



Service Manual

Model: GWH09TB-D3DNA1A (electrical heater)
GWH09TB-D3DNA1A
GWH12TB-D3DNA1A(electrical heater)
GWH12TB-D3DNA1A
GWH18TC-D3DNA1A
GWH24TD-D3DNA1A
(Refrigerant R410A)

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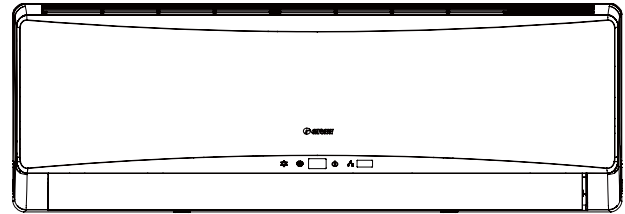
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Summary and Features

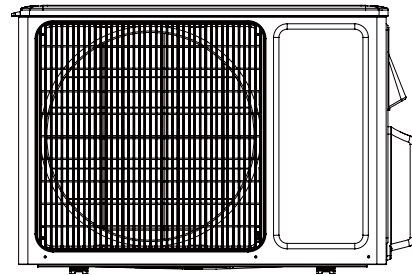
Indoor Unit:

GWH09TB-D3DNA1A/I
GWH12TB-D3DNA1A/I
GWH18TC-D3DNA1A/I
GWH24TD-D3DNA1A/I

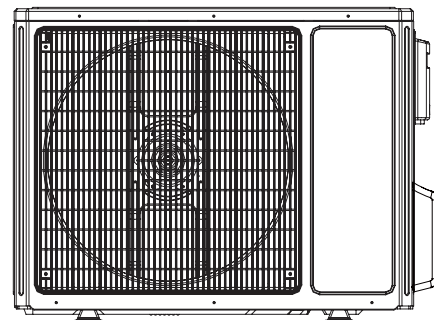


Outdoor Unit:

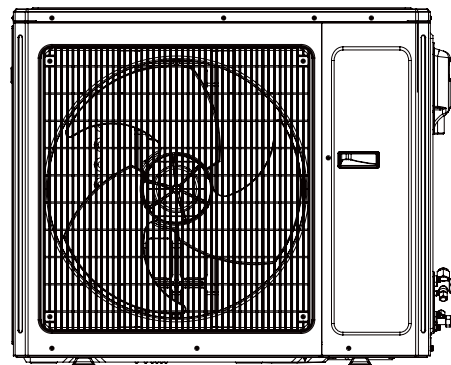
GWH09TB-D3DNA1A/O(electrical heater)
GWH09TB-D3DNA1A/O
GWH12TB-D3DNA1A/O(electrical heater)
GWH12TB-D3DNA1A/O



GWH18TC-D3DNA1A/O



GWH24TD-D3DNA1A/O



Remote Controller:

YAG1FBF
YAG1FB



1. Safety Precautions



Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment. Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

-  **Warning** Incorrect handling could result in personal injury or death.
-  **Caution** Incorrect handling may result in minor injury, or damage to product or property.

- Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- Make sure the ceiling/wall is strong enough to bear the weight of the unit.
- Make sure the noise of the outdoor unit does not disturb neighbors.
- Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
- Avoid contact between refrigerant and fire as it generates poisonous gas.
- Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
- Make sure no refrigerant gas is leaking out when installation is completed.
- Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
- Keep your fingers and clothing away from any moving parts.
- Clear the site after installation. Make sure no foreign objects are left in the unit.
- Always ensure effective grounding for the unit.

Warning

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

- Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
- This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- Have the unit adequately grounded in accordance with local electrical codes.
- Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

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

Caution

- Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
- Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
- Provide an electric leak breaker when it is installed in a watery place.
- Never wash the unit with water.
- Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
- Never touch the heat exchanger fins with bare hands.
- Never touch the compressor or refrigerant piping without wearing glove.
- Do not have the unit operate without air filter.
- Should any emergency occur, stop the unit and disconnect the power immediately.
- Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2. Specifications

2.1 Unit Specifications

Model			GWH09TB-D3DNA1A (electrical heater)	GWH09TB-D3DNA1A
Product Code			CB148002200	CB148002201
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity (Min~Max)		Btu/h	9000(3500~9600)	9000(3500~9600)
Heating Capacity (Min~Max)		Btu/h	9800(2200~11000)	9800(2200~11000)
Cooling Power Input (Min~Max)		W	600(330~1200)	600(330~1200)
Heating Power Input (Min~Max)		W	650(100~1250)	650(100~1250)
Cooling Current Input		A	5.7	5.7
Heating Current Input		A	7	7
Rated Input		W	1300	1300
Rated Current		A	9	9
Air Flow Volume		CFM	417.8/300.1/282.5/217.7/182.4/117.7/-	
Dehumidifying Volume		Pint/h	1.9	1.9
EER		(Btu/h)/W	14.5	14.5
COP		(Btu/h)/W	13	13
SEER			27	27
HSPF			9	9
Application Area		m ²	16-24	16-24
Indoor Unit	Indoor Unit Model		GWH09TB-D3DNA1A/I	GWH09TB-D3DNA1A/I
	Indoor Unit Product Code		CB148N02200	CB148N02200
	Indoor Unit Fan Type		Cross-flow	Cross-flow
	Indoor Unit Fan Diameter	inch	Φ3.86X3/50	Φ3.86X3/50
	Length (DXL)			
	Cooling Speed (Max~Min)	r/min	1400/1050/1000/900/800/700/500	
	Heating Speed (Max~Min)	r/min	1400/1150/1080/1030/980/900/850	
	Indoor Unit Fan Motor Power Output	W	10	10
	Indoor Unit Fan Motor RLA	A	0.07	0.07
	Indoor Unit Fan Motor Capacitor	μF	/	/
	Heater Power Input	W	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	Φ0.3	Φ0.3
	Evaporator Row-fin Gap	inch	2-3/50	2-3/50
	Evaporator Coil Length (LXDXW)	inch	26 1/50X1X10 2/5	26 1/50X1X10 2/5
	Swing Motor Model		MP24HC	MP24HC
	Swing Motor Power Output	W	2.4	2.4
	Fuse Current	A	3.15	3.15
	Sound Pressure Level (Max~Min)	dB (A)	42/38/36/34/30/26/23	42/38/36/34/30/26/23
	Sound Power Level (Max~Min)	dB (A)	52/48/46/44/40/36/33	52/48/46/44/40/36/33
	Dimension (WXHxD)	inch	34.1X11.5X8.2	34.1X11.5X8.2
	Dimension of Carton Box (LXWXH)	inch	37.1X14.7X11.1	37.1X14.7X11.1
	Dimension of Package (LXWXH)	inch	37.2X14.8X11.7	37.2X14.8X11.7
	Indoor Unit Net Weight	lb	24.3	24.3
	Indoor Unit Gross Weight	lb	30.9	30.9

Outdoor Unit	Outdoor Unit Model		GWH09TB-D3DNA1A/O (electrical heater)	GWH09TB-D3DNA1A/O
	Outdoor Unit Product Code		CB148W02200	
	Compressor Manufacturer		MITSUBISHI ELECTRIC (GUANGZHOU) COMPRESSOR CO.LTD	MITSUBISHI ELECTRIC (GUANGZHOU) COMPRESSOR CO.LTD
	Compressor Model		KNB092FTAMC	KNB092FTAMC
	Compressor Oil		FV50S	FV50S
	Compressor Type		Rotary	Rotary
	Compressor LRA.	A	13.8	13.8
	Compressor RLA	A	3.2	3.2
	Compressor Power Input	W	860	860
	Compressor Overload Protector		1NT11L-6578	1NT11L-6578
	Throttling Method		Electron expansion valve	Electron expansion valve
	Set Temperature Range	°F	60.8~86	60.8~86
	Cooling Operation Ambient Temperature Range	°F	0~118.4	0~118.4
	Heating Operation Ambient Temperature Range	°F	-4~86	-4~86
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	Φ0.31	Φ0.31
	Condenser Rows-fin Gap	inch	2.5-3/50	2.5-3/50
	Condenser Coil Length (LXDXW)	inch	30.0X2 1/5X21 7/10	30.0X2 1/5X21 7/10
	Outdoor Unit Fan Motor Speed	rpm	600/750/850	600/750/850
	Outdoor Unit Fan Motor Power Output	W	40	40
	Outdoor Unit Fan Motor RLA	A	0.18	0.18
	Outdoor Unit Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	CFM	1177	1177
	Outdoor Unit Fan Type		Axial-flow	Axial-flow
	Outdoor Unit Fan Diameter	inch	Φ17.5	Φ17.5
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level (H/M/L)	dB (A)	49/-/-	49/-/-
	Sound Power Level (H/M/L)	dB (A)	59/-/-	59/-/-
	Dimension (WXHXD)	inch	35.4X23.5X14.9	35.4X23.5X14.9
	Dimension of Carton Box (LXWXH)	inch	37.2X16.4X24.8	37.2X16.4X24.8
	Dimension of Package(LXWXH)	inch	37.3X16.5X25.4	37.3X16.5X25.4
	Outdoor Unit Net Weight	lb	86.0	86.0
	Outdoor Unit Gross Weight	lb	90.4	90.4
	Refrigerant		R410A	R410A
	Refrigerant Charge	oz	45.9	45.9
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft.	0.2	0.2
	Outer Diameter Liquid Pipe	inch	1/4	1/4
	Outer Diameter Gas Pipe	inch	1/2	1/2
	Max Distance Height	ft	32.8	32.8
	Max Distance Length	ft	49.2	49.2

