capacitor	μF	2.5	2.5
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7	Φ7
	Evaporator Row-fin Gap	mm	2-1.4	2-1.4
	Evaporator Coil Length (L×D×W)	mm	715×25.4×304.8	850×25.4×342.9
	Swing Motor Model	--	35BJ-A1	35BJ-A1
	Swing Motor Power Output	W	2.5	2.5
	Fuse Current	A	3.15	3.15
	Set Temperature Range	℃	16~31	16~31
	Sound Pressure Level (cooling)	dB (A)	47/44/31/29	48/44/35/33
	Sound Power Level	dB (A)	58/55/42/40	61/57/48/46
	Dimension (W×H×D)	mm	972x302x224	1081x327x248
	Dimension of Carton Box(W×H×D)	mm	1044x304x374	1155x342x410
	Dimension of Package(W×H×D)	mm	1047x314x377	1158x352x413
	Stacked Layers	--	7	7
	Net Weight	kg	13	16
	Gross Weight	kg	15.5	19

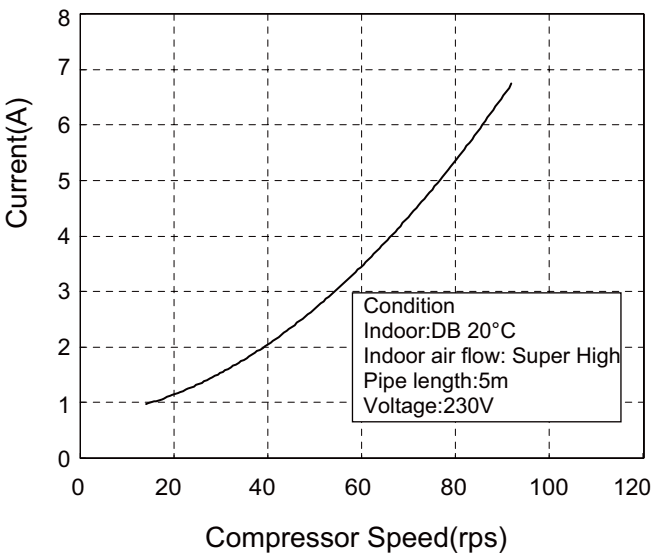
Outdoor Unit	Outdoor Unit Model	--	HRP-S18WH(O)	HRP-S24WH(O)
	Compressor Trademark		panasonic	panasonic
	Compressor Manufacturer	--	panasonic Wanbao Appliances Compressor(guangzhou) CO.,LTD./panasonic	panasonic Wanbao Appliances Compressor(guangzhou) CO.,LTD./panasonic
	Compressor Model	--	9RD132ZEA21	9RD160ZAA21
	Compressor Oil	--	FV50S	FV50S
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	23	25
	Compressor RLA	A	6.7	6.9
	Compressor Power Input	W	1260	1645
	Compressor Overload Protector	--	--	--
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	455	522
	Fan Motor Speed	rpm	850	800
	Fan Motor Power Output	W	55	60
	Fan Motor RLA	A	0.67	0.79
	Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	m^3/h	2800	3300
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7	Φ7
	Condenser Rows-fin Gap	mm	2-1.4	2-1.4
	Condenser Coil Length (L×D×W)	mm	869×38.1×572	878×38.1×660
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Maximum Allowable Pressure	MPa	4.3	4.3
	Cooling Operation Ambient Temperature Range	℃	-20~52	-20~52
	Throttling Method	--	Capillary	Capillary
	Defrosting Method	--	Automatic Defrosting	Automatic Defrosting
	Climate Type	--	T1	T1
	Climate Zone	--	Temperate Zone	Temperate Zone
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	55	59
	Sound Power Level	dB (A)	63	68
	Dimension (W×H×D)	mm	890x598x372	960×700×396
	Dimension of Carton Box (W×H×D)	mm	938x647x409	1008x742x452
	Dimension of Package(W×H×D)	mm	941x663x412	1011x763x455
	Stacked Layers	--	4	4
	Net Weight	kg	40	43.5
	Gross Weight	kg	43	47
	Refrigerant	--	R32	R32
	Refrigerant Charge	kg	0.93	1.05
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	20	50
	Outer Diameter of Liquid Pipe	inch	1/4"	1/4"
	Outer Diameter of Gas Pipe	inch	1/2"	5/8"
	Max Distance Height	m	10	10
	Max Distance Length	m	25	25

2.2 Operation Characteristic Curve

Cooling



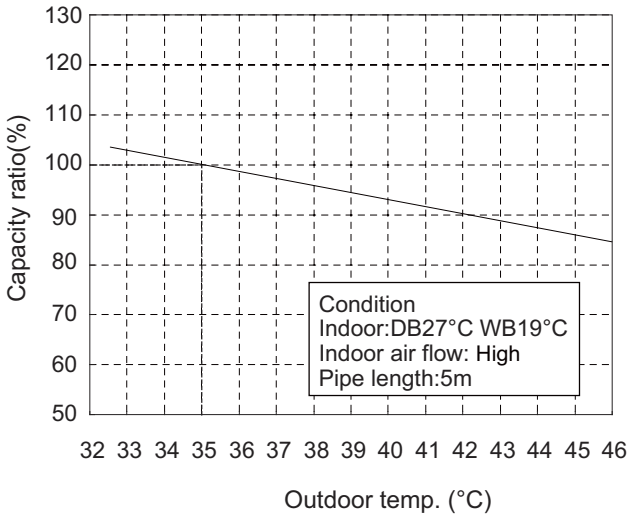
Heating



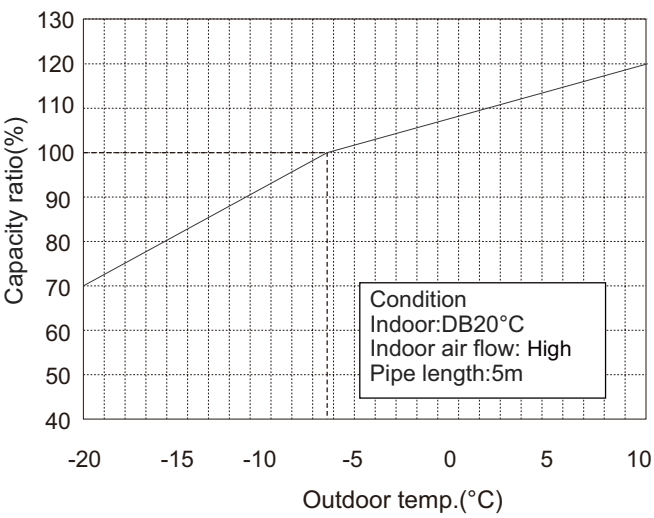
2.3 Capacity Variation Ratio According to Temperature

Heating operation ambient temperature range is -20ºC~30ºC

Cooling

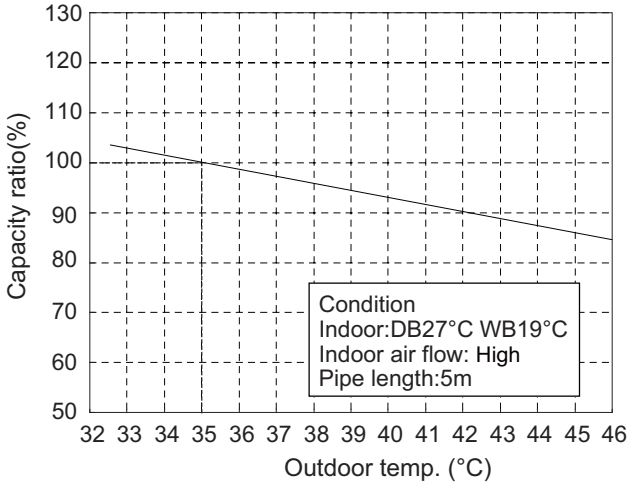


Heating

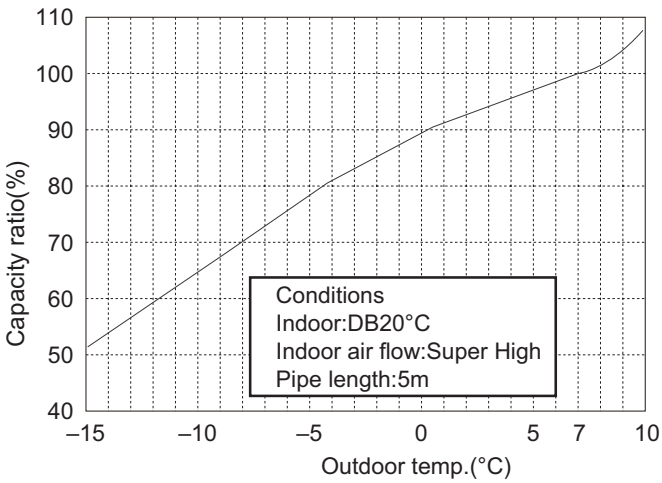


Heating operation ambient temperature range is -20ºC~30ºC

Cooling



Heating



2.4 Cooling Data Sheet in Rated Frequency

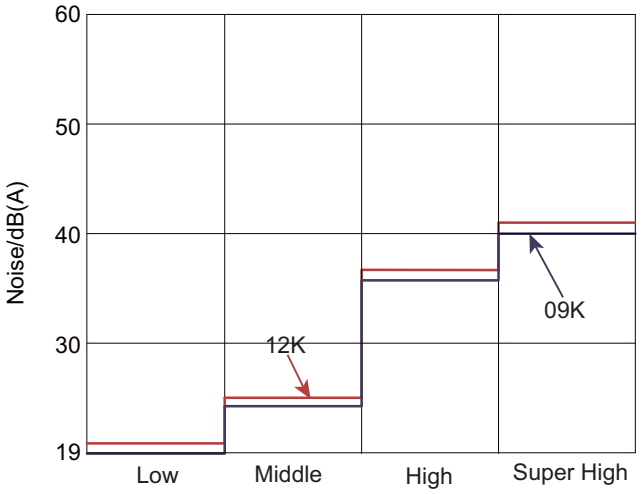
Model	Rated cooling condition(°C) (DB/WB)		Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Outdoor fan mode (rpm)
	Indoor	Outdoor	P (MPa)	T1 (°C)	T2 (°C)		
09K	27/19	35/24	0.9~1.1	12 to 14	75 to 37	Super High	880
12K							880
18K							850
24K							800

T1: Inlet and outlet pipe temperature of evaporator;
T2: Inlet and outlet pipe temperature of condenser;
P: Pressure of air pipe connecting indoor and outdoor units.

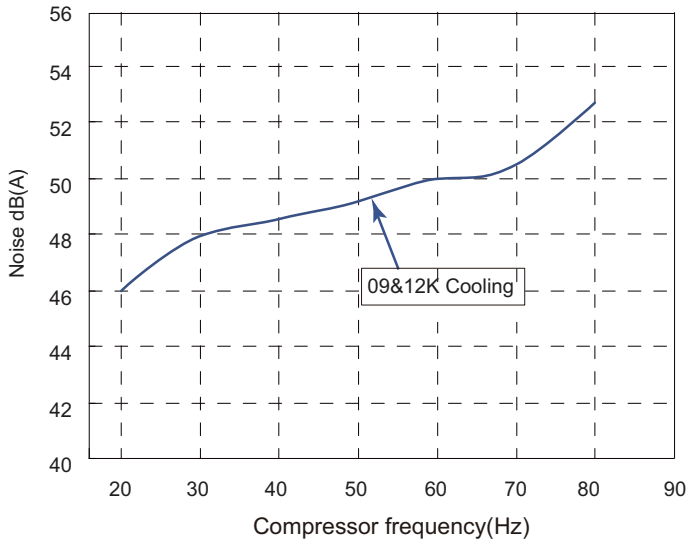
NOTES :
(1) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent.(Thermistor themometer)
(2) Connecting piping condition : 5m

2.5 Noise Curve

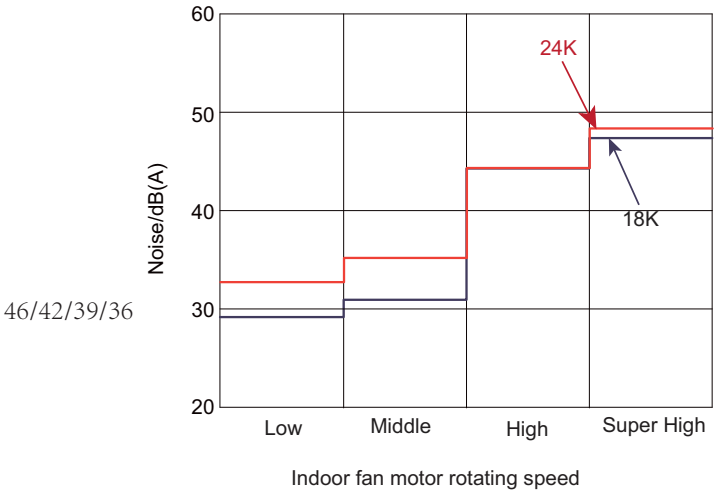
Indoor side noise when blowing



Outdoor side noise when blowing

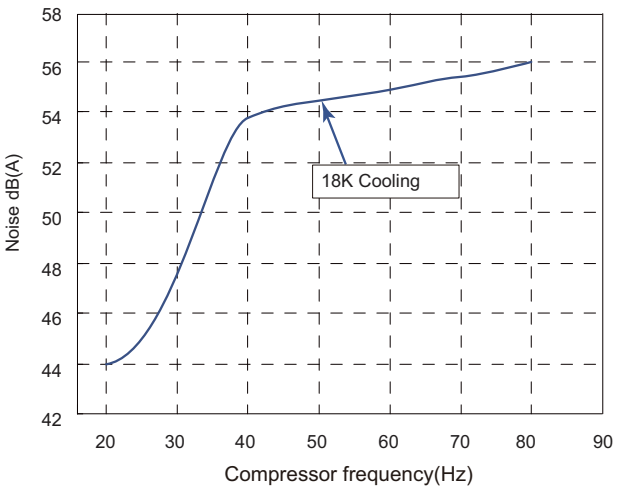


Indoor side noise when blowing



46/42/39/36

Outdoor side noise when blowing

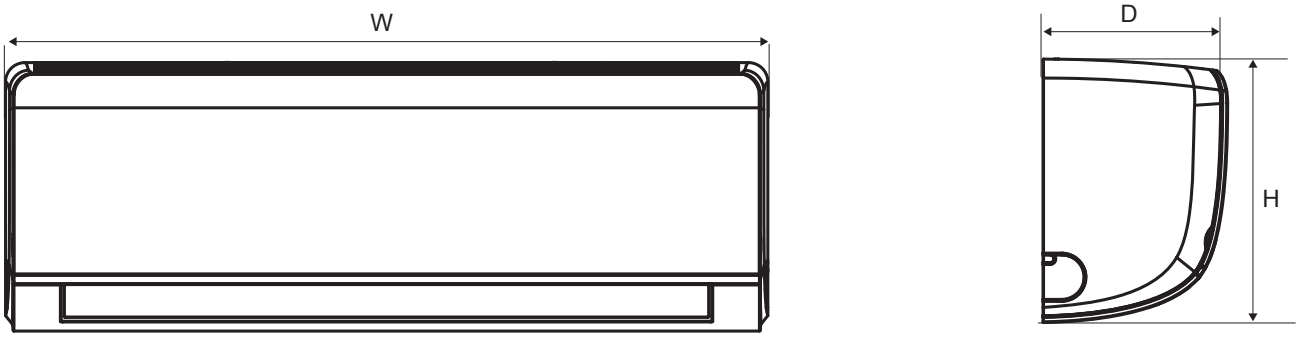


3. Construction Views

3.1 Indoor Unit

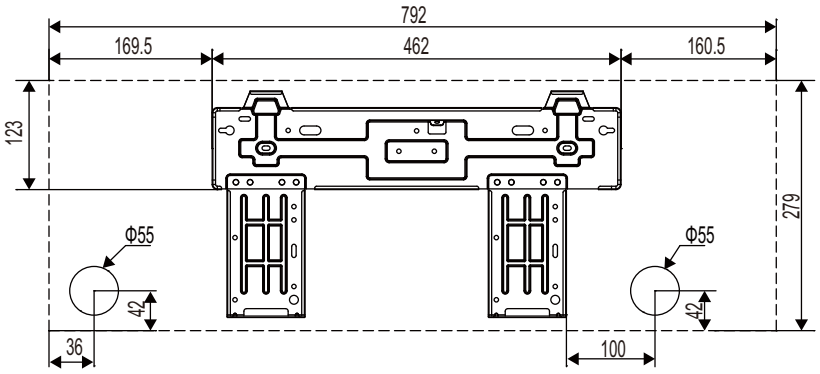
Unit:mm

HRP-S09WH(I) HRP-S12WH(I) HRP-S18WH(I) HRP-S24WH(I)

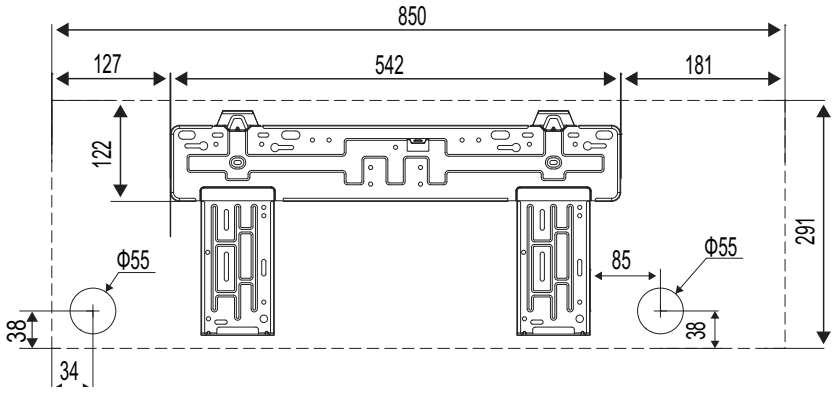


Model	W(mm)	H(mm)	D(mm)
09K	792	279	195
12K	850	291	203
18K	972	302	224
24K	1081	327	248

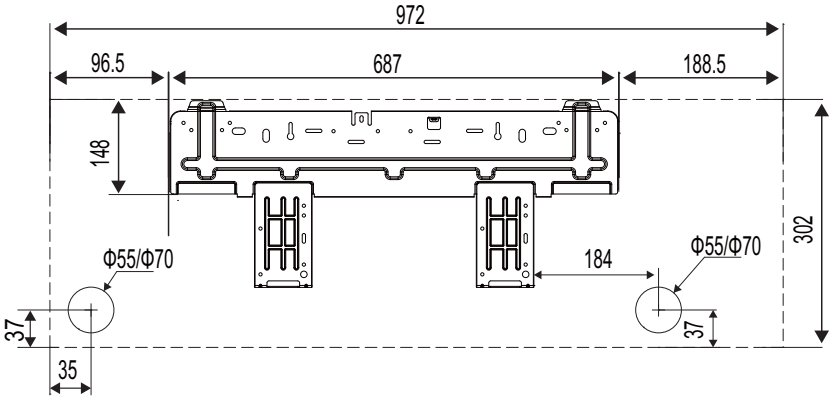
07K/09K



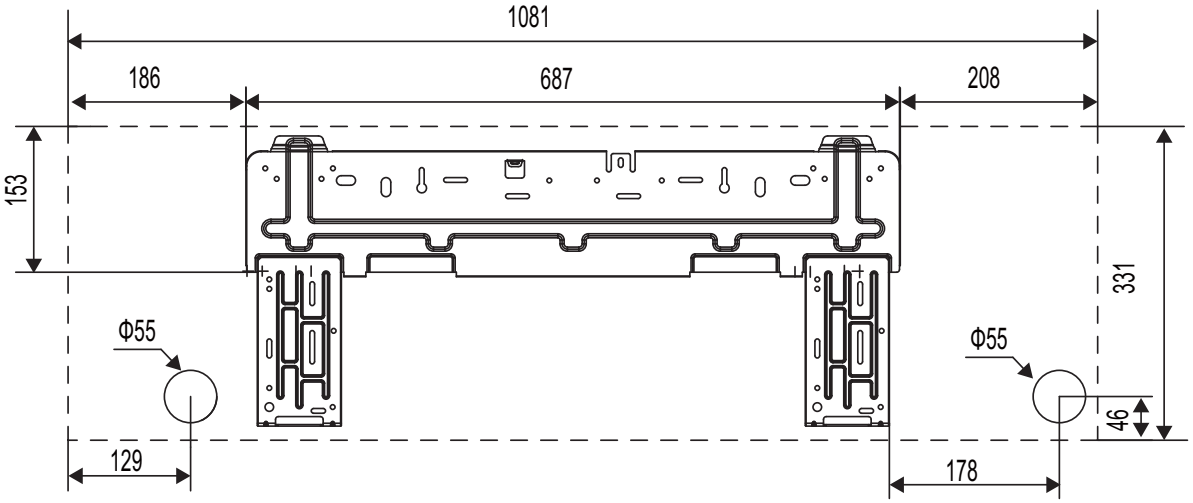
12K



18K



24K

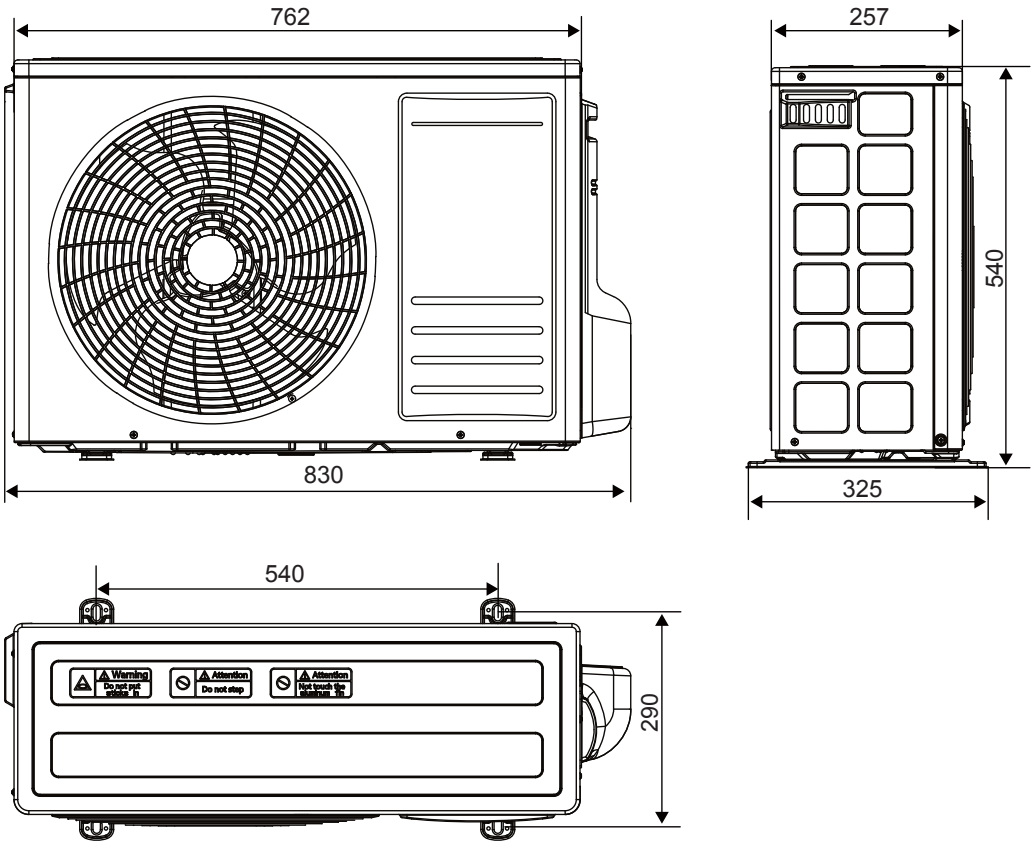


Unit:mm

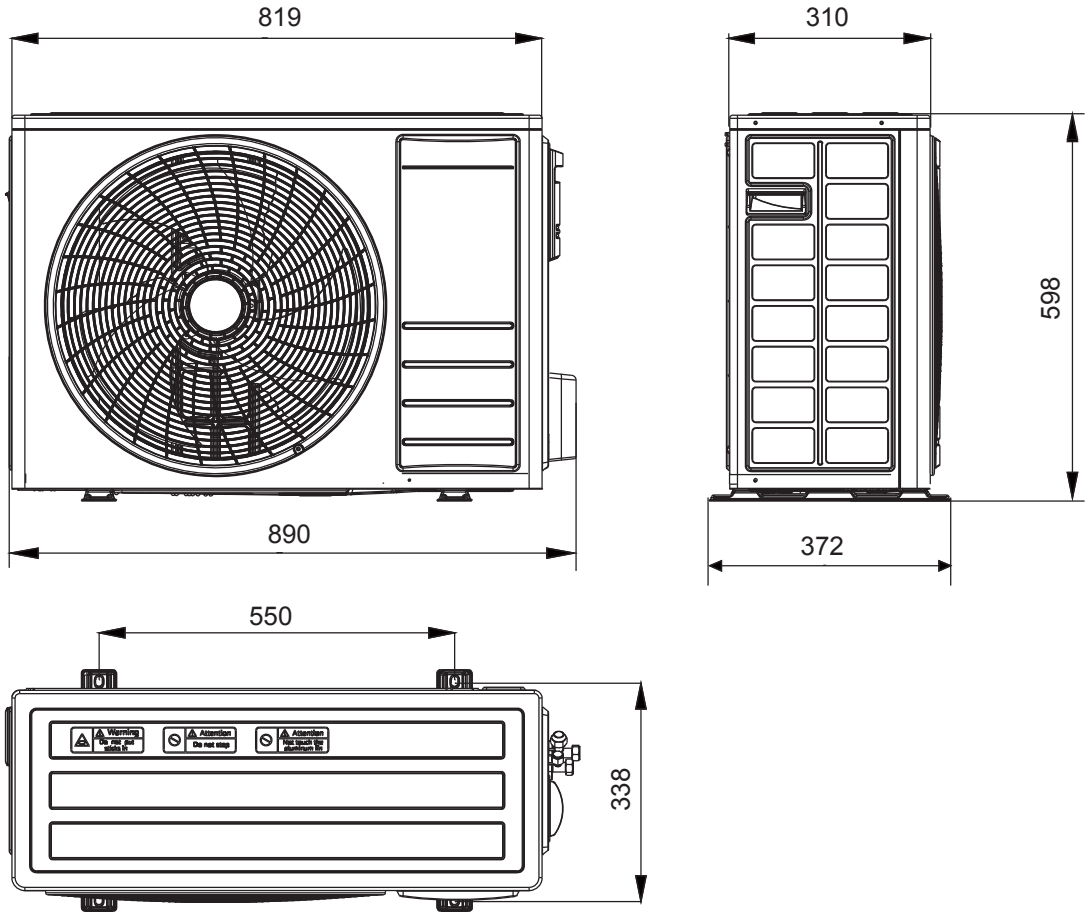
3.2 Outdoor Unit

Unit:mm

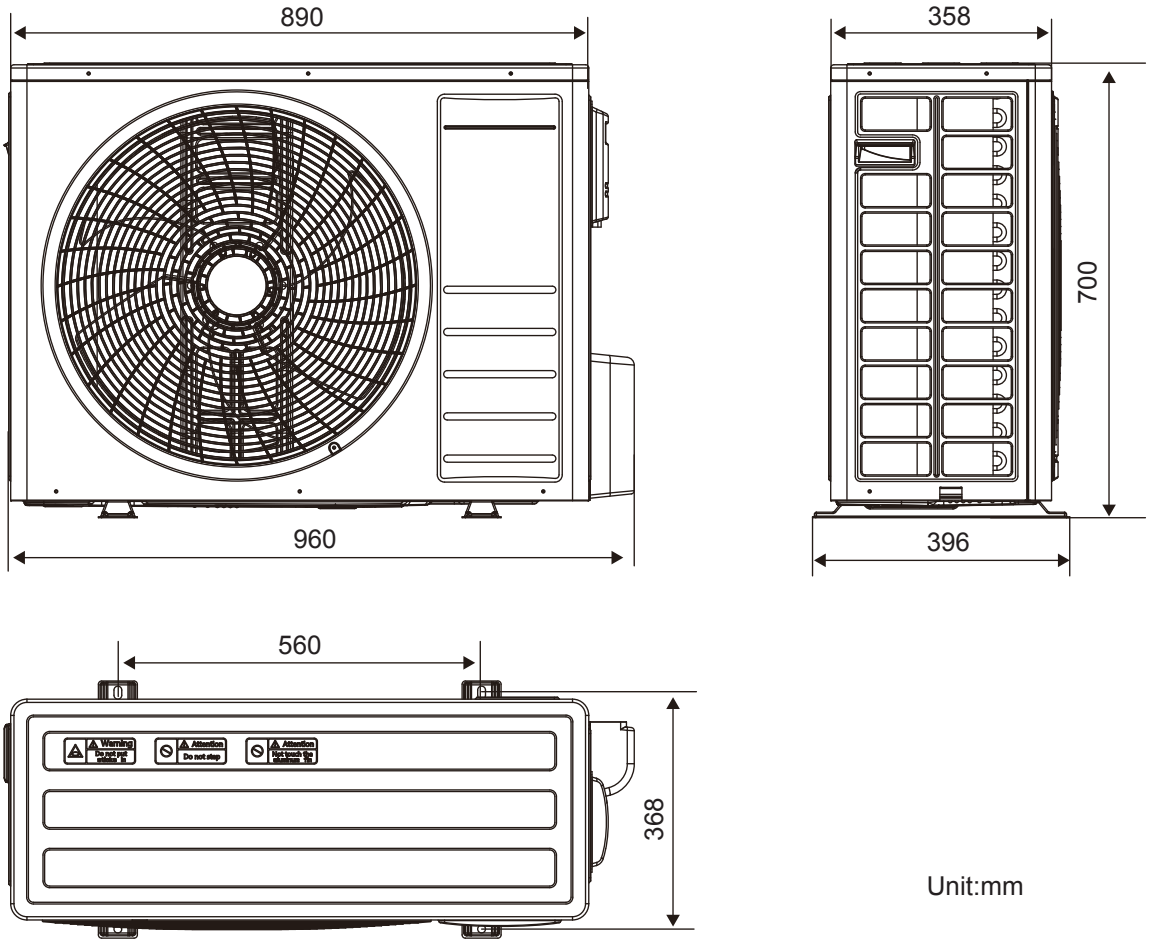
09K/12K



18K



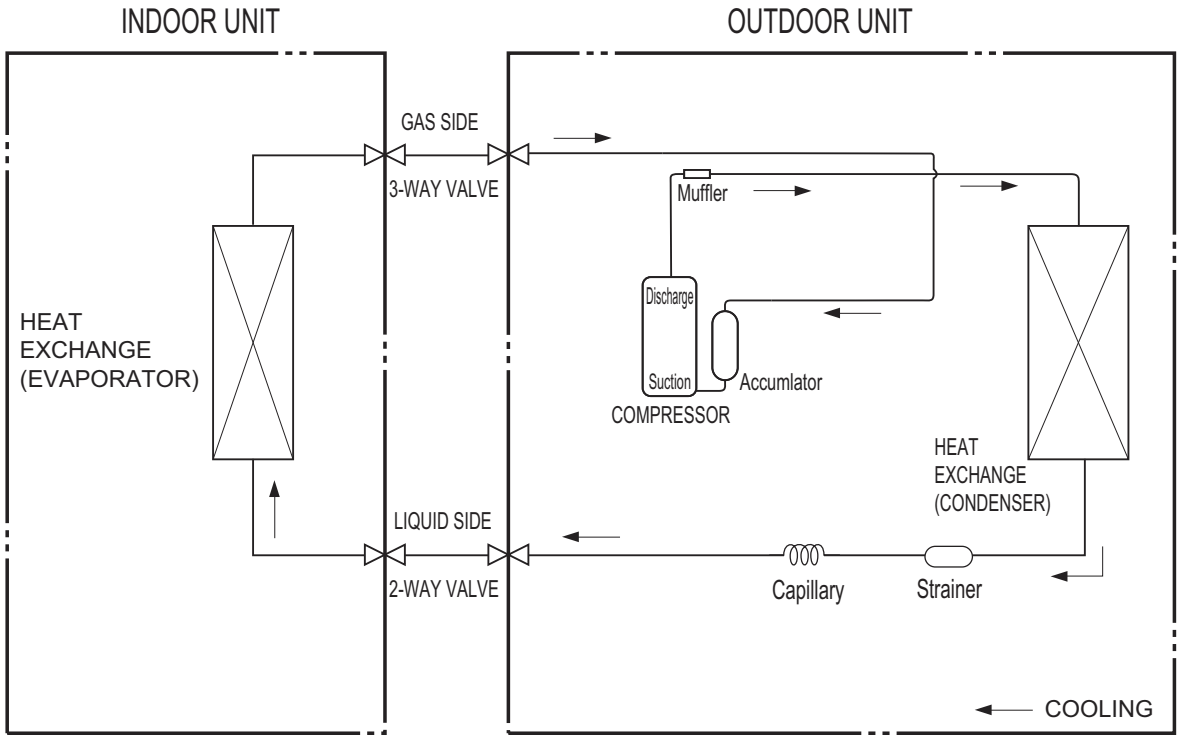
24K



Unit:mm

4. Refrigerant System Diagram

Cooling



Refrigerant pipe diameter
Liquid :1/4" (6 mm) Gas : 1/2" (12mm)

