



Technical Service Manual

R-410a Split Systems



R-410a 60 Hz

Single Splits Cooling Only	Indoor Unit 4MYW4518-A 4MYW4524-A	Outdoor Unit 4TYK4518-A 4TYK4524-A
Heat Pump	4MXW4518-A 4MXW4524-A	4TXK4518-A 4TXK4524-A



Warnings, Cautions and Notices

Warnings and Cautions. Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

Attention : Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ WARNING : Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION : Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE: Indicates a situation that could result in equipment or property-damage only accidents.

⚠ WARNING

Ground Required!

Follow proper local electrical code on requirements for grounding. Failure to follow code could result in death or serious injury.

⚠ WARNING

This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product could result in death, personal injury or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

Important!

Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants—including industry replacements for CFCs such as HCFCs and HFCs.

Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

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1. Specifications

1.1 Specification Sheet

Model			4MYW4518A1000AA 4TYK4518A1P00AA	4MXW4518A1000AA 4TXK4518A1P00AA
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	--	1	1
Power Supply Mode		--	Outdoor	Outdoor
Min/Max. Voltage		V	187/253	187/253
Cooling Capacity(Min~Max)		Btu/h	18000(7165~20000)	18000(7165~20000)
Heating Capacity(Min~Max)		Btu/h	/	19000(7430~23500)
Cooling Power Input(Min~Max)		W	1800(570~2500)	1950(570~2600)
Heating Power Input(Min~Max)		W	/	1730(580~2600)
Cooling Current		A	7.98	8.65
Heating Current		A	/	7.52
Rated Input		W	2500	2600
Rated Current		A	11.09	11.54
Rated Heating Current		A	/	11.09
Max. Over Current Protection		A	20	25
Min. Current (MCA)		A	14	17
Starting Current		A	5	5
EER		(Btu/h)/w	10.00	8.50
COP		(Btu/h)/w	/	10.23
SEER		--	15.00	15.00
HSPF		--	/	9.00
Air Flow Volume		CFM	506/459/383/324	506/459/383/324
Dehumidifying Volume		PINT/D	3.80	3.80
Application Area		m ²	23-34	23-34
Indoor Unit	Indoor Unit Model	--	4MYW4518A1000AA	4MXW4518A1000AA
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	inch	Φ3 6/7×28	Φ3 6/7×28
	Cooling Speed	r/min	1500/1200/1050/900	1500/1200/1050/900
	Heating Speed	r/min	/	1500/1250/1150/1050
	Fan Motor Power Output	W	20	20
	Fan Motor RLA	A	0.32	0.32
	Fan Motor Capacitor	μF	1.5	1.5
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	Φ 2/7	Φ 2/7
	Evaporator Row-fin Gap	inch	2-1/18	2-1/18
	Evaporator Coil Length (L×D×W)	inch	28 1/7×1×12	28 1/7×1×12
	Swing Motor Model	--	MP28VB	MP28VB
	Swing Motor Power Output	W	2	2.0
	Fuse Current	A	3.15	3.15
	Set Temperature Range	°F	61~86	61~86
	Sound Pressure Level	dB (A)	48/42/39/36	48/42/39/36
	Sound Power Level	dB (A)	58/52/49/46	58/52/49/46
	Dimension (W×H×D)	inch	37.008×11.732×7.874	37.008×11.732×7.874
	Dimension of Carton Box (L×W×H)	inch	39.764×14.961×11.22	39.764×14.961×11.22
	Dimension of Package(L×W×H)	inch	39.882×15.079×11.811	39.882×15.079×11.811
	Net Weight	lb	26.5	26.5
	Gross Weight	lb	33.1	33.1

Outdoor Unit	Outdoor Unit Model	--	4TYK4518A1P00AA	4TXK4518A1P00AA
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model	--	QXA-B141zF030A	QXA-B141zF030A
	Compressor Oil	--	68EP	68EP
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	25	25.00
	Compressor RLA	A	7.2	7.20
	Compressor Power Input	W	1440	1440
	Compressor Overload Protector	--	1NT11L-6233 or KSD115°C or HPC115/95U1	1NT11L-6233 or KSD115°C or HPC115/95U1
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	inch	20.472	20.472
	Fan Motor Speed	rpm	800/-/450	800/-/450
	Fan Motor Power Output	W	60	60
	Fan Motor RLA	A	0.365	0.365
	Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	m³/h	3200	3200
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	Φ 3/8	Φ 3/8
	Condenser Rows-fin Gap	inch	1-1/18	1-1/18
	Condenser Coil Length (L×D×W)	inch	33 5/8×6/7×26	33 5/8×6/7×26
	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	°F	64～109	64～109
	Heating Operation Ambient Temperature Range	°F	/	19～75
	Defrosting Method	--	/	Automatic Defrosting
	Climate Type	--	T1	T1
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	56	56
	Sound Power Level	dB (A)	66	66
	Dimension (W×H×D)	inch	37.598×27.559×15.591	37.598×27.559×15.591
	Dimension of Carton Box (L×W×H)	inch	40.394×17.913×28.937	40.394×17.913×28.937
	Dimension of Package(L×W×H)	inch	40.512×18.031×29.528	40.512×18.031×29.528
	Net Weight	lb	97.0	101.4
	Gross Weight	lb	105.8	111.4
	Refrigerant	--	R410A	R410A
	Refrigerant Charge	oz	42.3	63.5
Connection Pipe	Length	ft	24.6	24.6
	Gas Additional Charge	oz/ft.	0.2	0.2
	Outer Diameter of Liquid Pipe	inch	1/4"	1/4"
	Outer Diameter of Gas Pipe	inch	1/2"	1/2"
	Max Distance Height	ft	32.8	32.8
	Max Distance Length	ft	82.0	82.0

Model		--	4MYW4524A1000AA 4TYK4524A1P00AA	4MXW4524A1000AA 4TXK4524A1P00AA
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	--	1	1
Power Supply Mode		--	Outdoor	Outdoor
Min/Max. Voltage		V	187/253	187/253
Cooling Capacity(Min~Max)		Btu/h	22000(8630~23200)	22000(8630~23200)
Heating Capacity(Min~Max)		Btu/h	/	23000(8650~26000)
Cooling Power Input(Min~Max)		W	2310(600~2700)	2310(600~2700)
Heating Power Input(Min~Max)		W	/	2300(610~2750)
Cooling Current		A	10.25	10.25
Heating Current		A	/	10.20
Rated Input		W	2700	2750
Rated Current		A	11.98	12.20
Rated Heating Current		A	/	12.20
Max. Over Current Protection		A	25	25
Min. Current (MCA)		A	15	17
Starting Current		A	5	5
EER		(Btu/h)/w	9.52	9.52
COP		(Btu/h)/w	/	10.00
SEER		--	15.00	15.00
HSPF		--	/	8.50
Air Flow Volume		CFM	588/471/412/353	588/471/412/353
Dehumidifying Volume		PINT/D	5.28	5.28
Application Area		m ²	27-42	27-42
Indoor Unit	Indoor Unit Model	--	4MYW4524A1000AA	4MXW4524A1000AA
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	inch	3 7/8×30 1/8	3 7/8×30 1/8
	Cooling Speed	r/min	1500/1200/1050/900	1500/1200/1050/900
	Heating Speed	r/min	/	1450/1150/1020/950
	Fan Motor Power Output	W	60	60
	Fan Motor RLA	A	0.24	0.24
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	Φ 2/7	Φ 2/7
	Evaporator Row-fin Gap	inch	2-1/17	2-1/17
	Evaporator Coil Length (L×D×W)	inch	30 1/8×1×13 1/2	30 1/8×1×13 1/2
	Swing Motor Model	--	MP35XX	MP35XX
	Swing Motor Power Output	W	2.5	2.5
	Fuse Current	A	3.15	3.15
	Set Temperature Range	°F	61~86	61~86
	Sound Pressure Level	dB (A)	52/46/42/36	52/46/42/36
	Sound Power Level	dB (A)	62/56/52/46	62/56/52/46
	Dimension (W×H×D)	inch	39.646×12.402×8.622	39.646×12.402×8.622
	Dimension of Carton Box (L×W×H)	inch	42.244×15.551×12.323	42.244×15.551×12.323
	Dimension of Package(L×W×H)	inch	42.362×15.669×12.913	42.362×15.669×12.913
	Net Weight	lb	33.1	33.1
	Gross Weight	lb	40.8	40.8

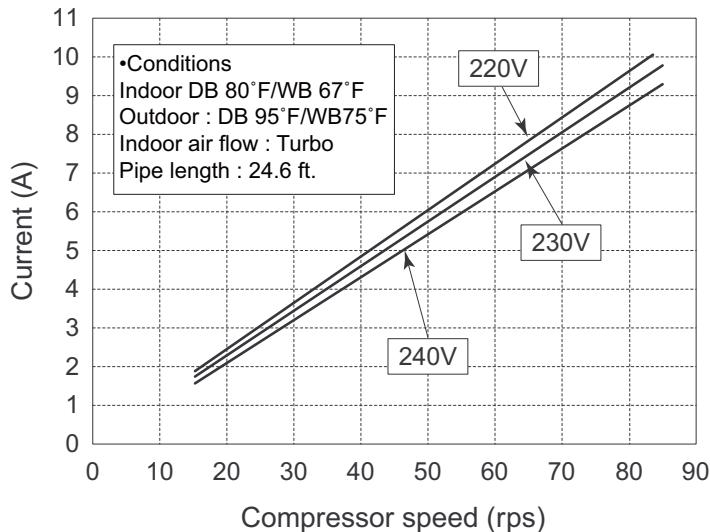
Outdoor Unit	Outdoor Unit Model	--	4TYK4524A1P00AA	4TXK4524A1P00AA
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model	--	QXA-B141zF030A	QXA-B141zF030A
	Compressor Oil	--	68EP	68EP
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	25.00	25.00
	Compressor RLA	A	7.20	7.20
	Compressor Power Input	W	1440	1440
	Compressor Overload Protector	--	1NT11L-6233 or KSD115°C or HPC115/95U1	1NT11L-6233 or KSD115°C or HPC115/95U1
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	inch	20.472	20.472
	Fan Motor Speed	rpm	800/-450	800/-450
	Fan Motor Power Output	W	60	60
	Fan Motor RLA	A	0.365	0.365
	Fan Motor Capacitor		/	/
	Outdoor Unit Air Flow Volume	m³/h	3200	3200
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	Φ 0.375	Φ 0.375
	Condenser Rows-fin Gap	inch	2-1/18	2-1/18
	Condenser Coil Length (L×D×W)	inch	33 1/3×1 3/4×26	33 1/3×1 3/4×26
	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	°F	64~109	64~109
	Heating Operation Ambient Temperature Range	°F	/	19.4~75.2
	Defrosting Method	--	/	Automatic Defrosting
	Climate Type	--	T1	T1
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	59	59
	Sound Power Level	dB (A)	69	69
Connection Pipe	Dimension (W×H×D)	inch	37.598×27.559×15.591	37.598×27.559×15.591
	Dimension of Carton Box (L×W×H)	inch	40.394×17.913×28.937	40.394×17.913×28.937
	Dimension of Package(L×W×H)	inch	40.512×18.031×29.528	40.512×18.031×29.528
	Net Weight	lb	108.0	114.7
	Gross Weight	lb	118.0	124.6
	Refrigerant	--	R410A	R410A
	Refrigerant Charge	oz	56.4	65.3
	Length	ft	24.6	24.6

Model		--	4MYW4524A1000AA 4TYK4524A1P00AA	4MXW4524A1000AA 4TXK4524A1P00AA
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	--	1	1
Power Supply Mode		--	Outdoor	Outdoor
Min/Max. Voltage		V	187/253	187/253
Cooling Capacity(Min~Max)		Btu/h	22000(8630~23200)	22000(8630~23200)
Heating Capacity(Min~Max)		Btu/h	/	23000(8650~26000)
Cooling Power Input(Min~Max)		W	2310(600~2700)	2310(600~2700)
Heating Power Input(Min~Max)		W	/	2300(610~2750)
Cooling Current		A	10.25	10.25
Heating Current		A	/	10.20
Rated Input		W	2700	2750
Rated Current		A	11.98	12.20
Rated Heating Current		A	/	12.20
Max. Over Current Protection		A	25	25
Min. Current (MCA)		A	15	17
Starting Current		A	5	5
EER		(Btu/h)/w	9.52	9.52
COP		(Btu/h)/w	/	10.00
SEER		--	15.00	15.00
HSPF		--	/	8.50
Air Flow Volume		CFM	588/471/412/353	588/471/412/353
Dehumidifying Volume		PINT/D	5.28	5.28
Application Area		m ²	27-42	27-42
Indoor Unit	Indoor Unit Model	--	4MYW4524A1000AA	4MXW4524A1000AA
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	inch	3 7/8×30 1/8	3 7/8×30 1/8
	Cooling Speed	r/min	1500/1200/1050/900	1500/1200/1050/900
	Heating Speed	r/min	/	1450/1150/1020/950
	Fan Motor Power Output	W	60	60
	Fan Motor RLA	A	0.24	0.24
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	2/7	2/7
	Evaporator Row-fin Gap	inch	2-1/17	2-1/17
	Evaporator Coil Length (L×D×W)	inch	30 1/8×1×13 1/2	30 1/8×1×13 1/2
	Swing Motor Model	--	MP35XX	MP35XX
	Swing Motor Power Output	W	2.5	2.5
	Fuse Current	A	3.15	3.15
	Set Temperature Range	°F	61~86	61~86
	Sound Pressure Level	dB (A)	52/46/42/36	52/46/42/36
	Sound Power Level	dB (A)	62/56/52/46	62/56/52/46
	Dimension (W×H×D)	inch	39.646×12.402×8.622	39.646×12.402×8.622
	Dimension of Carton Box (L×W×H)	inch	42.244×15.551×12.323	42.244×15.551×12.323
	Dimension of Package(L×W×H)	inch	42.362×15.669×12.913	42.362×15.669×12.913
	Net Weight	lb	33.1	33.1
	Gross Weight	lb	40.8	40.8

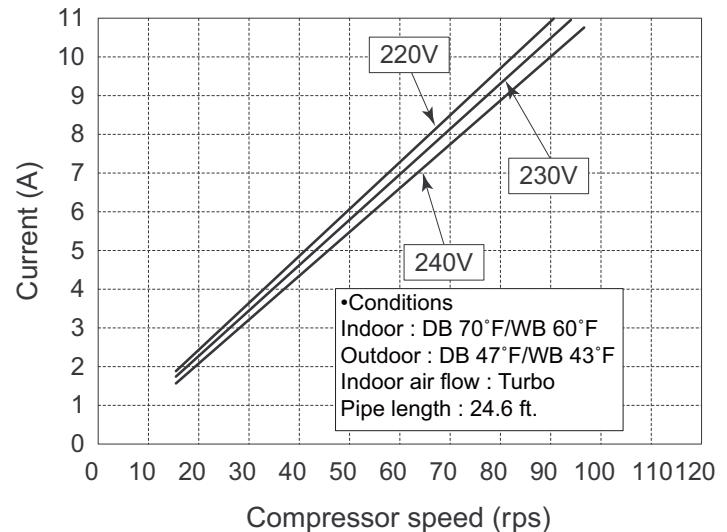
Outdoor Unit	Outdoor Unit Model	--	4TYK4524A1P00AA	4TXK4524A1P00AA
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model	--	QXA-B141zF030A	QXA-B141zF030A
	Compressor Oil	--	68EP	68EP
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	25.00	25.00
	Compressor RLA	A	7.20	7.20
	Compressor Power Input	W	1440	1440
	Compressor Overload Protector	--	1NT11L-6233 or KSD115°C or HPC115/95U1	1NT11L-6233 or KSD115°C or HPC115/95U1
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	inch	20.472	20.472
	Fan Motor Speed	rpm	800/-/450	800/-/450
	Fan Motor Power Output	W	60	60
	Fan Motor RLA	A	0.365	0.365
	Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	m³/h	3200	3200
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	Φ0.375	Φ0.375
	Condenser Rows-fin Gap	inch	2-1/18	2-1/18
	Condenser Coil Length (L×D×W)	inch	33 1/3×1 3/4×26	33 1/3×1 3/4×26
	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	°F	64~109	64~109
	Heating Operation Ambient Temperature Range	°F	/	19.4~75.2
	Defrosting Method	--	/	Automatic Defrosting
	Climate Type	--	T1	T1
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	59	59
	Sound Power Level	dB (A)	69	69
Connection Pipe	Dimension (W×H×D)	inch	37.598×27.559×15.591	37.598×27.559×15.591
	Dimension of Carton Box (L×W×H)	inch	40.394×17.913×28.937	40.394×17.913×28.937
	Dimension of Package(L×W×H)	inch	40.512×18.031×29.528	40.512×18.031×29.528
	Net Weight	lb	108.0	114.7
	Gross Weight	lb	118.0	124.6
	Refrigerant	--	R410A	R410A
	Refrigerant Charge	oz	56.4	65.3

1.2 Operation Characteristic Curve

Cooling

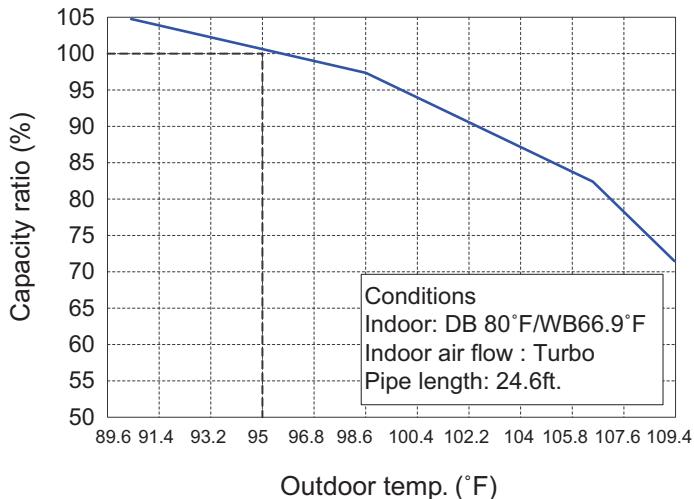


Heating

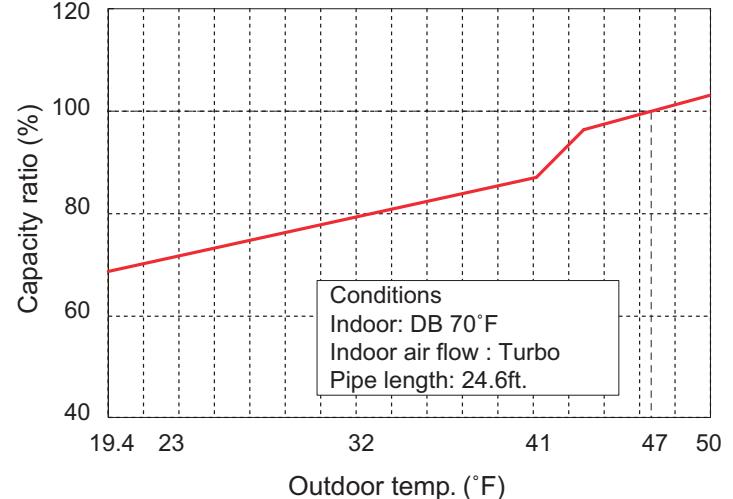


1.3 Capacity Variation Ratio According to Temperature

Cooling



Heating



1.4 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition (°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor revolution (rps)
Indoor	Outdoor			P (MPa)	T1 (°F)			
80/67	95/75	18K	0.9 to 1.1	53.6 to 57.2	109.4 to 105.8	Turbo	High	77
		24K	0.8 to 1.0	50 to 53.6	181.4 to 113			92

Heating:

Rated heating condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor revolution (rps)
Indoor	Outdoor			P (MPa)	T1 (°F)			
70/60	47/43	18K	2.2 to 2.4	100.4 to 98.6	35.6 to 39.2	Turbo	High	80
		24K	2.5 to 2.7	111.2 to 107.6	32 to 37.4			86

Instruction:

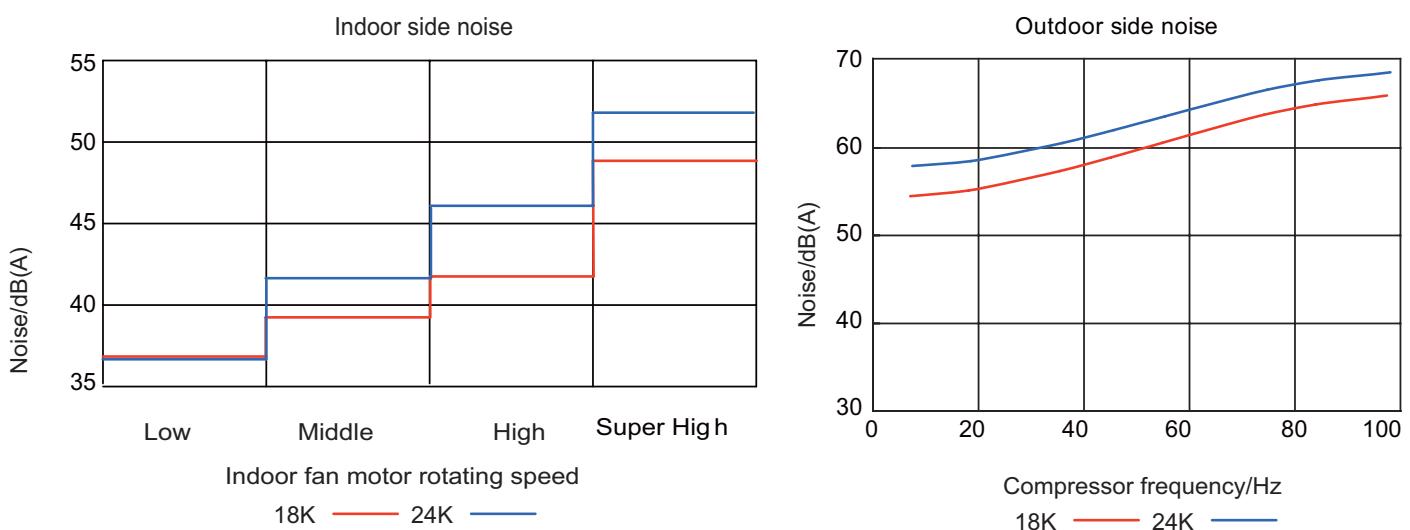
T1: Inlet and outlet pipe temperature of evaporator

T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

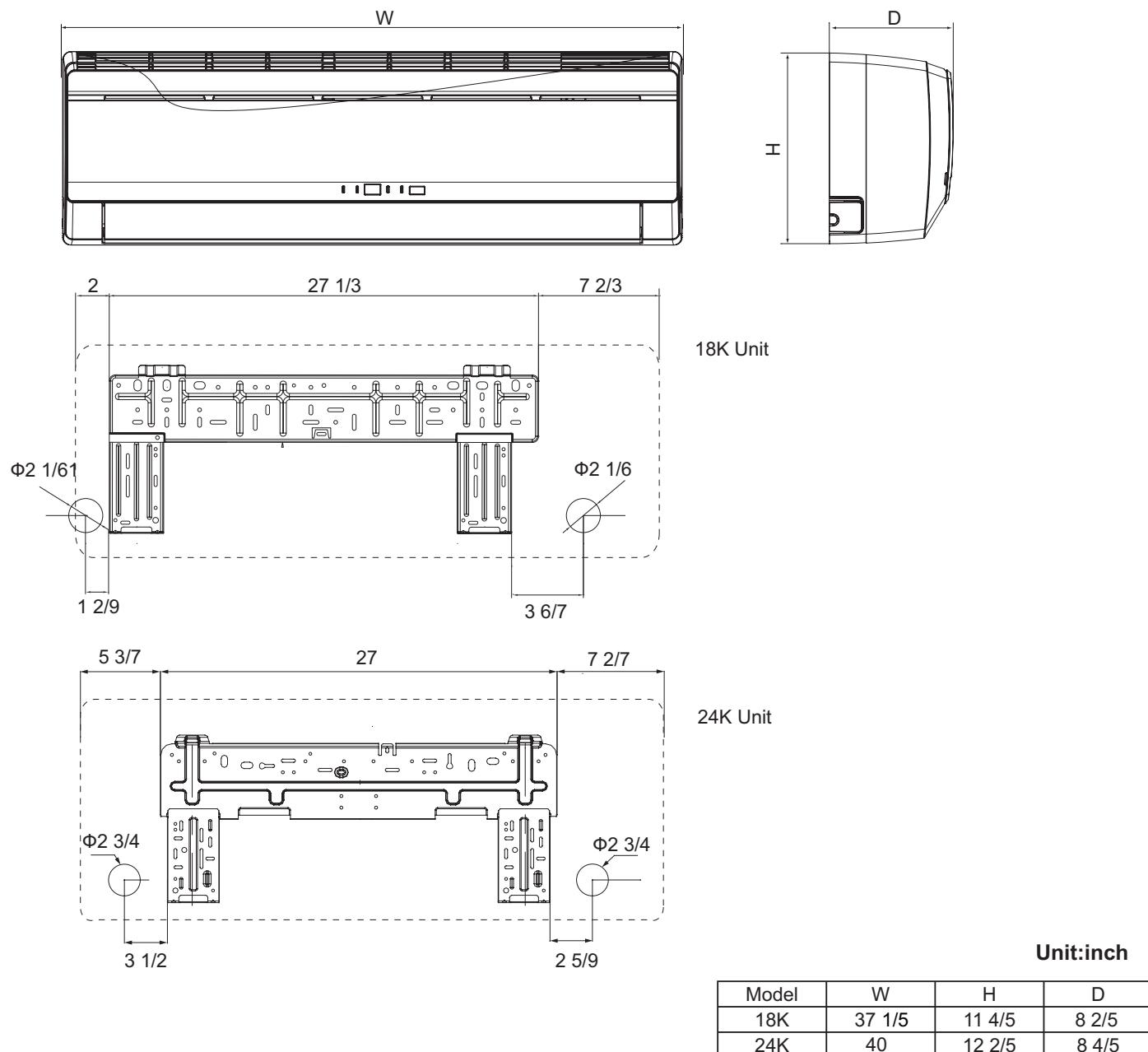
Connection pipe length: 24.6ft.

1.5 Noise Curve

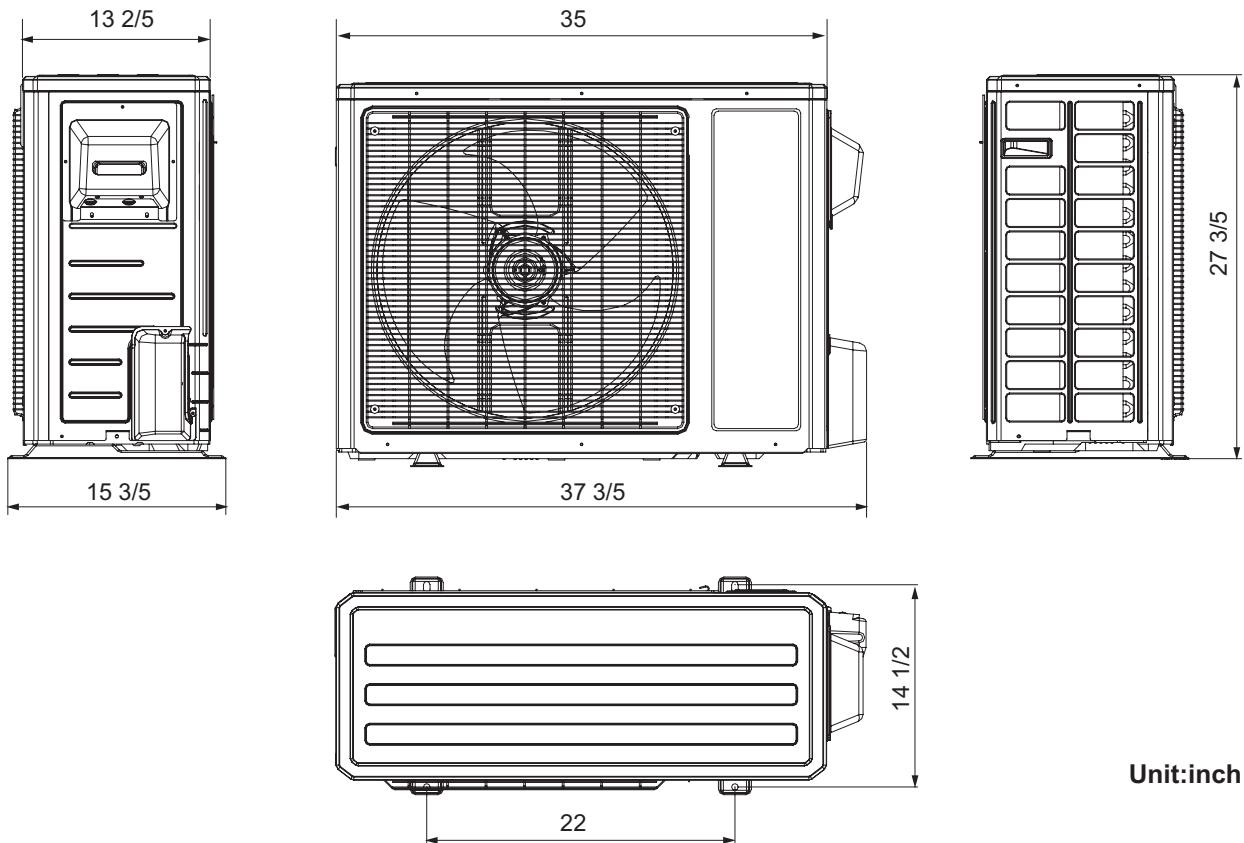


2. Outline Dimension Diagram

2.1 Indoor Unit

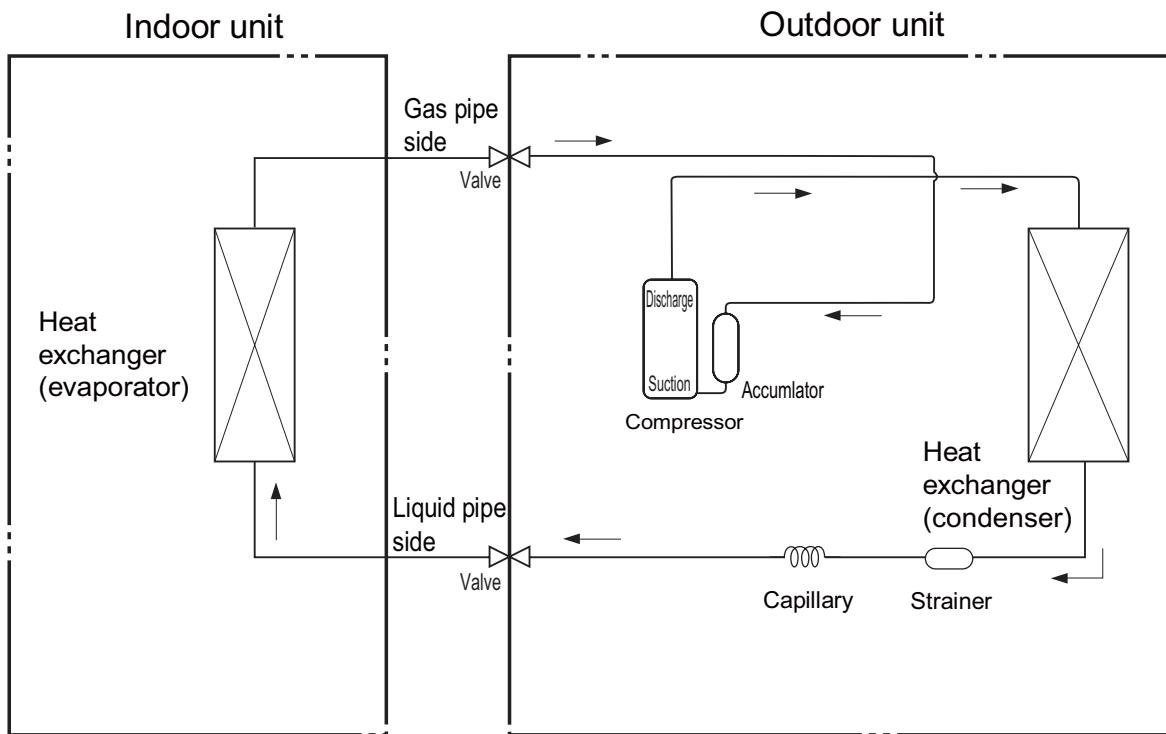


2.2 Outdoor Unit

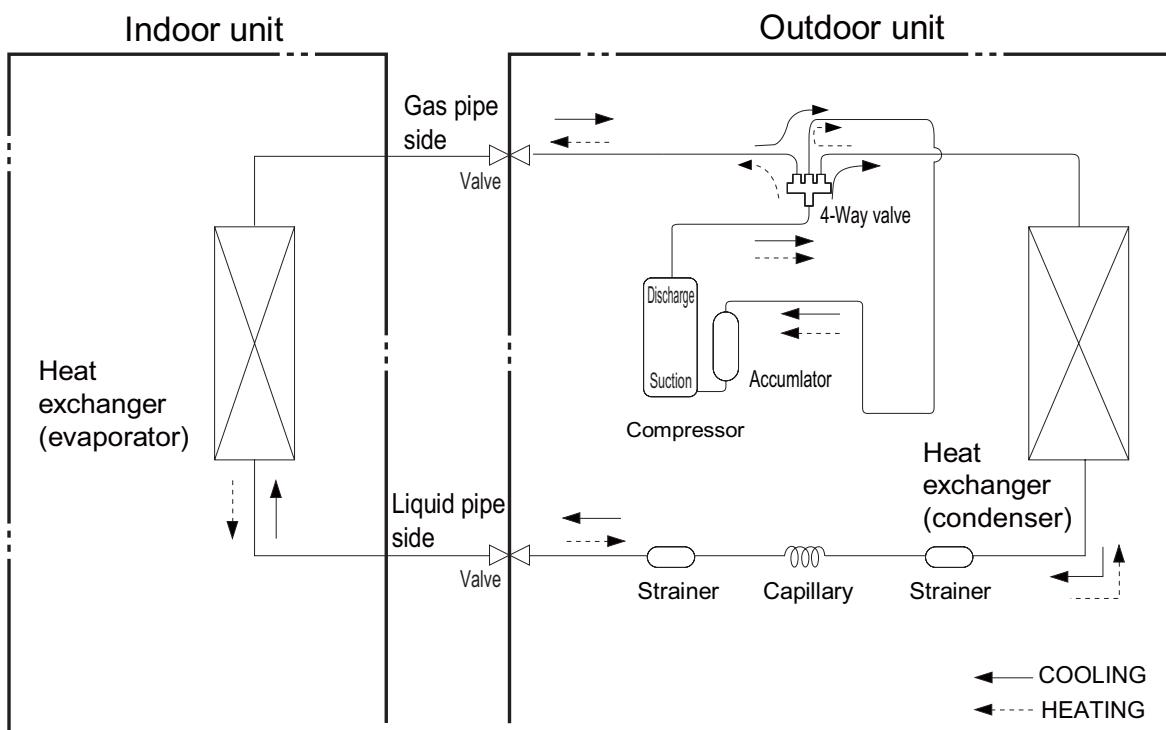


3. Refrigerant System Diagram

Cooling only model



Cooling and heating model



Refrigerant pipe diameter

Liquid pipe : 1/4"

Gas pipe : 1/2"(For 18K Unit)

Gas pipe : 5/8"(For 24K Unit)

4. Electrical Part

4.1 Wiring Diagram

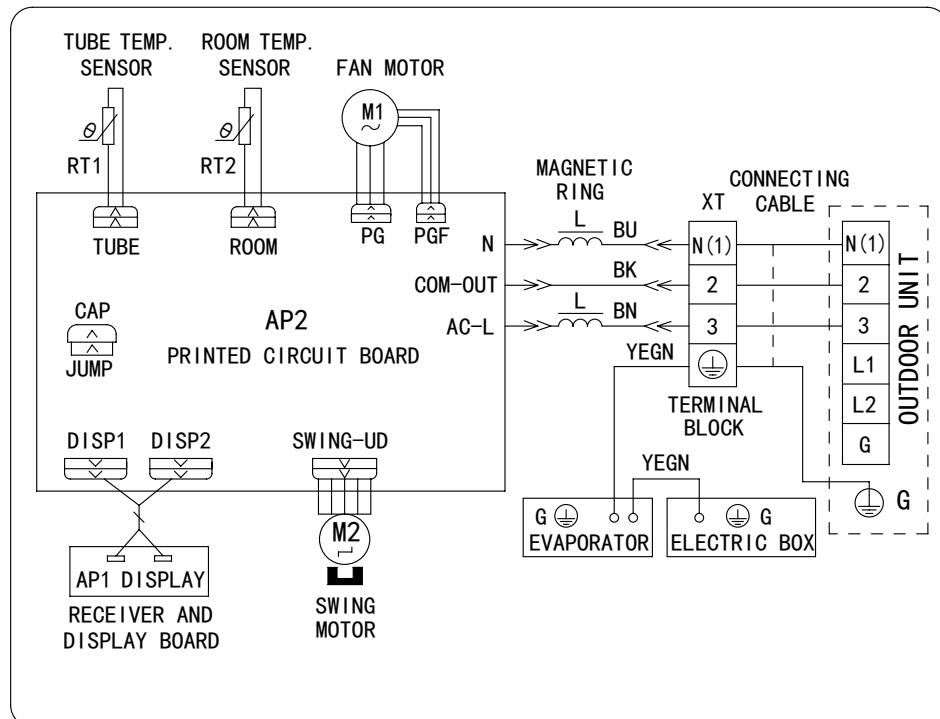
- Instruction

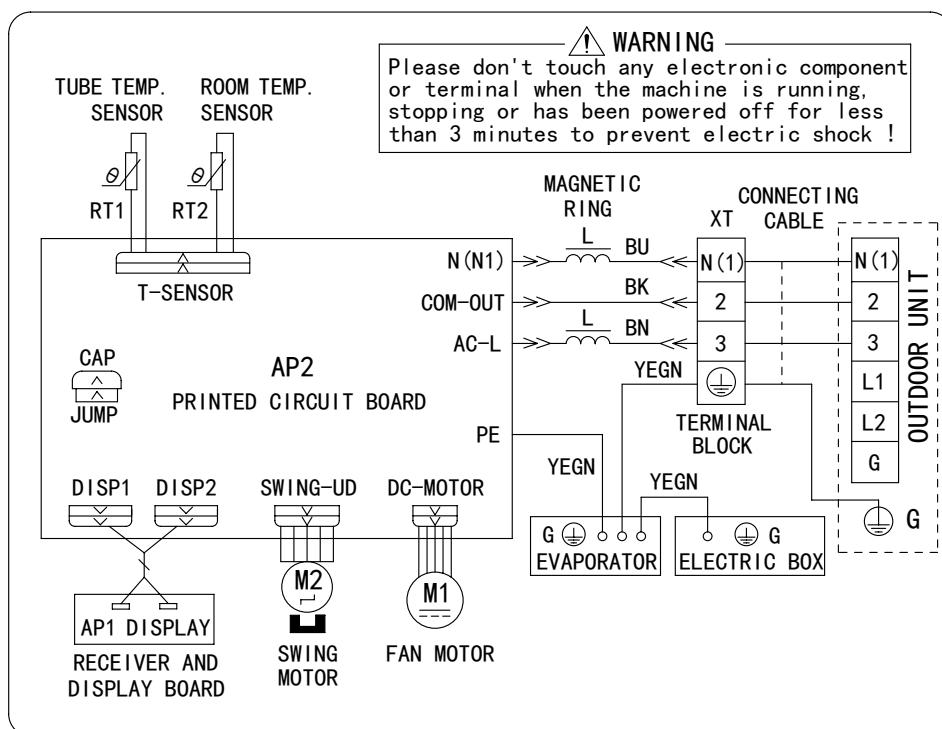
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue	()	Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