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

Specifications

Model			GWH12TB-D3DNA1A (electrical heater)	GWH12TB-D3DNA1A
Product Code			CB148002300	CB148002301
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity (Min~Max)		Btu/h	12000(3100~13000)	12000(3100~13000)
Heating Capacity (Min~Max)		Btu/h	13000(2400~14000)	13000(2400~14000)
Cooling Power Input (Min~Max)		W	882(380~1300)	882(380~1300)
Heating Power Input (Min~Max)		W	960(100~1350)	960(100~1350)
Cooling Current Input		A	6	6
Heating Current Input		A	7.5	7.5
Rated Input		W	1400	1400
Rated Current		A	9	9
Air Flow Volume		CFM	453.1/311.9/288.4/220.7/182.4/117.7/-	
Dehumidifying Volume		Pint/h	2.96	2.96
EER		(Btu/h)/W	12.8	12.8
COP		(Btu/h)/W	12	12
SEER			25	25
HSPF			9	9
Application Area		m ²	16-24	16-24
Indoor Unit	Indoor Unit Model		GWH12TB-D3DNA1A/I	GWH12TB-D3DNA1A/I
	Indoor Unit Product Code		CB148N02300	CB148N02300
	Indoor Unit Fan Type		Cross-flow	Cross-flow
	Indoor Unit Fan Diameter Length (DXL)	inch	Φ3.86X26 3/50	Φ3.86X26 3/50
	Cooling Speed (Max~Min)	r/min	1450/1070/1000/900/800/700/500	
	Heating Speed (Max~Min)	r/min	1450/1150/1080/1030/980/900/850	
	Indoor Unit Fan Motor Power Output	W	10	10
	Indoor Unit Fan Motor RLA	A	0.07	0.07
	Indoor Unit Fan Motor Capacitor	μF	/	/
	Heater Power Input	W	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	Φ0.3	Φ0.3
	Evaporator Row-fin Gap	inch	2-3/50	2-3/50
	Evaporator Coil Length (LXDXW)	inch	26 1/50X1X10 2/5	26 1/50X1X10 2/5
	Swing Motor Model		MP24HC	MP24HC
	Swing Motor Power Output	W	2.4	2.4
	Fuse Current	A	3.15	3.15
	Sound Pressure Level (Max~Min)	dB (A)	44/38/36/34/30/26/24/	44/38/36/34/30/26/24/
	Sound Power Level (Max~Min)	dB (A)	54/50/48/46/44/40/34/	54/50/48/46/44/40/34/
	Dimension (WXHDX)	inch	34.1X11.5X8.2	34.1X11.5X8.2
	Dimension of Carton Box (LXWXH)	inch	37.1X14.7X11.1	37.1X14.7X11.1
	Dimension of Package (LXWXH)	inch	37.2X14.8X11.7	37.2X14.8X11.7
	Indoor Unit Net Weight	lb	24.3	24.3
	Indoor Unit Gross Weight	lb	30.9	30.9

Outdoor Unit	Outdoor Unit Model		GWH12TB-D3DNA1A/O (electrical heater)	GWH12TB-D3DNA1A/O
	Outdoor Unit Product Code		CB148W02300	
	Compressor Manufacturer		MITSUBISHI ELECTRIC (GUANGZHOU) COMPRESSOR CO.LTD	MITSUBISHI ELECTRIC (GUANGZHOU) COMPRESSOR CO.LTD
	Compressor Model		KNB092FTAMC	KNB092FTAMC
	Compressor Oil		FV50S	FV50S
	Compressor Type		Rotary	Rotary
	Compressor LRA	A	13.8	13.8
	Compressor RLA	A	3.2	3.2
	Compressor Power Input	W	860	860
	Compressor Overload Protector		1NT11L-6578	1NT11L-6578
	Throttling Method		Electron expansion valve	Electron expansion valve
	Set Temperature Range	°F	60.8~86	60.8~86
	Cooling Operation Ambient Temperature Range	°F	0~118.4	0~118.4
	Heating Operation Ambient Temperature Range	°F	-4~86	-4~86
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	Φ0.3	Φ0.3
	Condenser Rows-fin Gap	inch	2.5-3/50	2.5-3/50
	Condenser Coil Length (LXDXW)	inch	30.0X2 1/5X21 7/10	30.0X2 1/5X21 7/10
	Outdoor Unit Fan Motor Speed	rpm	600/750/850	600/750/850
	Outdoor Unit Fan Motor Power Output	W	40	40
	Outdoor Unit Fan Motor RLA	A	0.18	0.18
	Outdoor Unit Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	CFM	1177	1177
	Outdoor Unit Fan Type		Axial-flow	Axial-flow
	Outdoor Unit Fan Diameter	inch	Φ17.5	Φ17.5
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level (H/M/L)	dB (A)	49/-/-	49/-/-
	Sound Power Level (H/M/L)	dB (A)	59/-/-	59/-/-
	Dimension (WXHDXD)	inch	35.4X23.5X14.9	35.4X23.5X14.9
	Dimension of Carton Box (LXWXH)	inch	37.2X16.4X24.8	37.2X16.4X24.8
	Dimension of Package(LXWXH)	inch	37.3X16.5X25.4	37.3X16.5X25.4
	Outdoor Unit Net Weight	lb	87.1	87.1
	Outdoor Unit Gross Weight	lb	91.5	91.5
	Refrigerant		R410A	R410A
	Refrigerant Charge	oz	45.9	45.9
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft.	0.2	0.2
	Outer Diameter Liquid Pipe	inch	1/4	1/4
	Outer Diameter Gas Pipe	inch	1/2	1/2
	Max Distance Height	ft	32.8	32.8
	Max Distance Length	ft	65.6	65.6

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

Specifications

Model			GWH18TC-D3DNA1A	GWH24TD-D3DNA1A
Product Code			CB148004000	CB148003800
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity (Min~Max)		Btu/h	18000(4600~22180)	24000(6800~29300)
Heating Capacity (Min~Max)		Btu/h	19000(3400~24900)	25000(7500~34000)
Cooling Power Input (Min~Max)		W	1500(180~2450)	2000(450~3050)
Heating Power Input (Min~Max)		W	1580(232~2500)	2090(450~3300)
Cooling Current Input		A	7.36/6.65	9.10
Heating Current Input		A	7.75/7.01	11.36
Rated Input		W	2500	3200
Rated Current		A	11.1	16.0
Air Flow Volume		CFM	589/512/465/371/330/283/	706/647/589/530/471/412/353
Dehumidifying Volume		Pint/h	3.8	5.3
EER		(Btu/h)/W	12	12
COP		(Btu/h)/W	12	12
SEER			21	21
HSPF			9.8	10
Application Area		m ²	23-34	32-50
Indoor Unit	Indoor Unit Model		GWH18TC-D3DNA1A/I	GWH24TD-D3DNA1A/I
	Indoor Unit Product Code		CB148N04000	CB148N03800
	Indoor Unit Fan Type		Cross-flow	Cross-flow
	Indoor Unit Fan Diameter Length (DXL)	inch	Φ3.9X30.1	Φ4.2X35.0
	Cooling Speed (Max~Min)	r/min	1250/1150/1050/950/850/750/650	1400/1300/1200/1100/1000/900/800
	Heating Speed (Max~Min)	r/min	1400/1200/1100/1000/900/800/700	1350/1350/1250/1150/1050/900/800
	Indoor Unit Fan Motor Power Output	W	25	30
	Indoor Unit Fan Motor RLA	A	0.1	/
	Indoor Unit Fan Motor Capacitor	μF	/	/
	Heater Power Input	W	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	inch	Φ0.3	Φ0.3
	Evaporator Row-fin Gap	inch	2-0.1	2-0.01
	Evaporator Coil Length (LXDXW)	inch	30.1X1X13.5	35.6X1X15
	Swing Motor Model		MP28VC/MP35DA/MP24AA	MP35CJ/MP24HB/MP24HC
	Swing Motor Power Output	W	2/2.5/1.5	2.5/1.5/1.5
	Fuse Current	A	/	/
	Sound Pressure Level (Max~Min)	dB (A)	51/48/45/43/39/36/33	52/49/47/45/43/41/38
	Sound Power Level (Max~Min)	dB (A)	61/58/55/53/49/46/43	62/59/57/55/53/51/48
	Dimension (WXHXD)	inch	41.2X13.6X9.2	46.4X12.8X10.4
	Dimension of Carton Box (LXWXH)	inch	43X15.5X12.8	49.3X16.2X13.7
	Dimension of Package (LXWXH)	inch	43.2X15.6X13.4	49.5X16.3X14.3
	Indoor Unit Net Weight	lb	30.9	39.7
	Indoor Unit Gross Weight	lb	44.1	52.9