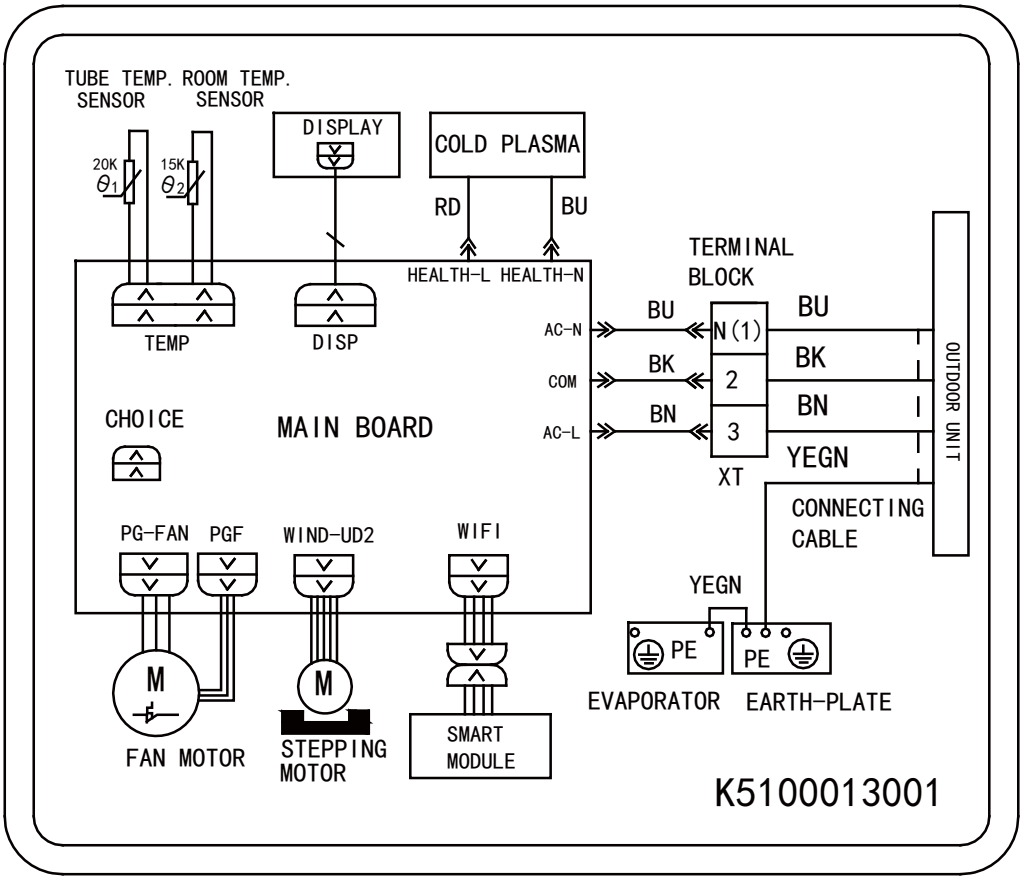
5. Schematic Diagram

5.1 Electrical Wiring

Meaning of marks

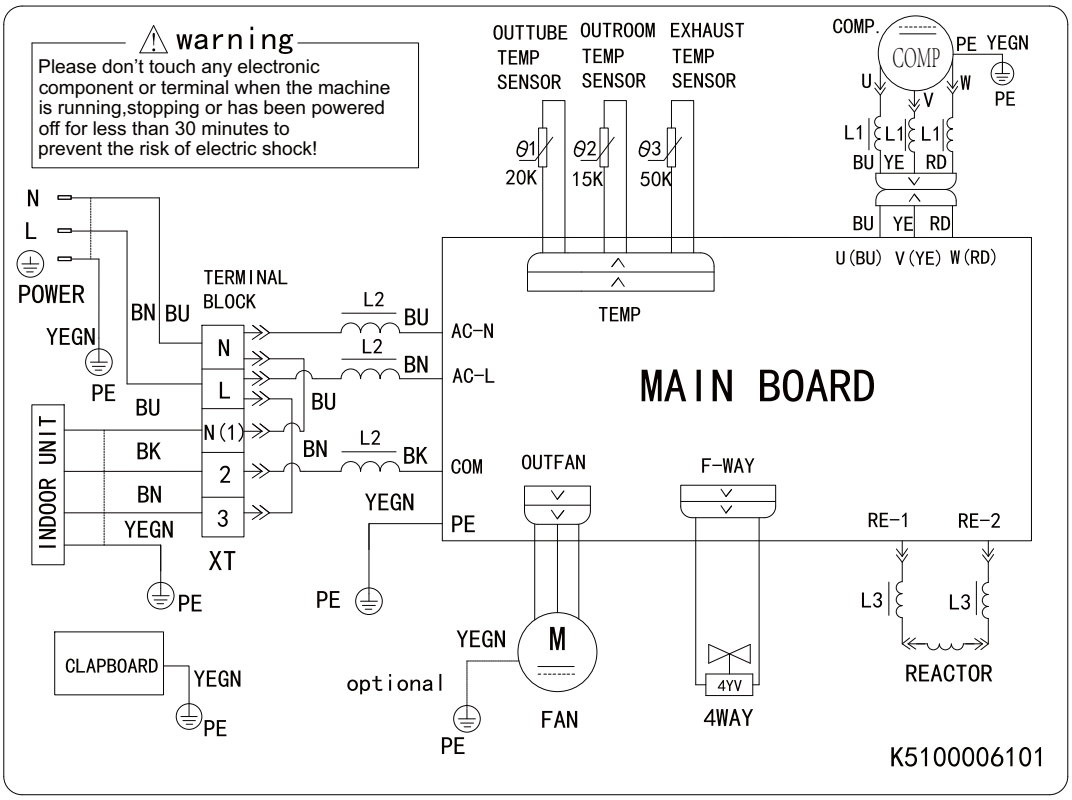
Symbol	OG	WH	YE	RD	YEGN	BN	BU	BK	VT
Color symbol	ORANGE	WHITE	YELLOW	RED	YELLOW GREEN	BROWN	BLUE	BLACK	VIOLET
Symbol	COMP		CT1,2		4V	XT		⏚	
Parts name	COMPRESSOR		OVERLOAD		4-WAY VALVE	TERMINAL BLOCK		PROTECTIVE EARTH	

Indoor Unit



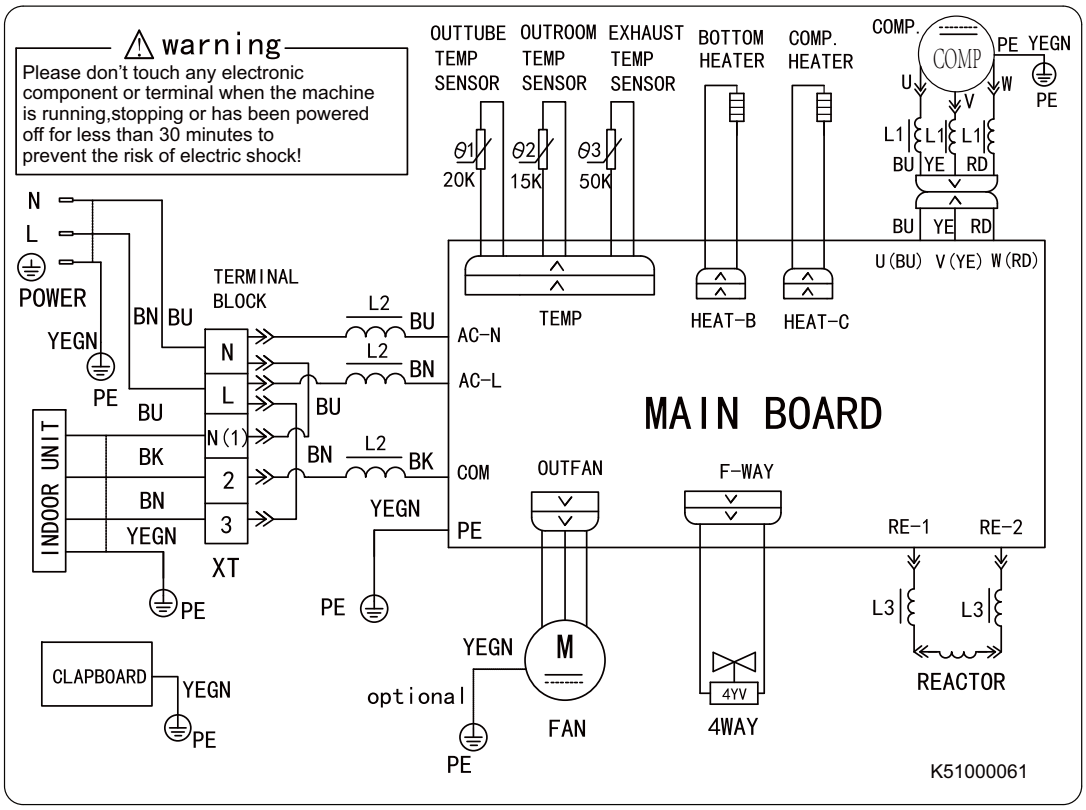
Outdoor Unit

09K/12K:

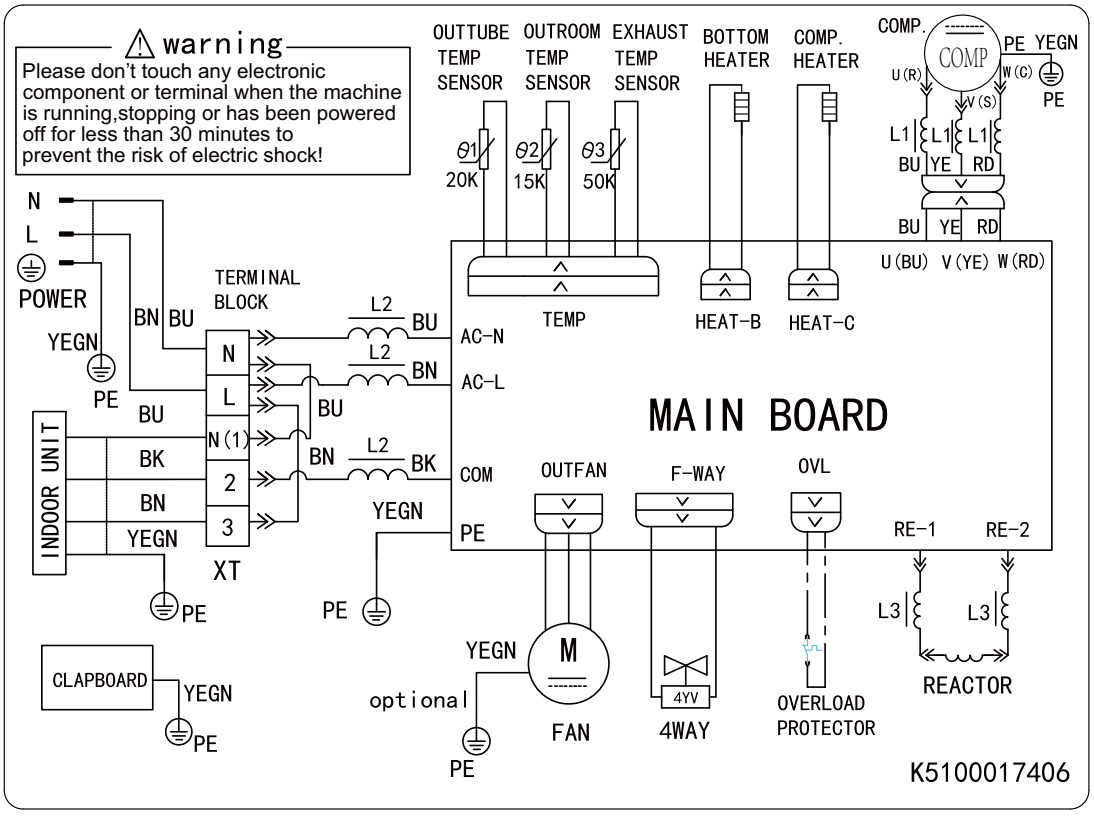


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

18K:



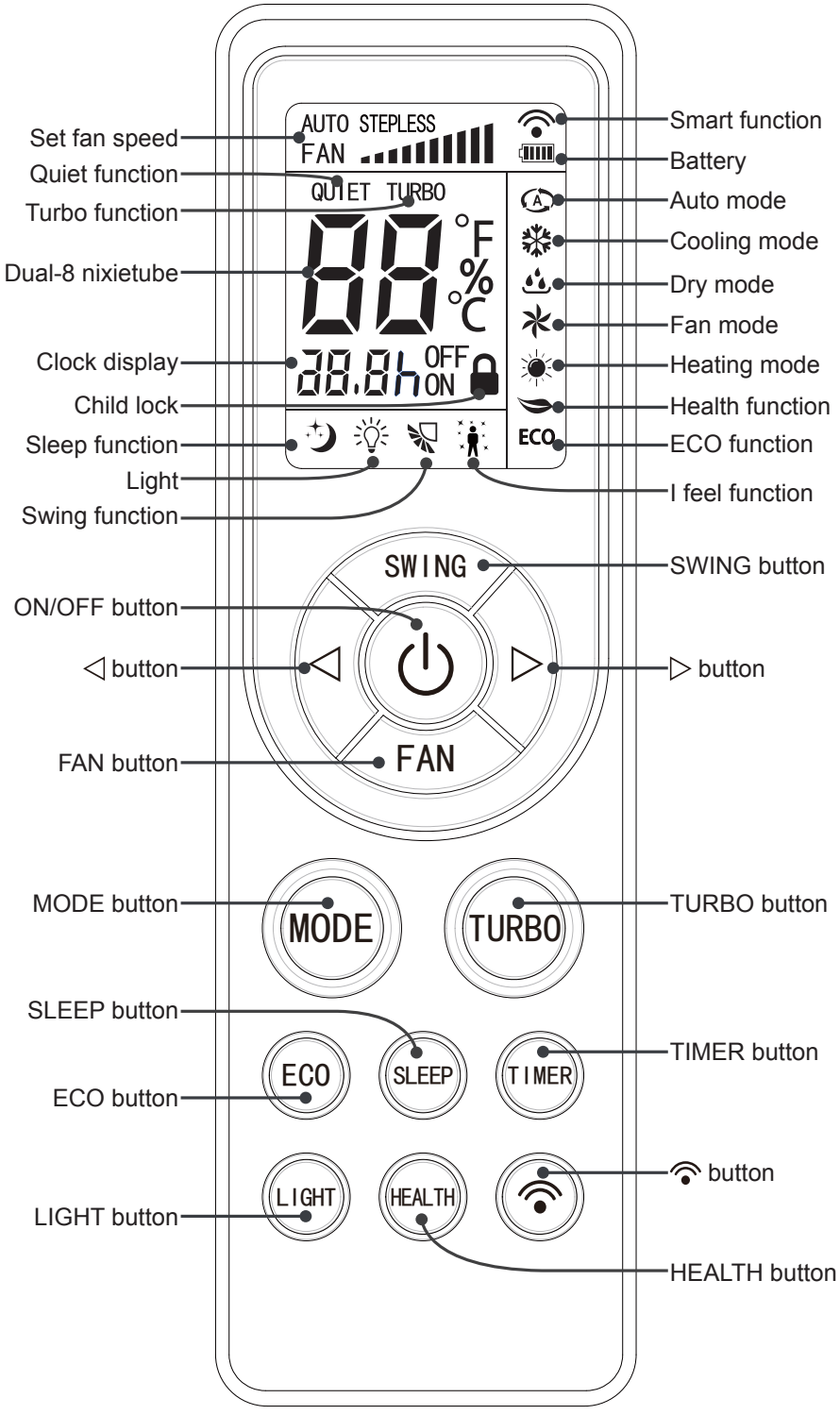
24K:



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

6. Function and Control

6.1 Remote Control Operations



After connecting the power, the air conditioner will make a sound.
Power indicator is ON. After that, you can operate the air conditioner by using remote controller.
Under on status, pressing the button on the remote controller, the signal icon " "on the display of remote controller will blink once and the air conditioner will give out a “de” sound, which means the signal has been sent to the air conditioner.The display will show the corresponding set function icons.
Under off status, light and clock icon will be displayed on the display of remote controller (If timer on, timer off and light functions are set, the corresponding icons will be displayed on the display of remote controller at the same time).

ON/OFF button

Press this button can turn on or turn off the air conditioner.

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. Setting temperature can't be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed. Press "SWING" button turn on or turn off the swing function.
- When selecting cool mode, air conditioner will operate under cooling mode. Press " ◁ " or " ▷ " button to adjust setting temperature. Press "FAN" button to adjust fan speed. Press "SWING" button to turn on or turn off the swing function.
- When selecting dry mode, the air conditioner will operate in fan1, fan speed can't be adjusted. Press "SWING" button to turn on or turn off the swing function.
- When selecting fan mode, the air conditioner will only blow, no cooling and no heating. Press "FAN" button to adjust fan speed. Press "SWING" button to turn on or turn off the swing function.
- When selecting heat mode, the air conditioner will operate in heating mode. Press " ◁ " or " ▷ " button to adjust setting temperature. Press "FAN" button to adjust fan speed. Press "SWING" button to turn on or turn off the swing function. (Cooling only unit won't receive heat mode signal. If setting heating mode with remote controller, press ON/OFF button can't start up the unit).

Note:

- To 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).
- Seting temperature range from remote controller: 16~31°C; Fan speed: auto, quiet, fan1, fan2, fan3, fan4, fan5, stepless speed.

◁ and ▷ button

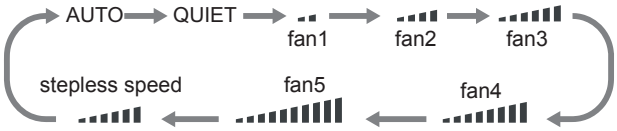
Press " ◁ " or " ▷ " button once to increase or decrease 1℃ of temperature. Holding " ◁ " or " ▷ " button, temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly. (Temperature can't be adjusted under auto mode)
When setting TIMER ON, TIMER OFF, press " ◁ " or " ▷ " button to adjust time.(Refer to " TIMER " button)

SWING button

Press this button can turn on or turn off the swing function. When swing function is on, " " icon is displayed on remote controller.

FAN button

Pressing this button can set fan speed circularly as: auto (AUTO), quiet(QUIET), fan1( ), fan2 ( ) , fan3 ( ) , fan4 ( ), fan5 ( ), stepless speed.



Note:

- In AUTO speed, air conditioner will select proper fan speed automatically according to ambient temperature.
- Fan speed under dry mode is fan1.
- No quiet fan speed under FAN mode.
- After entering the stepless speed function, users can adjust the fan speed according to the button " ◁ " or " ▷ ".

TURBO button

Press this button to turn on or turn off the turbo function in cool、heat、fan mode. When turbo function is on, " TURBO " icon is displayed on remote controller.

Note:

- Press "FAN" button the unit will quit this function.
- This function is no use in auto mode or dry mode.
- When start turbo function, quiet fan speed will quit automatically.

ECO button

In cool mode, press this button can turn on or turn off the ECO function. When ECO function is on, " ECO " icon is displayed on remote controller.

Note:

- Air conditioner will operate at auto speed. Set temperature can't be adjusted.
- Under cool mode, sleep function can not work with ECO function together at the same time.
- Change mode will exit the ECO function.
- No turbo function under ECO condition.

SLEEP button

Press this button to turn on or turn off the Sleep function under cool, heat, dry mode. When Sleep function is on, " " icon is displayed on remote controller.

Note:

- This function is off as defaulted after power on.
- It will be cleared after changing mode.
- It is no use under "Fan" mode and "Auto" mode.

TIMER button

This button can set the time for timer on(timer off). After pressing this button, " " icon displayed and " (^{OFF}) " icon blinking. Press " ◁ " or " ▷ " button within 5s to set timer on
(timer off) time. Each pressing of " ◁ " or " ▷ " button, the time will increase or decrease 0.5 hour. Hold " ◁ " or " ▷ " button, the time will change quickly until reaching your required time. Press "TIMER" button to confirm it. The icon " (^{OFF}) " will stop blinking.

Cancel Timer on (off)

In the condition of timer on (off) is started up, press "TIMER" button to cancel it.

Note:

- Time set range 0.5~24hours, time scale is 0.5 hours.
- Timing of the initital set hour is 0.0 hour.

LIGHT button

Press this button can turn on or turn off the light for indoor unit's display. When light function is on, " " icon is displayed on remote controller.

HEALTH button

Press this button to turn on or turn off the health function. When health function is on, " " icon is displayed on remote controller.

Note: This function is not available for some models.

button

Press this button to turn on or turn off the SMART function. When SMART function is on, " " icon is displayed on remote controller. For more details, please see nextpage for Smart APP User Guide.

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, the " " icon will blink three times without sending signal to the unit.

Force defrost

In the heating mode, press "FAN" and "MODE" buttons together for 3s would start or cancel the Force defrost.

Low temperature heating function setting

- In heating mode, pressing "MODE" and " ▷ " button at the same time will enter/exit the low temperature heating function.
- " LA " would be showed on the remote controller after entered into the low temperature heating funtion.
- When switching from one mode to another mode, low temperature heating function was canceled. Turn off and then turn on air conditioner that will remain the low temperature heating function. After powered on, the low temperature heating mode was default to off status.
- In the low temperature heating function, "Sleep" and "Low temperature heating" function cannot start at the same time. When low temperature heating function has already started, meanwhile you press the "SLEEP" button, the air conditioner will exit low temperature heating mode and enter the sleep mode. Vice versa.

Note:

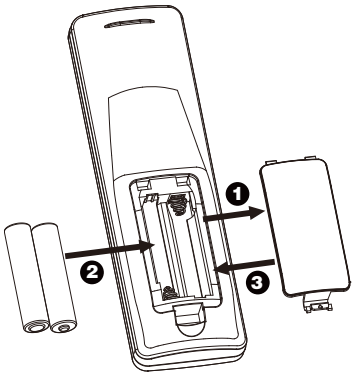
1. In the low temperature heating function, the fan speed was default to Auto and non-ajusatable.
2. In the low temperature heating function, Turbo function can't be set. If enter the low temperature heating function, the turbo and quiet function that started before will be canceled. As well as when exit the low temperature heating function, it will resume .
3. When exit from the low temperature heating function, the speed and temperature will turn into the original condition before it started.
4. You can set up other function.

Installation batteries

1. Press the back side of remote controller marked with " ", as shown in the fig, and then push out the cover of battery box along the arrow direction.

2. Installation two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar are correct.

3. Reinstall the cover of battery box.



Operation guide

1. After connecting the power, press " ⏻ " button on remote controller to turn on the air conditioner.

2. Press "MODE" button to select your required mode: Auto, Cool, Dry, Fan, Heat.

3. Press " ◁ " or " ▷ " button to set your required temperature. (Temperature can't be adjusted under auto mode).

4. Press "FAN" button to set your required fan speed: auto , quiet , fan1, fan2 , fan3 , fan4 , fan5 , stepless speed.

5. Press "SWING" button to turn on or turn off the swing function.

NOTE:

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

6.2 Smart APP User Guide

1.Download the Hyundai Smart Air Conditioner Application(Referrer to as APP hereinafter) Search "Easy Home AMS" to download Andriod version APP from Google Play and search "Easy Home AMS" to download IOS version APP from App Store.

2.Product Introduction

Easy Home air conditioner is functioning based on the built-in smart module M11T through the Wi-Fi network, that the mobile phones or other mobile devices can be connected to the Easy Home air conditioner to monitor and control the air conditioning status after installing the Easy Home AMS APP.

3. Parameter of Smart Module M11T

Model	M11T
Transmitting Frequency	2.4G
Power Supply	5V~18V
Operating Temperature	-20℃ ~85℃
Operating humidity	20%-80%RH

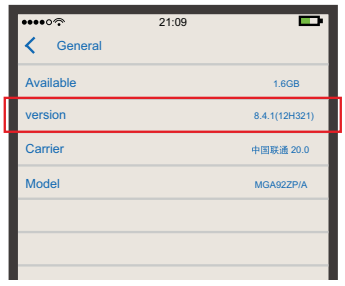
4.Precautions for Use

- Please ensure both air conditioner and mobile phone connect to the same Wi-Fi hot pot when configure.
- Air conditioners can only be controlled by APP when connecting to the same routher as mobile phone.

- Supported Devices

  Android phone/tablet：(Requires Android 4.4 or later version.) Turn on your phone →Settings → About device→Check the Android version;

  iOS (iPhone/iPad/iPod Touch)：(Requires iOS7.0 or later version.)Turn on your iPhone → Settings → General→ About → Check the current version;

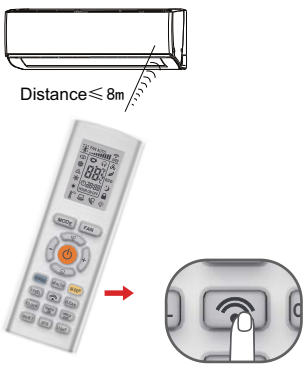


- This APP support wireless router with WPA/WPA2 connected encryption or no password. 5G wireless router is temporarily not supported.

5.Add Air Conditioner

- Please find the operating steps and method about download APP in Chapter 1 for detail.
- Add Air Conditioner.
- Complete the following steps to register for Android system:
- Smart Module configuration:

  Connect the mobile phone with wireless router, Turn on the power of the air conditioner, press " " button of the remote controller to start the Wi-Fi configuration.



- **Press “add Air Conditioner” in the APP, chose “No/ Don’t know” if it is the first start.**

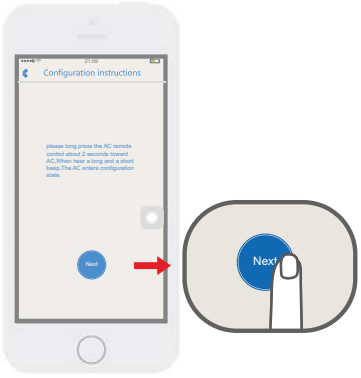
- **Please follow the instruction in Chapter 6, point 1 To add air conditioner, if it has been connected to Wi-Fi hotspot.**

- Follow the interface instruction, long press the “ ” button of the remote controller for 2 seconds, the AC will enter configuration mode if the following three phenomena appear at the same time:

◆ After long beep sound from air conditioner, and there will be another short beep sound.

◆ Air conditioner will display“A2”for 3 seconds.

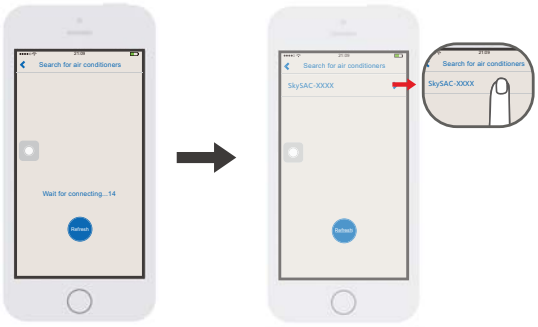
◆ The Wi-Fi indication light will flash once every second on air conditioner panel.



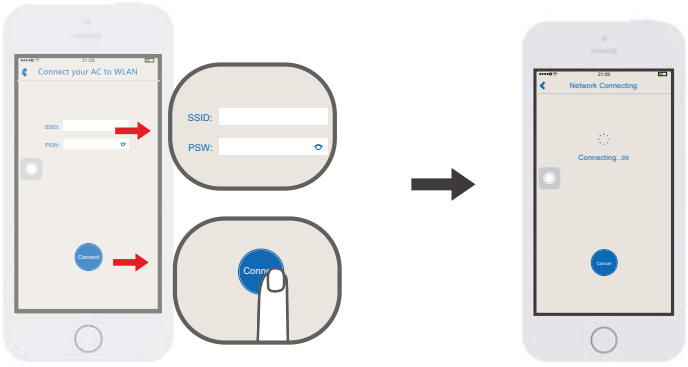
- Waiting for APP automatically search for configure the Air conditioner

Click to choose air conditioner on the list.

Notice:
Air conditioner hotspot name and password can be find at the left corner of the indoor unit. Hot spot Name: SkySAC _XXXX
Hot spot Password: 88888888



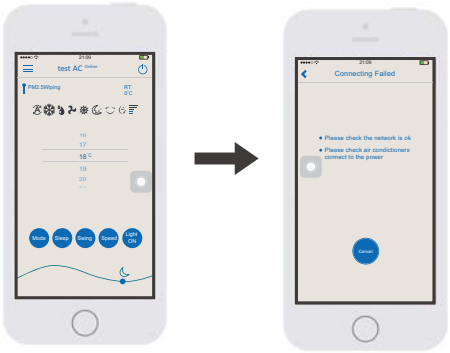
- Choose the Wi-Fi network ,type in the password and press “connect” to connect.Two beep sound from air conditioner indicates the connection is successful. Air conditioner panel will display “A3” for 3 seconds, the APP will enter operation interface at the same time.



● **The APP will remind after the connection failure.Please check the APP failure by the instruction.**

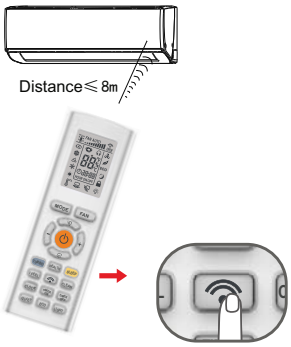
Notice:

- ◆ **Support WPA/WPA2 wireless router connected encryption.**
- ◆ **5G wireless router is not supported.**
- ◆ **The password should limit in 8-32 characters or without password.**

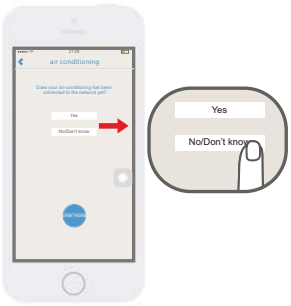


● Complete the following steps to register for iOS system:

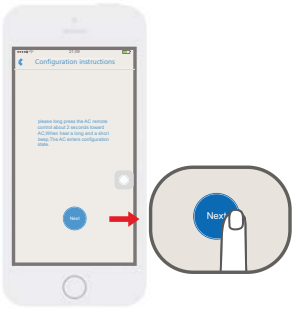
● Smart Module configuration: Connect the mobile phone with wireless router, turn on the power of the air conditioner, press “ ” button of the remote controller to start the Wi-Fi configuration.



● Press “add Air Conditioner” in the APP, chose “No/ Don’t know” if it is the first start. Please follow the instruction in Chapter 6, point 1 To add air conditioner, if it has been connected to Wi-Fi hotspot.



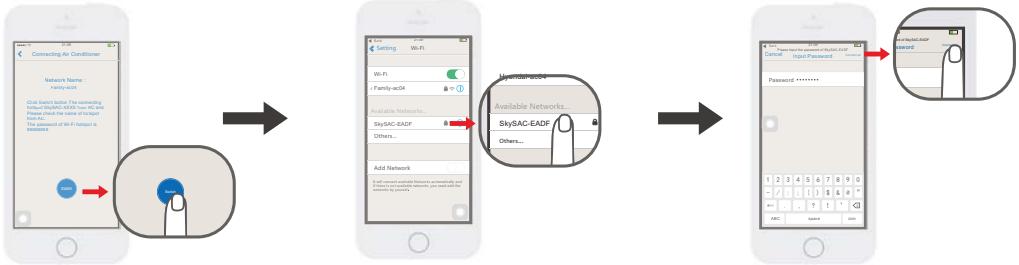
● Follow the interface instruction, long press the “ ” button of the remote controller for 2 seconds,Then after long beep and short beep, hotspot SkySAC_XXXX will appear for configuration from AC.The last 4 digits of hotspot name from 0-9 number and A-F English letters composition ,the AC will enter configuration status,the AC will enter configuration mode if the followingthree phenomena appear at the same time:



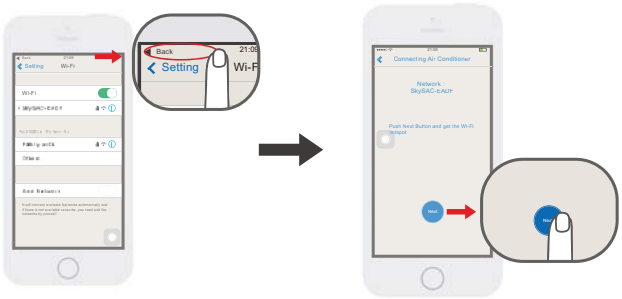
● Change the button to switch

● Choose network name SkySAC _XXXX ,Enter the Password: 88888888

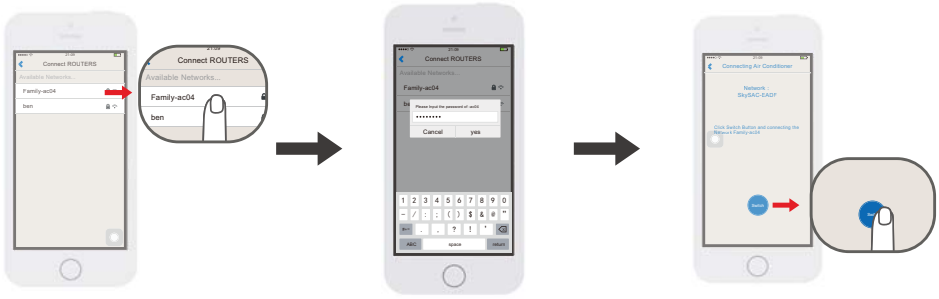
● Join the network.



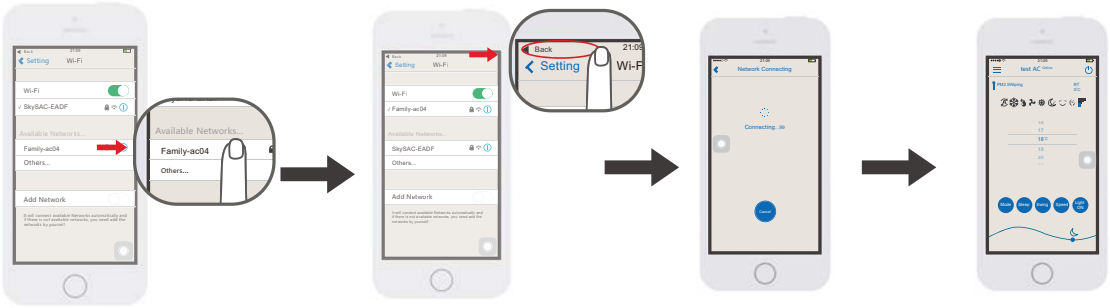
- **Press the back return to APP.**
- **Press："Next Step".**



- Choose the network and type in the password.



- Click to change network.
- Press "Back " return to Hyundai Smart Air Conditioner APP.
- Waiting for the configuration to success.
- After connect successful,it will enter the main interface.

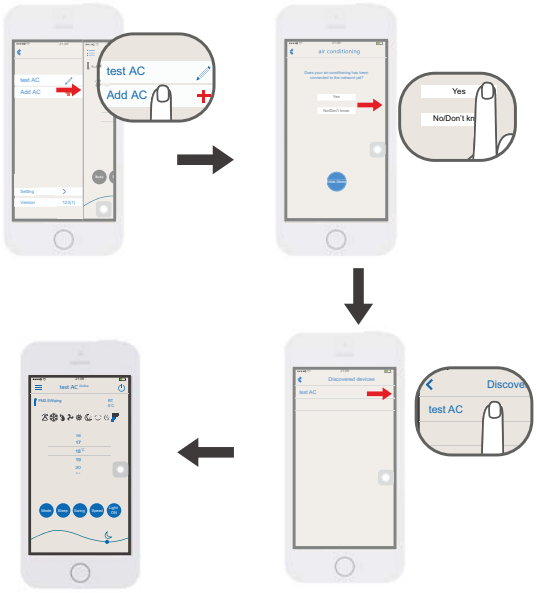


Notice：

This user guide with aim of Family_ac04 as the AC connecting network. When user operating the AC at home, please replace the Family_ac04 to actual Wi-Fi Name from your house.

6.Search the air conditioner in Wireless Local Area Network (WLAN)

- If the air conditioner has already connected to the WLAN, a new mobile phone users that connected with same WLAN can search the air conditioner through the APP. Enter the APP and select "Add AC" from the menu, and enter the page as shown in figure.Click "Yes", the APP will automatically search for the air-conditioner under same WLAN. If the AC is successfully located, it will automatically enter the control interface.



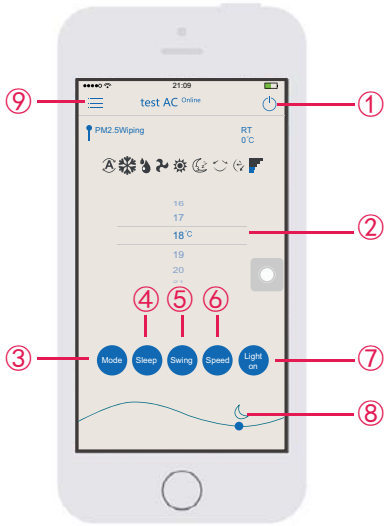
Notice:

If the AC is controlled only within the WLAN (without connected to Internet), up to two mobile devices can be supported at the same time. If the AC controlled through the WLAN with Internet or 3G/4G cellular network, it does not limit the numbers of mobile devices.

7.Operation Notice

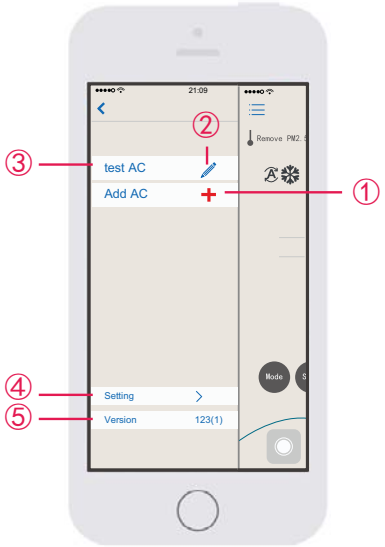
● Main Control Interface

① Power button: Turn on/off the air conditioner.
② Temperature zone: Slide up and down to set temperature
③ Mode button: Press to set the mode such as Cooling, Auto or Heating.
④ Sleep button: Press to enter the sleep mode.
⑤ Swing button: Press to switch the swing status.
⑥ Fan speed button: Press to switch the fan speed.
⑦ Light ON/OFF：Click to switch the Light state.
⑧ The moon icon on the right side shows the evening,when it move to left side will show sun icon for the day.
⑨ Menu button: Press to display other added AC list and add new AC.