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

- Indoor Unit

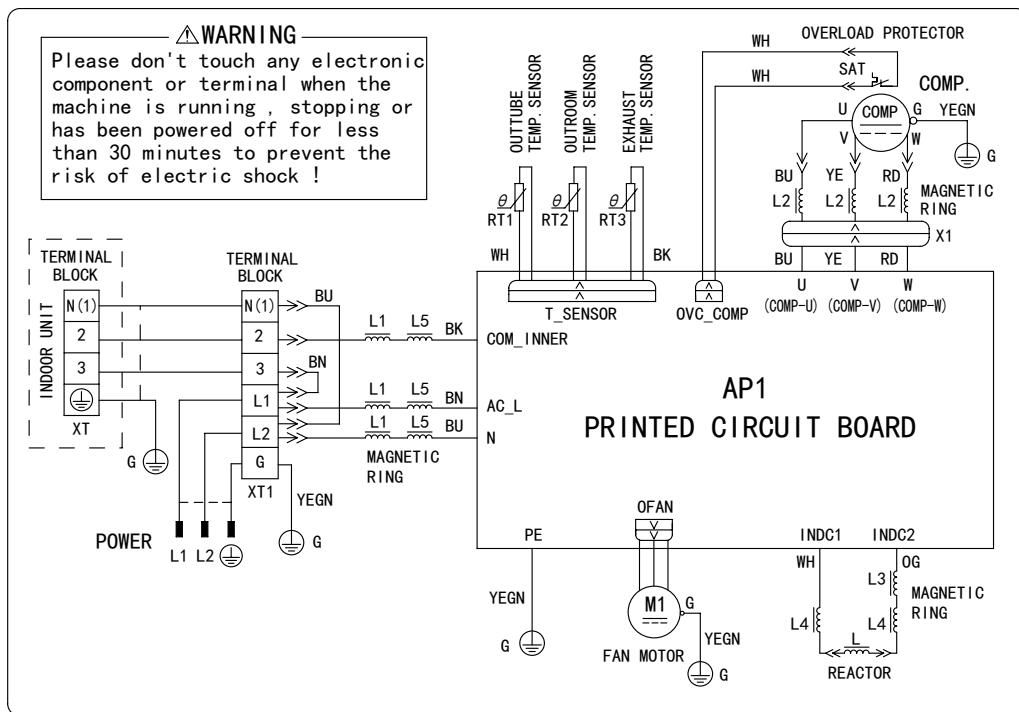
Models: 4MYW4518A1 / 4MXW4518A1



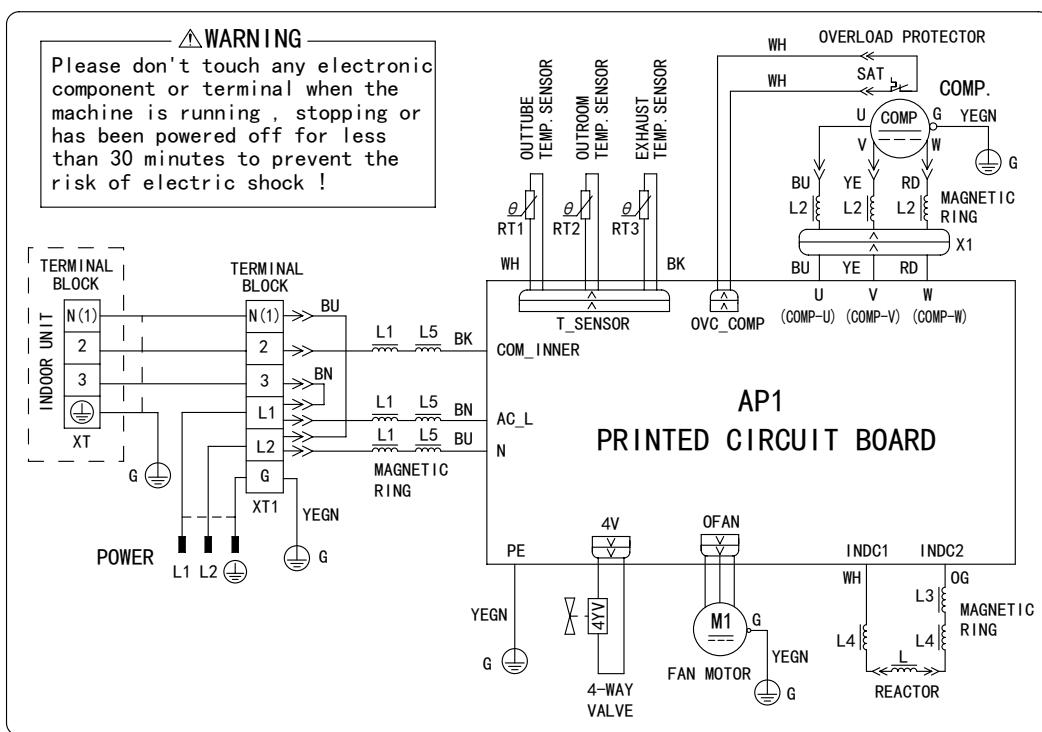


•Outdoor Unit

Models: 4TYK4518A1 / 4TYK4524A1



Models: 4TXK4518A1 / 4TXK4524A1

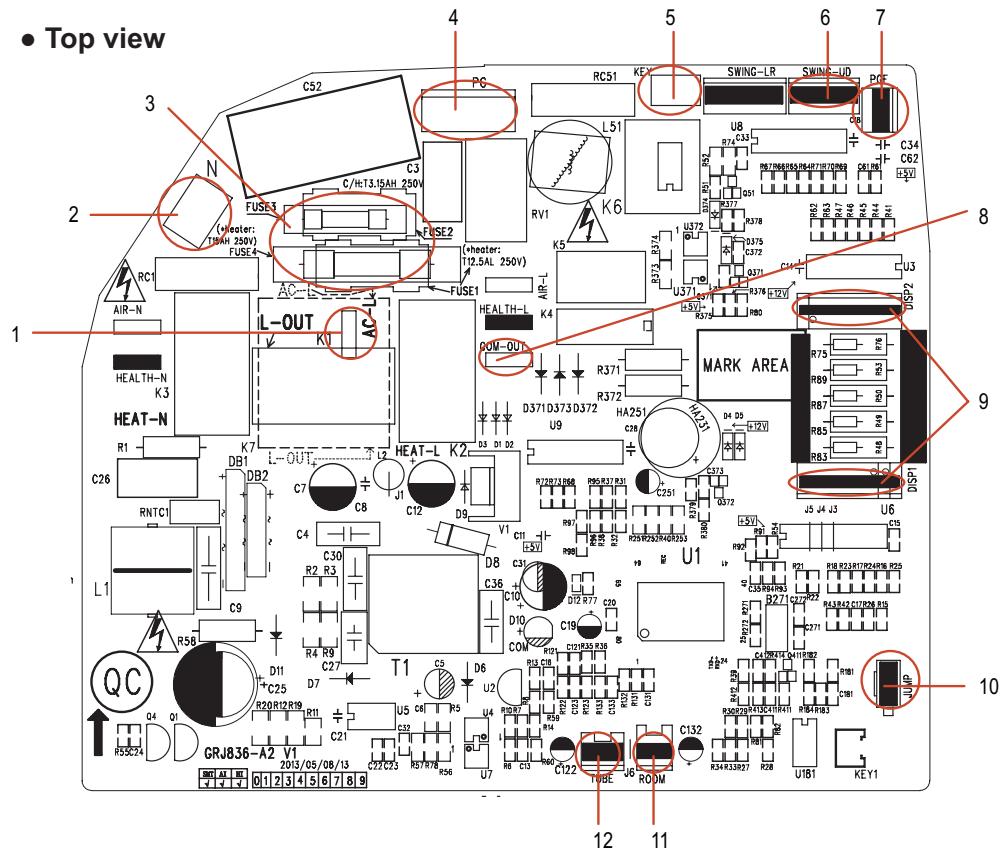


4.2 PCB Printed Diagram

- Indoor Unit

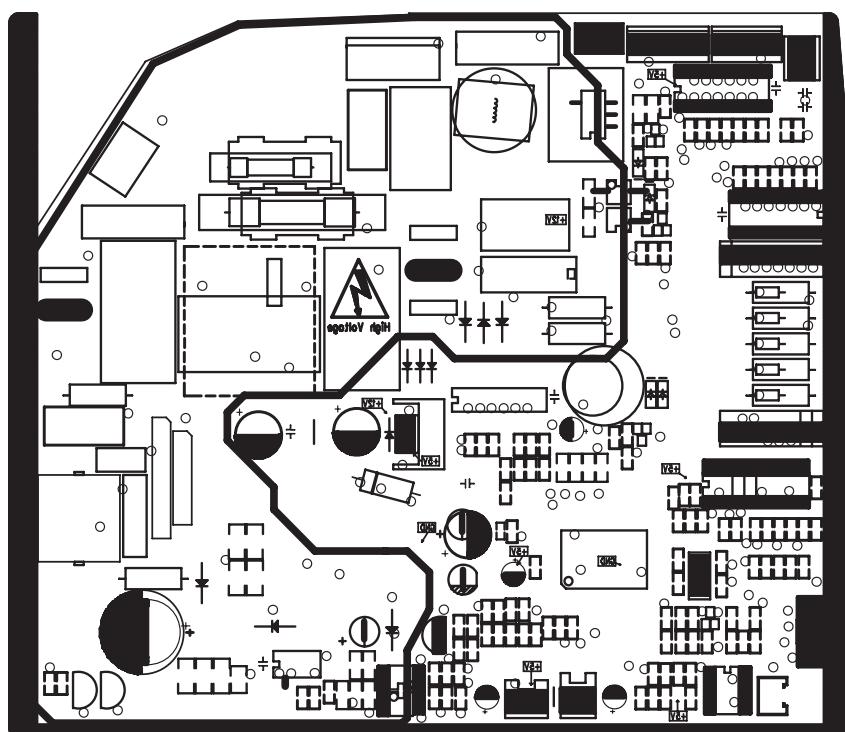
18K

- Top view



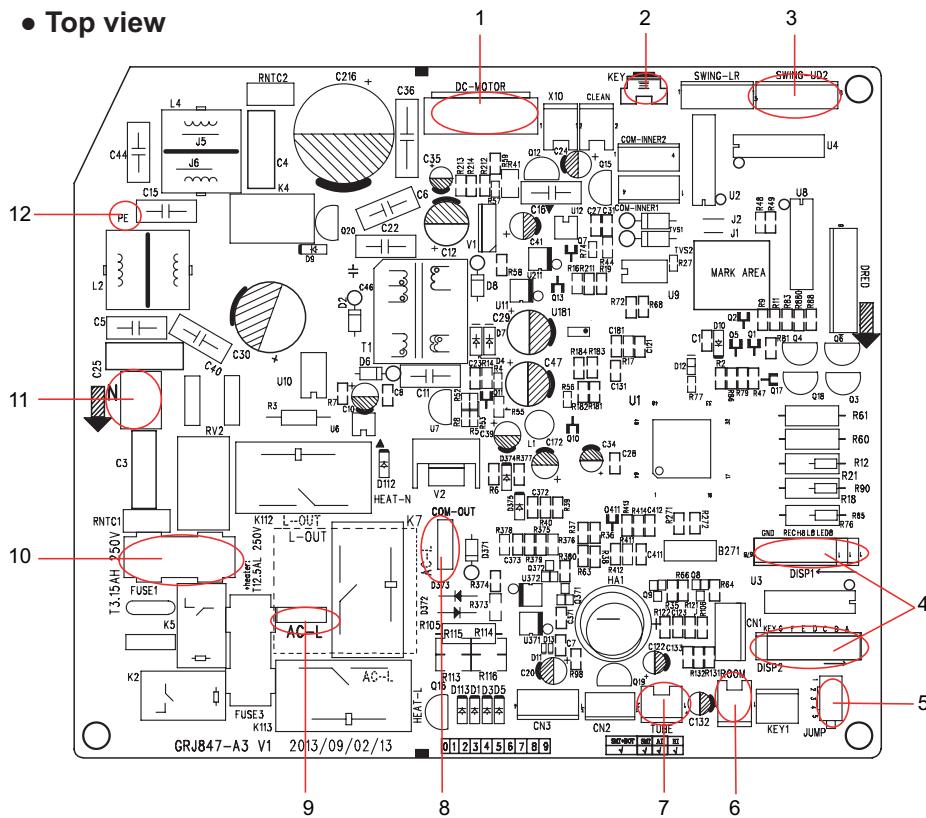
1	Live wire interface
2	Neutral wire interface
3	Fuse
4	PG Motor
5	Auto button
6	Up and down swing terminal interface
7	PG feedback
8	IDU and ODU communication interface
9	Display terminal interface
10	Jumper
11	Ambient temp. sensor
12	Tube temp. sensor

- **Bottom view**



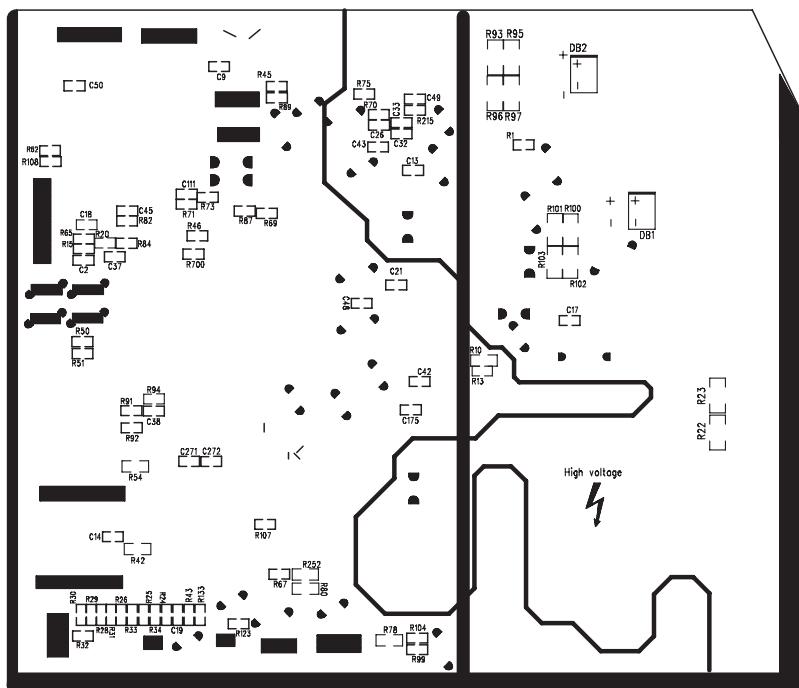
24K

- Top view



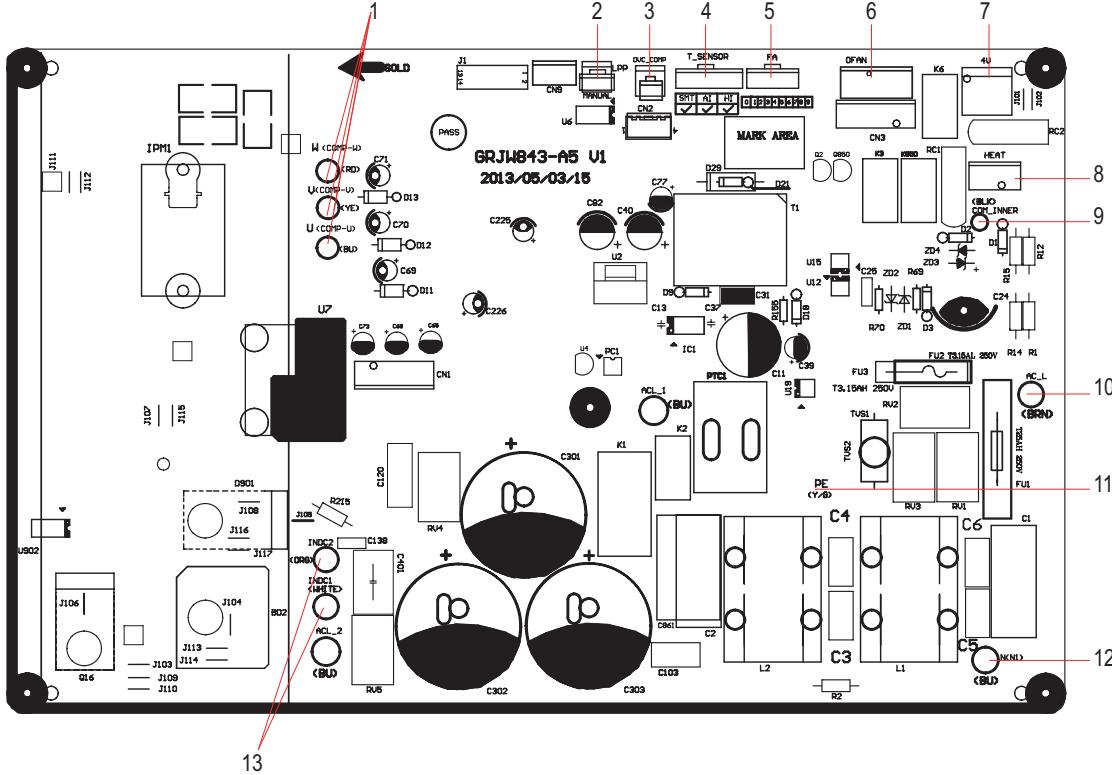
1	DC fan interface
2	Auto button
3	Up and down swing terminal interface
4	Display terminal interface
5	Jumper cap
6	Ambient temp. sensor
7	Tube temp. sensor
8	IDU and ODU communication interface
9	Live wire interface
10	Fuse
11	Neutral wire interface
12	Earth wire terminal interface

- **Bottom view**



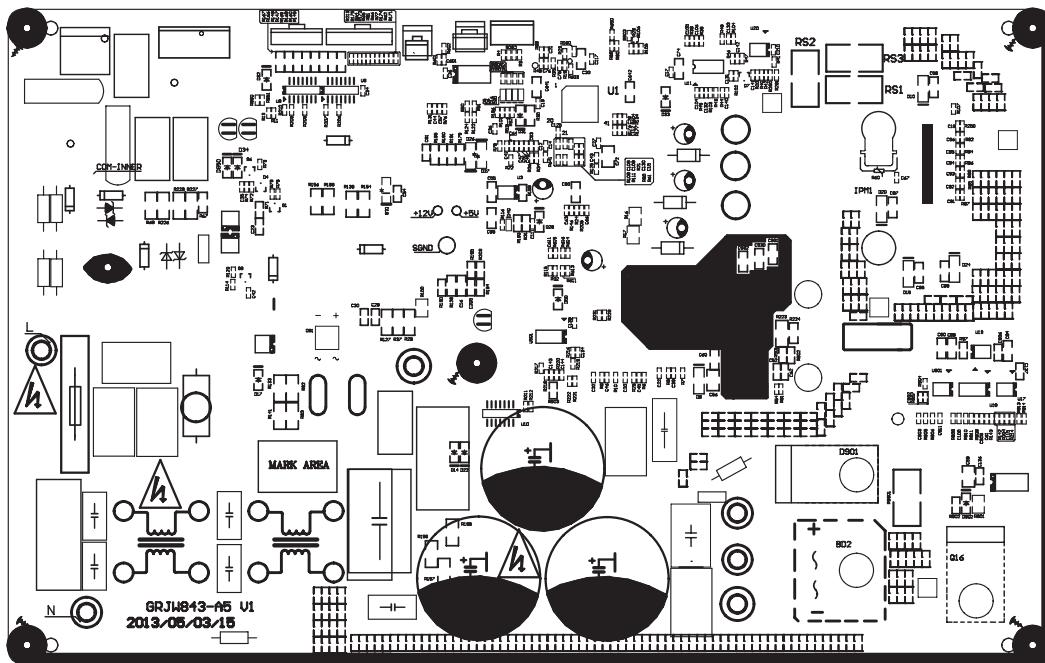
Outdoor Unit

• Top view



1	Compressor wiring connection terminal
2	ODU heat exchanger middle copper pipe temp. sensor terminal
3	Compressor overload protection terminal
4	ODU temp. sensor terminal
5	EXV terminal
6	Outdoor fan terminal
7	Four-way valve terminal
8	Chassis electric heating wiring terminal
9	Communication cable with IDU
10	Power supply live wire
11	Earth wire
12	Power supply neutral wire
13	PFC inductance wire

• Bottom view



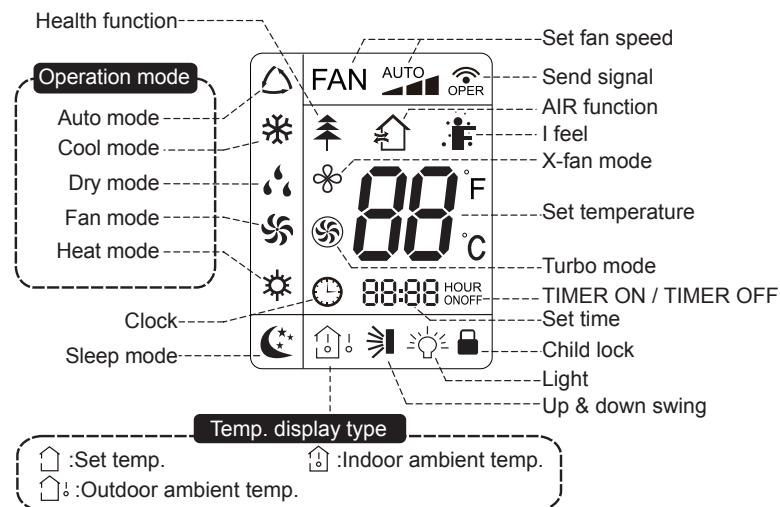
5. Function and Control

5.1 Remote Controller Introduction



- 1 ON/OFF button
- 2 MODE button
- 3 +/- button
- 4 FAN button
- 5 button
- 6 SLEEP button
- 7 TIMER ON/TIMER OFF button

Icon Display on Remote Controller



Operation introduction of remote controller

Note:

- ◆ When power is connected(stand by condition), you can operate the air conditioner through the remote controller.
- ◆ When unit is on, each time you press the button on remote controller, the sending signal icon on the display of remote controller will blink once. If the air conditioner gives out a beep sound, it means the signal has been sent.
- ◆ When unit is off, set temperature will be displayed on the remote controller (If the light of indoor unit display is turned on, the corresponding icon will be displayed); When unit is on, it will display the icon of the on-going function.

1. ON/OFF Button

Press this button to turn unit on/off

2. MODE Button

Pressing this button once can select your required mode circularly as below (the corresponding icon will be lit up after the mode is selected):

AUTO COOL DRY FAN HEAT (Only for models with heating function.)

- ◆ When selecting auto mode, air conditioner will operate automatically according to Ambient Temperature. Set temperature can't be adjusted and won't be displayed either. Press FAN button to adjust fan speed. (This function is not available in this air conditioner.)
- ◆ When selecting cool mode, air conditioner will operate under cool mode. Then press + or -- button to adjust set temperature. Press FAN button to adjust fan speed.
- ◆ When selecting dry mode, air conditioner will operate at low fan speed under dry mode. In dry mode, fan speed can't be adjusted.
- ◆ When selecting fan mode, air conditioner will operate in fan mode only. Then press FAN button to adjust fan speed.
- ◆ When selecting heat mode, air conditioner will operate under heat mode. Then press + or -- button to adjust set temperature. Press FAN button to adjust fan speed.

3. +/- button

- ◆ Pressing + or - button once will increase or decrease set temperature by 1 °F(°C). Hold + or -- button for 2s, set temperature on remote controller will change quickly. Release the button after your required set temperature is reached.
- ◆ When setting Timer On, Timer Off or Clock, press + or -- button to adjust the time (See TIMER Button for setting details).

4. FAN Button

Pressing this button can select fan speed circularly as: AUTO, SPEED 1(1), SPEED 2(2), SPEED 3(3), SPEED 4(4) (unavailable in this air conditioner. Speed 4 is the same with speed 3).



Note:

- ◆ Under Auto mode, air conditioner will select proper fan speed automatically according to ambient temperature.
- ◆ Fan speed can't be adjusted under Dry mode.

5. SWING Button

Press this button to turn on up&down air swing.

6. SLEEP Button

Under Cool, Heat, Dry mode, press this button to turn on Sleep function. Press this button to cancel Sleep function. Under Fan and Auto mode, this function is unavailable.

7. TIMER Button

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

Note:

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

Function introduction for combination buttons

1. Child lock function

Press "+" and "-" buttons simultaneously can turn on or turn off child lock function. When child lock function is started up, LOCK indicator on remote controller is ON. If you operate the remote controller, remote controller won't send signal.

2. Temperature display switchover function

Under OFF status, press "-" button and "MODE" button simultaneously can switch between °C and °F.

Operation guide

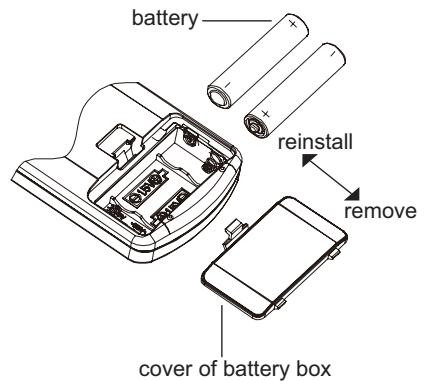
1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN, HEAT.
3. Press "+" or "-" button to set your required temperature. (Temperature can't be adjusted under auto mode).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

Replacement of Batteries in Remote Controller

1. Press the back side of remote controller on the spot marked with  , and then push out the cover of battery box along the arrow direction.
2. Replace two No.7 (AAA 1.5V) dry batteries and make sure the positions of + and -- polar are correct.
3. Reinstall the cover of battery box.

Note:

- ◆ During operation, point the signal sender of the remote controller at the receiving window of the indoor unit;
- ◆ The distance between signal sender and receiving window should be within 8m. There should be no obstacle 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 if there's no display, please replace batteries.



5.2 Brief Description of Modes and Functions

1 General introduction

(1) Buzzer

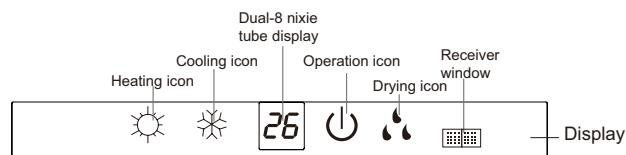
When the controller is energized or receives any command or signal from the buttons or the remote controller, the buzzer will give out a beep.

(2) Display

After energizing, the unit will display all icons. Under standby status, running indicating icon is displayed in red. If the unit is started by remote controller, running indicating icon is displayed in green (the color may be different for different models); meanwhile, the icon of current running mode will be displayed (mode icons: cooling, heating and dry mode).

(3) Temperature parameters

- ◆ Indoor set temperature (Tset)
- ◆ Indoor ambient temperature (Tamb.)
- ◆ Indoor evaporator inner tube temperature (Tinner tube)
- ◆ Indoor condenser outer tube temperature (Outer tube)
- ◆ Outdoor discharge pipe temperature (Tdischarge)
- ◆ Outdoor IMP module temperature (Tmodule)



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

2. Introduction of basic mode function

Once the compressor is energized, there should be a minimum interval of 3 mins between two start-ups.

If the unit is with memory function and is off before power failure, the compressor can be restarted without an interval of 3 mins after the system is energized; if the unit is on before power failure, the compressor will be restarted with an interval of 3 mins.

Once started, the compressor won't stop within 7 mins according to the change of room temp.

(1) Auto mode

① Auto mode conditions and process

In this mode, the unit will automatically select its operation mode (cooling, heating or fan) according to the change of indoor ambient temperature. There is a 30-second delay protection for mode switchover.

- ◆ When Tamb. \geq 78°F, the unit runs in cooling mode; in this case, the factory default set temperature is 77°F.
- ◆ For cooling and heating model: when Tamb. \leq 71.6°F, the unit runs in heating mode; in this case, the factory default set temperature is 68°F.
- ◆ For cooling only model: when Tamb. \leq 71.6°F, the unit runs in fan mode; in this case, the factory default set temperature is 77°F.
- ◆ When 71.6°F $<$ Tamb. $<$ 78°F: the unit will run in fan mode when it enters auto mode just after power on; the unit will keep the previous operation mode when it enters auto mode from cooling, heating or fan mode; the unit will run in fan mode when it enters auto mode from dry mode.

② The indoor unit displays the operation icon, operation mode icon and set temperature, but set temperature can't be adjusted.

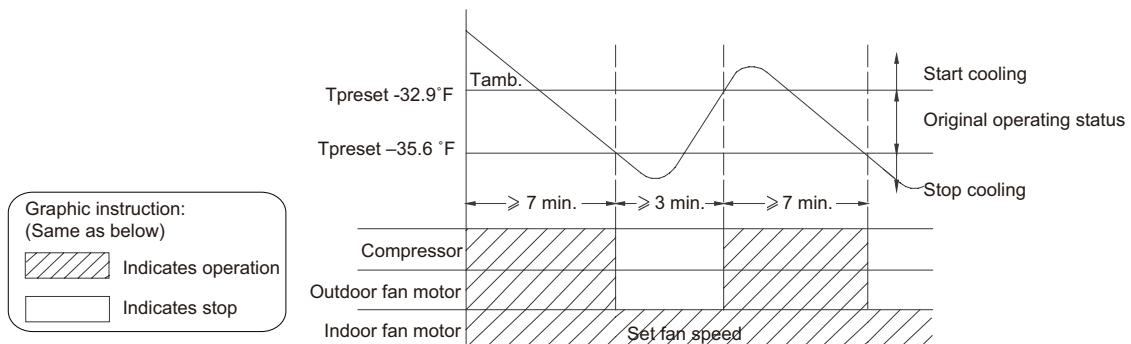
③ Protection functions are the same as those in any other mode. (See function protection of this section)

(2) Cooling mode

① Cooling conditions and process

- ◆ When Tamb. \geq Tset-32.9°F, the unit starts cooling. In this case, the compressor and the ODU fan motor run, and the IDU fan motor runs at set speed.
- ◆ When Tamb. \leq Tset-35.6°F, the compressor and the ODU fan motor stop after a few seconds, while the IDU fan motor runs at set speed.
- ◆ When Tset-35.6°F $<$ Tamb. $<$ Tset-32.9°F, the unit will maintain its present operation status.
- ◆ When the unit stops due to malfunction or protection, the compressor and ODU fan motor stop, while the IDU maintains its present operation status.
- ◆ In cooling process, when Tamb. is quite different from Tset, the compressor will run in relatively high frequency for quick cooling; when Tamb. is near Tset, the compressor frequency will decrease automatically for high coziness and efficiency.

In this mode, the 4-way valve is de-energized (cooling only unit is without 4-way valve). Temperature setting range is 60.8 ~ 86°F.



② The indoor unit displays operation icon, cooling icon and set temperature.

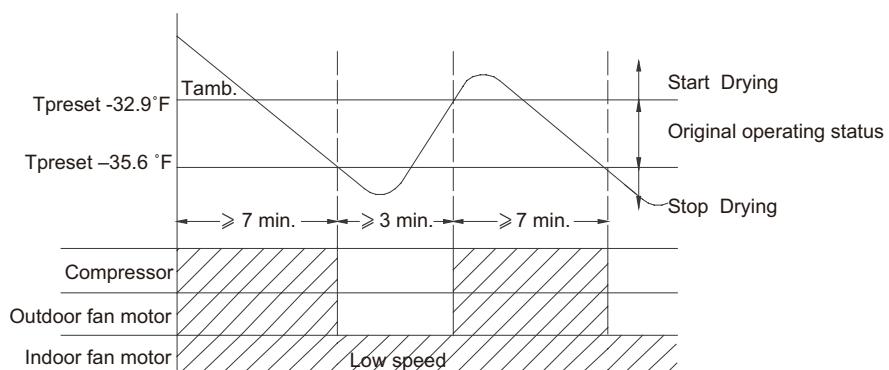
③ Protection functions (See function protection of this section)

(3) Dry Mode

① Dry conditions and process

- ◆ When Tamb. $\geq Tset-32.9^{\circ}\text{F}$, the unit starts drying and cooling. In this case, the compressor and the ODU fan motor run, and the IDU fan motor runs at low speed.
- ◆ When Tamb. $\leq Tset-35.6^{\circ}\text{F}$, the compressor and the ODU fan motor stop after a few seconds, while the IDU fan motor runs at low speed.
- ◆ When $Tset-35.6^{\circ}\text{F} < Tamb. < Tset-32.9^{\circ}\text{F}$, the unit will maintain its present operation status.
- ◆ When the unit stops due to malfunction or protection, the indoor unit maintains its present operation status and displays malfunction code.

In this mode, the 4-way valve is de-energized (cooling only unit is without 4-way valve). Temperature setting range is $60.8 \sim 86^{\circ}\text{F}$.



② The indoor unit displays operation icon, dry icon and set temperature.

③ Protection functions (See function protection of this section)

(4) Fan mode

① Fan conditions and process

In this mode, IDU fan motor runs at set speed while the compressor and ODU fan motor stop operation. The 4-way valve is de-energized (cooling only unit is without 4-way valve). Temperature setting range is $60.8 \sim 86^{\circ}\text{F}$.

② The indoor unit displays operation icon and set temperature.

③ Protection functions (See function protection of this section)

(5) Heating mode (not available for cooling only type)

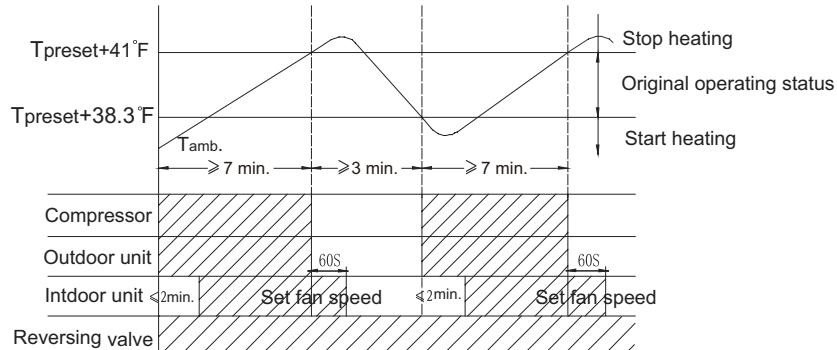
① Heating conditions and process

- ◆ When Tamb. $\leq Tset+38.3^{\circ}\text{F}$, the unit starts heating operation. In this case, the 4-way valve, compressor and ODU fan motor run simultaneously; the IDU fan motor runs after a while to prevent blowing out cold air.
- ◆ When Tamb. $\geq Tset+41^{\circ}\text{F}$, the compressor and ODU fan motor stop after a few seconds; the 4-way valve remains energized; the IDU

fan motor blows residual heat for a while at set speed to prevent high temperature inside the unit.

- ◆ When $T_{set} + 38.3^{\circ}\text{F} < T_{amb.} < T_{set} + 41^{\circ}\text{F}$, the unit will maintain its previous operation status.
- ◆ When the unit stops due to malfunction or protection, the compressor, IDU fan motor and ODU fan motor stop operation.
- ◆ In heating process, when $T_{amb.}$ is quite different from T_{set} , the compressor will run in relatively high frequency for quick heating; when $T_{amb.}$ is near T_{set} , the compressor frequency will decrease automatically for high coziness and efficiency.

In this mode, the 4-way valve is energized. Temperature setting range is $60.8 \sim 86^{\circ}\text{F}$.



② The indoor unit displays operation icon, heating icon and set temperature.

③ Defrost conditions and process

In order to ensure heating effect, the unit will defrost automatically according to the frost status of outdoor unit. heating indicator is ON 10s and OFF 0.5(for 18K) and indoor unit display "H1"(for 24K) during defrosting.

④ Protection functions (See function protection of this section)

(6) Compressor control function

(1) The controller controls the operation frequency of compressor according to the relationship between ambient temperature and set temperature and the changing speed of ambient temperature.

(2) When turning on the unit in cooling, heating or dry mode, the compressor starts after the ODU fan motor has operated for 5 seconds.

(3) The compressor stops immediately when turning off the unit, switching to fan modes and unit stops for protection.

(4) In each mode: once started, the compressor won't stop within 7 mins (note: including stop operation when reaching the temperature point; not including malfunction protection, turning off the unit by remote controller or switching modes in which stopping operation of compressor is needed).

(5) In each mode: once stopped, the compressor won't start again within 3 mins; if the unit is with memory function, the compressor can be restarted without delay when turning off the unit and then energizing again.

(7) 4-way valve control function(not available for cooling only type)

(1) The 4-way valve is de-energized in cooling, dry and fan mode;

(2) The 4-way valve is energized in heating mode;

(3) When turning off the unit in heating mode or switching to other mode from heating mode, the compressor stops and the 4-way valve is de-energized after a while;

(4) When the unit stops for protection, the 4-way valve is de-energized after a while;

(5) When starting defrosting, the compressor stops and the 4-way valve is de-energized after a while;

(6) When existing defrosting, the compressor stops and the 4-way valve is energized after a while;

3. Other control functions

(1) Timer function

General timer and clock timer functions are compatible by equipping remote controller with different functions.

① General timer: the timer precision is 30min and set unit ON/OFF after a desired hour.

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

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

② Clock timer: the timer precision is 1min and set unit ON/OFF at a certain time every day.

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

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

◆ Timer change:

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

If timer ON and timer OFF are set at the same time during ON status, the unit will keep running at current status. When OFF time reaches, the unit will stop operation. Then upon ON time reaches, the unit will start operation automatically. The unit will operate circularly like this every day.

If timer ON and timer OFF are set at the same time during OFF status, the unit will keep OFF status. When ON time reaches, the unit will start operation. Then upon OFF time reaches, the unit will stop operation automatically. The unit will operate circularly like this every day.

(2) Emergency operation switch

If pressing this button in OFF status, the unit will operate in AUTO mode and IDU fan motor will operate at auto speed; meanwhile, the swing motor operates. Press this button again to turn off the unit.