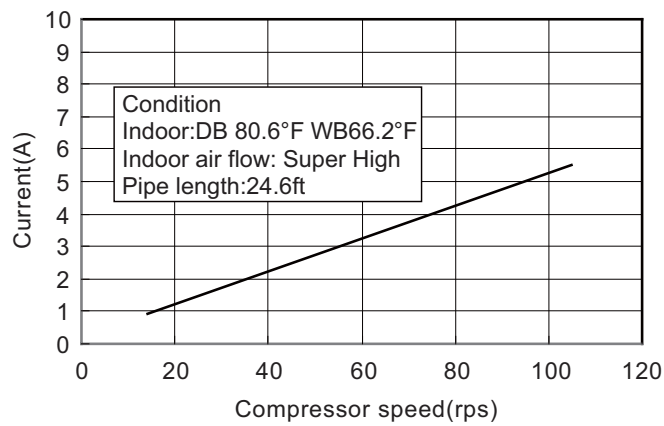
Outdoor Unit	Outdoor Unit Model		GWH18TC-D3DNA1A/O	GWH24TD-D3DNA1A/O
	Outdoor Unit Product Code		CB148W04000	CB148W03800
	Compressor Manufacturer		MITSUBISHI ELECTRIC (GUANGZHOU)COMP	ZHUHAI LANDA COMPRESSOR CO,LTD/Gree
	Compressor Model		SNB130FGYMC-L1	QXAS-D23zX090
	Compressor Oil		FV50S	FV50S
	Compressor Type		Rotary	Rotary
	Compressor LRA.	A	27	40
	Compressor RLA	A	8.4	12
	Compressor Power Input	W	1245	2450
	Compressor Overload Protector		1NT11L-6578	1NT11L-6233
	Throttling Method		Electron expansion valve	Electron expansion valve
	Set Temperature Range	°F	60.8~86	60.8~86
	Cooling Operation Ambient Temperature Range	°F	50~118.4	50~118.4
	Heating Operation Ambient Temperature Range	°F	5~75.2	5~75.2
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	inch	0.38	Φ0.31
	Condenser Rows-fin Gap	inch	2-0.06	3-0.06
	Condenser Coil Length (LXD _X W)	inch	32.0X1.7X26.0	37.5X2.25X30
	Outdoor Unit Fan Motor Speed	rpm	700	780/390
	Outdoor Unit Fan Motor Power Output	W	60	90
	Outdoor Unit Fan Motor RLA	A	0.28A	/
	Outdoor Unit Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	CFM	1883.2	2354
	Outdoor Unit Fan Type		Axial-flow	Axial-flow
	Outdoor Unit Fan Diameter	inch	Φ20.5	Φ21.7
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	1.2
	Sound Pressure Level (H/M/L)	dB (A)	56/-/-	56/-/-
	Sound Power Level (H/M/L)	dB (A)	66/-/-	66/-/-
	Dimension (WXH _X D)	inch	37.6X27.6X15.6	38.6X31.1X16.8
	Dimension of Carton Box (LXWXH)	inch	40.4X17.9X28.9	42.7X19.1X33.1
	Dimension of Package (LXWXH)	inch	40.5X18.0X29.5	42.8X19.2X33.7
	Outdoor Unit Net Weight	lb	110.3	154.3
	Outdoor Unit Gross Weight	lb	116.9	165.3
	Refrigerant		R410A	R410A
	Refrigerant Charge	oz	56.5	88.2
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft.	0.5	0.5
	Outer Diameter Liquid Pipe	inch	1/4	1/4
	Outer Diameter Gas Pipe	inch	5/8	5/8
	Max Distance Height	ft	32.8	32.8
	Max Distance Length	ft	82.0	82.0