● Menu Content

① Add Air Conditioner: See Chapter 5 “add Air Conditioner”.
② Modify the name: Click the icon to rename for Air Conditioner.
③ Long press added AC to delete on Android APP Slide left for delete on iOS APP to delete Air Conditioner
④ Setting: You can set the Air Conditioner auxiliary function, upgrade the Smart module APP and so on.
⑤ Latest Version: Current APP version information



8.Problems and Solutions

● Requirement for use

◆ Wireless Router for Wi-Fi function

◆ Android 4.4 or later version or iOS7.0 or later version iPhone.

Notice:

Please connect the router to the Internet when it required.

● Diagram of communication

The path of communication between mobile phone and air conditioner:

A.When the mobile phone and smart air conditioner connected to the same wireless router, the connection is as shown in Figure 8.1 to achieve the connection.

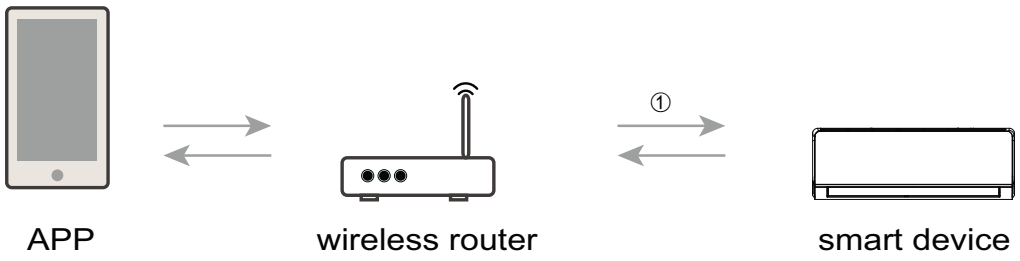


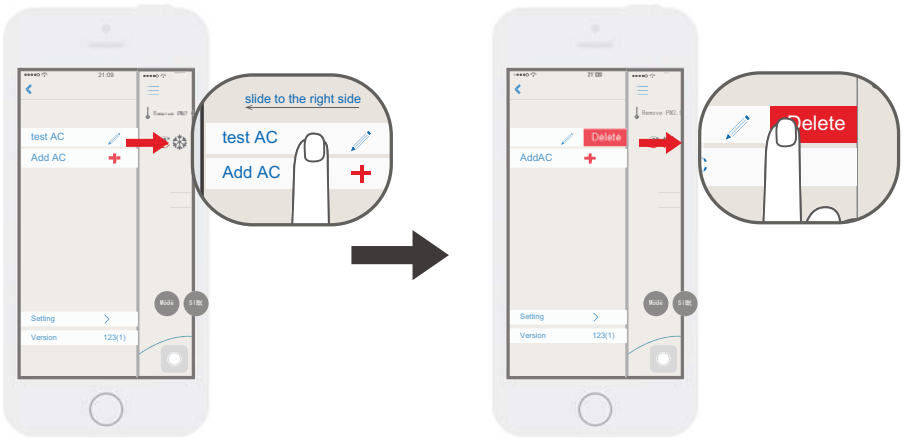
Figure 8.1

When the mobile phone and air conditioner connected to the same wireless router, it is as shown in Figure 8.1 to achieve the connection.

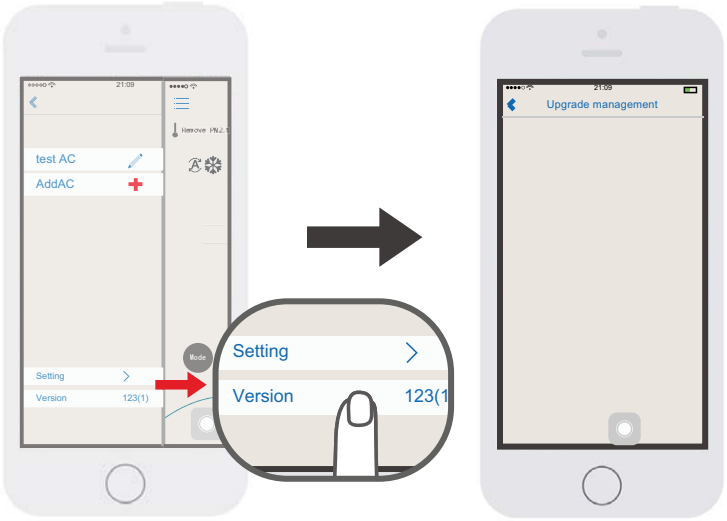
● How to add air conditioner on APP

Please find the operating steps and method about add air conditioner in Chapter 5 or 6 for detail.

● How to delete the air conditioner on APP



● APP software upgrading methodPress current version in menu, enter the version update and description page, and choose to upgrade the APP according to the content page.



● Air Conditioner Wi-Fi indication light quick blinking (Blink once every 1 second)

The Wi-Fi module is being configured,see point 5 for more details.

● Air Conditioner Wi-Fi indication light slow blinking (Blink once every 10 second)

◆ When the Wi-Fi indication light blinking once every 10 second, the communication connect ① or ② in Figure 8.1 is failure.

◆ Please check whether the router and network are normal and the password is correct.It is recommended that you use a mobile phone to connect the router, to determine whether it can be connected to the Internet. Please add air conditioner again if the router is normal.

◆ If you confirm the connection of router's SSID & password are correct, the air conditioner and mobile phone are all proper functioning, please re-start the air conditioner after power cut, re-start the router, re-start APP from the phone to try to connect again.

● Air conditioning has been keeping failed

A: Does not support 5G router, support WPA/WPA2 wireless router connected encryption only.

B: Too much connection, please restart the router.

● Air conditioner is offline

Please check whether the air conditioner is connected to the power supply, the router network is normal. If the network signal is normal, may need to wait for a period of time.

- **APP abnormally quit**

◆ Please verify that the iPhone system version is iOS7.0 or later and Android phone system version is 4.4 or later.
◆ If the version meets the requirements, but the problem still happens, please contact us for further through assistance.

- **Meaning of the Wi-Fi indication light**

◆ **When the indication light on:**
① **Turn on the Wi-Fi function, Wi-Fi indication light will be on, turn off the Wi-Fi function, Wi-Fi indication light gets off.**
② **When enter quick configuration function,Wi-Fi indication light blinks (3s to 0.1s),after succeed, the Wi-Fi indication light stop blinking, Wi-Fi indication lights will be all on.**
③ **When Wi-Fi module and the Internet is disconnected, Wi-Fi indication lights will blink once every 10s (bright 10s off 0.1s).**
◆ **When the indication light is turned off:**
Wi-Fi light gets off, the Wi-Fi function can still be controlled.

- **What is the applicable range for HYUNDAI Air Conditioner Wi-Fi module?**

This module is only applicable to HYUNDAI Air conditioner.

- **Disconnected frequently**

◆ **Please check if there are more than 2 sets of mobile devices connected via the same Wi-Fi router to control the air conditioner.**
◆ **Please check whether the network environment is complicate and network connection quality is good.**
◆ **If the network environment is complicated, the network communication speed is very slow, it is easy to occur the delay or unable operation.**

- **Problem Feedback**

Please connect with us if any problem happen during using the air conditioner and the APP. Your constructive comments can help us to improve our products and service.
Our Email: info@hyundai-hvac.pl

6.3 Description of Each Control Operation

1. The mainboard design with below function

(1) Auto (2) Cooling (3) Dehumidifying (4) Air fan (5) Heating

2. Control

Indoor fan(Quiet、speed 1、speed 2、speed 3、speed 4、speed 5、Turbo), left and right louver, up and down louver, buzzer,display, outdoor electric heater(option), outdoor power, healthy(option).

3. Basis control function

Cooling mode

(1) Setting Temp 16-31 degree,the indoor fan and louver run as the original mode.
(2) The indoor will run as original mode if the outdoor does not work,and the indoor will show error code.

Fan

(1) Setting Temp 16-31 degree,the indoor fan and louver run as the original mode.
(2) The indoor will run as original mode if the outdoor does not work,and the indoor will show error code.

Heating mode

(1) Setting temperature range 16-31 degree.
(2) It will in anti-cold air first when unit run in heating mode,and then heating.It will blow hot air after unit is off.
(3) Indoor power light blink and then indoor fan stop after unit entering defrost mode.
(4) Indoor blow hot air one minute if outdoor is malfunction.
(5) Indoor blow hot air 10 minutes after turn off unit when indoor fan is running.

4. Auto mode

(1) When environment temperature is equal or above 26 degree,and setting the cooling mode,the setting temperature will reach 25 degree.
(2)When the environment temperature i is equal or below 19 degree plus additional temperature,it will run in heating mode,and the setting temperature reach 20 degree at that time.
(3) When 1(9 degree +additional temperature,)<environment temperature<26 degree.It will run in airfan mode if it is the first time entering auto mode.It will run in original mode if it change from cooling and heating mode.If original mode is dehumidifying,it will be in airfan after change into auto mode.

5. Protect

(1)Anti cold air

The louver will be in horizontal level when evaporator temperature is too low,and indoor fan does not work or run in low speed.

(2)Blow hot air

Indoor will run in few minutes before turn off when turn off in heating or indoor temperature above environment temperature.

(3)Sensor malfunction

If the environment sensor or pipe sensor AD is above or equal 250 5s continually or the environment sensor or pipe sensor AD is below 5 when the unit is on ,it means sensor malfunction.

(4)Motor blockage

When mainboard can not find the indoor fan speed continually,or motor fan run in low speed continually, compressor outdoor fan,indoor fan and louver stop running.Indoor will show error code.

(5)Jumper malfunction

Un-install the jumper

(6)Communication malfunction

When the unit is running except for airfan mode,outdoor and indoor can not communicate 3 minutes.It will show error code.

(7)Defrost

When outdoor condensing defrost,it will start defrost mode.

(8)Manually Defrost

Press the "FAN" and "MODE" 3s at the same time in heating mode,it will enter or exit the manually defrost,and indoor will buzz.

6. Other Function

(1) Auto button

when you press this button,it will enter auto mode,indoor motor in auto fan speed,Indoor fan run and louver motor stop. Press the auto button,unit will be off.

(2) Filter cleaning

Indoor motor fan run 600 hours ,unit will show b3 to notice filter cleaning.The b3 is off after turn off unit

(3) Health

Indoor healthy function start when push healthy button.

(4) Dry

Unit will run in cooling 10 min after set up dry function.

(5) Saving energy

Indoor will show in ECO after unit run in energy saving mode.

Air conditioner switch to FAN mode after ECO mode work 4 hours,and turn off after 4 hours under FAN mode.

(6) Low temperature heating

Press "MODE" and "+" button at the same time in heating mode,it will show LA.

(7) Environment temperature

push temperature button,it will show environment temperature 5s and the setting temperature.

(8) Outdoor power

Power on,outdoor power is off.

(9) When unit is on except for fan mode,outdoor power supply input high frequency.

(10) Entering off mode or fan mode,outdoor power is off after 4 minutes.

(11) 1W Standby.

7. Display

(1) Basis display,Power on,it maintain 2s-3s display,and then power light is on.

(2) The running light is on when remote controller turn on unit,and indoor show the running mode.

(3) If turn off the light button,and all display is off.

(4) It displays as original mode after setting sleeping function.

7. Installation Manual

7.1 Notices for Installation

Caution

1.The unit should be installed only by authorized service center according to local or government regulations and in compliance with this manual.
2.Before installing, please contact with local authorized maintenance center. If the unit is not installed by the authorized service center, the malfunction may not be solved due to incovenient contact between the user and the service personnel.
3.When removing the unit to the other place, please firstly contact with the local authorized service center.
4.Warning: Before obtaining access to terminals, all supply circuits must be disconnected.
5.For appliances with type Y attachment, the instructions shall contain the substance of the following. 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.
6.The appliance must be positioned so that the plug is accessible.
7.The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.
8.The instructions shall state the substance of the following:This appliance is not intended for use by persons(including children)with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
Children should be supervised to ensure that they do not play with the appliance.

7.1.1 Installation Site Instructions

Installing the unit in the following places maycause malfunction. If it is unavoidable, please consult the local dealer:
1.The place with strong heat sources,vapors,flammable or explosive gas,or volatile objects spread in the air.
2.The place with high-frequency devices (such as welding machine,medical equipment).
3.The place near coast area.
4.The place with oil or fumes in the air.
5.The place with sulfureted gas.
6.Other places with special circumstances.
7.The appliance shall not be installed in the laundry.

7.1.2 Installation Site of Indoor Unit

1. There should be noobstruction 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 ableto withstand the weight of indoor unit and won't increase noise and vibration.
6. The appliance must be installed 2.5m above fioor.
7. Don't install the indoor unit right above the electric appliance.
8.Please try your best to keep way from fluorescent lamp.

7.1.3 Installation Site of Outdoor Unit

1.Select a location where the noise and out flow 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 the fence for safety purpose.

7.1.4 Safety Precautions for Electric Appliances

1.A dedicated power supply circuit should be used in accordance with local electrical safety regulations.
2.Don't drag the power cord with excessive force.
3.The unit should be reliably earthed and connected to an exclusive earth device by the professionals.
4.The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
5.The minimum distance between the unit and combustive surface is 1.5m.
6.The appliance shall be installed in accordance with national wiring regulations.
7.An all-pole disconnection switch with a contact separation of at least 3mm in all poles should be connected in fixed wiring.

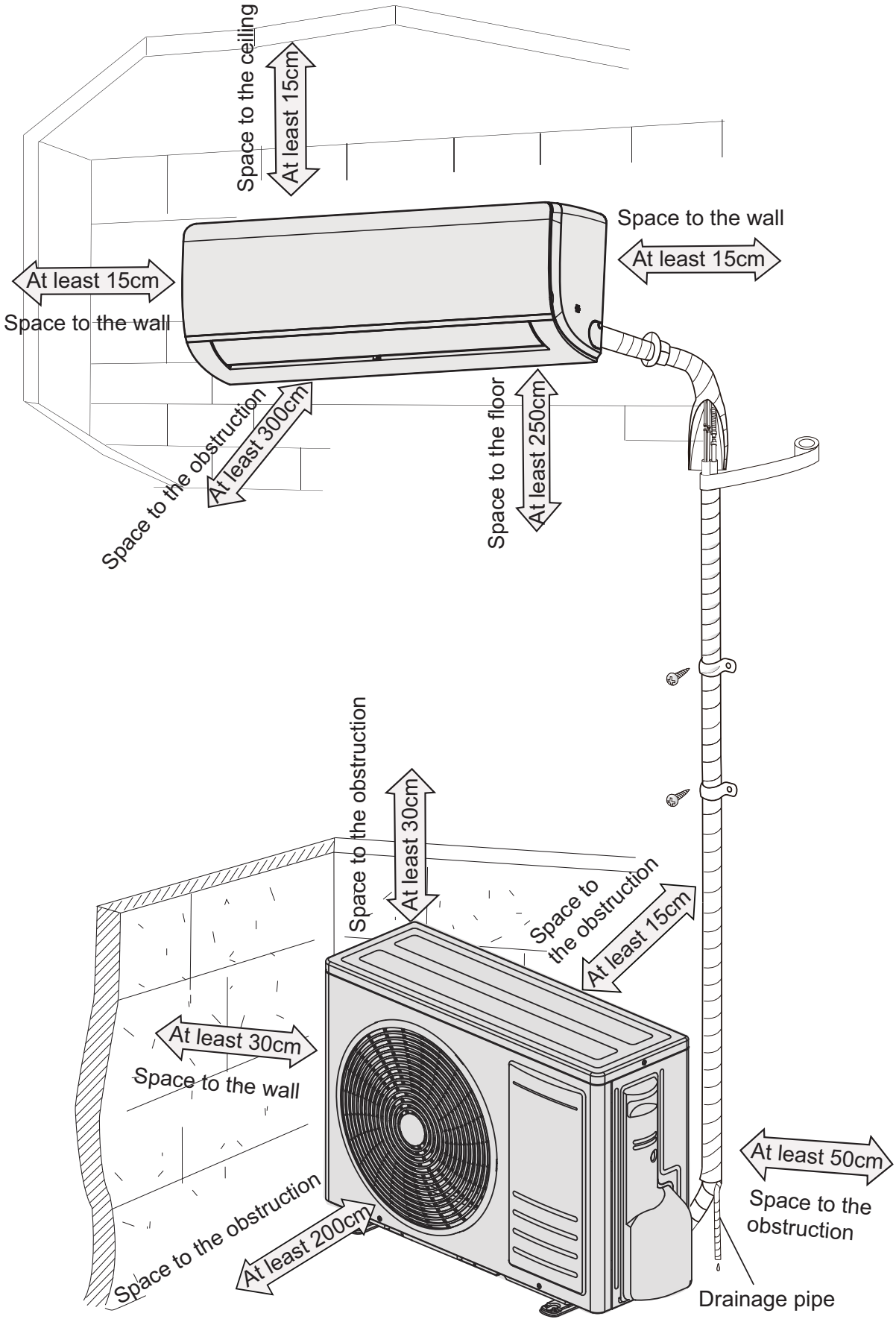
Note:

- **Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected. There should be reliable circuit in the diagram.**
- **Inadequate or incorrect electrical connections may cause electric shock or fire.**

7.1.5 Earthing Requirements

1. Air conditioner is type I electric appliance. Please ensure that the unit is reliably earthed.
2. The yellow-green wire in air conditioner is the earthing wire which can not be used for other purposes. Improper earthing may cause electric shock.
3. The earth resistance should accord to the national criterion.
4. The power must have reliable earthing terminal. Please do not connect the earthing wire with the following:
   - Water pipe
   - Gas pipe
   - Contamination pipe
   - Other place that professional personnel consider is unreliable
5. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

7.2 Installation Dimension Diagram



7.3 Installation Indoor Unit

Step 1: Choosing installation location

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

Step 2: Install wall-mounting frame

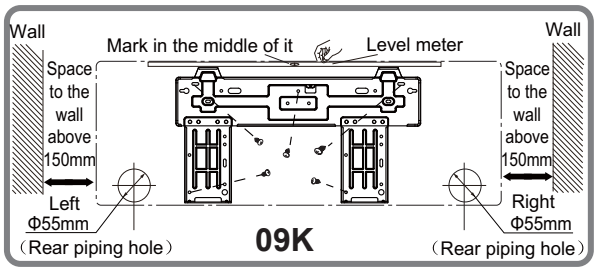
1. Hang the wall-mounting frame on the wall; adj ust it in horizontal position with the level meter and then point out the screw fixing holes on the wall .

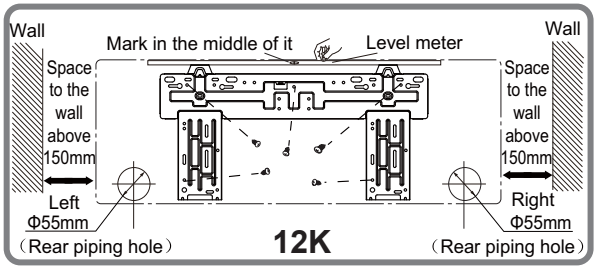
2. Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles in the holes.

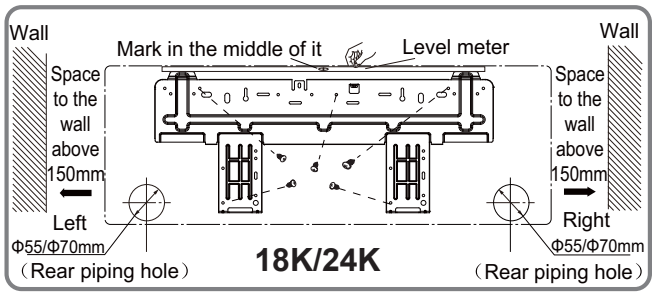
3. Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly inatalled by pulling the frame.If the plastic expansion particle is loose, please drill another fixing hole nearby.

Step 3: Open piping hole

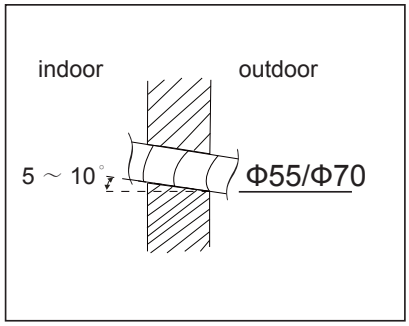
1. Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame, shown as below.







2. Open a piping hole with the diameter of Φ55/Φ70 on the selected outlet pipeposition. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°.

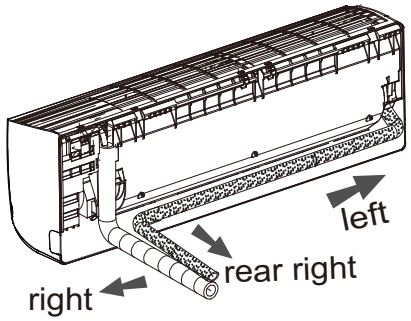


Note:

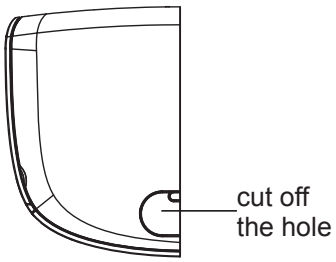
- **Pay attention to dust prevention and take relevant safety measures when opening the hole.**
- **The plastic expansion particles are not provided and should be bought locally.**

Step 4: Outlet pipe

1.The pipe can be led out in the direction of right, rear right or left.



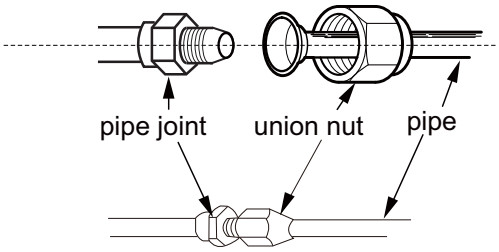
2.When select leading out the pipe from left or right, please cut off the corresponding hole on the bottom case.



Step 5: Connect the pipe of indoor unit

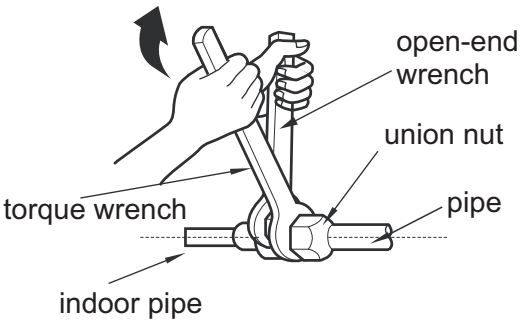
1. Aim the pipe joint at the corresponding bellmouth.

2. Pretightening the union nut with hand.

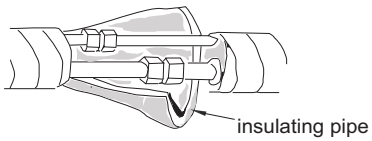


3. Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench.

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



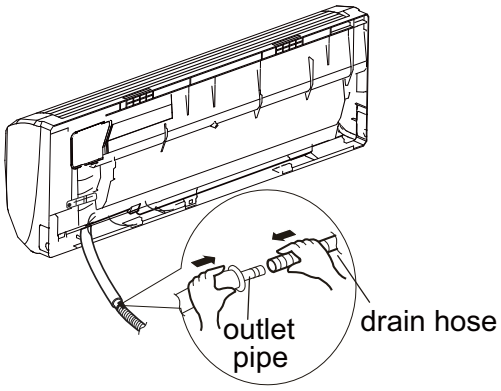
4. Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape.

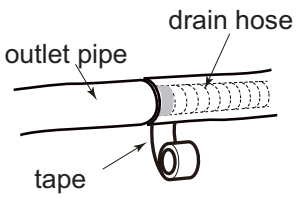


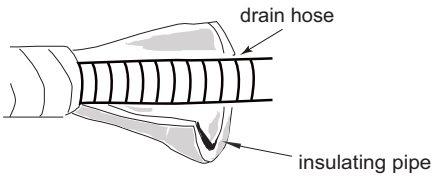
Step 6: Install drain hose

1. Connect the drain hose to the outlet pipe of indoor unit.

2. Bind the joint with tape.



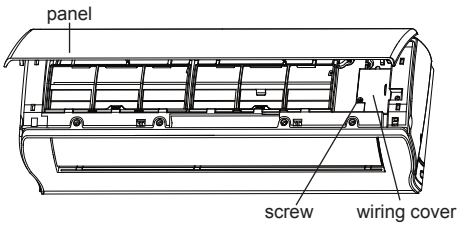


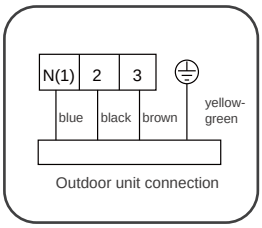


Note:
- Add insulating pipe in the indoor drain hose in order to prevent condensation.
- The plastic expansion particles are not provided.

Step 7: Connect wire of indoor unit

1. Open the panel, remove the screw on the wiring cover and then take down the cover.





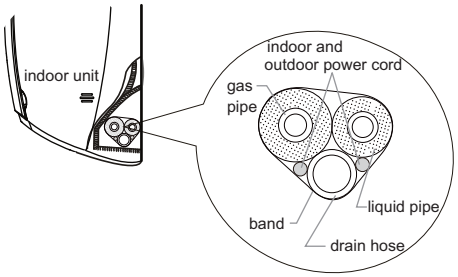
2. Make the power connection wire go through the cable-cross hole at the back of indoor unit and then pull it out from the front side.
3. Remove the wire clip,connect the power connection wire to the wiring terminal according to the color, tighten the screw and then fix the power connection wirewith wire clip.
4. Put wiring cover back and then tighten the screw.
5. Close the panel.

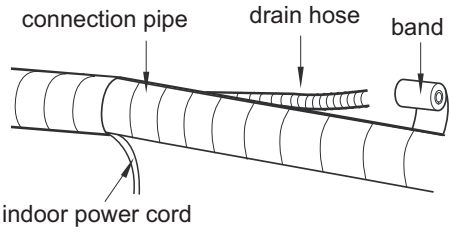
Note:

- All wires of indoor unit and outdoor unit should be connected by a professional.
- If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
- For the air conditioner with plug,the plug should be reachable after finishing installation.
- 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.

Step 8: Bind up pipe

1. Bind up the connection pipe, power cord and drain hose with the band.
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.





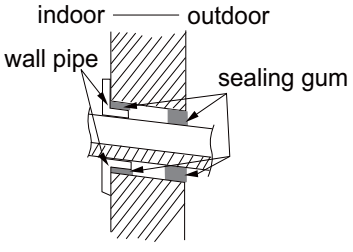
3. Bind them evenly.
4. The liquid pipe and gas pipe should be bound separately at the end.

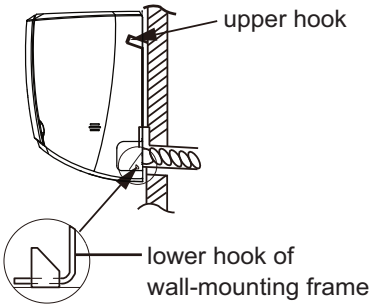
Note:

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

Step 9: Hang the indoor unit

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





Note:

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

7.4 Installation Outdoor Unit

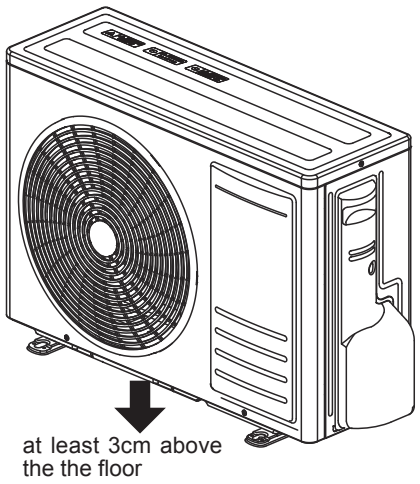
Step 1: Fix the support of outdoor

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:

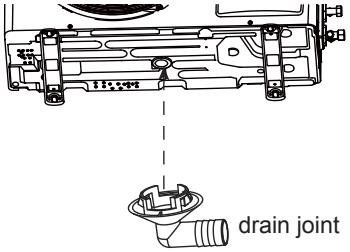
- Take sufficient protecttive measures when installing the outdoor unit.
- Make sure the support can withstand at least four times of the unit weight.
- The outdoor unit should be installed at least 3cm above the the floor in order to install drain joint.
- For the unit with cooling capacity of 2300W~5000W, 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.



Step 2: Install drain joint

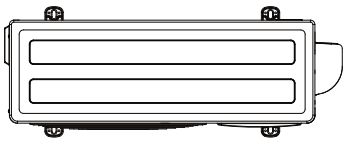
(Only for cooling and heating unit)

1. Connect the outdoor drain joint into the hole on the chassis, as shown in the picture below.
2. Connect the drain hose into the drain vent.



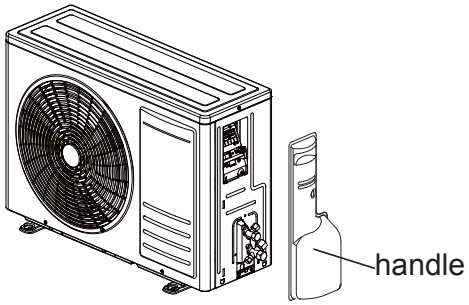
Step 3: Fix outdoor unit

1. Place the outdoor unit on the support.
2. Fix the foot holes of outdoor unit with bolts.

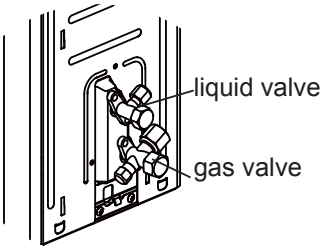


Step 4: Connect indoor and outdoor pipe

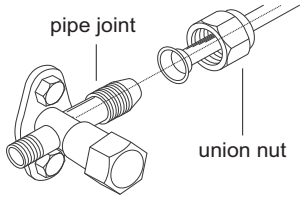
1. Remove the screw on the right handle of outdoor unit and then remove the handle.



2. Remove the screw cap of valve and aim the pipe joint at the bell mouth of pipe.



3. Pretightening the union nut with hand.

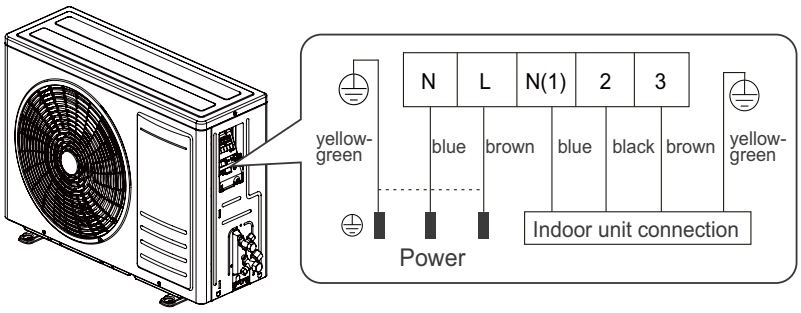


4. Tighten the union nut with torque wrench by referring to the sheet below.

Hex nut diameter	Tightening torque (N.m)
Φ 6	15-20
Φ 9.52	30~40
Φ 12	45~55
Φ 16	60~65
Φ 19	70~75

Step 5: Connect indoor and outdoor pipe

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



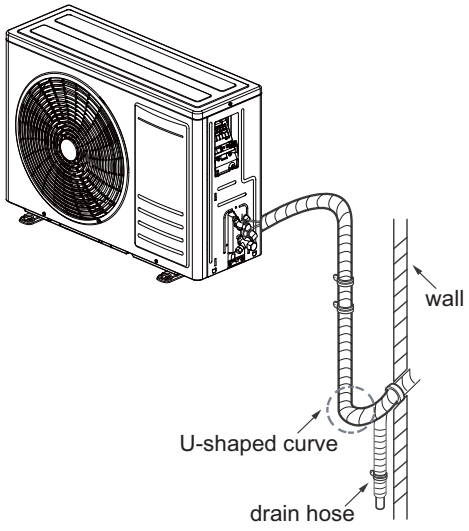
Note:

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

Step 6: Neaten the pipes

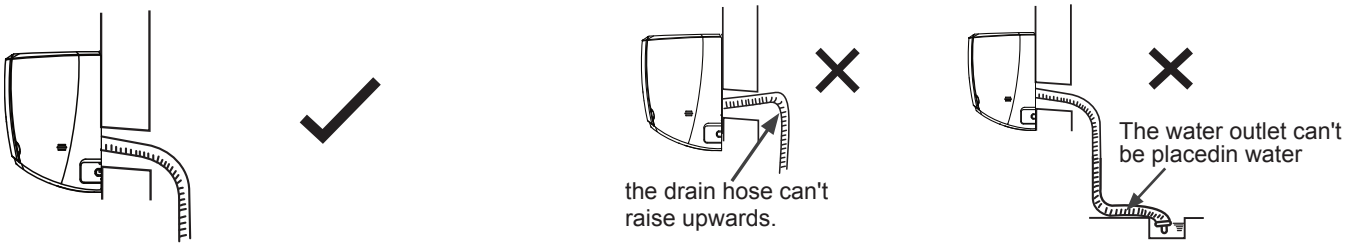
1. The pipes should be placed along the wall,bent reasonably and hidden possibly. Min.semidiameter of bending the pipe is 10cm.

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.

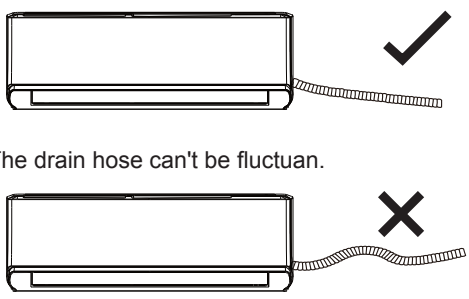


Note:

The through-wal height of drain hose shouldn't be higher than the outlet pipe hole of indoor unit.
The water outlet can't be placed in water in order to drain smoothly.



Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fiuctuant,etc.



Step 7: Vacuum pumping

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.

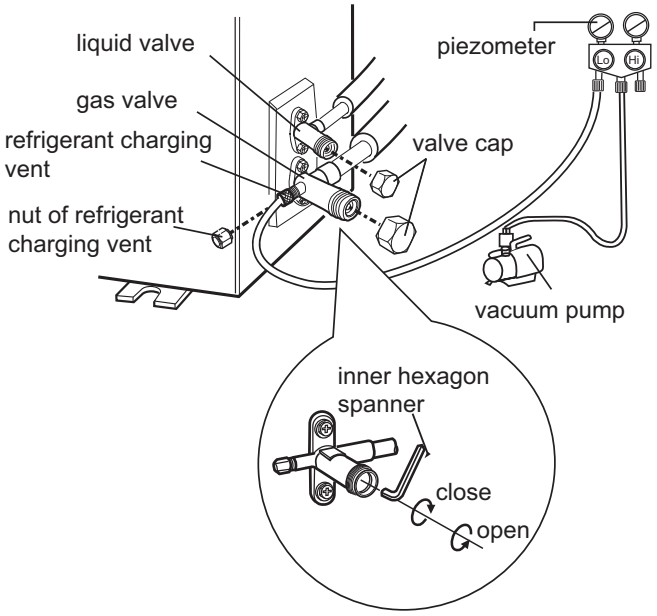
3. Open the piezometer completely and operate for 10-15min to check if the pressure of piezometer remains in -0.1MPa.

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 valve and refrigerant charging vent.

7. Reinstall the handle.



Step 8: *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.

7.5 Check after installation

Check according to the following requirement after finishing installation.