(3) Sleep function

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

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

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

(4) Turbo function

This function can be set in cooling or heating mode. When turbo function is set, the system will operate in the highest fan speed.

(5) X-FAN function

This function can be set in cooling or dry mode. When X-FAN function is set, fan motor will run for a while and then stop operation after the unit is turned off. During X-FAN operation, press X-FAN button on remote controller again to exit X-FAN function.

(6) Indoor fan speed control

Indoor fan speed can be set in super-high, high, medium and low speed through remote controller; auto fan speed can also be set in cooling, heating and fan mode. In auto fan speed mode, the IDU fan motor will automatically select high, medium or low speed according to the change of ambient temperature. (Note: super-high speed is only available in cooling and heating mode).

(7) Up & down swing

① After energizing, up & down swing motor will firstly have the horizontal louver rotate anticlockwise to position 0 to close air outlet. If swing function has not been set after turning on the unit, the horizontal louver will turn clockwise to position D in heating mode, or turn clockwise to level position L in other modes.

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

There are 7 swing status of horizontal louver:

◆ Positions L: corresponding setting on the remote controller:

◆ Positions A: corresponding setting on the remote controller:

◆ Positions B: corresponding setting on the remote controller:

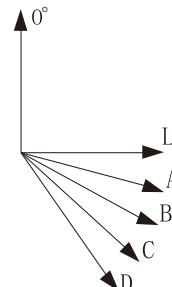
◆ Positions C: corresponding setting on the remote controller:

◆ Positions D: corresponding setting on the remote controller:

◆ Swing between L and D, corresponding setting on the remote controller: , , ,

◆ Stop at any position between L and D (angles between L and D are equiangular); corresponding setting on the remote controller: without display

③ Upon turning off the unit, the horizontal louver will close at position 0.



④ Swing function is available only when swing function is set and IDU fan motor is operating.

(8) Display of nixie tube on indoor unit

- ◆ When energized & started for the first time, the nixie tube defaults to displaying current set temperature.
- ◆ When set temperature display is set by remote controller, it will display set temperature; when switching to indoor ambient temperature display from other display status, indoor ambient temperature will be displayed for 3-5 seconds firstly and then set temperature display returns; if other status are set by remote controller, it will still display original set temperature.
- ◆ When malfunction occurs, the nixie tube will display corresponding error code. (refer to Error Code List)
- ◆ In auto defrosting mode, heating indicator is ON 10s and OFF 0.5(for 18K) and indoor unit display "H1"(for 24K). It is a normal phenomenon.
- ◆ The display light can be closed by pressing light button.

(9) Memory function

① Power failure in unit ON status

- ◆ Memorized items: unit ON status, mode, up & down swing, light, set temperature, set fan speed, general timer and Fahrenheit/ Celsius.
- ◆ General timer will be memorized and the timer time will be recalculated after re-energizing.
- ◆ Clock timer will not be memorized.

② Power failure in unit OFF status

- ◆ Memorized items: unit OFF status, mode, up & down swing, light, set temperature, set fan speed, general timer and Fahrenheit/ Celsius.
- ◆ General timer will be memorized and the timer time will be recalculated after re-energizing.
- ◆ Clock timer will not be memorized.

(10) Compulsory defrosting function

(1) Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 60.8°F. Press "+, -, +, -, +,-" button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator is ON 10s and OFF 0.5(for 18K) and indoor unit display "H1"(for 24K) (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed).

(2) Exit compulsory defrosting mode

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

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

(1) Enter refrigerant recycling function

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

(2) Exit refrigerant recycling function

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

(12) Outdoor fan motor control function

- (1) When turning off the unit by remote controller, unit stopping for protection, unit stopping as reaching the temperature point, the compressor stops and outdoor fan motor stops after 1min.
- (2) In fan mode, the outdoor fan motor stops.
- (3) After entering defrosting mode, the compressor stops and outdoor fan motor stops after 50s.
- (4) After finishing defrosting, the compressor restarts heating and outdoor fan motor starts operation 5s ahead.
- (5) Outdoor fan motor is DC motor and it will automatically adjust rotation speed according to ambient temperature.

4 Special functions

(1) HEALTH function (applicable for the models with health function)

- ① If the unit is equipped with the remote controller with HEALTH button, the unit defaults health function ON. Health function will be

closed by pressing the HEALTH button on remote controller or turning off the unit.

② If the unit is equipped with the remote controller without HEALTH button, the unit defaults health function ON. Health function will be closed when turning off the unit.

(2) I FEELfunction

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

5 Main system protection (more details please refer to maintenance section)

(1) Indoor fan motor does not operate (indoor unit displays H6 in cooling, heating, dry or fan mode)

If the controller detects that the rotation speed of indoor fan motor is below 300round/min or the indoor fan motor stops operation, it judges that the motor operation is abnormal. In order to prevent damaging the motor, the system judges that the indoor fan motor is blocked and then stops the unit for protection with error code displayed on the indoor unit (refer to Error Code List). After the unit is turned off, the error code will not be displayed.

Turn off the unit and then turn it on, the malfunction display will be cleared.

(2) Freeze protection (indoor unit displays E2 in cooling or dry mode)

① In cooling and dry mode, if Tindoor pipe < 32°F is detected for 3min continuously, the outdoor unit will stop for freeze protection; if Tindoor pipe > 42.8°F and the compressor has stopped for 3min, the unit will resume previous running status;

② In cooling and dry mode, if Tindoor pipe < 42.8°F, running frequency of compressor will be decreased or stop increasing;

③ If the unit stops for freeze protection for 6 times continuously, it can not resume operation automatically and displays error code; it can resume operation by pressing ON/OFF button on the remote controller.

(3) Overload protection (indoor unit displays E8 in cooling, heating or dry mode)

① In cooling and dry mode: if Toutdoor ≥ 149°F, the unit will stop for overload protection; if Toutdoor pipe < 131°F and the compressor has stopped for 3min, the unit will resume previous running status;

② In cooling and dry mode: if Toutdoor pipe ≥ 131°F, running frequency of compressor will be decreased or stop increasing;

③ In heating mode: if Tindoor pipe ≥ 147.2°F, the unit will stop for overload protection; if Tindoor pipe < 129.2°F and the compressor has stopped for 3min, the unit will resume running;

④ In heating mode: if Tindoor pipe ≥ 131°F, running frequency of compressor will be decreased or stop increasing.

(4) Compressor high discharge temperature protection (indoor unit displays E4 in cooling, heating or dry mode)

① If Tdischarge ≥ 239°F, the unit will stop for high discharge temperature protection; if Tdischarge < 206.6°F and the compressor has stopped for 3min, the unit will resume running;

② If Tdischarge ≥ 206.6°F, running frequency of compressor will be decreased or stop increasing.

(5) Drop off voltage protection (indoor unit displays U3 in cooling, heating or dry mode)

During compressor operation, if voltage drops off rapidly, the system will stop running for drop off voltage protection; when the voltage resumes normal, the malfunction will be eliminated automatically; if the compressor has stopped for 3min, the unit will resume previous running status.

(6) Communication malfunction (indoor unit displays E6 in cooling, heating, dry or fan mode)

If the indoor unit and outdoor unit can not communicate smoothly, the unit will stop for communication malfunction; if communication malfunction is eliminated and the compressor has stopped for 3min, the unit will resume previous running status.

(7) IPM module protection (indoor unit displays H5 in cooling, heating or dry mode)

① When the compressor starts, if there is overcurrent or low control voltage for IPM module due to some abnormal reasons, the unit will stop for IPM module protection; when the IPM module current decreases or control voltage increases, the protection will be eliminated automatically; if the compressor has stopped for 3min, the unit will resume previous running status.

② If unit stopping for module protection continuously occurs for three times, the unit can not resume running automatically and you should press ON/OFF button on remote controller to resume running.

(8) Module overheating protection (indoor unit displays P8 in cooling, heating or dry mode)

① If Tmodule ≥ 80°F, running frequency of compressor will be decreased or stop increasing;

② If Tmodule ≥ 95°F, the unit will stop for module overheating protection; if Tmodule < 188.6°F and the compressor has stopped for 3min, the unit will resume running.

(9) Compressor overload protection (indoor unit displays H3 in cooling, heating or dry mode)

① If disconnection of compressor overload switch is detected for 3S continuously, the system will stop for compressor overload protection; when the protection is eliminated and the compressor has stopped for 3min, the unit will resume running;

② If unit stopping for compressor overload protection continuously occurs for three times, the unit can not resume running automatically and you should press ON/OFF button on remote controller to resume running; the times of compressor overload protection will be cleared if the compressor has run for 30min.

(10) Overcurrent protection (indoor unit displays E5 in cooling, heating or dry mode)

If overcurrent is detected for 3s continuously, the system will stop for overcurrent protection; when the protection is eliminated and the compressor has stopped for 3min, the unit will resume running.

(11) Temperature sensor malfunction detection (indoor unit displays F1, F2, F3, F4, F5 in cooling, heating, dry or fan mode)

① Malfunction of indoor ambient temperature sensor: indoor unit displays F1, which means indoor ambient temperature sensor is open-circuit or short-circuit, or its detection circuit element is broken;

② Malfunction of indoor evaporator temperature sensor: indoor unit displays F2, which means indoor evaporator temperature sensor is open-circuit or short-circuit, or its detection circuit element is broken;

③ Malfunction of outdoor ambient temperature sensor: indoor unit displays F3, which means outdoor ambient temperature sensor is open-circuit or short-circuit, or its detection circuit element is broken;

④ Malfunction of outdoor condenser temperature sensor: indoor unit displays F4, which means outdoor condenser temperature sensor is open-circuit or short-circuit, or its detection circuit element is broken;

⑤ Malfunction of outdoor discharge temperature sensor: indoor unit displays F5, which means outdoor discharge temperature sensor is open-circuit or short-circuit, or its detection circuit element is broken.

When temperature sensor malfunction occurs, the unit stops for protection.

6. Notes for Installation and Maintenance

Safety Precautions:

Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

- The installation or maintenance must accord with the instructions.
- Comply with all national electrical codes and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- All installation and maintenance shall be performed by distributor or qualified person.
- All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
- Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.



Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.

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

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 1/8 inch.

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

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

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

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

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)

2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 44.09lb.

3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.

4. Ware safety belt if the height of working is above 78 3/4 inch.

5. Use equipped components or appointed components during installation.

6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.

2. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.

3. Make sure no refrigerant gas is leaking out when installation is completed.

4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.

5. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

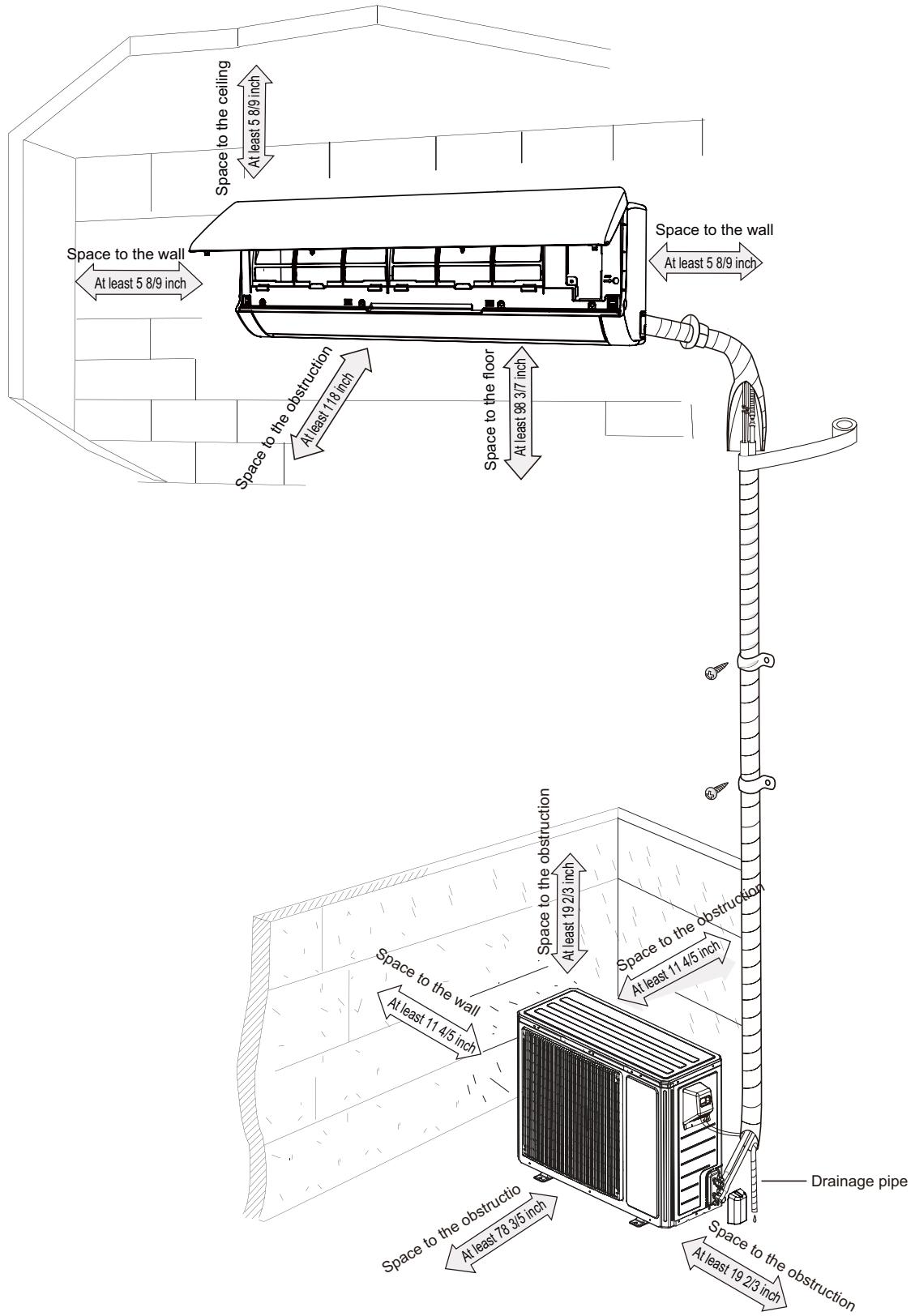
Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

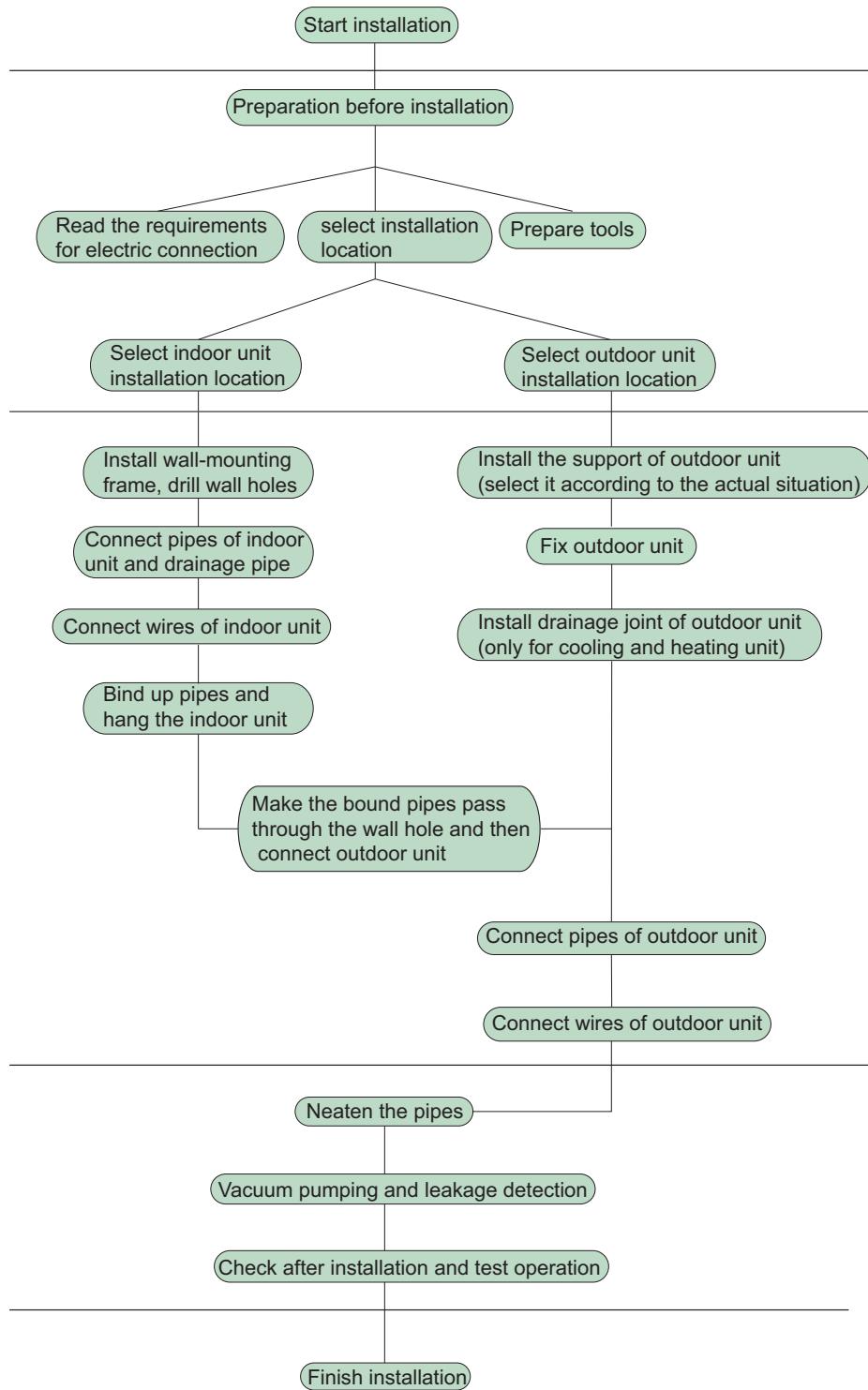
1. Level meter, measuring tape	2. Screw driver	3. Impact drill, drill head, electric drill
		
4. Electroprobe	5. Universal meter	6. Torque wrench, open-end wrench, inner hexagon spanner
		
7. Electronic leakage detector	8. Vacuum pump	9. Pressure meter
		
10. Pipe pliers, pipe cutter	11. Pipe expander,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

7. Installation

7.1 Installation Dimension Diagram



Installation procedures



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

7.2 Installation Parts-checking

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

 **Note:**

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

7.3 Selection of Installation Location

1. Basic Requirement:

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:
(1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
(2) The place with high-frequency devices (such as welding machine, medical equipment).
(3) The place near coast area.
(4) The place with oil or fumes in the air.
(5) The place with sulfureted gas.
(6) Other places with special circumstances.

2. Indoor Unit:

- (1) There should be no obstruction near air inlet and air outlet.
- (2) Select a location where the condensation water can be dispersed easily and won't affect other people.
- (3) Select a location which is convenient to connect the outdoor unit and near the power socket.
- (4) Select a location which is out of reach for children.
- (5) The location should be able to withstand the weight of indoor unit and won't increase noise and vibration.
- (6) The appliance must be installed 98 3/7 inch above floor.
- (7) Don't install the indoor unit right above the electric appliance.
- (8) The appliance shall not be installed in the laundry.

3. Outdoor Unit:

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

7.4 Electric Connection Requirement

1. Safety Precaution

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

Air-conditioner	Air switch capacity
18K	20A
24K	25A

- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) For appliances with type Y attachment, the instructions shall contain the substance of 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.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

2. Grounding Requirement:

- (1) The air conditioner is first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- (2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- (3) The grounding resistance should comply with national electric safety regulations.
- (4) The appliance must be positioned so that the plug is accessible.
- (5) An all-pole disconnection switch having a contact separation of at least 1/8 inch in all poles should be connected in fixed wiring.
- (6) Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit short and overload. (Caution: please do not use the fuse only for protect the circuit)

7.5 Installation of Indoor Unit

1. Choosing Installation location

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

2. Install Wall-mounting Frame

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

in the holes.

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

3. Install Wall-mounting Frame

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

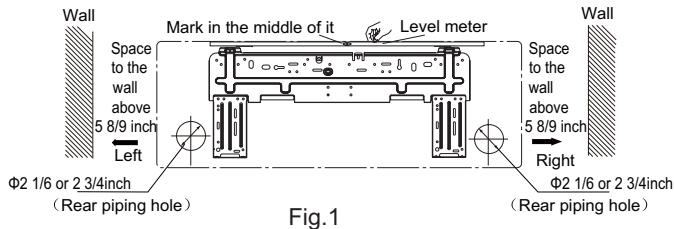


Fig.1

(2) Open a piping hole with the diameter of 2 1/6 or 2 3/4inch on the selected outlet pipe position.In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°.(As show in Fig.2)

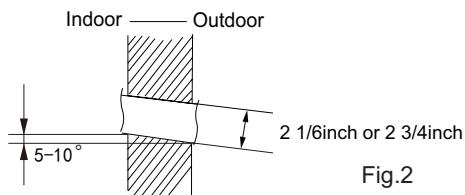


Fig.2

⚠ Note:

(1) Pay attention to dust prevention and take relevant safety measures when opening the hole.

(2) The plastic expansion particles are not provided and should be bought locally.

4. Outlet Pipe

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

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

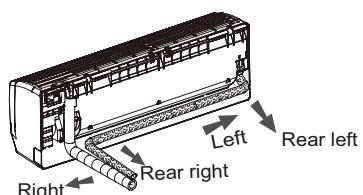


Fig.3

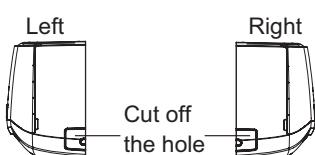


Fig.4

5. Connect the Pipe of Indoor Unit

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

(2) Pretightening the union nut with hand.

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

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

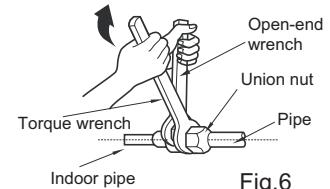
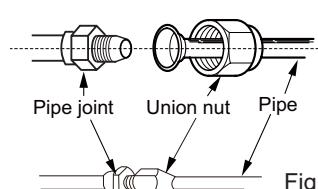


Fig.6

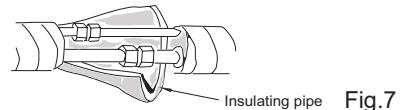


Fig.7

Refer to the following table for wrench moment of force:

Hex nut diameter(inch)	Tightening torque(ft·lbf)
Φ1/4	11.10~14.75
Φ3/8	22.82~29.50
Φ1/2	33.19~40.56
Φ5/8	44.24~47.94
Φ3/4	51.32~55.31

6. Install Drain Hose

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

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

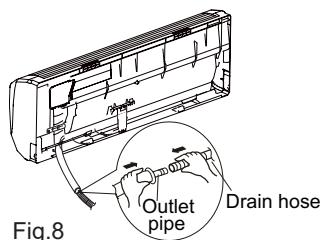


Fig.8

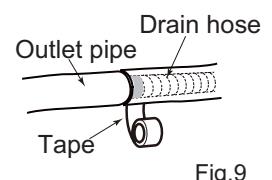


Fig.9

⚠ Note:

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

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

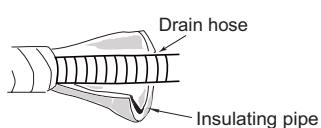


Fig.10

7. Connect Wire of Indoor Unit

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

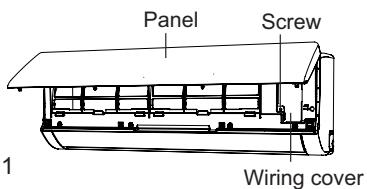


Fig.11

(2) Fix the wire crossing board on connection wire sleeve at the bottom case; let the connection wire sleeve go through the wire crossing hole at the back of indoor unit, and then pull it out from the front.(As show in Fig.12)

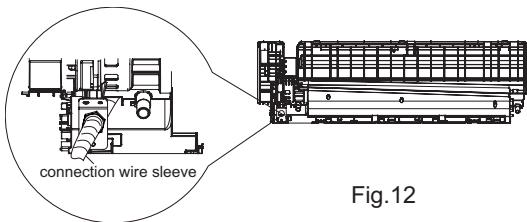


Fig.12

(3) Remove the wire clip; connect the power connection wire to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip.(As show in Fig.13)

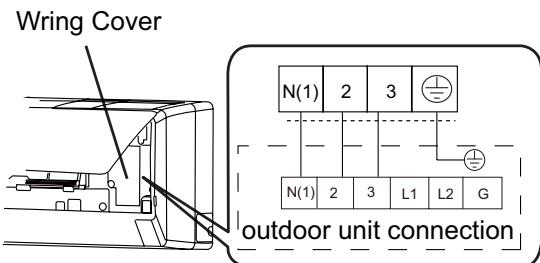


Fig.13

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

(5) Close the panel.

⚠ Note:

- (1) All wires of indoor unit and outdoor unit should be connected by a professional.
- (2) If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
- (3) For the air conditioner with plug, the plug should be reachable after finishing installation.
- (4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 1/8inch.

8. Bind up Pipe

(1) Bind up the connection pipe, power cord and drain hose with the band.(As show in Fig.14)

(2) Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose.(As show in Fig.15)

(3) Bind them evenly.

(4) The liquid pipe and gas pipe should be bound separately at the end.

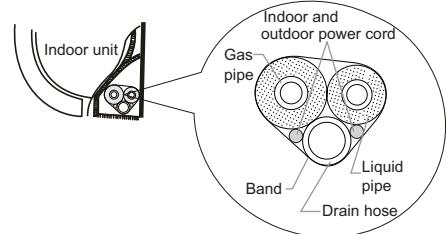


Fig.14

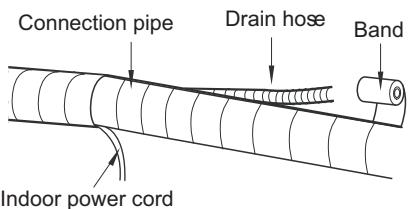


Fig.15

⚠ Note:

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

9. Hang the Indoor Unit

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

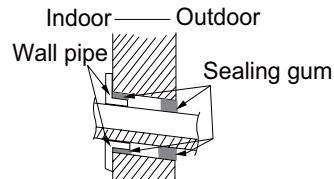
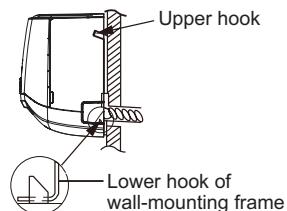


Fig.16

Fig.17



⚠ Note:

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

7.6 Installation of Outdoor Unit

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

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

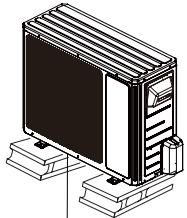
⚠ Note:

(1) Take sufficient protective measures when installing the outdoor unit.

(2) Make sure the support can withstand at least four times the unit weight.

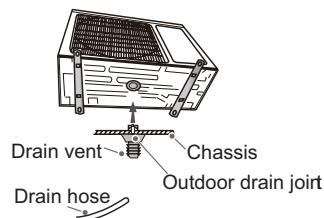
(3) The outdoor unit should be installed at least 1 1/6inch above the floor in order to install drain joint.(As show in Fig.18)

(4) For the unit with cooling capacity of 2300W~5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W~16000W, 10 expansion screws are needed.



At least 1 1/6 inch above the floor

Fig.18



Drain vent Chassis
Drain hose Outdoor drain joint

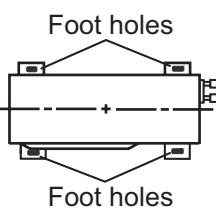
Fig.19

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

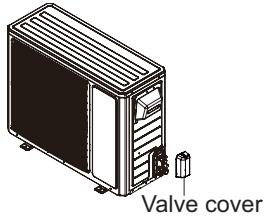
- (1) Connect the outdoor drain joint into the hole on the chassis.
 - (2) Connect the drain hose into the drain vent.
- (As show in Fig.19)

3. Fix Outdoor Unit

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



Foot holes



Valve cover

4. Connect Indoor and Outdoor Pipes

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

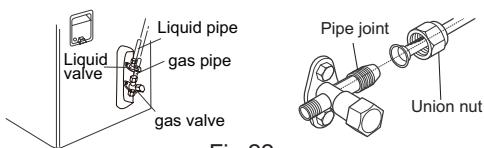


Fig.22

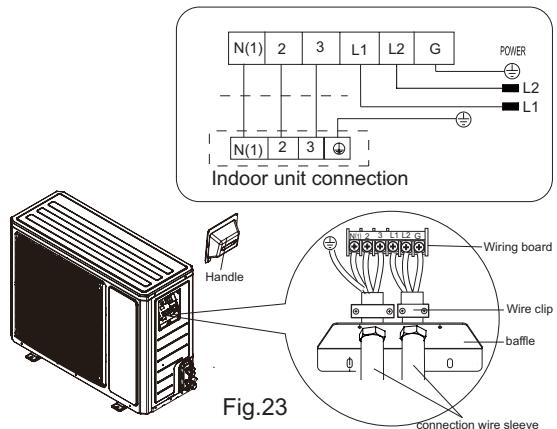
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force:

Hex nut diameter(inch)	Tightening torque(ft-lbf)
Φ1/4	11.10~14.75
Φ3/8	22.82~29.50
Φ1/2	33.19~40.56
Φ5/8	44.24~47.94
Φ3/4	51.32~55.31

5. Connect Outdoor Electric Wire

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



- (2) Fix the power connection wire and power cord with wire clip.
- (3) Fix the stopper on handle with screw.

⚠ Note:

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

6. Neaten the Pipes

- (1) The pipes should be placed along the wall, bent reasonably and hidden possibly. Min. semidiameter of bending the pipe is 4inch.
- (2) If the outdoor unit is higher than the wall hole, you must set a U-shaped curve in the pipe before pipe goes into the room, in order to prevent rain from getting into the room.(As show in Fig.24)

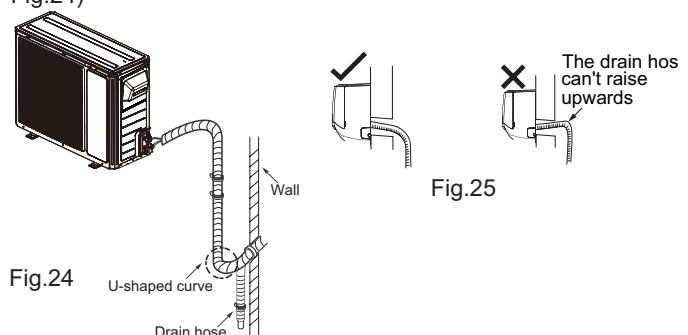
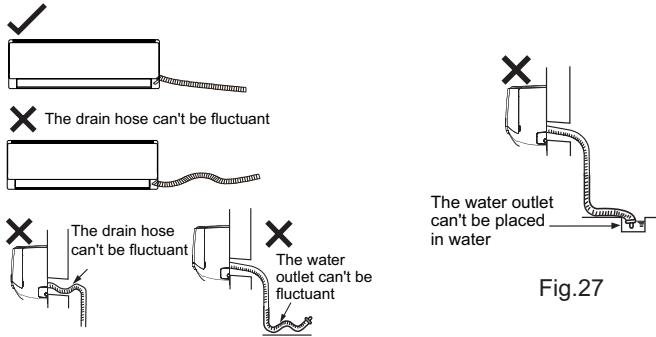


Fig.24

Fig.25

Note:

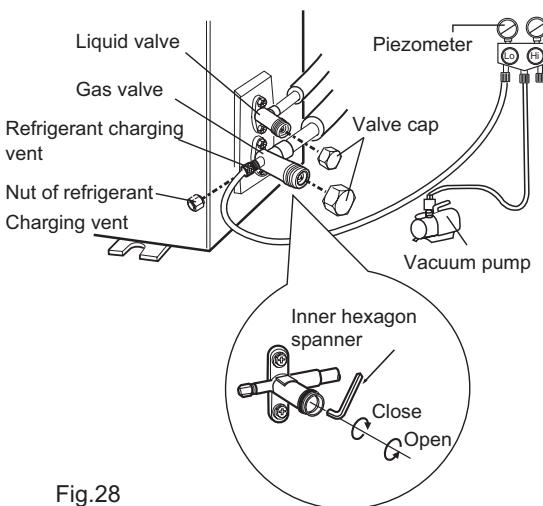
- (1) The through-wall height of drain hose shouldn't be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fluctuant, etc.(As show in Fig.26)
- (3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)



7.7 Vacuum Pumping and Leak Detection

1. Use Vacuum Pump

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



2. Leakage Detection

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

7.8 Check after Installation and Test Operation

1. Check after Installation

Check according to the following requirement after finishing installation.

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

2. Test Operation

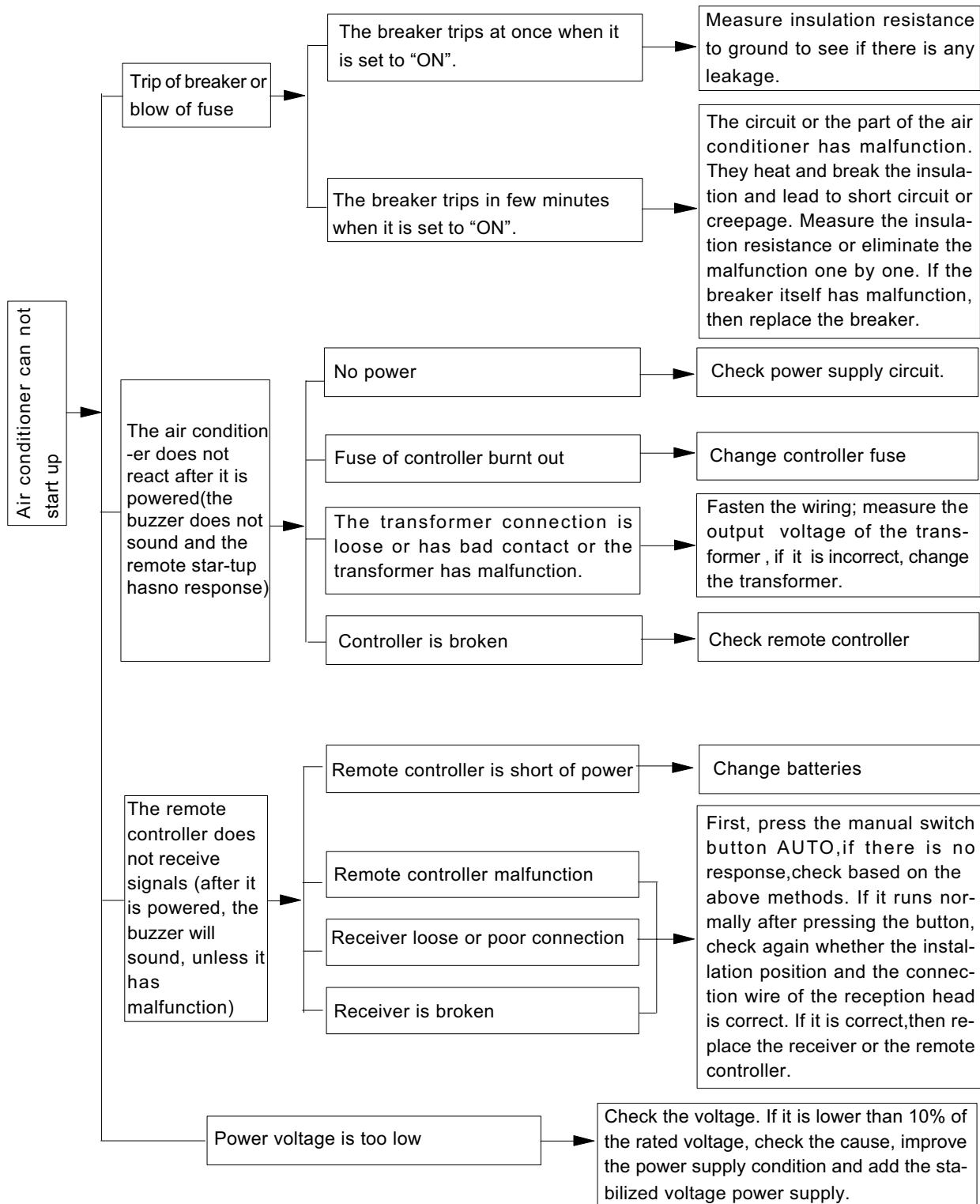
(1) Preparation of test operation

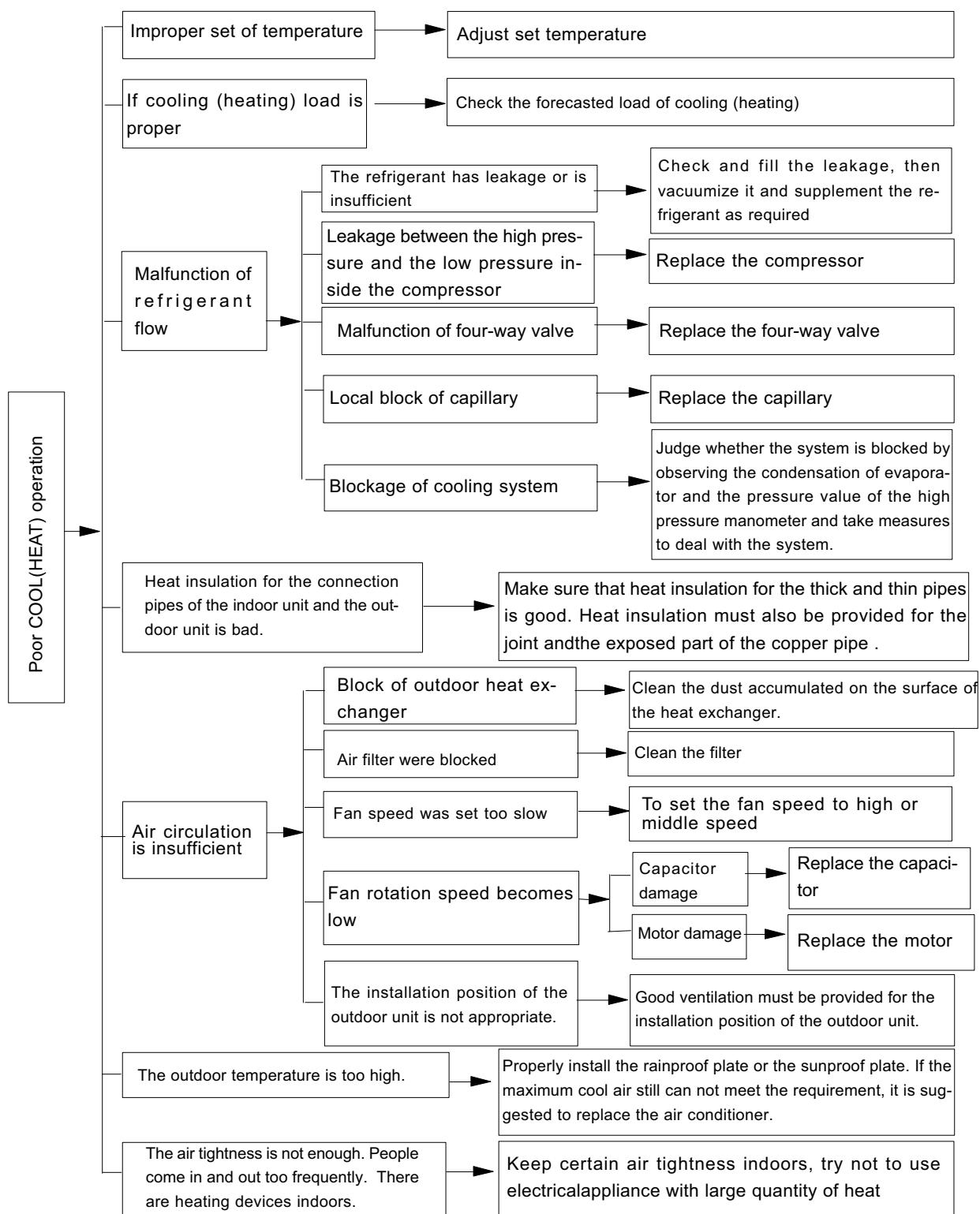
- The client approves the air conditioner installation.
 - Specify the important notes for air conditioner to the client.
- #### (2) Method of test operation
- Put through the power, press ON/OFF button on the remote controller to start operation.
 - Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
 - If the ambient temperature is lower than 60.8°F, the air conditioner can't start cooling.