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

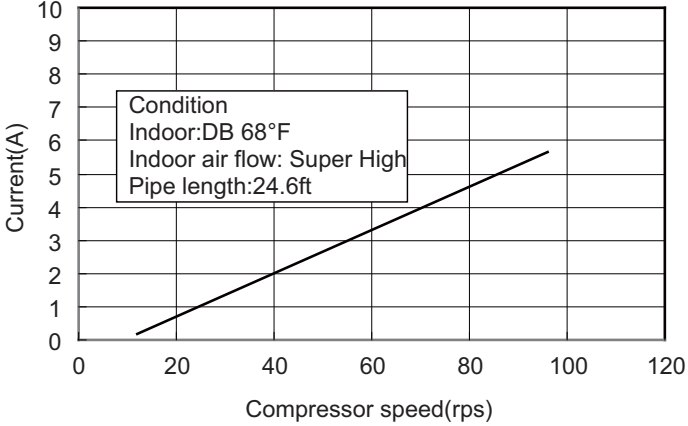
2.2 Operation Characteristic Curve

09K

Cooling

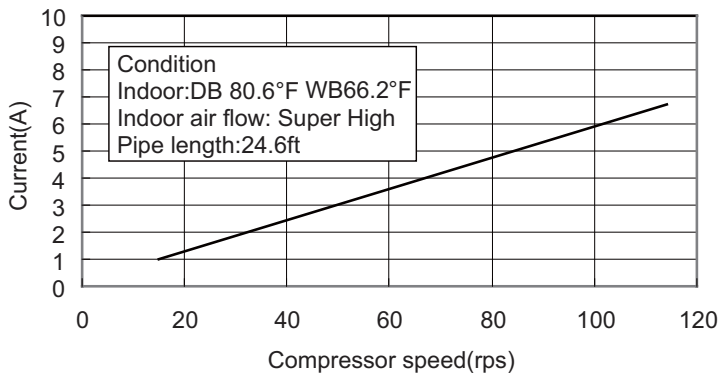


Heating

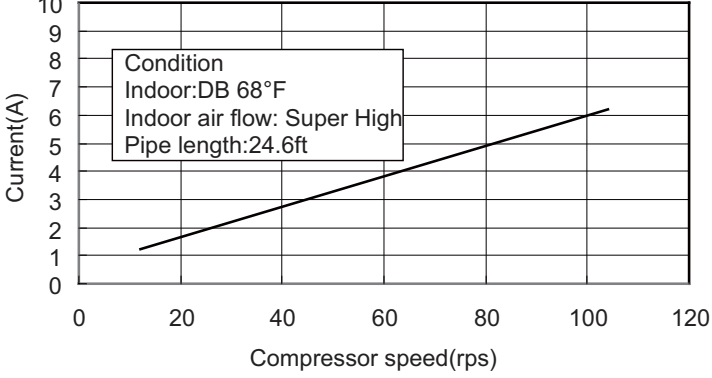


12K

Cooling

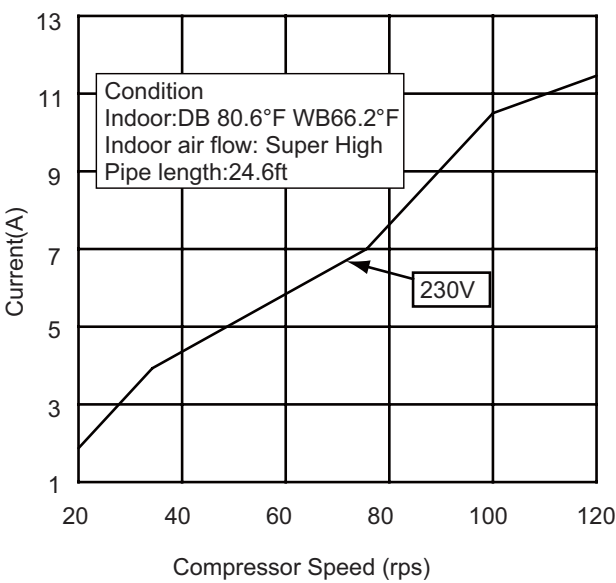


Heating

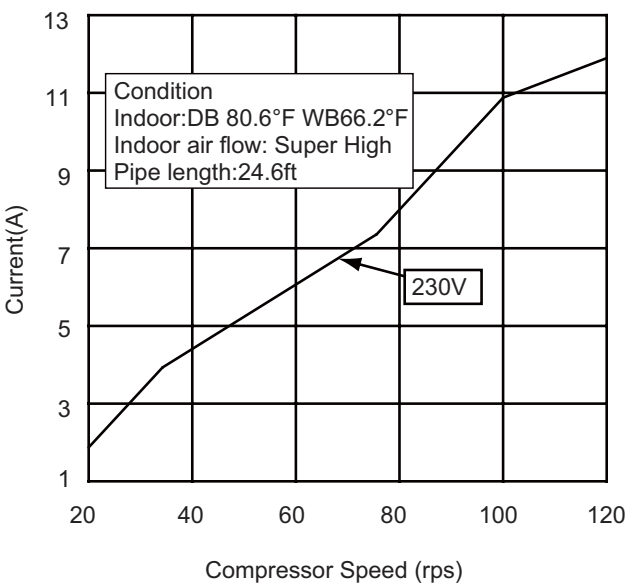


18/24K

Cooling



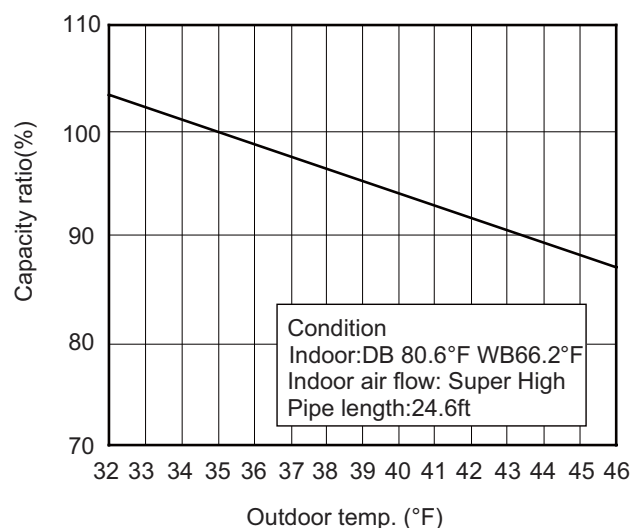
Heating



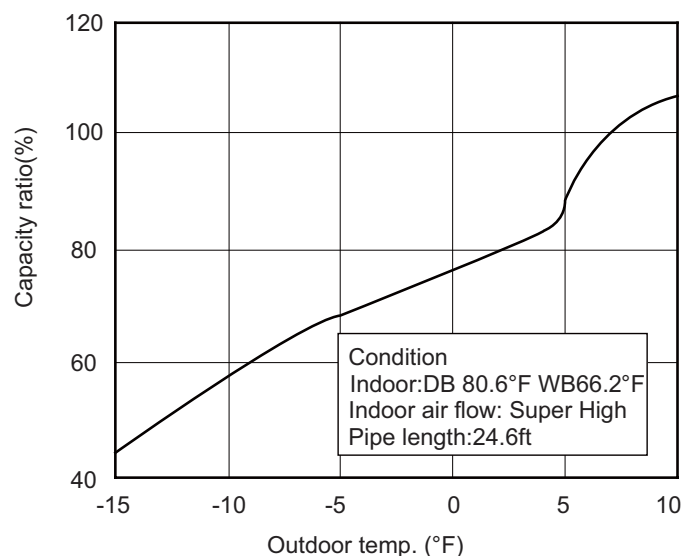
2.3 Capacity Variation Ratio According to Temperature

09/12K

Cooling

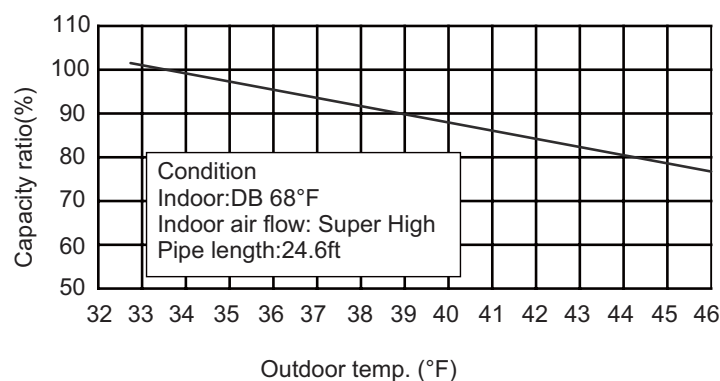


Heating

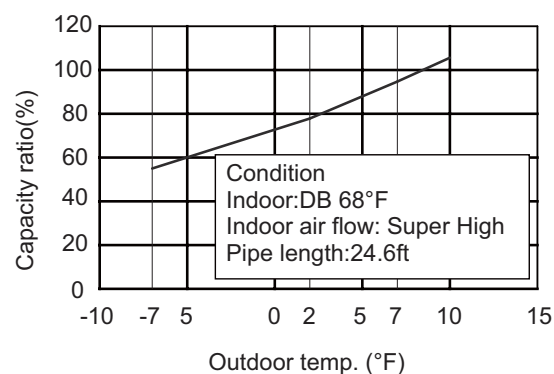


18/24K

Cooling



Heating



2.4 Operation Data

Cooling

Temperature condition (°F)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor frequency (rps)
Indoor	Outdoor			T1 (°F)	T2 (°F)			
80.6/66.2	95/75.2	09K	0.93	57.2	98.6	Turbo	High	46
		12K	1.05	59	98.6	Turbo	High	70
		18/24K	0.9 to 1.1	46.4~51.8 to 51.8~57.2	167~181.4 to 98.6~118.4	Turbo	High	75

Heating

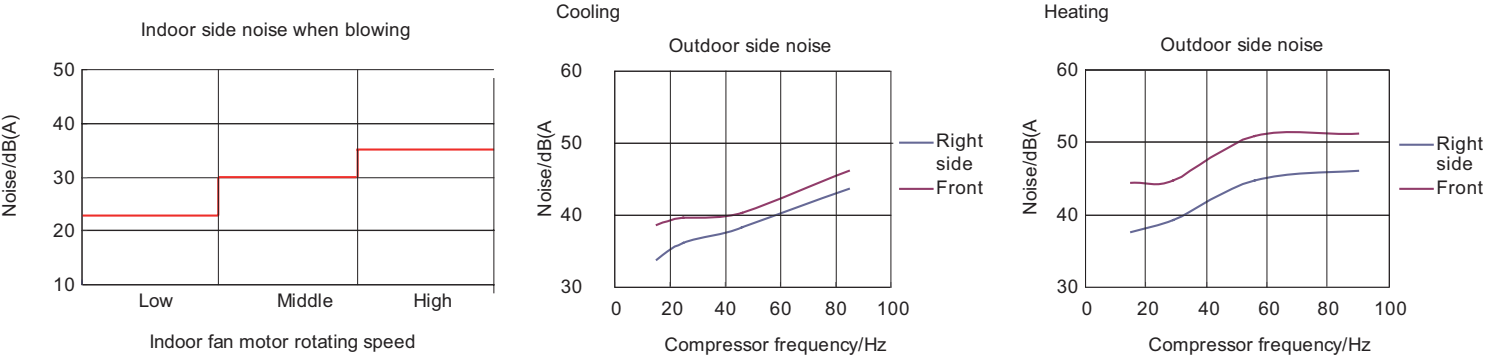
Temperature condition (°F)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor frequency (rps)
Indoor	Outdoor			T1 (°F)	T2 (°F)			
70/60	47/43	09K	2.77	113	41	Turbo	High	56
		12K	2.62	107.6	41	Turbo	High	73
68/59	44.6/42.8	18/24K	2.2 to 2.4	167~181.4 to 98.6~113	33.8~37.4 to 35.6~42.8	Turbo	High	75

NOTES :

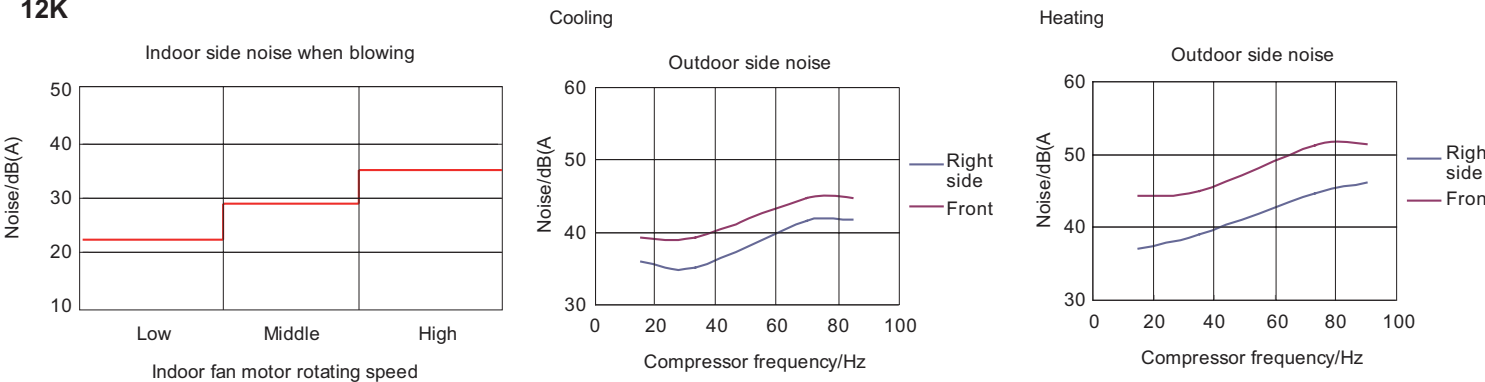
- (1) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent. (Thermistor thermometer)
- (2) Connecting piping condition : 24.6 ft
- (3) P: pressure of air pipe connected to the indoor and outdoor units (gas valve side)
 - T1: Inlet and outlet temperature for evaporator
 - T2: Inlet and outlet temperature for condenser