Items to be checked	Possible malfunction
Has the unit been installed firmly?	The unit may drop, shake or emit noise
Have you done the refrigerant leakage test?	It may cause in sufficient cooling(heating) capacity.
Is heat insulation of pipeline sufficient?	It may cause condensation and water dripping.
Is water drained well?	It may cause condensation and water dripping.
Is the voltage of power supply according to the voltage marked on the nameplate?	It may cause malfunction or damaging the parts.
Is electric wiring and pipeline installed correctly?	It may cause malfunction or damaging the parts.
Is the unit grounded securely?	It may cause electric leakage
Does the power cord follow the specification?	It may cause malfunction or damaging the parts.
Is there any obstruction in the air inlet and outlet?	It may cause in sufficient cooling(heating) capacity.
The dust and sundries caused during installation are removed?	It may cause malfunction or damaging the parts.
The gas valve and liquid valve of connection pipe are open completely?	It may cause in sufficient cooling(heating) capacity.

7.6 Test operation

1. Preparation of test operation

- The client approves the air conditioner.
- 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 HEATto check whether the operation is normal or not.
- If the ambient temperature is lower than 16℃ , the air conditioner can't start cooling.

7.7 Configuration of connection pipe

1. Standard length of connection pipe
   ● 5m, 7.5m, 8m.
2. Min. length of connection pipe is 3m.
3. Max. length of connection pipe and max. high difference.

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

4. The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
● After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
● Thecalculation methodof additional refrigerant charging amount (onthe basis of liquid pipe):
Additional refrigerant charging amount = prolonged length of liquid pipe × additional refrigerant charging amount per meter

● Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

Additional refrigerant charging amount for R22, R407C, R410A and R134a

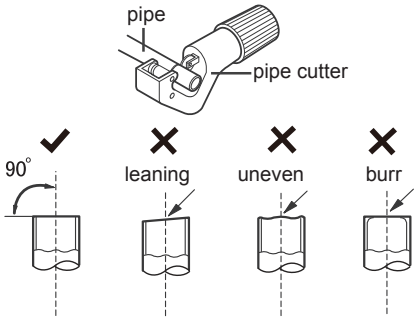
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(mm)	Gas pipe(mm)	Cooling only(g/m)	Cooling and heating(g/m)
Φ6	Φ9.52 or Φ12	15	20
Φ6 or Φ9.52	Φ16 or Φ19	15	50
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	-	250	250
Φ22.2	-	350	350

7.8 Pipe expanding method

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

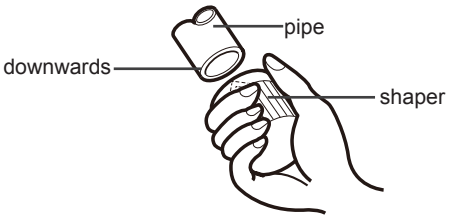
A: Cut the pipe

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



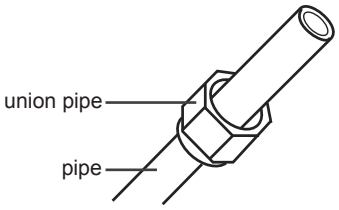
B: Remove the burrs

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



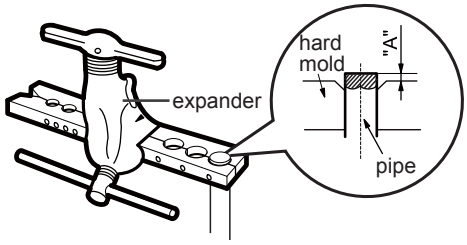
C: Put on suitable insulating pipe
D: Put on the union nut

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



E: Expand the port

Expand the port with expander.

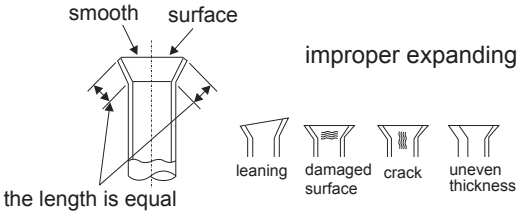


Note:
"A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35(1/4")	1.3	0.7
Φ9.52(3/8")	1.6	1.0
Φ12-12.7(1/2")	1.8	1.0
Φ15.8-16(5/8")	2.4	2.2

F: Inspection

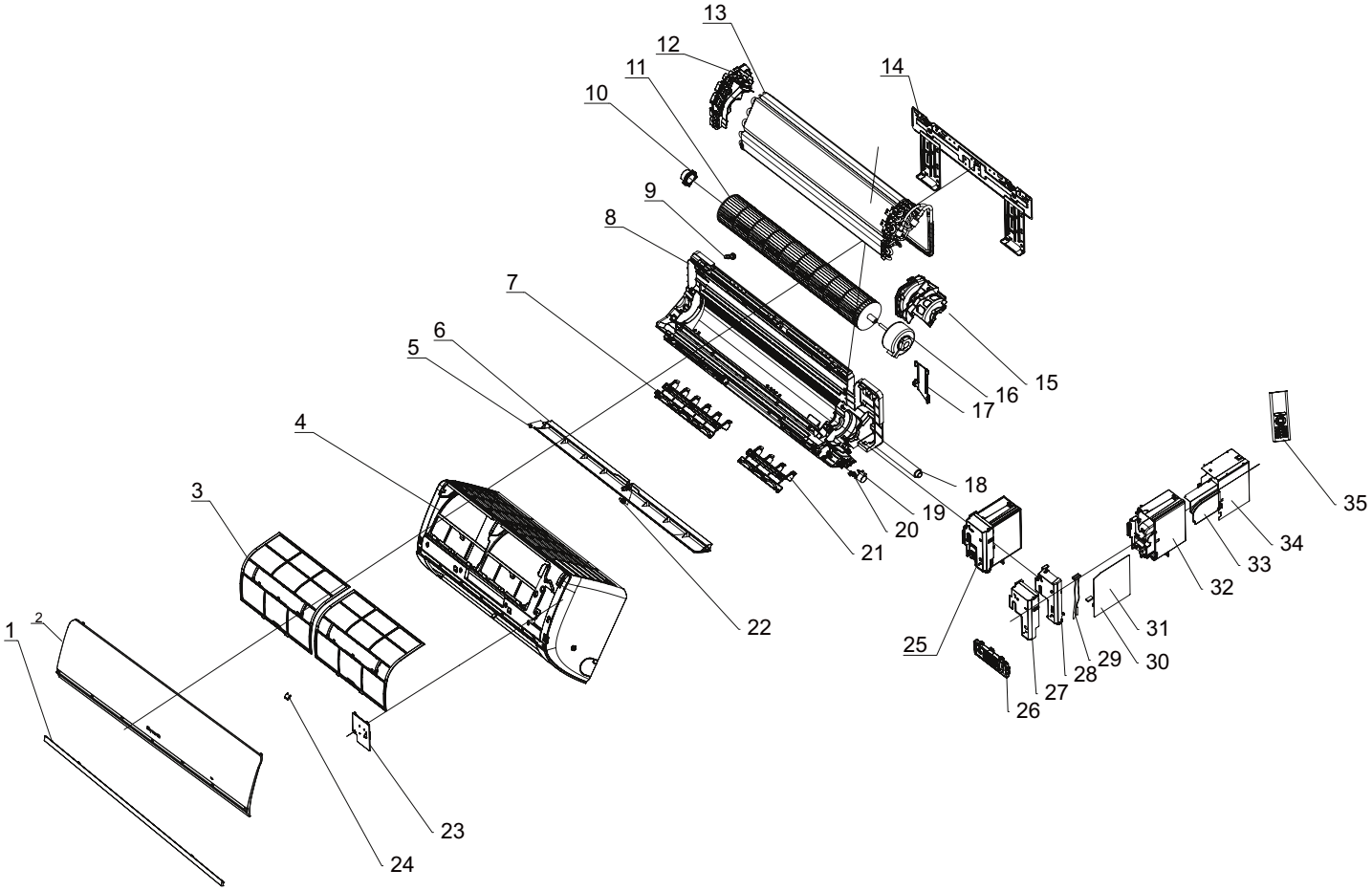
Check the quality of expanding port.
If there is any blemish, expand the port again according to the steps above.



8. Exploded Views and Parts List

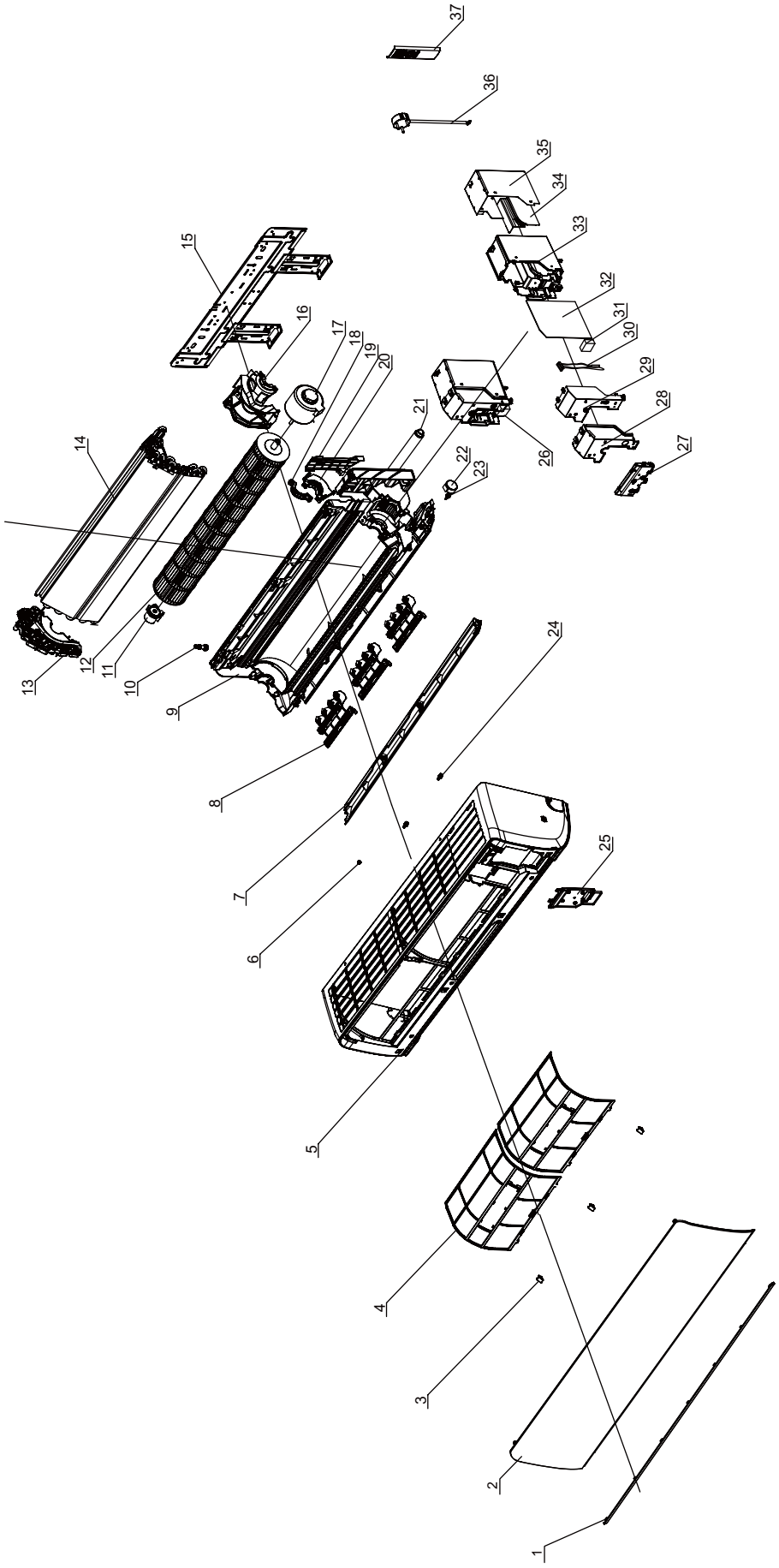
8.1 Indoor Unit

Model: 09K/12K



NO.	Description	Part Code		Qty
		SMVH09B-2A2A3NH(I)	SMVH12B-2A2A3NH(I)	
	Product Code	KEB001N2190	KEB001N2200	
1	Decorate Strip	K21200002P01	K21200009P01	1
2	Panel	K20000051	K20000082T	1
3	Filter Subassembly	K15420004	K15420004	2
4	Panel	K20000092	K20000092	1
5	Left Axile Bush	K15210001	K15210001	1
6	Air Louver	K15200025	K15200025	1
7	Swing Louver	K15200004	K15200004	1
8	Chassis Subassembly	K21400028	K21400028	1
9	Water Pan Rubber	K62600006	K62600006	1
10	Bearing Rubber Ring Subassembly	K62400002	K62400002	1
11	Cross-flow Fan	K15020002	K15020002	1
12	Evaporator Angular Carriage	K21800006	K21800006	1
13	Evaporator Assembly	K20210010	K20210010	1
14	Wall Frame	K10450006	K10450006	1
15	Fan Motor Clamp Board	K22020003	K22020003	1
16	Fan Motor	K16800001	K16800001	1
17	Fan Motor Clamp Board	K22020001	K22020001	1
18	Drain Pipe	K1301000101	K1301000101	1
19	Step Motor	K17000001	K17000001	1
20	Crank	K61200001	K61200001	1
21	Swing Louver	K15200005	K15200005	1
22	Axile Bush	K15210002	K15210002	1
23	Electrical Box Cover 2 Subassembly	K10553000	K20400010	1
24	Screw Cap	K21830002	K21830002	1
25	Electrical Box Assembly	K39901204	K3990106301	1
26	Display Board	K21610026	K21610026	1
27	Electrical Box Cover Shielding Cover	K20400009	K20400013	1
28	Electrical Box Cover	K20400008	K20400008	1
29	Tempreature Sensor	K3300000101	K3300000101	1
30	Jumper Wire Cap	K3361000312	K3361000310	1
31	Main Board	K50102138	K50102138	1
32	Electrical Box	K20400040	K20400040	1
33	Electrical Box Shielding Cover 2	K10450020	K10450020	1
34	Electrical Box Shielding Cover 1	K20400013	K10450020	1
35	Remote Controller	K30400043	K30400043	1

Model: 18K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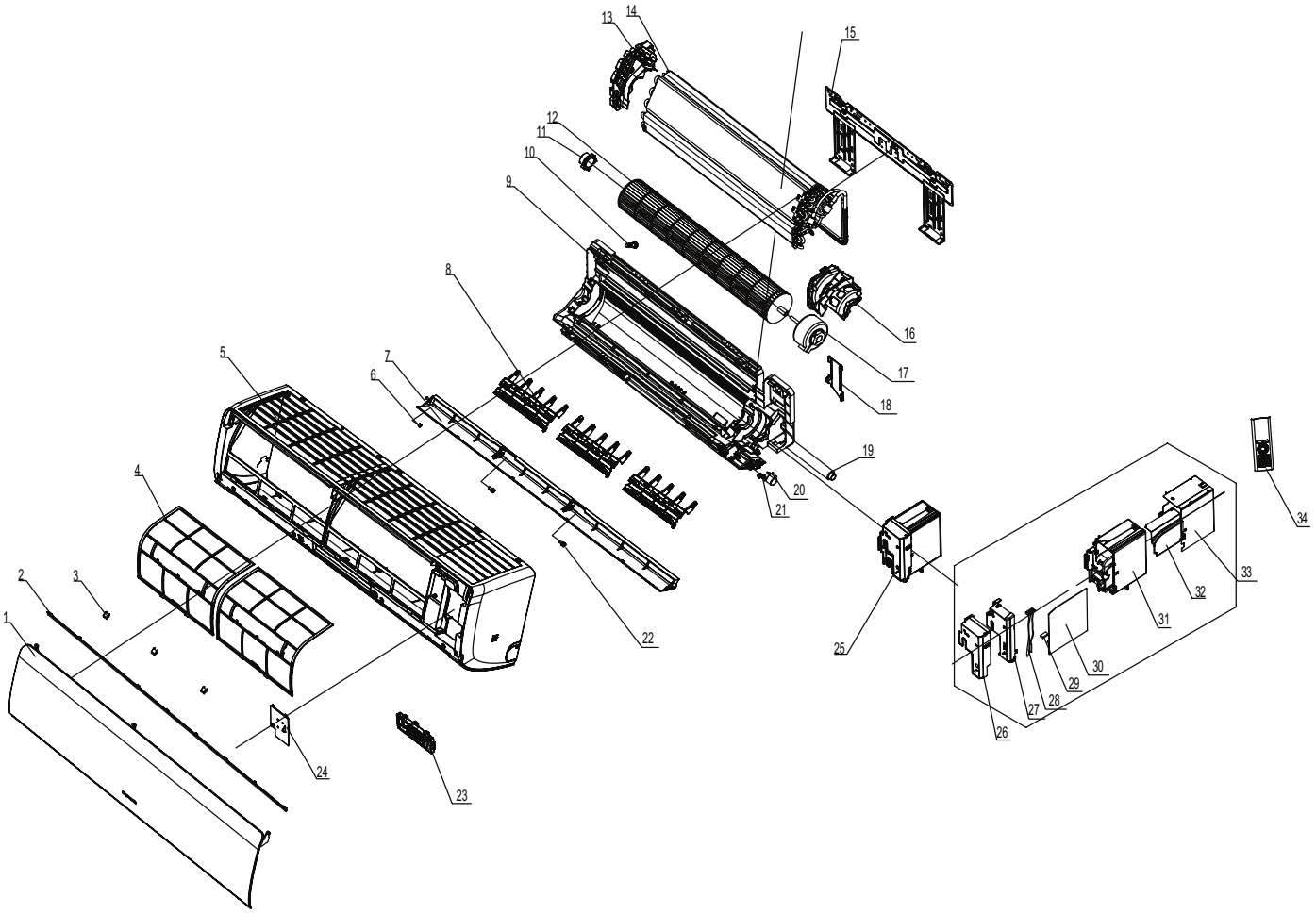
NO.	Description	Part Code	Qty
		SMVH18B-4A2A3NG(I)	
	Product Code	KEB001N1550	
1	Decorate Sheet	K21200005P01	1
2	Panel	K20000064T	1
3	Screw Cap	K21830005	3
4	Filter Subassembly	K15420006	2
5	Panel	K20000063	1
6	Left Axile Bush	K15210001	1
7	Air Louver	K15200030	1
8	Swing Louver	K15200007	3
9	Chassis Subassembly	K21400005	1
10	Water Pan Rubber	K62600006	1
11	Bearing Rubber Ring Subassembly	K62400004	1
12	Cross-flow Fan	K15020003	1
13	Evaporator Angular Carriage	K21800004	1
14	Evaporator Assembly	K10200006	1
15	Wall Frame	K10450017	1
16	Fan Motor Clamp Board	K22020004	1
17	Fan Motor	K16800003	1
18	Fan Motor Clamp Board	K61000009	1
19	Connction Pipe Pressed Plate	K22020005	1
20	Motor Stand	K61000008	1
21	Drain Pipe	K1301000103	1
22	Step Motor	K17000003	1
23	Crank	K61200001	1
24	Axile Bush	K15210002	1
25	Electrical Box Cover 2 Subassembly	K20400022	1
26	Electrical Box Assembly	K11800397	1
27	Display Board	K21610033	1
28	Electrical Box Cover Shielding Cover	K20400020	1
29	Electrical Box Cover	K20400019	1
30	Tempreature Sensor	K33000001	1
31	Jumper Wire Cap	K3361000322	1
32	Main Board	K30050241	1
33	Electrical Box	K20400041	1
34	Electrical Box Shielding Cover 2	K20400018	1
35	Electrical Box Shielding Cover 1	K20400017	1
36	Power Line	/	1
37	Remote Controller	K30400018	1

Model: 24K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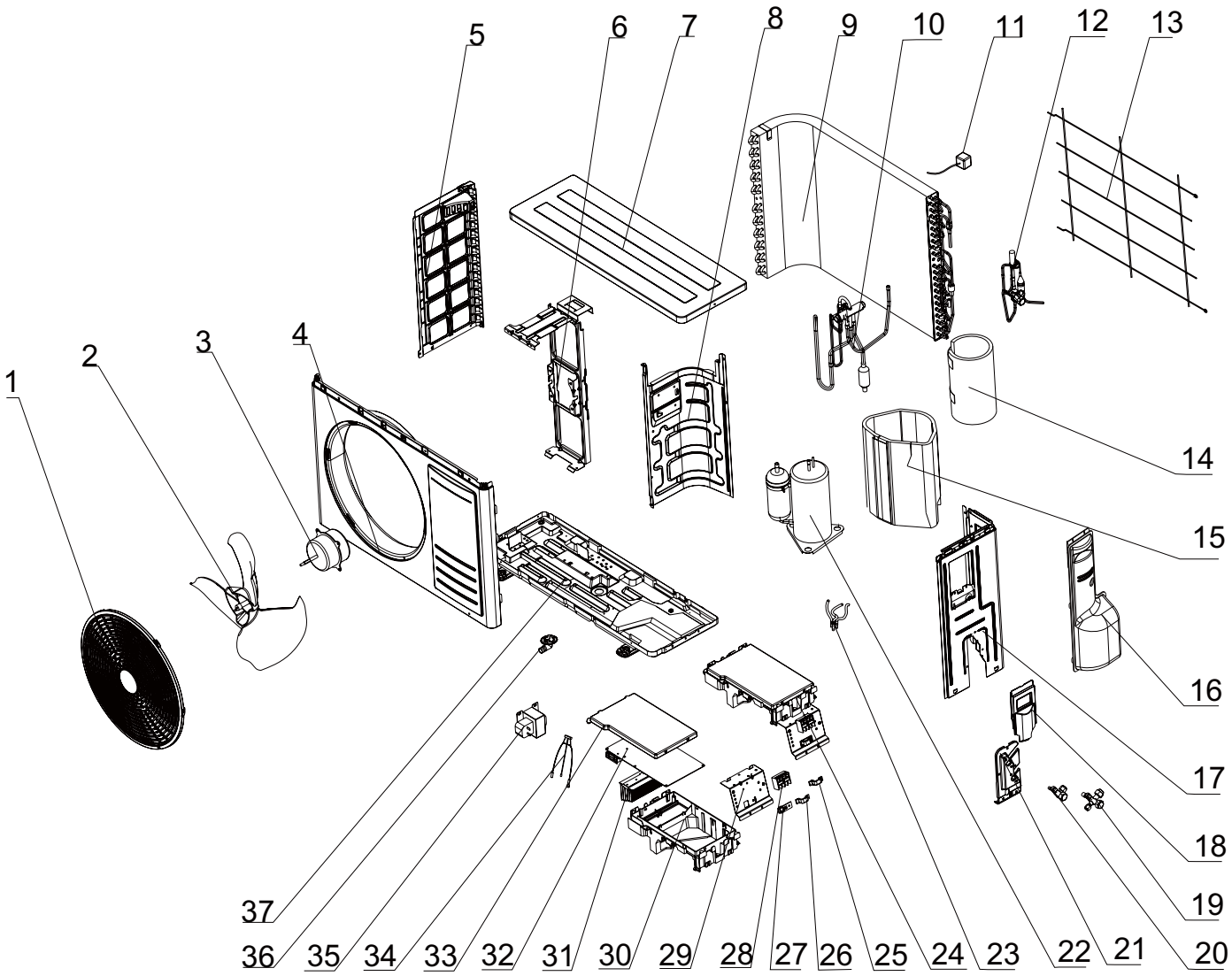
NO.	Description	Part Code	Qty
		SMVH24B-5A2A3NG(I)	
	Product Code	KEB001N1560	
1	Panel	K20000066T	1
2	Decorate Strip	K21200006P01	1
3	Screw Cap	K21830005	3
4	Filter Subassembly	K15420012	2
5	Panel	K20000065	1
6	Left Axile Bush	K15210001	1
7	Air Louver	K15200031	1
8	Swing Louver	K15200015	3
9	Chassis Subassembly	K21400013	1
10	Water Pan Rubber	K62600006	1
11	Bearing Rubber Ring Subassembly	K62400004	1
12	Cross-flow Fan	K15020005	1
13	Evaporator Angular Carriage	K21800008	1
14	Evaporator Assembly	K10200024	1
15	Wall Frame	K10450024	1
16	Fan Motor Clamp Board	K22020007	1
17	Fan Motor	K16800014	1
18	Connction Pipe Pressed Plate	K22020005	1
19	Drain Pipe	K1301000104	1
20	Step Motor	K17000003	1
21	Crank	K61200001	1
22	Axile Bush	K15210002	2
23	Display Board	K21610033	1
24	Electrical Box Cover 2 Subassembly	K20400022	1
25	Electrical Box Assembly	K11800398	1
26	Electrical Box Cover 1 Shielding Cover	K20400020	1
27	Electrical Box Cover 1	K20400019	1
28	Tempreature Sensor	K33000001	1
29	Jumper Wire Cap	K3361000325	1
30	Main Board	K30050242	1
31	Electrical Box	K20400041	1
32	Electrical Box Shielding Cover 2	K20400018	1
33	Electrical Box Shielding Cover 1	K20400017	1
34	Remote Controller	K30400018	1

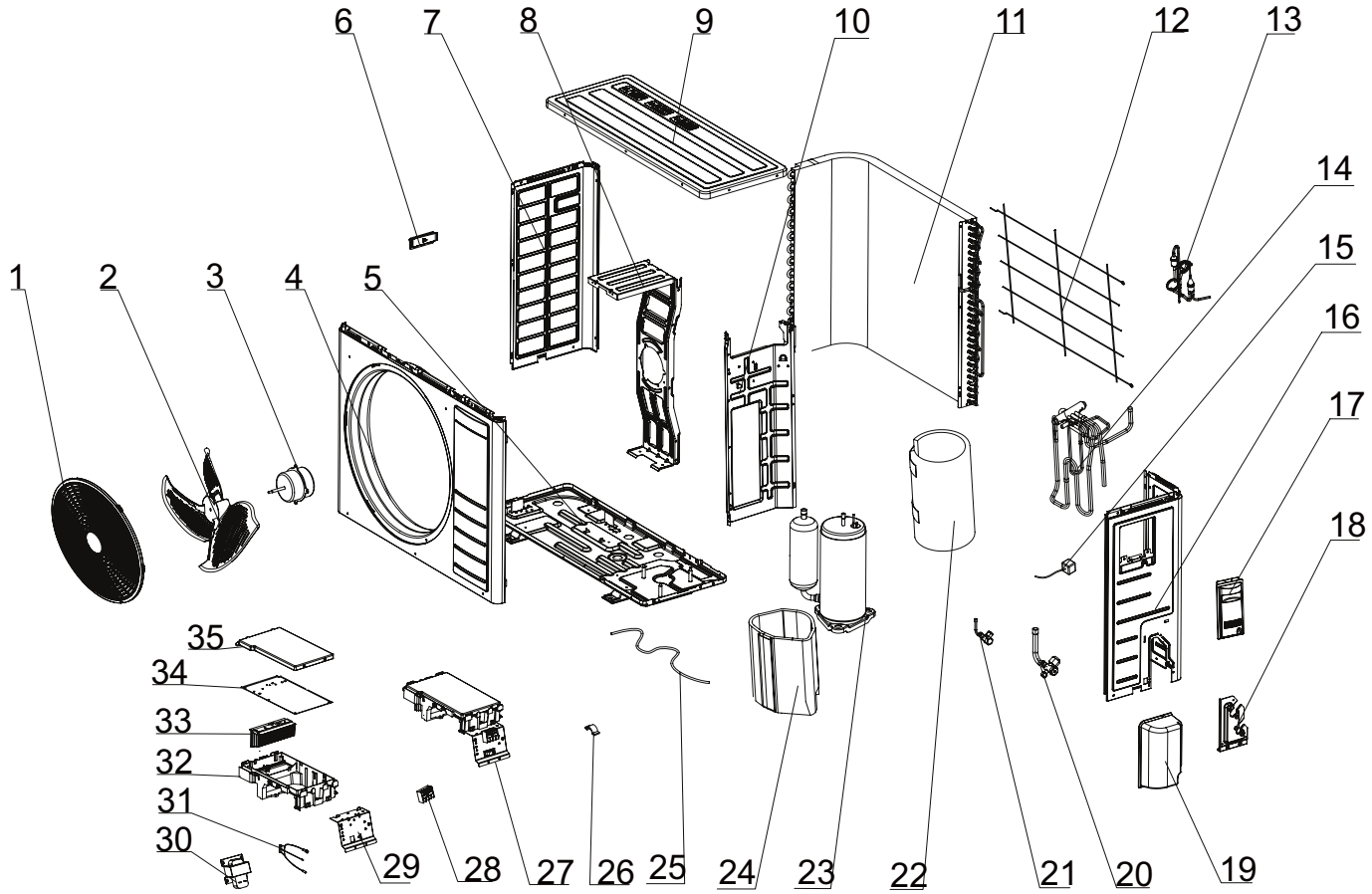
8.2 Outdoor Unit

Model: 09K/12K



NO.	Description	Part Code		Qty
		SMVH09B-2A2A3NH(O)	SMVH12B-2A2A3NH(O)	
	Product Code	KEB001W2190	KEB001W2200	
1	Grill	K21600001	K21600001	1
2	Axial Flow Fan	K15010001	K15010001	1
3	Motor	K16800008	K16800008	1
4	Front Panel	K11010001P	K11010001P	1
5	Left Side Panel	K10600067	K10600067	1
6	Motor Support	K1120002802	K11200028	1
7	Top Cover	K10450004P	K10450004P	1
8	Partition Board Subassembly	K10440035	K10440035	1
9	Condenser Assembly	K20209123	K20209122	1
10	4-way-valve Assembly	K20305055Y	K20305046	1
11	Electric Coil	K3380000508	K3380000508	1
12	Capillary Subassembly	K20317087	K20317086	1
13	Mesh Enclosure(Iron Mesh)	K10860007	K10860007	1
14	Noise-absorption Sponge	K61410054	K61410056	1
15	Noise-absorption Sponge	K40108001	K40108001	1
16	Big Handle(apricot Grey)	K22210002	K22210002	1
17	Right Side Panel(apricot Grey)	K1060000101P	K1060000101P	1
18	Big Handle Guard Board	/	/	0
19	Stop Valve	K1420000203	K1420000203	1
20	Stop Valve	K1420000103	K1420000103	1
21	Valve Support	K1120000201P	K1120000201P	1
22	Compressor And Accessory	K10001013	K10001013	1
23	Wiring(compressor)	K33200009	K33200009	1
24	Electric Box Assembly	K39901188	K39901189	1
25	Wire Fix Clamp	K61000003	K61000003	1
26	Wire Fix Clamp	K61000002	K61000002	1
27	Insulation Gasket	K60600005	K60600005	1
28	Wiring Board	K3360001001	K3360001001	1
29	Wiring Board Support	K1123002501A	K1123002501A	1
30	Electric Box	K20400006	K20400006	1
31	Radiator	K34810003	K34810003	1
32	Main Board	K50102125	K50102124	1
33	Electric Box Cover	K20400014	K20400014	1
34	Temp. Sensor	K3300000302	K3300000302	1
35	Reactor	K34020001	K34020001	1
36	Drain Joint	K13210001	K13210001	1
37	Chassis Subassembly	K1040011501P	K10400115P	1

Model: 18K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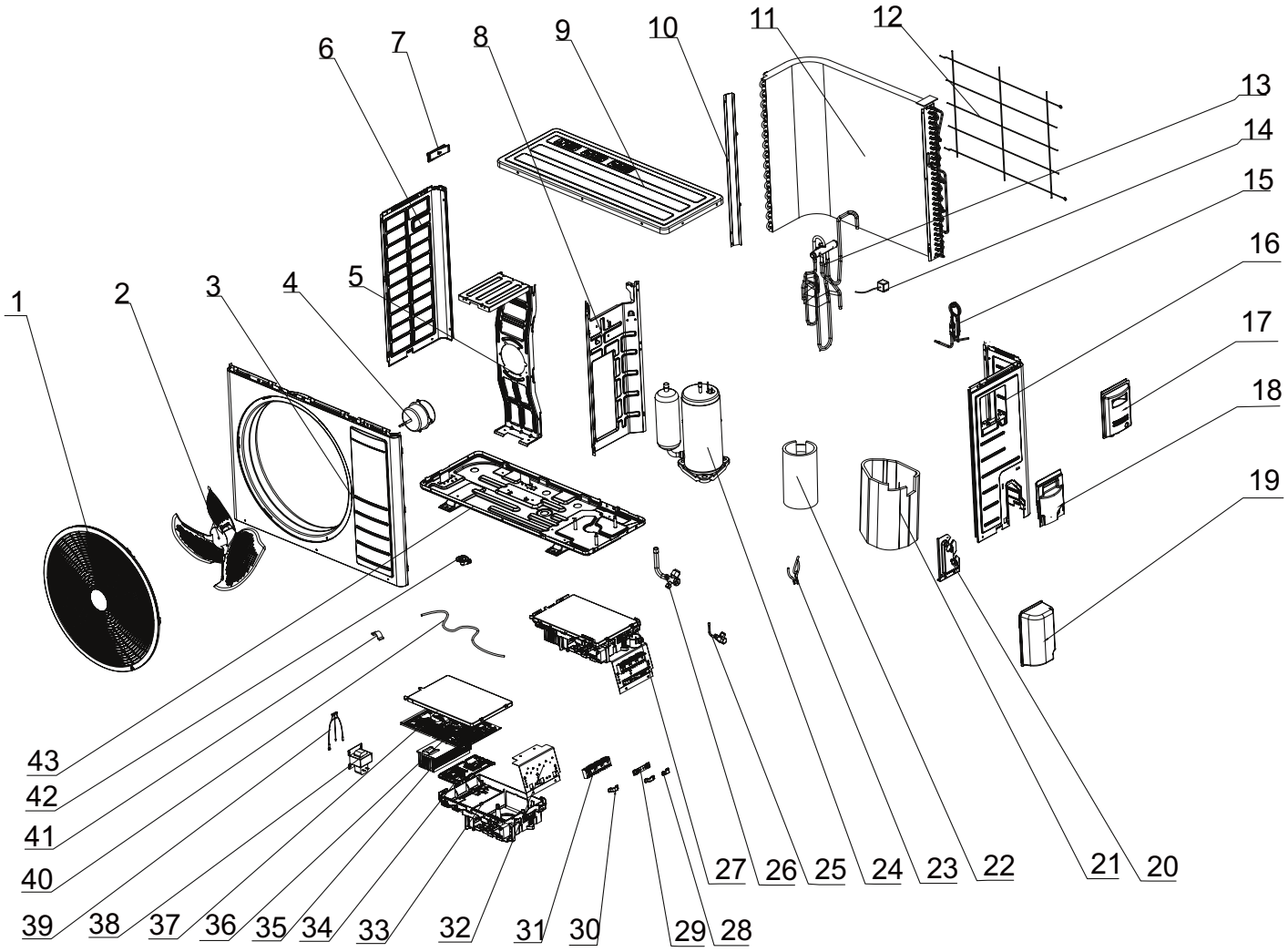
NO.	Description	Part Code	Qty
		SMVH18B-4A2A3NG(O)	
	Product Code	KEB001W1550	
1	Grill	K21600005	1
2	Axial Flow Fan	K15010005	1
3	Fan Motor	K16800028	1
4	Front Panel	K11010007P	1
5	Chassis Subassembly	K11034018P	1
6	Small Handle	K22210004	1
7	Left Side Panel	K10600031P	1
8	Motor Support Subassembly	K1120001703	1
9	Top Cover	K10450034P	1
10	Partition Board Subassembly	K10440028	1
11	Condenser Subassembly	K20207004	1
12	Mesh Enclosure(Iron Mesh)	K10860015	1
13	Capillary Subassembly	K20317044	1
14	4-way-valve Assembly	K20305038	1
15	4-way-valve Coil	K3380000501	1
16	Right Side Panel	K1060003201P	1
17	Big Handle	K22210001	1
18	Valve Support Subassembly	K11200007P	1
19	Valve Cover	K21420017	1
20	Stop Valve	K1420000603	1
21	Stop Valve	K1420000307	1
22	Noise-absorption Sponge	K61410054	1
23	Compressor And Accessory	K10001003	1
24	Noise-absorption Sponge	K61410053	1
25	Electric Heating Belt	K3080000501	1
26	Electric Heating Cable Tabletting	K11410002	9
27	Electric Box Assembly	K39901109	1
28	Wiring Board	K3360001001	1
29	Wiring Board Support	K11230005A	1
30	Reactor	K34020003	1
31	Temp Sensor	K33000003	1
32	Electric Box	K20400028	1
33	Radiator	K34810008	1
34	Main Board	K50102058	1
35	Electric Box Cover	K20400029	1