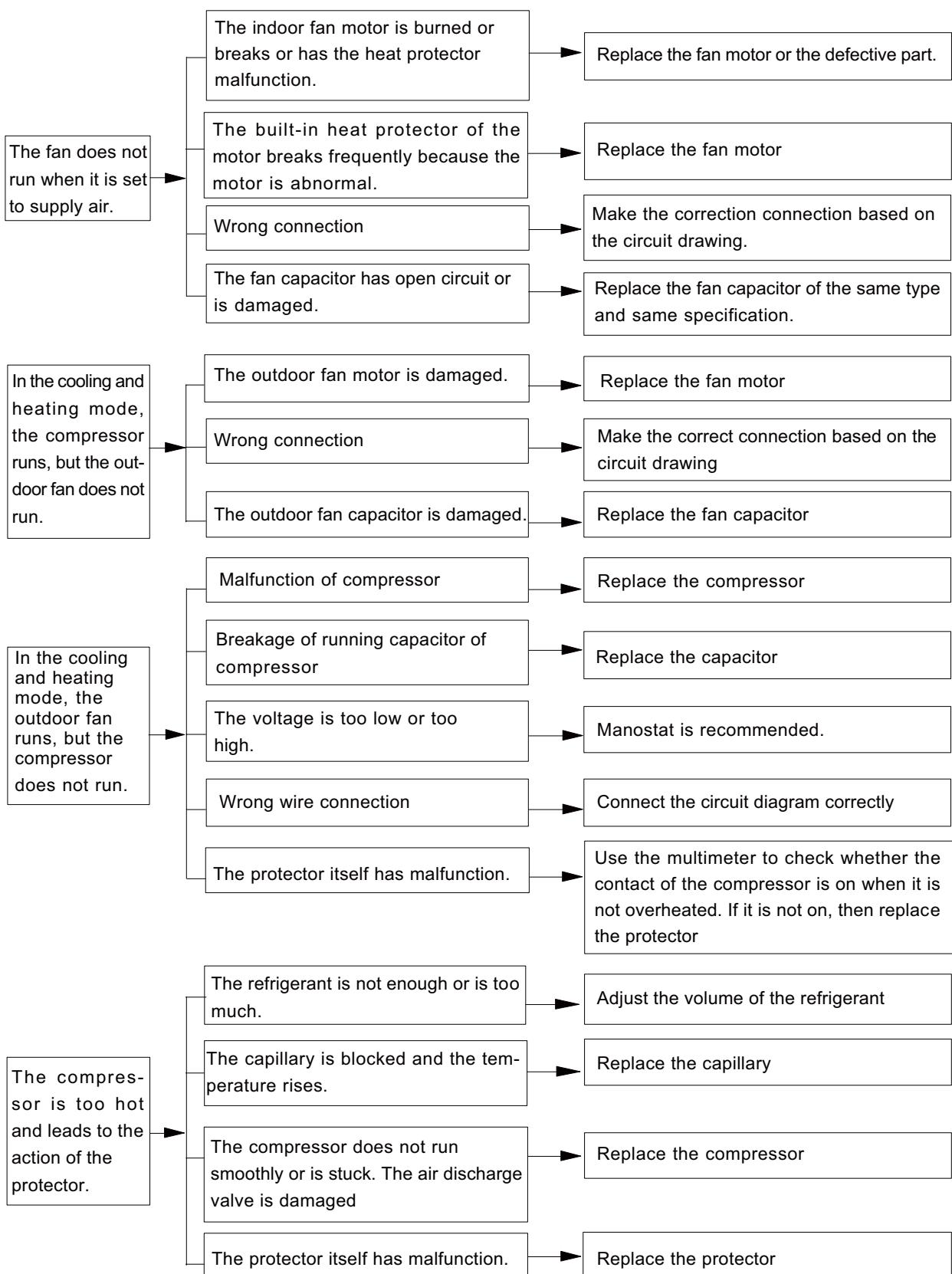
8. Maintenance

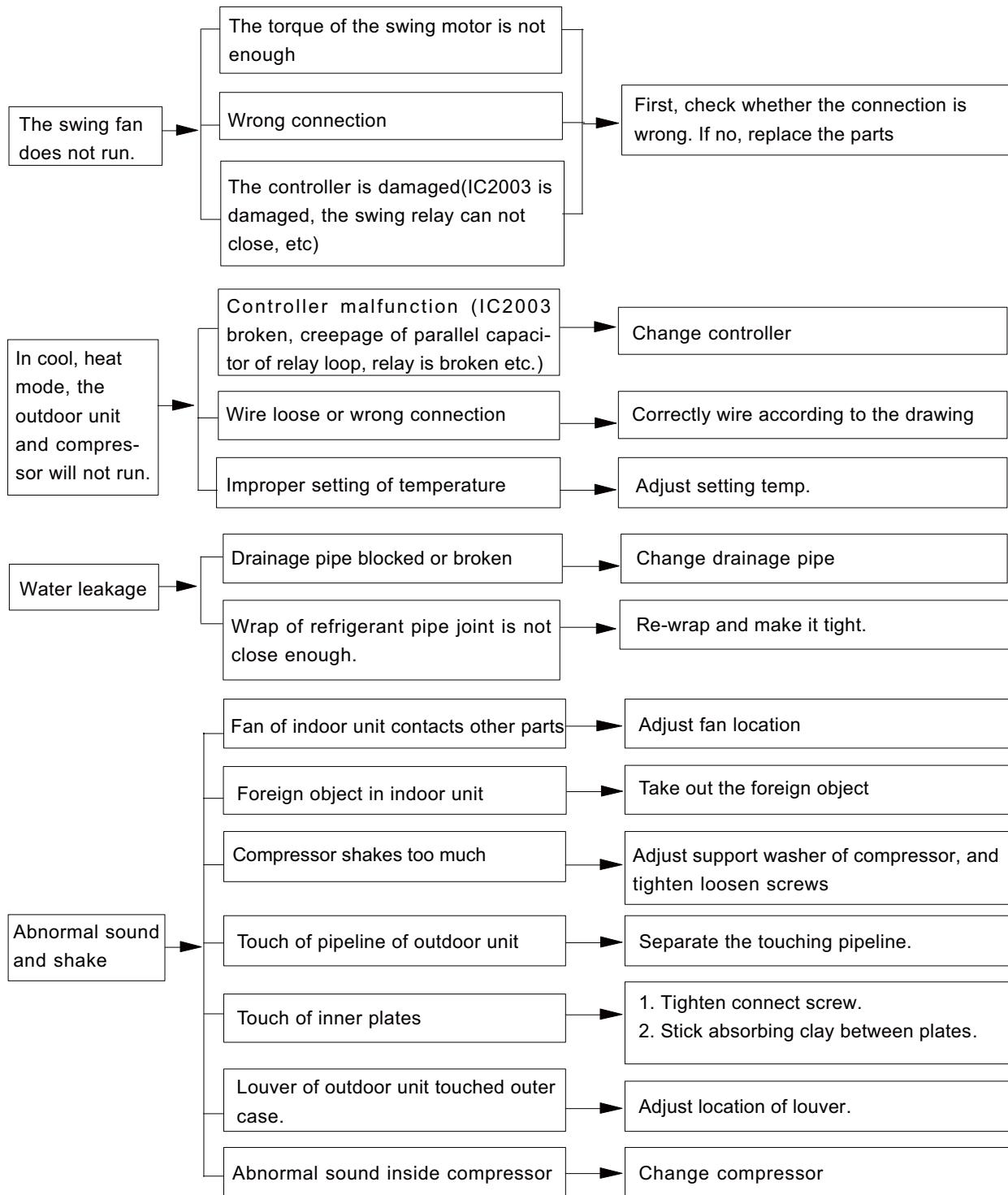
8.1 Malfunction Analysis

Note: When replacing the controller, be sure to insert the wire jumper into the new controller, otherwise the unit will display C5









8.2 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

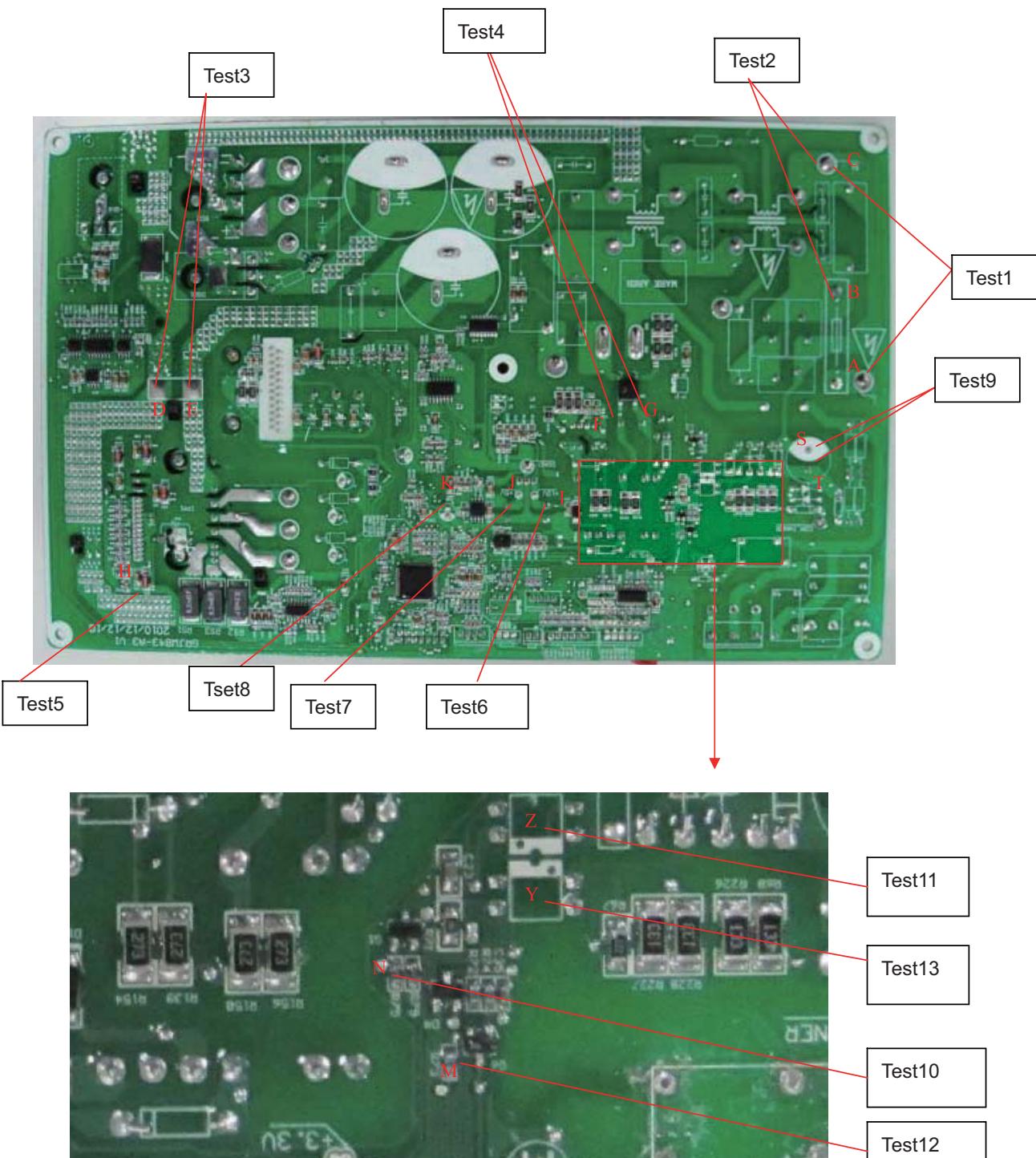
NO.	Name of malfunction	Indoor unit displaying method			Outdoor unit display(LEDs have 3 status) □ OFF ■ ON ☆ Blinks				AC status	Malfunctions		
		Double 8 code display	Indicator display(LED blinks 0.5s-ON/0.5s-OFF)		D40/D5	D41/D6	D42/D16	D43/D30				
			Running LED	Cooling LED								
1	System high pressure protection	E1	3s off blink once		□	☆	☆	☆		High pressure of system,might be: 1.Refrigerant is too much; 2.Poor heating exchanging for units(including heat exchanger is dirty and unit heating radiating ambient is poor); 3.Ambient temp.is too high.		
2	Anti-freezing protection	E2	3s off blink twice		■	□	■	□		cooling,dehumidifying,com pressor,outdoor fan motor will stop running,indoor fan motor will keep running.		
3	Compressor air exhaust high temp. protection	E4	3s off blink four times		■	□	■	☆		cooling,dehumidifying,com pressor,outdoor fan motor will stop running,indoor fan motor works. heating:all stop running.		
4	AC overload protection	E5	Off 3s blink 5 times		□	■	☆	□		1.power supply is stable,fluctuation is too much 2.Power supply is too low,overload is too much.		
5	Indoor and outdoor units communication malfunction	E6	Off 3s blink 6 times		□	□	□	☆		Please refer to troubleshooting		
6	Anti-high temp. protection	E8	Off 3s blink 8 times		■	□	■	■		Please refer to troubleshooting		
7	Indoor unit motor no feedback	H6	Off 3s blink 11 times							1.Poor insert for GPF 2.Indoor control board AP1 malfunction 3.Indoor motor M1 malfunction		
8	Jump wire cap malfunction protection	C5	Off 3s blink 15 times							Indoor control board AP1 jump cap poor connected,please reinsert or replace the jump cap.		
9	Indoor ambient sensor open circuit,short circuit	F1		Off 3s blink once						1.Room temp.sensor is not connected with the control panel AP1 2.Room temp.sensor is damaged		
10	Indoor evaporator sensor ciruit open,short circuit	F2		Off 3s blink twice						1.Tube temp.sensor is not connected with the control panel AP1 2.Tube tmeep.sensor is damaged		
11	Outdoor ambient sensor circuit open,circuit short	F3		Off 3s blinks three times	□	□	☆	■		Outdoorm temp.sensor hasn't connected well,or damaged,please refer to the sensor resistance value for checking.		
12	Outdoor condemson sensor open circuit,short circuit	F4		Off 3s blinks 4 times	□	□	☆	□		Outdoorm temp.sensor hasn't connected well,or damaged,please refer to the sensor resistance value for checking.		

13	Outdoor air exhaust sensor open circuit,short circuit	F5		Off 3s blinks 5 times	<input type="checkbox"/>	<input type="checkbox"/>	☆	☆	Cooling,dehumidifying;after runing for 3mins later,the compressor will stop to run,indoor fan motor will start to run.heating:after run 3 mins later,all will stop to run.	1.Exhaust temp sensor hasn't connected well,or damaged,plwease refer to the sensor resistance value for checking. 2.Sensor head hasn't insert into the copper tube.
14	Overload limit/ descending frequency	F6		Off 3s blinks 6 times	■	<input type="checkbox"/>	☆	☆	Overload mormal operation,compressor is runing,frequency descending	Please refer to troubleshooting
15	Over current need frequency descending	F8		Off 3s blinks 8 times	■	■	<input type="checkbox"/>	■	Overload mormal operation,compressor is runing,frequency descending	1.Input power supply is too low 2.System voltage is too high,over is too much
16	Air exhaust over high need frequency descending	F9		Off 3s blinks 9 times	■	■	<input type="checkbox"/>	<input type="checkbox"/>	Overload mormal operation,compressor is runing,frequency descending	1.Overload is too much,ambient temp.is too high 2.Refrigerant is short 3.Electric expansion malfunction
17	DC generatrix voltage is too high	PH		Off 3s blink 11 times	<input type="checkbox"/>	■	<input type="checkbox"/>	☆	Cooling,dehumidifying,compressor stop running,Fan motor works. Heating: all will stop	1.Testing wire terminal L and N position.If higher than 265VAC,please cut off the power supply and restart until back to normal 2.If input voltage is normal, testing the voltage of electrolytic capacitor on AP1 after turn on the unit.There may be some problem and replace the AP1 if the electrolytic capacitor voltage range at 200-280V
18	Whole unit's current testing malfunction	U9		Off 3s blink 13 times	<input type="checkbox"/>	■	☆	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	The circuit on AP1 has malfunction, replace the outdoor unit AP1
19	Compressor current overcurrent protection	P5		Off 3s blink 15 times	<input type="checkbox"/>	☆	<input type="checkbox"/>	<input type="checkbox"/>	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Please refer to troubleshooting(IPM protection, compressor lose steps, compressor current overcurrent protection)
20	Defrosting (24K)	H1		Off 3s blink once					Under the heating mode,compressor running, indoor/outdoorfan motor stop working	It is normal function
	Defrosting (18K)	/		On 10s and Off 0.5s						
21	Compressor overload protection	H3		Off 3s blink 3 times	<input type="checkbox"/>	☆	☆	<input type="checkbox"/>	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	1. Wire terminal OVCCOMP loosen or circuit,has problem, the resistance of SAT should be lower than 1 ohm. 2.Please refer to troubleshooting(exhaust/ overload protection)
22	IPM protection	H5		Off 3s blink 5 times	■	<input type="checkbox"/>	■	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting

23	PFC protection	HC			Off 3s blink 6 times	□	■	☆	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
24	Compressor lose steps	H7			Off 3s blink 7 times	□	☆	■	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
25	Startsup fail	Lc			Off 3s blink 11 times	□	☆	□	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
26	Compressor current testing circuit malfunction	U1			Off 3s blink 13 times	□	☆	■	□		Replace the outdoor control board AP1
27	EEPROM malfunction	EE			Off 3s blink 15 times	□	□	□	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Replace the outdoor control board AP1
28	Capacitor charge malfunction	PU			Off 3s blink 17 times	□	■	□	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to Part 3 capacitor charging fault of troubleshooting
29	Module sensor circuit diagram	P7			Off 3s blink 18 times	□	□	■	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Replace the outdoor control board AP1
30	Module temp. over high protection	P8			Off 3s blink 19 times	■	□	☆	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	To check whether the ambient Temp. of IPM is too high or the heat-sinking of IPM is dirty else replace the outdoor baord AP1
31	DC Bus voltage dips	U3			Off 3s blink 20 times	□	■	■	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Power voltage is not stable
32	Low DC Bus voltage protection	PL			Off 3s blink 21 times	□	■	■	□	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	1.Check the Input voltage if the Voltage is lower than 150VAC,restart the machine when the power supply is mormal. 2.Checking the reactor L connection.
33	IPM temp.is too high limit/ decrease frequency	EU				■	■	■	☆	Over load normal works,compressor runing frequency declines	Whole unit break for 20 mins and discharge,to check the outdoor control board AP1's IPM module coolant whether is short,the radiator is tightened. If above phenomenon is not OK,Please improve or replace the control board AP1
34	Four-way valve abnormal	U7				■	□	☆	□	This malfunction happened,only in heating mode,all will stop to run.	1.Power supply voltage is lower than AC175V 2.Wire terminal 4V loosen or wire break 3.4V damaged,replace 4V
35	Outdoor unit zero-cross detecting error	U9				■	■	☆	□	Cooling:compressor will stop,indoor fan motor works. Heating:all will stop.	Replace the outdoor control board AP1

36	Anti-freezing limit/decrease frequency	FH				■	■	■	□	All loads work normally but the running frequency limited or decrease	Indoor unit air return is poor or fan speed is to low.
37	Fan module protection	L3				■	□	□	□	Cooling:outdoor fan motor,compressor stop running;indoor fan works. Heating:outdoor fan motor,compressor,indoor fan motor stop running.	1.The wire terminal of outdoor fan motor is loosed,fix the terminal. 2.Motor damaged,replace the motor 3.Fan motor module on mainboard is damaged;replace the mainboard AP1

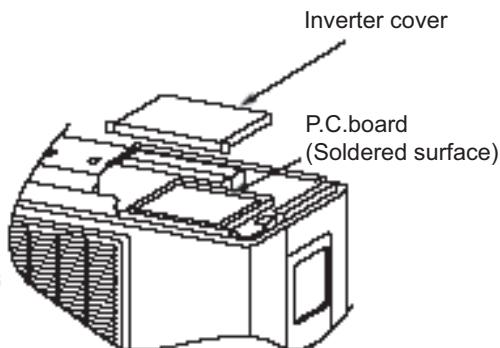
Key test point (bottom layer)



Test point No.	Test point	Related elements	Test value under normal condition
Test 1	Between A and C	Neutralwire, live wire	160V-265V
Test 2	Between B and C	Neutralwire, live wire	160V-265V
Test 3	Between D and E	Electrolytic capacitor of DC bas bar	DC 180V-380V
Test 4	Between F and G	Electrolytic capacitor of switch power	DC 180V-380V
Test 5	Both ends of diode D10	D10 (IPM module +15V)	DC 14.5V-15.6V
Test 6	Both ends of electrolytic capacitor C40	C40 (+12V power)	DC 12V-13V
Test 7	Both ends of electrolytic capacitor C82	C82 (+5V power)	DC 5V
Test 8	Both ends of electrolytic capacitor C225	C225 (+3.3V power)	DC 3.3V
Test 9	Between S and T	Communication circular current	DC 56V
Test 10	Between point N and GND	R78 to N terminal (ground) (signal receiving terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 11	U12	Between 1 and 2 at leading foot of U12	Jumping between 0V and 3.3V
Test 12	Between point M and GND	R75 to M terminal(ground) (signal sending terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 13	U15	Between 3 and 4 at leading foot of U15	Jumping between 0V and 3.3V

•Discharging method

(1) remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge resistance(approx.100Ω20W)or plug of the soldering iron to voltage between + - terminals of the electrolytic capacitor (test3 "D " and "E" point) on PC Board for 30s, and then perform discharging.

NOTE:

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

8.3 How to Check Simply the Main Part

Confirm the malfunction type according to the malfunction indicator of indoor/outdoor unit and malfunction sheet (usually the sheet will be stuck on the electric box cover or top cover of the unit).

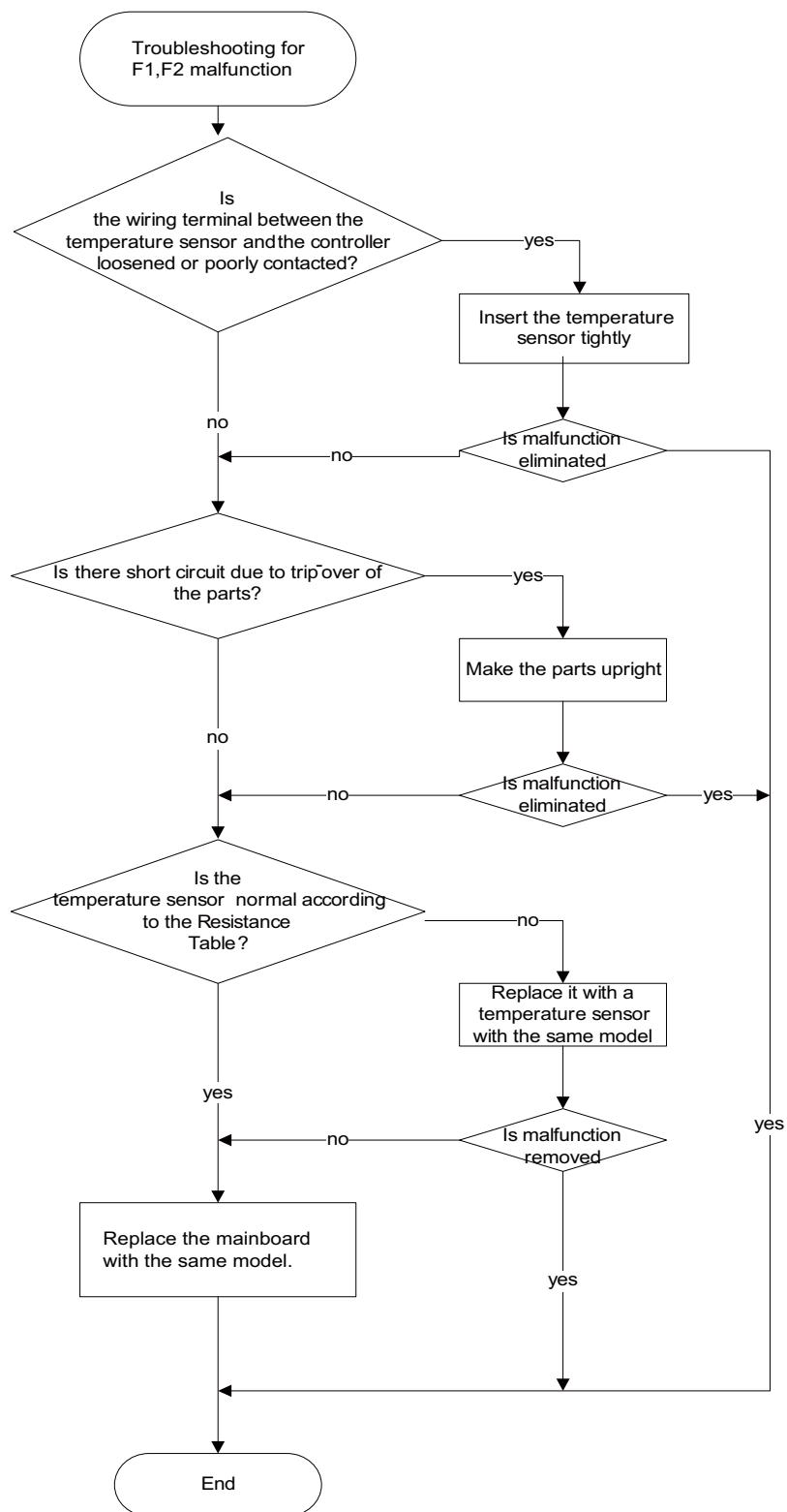
As long as there is a malfunction, the indicator of the outdoor controller board will display the corresponding malfunction directly; Some malfunctions will be displayed on the indoor unit directly and some malfunctions will be seen on the remote controller by pressing light button for 4 times in 3 seconds.

In the below malfunction diagnosis process, "Y" means "Yes", "N" means "No";

In the below malfunction diagnosis process, controller board AP1 is for outdoor controller board;

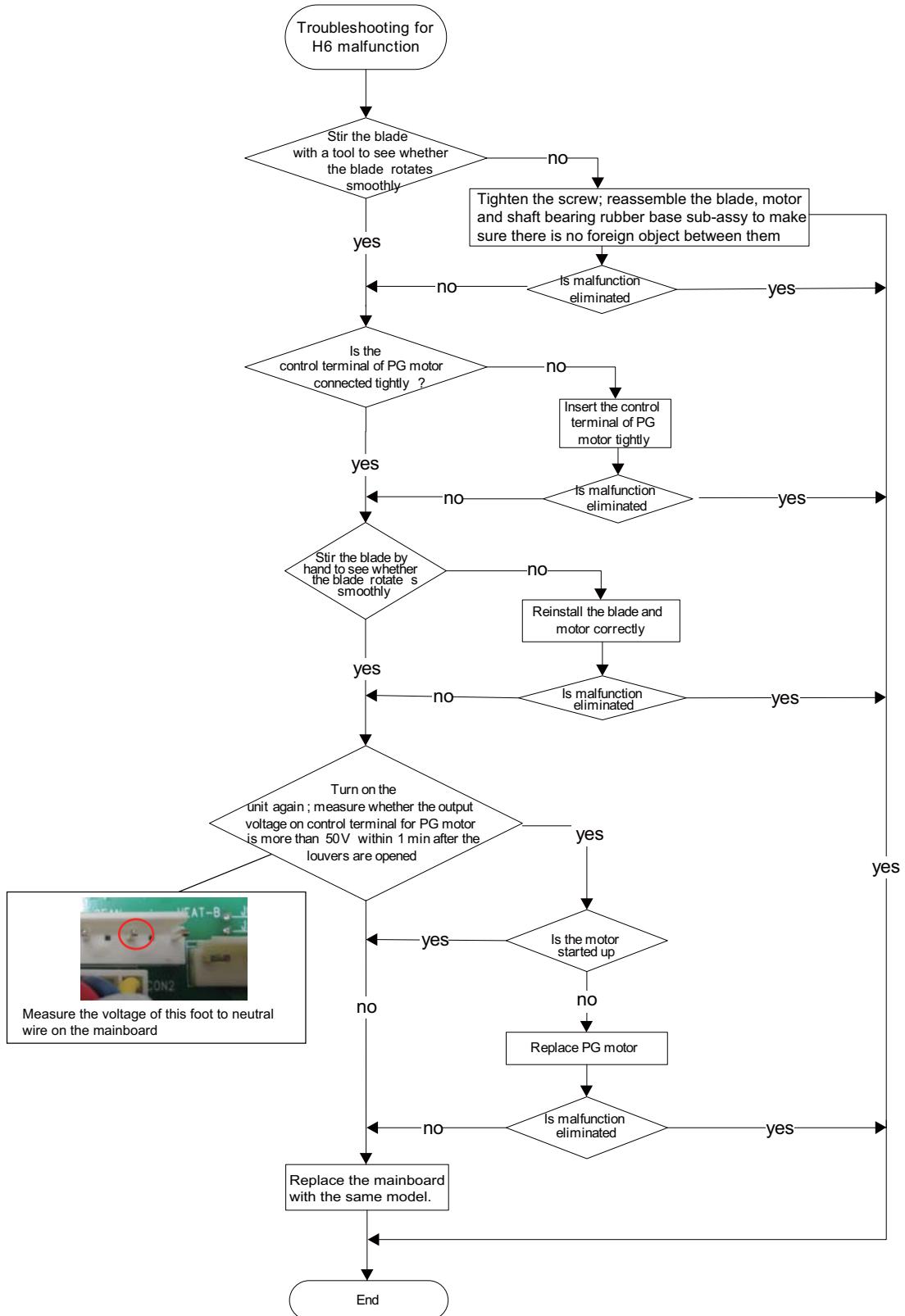
Before proceeding malfunction check, discharge the electrolytic capacitor according to the method mentioned before and make sure the voltage is below 20V. Otherwise, it may cause electric shock or break the controller board!

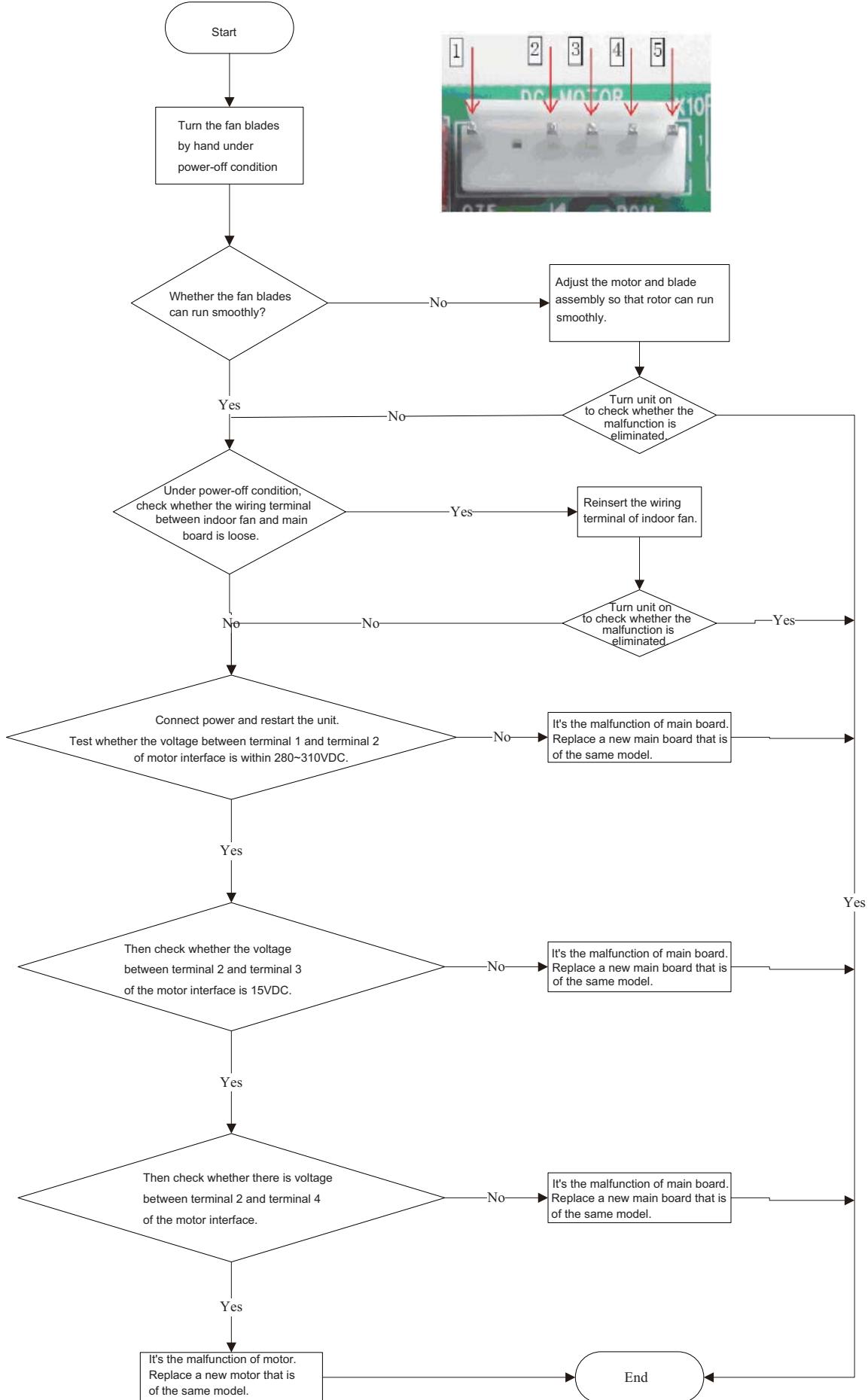
1. Malfunction of Temperature Sensor F1,F2



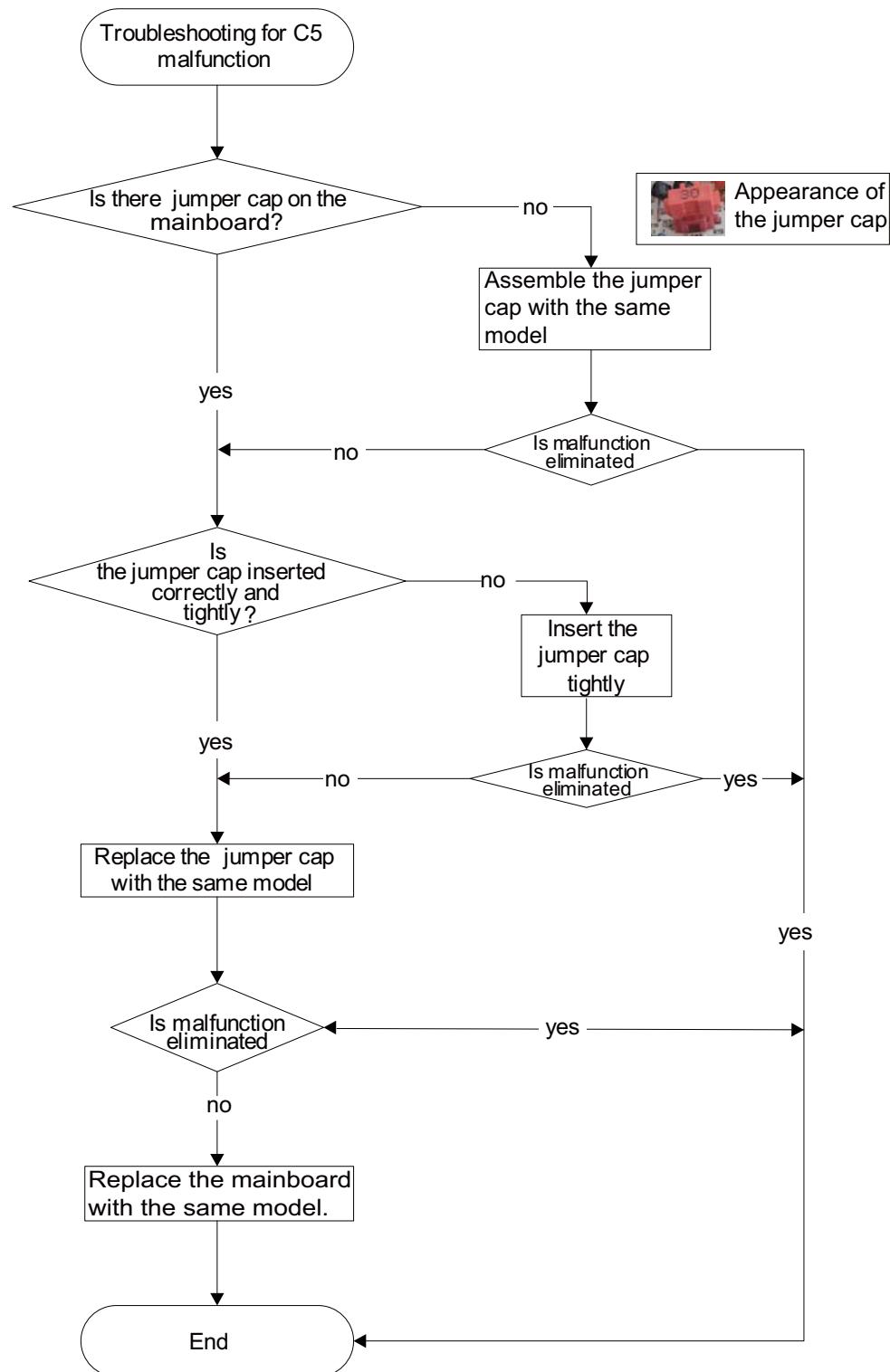
2. Malfunction of Blocked Protection of IDU Fan Motor H6