2.5 Noise Criteria Curve Tables for Both Models

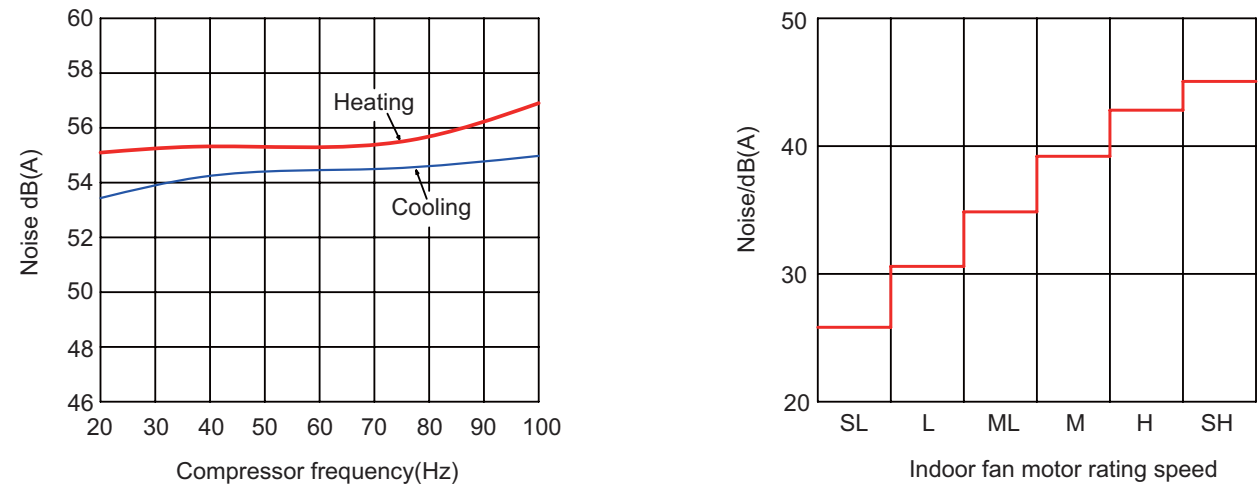
09K



12K

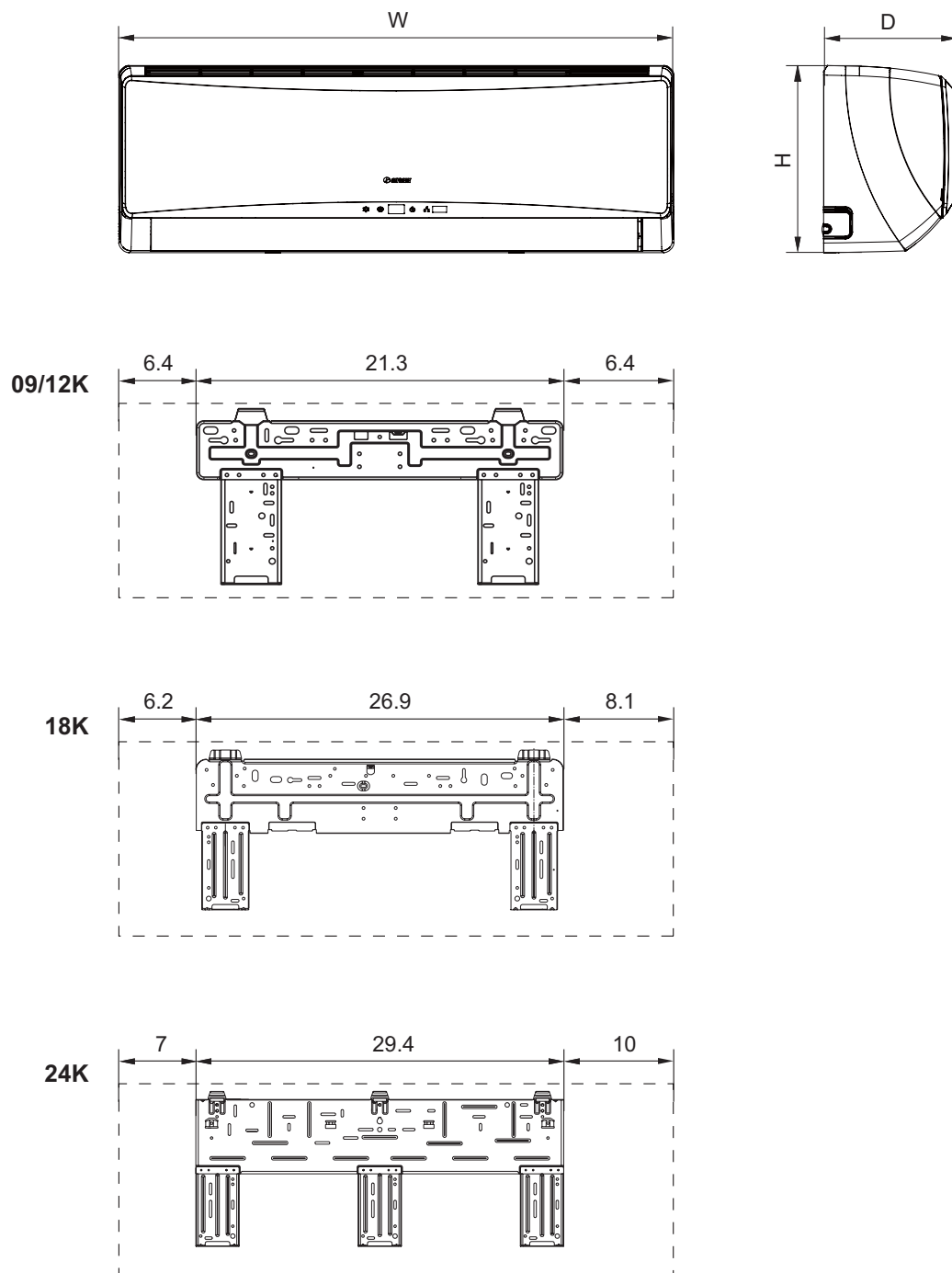


18/24K



3. Construction Views

3.1 Indoor Unit

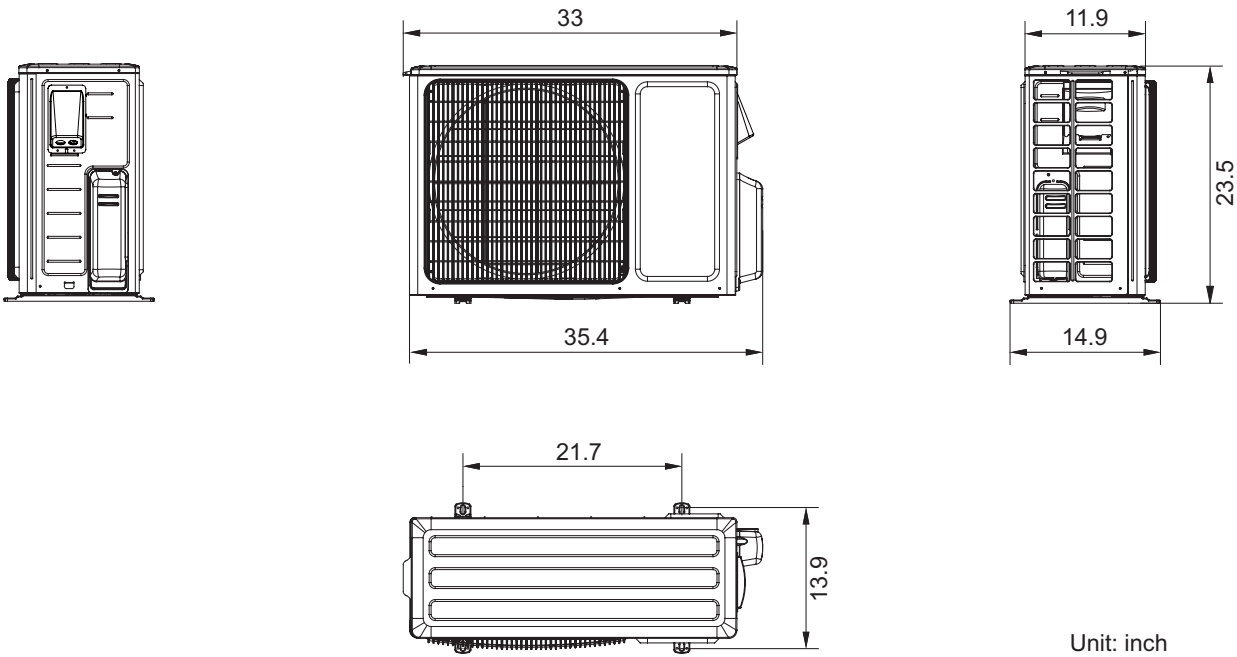


Unit: inch

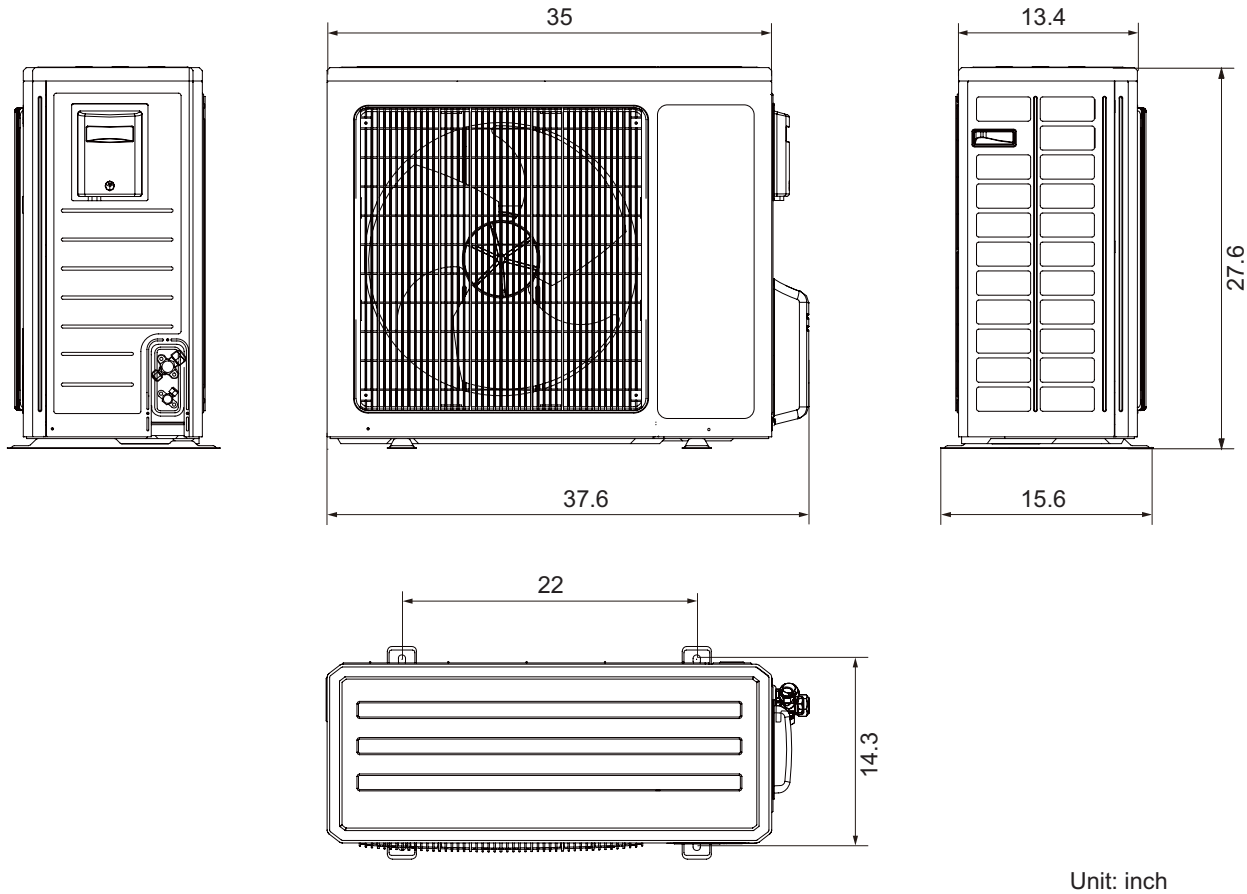