Model: 24K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NO.	Description	Part Code	Qty
		SMVH24B-5A2A3NG(O)	
	Product Code	KEB001W1560	
1	Grill	K21600002	1
2	Axial Flow Fan	K15010002	1
3	Front Panel	K11010002P	1
4	Odu Fan Motor	K16800015	1
5	Motor Support Subassembly	K11200015	1
6	Left Side Panel	K10600005P	1
7	Small Handle	K22210004	1
8	Partition Board Subassembly	K10440015	1
9	Top Cover	K10450010P	1
10	Support Panel	K10620002	1
11	Condenser Assembly	K20209076	1
12	Mesh Enclosure(Iron Mesh)	K10860002	1
13	4-way-valve Assembly	K20305004Y	1
14	4-way-valve Coil	K3380000501	1
15	Capillary Subassembly	K20317049	1
16	Right Side Panel	K10600006P	1
17	Big Handle	K22210003	1
18	Big Handle Guard Board	K10620003	1
19	Valve Cover	K21420010	1
20	Valve Support Subassembly	K1120000701P	1
21	Noise-absorption Sponge	K61410028	1
22	Noise-absorption Sponge	K61410027	1
23	Wiring	K3320000901	1
24	Compressor And Accessory	K10001004	1
25	Stop Valve	K1420000103	1
26	Stop Valve	K1420004403	1
27	Electric Box Assembly	K39901110	1
28	Wire Fix Clamp	K61000004	1
29	Insulation Gasket	K60600005	1
30	Wire Fix Clamp	K61000002	1
31	Wiring Board	K3360001001	1
32	Wiring Board Support	K11230026	1
33	Electric Box	K20400028	1
34	Module Support	K22240002	1
35	Radiator	K34810008	1
36	Main Board	K50102060	1
37	Electric Box Cover	K20400029	1
38	Reactor	K34020003	1
39	Temp Sensor	K3300000301	1
40	Electric Heating Belt	K3080000501	1
41	Electric Heating Cable Tabletting	K11410002	1
42	Drain Joint	K13210001	1
43	Chassis Subassembly	K11034017P	1

9. Troubleshooting

9.1 Error Code List

Error Code	Name of malfunction and status	Way of display			Error Type	Possible Causes	Solution
		Display directly	By remote conrol procedure only	By remote control procedure within compressor stop 200s or direcly after compressor stop 200s			
CL	Filter cleaning reminder	√			Indoor	Filter may have dust	Clean the fliter
d0	Compressor RMS phase current limit down		√		Outdoor	Compressor phase current effective value is too high, the compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function.
d1	RMS machine current limit down		√		Outdoor	The whole unit current effective value is too high, compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function.
d2	Exhaust gas temperature limit down		√		Outdoor	The Exhaust pipe temperature is too high, compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function.
d3	Anti-freeze limit down		√		Outdoor	The inner pipe temperature is too low, compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function.
d4	Overload limit down		√		Outdoor	The system is overload, compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function.
d5	IPM temp limit down		√		Outdoor	The compressor module temperature is too high, compressor need to limit the frequency or frequency reduction operation	The normal limit frequency reduction function
E0	High discharge temp protection			√	Outdoor	See Diagram 1	See Diagram 1
E1	Overload protection			√	Outdoor	See Diagram 2	See Diagram 2
E2	Compressor overload protection			√	Outdoor	See Diagram 3	See Diagram 3
E3	Anti-freeze protection			√	Outdoor	1. Indoor machine return air is not smooth. 2. The fan speed is too low. 3. The filter or evaporator not clean. 4. The inner temperature sensor abnormal.	1. Indoor machine return air is not smooth. 2. The fan speed is too low. 3. The filter or evaporator not clean. 4. Change the temperature sensor abnormal.
E7	4 way valve malfunction			√	Outdoor	1.Supply voltage is unstable 2.Mainboard and 4-Way valve unconnected. 3.4-Way valve is broken.	1.Check the voltage of power supply. 2.Check the connecting of mainboard and 4-way valve. 3.Change the 4-Way valve.
E8	Outdoor ambient temperature abnormal protection		√		Outdoor	1. The outdoor environment temperature is too high or too low. 2. The outdoor environment temprature sensor is damage.	1. The outdoor environment temperature is in normal range. 2. Change the temprature sensor.
H0	Compressor stalling			√	Outdoor	See Diagram 4	See Diagram 4
H1	Start up failure			√	Outdoor	See Diagram 5	See Diagram 5

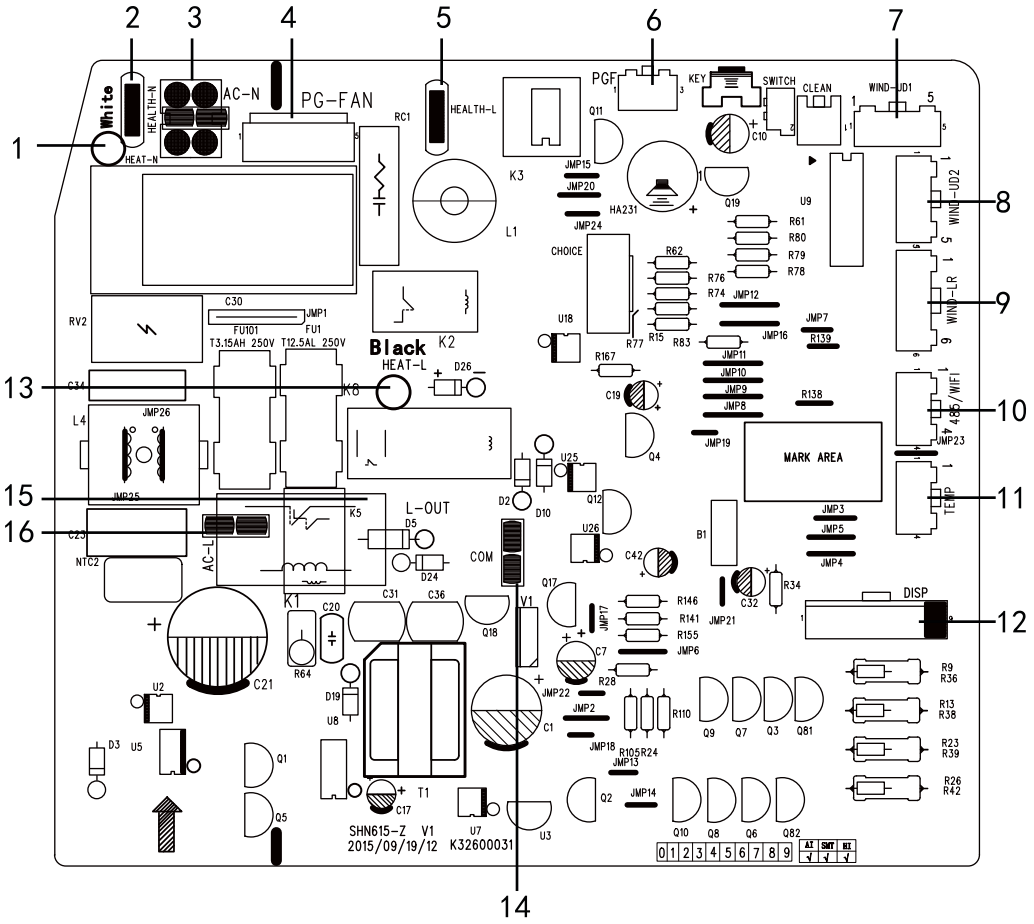
H2	Compressor phase current peak protection			√	Outdoor	See Diagram 6	See Diagram 6
H3	Compressor phase current RMS protection			√	Outdoor	See Diagram 7	See Diagram 7
H4	IPM protection			√	Outdoor	See Diagram 8	See Diagram 8
H5	IPM overheat protection			√	Outdoor	1. The radiator ventilation is abnormal 2. IPM module thermal paste dry solid or screw loose 3. the mainboard is damage	1. Check the radiator ventilation is normal 2. Check the IPM module thermal paste dry solid or screw loose is normal 3. Change the main board
H6	Compressor phase ciurcuit detection error	√			Outdoor	the mainboard is broken	change the mainboard
H7	Compressor phase loss error			√	Outdoor	1.mainboard and compressor unconnected 2.the mainboard is broken	1.check the connecting of mainboard and compressor 2.change the mainboard
H8	Outdoor DC fan motor error			√	Outdoor	1.Outdoor motor fan is blocked 2.mainboard and DC fan motor unconnected 3.the mainboard is broken 4.DC fan motor is broken	1.remove the block 2.check the connecting of mainboard and DC fan motor 3.change the mainboard 4.change the DC fan motor
H9	Outdoor DC fan motor phase current detection circuit error	√			Outdoor	The mainboard is broken	Change the mainboard
L0	Jumper error	√			Indoor	See Diagram 9	See Diagram 9
L1	PG Indoor motor zero crossing detecting circuit malfunction	√			Indoor	The mainboard is broken	Change the mainboard
L2	Indoor fan motor error	√			Indoor	See Diagram 10	See Diagram 10
L3	Indoor display communication between Indoor and Outdoor failure	√			Indoor	See Diagram 11	See Diagram 11
L4	Select the port level abnormal error		√		Indoor	The mainboard is broken	Change the mainboard
L5	Indoor EEPREM error		√		Indoor	See Diagram	See Diagram
L6	Outdoor display communication between Indoor and Outdoor failure	√			Outdoor	See Diagram 12	See Diagram 12
LL	Trial running		√		Indoor	Normal Function	Normal Function
P0	Outdoor EEPREM error	√			Outdoor	1.EEPROM chip(U8)loose. 2.The mainboard is broken.	1.Check the EEPROM chip(U8)is fixed. 2.Change the mainboard.
P1	Power On failure \ Chaging ciurcuit error	√			Outdoor	1.The voltage of power supply is too low. 2.The mainboard is broken.	1.Check the voltage of power supply. 2.Change the mainboard.
P2	Alternating current protection \ Feedforward voltage protection			√	Outdoor	1.The voltage of power supply is too low. 2.The mainboard is broken	1.Check the voltage of power supply. 2.Change the mainboard.
P3	High voltage protection			√	outdoor	1.The voltage of power supply is too high. 2.The mainboard is broken.	1.Check the voltage of power supply. 2.Change the mainboard.
P4	Low voltage protection			√	Outdoor	1.The voltage of power supply is too low. 2.The mainboard is broken.	1.Check the voltage of power supply. 2.Change the mainboard.
P5	DC line voltage drop protection			√	Outdoor	1.The voltage of power supply is unstable. 2.The mainboard is broken.	1.Check the voltage of power supply. 2.Change the mainboard.
P6	Machine current detection circuit error	√			Outdoor	1.Refrigerant leakage. 2.The mainboard is broken.	1.Check the refrigerant leakage. 2.Change the mainboard.
P7	Over-current protection			√	Outdoor	See Diagram 13	See Diagram 13
P8	PFC current detection circuit error	√			Outdoor	The mainboard is broken	Change the mainboard
P9	PFC protection			√	Outdoor	See Diagram 14	See Diagram 14

PA	Indoor and outdoor mismatch	√			Outdoor	1. The outdoor unit valve is close. 2. The refrigerant connecting pipe installation errors. 3. The inside and outside the machine connecting wiring error. 4. The refrigerant connecting pipe with the connection order sequence.	1. Check the outdoor unit valve is open. 2. The refrigerant connecting pipe installation errors. 3. Check the inside and outside the machine connecting wiring is correct. 4. Check the refrigerant connecting pipe with the connection is in order sequence.
PC	Mode conflict	√			Outdoor	Failure in indoor model conflicts with the operation mode of the outdoor unit.	Power off or change the failure in indoor unit mode to non-conflicts mode.
U0	Indoor ambiet temp sensor short\open	√			Indoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U1	Indoor mide pepe temp sensor short\open	√			Indoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U2	Outdoor ambient temp sensor short\open	√			Outdoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U3	Outdoor mid-coil temp sensor short\open	√			Outdoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U4	Outdoor pipe temp sensor short\open	√			Outdoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U5	IPM temp sensor short\ open	√			Outdoor	The IPM temp sensor is broken.	Change the mainboard.
U6	Liquid pipe outlet temp sensor short\open	√			Outdoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U7	Gas pipe outlet temp sensor short\open	√			Outdoor	1.The wiring terminal between the temperature sensor and the mainboard loosened or poorly contacted. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the wiring terminal. 2.Change the sensor. 3.Change the mainboard.
U8	Discharge temp sensor short\open	√			Outdoor	1.Outdoor pipe temp sensor is not in the right position. 2.The sensor is broken. 3.The mainboard is broken.	1.Check the sensor position. 2.Change the sensor. 3.Change the mainboard.

9.2 PCB Printed Diagram

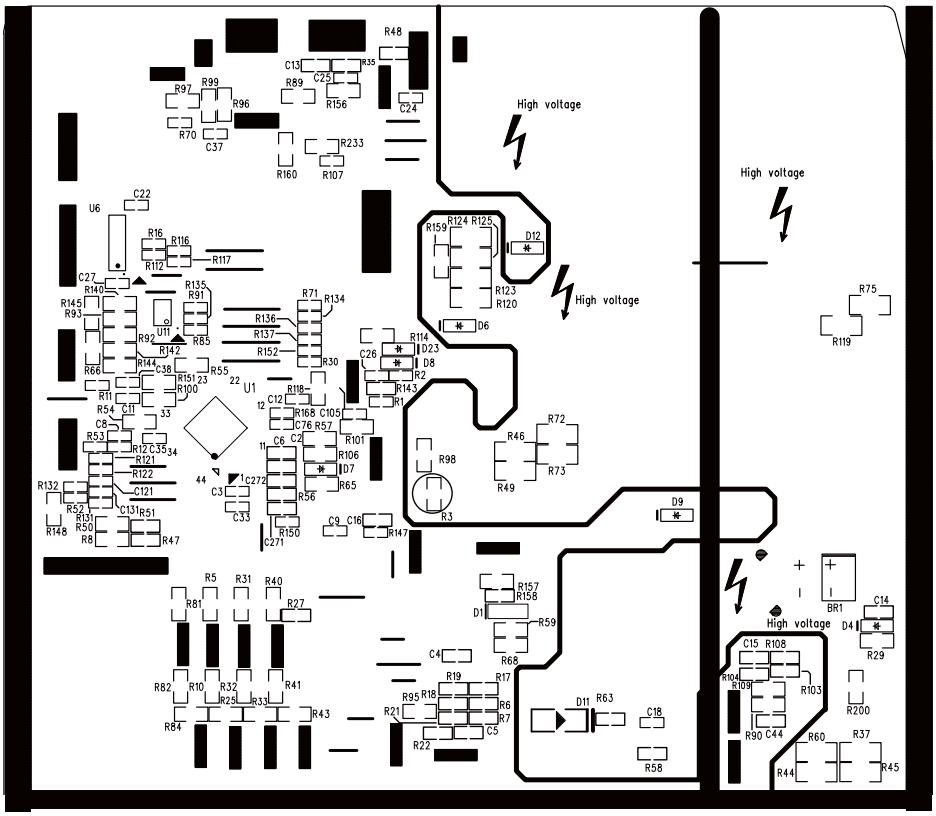
Indoor Unit

● Top View



No.	Function
1	Auxiliary heating zero wire connector
2	Cold plasma zero wire connector
3	Power supply zero wire connector
4	AC motor connector
5	Cold plasma fire wire connector
6	AC motor feedback connector
7,8	Up and down louver motor connector
9	Left and right louver motor connector
10	WIFI
11	Sensor connector
12	Display connector
13	Auxiliary heating fire wire connector
14	Communication connector
15	Outdoor fire wire connector
16	Power supply fire wire connector

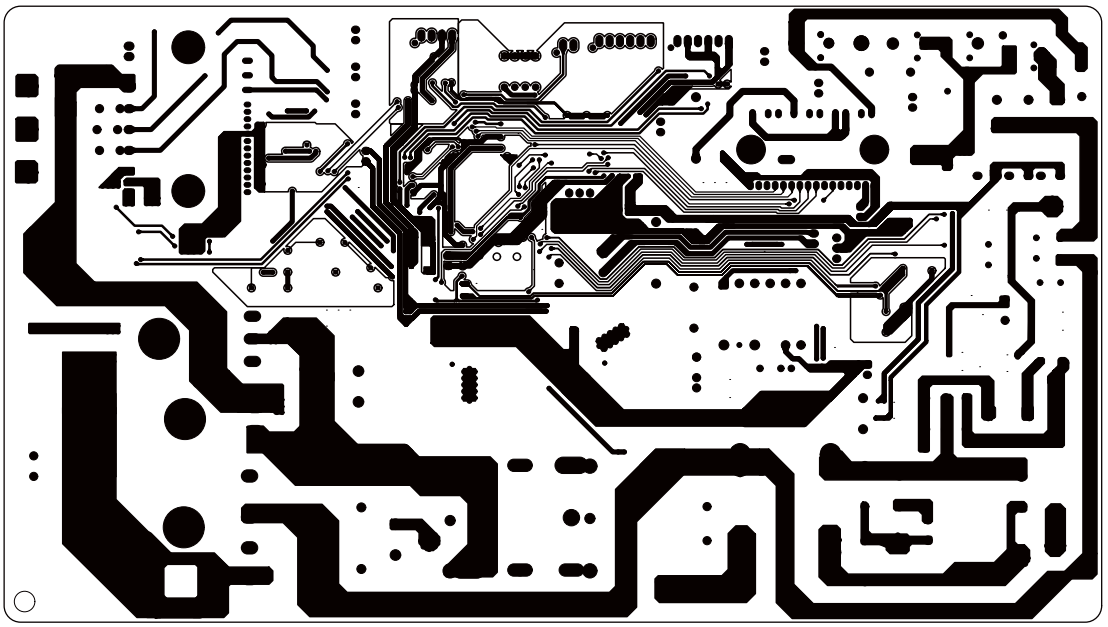
BOTTOM VIEW

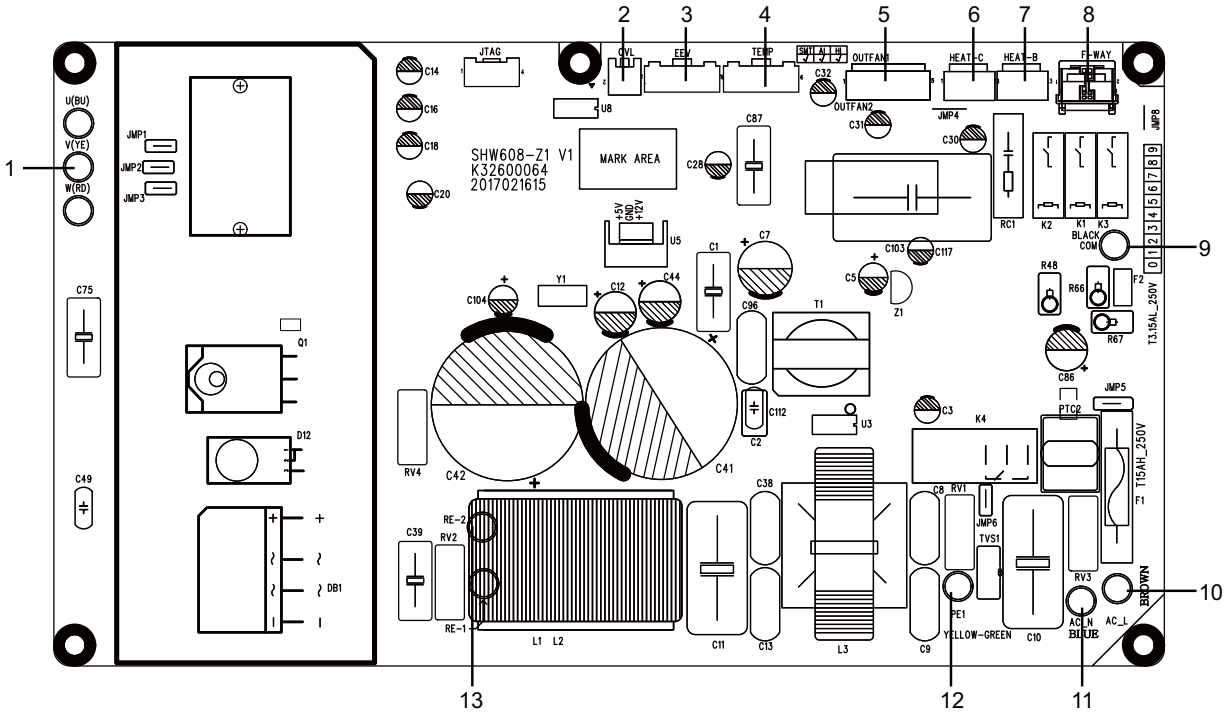


Outdoor Unit

Model: 09K/12K

● Top View

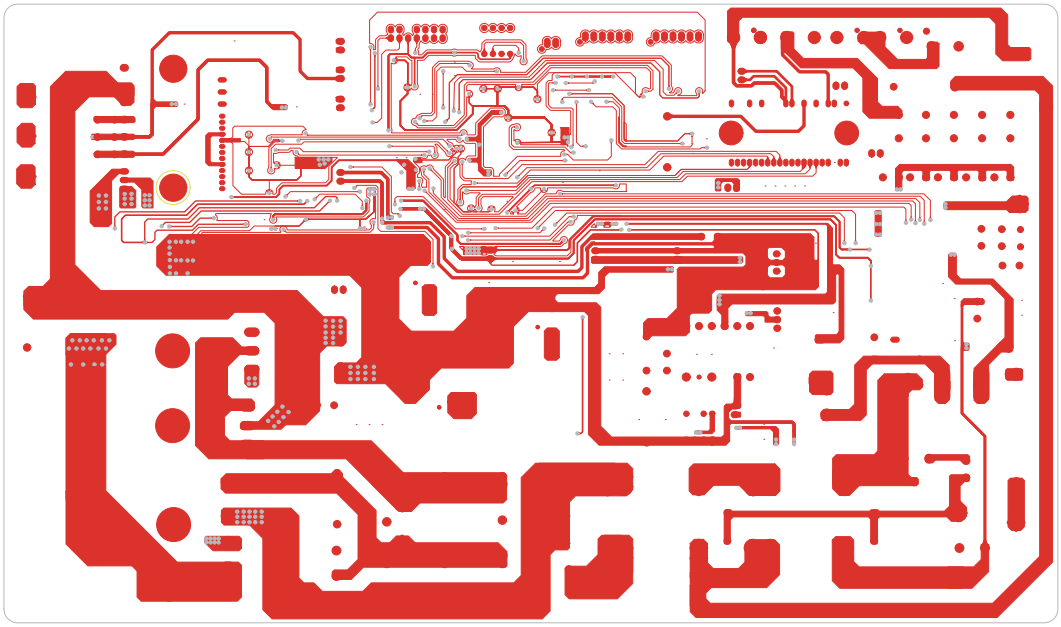


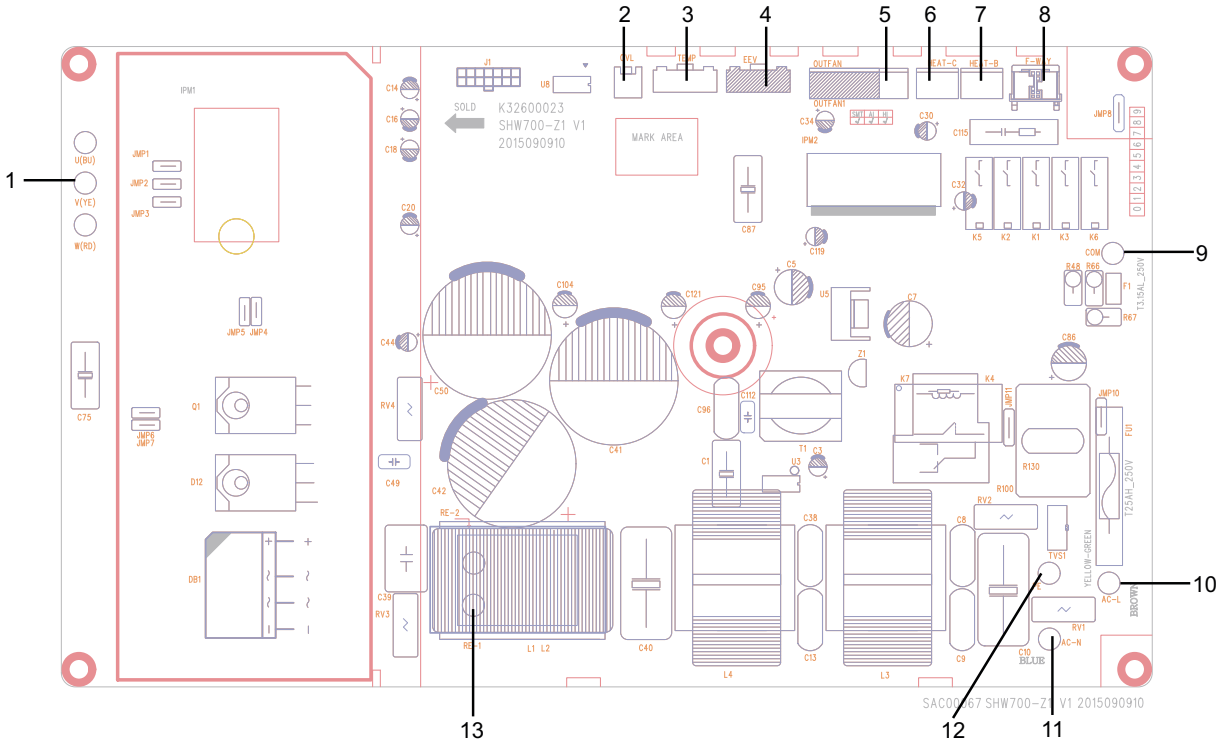


NO.	Silk scren name	Connector	Function note
1	U(BU), V(YE),W(RD)	Compressor interface	Used to connect the compressor: U (BU) - (YE) - yellow blue, V, W (RD) - red
2	OVL	Overload interface	Used to connect the compressor overload protector, the two white lines. Random selection
3	EEV	Electronic expansion valve interface	Used to connect five core electronic expansion valve
4	TEMP	Temp.sensor interface	Used to connect to the six core thermal package: tube temperature (20 k @ 25 ˚C), the outer ring temperature (15 k @ 25 ˚C), exhaust (50 k @ 25 ˚C)
5	OFAN,OFAN1	Fan interface	Used to connect to external fan
6	HEAT-C	Compression mechanical and electrical heated interface	Used to compress the mechanical and electrical heating zone
7	HEAT-B	Chassis electrical heating zone interface	Used for chassis electrical heating zone
8	F-WAY	4-way-valve interface	4-way-valve
9	COM	Communication line	Used to communicate with the indoor unit
10	AC-L	Power supply line	Used to connect to the power supply line
11	AC-N	Power supply wiring	Used to connect the power supply wiring
12	PE	Power supply ground line	Used to connect the power supply ground line
13	RE-1, RE-2	Reactor connecting	Used to connect the reactor

Model: 18K/24K

- Top View





NO.	Silk scren name	Connector	Function note
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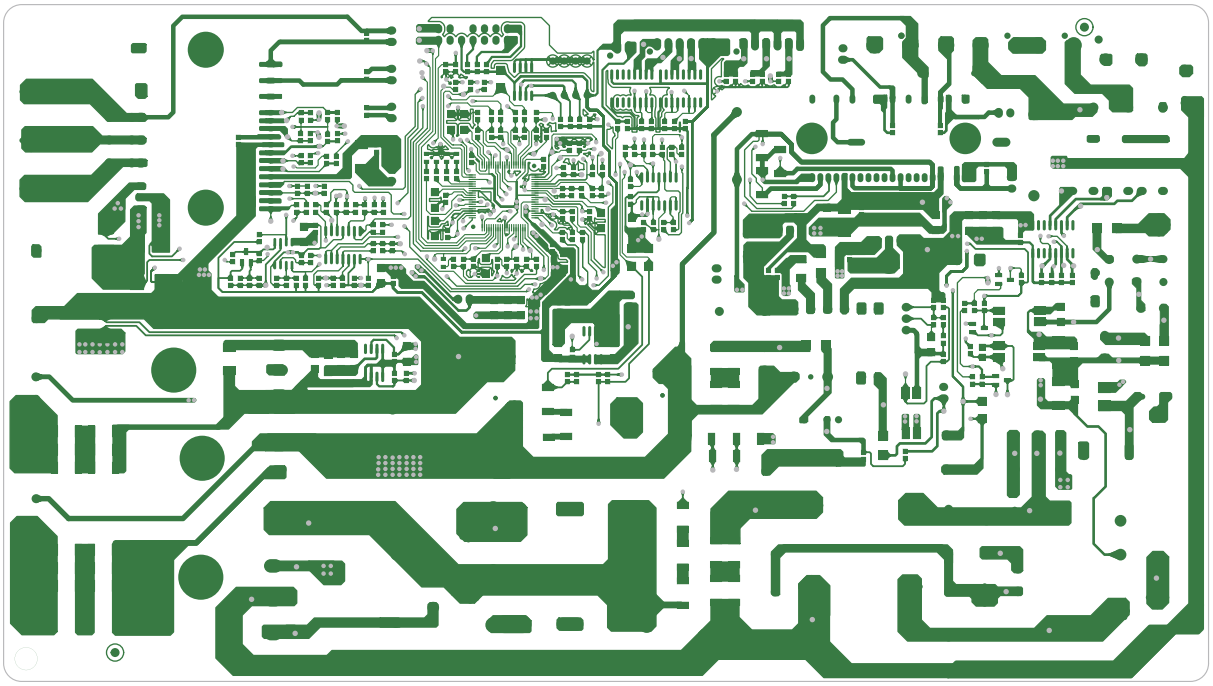
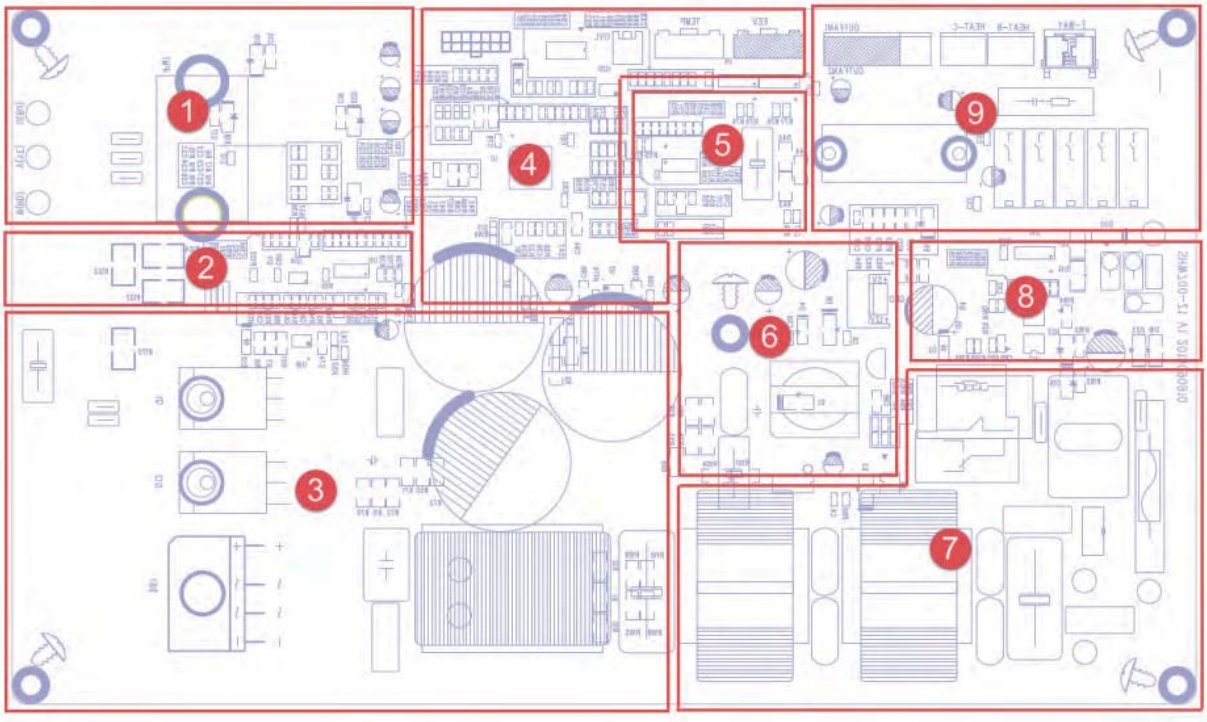
2	OVL	Overload interface	Used to connect the compressor overload protector, the two white lines. Random selection
3	TEMP	Temp.sensor interface	Used to connect to the six core thermal package: tube temperature (20 k @ 25 ℃), the outer ring temperature (15 k @ 25 ℃), exhaust (50 k @ 25 ℃)
4	EEV	Electronic expansion valve interface	Used to connect five core electronic expansion valve
5	OFAN,OFAN1	Fan interface	Used to connect to external fan
6	HEAT-C	Compression mechanical and electrical heated interface	Used to compress the mechanical and electrical heating zone
7	HEAT-B	Chassis electrical heating zone interface	Used for chassis electrical heating zone
8	F-WAY	4-way-valve interface	4-way-valve
9	COM	Communication line	Used to communicate with the indoor unit
10	AC-L	Power supply line	Used to connect to the power supply line
11	AC-N	Power supply wiring	Used to connect the power supply wiring
12	PE	Power supply ground line	Used to connect the power supply ground line
13	RE-1, RE-2	Reactor connecting	Used to connect the reactor

- Bottom View





NO.	Name
1	Compressor control circuit
2	Compressor phase current sampling circuit & PFC current sampling circuit
3	Power factor correction (PFC) control circuit
4	Master control chip circuit
5	DC fan electric circuit, sampling circuit
6	Switch power supply circuit
7	EMI filter circuit
8	Wire communication circuit
9	Fan and load control circuit

9.3 Procedure of Troubleshooting

Diagram 1:

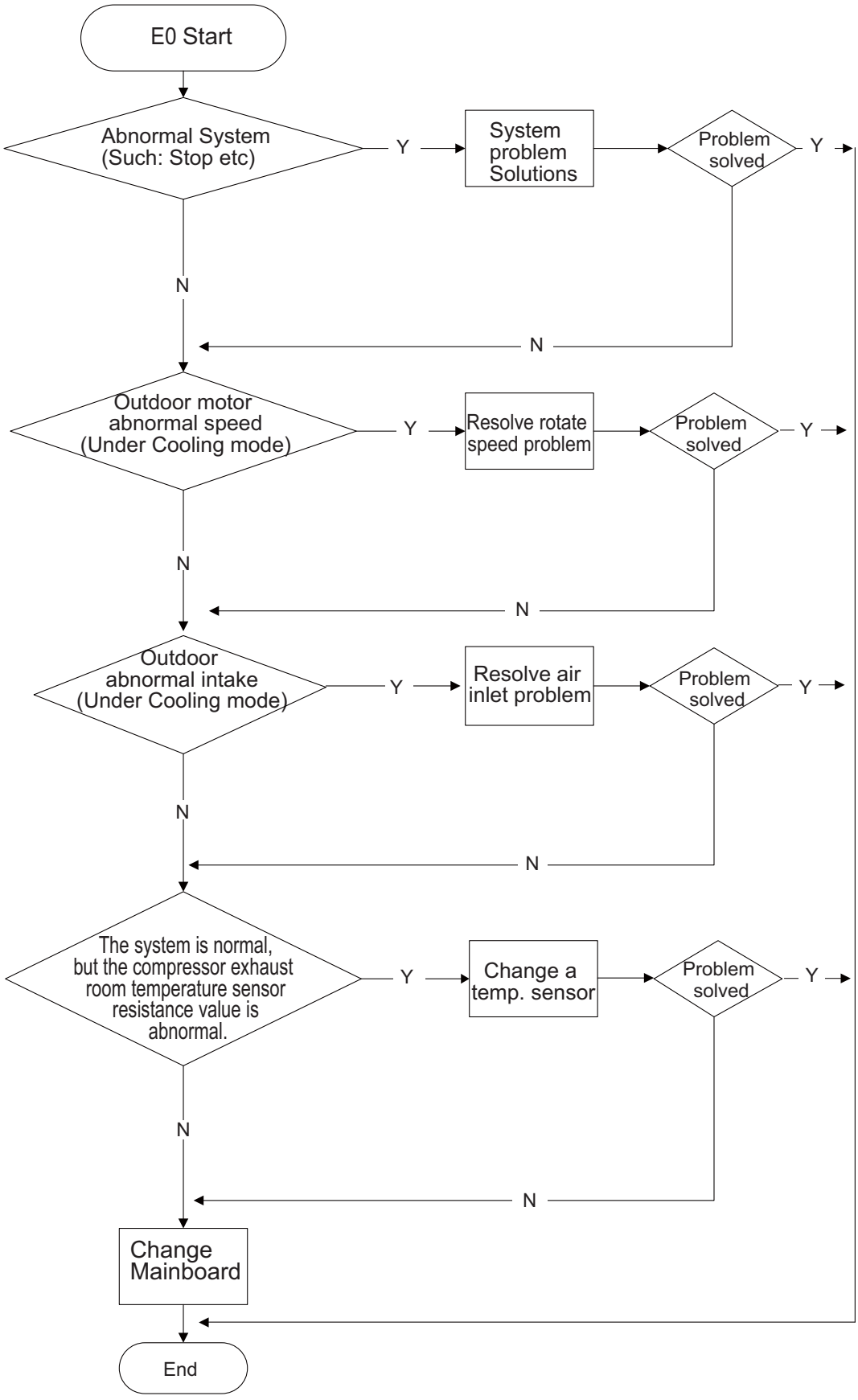


Diagram 2:

Main test points:

- Is the temperature of Indoor and Outdoor Unit too high?
- Is the fan of Indoor and Outdoor Unit operating normal?
- Is the radiating of Indoor and Outdoor Unit well(Including the fan speed is lower or not)?
- Is the pipe temperature sensor normal?