18K

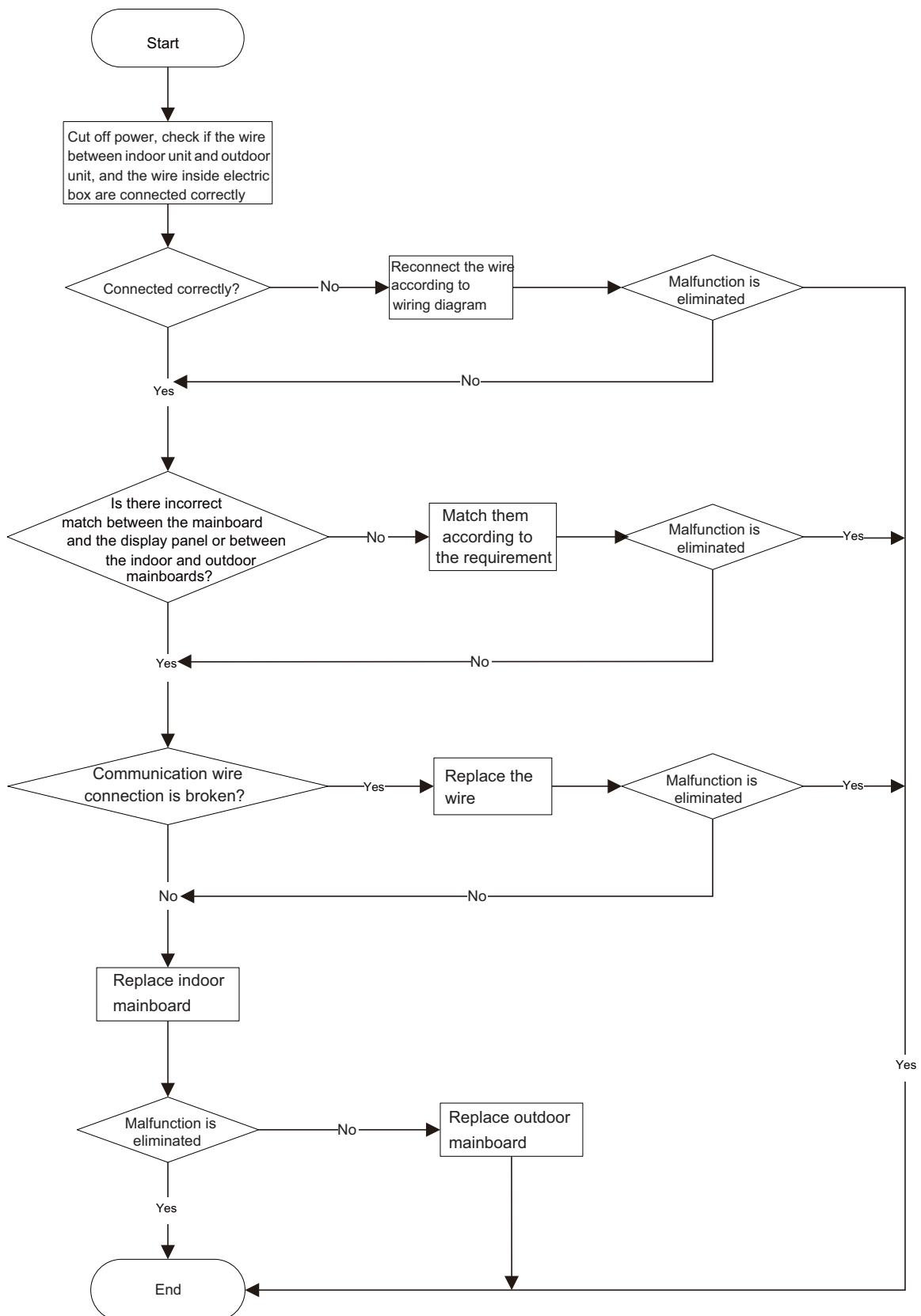




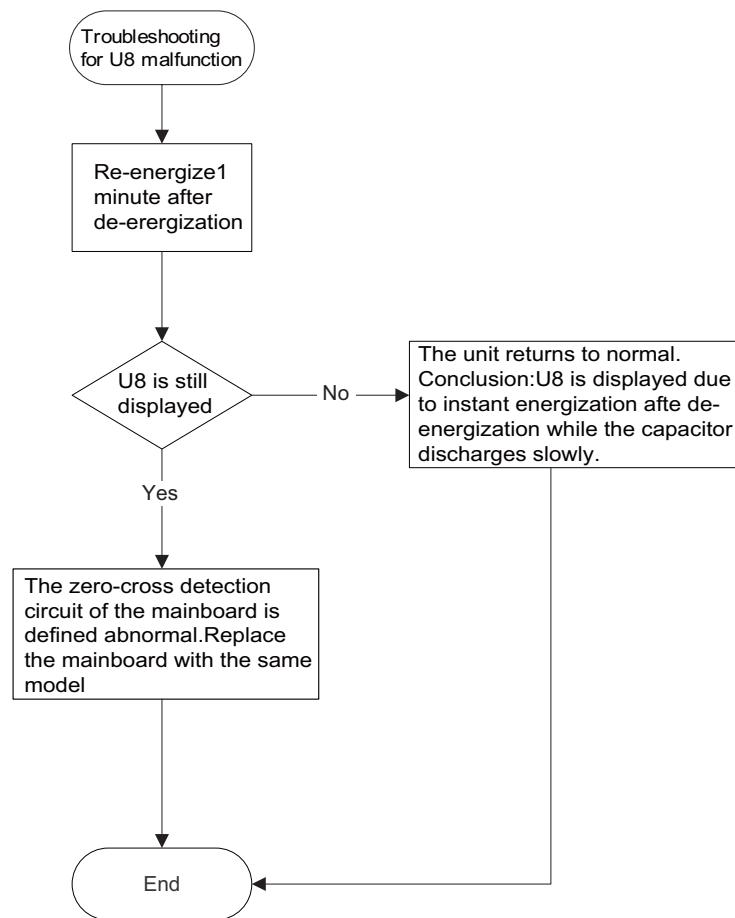
3. Malfunction of Protection of Jumper Cap C5



4. Communication malfunction E6



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



6. Capacitor charging malfunction (outdoor unit malfunction)

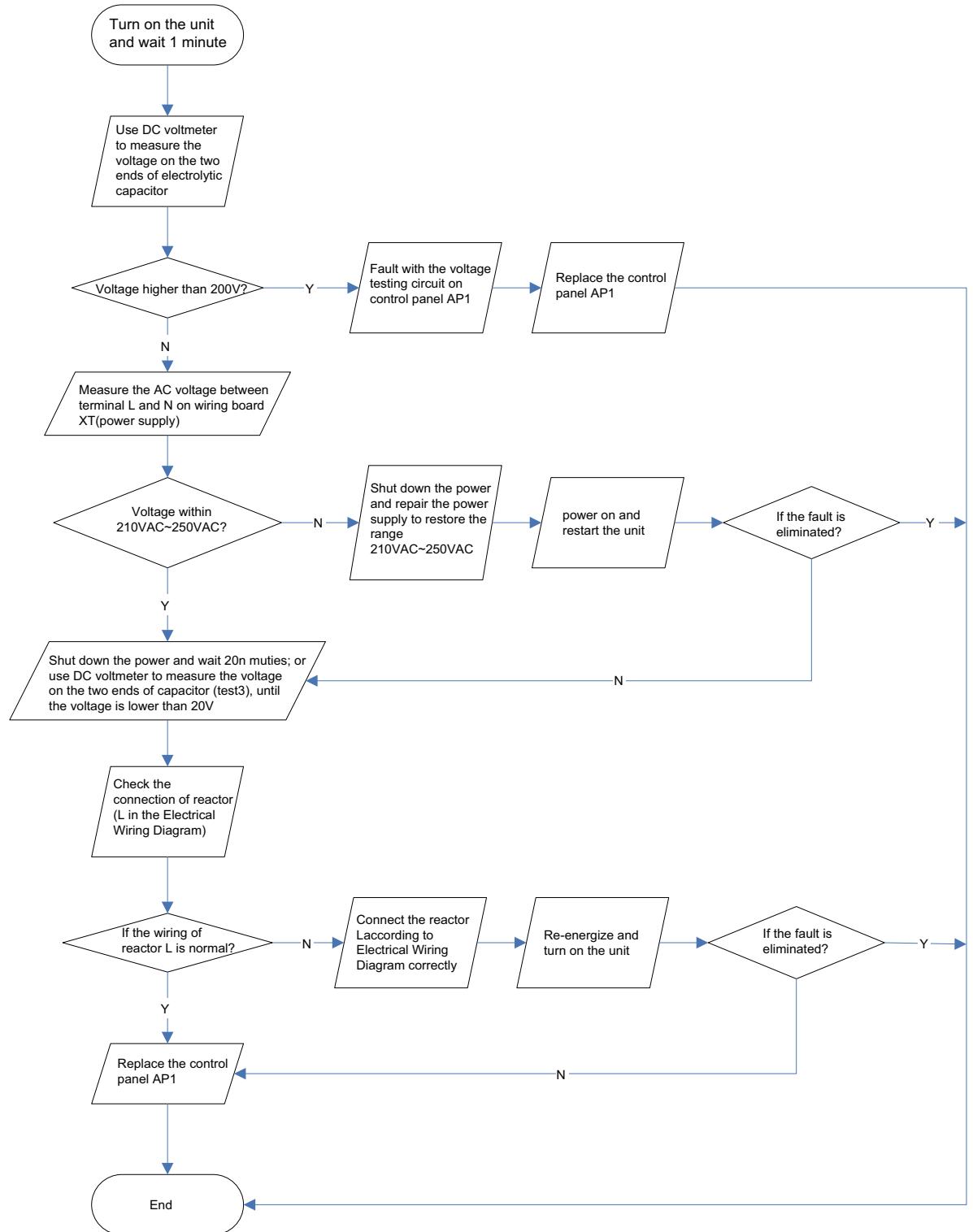
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	■	□	■

Main detection point:

- Detect if the voltage of L and N terminal of wiring board is between 210AC-240AC by alternating voltage meter;
- Is reactor (L) well connected? Is connection wire loosened or pull-out? Is reactor (L) damaged?

Malfunction diagnosis process:



7. IPM protection, desynchronizing malfunction, phase current of compressor is overcurrent (outdoor unit malfunction)

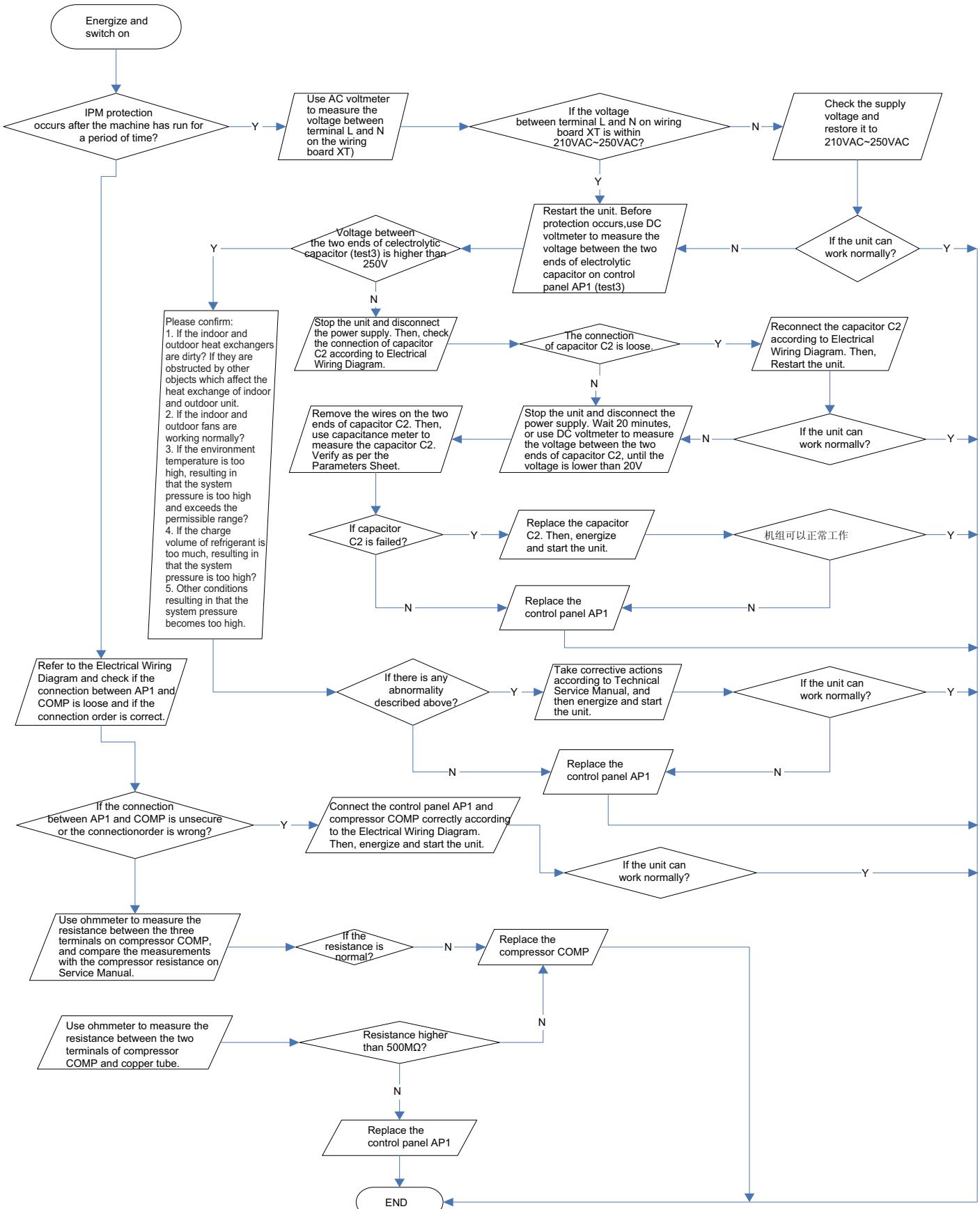
Outdoor unit malfunction indicator status

Malfunction	D5	D6	D16	D30
IPM protection	<input type="checkbox"/>	☆	<input type="checkbox"/>	■
Desynchronizing malfunction	<input type="checkbox"/>	☆	■	☆
Compressor overcurrent	<input type="checkbox"/>	☆	<input type="checkbox"/>	<input type="checkbox"/>

Main detection point:

- If control board AP1 and compressor COMP is well connected? If they are loosened? If the connection sequence is correct?
- Is voltage input in the normal range (Test the voltage between L, N of wiring board XT by DC voltage meter)?
- If coil resistance of compressor is normal? Is compressor coil insulating to copper pipe well?
- If the work load of unit is heavy? If radiating of unit is well? If the refrigerant charging is appropriate?

Malfunction diagnosis process:



8. Diagnosis for high temperature, overload protection (check outdoor unit in cooling mode and check indoor unit in heating mode)

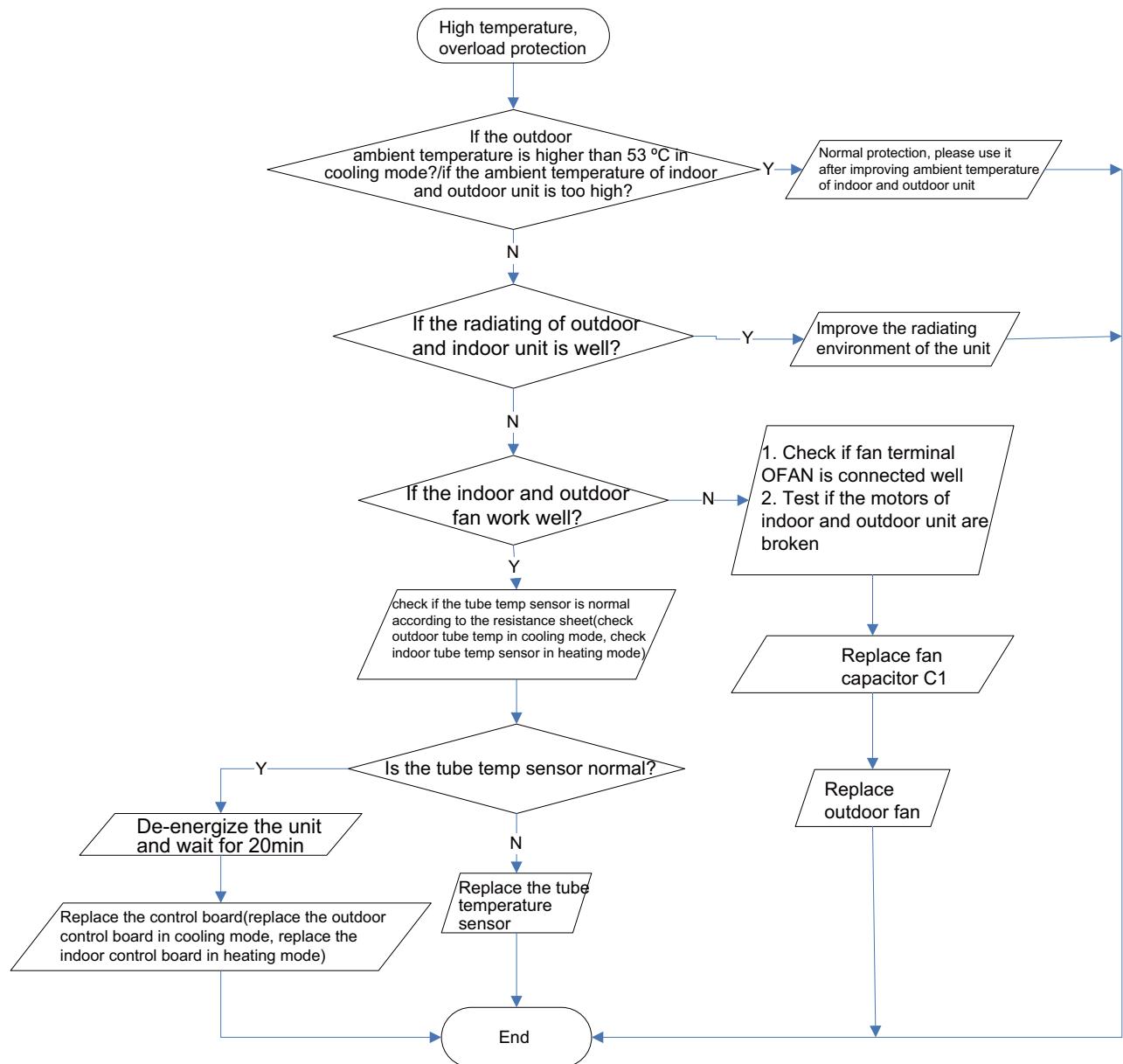
Outdoor unit malfunction indicator status

D5	D6	D16	D30
■	□	■	■

Main detection point:

- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan is running normally;
- If the radiating environment inside and outside the unit is well (including if the fan speed is too low)?
- If the tube temperature sensor of indoor and outdoor unit is normal?

Malfunction diagnosis process:



9. Diagnosis for failure start up malfunction (outdoor unit malfunction)

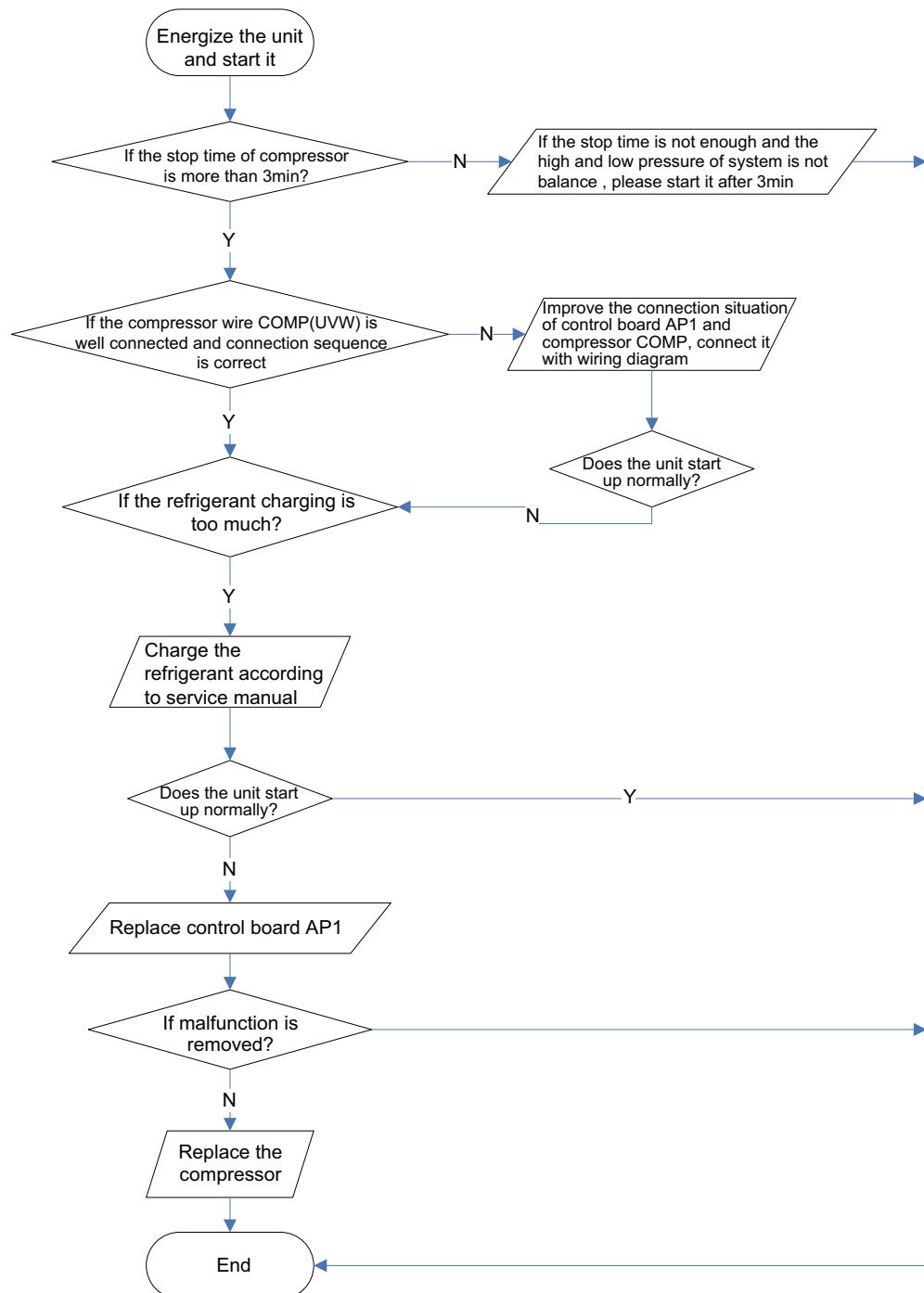
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	☆	□	☆

Main detection point:

- If the compressor wiring is correct?
- If the stop time of compressor is enough?
- If the compressor is damaged?
- If the refrigerant charging is too much?

Malfunction diagnosis process:



10. Diagnosis for compressor synchronism (outdoor unit malfunction)

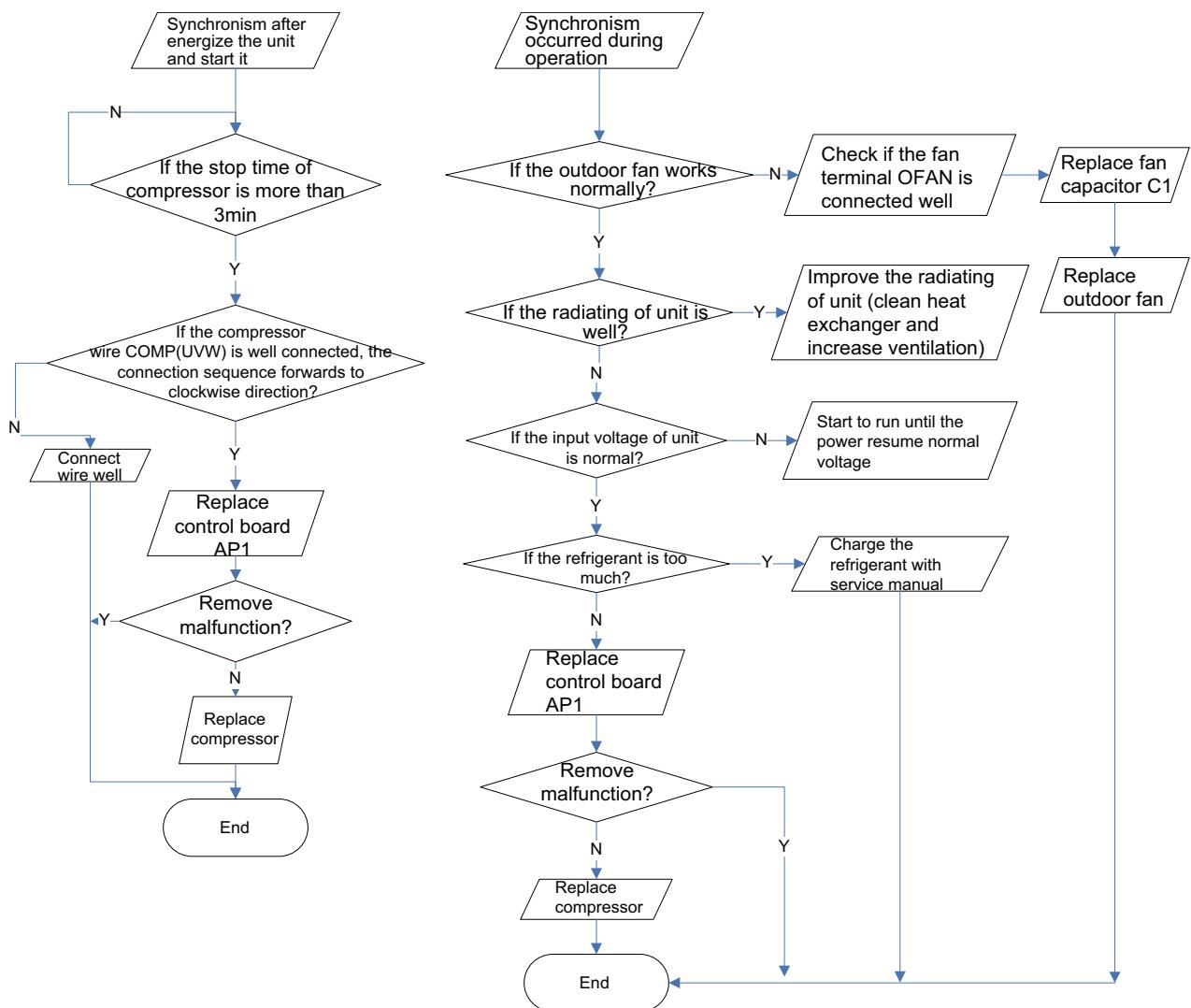
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	☆	■	☆

Main detection point:

- If the system pressure is over-high?
- If the working voltage is over-low?

Malfunction diagnosis process:



11. Diagnosis for overload and discharge malfunction (outdoor unit malfunction)

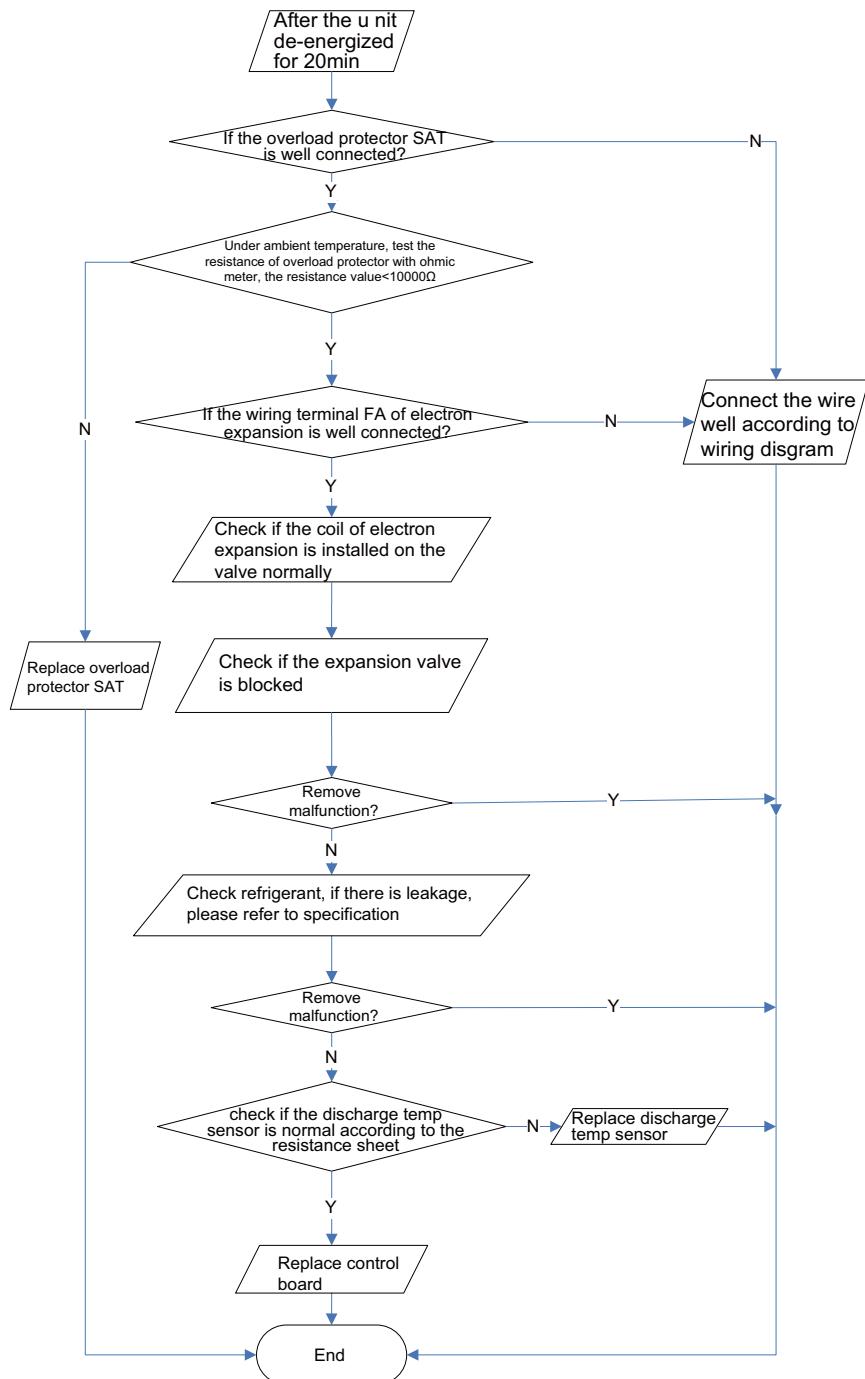
Outdoor unit malfunction indicator status

Malfunction	D5	D6	D16	D30
Overload	□	☆	☆	□
Discharge	■	□	■	☆

Main detection point:

- If the electron expansion valve is connected well? Is the expansion valve damaged?
- If the refrigerant is leakage?
- If the overload protector is damaged?
- If the discharge temp sensor is damaged?

Malfunction diagnosis process:



12. Communication malfunction

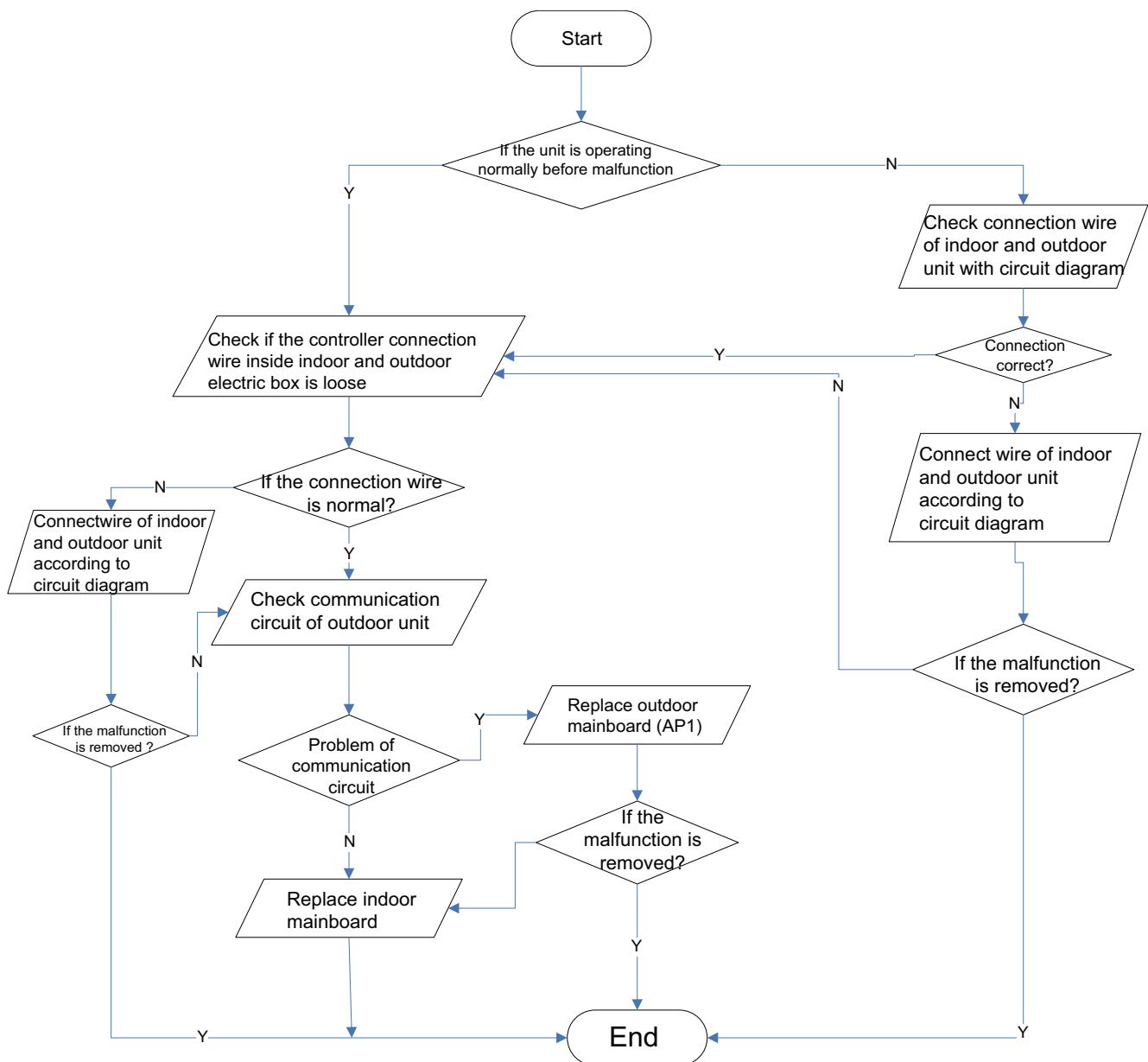
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	□	□	☆

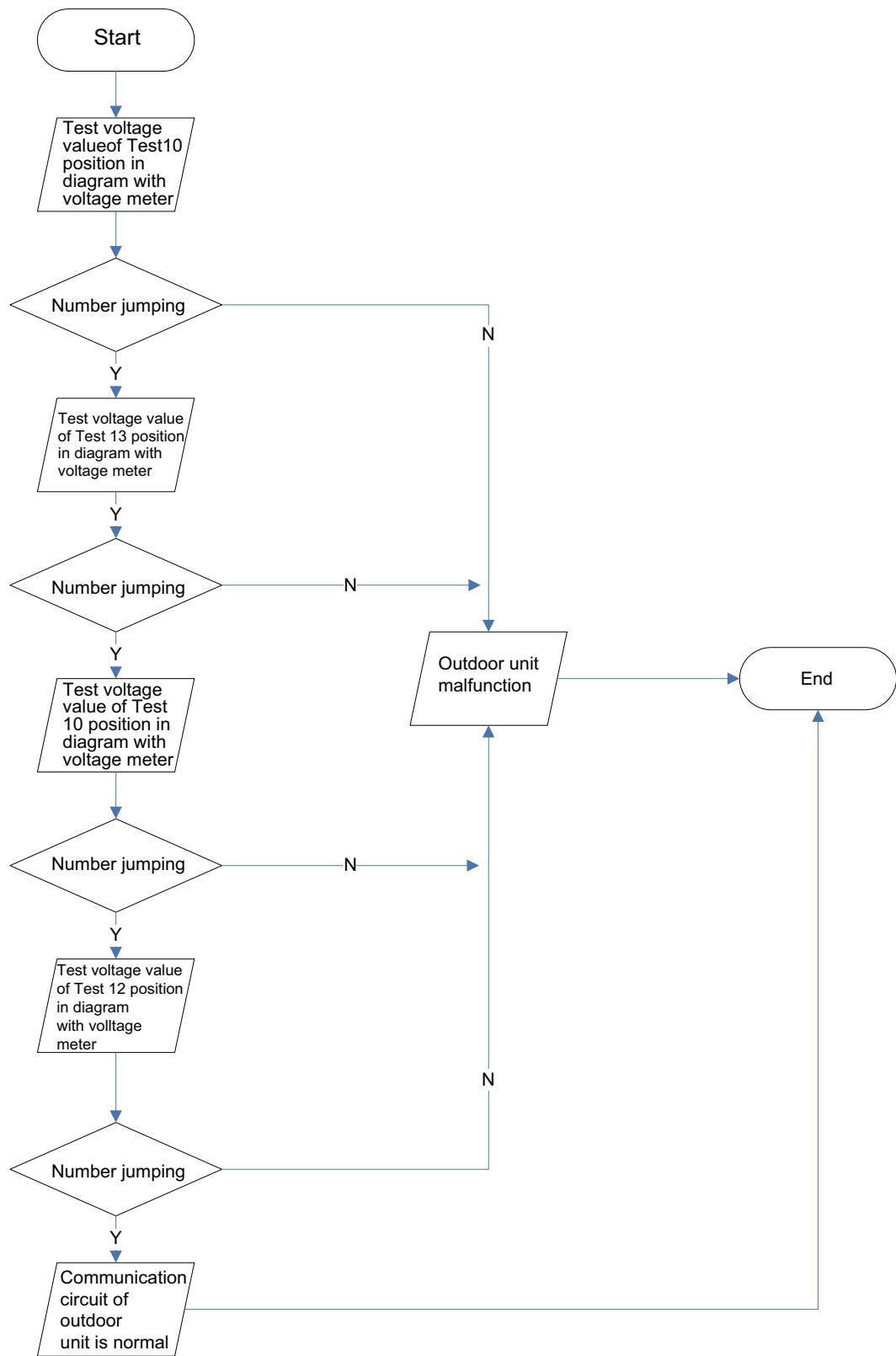
Main detection point:

- Check if the connection wire and the built-in wiring of indoor and outdoor unit is connected well and no damaged;
- If the communication circuit of indoor mainboard is damaged? If the communication circuit of outdoor mainboard (AP1) is damaged?