Model	W	H	D
09/12K	34.1	11.5	8.2
18K	41.2	13.6	9.2
24K	46.4	12.8	10.4

3.2 Outdoor Unit

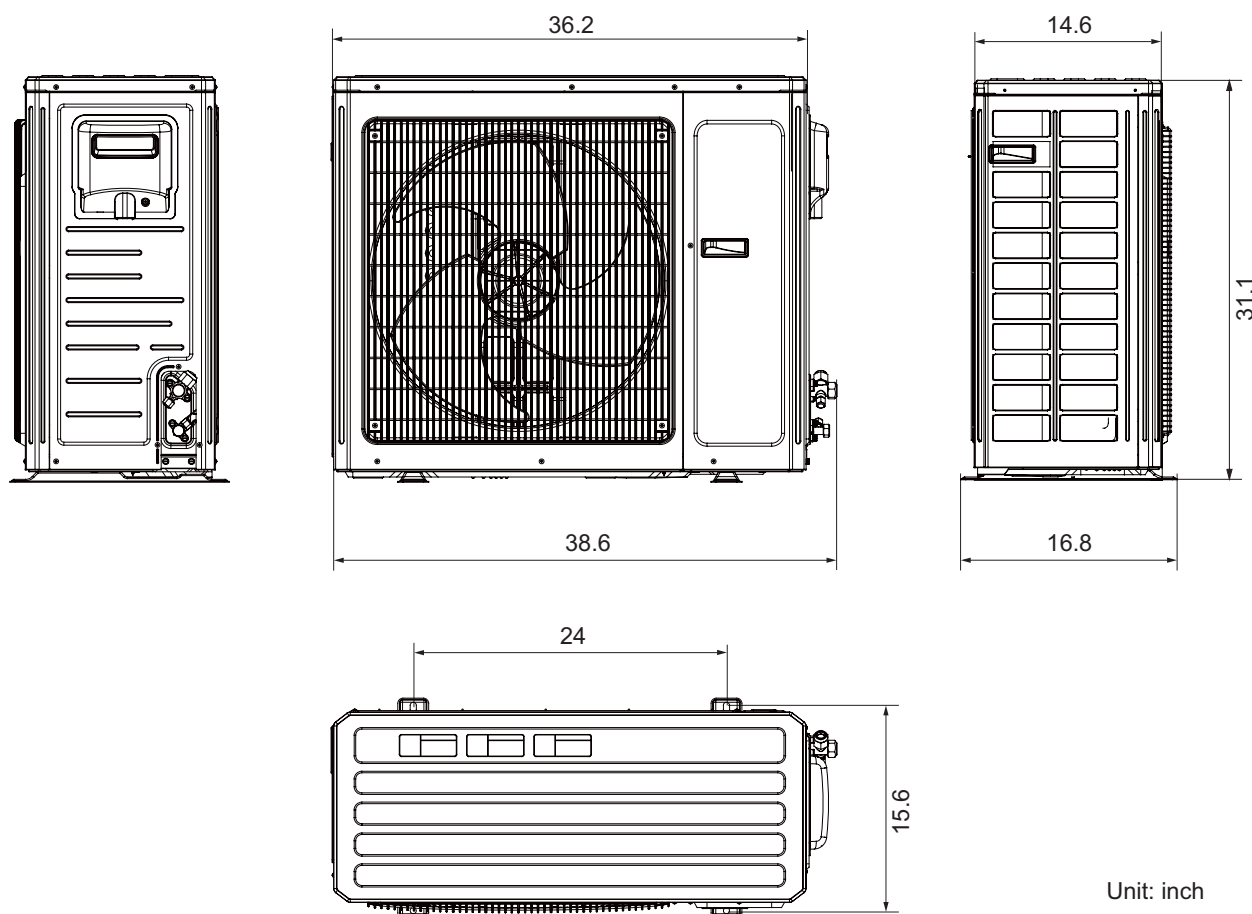
09/12K



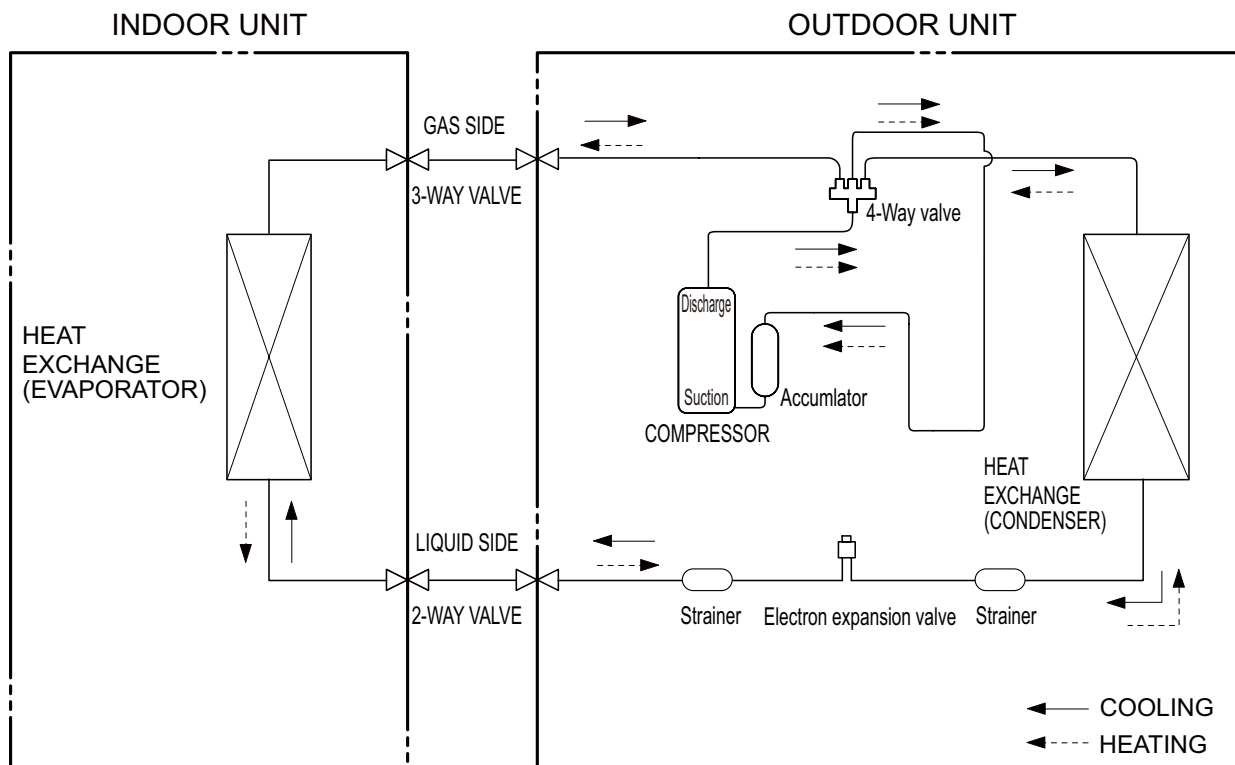
18K



24K



4. Refrigerant System Diagram



Refrigerant pipe diameter

Liquid : 1/4" (0.24 inch)