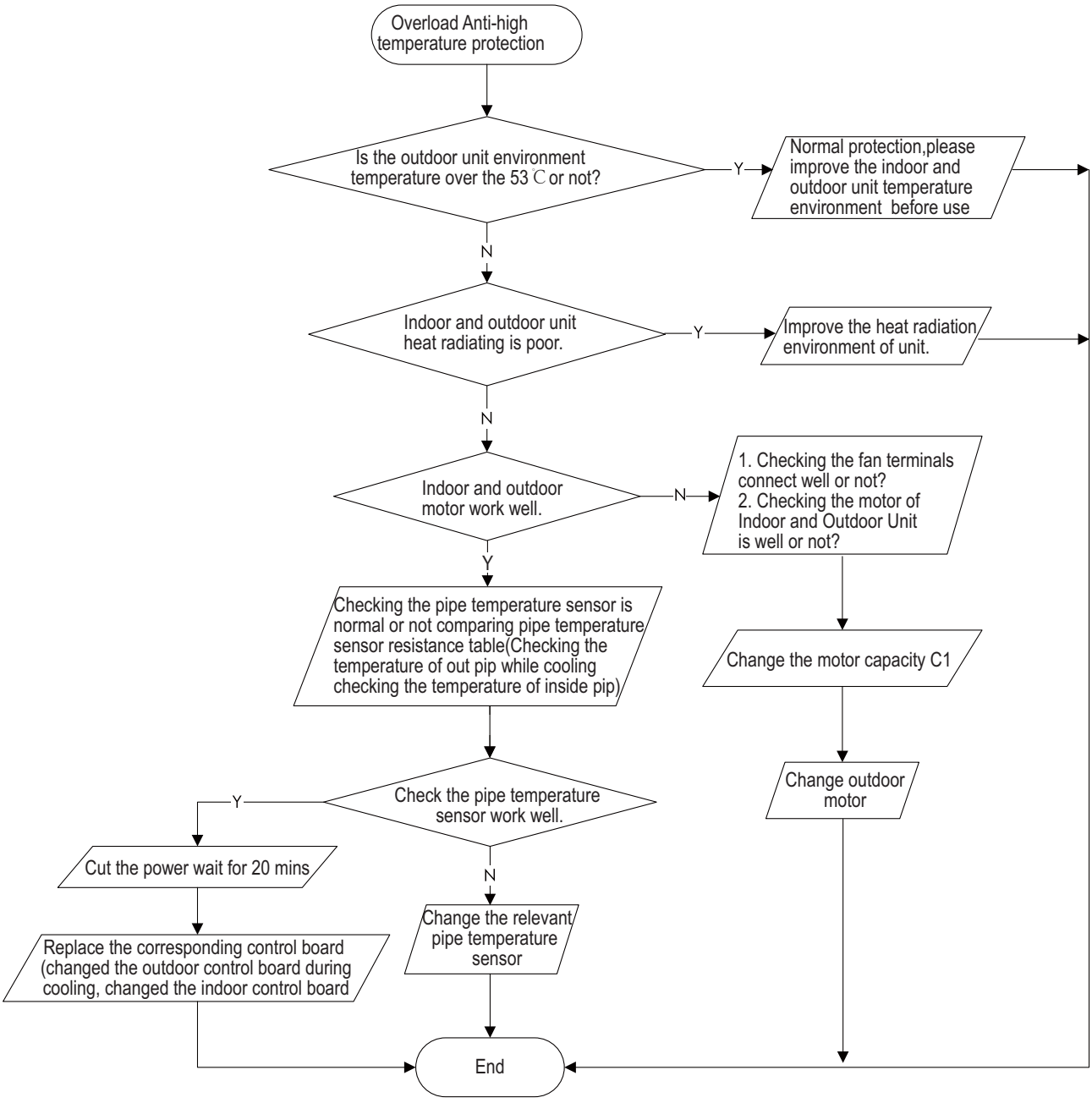


Diagram 3:

Main test points:

- Check the electronic expansion valve is connected.
- Check the electronic expansion valve is in good condition.
- Check the refrigerant leakage or not.
- Check the overload protector is in good condition.
- Check the pipe temperature sensor is in good condition.

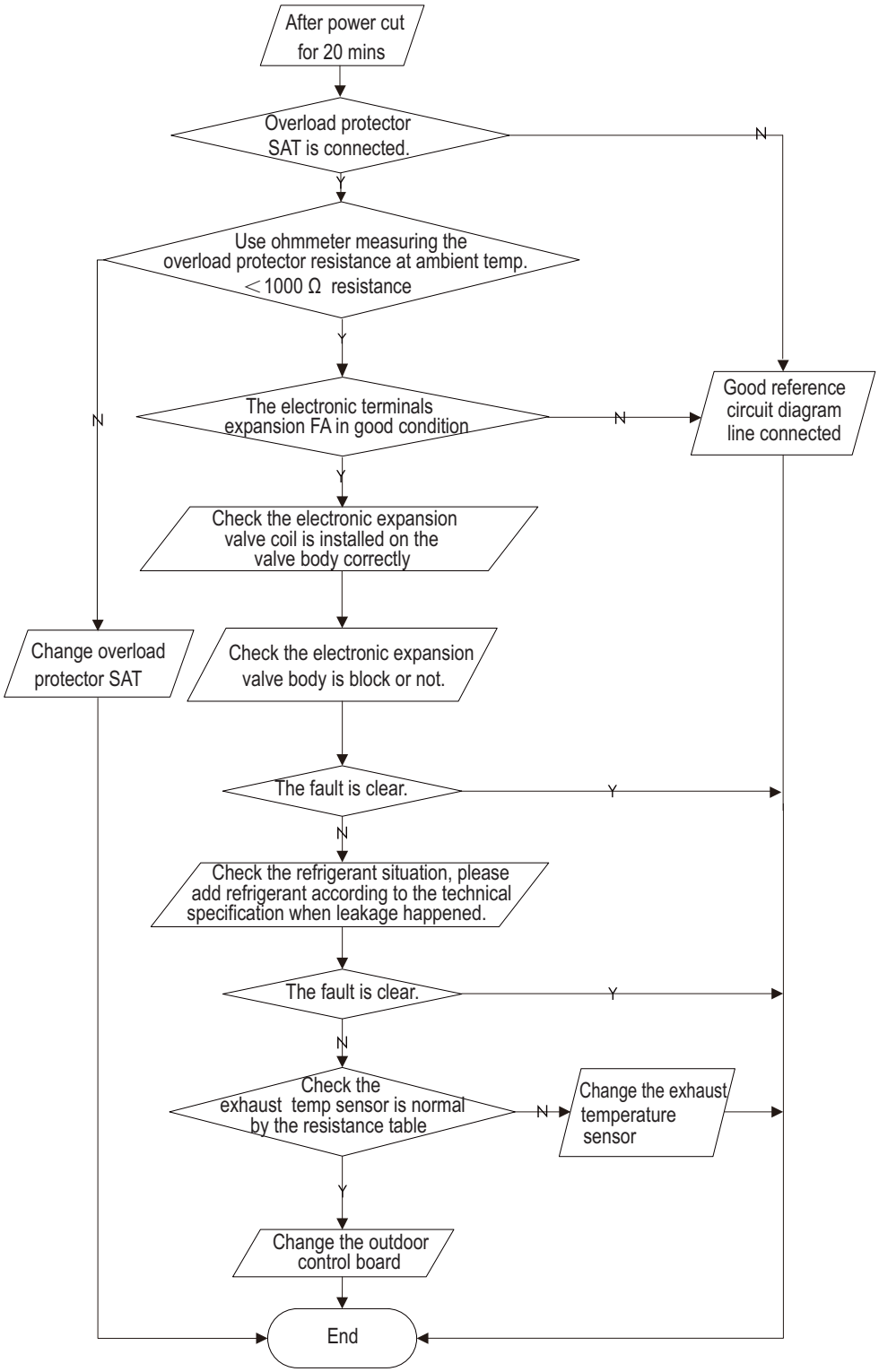


Diagram 4:

Main test points:

- Check the system pressure is high.
- Check the voltage is low.

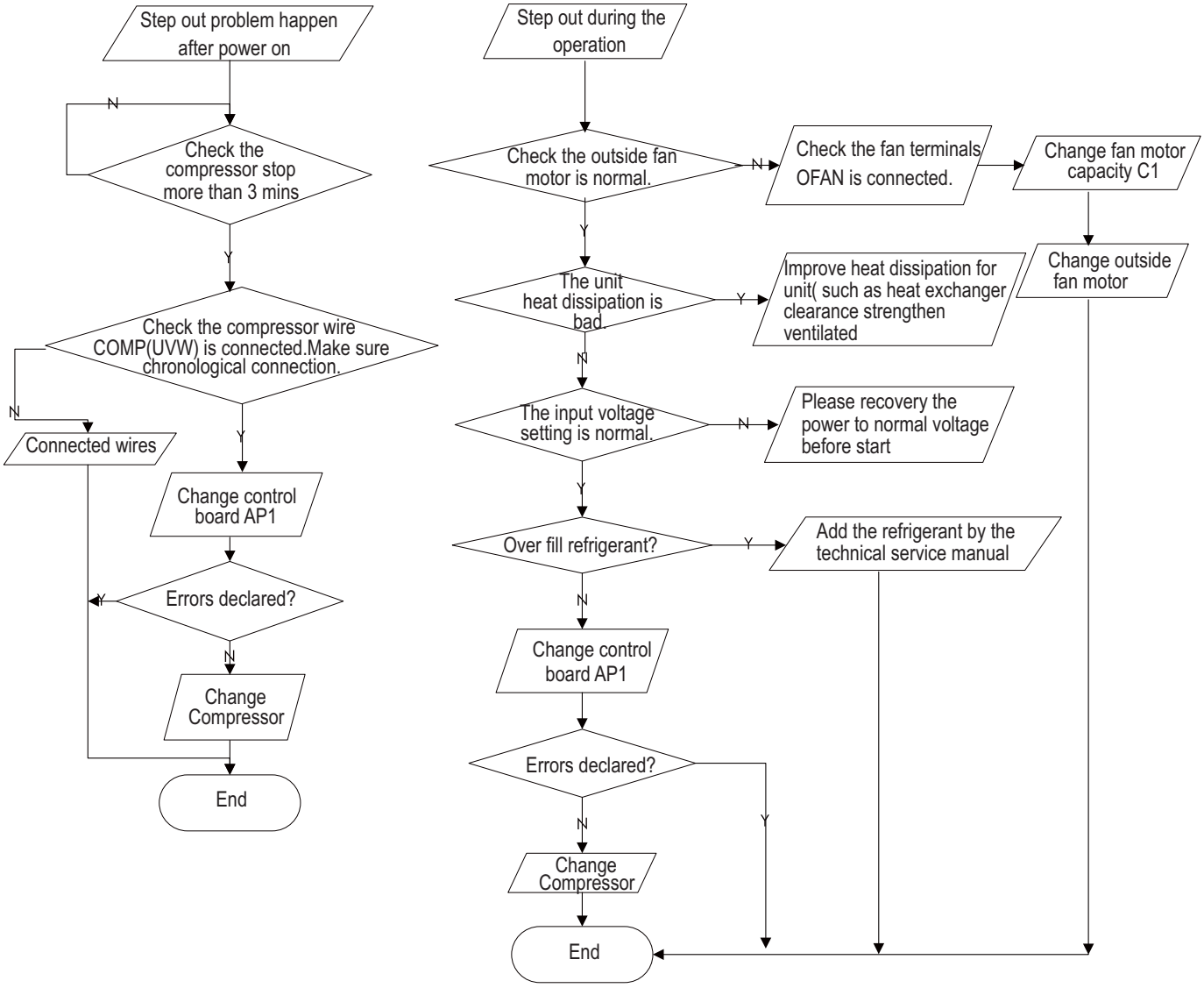


Diagram 5:

Main test points:

- Whether the compressor wiring is connected correct?
- Is compressor broken?
- Is time for compressor stopping enough?
- Whether refrigerant was charged too much?

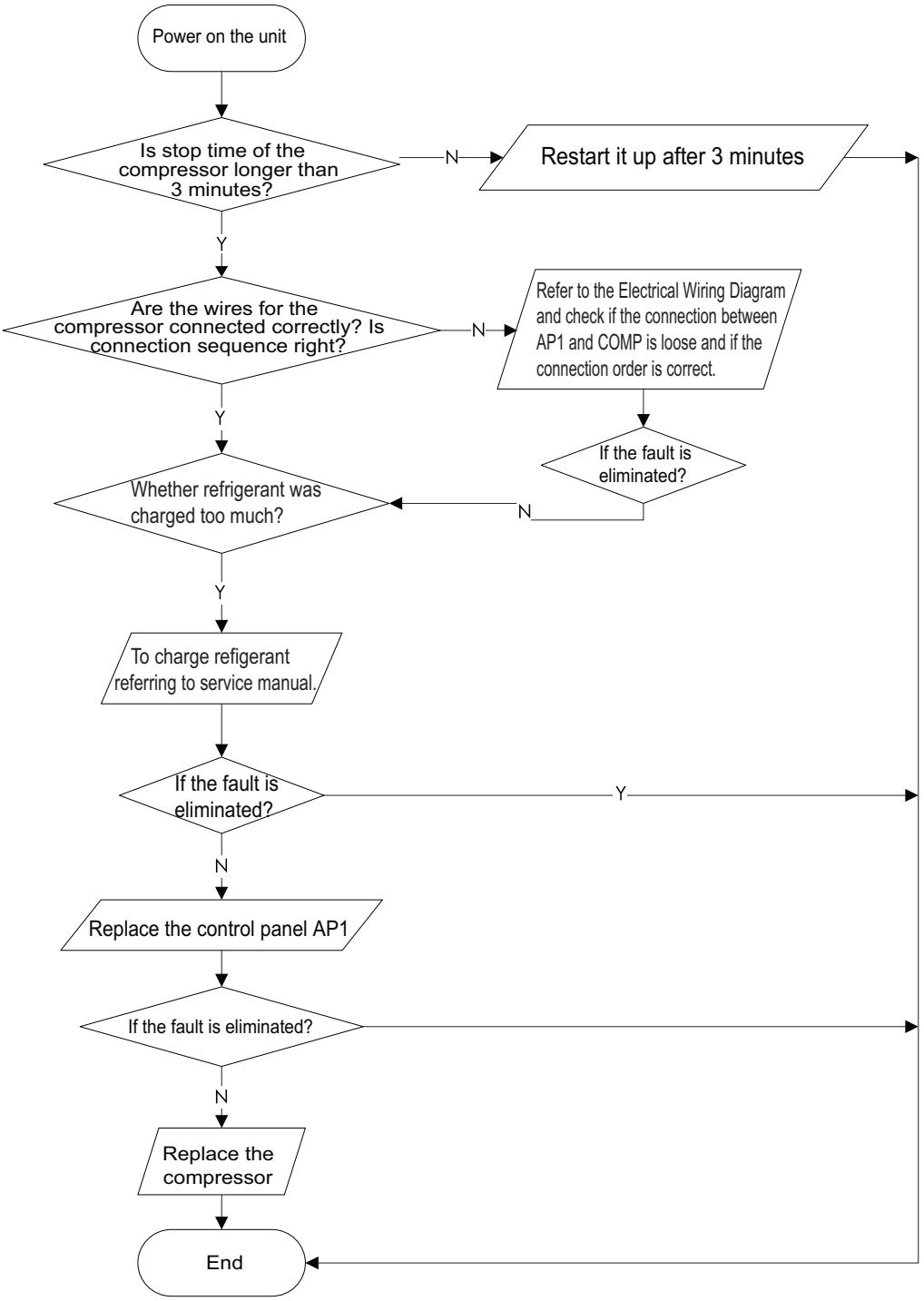


Diagram 6 , 7, 8:

Main check points:

- Is the connection between control panel AP1 and compressor COMP secure? Loose? Is the connection in correct order?
- Is the voltage input of the machine within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)
- Is the compressor coil resistance normal? Is the insulation of compressor coil against the copper tube in good condition?
- Is the working load of the machine too high? Is the radiation good?
- Is the charge volume of refrigerant correct?

Fault diagnosis process:

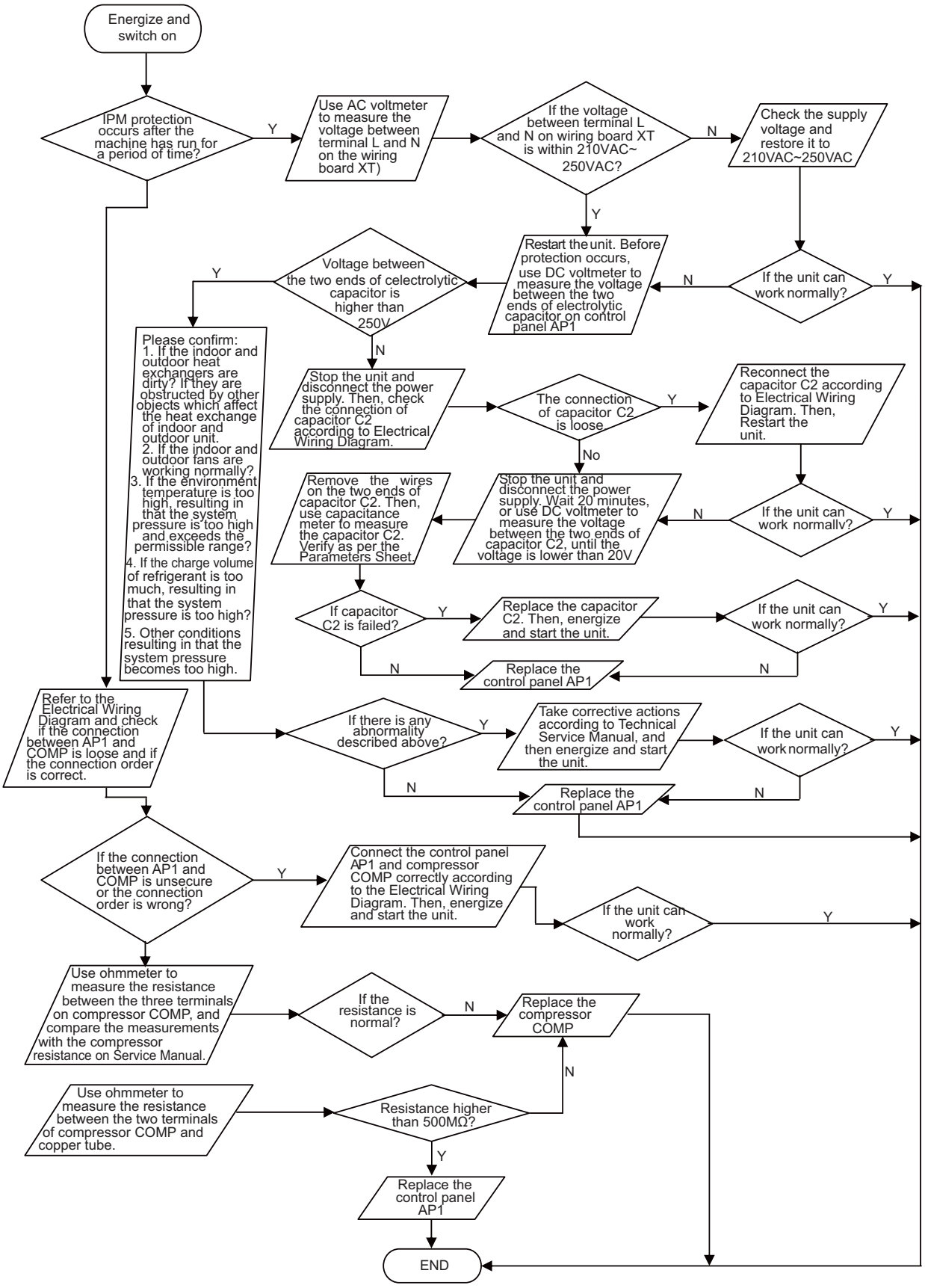


Diagram 9:

Main detection points:

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

Malfunction diagnosis process:

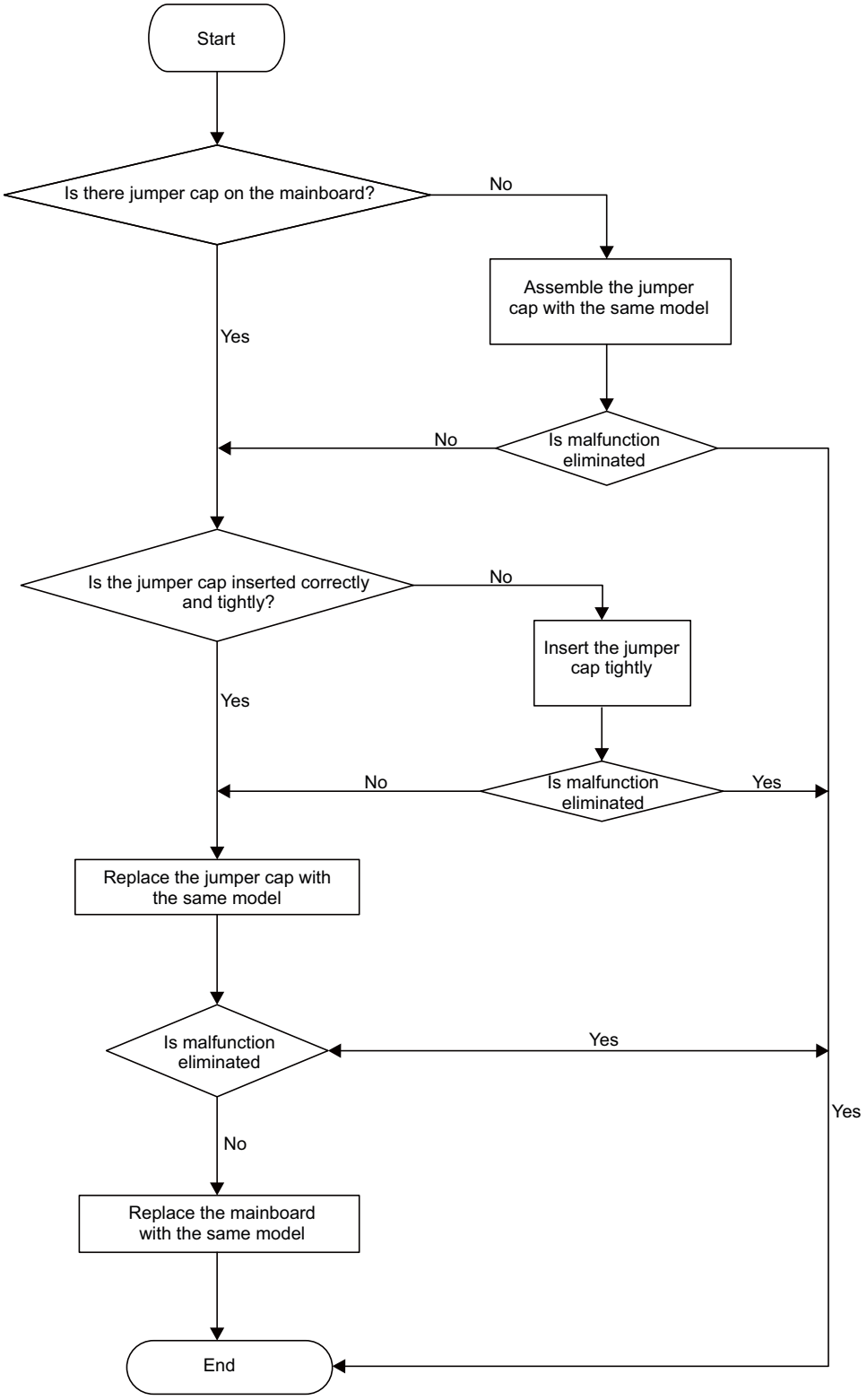


Diagram 10:

Malfunction of Blocked Protection of IDU Fan Motor L2

Main detection points:

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

Malfunction diagnosis process:

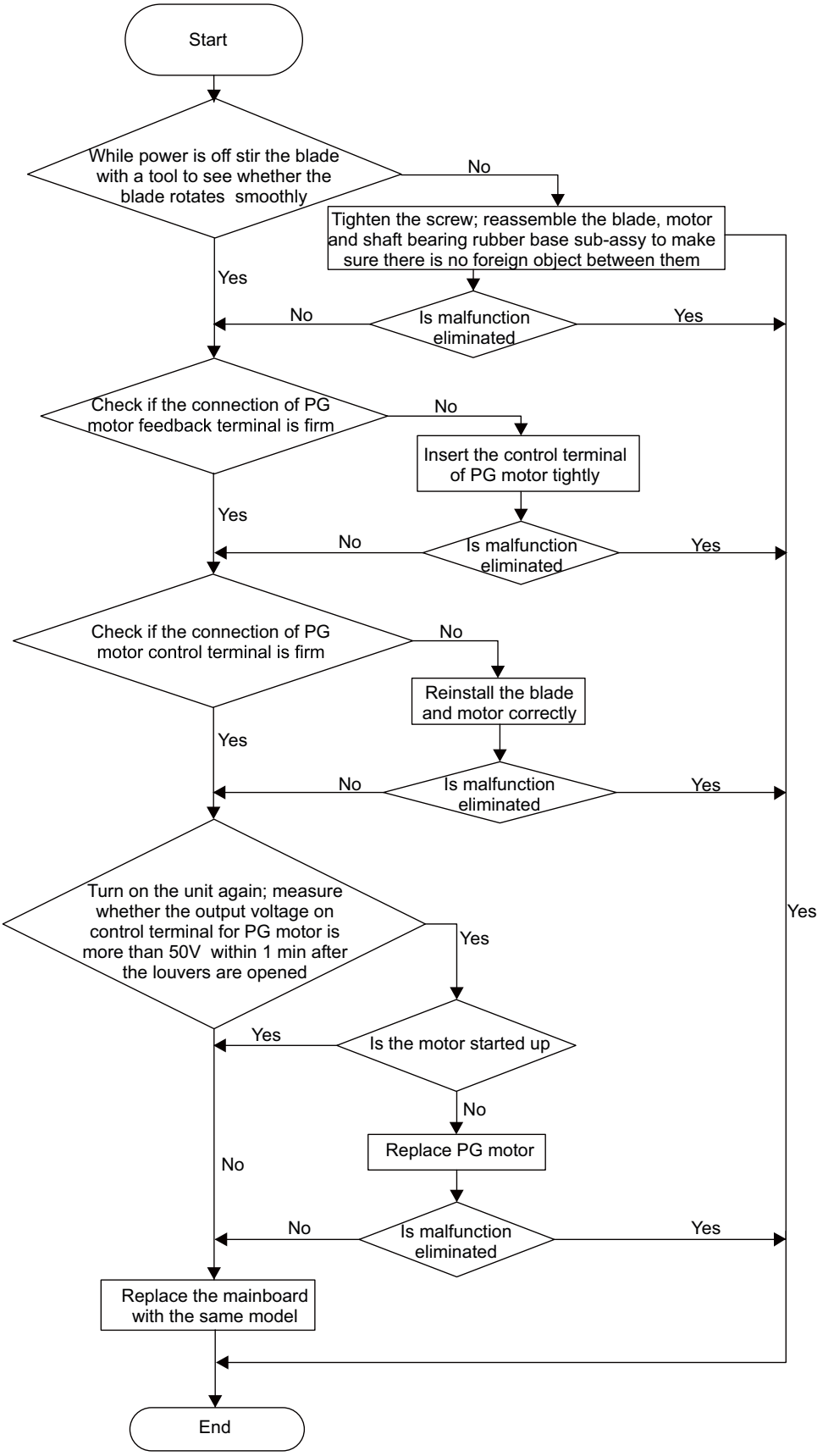


Diagram 11:

Main check points:

- Test the indoor and outdoor unit connection wire and internal wiring is connected or in good condition.
- Check the indoor unit main board communication circuit and outdoor unit main board communication circuit (AP1)are in good condition.