Malfunction diagnosis process:



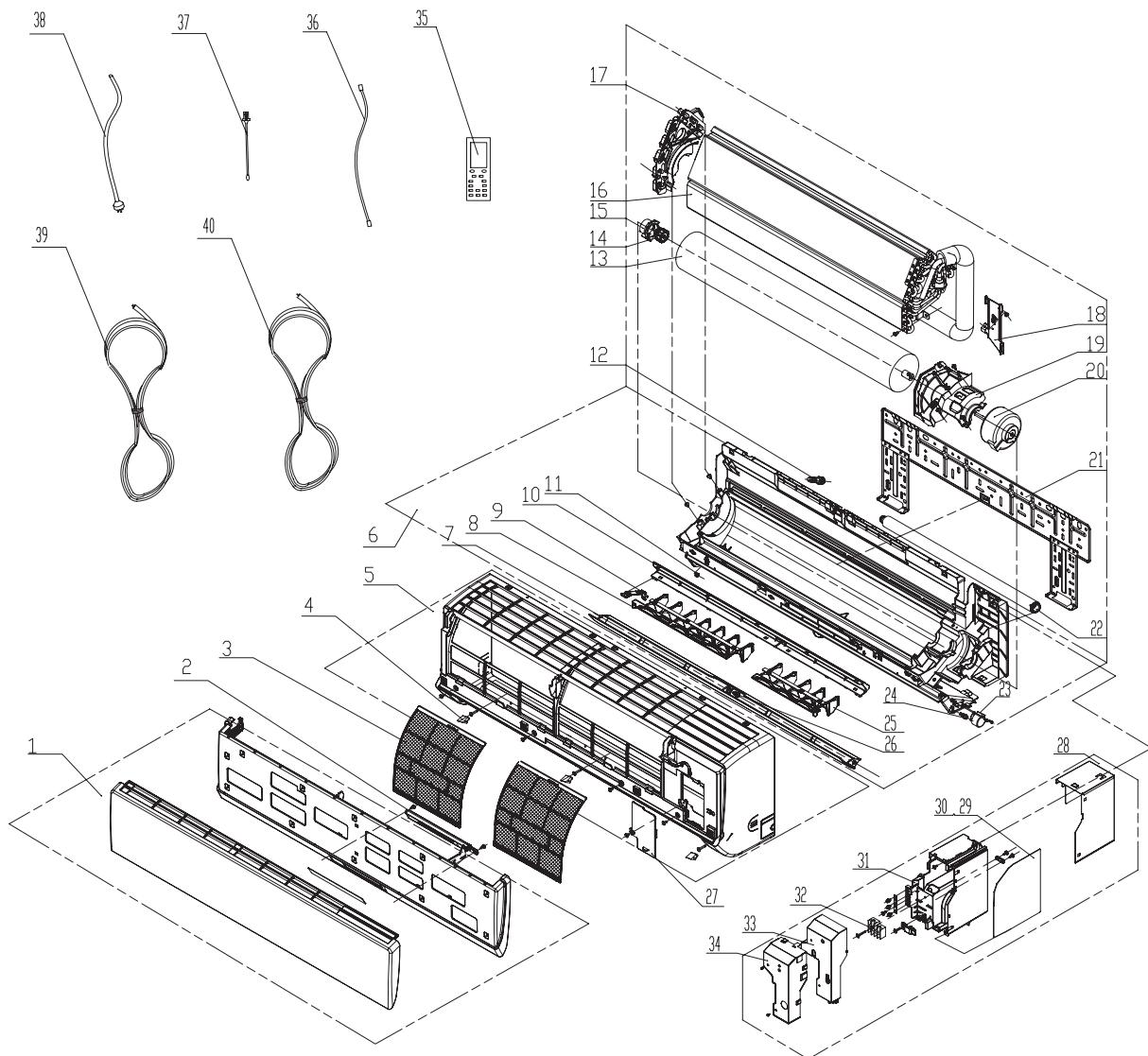
Diagnosis process for outdoor communication circuit (refer to the key detection points of outdoor unit)



9. Exploded Views and Parts List

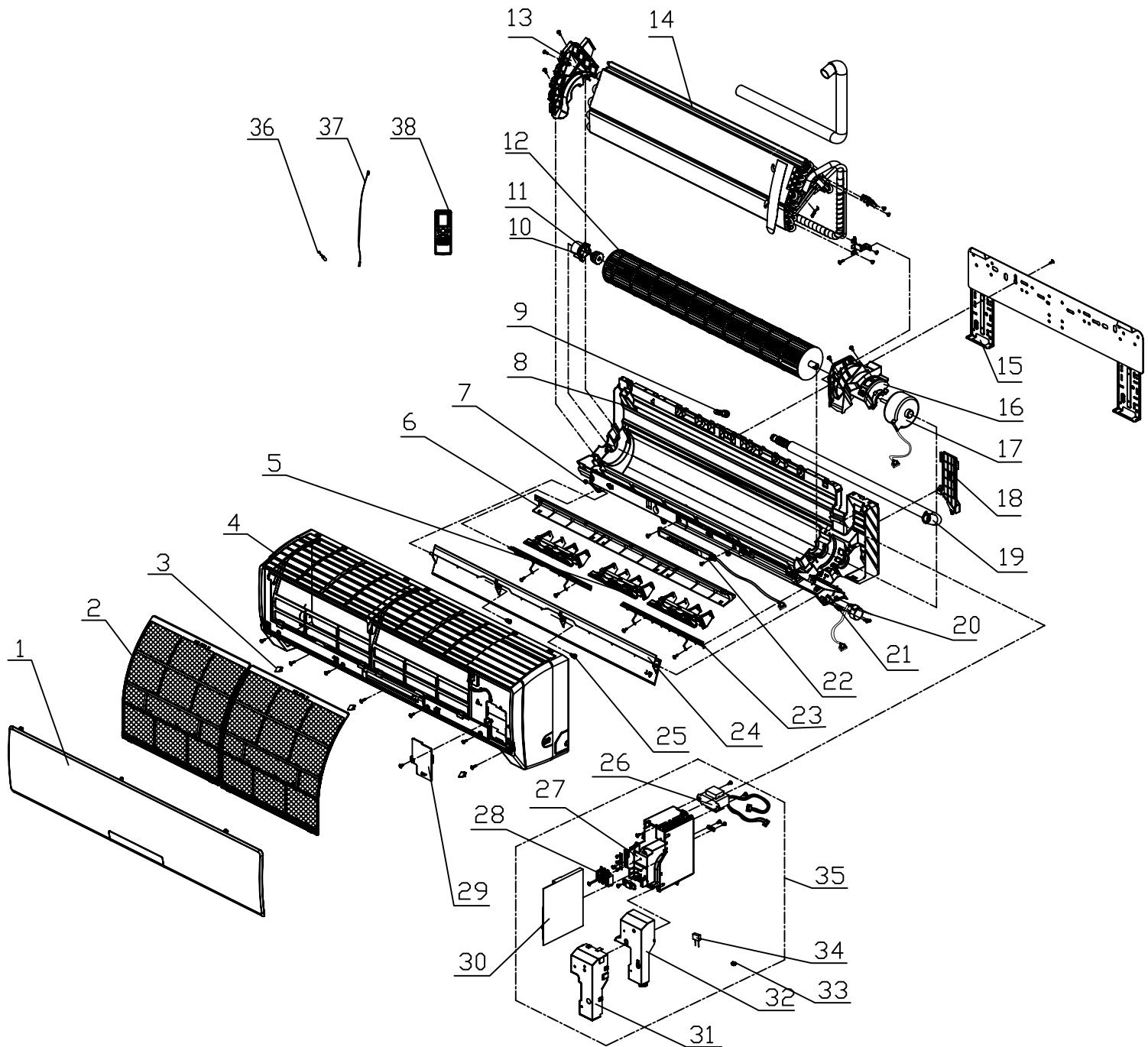
9.1 Indoor Unit

Models: 4MYW4518A1000AA 4MXW4518A1000AA



NO.	Part Description	Part Code		Qty
		4MYW4518A1000AA	4MXW4518A1000AA	
1	Front Panel Assy	20022518	20022518	1
2	Display Board	30565235	30565235	1
3	Filter Sub-Assy	1112208901	1112208901	2
4	Screw Cover	24252016	24252016	3
5	Front Case Sub-assy	20012667	20012667	1
6	Rear Case assy	22202193	22202193	1
7	Guide Louver	10512205	10512205	1
8	Air Louver 1	1051211602	1051211602	1
9	Baffle Plate	2611222802	2611222802	1
10	Helicoid Tongue	2611223802	2611223802	1
11	Left Axile Bush	10512037	10512037	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	Cross Flow Fan	10352019	10352019	1
14	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
15	Ring of Bearing	26152022	26152022	1
16	Evaporator Assy	01002575	01002575	1
17	Evaporator Support	24212133	24212133	1
18	Connecting pipe clamp	2611216401	2611216401	1
19	Motor Press Plate	26112494	26112494	1
20	Fan Motor	1501214601	1501214601	1
21	Wall Mounting Frame	01252218	01252218	1
22	Drainage Hose	05230014	05230014	1
23	SteppingMotor	15012086	15012086	1
24	Crank	10582070	10582070	1
25	Air Louver 2	1051211702	1051211702	1
26	Axile Bush	10542036	10542036	1
27	Electric Box Cover2	20122142	20122142	1
28	Electric Box Assy	10000203470	10000203471	1
29	Main Board	30138001023	30138000009	1
30	Jumper	4202300122	4202300122	1
31	Electric Box	2011210802	2011210802	1
32	Terminal Board	42011233	42011233	1
33	Electric Box Cover1	2012215401	2012215401	1
34	Shield Cover of Electric Box	01592092	01592092	1
35	Remote Controller	64510089_K83359	64510089_K83359	1
36	Temperature Sensor	390000453	390000453	1
37	Temperature Sensor	390000591	390000591	1
38	Power Cord	/	/	0
39	Connecting Cable	4002052317	4002052317	0
40	Connecting Cable	/	/	0

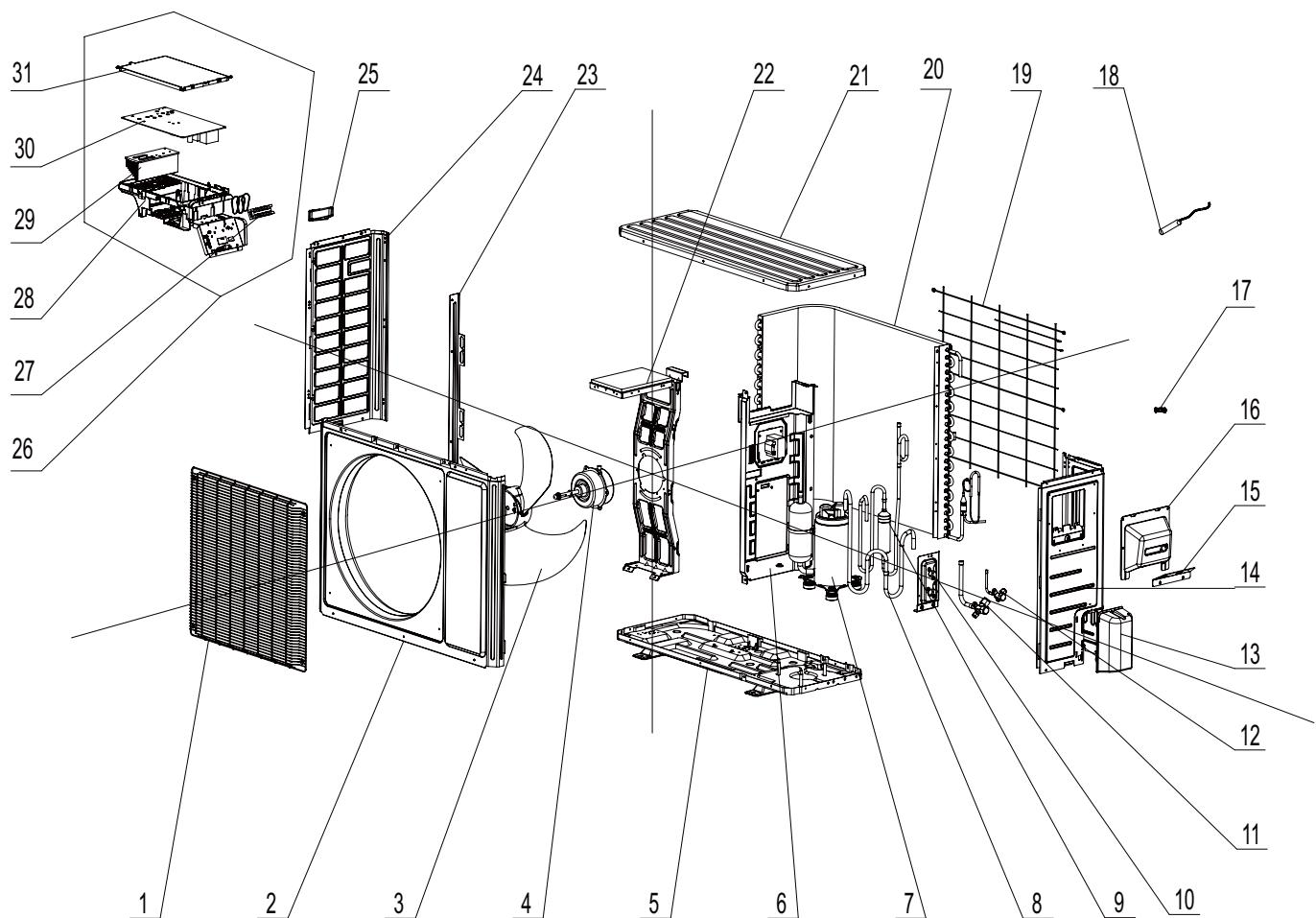
Models: 4MYW4524A1000AA 4MXW4524A1000AA



NO.	Part Description	Part Code		Qty
		4MYW4524A1000AA	4MXW4524A1000AA	
1	Front Panel Assy	20022513	20022513	1
2	Filter Sub-Assy	11122091	11122091	2
3	Screw Cover	24252016	24252016	3
4	Front Case Assy	2001297403	2001297403	1
5	Air Louver 1	1051215901	1051215901	3
6	Helicoid Tongue	2611218702	2611218702	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	2220219701	2220219701	1
9	Rubber Plug (Water Tray)	76712012	76712012	1
10	Ring of Bearing	26152025	26152025	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Cross Flow Fan	10352030	10352030	1
13	Evaporator Support	24212103	24212103	1
14	Evaporator Assy	0100200000401	0100200000401	1
15	Wall Mounting Frame	01252032	01252032	1
16	Motor Press Plate	26112316	26112316	1
17	Fan Motor	15012136	15012136	1
18	Connecting pipe clamp	2611218801	2611218801	1
19	Drainage Hose	0523001405	0523001405	1
20	Stepping Motor	1521300101	1521300101	1
21	Crank	10582070	10582070	1
22	Display Board	30565235	30565235	1
23	Mesh Enclosure(Air Outlet)	/	/	0
24	Guide Louver	10512208	10512208	1
25	Axile Bush	10542036	10542036	2
26	Transformer	/	/	0
27	Electric Box	2011210802	2011210802	1
28	Terminal Board	42011233	42011233	1
29	Electric Box Cover2	20122142	20122142	1
30	Main Board	30138001026	30138001025	1
31	Shield Cover of Electric Box	01592092	01592092	1
32	Electric Box Cover1	2012215401	2012215401	1
33	Jumper	4202021908	4202021908	1
34	Capacitor CBB61	/	/	0
35	Electric Box Assy	10000203468	10000203469	1
36	Temperature Sensor	3900031302	3900031302	1
37	Temperature Sensor	/	/	0
38	Remote Controller	64510089_K83359	64510089_K83359	1

9.2 Outdoor Unit

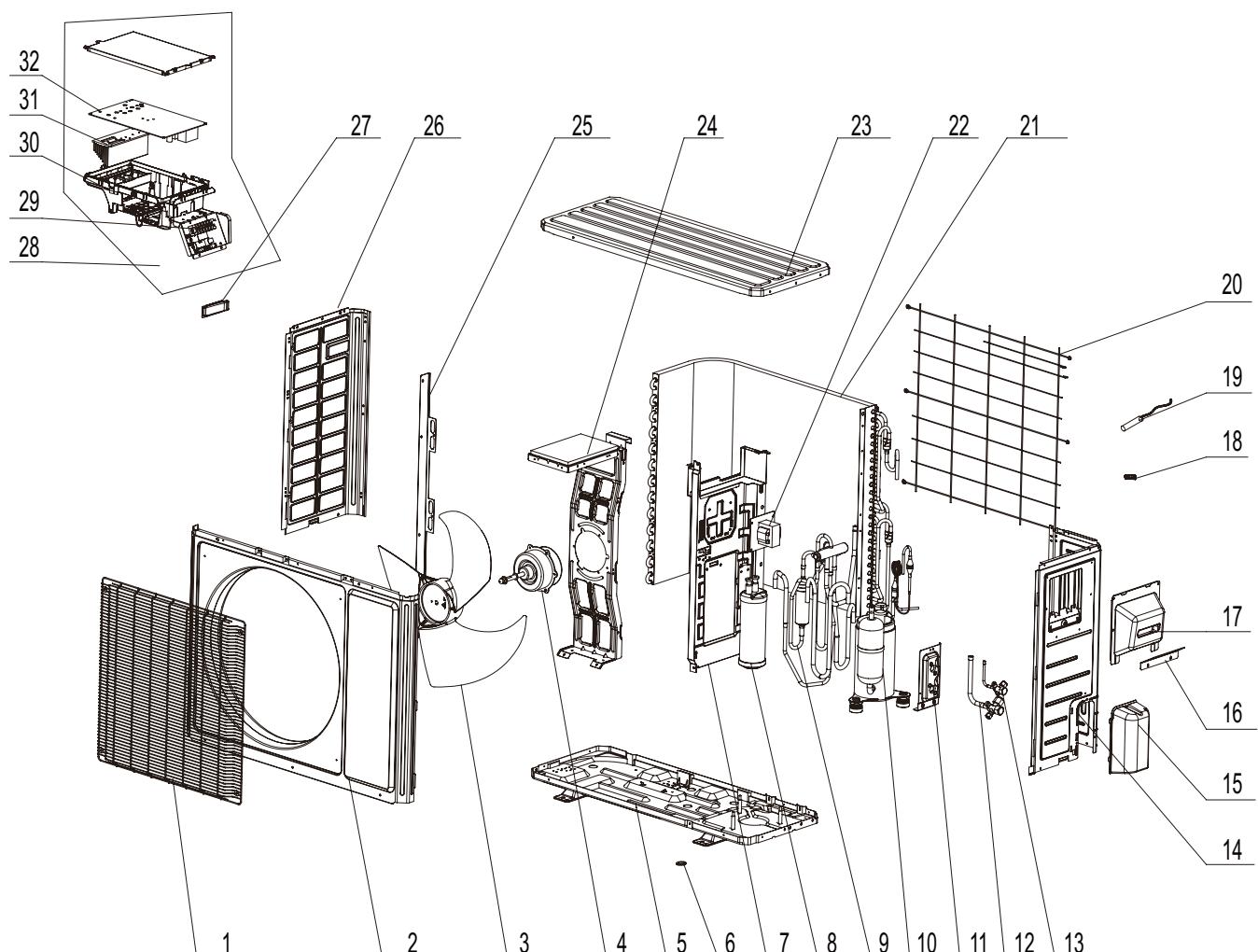
Model: 4TYK4518A1P00AA



NO.	Description	Part Code	Qty
		4TYK4518A1P00AA	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Axial Flow Fan	10335008	1
4	Fan Motor	1501506402	1
5	Chassis Sub-assy	02803281P	1
6	Clapboard Assy	01233153	1
7	Compressor and Fittings	00105249G	1
8	Inhalation Tube Sub-assy	03833913	1
9	Discharge Tube Sub-assy	03833912	1
10	Valve Support Assy	01715010P	1
11	Cut off Valve Assy 1/2	07133774	1
12	Cut off Valve Sub-Assy	07133204	1
13	Valve Cover	22245002	1
14	Right Side Plate	0130509403P	1
15	Retaining Plate	02115006P	1
16	Handle Assy	02113109	1
17	Wire Clamp	71010003	1
18	Temperature Sensor	3900030901	1
19	Rear Grill	01473043	1
20	Condenser Assy	01103000241	1
21	Coping	01255005P	1
22	Motor Support Sub-Assy	01703154	1
23	Condenser Support Plate	01173127	1
24	Left Side Plate	01305093P	1
25	Handle	26233053	1
26	Electric Box Assy	01403000162	1
27	Terminal Board	42010255	1
28	Electric Box	20113027	1
29	Main Board	30138000234	1
30	Radiator	49010252	1
31	Insulated Board (Cover of Electric Box)	20113003	1

Above data is subject to change without notice.

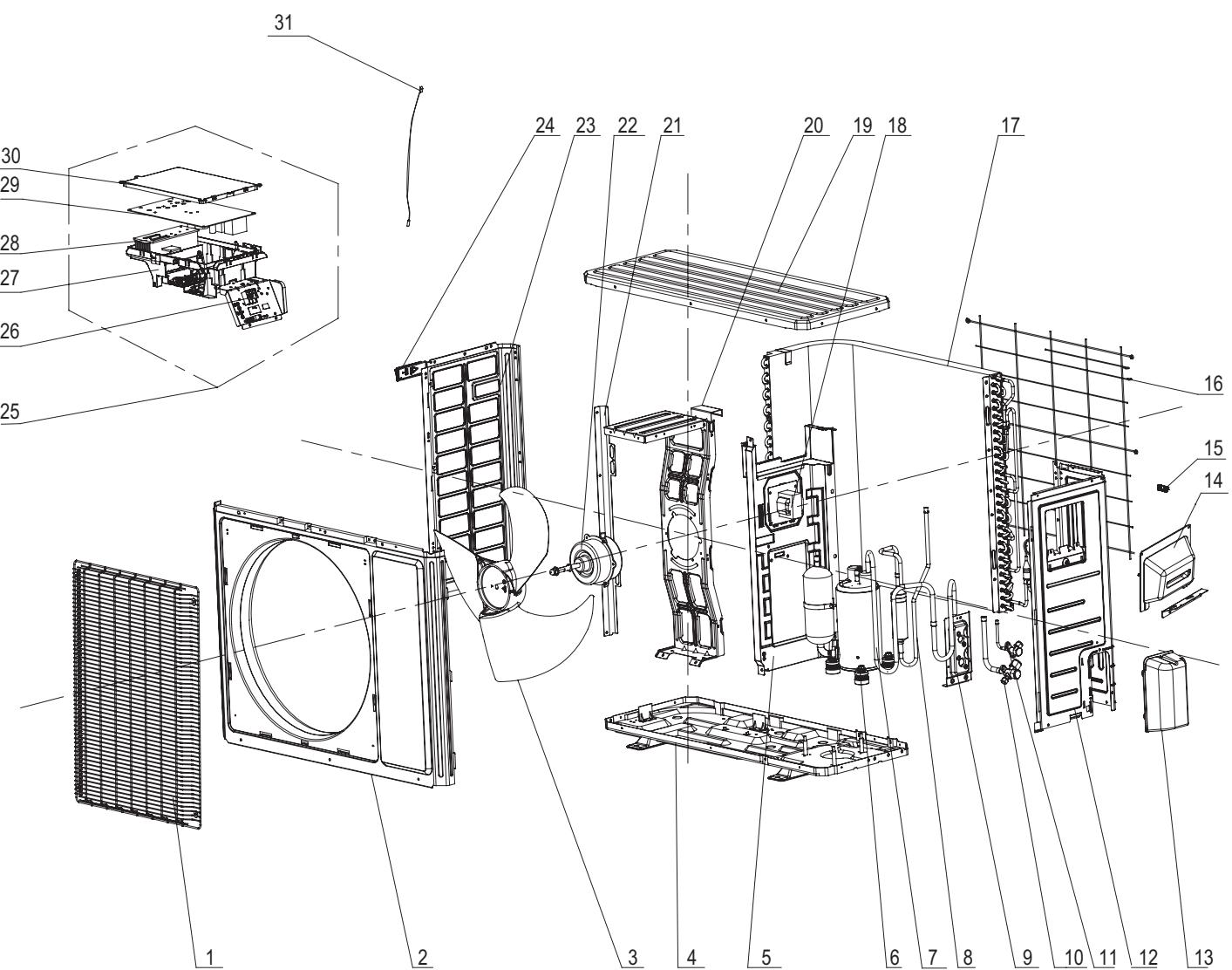
Model: 4TXK4518A1P00AA



NO.	Description	Part Code	Qty
		4TXK4518A1P00AA	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Axial Flow Fan	10335008	1
4	Fan Motor	1501506402	1
5	Chassis Sub-assy	0280336701P	1
6	Drainage hole Cap	06813401	3
7	Clapboard Assy	0123315301	1
8	Gas-liquid Separator	07223048	1
9	4-Way Valve Assy	03073322	1
10	Compressor and Fittings	00105249G	1
11	Valve Support Assy	01715010P	1
12	Cut off Valve Assy 1/2	07133774	1
13	Cut off Valve Sub-Assy	07133204	1
14	Right Side Plate	0130509403P	1
15	Valve Cover	22245002	1
16	Retaining Plate	02115006P	1
17	Handle Assy	02113109	1
18	Wiring Clamp	26115004	1
19	Temperature Sensor	3900030901	1
20	Rear Grill	01473043	1
21	Condenser Assy	01103000286	1
22	Reactor	43130025	1
23	Coping	01255005P	1
24	Motor Support Sub-Assy	01703154	1
25	Condenser Support Plate	01173127	1
26	Left Side Plate	01305093P	1
27	Left Handle	26235401	1
28	Electric Box Assy	01403000234	1
29	Terminal Board	42010255	1
30	Electric Box	20113027	1
31	Main Board	30138000235	1
32	Radiator	49010252	1

Above data is subject to change without notice.

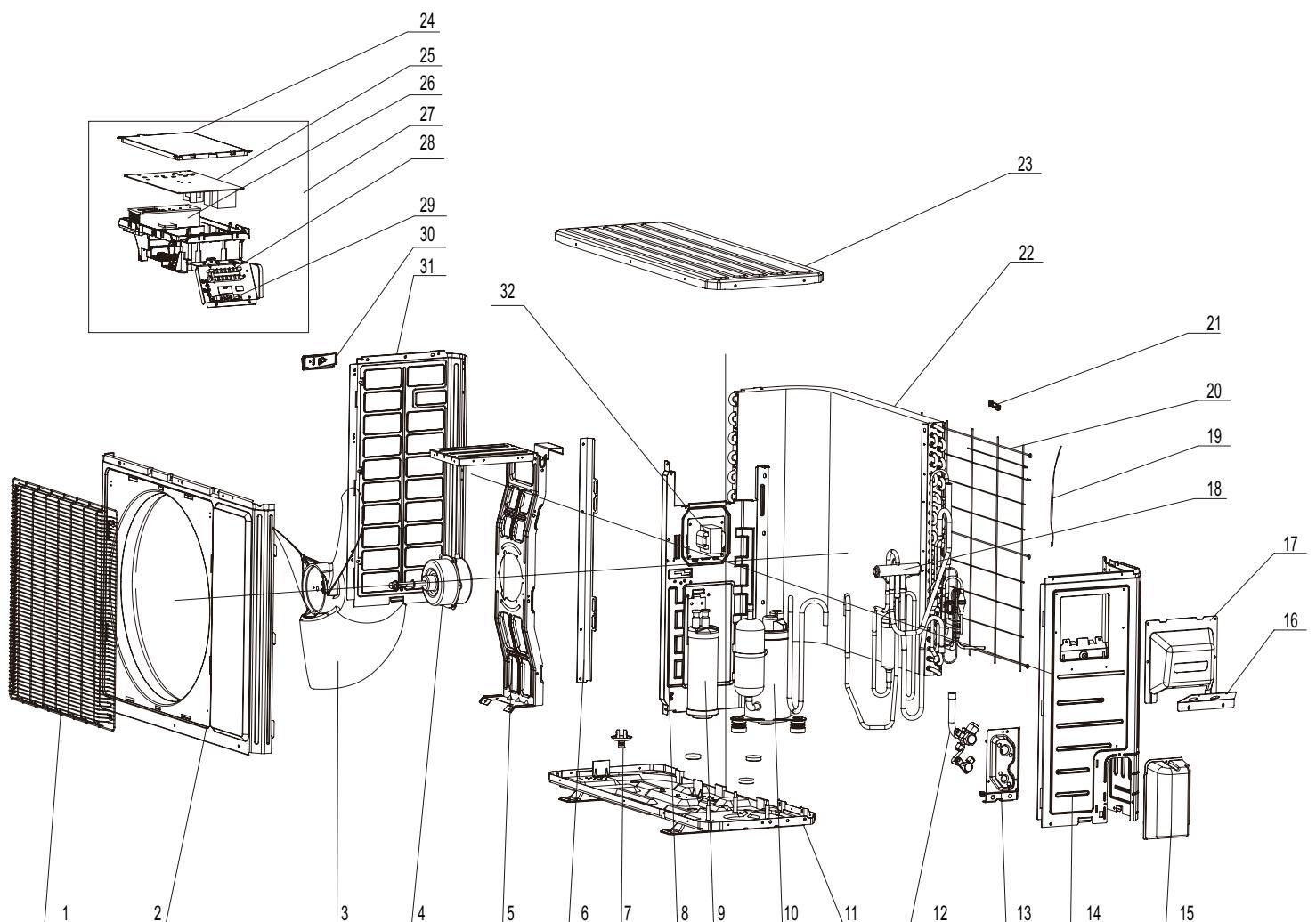
Model: 4TYK4524A1P00AA



NO.	Description	Part Code	Qty
		4TYK4524A1P00AA	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Axial Flow Fan	10335008	1
4	Chassis Sub-assy	02803214P	1
5	Clapboard Assy	01233153	1
6	Compressor and Fittings	00105249G	1
7	Inhalation Tube Sub-assy	03833916	1
8	Discharge Tube Sub-assy	03833914	1
9	Valve Support Sub-Assy	01713098P	1
10	Cutoff Valve	07133157	1
11	Cutoff Valve Sub-Assy	0713317001	1
12	Right Side Plate	0130509403P	1
13	Valve Cover	22245002	1
14	Handle	26233053	1
15	Wiring Clamp	26115004	1
16	Rear Grill	01473043	1
17	Condenser Assy	01103000247	1
18	Reactor	43130025	1
19	Coping	01255005P	1
20	Motor Support Sub-Assy	0170512001	1
21	Condenser Support Plate	01173415	1
22	Fan Motor	1501506402	1
23	Left Side Plate	01305093P	1
24	Handle	26233053	1
25	Electric Box Assy	01403000165	1
26	Terminal Board	42010255	1
27	Electric Box	20113027	1
28	Radiator	49010252	1
29	Main Board	30138000232	1
30	Insulated Board(CoverofElectricBox)	20113003	1
31	Temperature Sensor	3900030901	1

Above data is subject to change without notice.

Model: 4TXK4524A1P00AA



NO.	Description	Part Code	Qty
		4TXK4524A1P00AA	
1	Front Grill	01473049	1
2	Cabinet	01433047P	1
3	Axial Flow Fan	10335008	1
4	Fan Motor	1501506402	1
5	Motor Support Sub-Assy	0170512001	1
6	Condenser Support Plate	01173415	1
7	Drainage Connecter	06123401	1
8	Clapboard Assy	01233153	1
9	Gas-liquid Separator	07223048	1
10	Compressor and Fittings	00105249G	1
11	Chassis Sub-assy	02803367P	1
12	Cut off Valve	07133157	2
13	Valve Support Sub-Assy	01713098P	1
14	Right Side Plate	0130509403P	1
15	Valve Cover	22245002	1
16	Retaining Plate	02115006P	1
17	Handle Assy	02113109	1
18	4-Way Valve Assy	03073324	1
19	Temperature Sensor	3900030901	1
20	Rear Grill	01473043	1
21	Wiring Clamp	26115004	1
22	Condenser Assy	01103000288	1
23	Coping	01255005P	1
24	Electric Box	20113027	1
25	Main Board	30138000242	1
26	Radiator	49010252	1
27	Electric Box Assy	01403000242	1
28	Terminal Board	42010255	1
29	Wire Clamp	71010003	1
30	Handle	26233053	1
31	Left Side Plate	01305093P	1
32	Reactor	43130025	1

Above data is subject to change without notice.

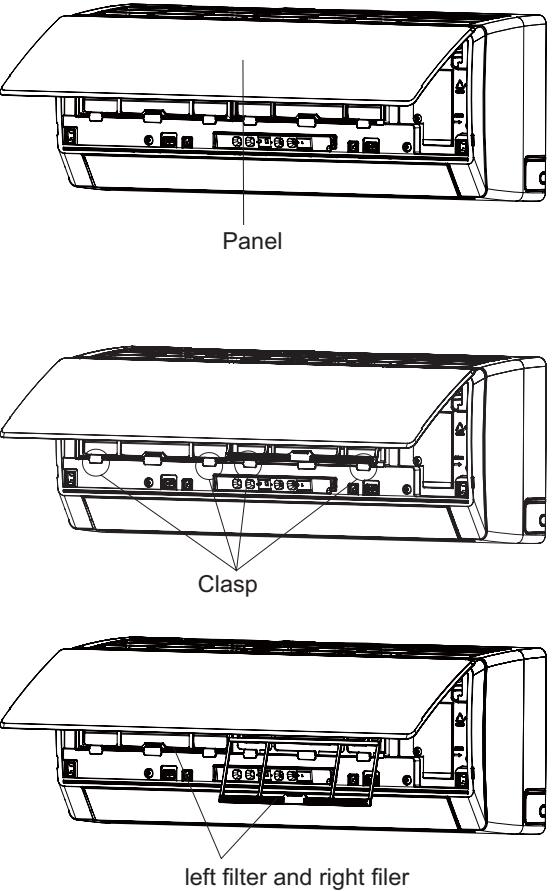
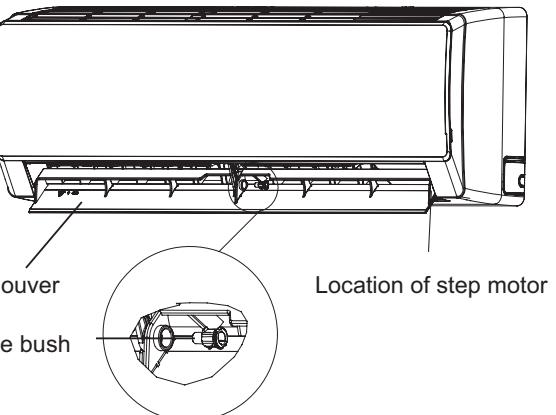
10. Removal Procedure

10.1 Removal Procedure of Indoor Unit

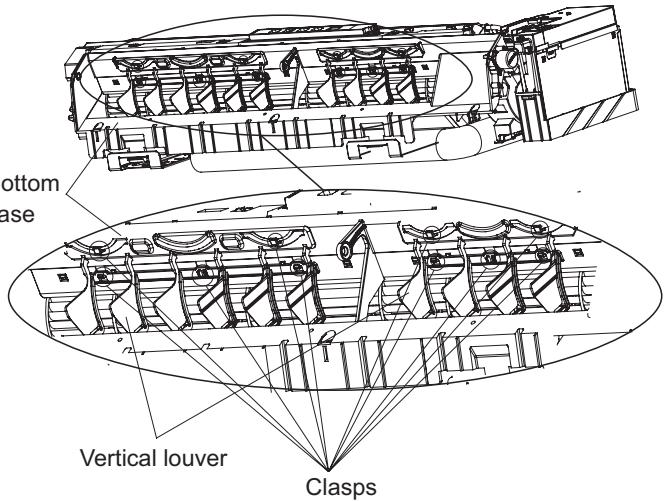
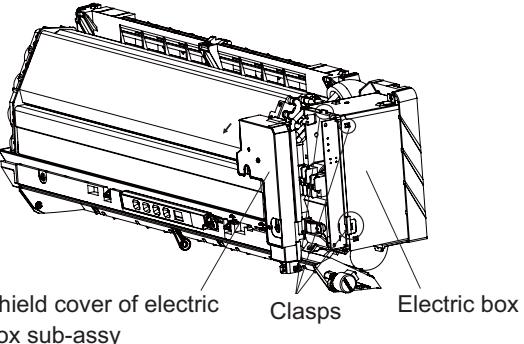
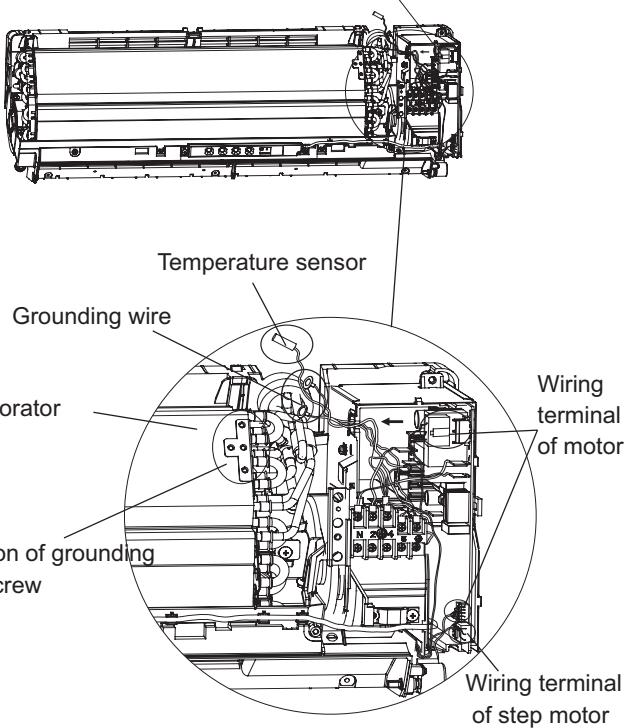
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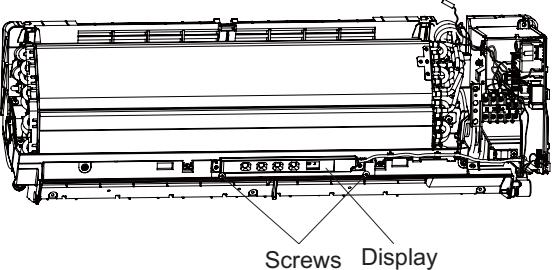
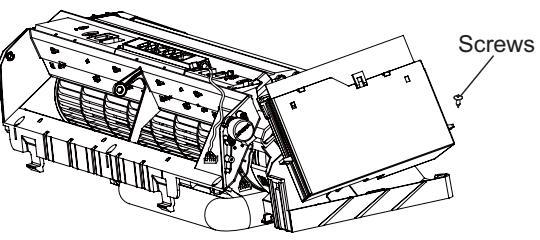
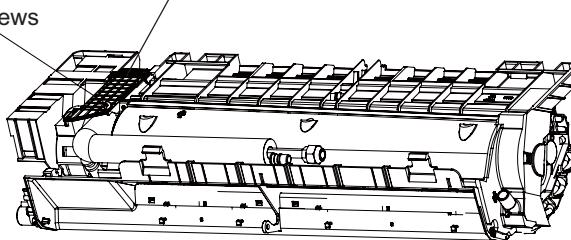
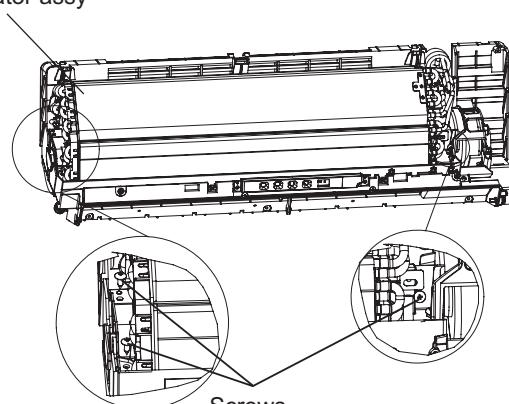
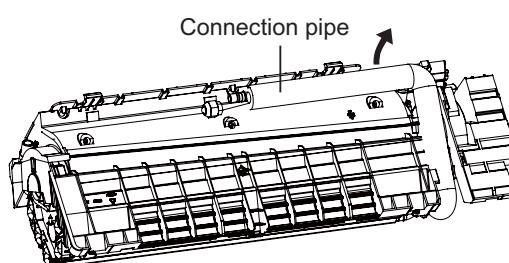


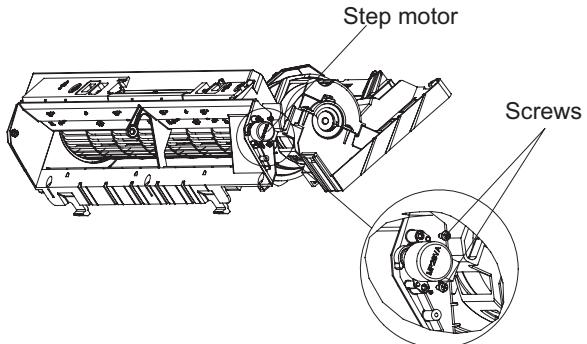
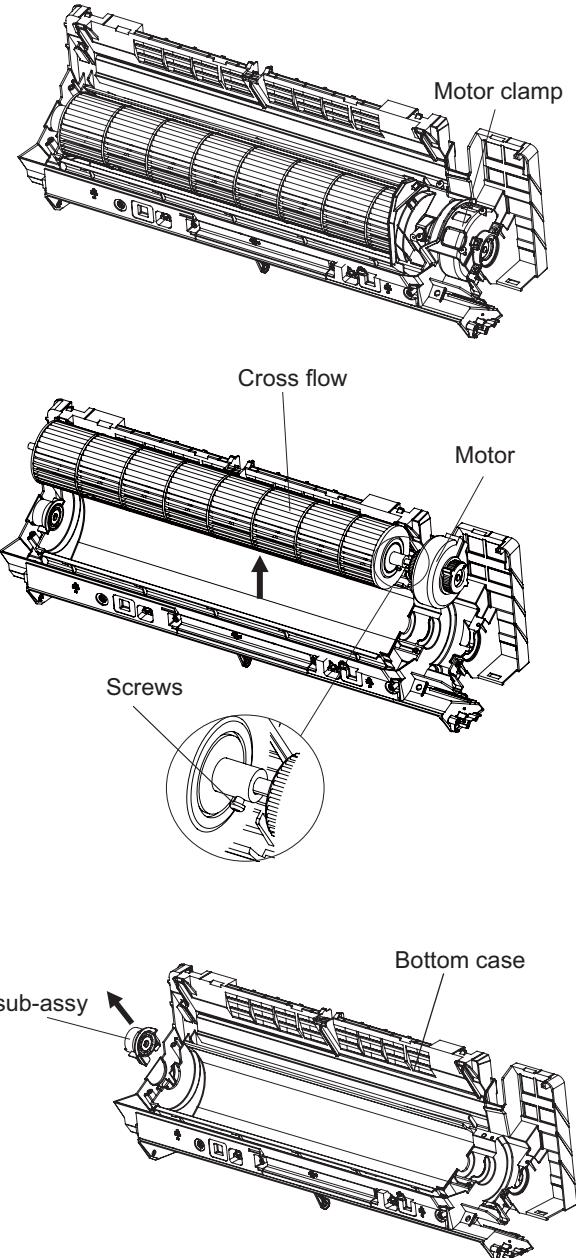
Caution: discharge the refrigerant completely before removal.