Gas : 1/2" (0.47 inch)(09/12K)

Gas : 5/8" (0.63 inch)(18/24K)

5. Schematic Diagram

5.1 Electrical Data

Meaning of marks

● Indoor Unit

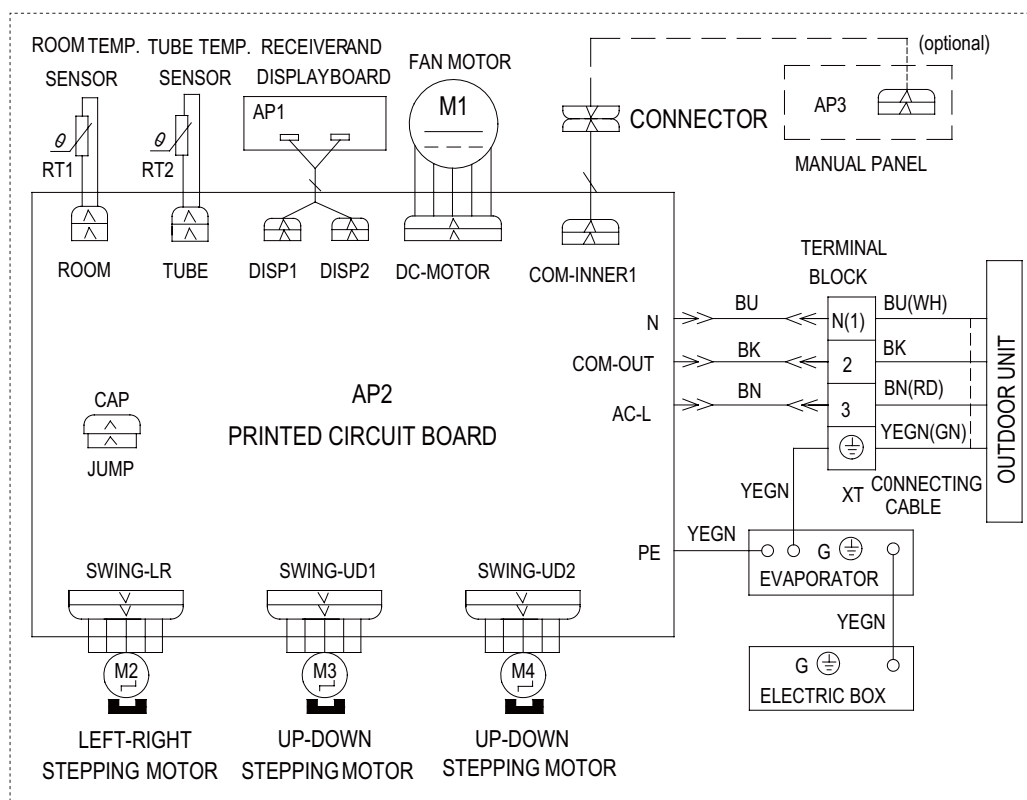
Symbol	Color symbol	Symbol	Color symbol	Symbol	Part name
BU	BLUE	BN	BROWN	\oplus	PROTECTIVE EARTH
YE	YELLOW	GN	GREEN	/	/
RD	RED	BK	BLACK	/	/
YEGN	YELLOW GREEN	/	/	/	/

● Outdoor Unit

Symbol	Part name	Symbol	Color symbol	Symbol	Color symbol
C1	CBB61	BN	BROWN	WH	WHITE
C2	CBB65	BU	BLUE	YE	YELLOW
SAT	OVERLOAD	BK	BLACK	RD	RED
COMP	COMPRESSOR	OG	ORANGE	YEGN	YELLOW GREEN
\oplus	PROTECTIVE EARTH	WH	WHITE	/	/