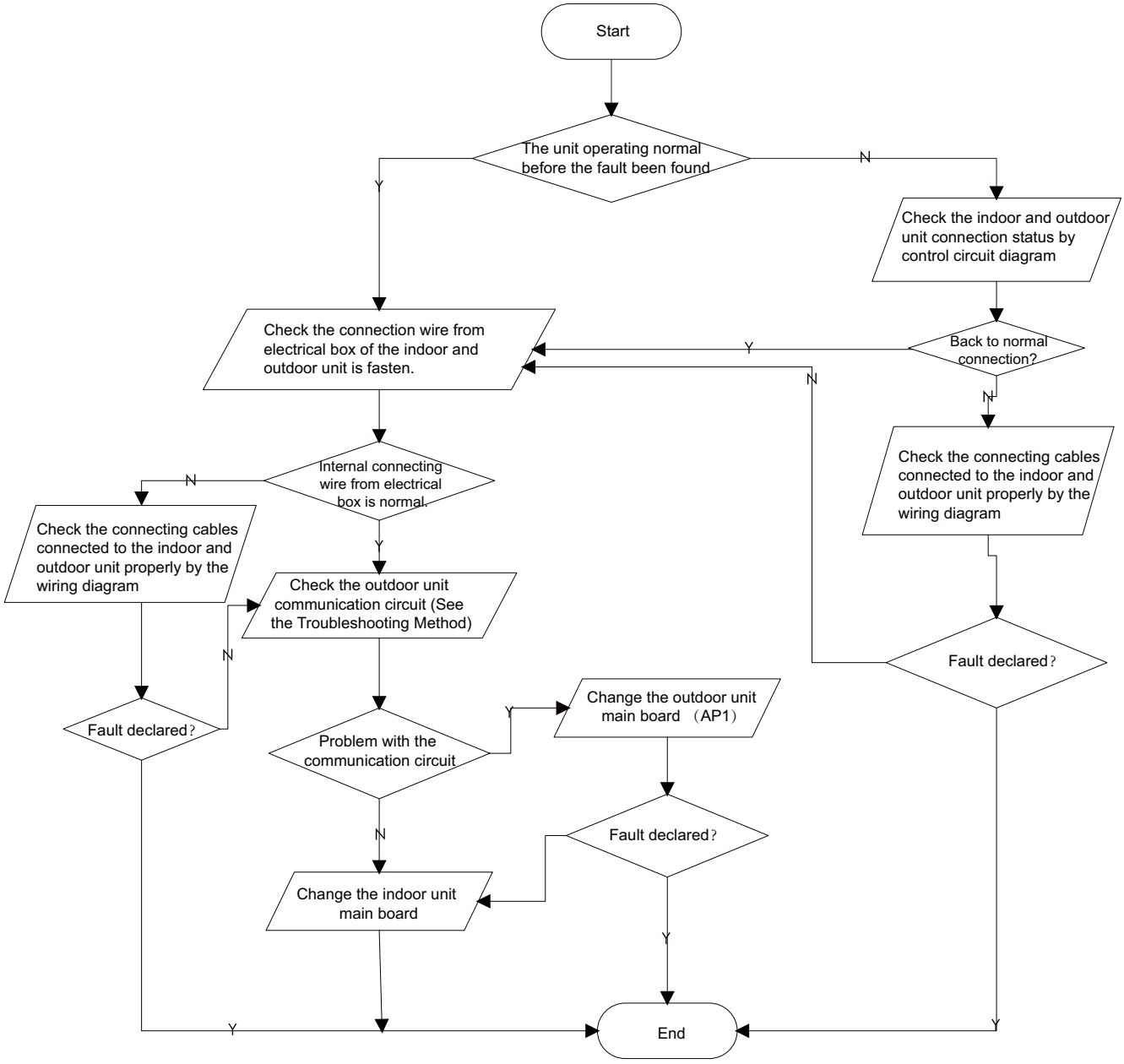


Diagram 12:

Outdoor unit communication circuit detection process as follows (outdoor unit key test points)

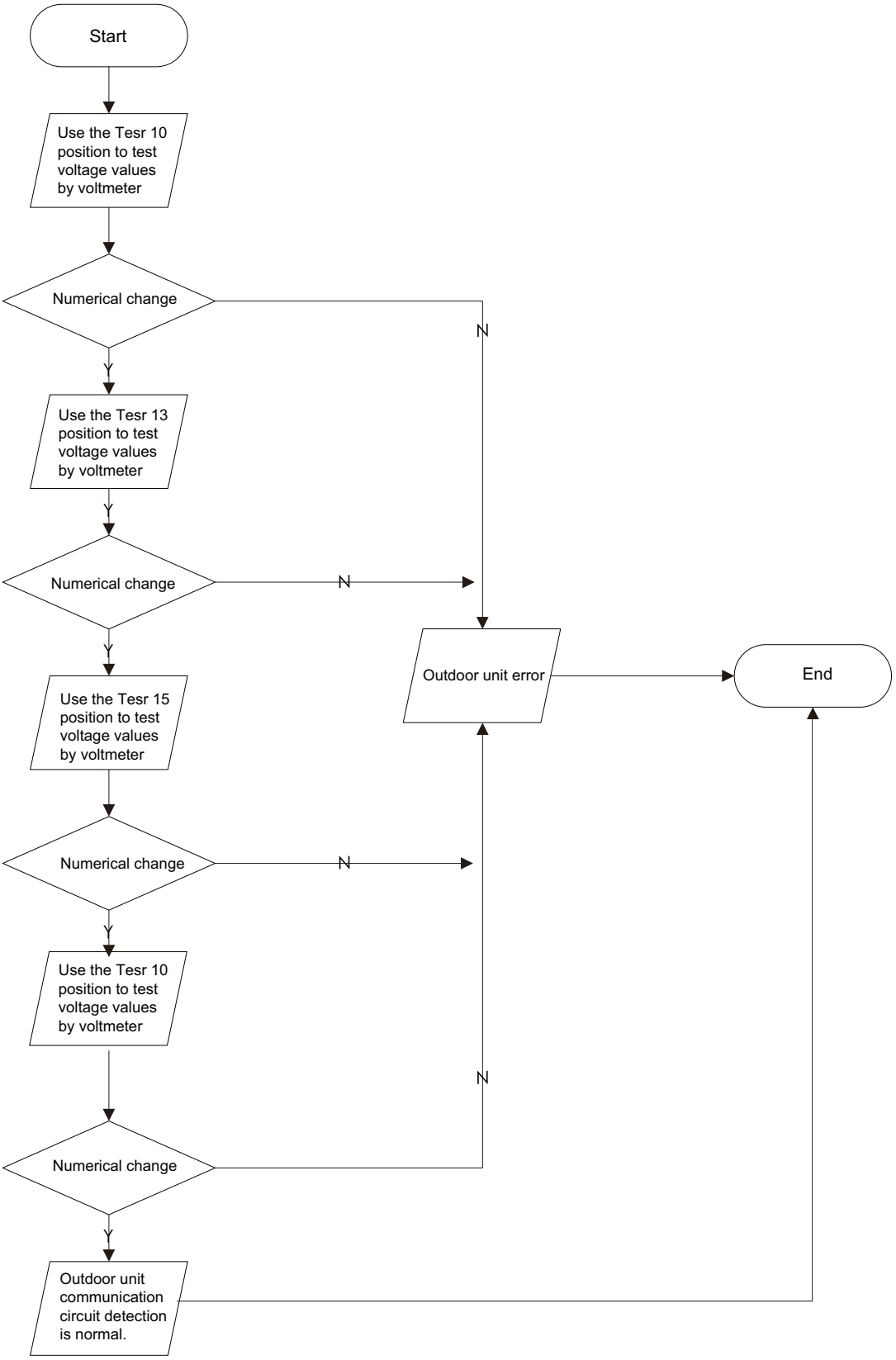


Diagram 13:

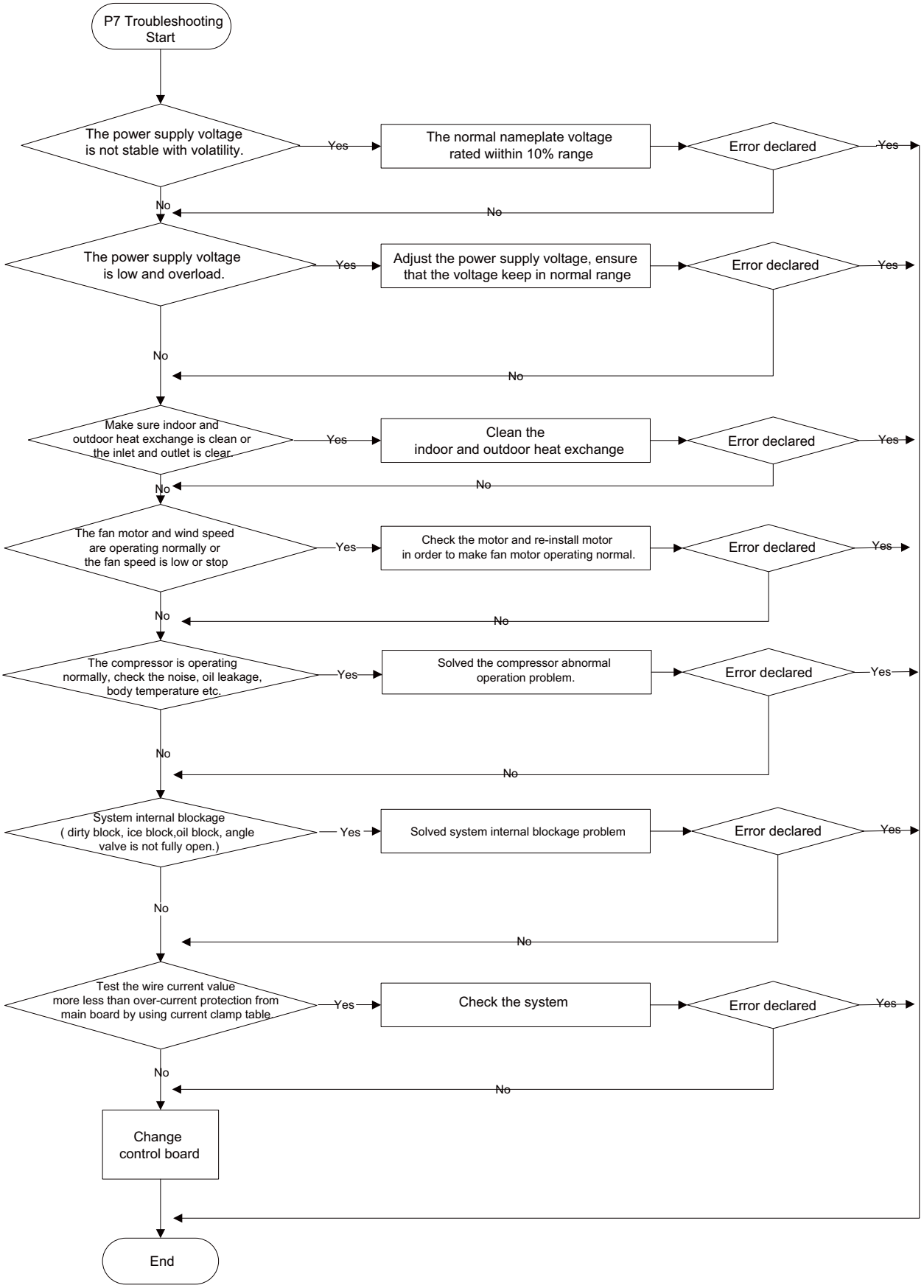
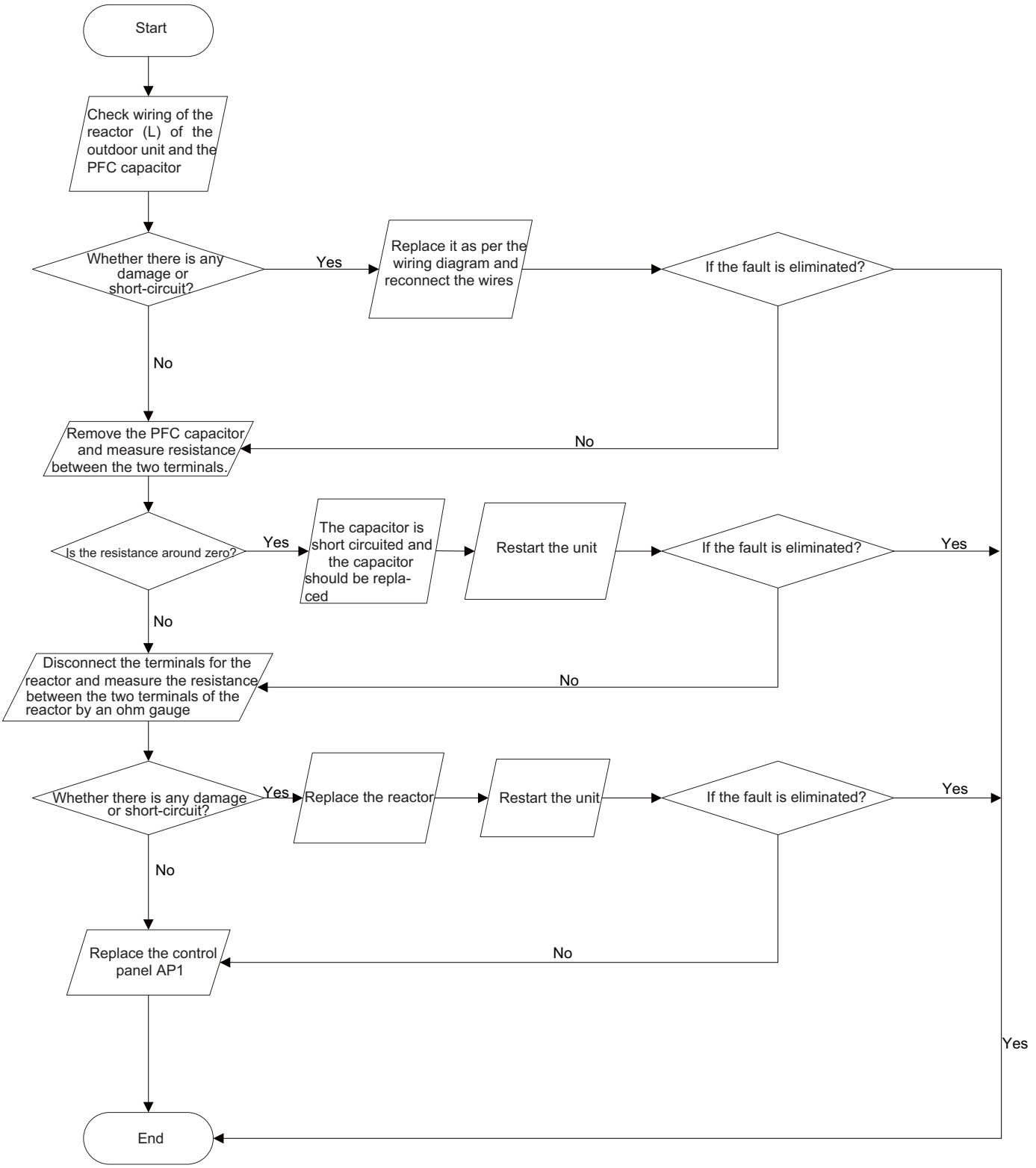

P7 Troubleshooting Start
The power supply voltage is not stable with volatility.
Yes
The normal nameplate voltage rated wiithin 10% range
Error declared
Yes
No
No
The power supply voltage is low and overload.
Yes
Adjust the power supply voltage, ensure that the voltage keep in normal range
Error declared
Yes
No
No
Make sure indoor and outdoor heat exchange is clean or the inlet and outlet is clear.
Yes
Clean the indoor and outdoor heat exchange
Error declared
Yes
No
No
The fan motor and wind speed are operating normally or the fan speed is low or stop
Yes
Check the motor and re-install motor in order to make fan motor operating normal.
Error declared
Yes
No
No
The compressor is operating normally, check the noise, oil leakage, body temperature etc.
Yes
Solved the compressor abnormal operation problem.
Error declared
Yes
No
No
System internal blockage (dirty block, ice block,oil block, angle valve is not fully open.)
Yes
Solved system internal blockage problem
Error declared
Yes
No
No
Test the wire current value more less than over-current protection from main board by using current clamp table.
Yes
Check the system
Error declared
Yes
No
No
Change control board
End

Diagram 14:

Power factor correct (PFC) fault P9 (a fault of outdoor unit) (AP1 here in after refers to the control board of the outdoor unit)
Mainly detect:
● Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken.
Fault diagnosis process:



9.4 Troubleshooting for Normal Malfunction

1. Air Conditioner Can't be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes,wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firml
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 filte
Installation position for indoor unit and outdoor unit is improper	Check whether the installation postion 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't 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 firml
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 firml
Capacity of the ODU fan motor is damaged	Measure the capacity of fan capacitor with an universal meter and fnd 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 firml
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and fnd 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 airconditioner	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.

Appendix1:Resistance Table for Indoor and Outdoor Ambient Temperature Sensors (15K)							
Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)
-20	144	16	22.53	52	4.986	88	1.451
-19	138.1	17	21.51	53	4.802	89	1.408
-18	128.6	18	20.54	54	4.625	90	1.363
-17	121.6	19	19.63	55	4.456	91	1.322
-16	115	20	18.75	56	4.294	92	1.282
-15	108.7	21	17.93	57	4.139	93	1.244
-14	102.9	22	17.14	58	3.99	94	1.207
-13	97.4	23	16.39	59	3.848	95	1.171
-12	92.22	24	15.68	60	3.711	96	1.136
-11	87.35	25	15	61	3.579	97	1.103
-10	82.75	26	14.36	62	3.454	98	1.071
-9	78.43	27	13.74	63	3.333	99	1.039
-8	74.35	28	13.16	64	3.217	100	1.009
-7	70.5	29	12.6	65	3.105	101	0.9801
-6	66.88	30	12.07	66	2.998	102	0.9519
-5	63.46	31	11.57	67	2.898	103	0.9247
-4	60.23	32	11.09	68	2.797	104	0.8984
-3	57.18	33	10.63	69	2.702	105	0.873
-2	54.31	34	10.2	70	2.611	106	0.8484
-1	51.59	35	9.779	71	2.523	107	0.8246
0	49.02	36	9.382	72	2.439	108	0.8016
1	46.8	37	9.003	73	2.358	109	0.7793
2	44.31	38	8.642	74	2.28	110	0.7577
3	42.14	39	8.297	75	2.205	111	0.7369
4	40.09	40	7.967	76	2.133	112	0.7167
5	38.15	41	7.653	77	2.064	113	0.6971
6	36.32	42	7.352	78	1.997	114	0.6782
7	34.58	43	7.065	79	1.933	115	0.6599
8	32.94	44	6.791	80	1.871	116	0.6421
9	31.38	45	6.529	81	1.811	117	0.625
10	29.9	46	6.278	82	1.754	118	0.6083
11	28.51	47	6.038	83	1.699	119	0.5922
12	27.18	48	5.809	84	1.645	120	0.5765
13	25.92	49	5.589	85	1.594	121	0.5614
14	24.73	50	5.379	86	1.544	122	0.5467
15	23.6	51	5.179	87	1.497	123	0.5324

Appendix2:ResistanceTable for Indoor and Outdoor Ambient Temperature Sensors (20K)							
Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)	Temp.(℃)	Resistance(kΩ)
-30	361.8	6	48.42	42	9.803	78	2.663
-29	339.8	7	46.11	43	9.42	79	2.577
-28	319.2	8	43.92	44	9.054	80	2.495
-27	300	9	41.84	45	8.705	81	2.415
-26	282.2	10	39.87	46	8.37	82	2.339
-25	265.5	11	38.01	47	8.051	83	2.265
-24	249.9	12	36.24	48	7.745	84	2.194
-23	235.3	13	34.57	49	7.453	85	2.125
-22	221.6	14	32.98	50	7.173	86	2.059
-21	208.9	15	31.47	51	6.905	87	1.996
-20	196.9	16	30.04	52	6.648	88	1.934
-19	181.4	17	28.68	53	6.403	89	1.875
-18	171.4	18	27.39	54	6.167	90	1.818
-17	162.1	19	26.17	55	5.942	91	1.763
-16	153.3	20	25.01	56	5.726	92	1.71
-15	145	21	23.9	57	5.519	93	1.658
-14	137.2	22	22.85	58	5.32	94	1.609
-13	129.9	23	21.85	59	5.13	95	1.561
-12	123	24	20.9	60	4.948	96	1.515
-11	116.5	25	20	61	4.773	97	1.47
-10	110.3	26	19.14	62	4.605	98	1.427
-9	104.6	27	18.32	63	4.443	99	1.386
-8	99.13	28	17.55	64	4.289	100	1.346
-7	94	29	16.8	65	4.14	101	1.307
-6	89.17	30	16.1	66	3.998	102	1.269
-5	84.61	31	15.43	67	3.861	103	1.233
-4	80.31	32	14.79	68	3.729	104	1.198
-3	76.24	33	14.18	69	3.603	105	1.164
-2	72.41	34	13.59	70	3.481	106	1.131
-1	68.79	35	13.04	71	3.364	107	1.099
0	65.37	36	12.51	72	3.252	108	1.069
1	62.13	37	12	73	3.144	109	1.039
2	59.08	38	11.52	74	3.04	110	1.01
3	56.19	39	11.06	75	2.94	111	0.9825
4	53.46	40	10.62	76	2.844	112	0.9556
5	50.87	41	10.2	77	2.752	113	0.9295

Appendix 3: Resistance Table for Indoor and Outdoor Ambient Temperature Sensors (50K)

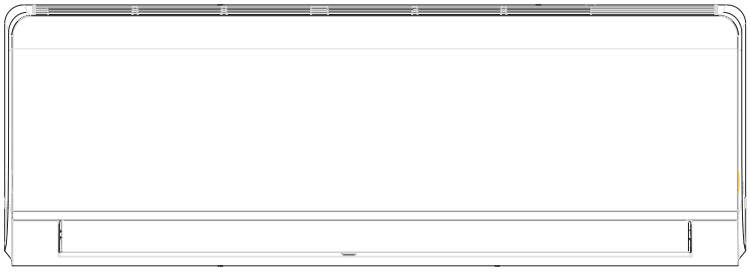
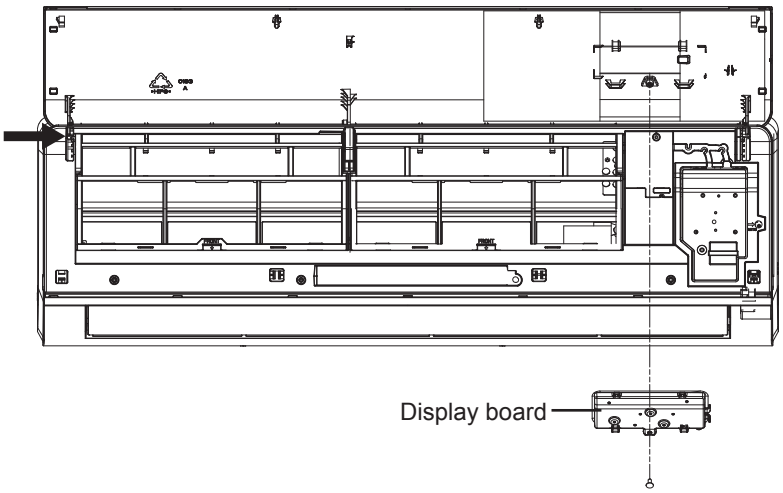
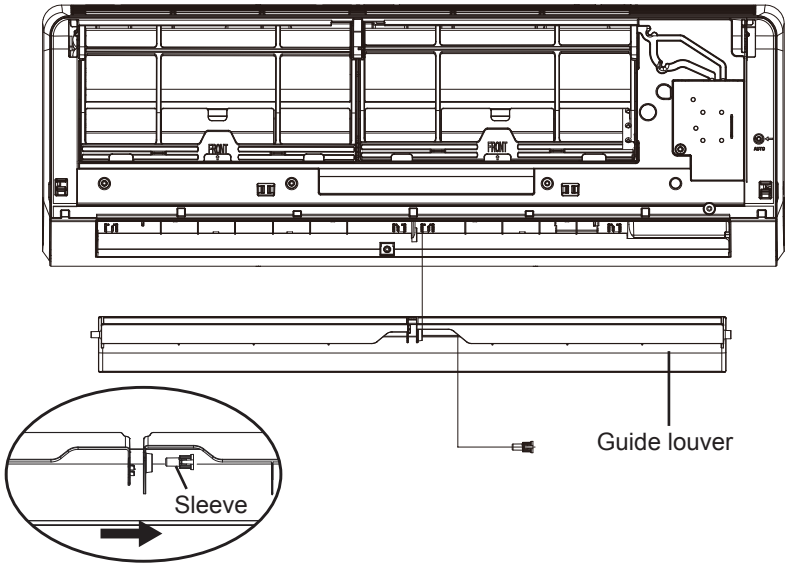
Temp. (℃)	Resistance (kΩ)	Temp. (℃)	Resistance (kΩ)	Temp. (℃)	Resistance (kΩ)	Temp. (℃)	Resistance (kΩ)	Temp. (℃)	Resistance (kΩ)
-30	911.56	6	119.08	42	24.128	78	6.542	114	2.2409
-29	853.66	7	113.37	43	23.186	79	6.3315	115	2.1816
-28	799.98	8	107.96	44	22.286	80	6.1288	116	2.1242
-27	750.18	9	102.85	45	21.425	81	5.9336	117	2.0686
-26	703.92	10	98.006	46	20.601	82	5.7457	118	2.0148
-25	660.93	11	93.42	47	19.814	83	5.5647	119	1.9626
-24	620.94	12	89.075	48	19.061	84	5.3903	120	1.9123
-23	583.72	13	84.956	49	18.34	85	5.2223	121	1.8652
-22	549.04	14	81.052	50	17.651	86	5.0605	122	1.8158
-21	516.71	15	77.349	51	16.99	87	4.9044	123	1.7698
-20	486.55	16	73.896	52	16.358	88	4.7541	124	1.7253
-19	458.4	17	70.503	53	15.753	89	4.6091	125	1.6821
-18	432.1	18	67.338	54	15.173	90	4.4693	126	1.6402
-17	407.51	19	64.333	55	14.018	91	4.3345	127	1.5996
-16	384.51	20	61.478	56	14.085	92	4.2044	128	1.5602
-15	362.99	21	58.766	57	13.575	93	4.0789	129	1.522
-14	342.83	22	56.189	58	13.086	94	3.9579	130	1.485
-13	323.94	23	53.738	59	12.617	95	3.841	131	1.449
-12	306.23	24	51.408	60	12.368	96	3.7283	132	1.4141
-11	289.61	25	49.191	61	11.736	97	3.6194	133	1.3803
-10	274.02	26	47.082	62	11.322	98	3.5143	134	1.3474
-9	259.37	27	45.074	63	10.925	99	3.4128	135	1.3155
-8	245.61	28	43.163	64	10.544	100	3.3147	136	1.2846
-7	232.67	29	41.313	65	10.178	101	3.22	137	1.2545
-6	220.5	30	39.61	66	9.8269	102	3.1285	138	1.2233
-5	209.05	31	37.958	67	9.4896	103	3.0401	139	1.1969
-4	198.27	32	36.384	68	9.1655	104	2.9547	140	1.1694
-3	188.12	33	34.883	69	8.9542	105	2.8721	141	1.1476
-2	178.65	34	33.453	70	8.5551	106	2.7922	142	1.1166
-1	169.68	35	32.088	71	8.2676	107	2.715	143	1.0913
0	161.02	36	30.787	72	7.9913	108	2.6404	144	1.0667
1	153	37	29.544	73	7.7257	109	2.5682	145	1.0429
2	145.42	38	28.359	74	7.4702	110	2.4983	146	1.0197
3	138.26	39	27.227	75	7.2245	111	2.4308	147	0.9971
4	131.5	40	26.147	76	6.9882	112	2.3654	148	0.9752
5	126.17	41	25.114	77	6.7608	113	2.3021	149	0.9538

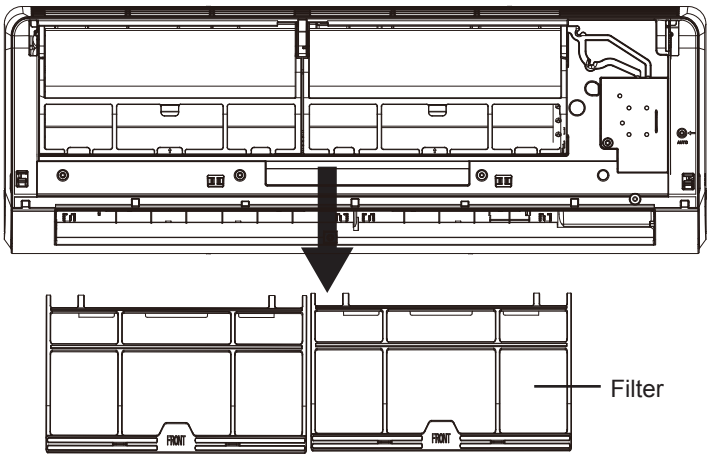
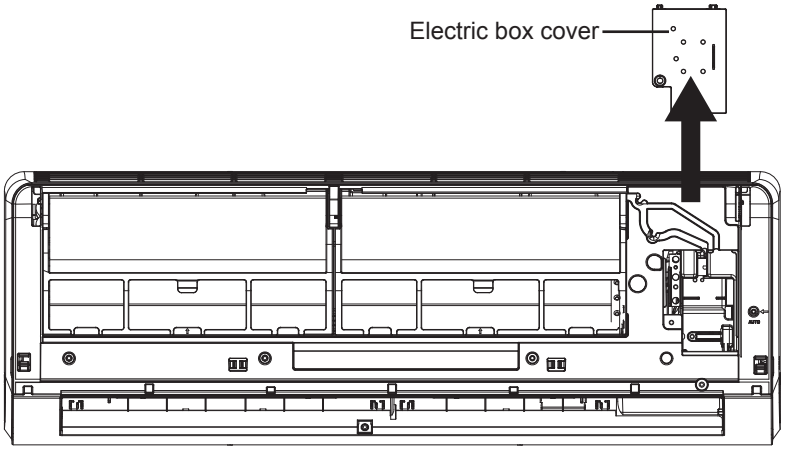
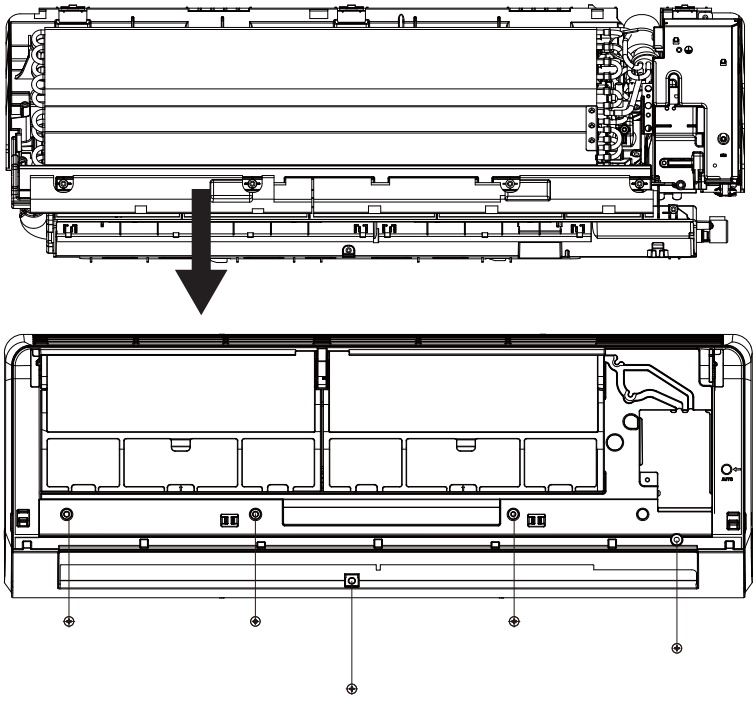
Note: The information above is for reference only.

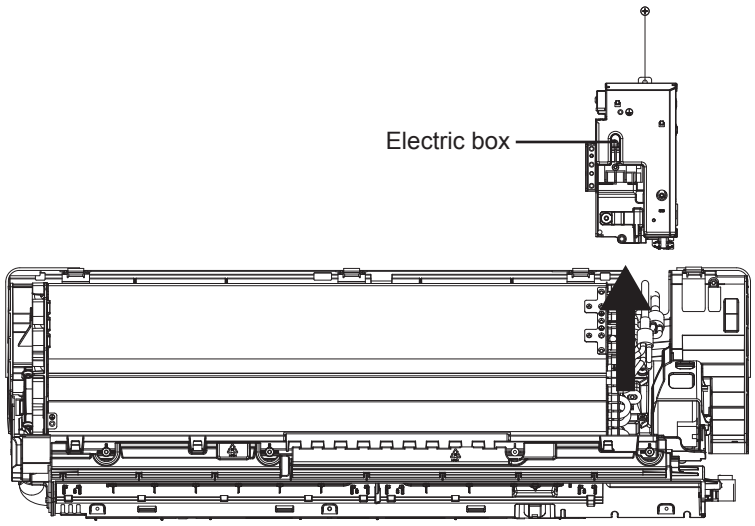
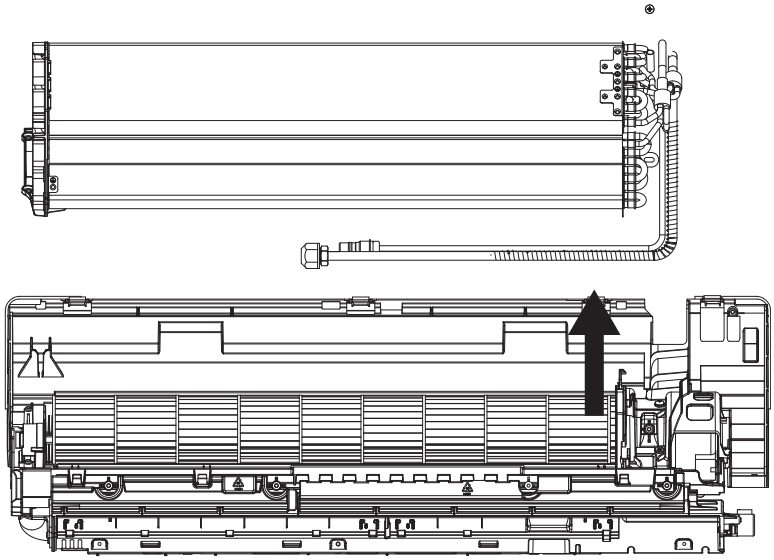
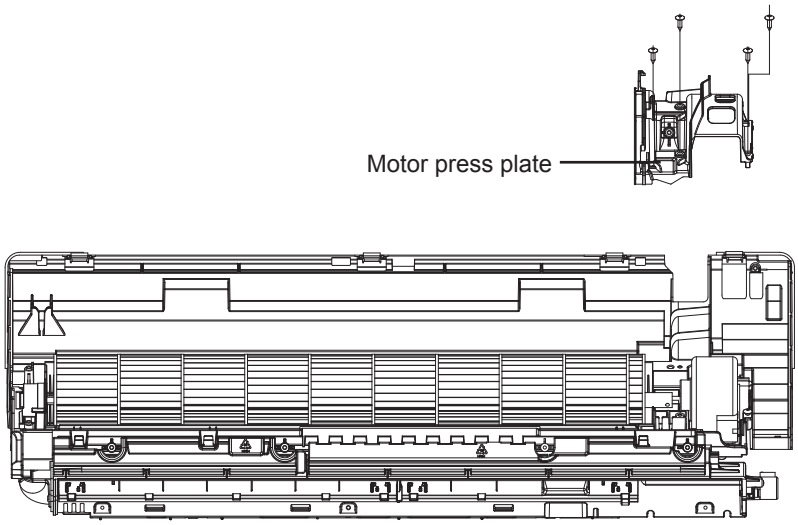
10. Removal Procedure

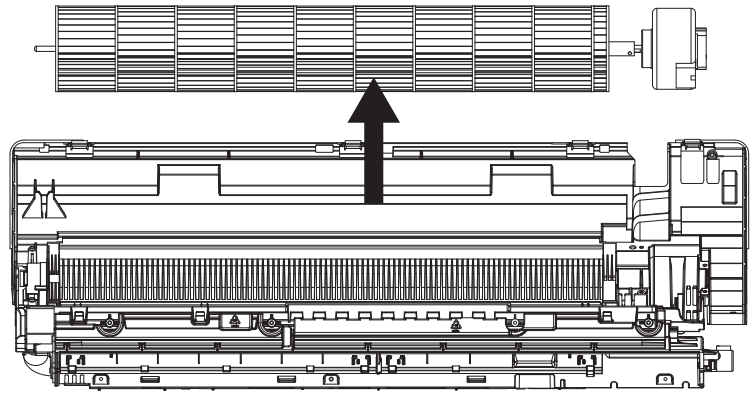
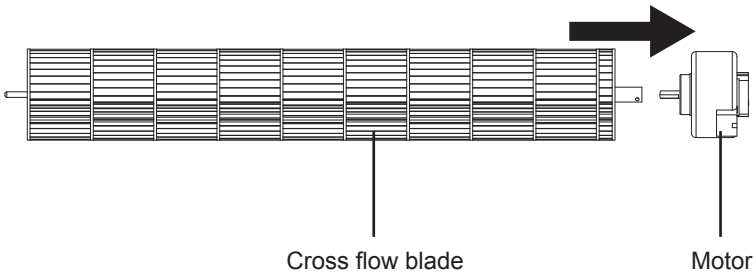
10.1 Removal Procedure of Indoor Unit **Model:** 09K/12K

Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

Procedure	Note
	**1. Before disassembly**
	**2. Remove panel and Display Board** A: Open the front panel. B: Loosen the screws of the display board with screwdriver. C: Push the rotor shaft on both sides of the panel to make it separate from the groove. Remove the panel.
	**3. Remove guide louver** Remove axial sleeve of guide louver.

Procedure	Note
	**4. Remove the filter** Push the filter inward and then draw it upward to remove it.
	**5. Remove electric box cove** Loosen the screws of the electric box cover with screwdriver.
	**6. Remove the front case** A: Open the screw cap on the front case. Remove the screws fixing the front case. B: Remove the front case to seperate it with bottom assembly.

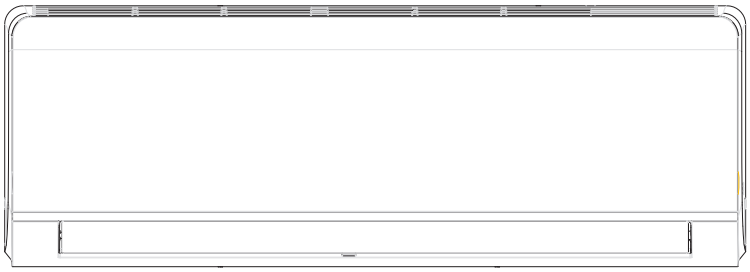
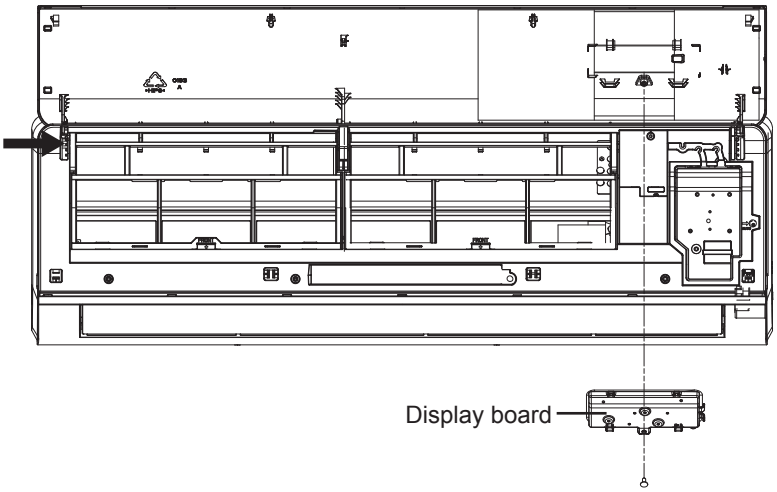
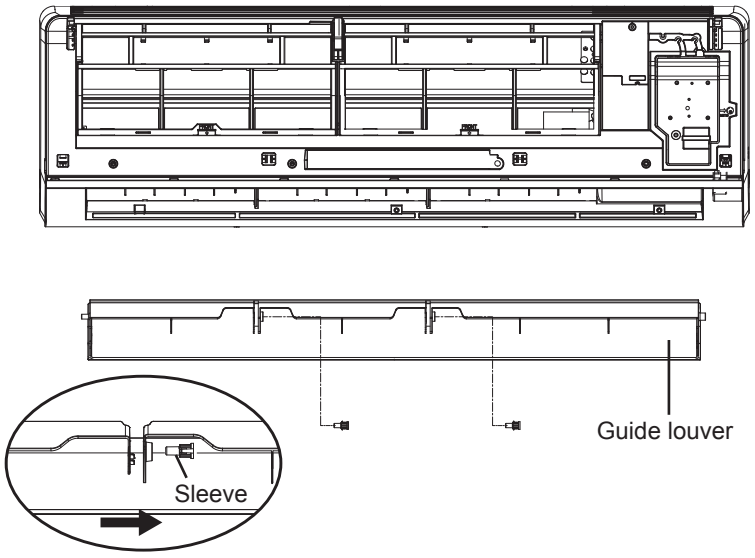
Procedure	Note
	**7. Remove electric box** A: Disconnect the indoor tube temperature sensor. B: Remove the screws at the joint of the earthing wire and evaporator. C: Loosen the clasp at the joint of the electric box.
	**8. Remove evaporator** A: Remove the screws at the joint of the evaporator and rear case. B: Adjust slightly the pipe on the evaporator to separate the pipe with the evaporator. C: Remove the evaporator to separate the evaporator with rear case assy.
	**9. Remove motor press plate** Remove the screw of the motor press plateand then remove the press plate.