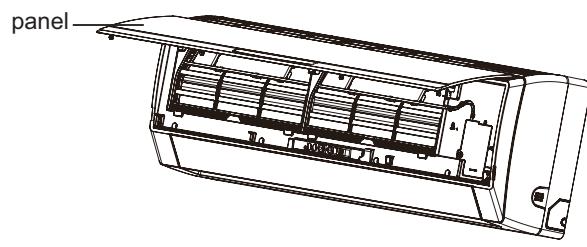
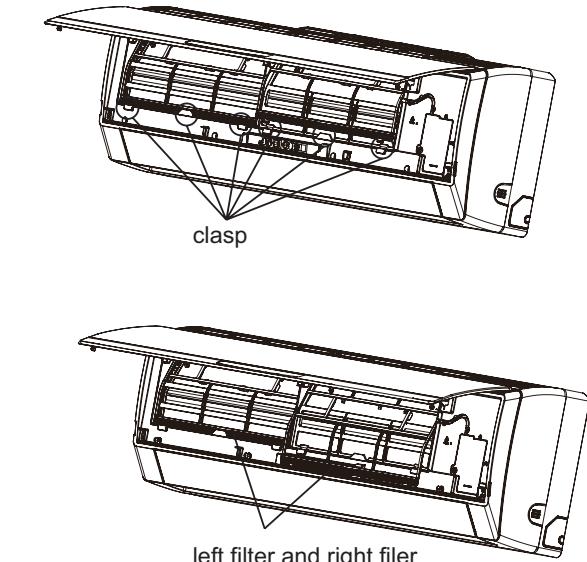
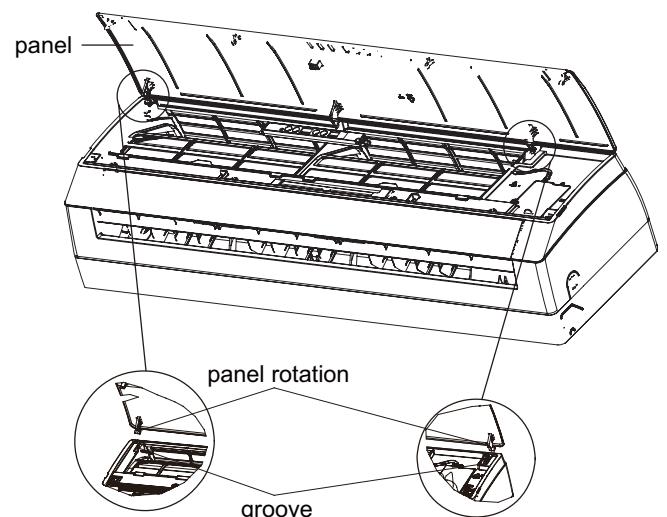
Steps	Procedure
1. Remove filter	<p>a Open the panel.</p> <p>b Loosen the clasp shown in the fig and then pull the left filter and right filer outwards to remove them.</p> 
2. Remove horizontal louver	<p>Push out the axile bush on horizontal louver. Bend the horizontal louver with hand and then separate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

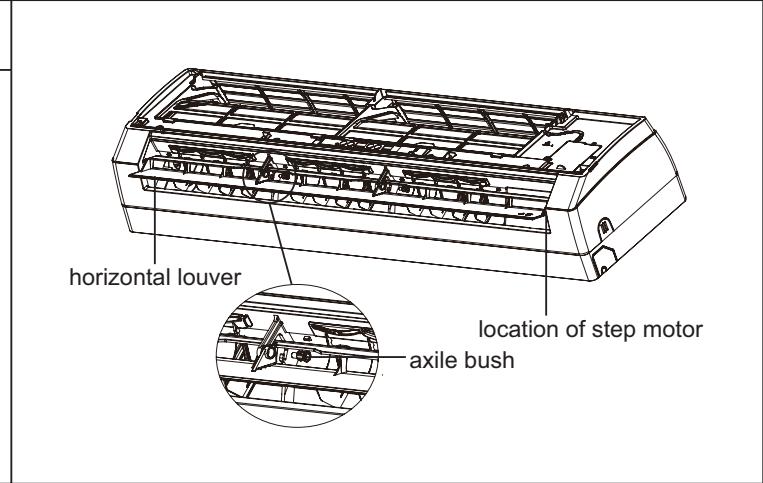
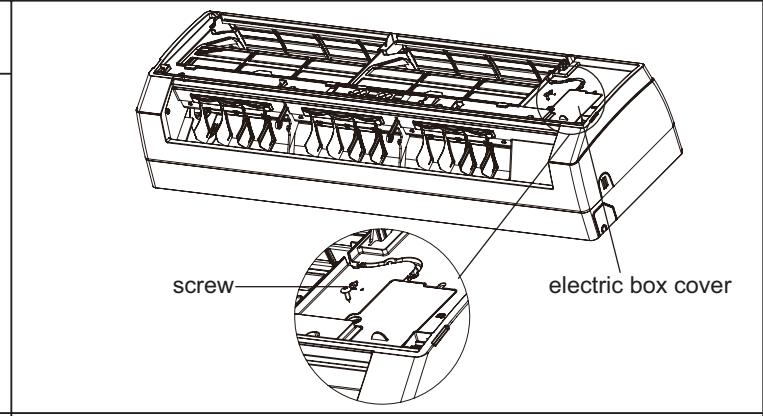
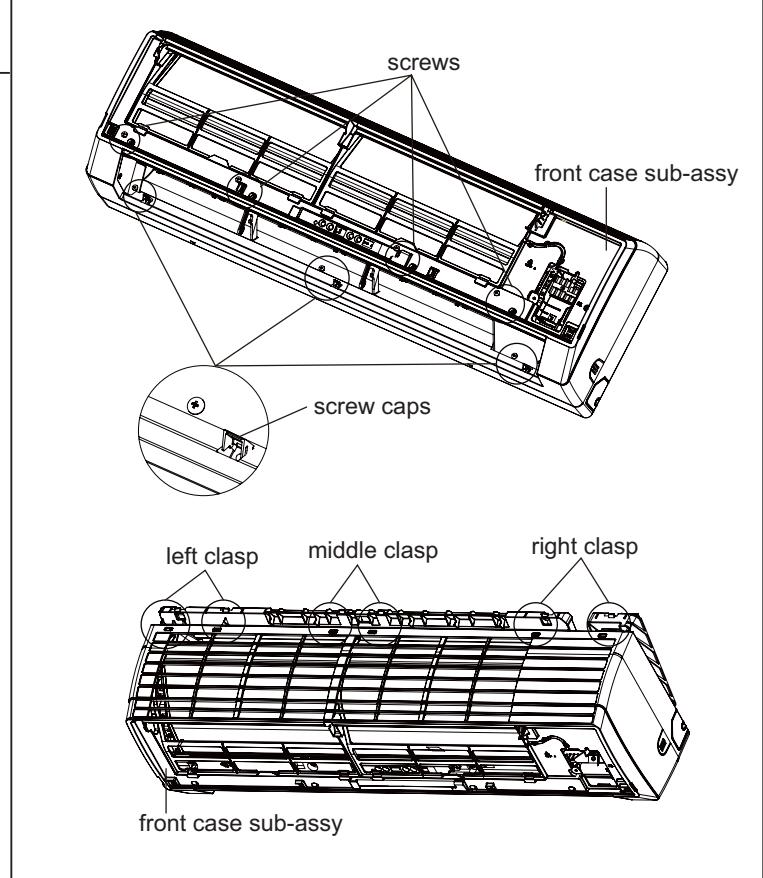
Steps		Procedure
	3. Remove panel	<p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>
	4. Remove electric box cover	<p>Remove the screws on the electric box cover to remove the electric box cover.</p>
	5. Remove front case sub-assy	<p>a Remove the screws fixing front case.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Open the screw caps before removing the screws around the air outlet. 2. The quantity of screws fixing the front case sub-assy is different for different models. <p>b Loosen the clasps at left, middle and right sides of front case. Lift the front case sub-assy upwards to remove it.</p> <p>c Remove screws fixing the finger guard grille and then remove the finger guard grille</p>

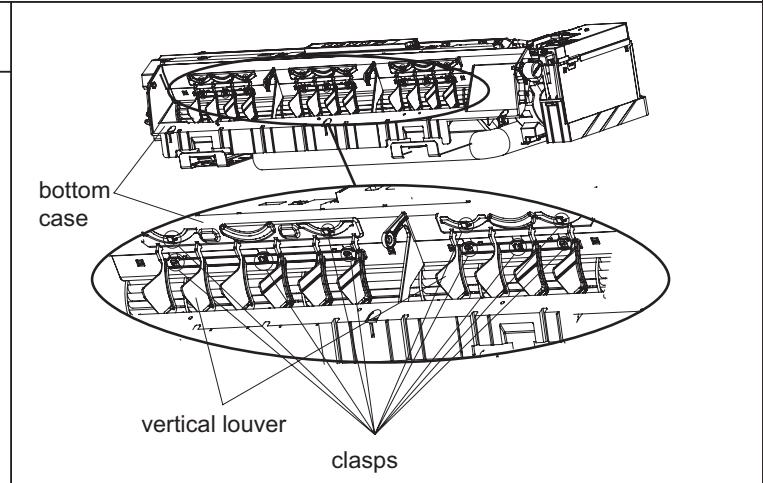
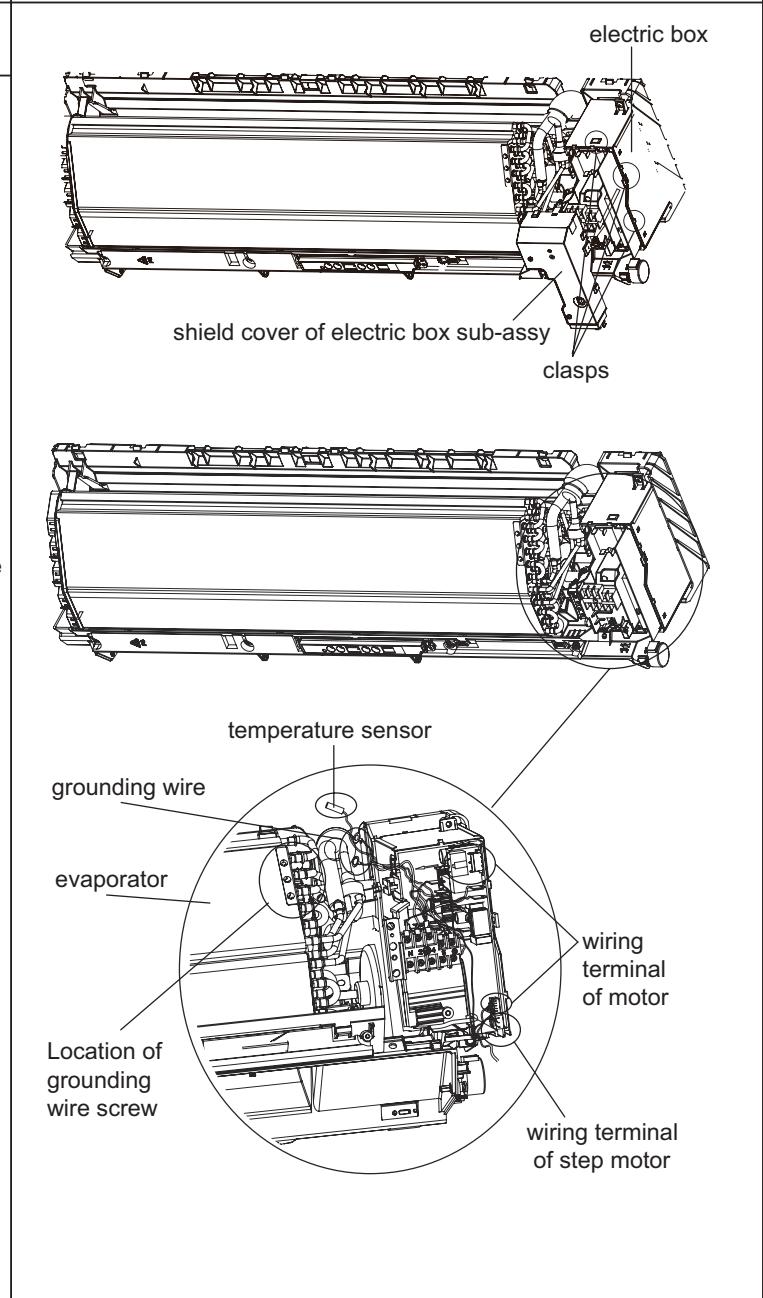
Steps	Procedure
	<p>6. Remove vertical louver</p> <p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p>
	
<p>7. Remove electric box assy</p> <p>a</p>	<p>Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then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

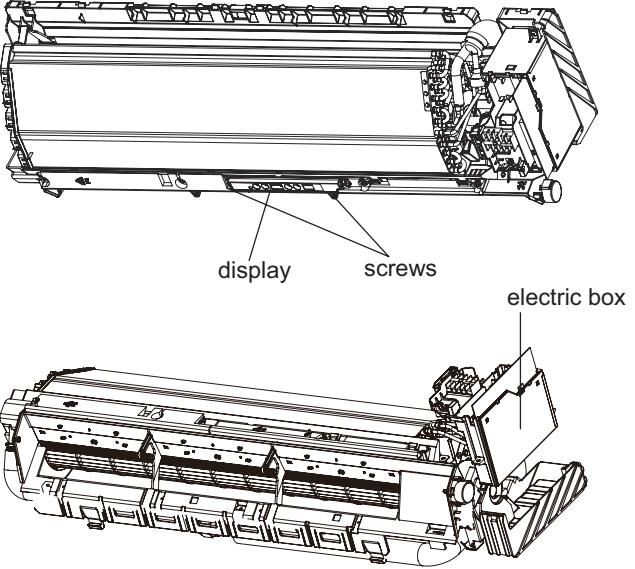
Steps	Procedure	
c	<p>Remove two screws fixing display.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>	
d	Remove the screw fixing electric box assy and then remove the electric box assy.	
8. Remove evaporator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

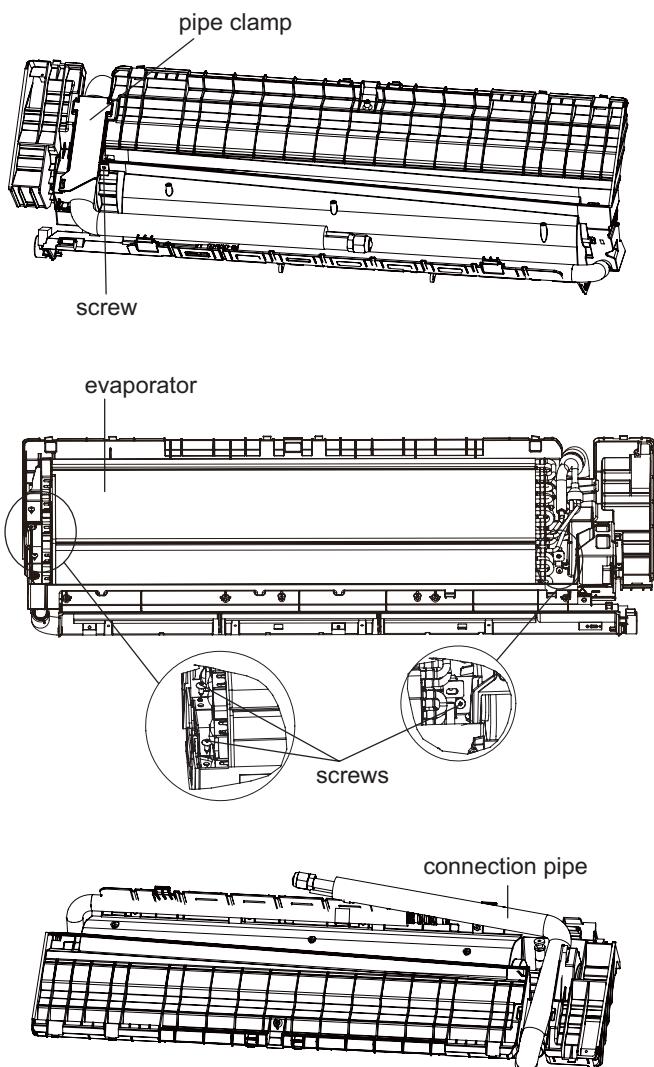
Steps	Procedure
9. Remove stepping motor	<p>Remove the screw fixing step motor and then remove the step motor.</p> 
10. Remove motor and cross flow blade	<p>a Remove the screws fixing motor clamp and then remove the motor clamp.</p> <p>b Remove the screws at the connection place of cross flow blade and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

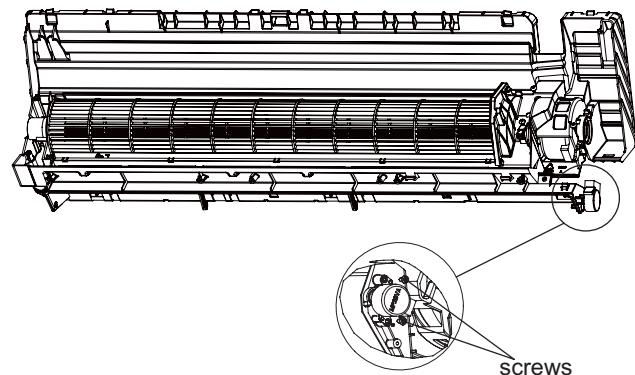
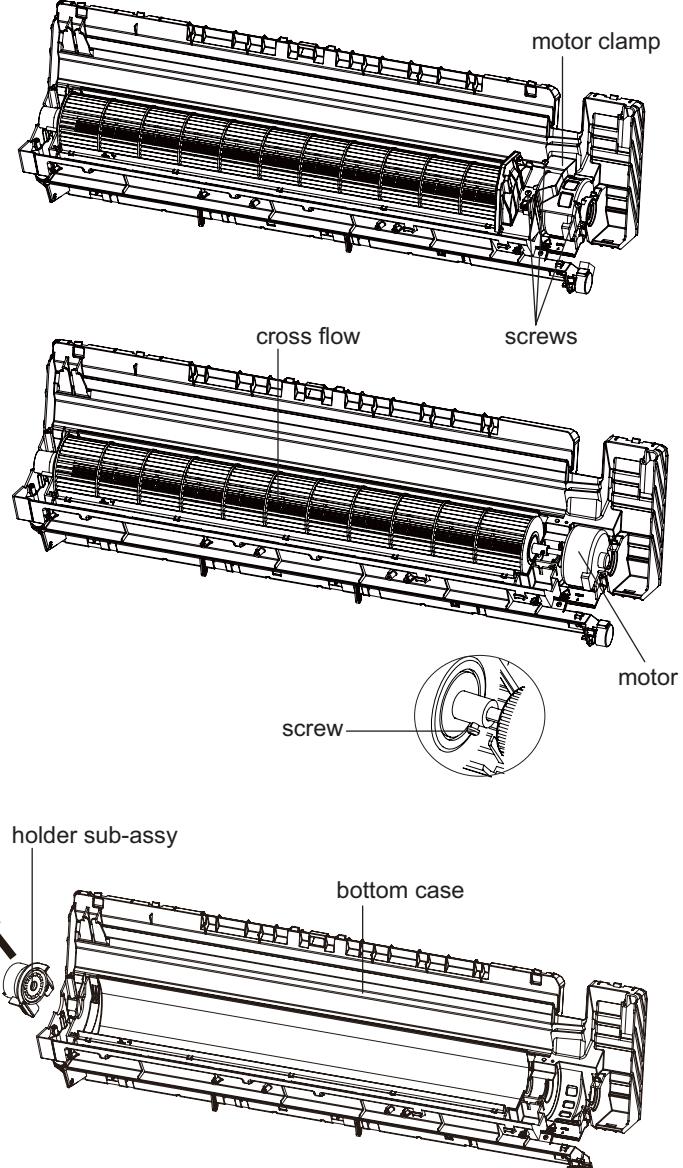
Steps	Procedure
1. Remove filter	<p>a Open the panel.</p>  <p>b Loosen the clasp shown in the fig and then pull the left filter and right filer outwards to remove them.</p> 
2. Remove panel	<p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p> 

Steps	Procedure
3. Remove horizontal louver	<p>Push out the axile bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p> 
4. Remove electric box cover	<p>Remove the screws on the electric box cover to remove the electric box cover.</p> 
5. Remove front case sub-assy	<p>a Remove the screws fixing front case. Note: 1. Open the screw caps before removing the screws around the air outlet. 2. The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the clasps at left, middle and right sides of front case. Lift the front case sub-assy upwards to remove it.</p> 

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

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



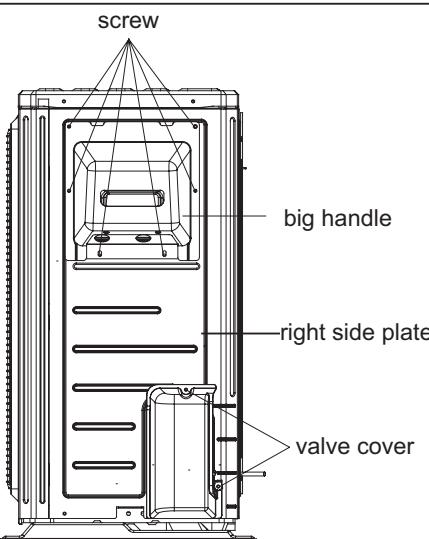
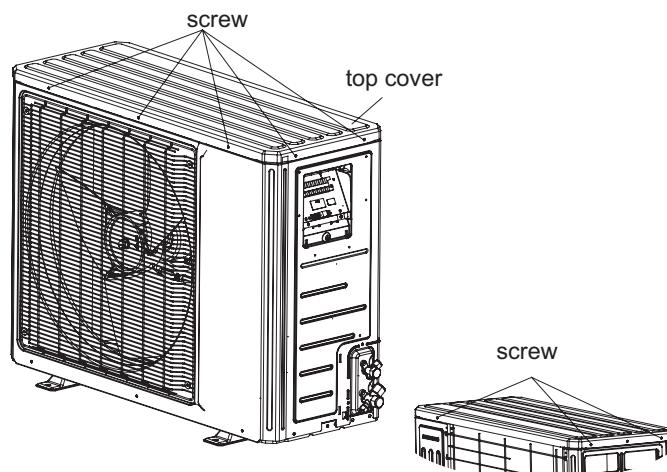
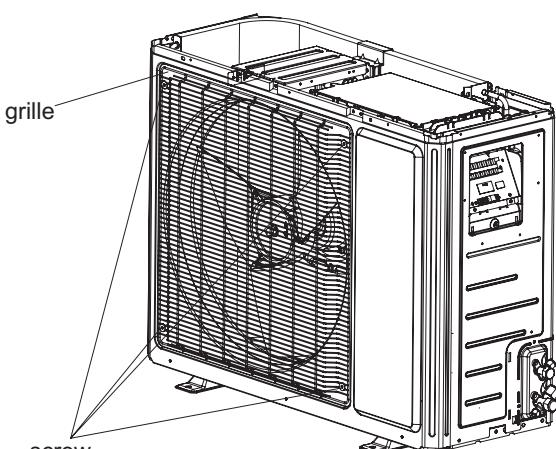
Steps	Procedure
9. Remove stepping motor	<p>Remove the screw fixing step motor and then remove the step motor.</p> 
10. Remove motor and cross flow blade	<p>a Remove the screws fixing motor clamp and then remove the motor clamp.</p> <p>b Remove the screws at the connection place of cross flow blade and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

10.2 Removal Procedure of Outdoor Unit

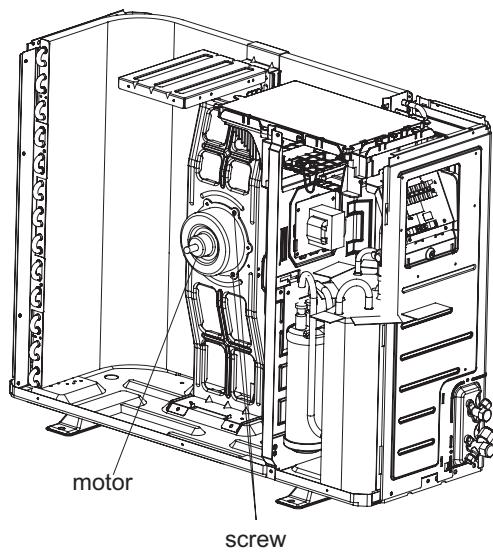
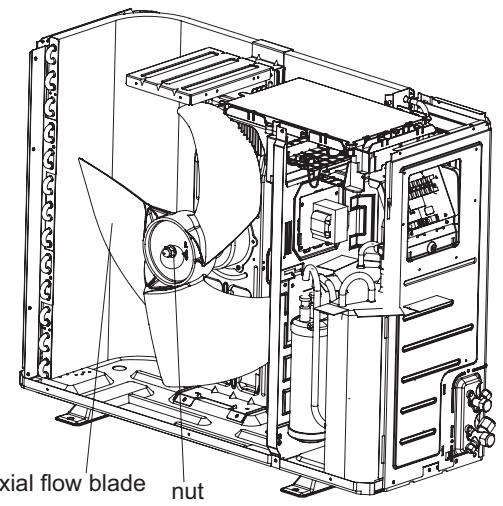
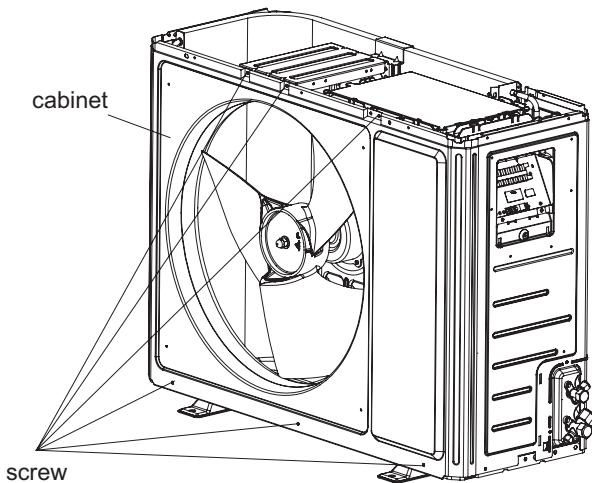
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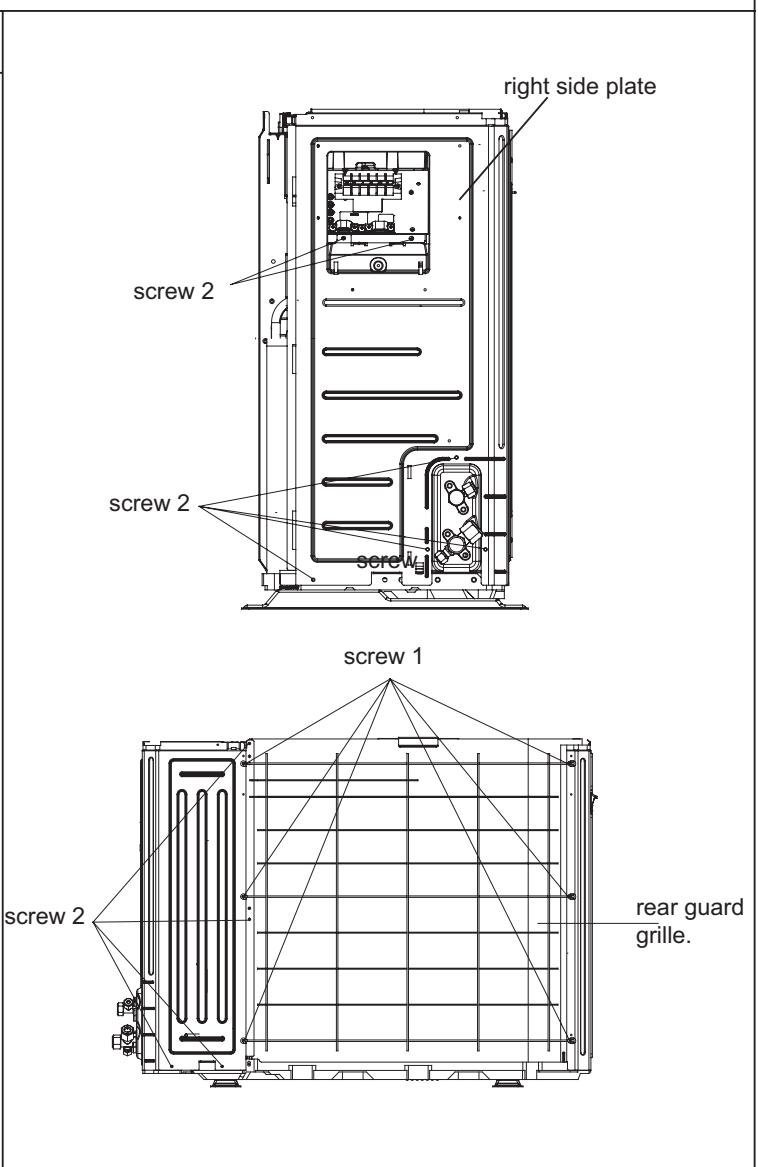
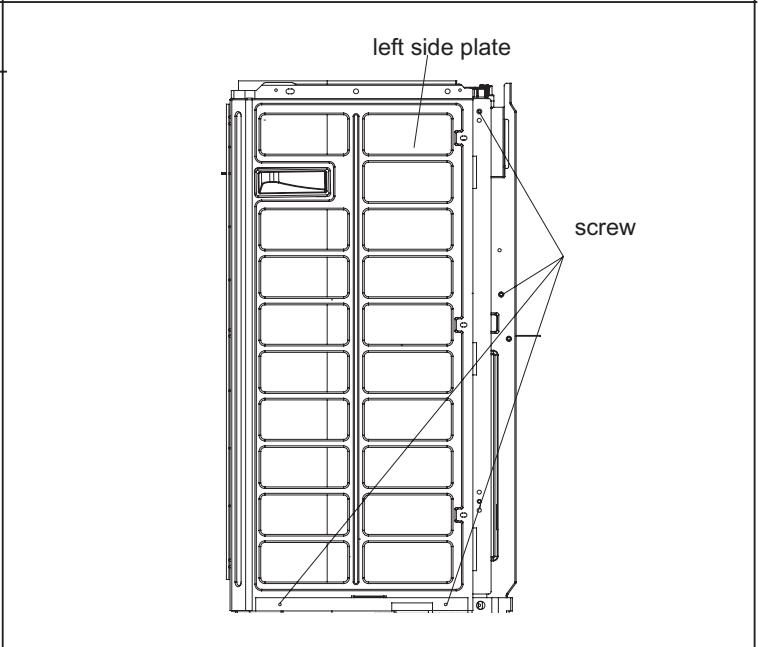
NOTE: Take heat pump for example.