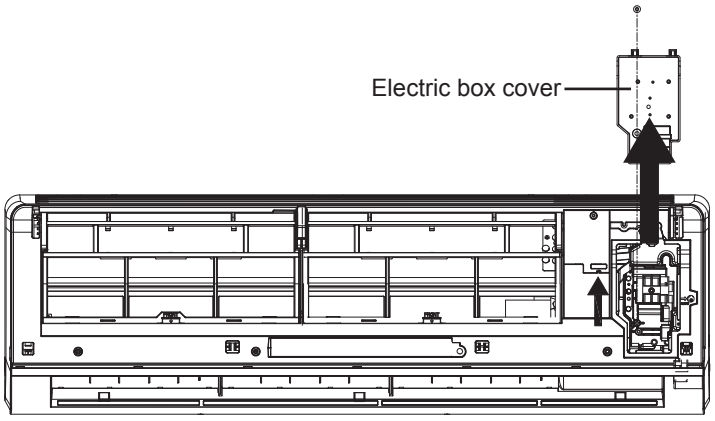
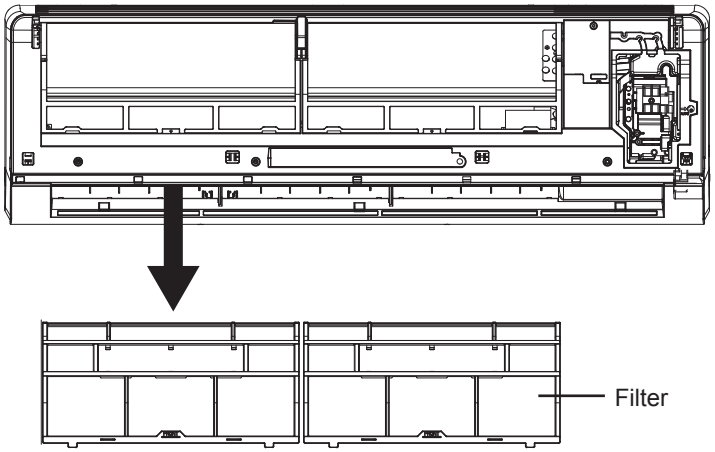
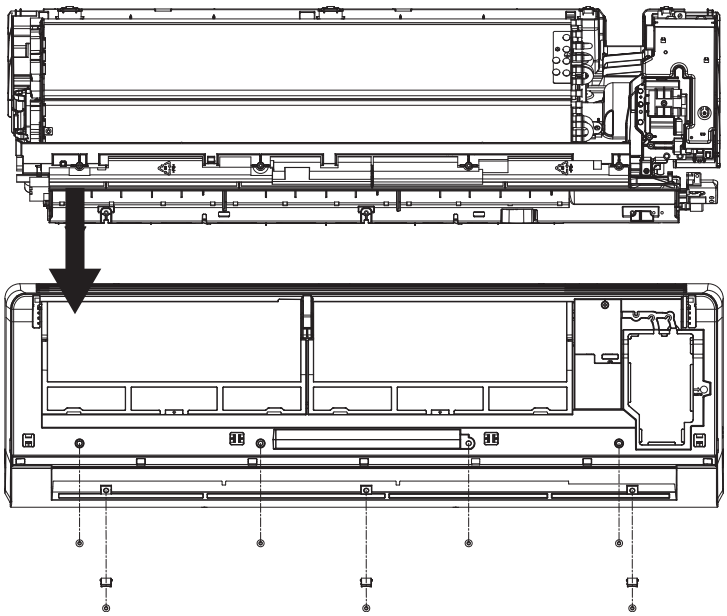
Procedure	Note
	**10. Remove motor and cross flow blade** A: Remove the cross flow blade and motor.
	B: Remove the screws at the joint of the cross flowblade and the motor. Take down the motor.

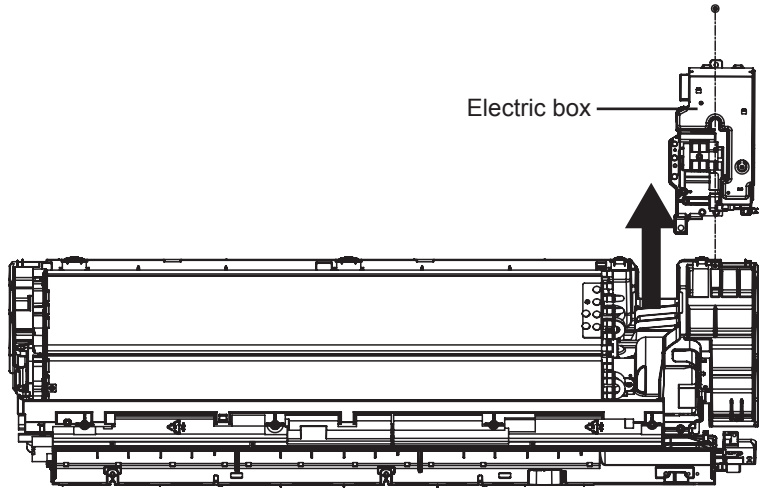
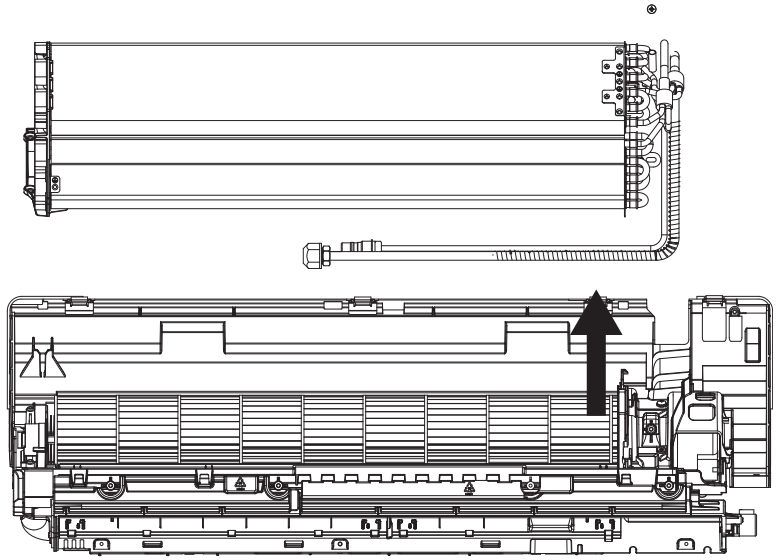
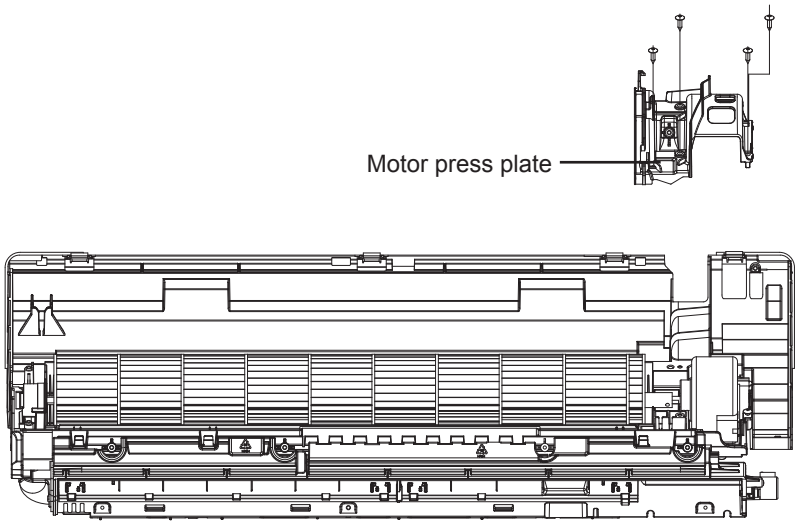
10.2 Removal Procedure of Indoor Unit

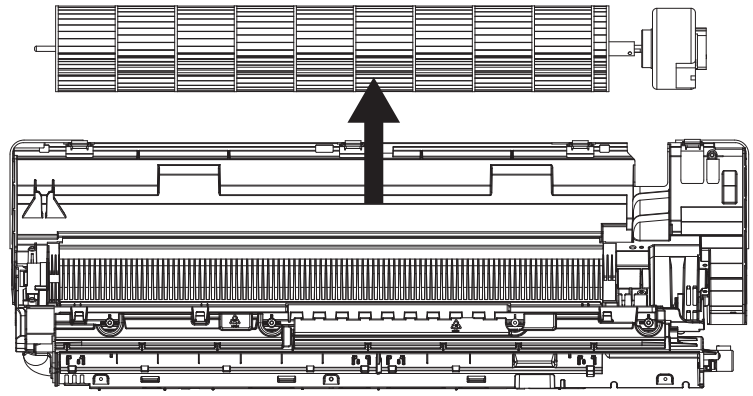
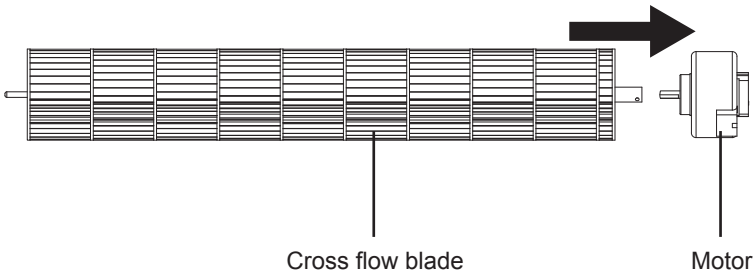
Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

Model: 18K

Procedure	Note
	**1. Before disassembly**
	**2. Remove panel and Display Board** A: Open the front panel. B: Loosen the screws of the display board with screwdriver. C: Push the rotor shaft on both sides of the panel to make it separate from the groove. Remove the panel.
	**3. Remove guide louver** Remove axial sleeve of guide louver.

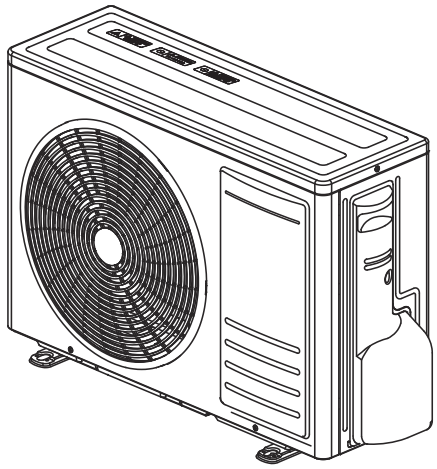
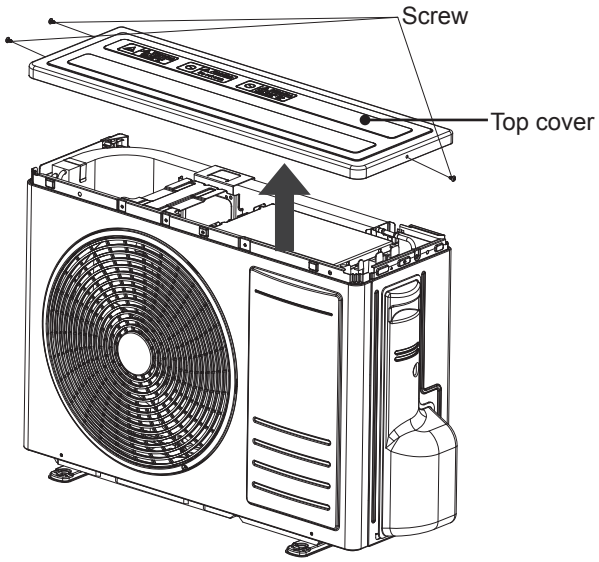
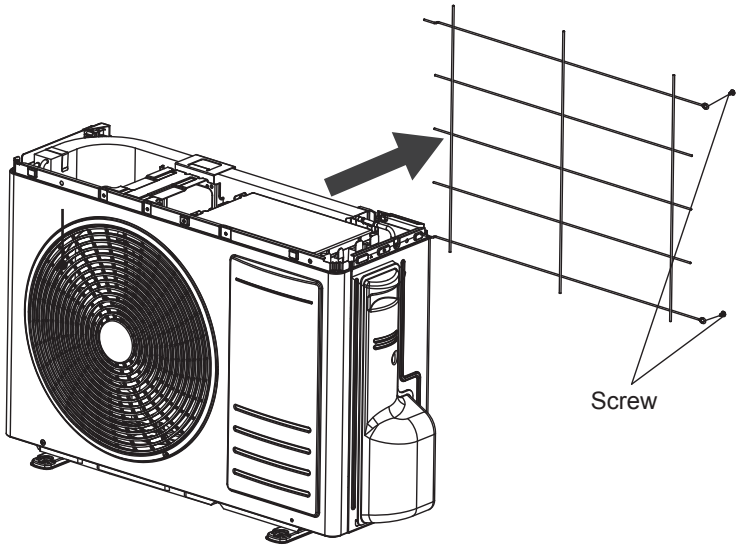
Procedure	Note
	**4. Remove electric box cove** Loosen the screws of the electric box cover with screwdriver.
	**5. Remove the filter** Push the filter inward and then draw it upward to remove it.
	**6. Remove the front case** A: Open the screw cap on the front case. Remove the screws fixing the front case. B: Remove the front case to seperate it with bottom assembly.

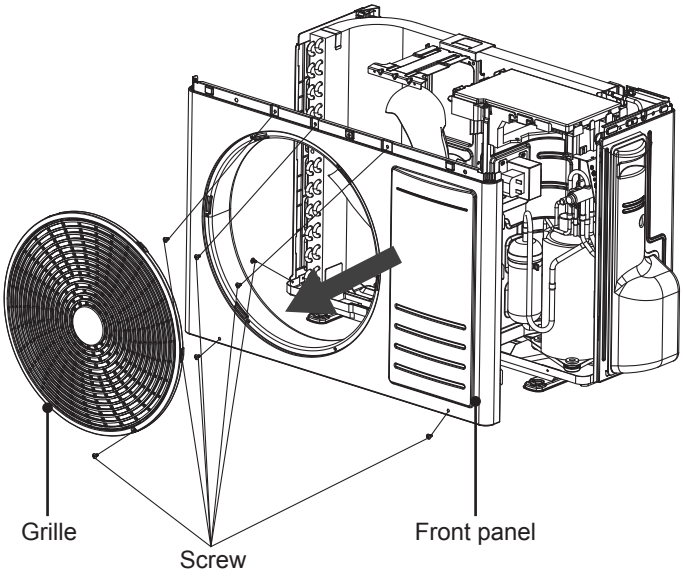
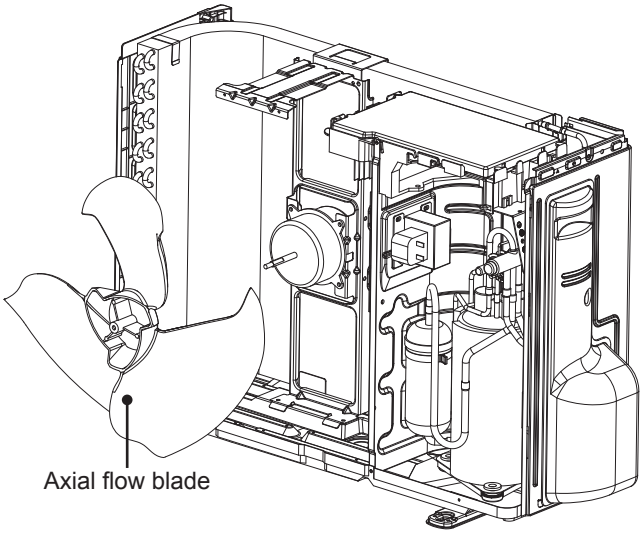
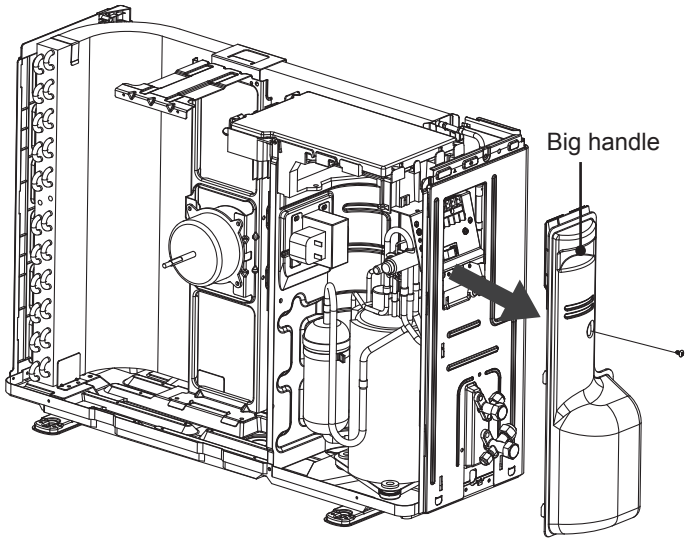
Procedure	Note
	**7. Remove electric box** A: Disconnect the indoor tube temperature sensor. B: Remove the screws at the joint of the earthing wire and evaporator. C: Loosen the clasp at the joint of the electric box.
	**8. Remove evaporator** A: Remove the screws at the joint of the evaporator and rear case. B: Adjust slightly the pipe on the evaporator to separate the pipe with the evaporator. C: Remove the evaporator to separate the evaporator with rear case assy.
	**9. Remove motor press plate** Remove the screw of the motor press plateand then remove the press plate.

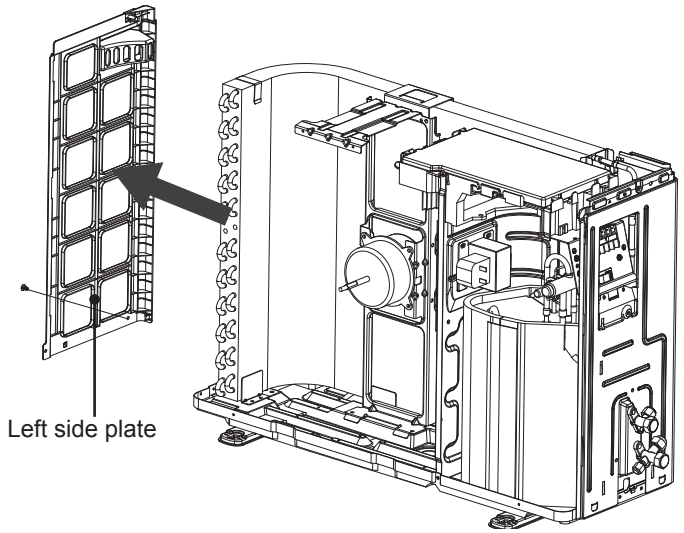
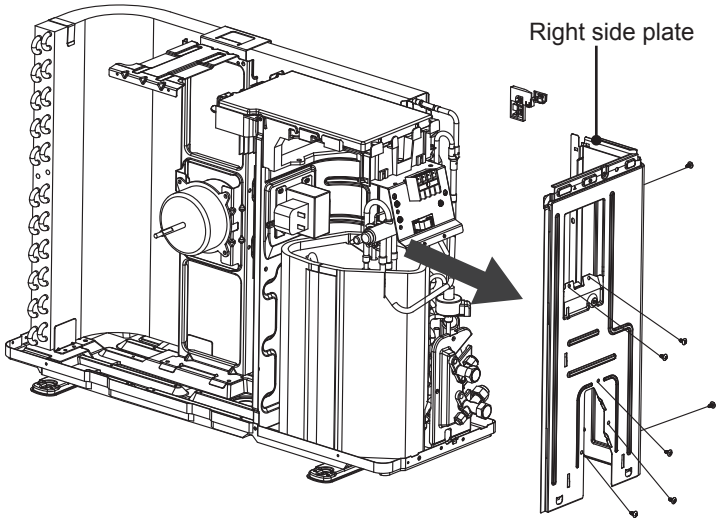
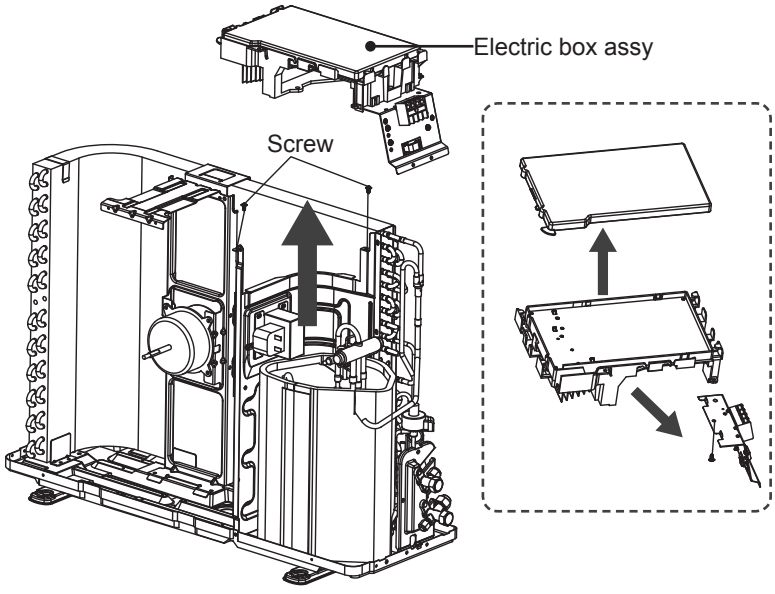
Procedure	Note
	**10. Remove motor and cross flow blade** A: Remove the cross flow blade and motor.
	B: Remove the screws at the joint of the cross flowblade and the motor. Take down the motor.

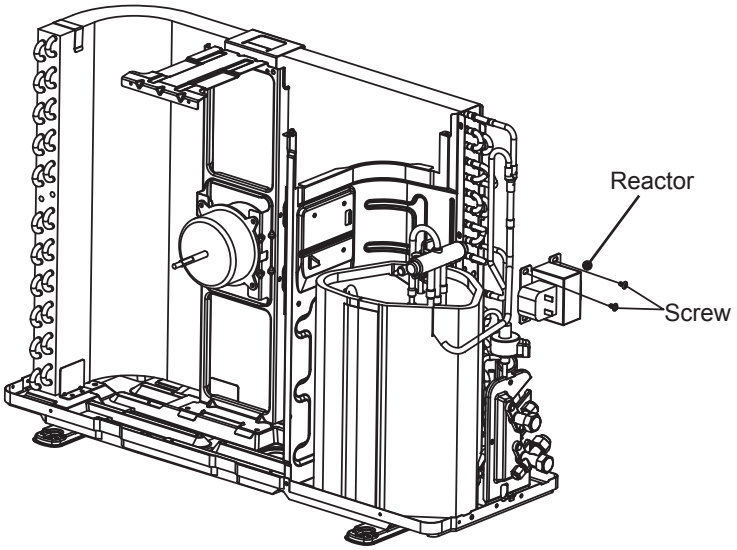
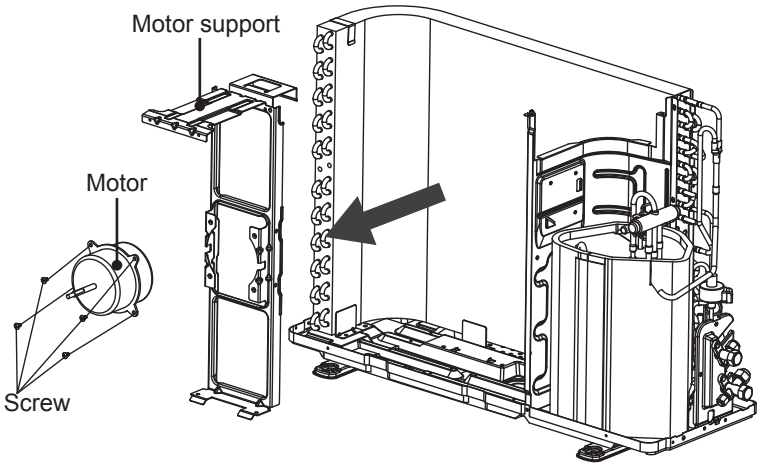
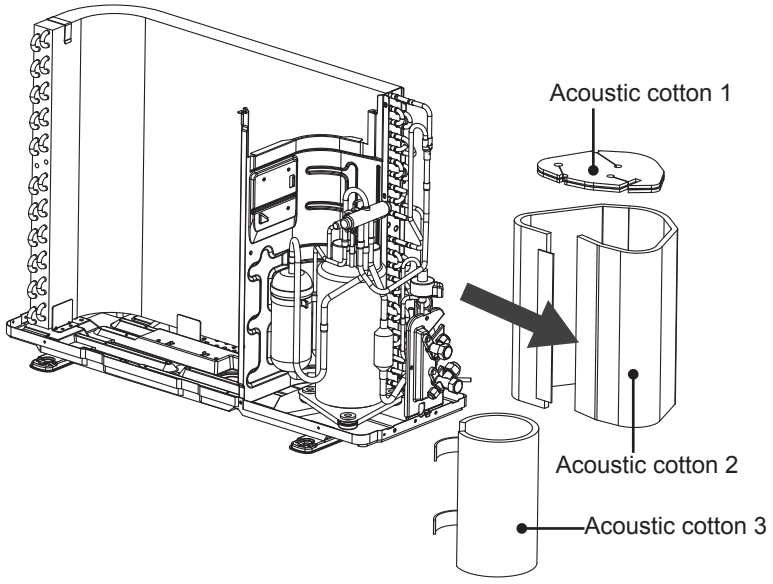
10.3 Removal Procedure of Outdoor Unit

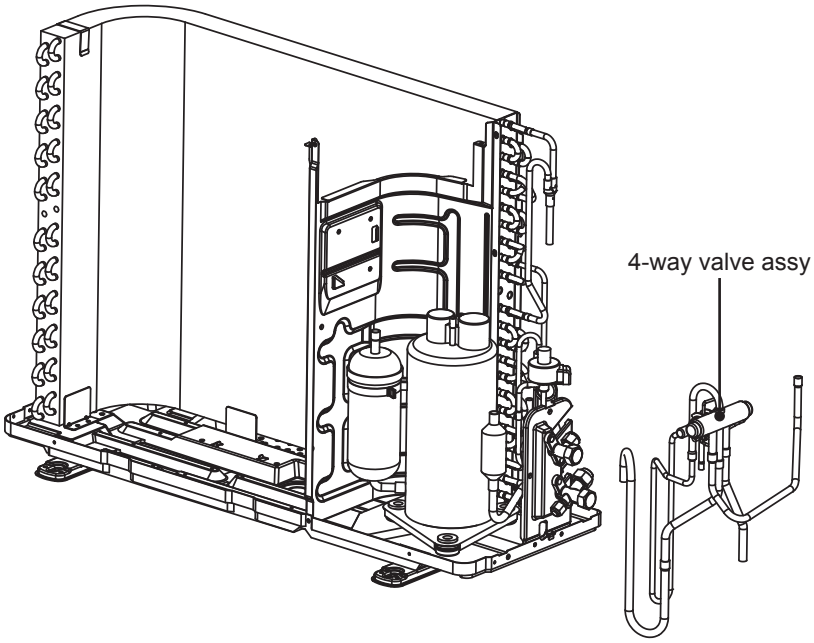
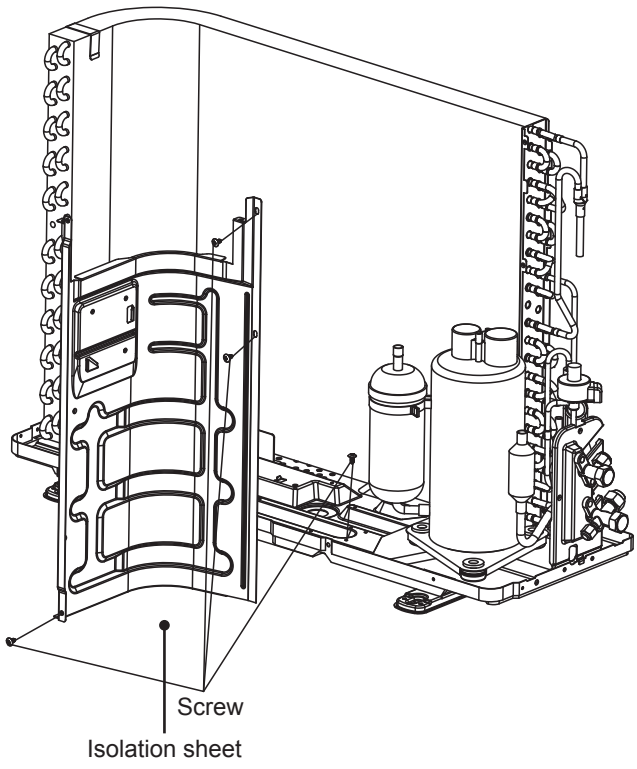
Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

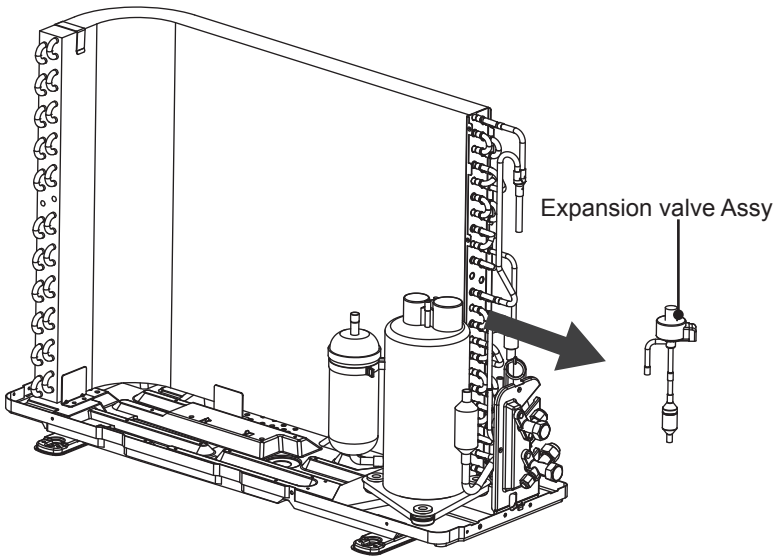
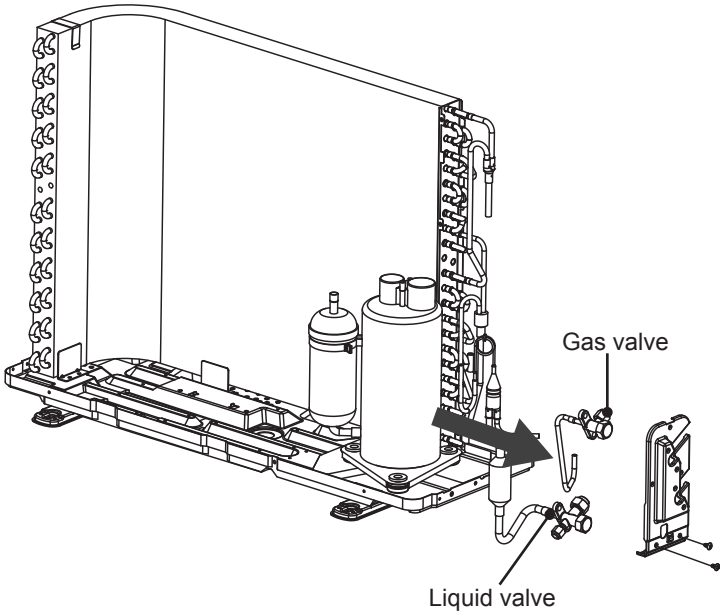
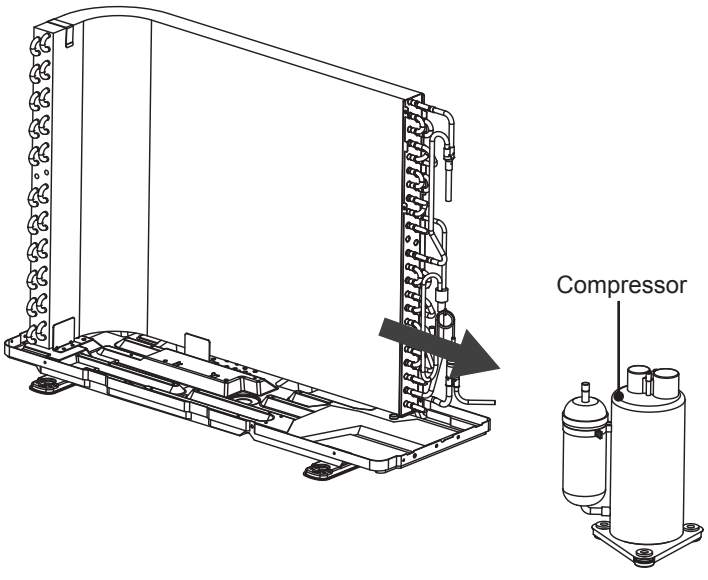
Procedure	Note
	**1.Before disassembly**
	**2. Remove top cover** Remove connection screws connecting the top cover plate with the front panel and the right side plate, and then remove the toppanel.
	**3. Remove protective grille** Remove the screws fixing protective grille and then remove the protective grille. If mesh enclosure is plastic.Please cut the ties to remove the plastic mesh enclosure

Procedure	Note
	**4.Remove grille and panel** A: Remove connection screws between the front grille and the front panel. Then remove the front grille. B: Remove connection screws connecting the front panel with the chassis and the motor support, and then remove the front panel.
	**4.Remove axial flow blade** Remove the nut fixing the blade and then remove the axial flow blade.
	**5.Remove big handle** Remove the connection screw fixing the big handle and then remove the handle.

Procedure	Note
	**6. Remove left side plate** Remove connection screws connecting the left side plate with the condenser assy. Then remove the left side plate.
	**7. Remove right side plate** Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.
	**8. Remove electric box assy** Remove screws fixing the electric box assy; loosen the wire bundle and unplug the wiring terminals. Then lift the electric box to remove it.

Procedure	Note
	**9.** Remove Reactor Take off the fixed screw,and you could take off the reactor.
	**10. Remove motor and motor support** Remove tapping screws fixing the motor anddisconnect the leading wire insert of the motor. Then remove the motor. Remove tapping screws fixing the motor andlift the motor support to remove it.
	**11. Remove acoustic cotton** ***Split the acoustic cotton lock,and take out 3 pcs slowly.*** ***NOTE: Do not damage the pipe.***

Procedure	Note
	**12. Remove 4-way valve assy** Unsolder the spot weld of 4-way valve assy, compressor and condenser, and then remove the 4-way valve assy . **Warning** Discharge the refrigerant completely before unsoldering,when unsoldering, wrap the gas valve with awet cloth completely to avoid damage to thevalve caused by high temperature. When unsoldering the spot weld, wrap the 4-way valve with wet cloth completely to avoid damaging the valve due to high temperature.
	**13. Remove isolation sheet** Remove the screws fixing the isolation sheet and then remove the isolation sheet.

Procedure	Note
	**14. Remove Expansion valve Assy** Unsolder the spot weld of expansion valve assy, liquid valve and condenser, and then remove the expansion valve assy .
	**14. Remove the compressor** A: 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.
	B: Remove the foot nuts on the compressor and then remove the compressor.

HYUNDAI