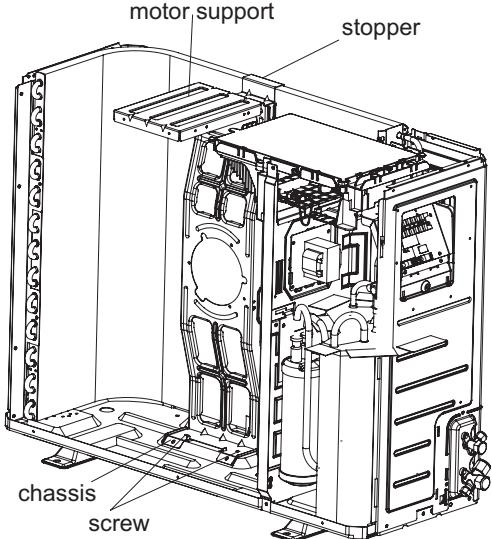
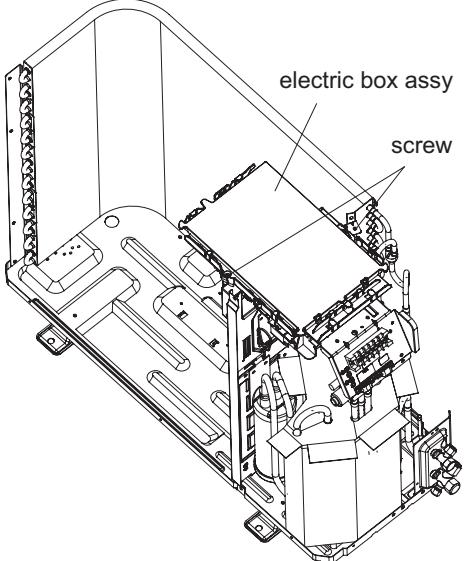
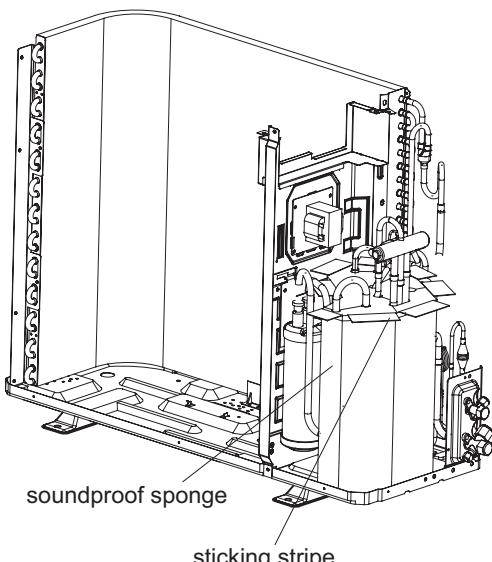
Caution: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

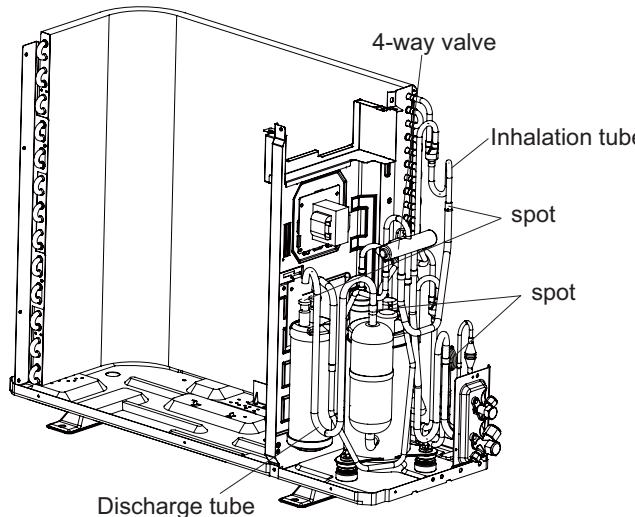
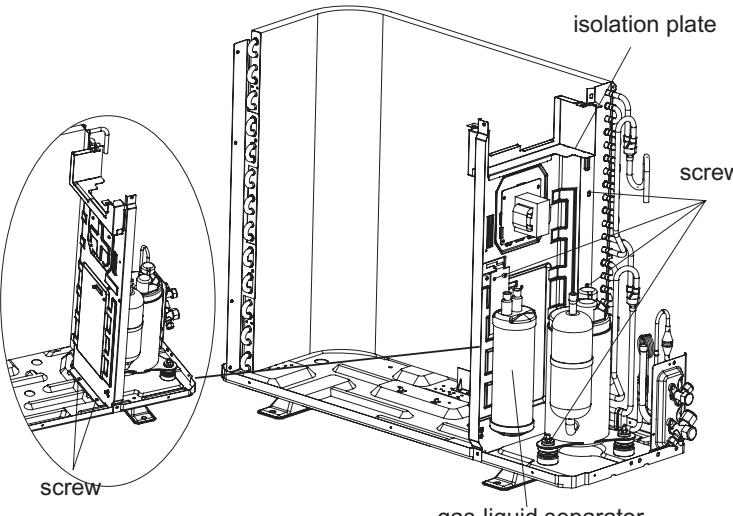
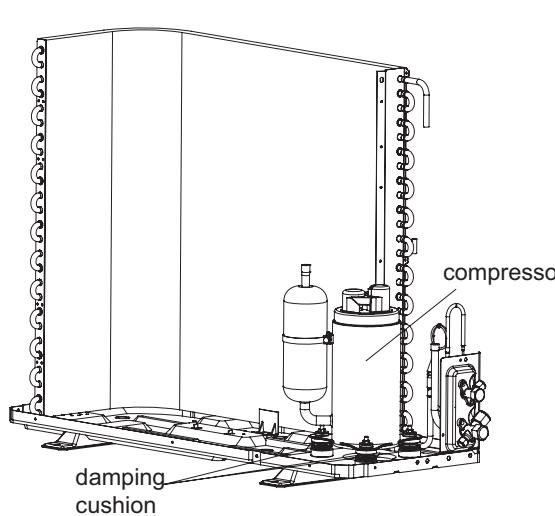
Steps	Procedure
1. Remove big handle and valve cover	<p>Remove the screw connecting the big handle and right side plate, and then remove the big handle.</p> <p>Remove the screw connecting the valve cover and right side plate, and then remove the valve cover.</p> 
2. Remove top cover	<p>Remove the screws connecting the top cover with outer case, right side plate and left side plate; lift the top cover upwards to remove it.</p> 
3. Remove grille	<p>Remove the 4 screws connecting the grille and outer case, and then remove the grille.</p> 

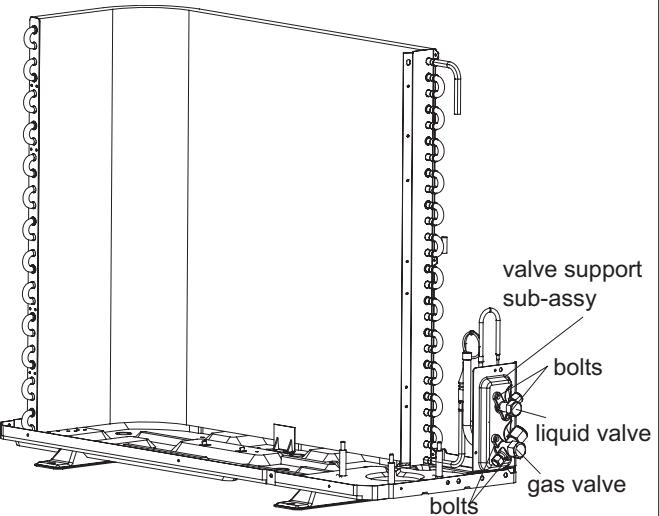
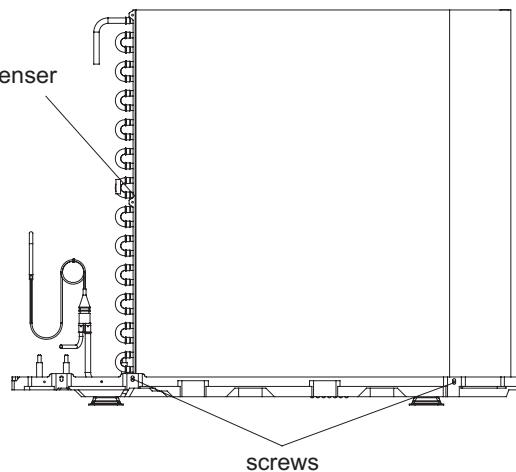
Steps	Procedure
4. Remove cabinet	<p>4. Remove cabinet</p> <p>Remove the screws connecting the outer case with motor support, isolation plate and chassis; lift the outer case upwards; loosen the clasps of outer case with right side plate and left side plate, and then remove the cabinet.</p>
5. Remove axial flow blade	<p>5. Remove axial flow blade</p> <p>Remove the nut fixing axial flow fan and then remove the axial flow blade.</p>
6. Remove motor	<p>6. Remove motor</p> <p>Remove the screws fixing the motor and then remove the motor.</p>



Steps	Procedure
	<p>7. Remove rear guard grill and right side plate</p> <p>Remove the screws 1 connecting the left side plate and right side plate and then remove rear grill.</p> <p>Remove the screws 2 connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate.</p>
	
	<p>8. Remove left side plate</p> <p>Remove the screws connecting the left side plate with the chassis, the valve support and the electric box, and then remove the left side plate assy.</p>
	

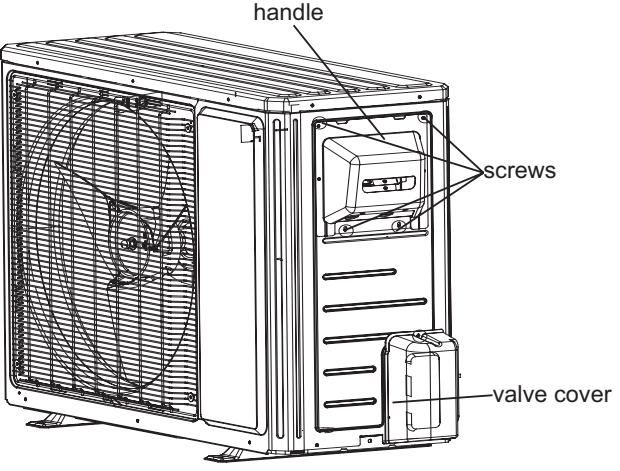
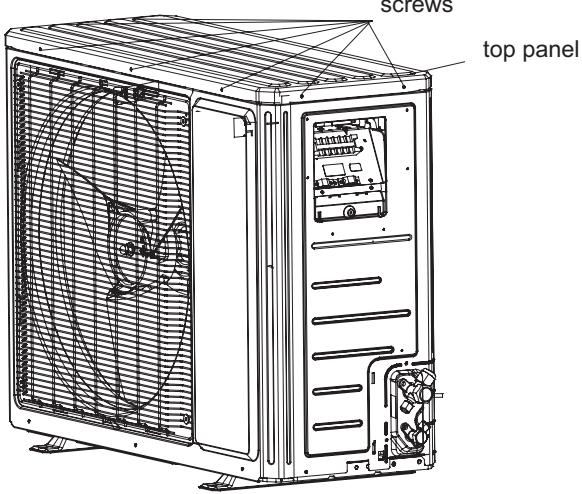
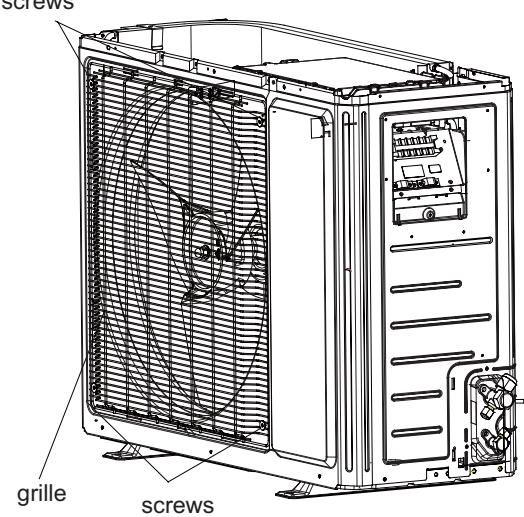
Steps	Procedure
9.Remove motor support sub-assy	<p>Remove the screws connecting the motor support and chassis, and then loosen the stopper to remove the motor support.</p> 
10.Remove electric box assy	<p>Remove the screws fixing electric box assy ; pull out each wiring terminal; lift the electric box assy upwards to remove it.</p> <p>Note: When pulling out the wiring terminal, pay attention to loose the clasp and don't pull it so hard.</p> 
11.Remove the soundproof sponge	<p>Tear off the sticking stripe and then remove the soundproof sponge.</p> 

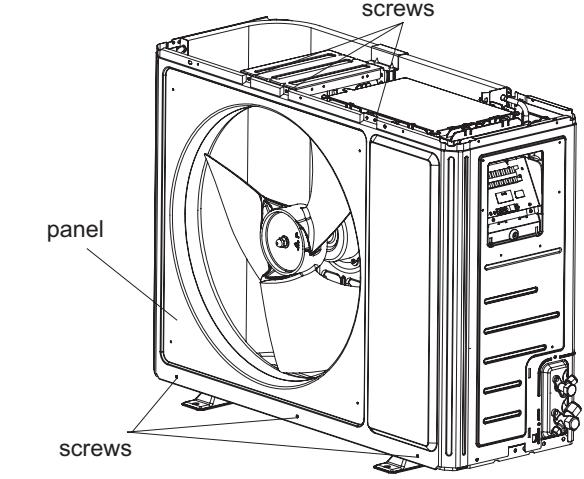
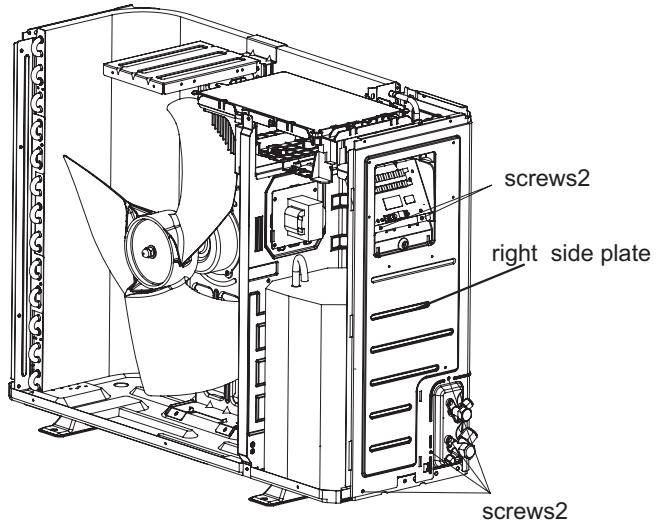
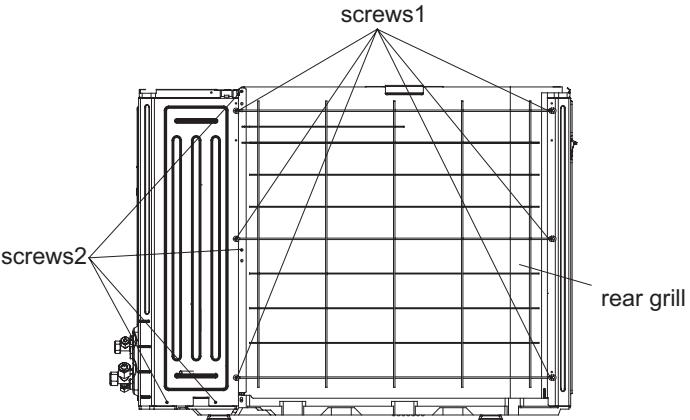
Steps	Procedure
12. Remove 4-way valve assy	<p>Unsolder the spot joints connecting the 4-way valve assy with capillary sub-assy, compressor and condenser; remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>
	
13.remove the isolation plate and gas-liquid separator	<p>Remove the 2 screws connecting the isolation plate and condenser side plate; remove the 3 screws connecting the isolation plate and chassis, and then remove the isolation plate and gas-liquid separator.</p>
	
14.Remove compressor	<p>Remove the 3 foot nuts fixing compressor and then lift the compressor upwards to remove the compressor and damping cushion.</p> <p>Note: Keep the ports of discharge pipe and suction pipe from foreign objects.</p>
	

Steps	Procedure
15.Remove Valve support sub-assy	<p>Remove two screws fixing the gas valve, then remove the gas valve.</p> <p>Remove two screws fixing the liquid valve, then remove the liquid valve.</p> <p>Screw off the screw fixing the valve support and then remove the valve support.</p> 
16.Remove condenser	<p>Remove the 2 screws fixing the condenser and chassis, and then lift the condenser upwards to remove it.</p> 

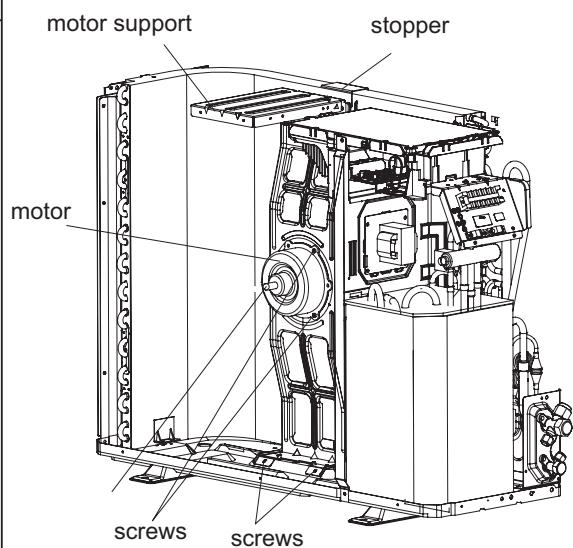
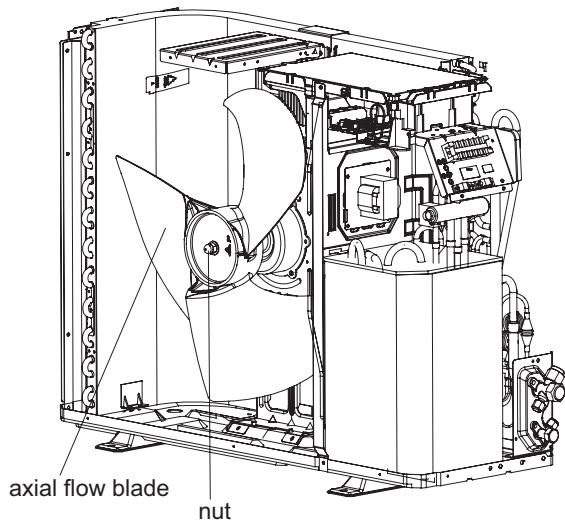
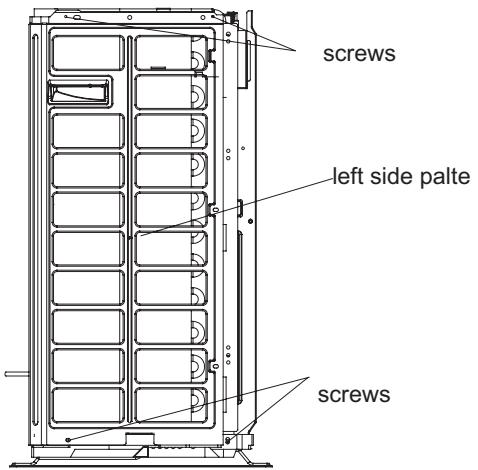
NOTE: Take heat pump for example.

Steps	Procedure
1. Remove big handle	<p>Remove the screw fixing big handle; slide out the big handle upwards to make the clasp of big handle separate from the groove of right side plate, and then remove the big handle.</p>
2. Remove top panel	<p>Remove the screws fixing top panel and then remove the top panel.</p>
3. Remove grille	<p>Remove connection screws between the front grille and the front panel. Then remove the front grille.</p>

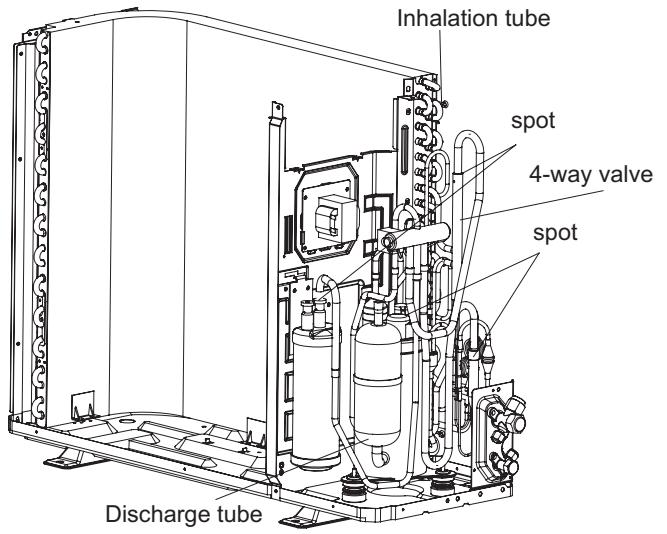
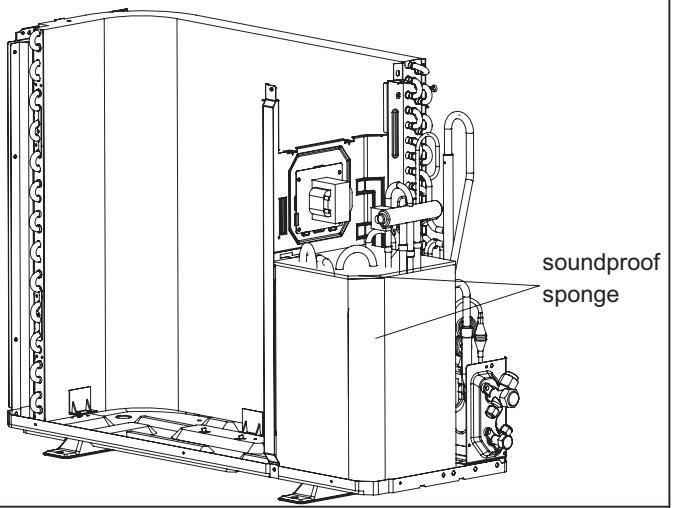
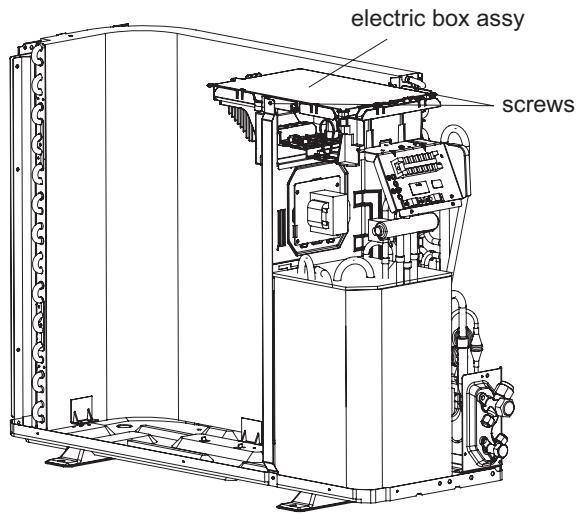




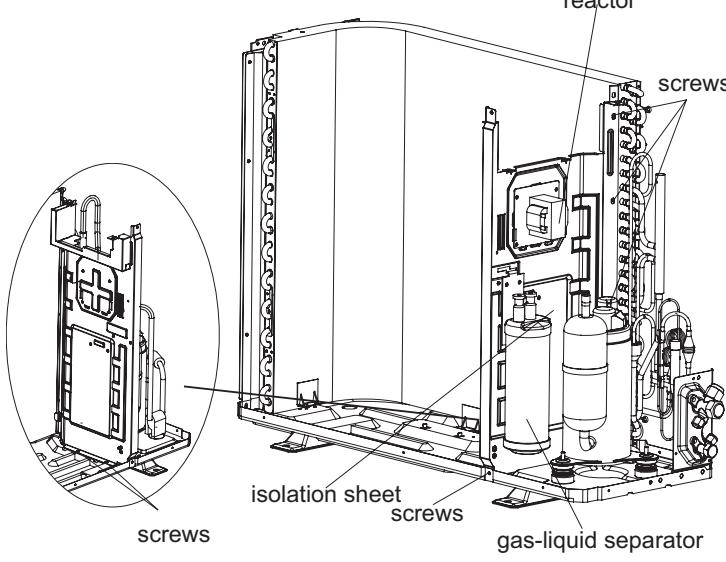
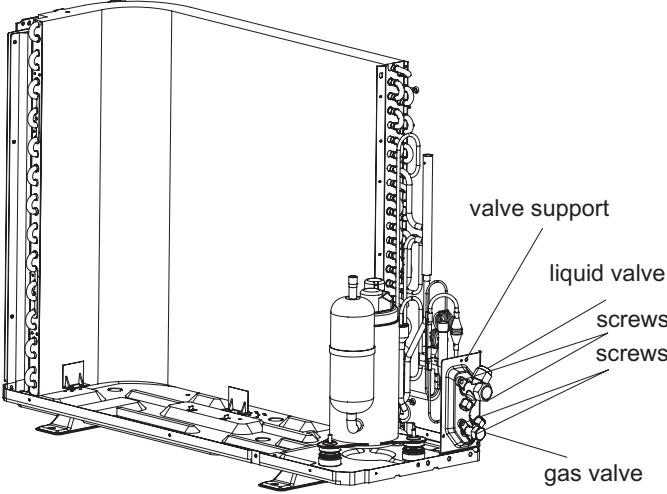
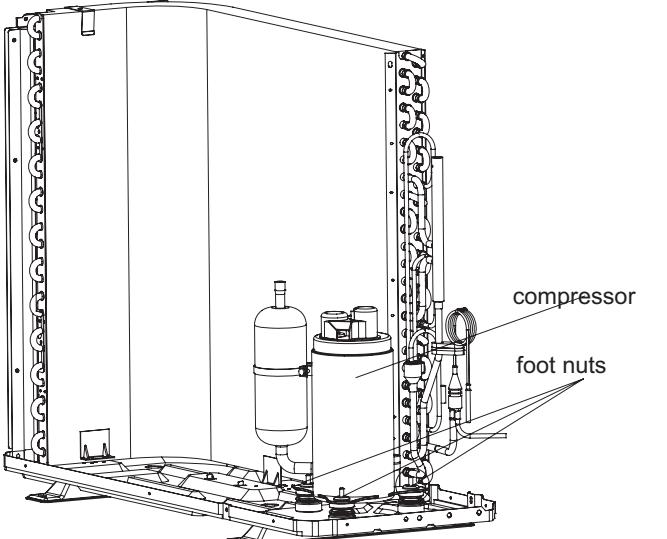
Steps	Procedure
4. Remove panel	<p>Remove the screws connecting the panel with the chassis and the motor support, and then remove the panel.</p> 
5. Remove rear grill and right side plate	<p>Remove the screws 1 connecting the left side plate and right side plate and then remove rear grill.</p> <p>Remove the screws 2 connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate.</p>  

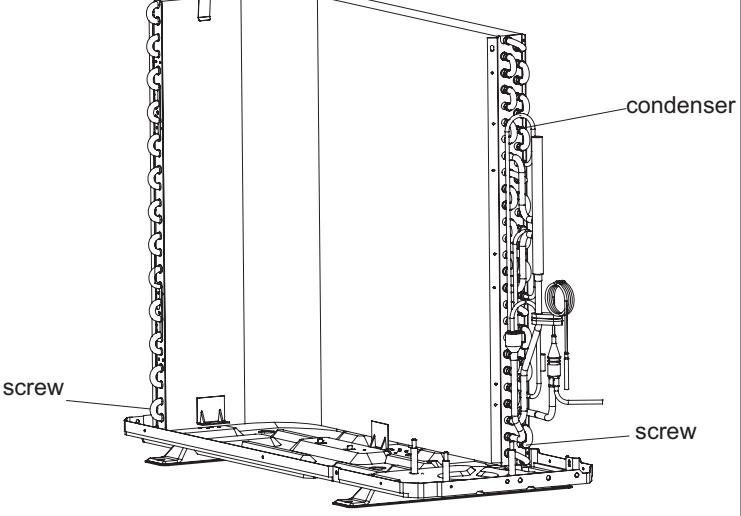
Steps	Procedure
	<p>6. Remove left side plate</p> <p>Remove the screws connecting the left side plate with the chassis, the valve support and the electric box, and then remove the left side plate assy.</p>
	<p>7. Remove axial flow blade</p> <p>Remove the nut fixing axial flow blade and then remove the axial flow blade.</p>
	<p>8. Remove motor and motor support.</p> <p>Remove the screws fixing motor support and then remove the motor support.</p>



Steps	Procedure
9. Remove electric box assy	<p>Remove the screws fixing electric box assy ; pull out each wiring terminal; lift the electric box assy upwards to remove it.</p> <p>Note: When pulling out the wiring terminal, pay attention to loose the clasp and don't pull it so hard.</p>
10. Remove the soundproof sponge	<p>Tear off the sticking stripe and then remove the soundproof sponge.</p>
11. Remove 4-way valve assy	<p>Unsolder the spot joints connecting the 4-way valve assy with capillary sub-assy, compressor and condenser; remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>



Steps	Procedure
12. Remove inhalation tube and discharge pipe and gas-liquid separator	<p>Remove the 2 screws connecting the isolation plate and condenser side plate; remove the 3 screws connecting the isolation plate and chassis, and then remove the isolation plate and gas-liquid separator.</p> 
13. Remove gas valve and liquid valve	<p>Remove two screws fixing the gas valve, then remove the gas valve.</p> <p>Remove two screws fixing the liquid valve, then remove the liquid valve.</p> <p>Screw off the screw fixing the valve support and then remove the valve support.</p> 
14. Remove compressor	<p>Remove 3 foot nuts on compressor, and then remove the compressor.</p> <p>Note: Protect the ports of discharge pipe and suction pipe to avoid foreign objects to enter it.</p> 

Steps	Procedure
15. Remove condenser	
	<p>Remove one screw fixing the condenser, then remove the condenser.</p> 

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

Set temperature

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

Ambient temperature

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

Appendix 2: Configuration of Connection Pipe

1. Standard length of connection pipe

- 16.40ft, 24.61ft, 26.25ft.

2. Min. length of connection pipe is 9.84ft.

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

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

- After the length of connection pipe is prolonged for 32.81ft at the basis of standard length, you should add 0.0013gal of refrigerant oil for each additional 16.40ft of connection pipe.

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

- When the length of connection pipe is above 16.40ft, add refrigerant according to the prolonged length of liquid pipe. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

- Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	49.21ft	16.40ft
7000 Btu/h(2051 W)	49.21ft	16.40ft
9000 Btu/h(2637 W)	49.21ft	32.81ft
12000 Btu/h(3516 W)	65.62ft	32.81ft
18000 Btu/h(5274 W)	82.02ft	32.81ft
24000 Btu/h(7032 W)	82.02ft	32.81ft
28000 Btu/h(8204 W)	98.43ft	32.81ft
36000 Btu/h(10548 W)	98.43ft	65.62ft
42000 Btu/h(12306 W)	98.43ft	65.62ft
48000 Btu/h(14064 W)	98.43ft	65.62ft

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(inch)	Gas pipe(inch)	Cooling only(oz/ft.)	Cooling and heating(oz/ft.)
Φ0.24	Φ0.37 or Φ0.47	0.2	0.2
Φ0.24 or Φ0.37	Φ0.63 or Φ0.75	0.2	0.2
Φ0.47	Φ0.75 or Φ0.87	0.3	1.3
Φ0.63	Φ1 or Φ1.25	0.7	1.3
Φ0.75	/	2.7	2.7
Φ0.87	/	3.8	3.8

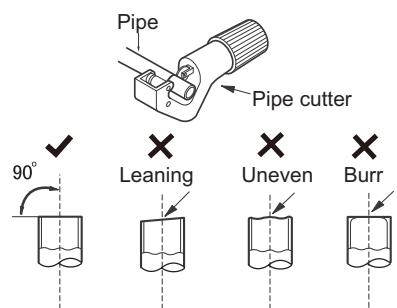
Appendix 3: Pipe Expanding Method

⚠ Note:

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

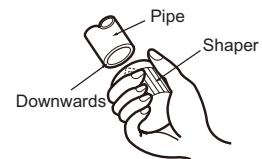
A:Cut the pip

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

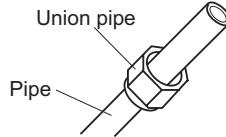


B:Remove the burrs

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

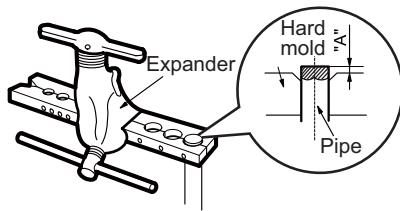


C:Put on suitable insulating pipe



D:Put on the union nut

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



E:Expand the port

- Expand the port with expander.

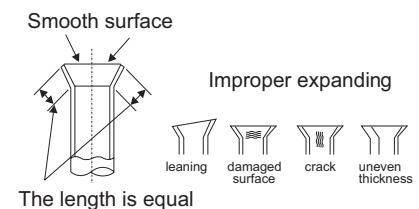
⚠ Note:

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

Outer diameter(inch)	A(inch)	
	Max	Min
Φ0.24 - 0.25 (1/4")	0.05	0.03
Φ0.37 (3/8")	0.06	0.04
Φ0.47 - 0.50 (1/2")	0.07	0.04
Φ0.63 - 0.625 (5/8")	0.09	0.09

F:Inspection

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



Appendix 4: List of Resistance for Temperature Sensor

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	138.1	68	18.75	138.2	3.848	208.4	1.071
-0.4	128.6	69.8	17.93	140	3.711	210.2	1.039
1.4	121.6	71.6	17.14	141.8	3.579	212	1.009
3.2	115	73.4	16.39	143.6	3.454	213.8	0.98
5	108.7	75.2	15.68	145.4	3.333	215.6	0.952
6.8	102.9	77	15	147.2	3.217	217.4	0.925
8.6	97.4	78.8	14.36	149	3.105	219.2	0.898
10.4	92.22	80.6	13.74	150.8	2.998	221	0.873
12.2	87.35	82.4	13.16	152.6	2.896	222.8	0.848
14	82.75	84.2	12.6	154.4	2.797	224.6	0.825
15.8	78.43	86	12.07	156.2	2.702	226.4	0.802
17.6	74.35	87.8	11.57	158	2.611	228.2	0.779
19.4	70.5	89.6	11.09	159.8	2.523	230	0.758
21.2	66.88	91.4	10.63	161.6	2.439	231.8	0.737
23	63.46	93.2	10.2	163.4	2.358	233.6	0.717
24.8	60.23	95	9.779	165.2	2.28	235.4	0.697
26.6	57.18	96.8	9.382	167	2.206	237.2	0.678
28.4	54.31	98.6	9.003	168.8	2.133	239	0.66
30.2	51.59	100.4	8.642	170.6	2.064	240.8	0.642
32	49.02	102.2	8.297	172.4	1.997	242.6	0.625
33.8	46.6	104	7.967	174.2	1.933	244.4	0.608
35.6	44.31	105.8	7.653	176	1.871	246.2	0.592
37.4	42.14	107.6	7.352	177.8	1.811	248	0.577
39.2	40.09	109.4	7.065	179.6	1.754	249.8	0.561
41	38.15	111.2	6.791	181.4	1.699	251.6	0.547
42.8	36.32	113	6.529	183.2	1.645	253.4	0.532
44.6	34.58	114.8	6.278	185	1.594	255.2	0.519
46.4	32.94	116.6	6.038	186.8	1.544	257	0.505
48.2	31.38	118.4	5.809	188.6	1.497	258.8	0.492
50	29.9	120.2	5.589	190.4	1.451	260.6	0.48
51.8	28.51	122	5.379	192.2	1.408	262.4	0.467
53.6	27.18	123.8	5.197	194	1.363	264.2	0.456
55.4	25.92	125.6	4.986	195.8	1.322	266	0.444
57.2	24.73	127.4	4.802	197.6	1.282	267.8	0.433
59	23.6	129.2	4.625	199.4	1.244	269.6	0.422
60.8	22.53	131	4.456	201.2	1.207	271.4	0.412
62.6	21.51	132.8	4.294	203	1.171	273.2	0.401
64.4	20.54	134.6	4.139	204.8	1.136	275	0.391
66.2	19.63	136.4	3.99	206.6	1.103	276.8	0.382

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	181.4	68	25.01	138.2	5.13	208.4	1.427
-0.4	171.4	69.8	23.9	140	4.948	210.2	1.386
1.4	162.1	71.6	22.85	141.8	4.773	212	1.346
3.2	153.3	73.4	21.85	143.6	4.605	213.8	1.307
5	145	75.2	20.9	145.4	4.443	215.6	1.269
6.8	137.2	77	20	147.2	4.289	217.4	1.233
8.6	129.9	78.8	19.14	149	4.14	219.2	1.198
10.4	123	80.6	18.13	150.8	3.998	221	1.164
12.2	116.5	82.4	17.55	152.6	3.861	222.8	1.131
14	110.3	84.2	16.8	154.4	3.729	224.6	1.099
15.8	104.6	86	16.1	156.2	3.603	226.4	1.069
17.6	99.13	87.8	15.43	158	3.481	228.2	1.039
19.4	94	89.6	14.79	159.8	3.364	230	1.01
21.2	89.17	91.4	14.18	161.6	3.252	231.8	0.983
23	84.61	93.2	13.59	163.4	3.144	233.6	0.956
24.8	80.31	95	13.04	165.2	3.04	235.4	0.93
26.6	76.24	96.8	12.51	167	2.94	237.2	0.904
28.4	72.41	98.6	12	168.8	2.844	239	0.88
30.2	68.79	100.4	11.52	170.6	2.752	240.8	0.856
32	65.37	102.2	11.06	172.4	2.663	242.6	0.833
33.8	62.13	104	10.62	174.2	2.577	244.4	0.811
35.6	59.08	105.8	10.2	176	2.495	246.2	0.77
37.4	56.19	107.6	9.803	177.8	2.415	248	0.769
39.2	53.46	109.4	9.42	179.6	2.339	249.8	0.746
41	50.87	111.2	9.054	181.4	2.265	251.6	0.729
42.8	48.42	113	8.705	183.2	2.194	253.4	0.71
44.6	46.11	114.8	8.37	185	2.125	255.2	0.692
46.4	43.92	116.6	8.051	186.8	2.059	257	0.674
48.2	41.84	118.4	7.745	188.6	1.996	258.8	0.658
50	39.87	120.2	7.453	190.4	1.934	260.6	0.64
51.8	38.01	122	7.173	192.2	1.875	262.4	0.623
53.6	36.24	123.8	6.905	194	1.818	264.2	0.607
55.4	34.57	125.6	6.648	195.8	1.736	266	0.592
57.2	32.98	127.4	6.403	197.6	1.71	267.8	0.577
59	31.47	129.2	6.167	199.4	1.658	269.6	0.563
60.8	30.04	131	5.942	201.2	1.609	271.4	0.549
62.6	28.68	132.8	5.726	203	1.561	273.2	0.535
64.4	27.39	134.6	5.519	204.8	1.515	275	0.521
66.2	26.17	136.4	5.32	206.6	1.47	276.8	0.509

Resistance Table of Discharge Temperature Sensor for Outdoor(50K)

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-20.2	853.5	50	98	120.2	18.34	190.4	4.754
-18.4	799.8	51.8	93.42	122	17.65	192.2	4.609
-16.6	750	53.6	89.07	123.8	16.99	194	4.469
-14.8	703.8	55.4	84.95	125.6	16.36	195.8	4.334
-13	660.8	57.2	81.05	127.4	15.75	197.6	4.204
-11.2	620.8	59	77.35	129.2	15.17	199.4	4.079
-9.4	580.6	60.8	73.83	131	14.62	201.2	3.958
-7.6	548.9	62.6	70.5	132.8	14.09	203	3.841
-5.8	516.6	64.4	67.34	134.6	13.58	204.8	3.728
-4	486.5	66.2	64.33	136.4	13.09	206.6	3.619
-2.2	458.3	68	61.48	138.2	12.62	208.4	3.514
-0.4	432	69.8	58.77	140	12.17	210.2	3.413
1.4	407.4	71.6	56.19	141.8	11.74	212	3.315
3.2	384.5	73.4	53.74	143.6	11.32	213.8	3.22
5	362.9	75.2	51.41	145.4	10.93	215.6	3.129
6.8	342.8	77	49.19	147.2	10.54	217.4	3.04
8.6	323.9	78.8	47.08	149	10.18	219.2	2.955
10.4	306.2	80.6	45.07	150.8	9.827	221	2.872
12.2	289.6	82.4	43.16	152.6	9.489	222.8	2.792
14	274	84.2	41.34	154.4	9.165	224.6	2.715
15.8	259.3	86	39.61	156.2	8.854	226.4	2.64
17.6	245.6	87.8	37.96	158	8.555	228.2	2.568
19.4	232.6	89.6	36.38	159.8	8.268	230	2.498
21.2	220.5	91.4	34.88	161.6	7.991	231.8	2.431
23	209	93.2	33.45	163.4	7.726	233.6	2.365
24.8	198.3	95	32.09	165.2	7.47	235.4	2.302
26.6	199.1	96.8	30.79	167	7.224	237.2	2.241
28.4	178.5	98.6	29.54	168.8	6.998	239	2.182
30.2	169.5	100.4	28.36	170.6	6.761	240.8	2.124
32	161	102.2	27.23	172.4	6.542	242.6	2.069
33.8	153	104	26.15	174.2	6.331	244.4	2.015
35.6	145.4	105.8	25.11	176	6.129	246.2	1.963
37.4	138.3	107.6	24.13	177.8	5.933	248	1.912
39.2	131.5	109.4	23.19	179.6	5.746	249.8	1.863
41	125.1	111.2	22.29	181.4	5.565	251.6	1.816
42.8	119.1	113	21.43	183.2	5.39	253.4	1.77
44.6	113.4	114.8	20.6	185	5.222	255.2	1.725
46.4	108	116.6	19.81	186.8	5.06	257	1.682
48.2	102.8	118.4	19.06	188.6	4.904	258.8	1.64



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