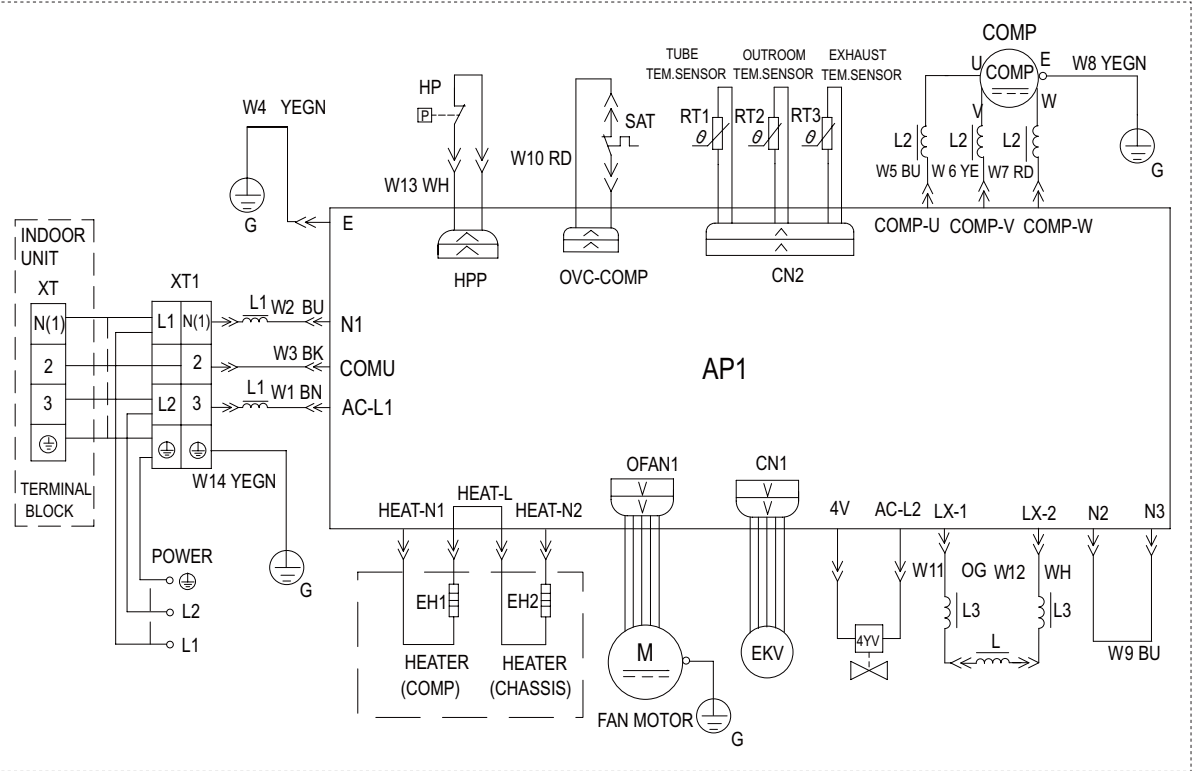
5.2 Electrical Wiring

● Indoor Unit

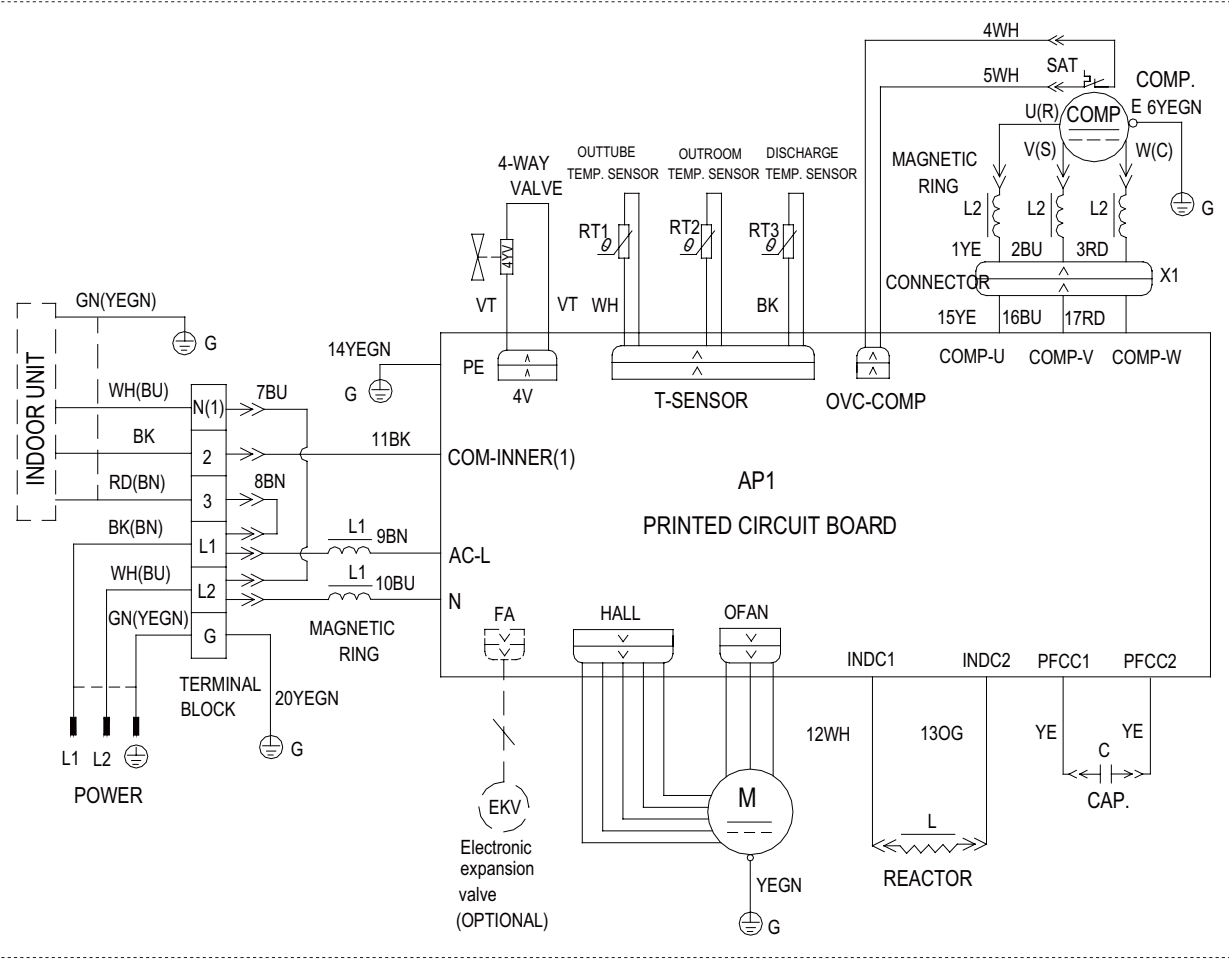


● Outdoor Unit

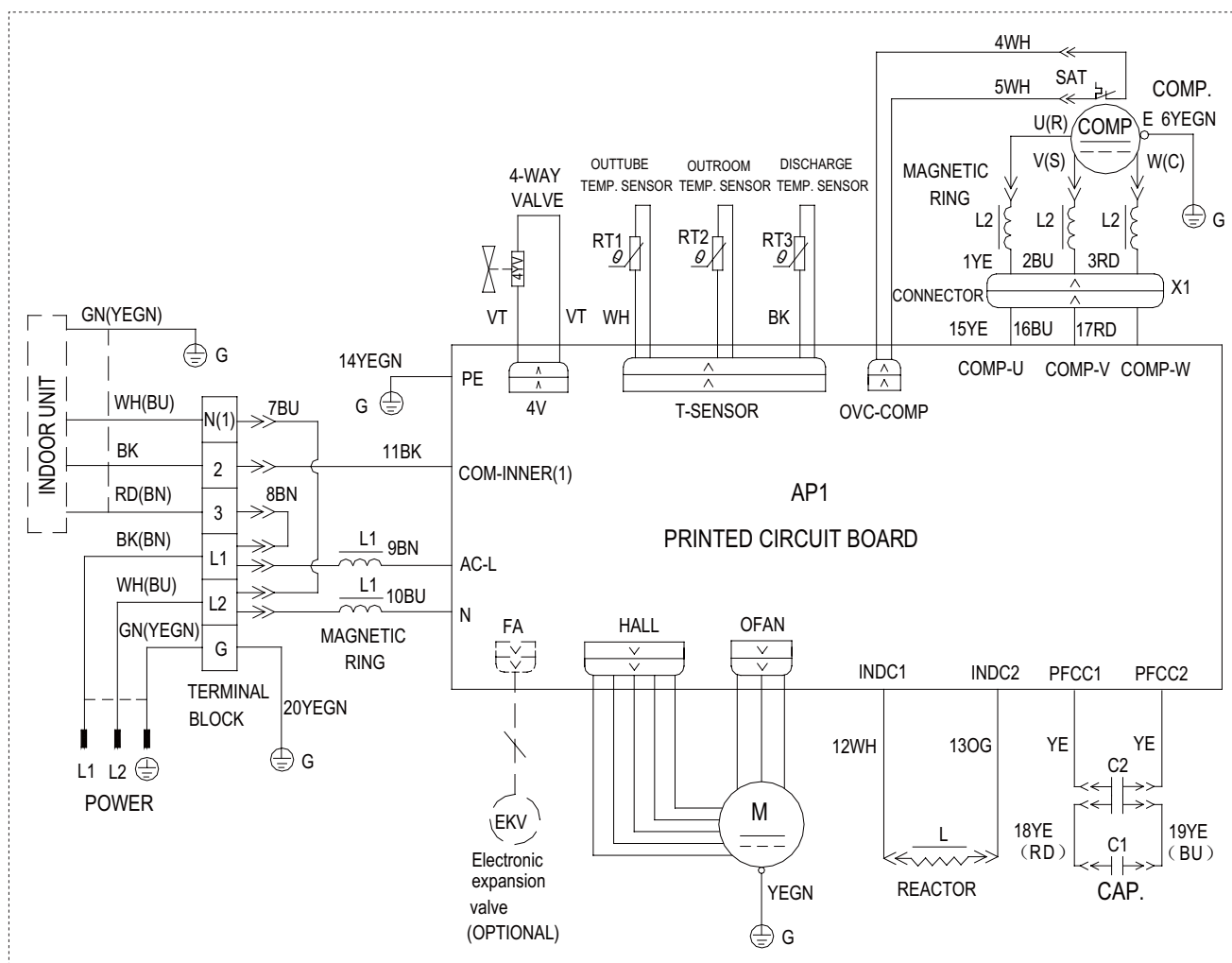
09/12K



18K



24K

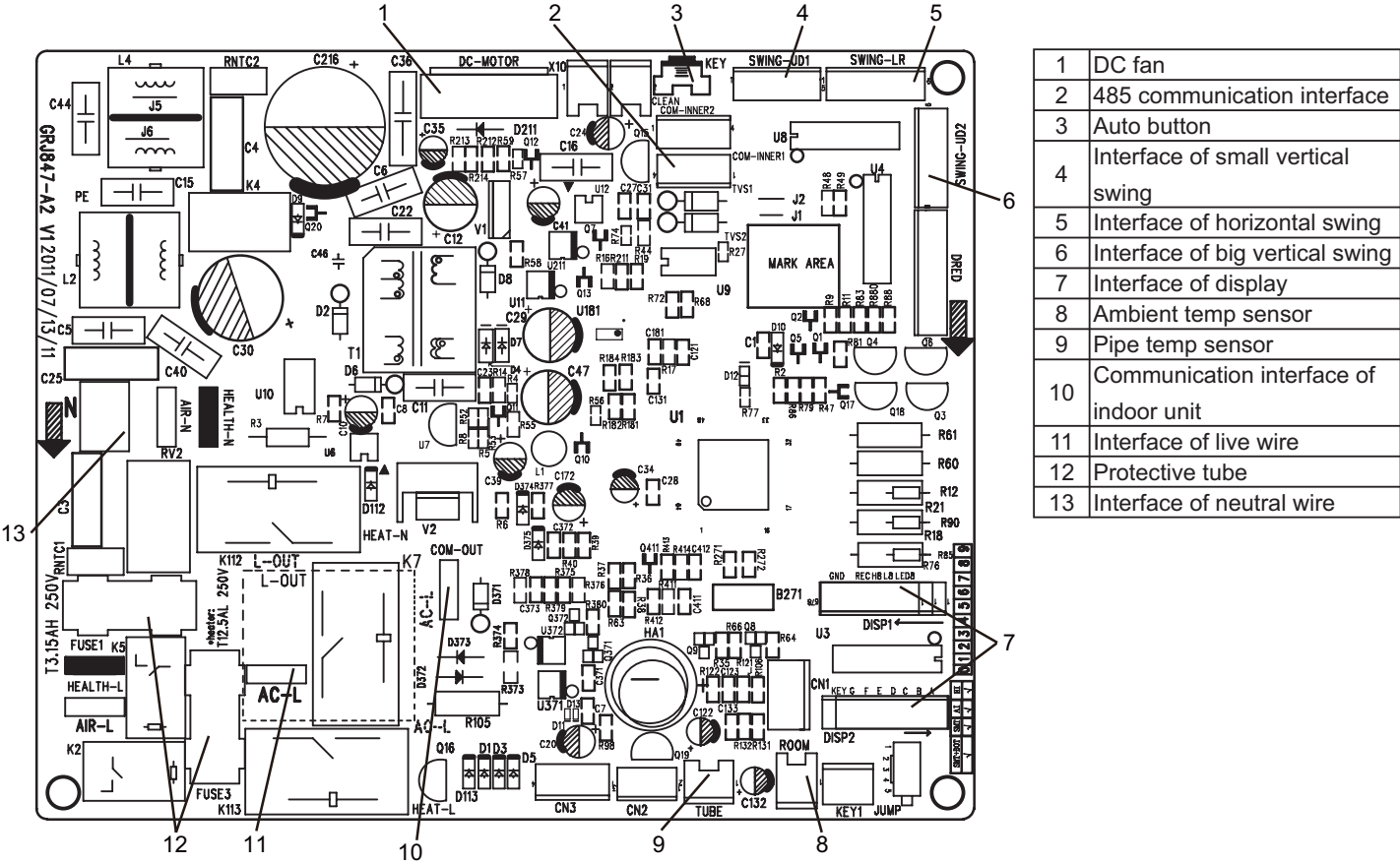


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

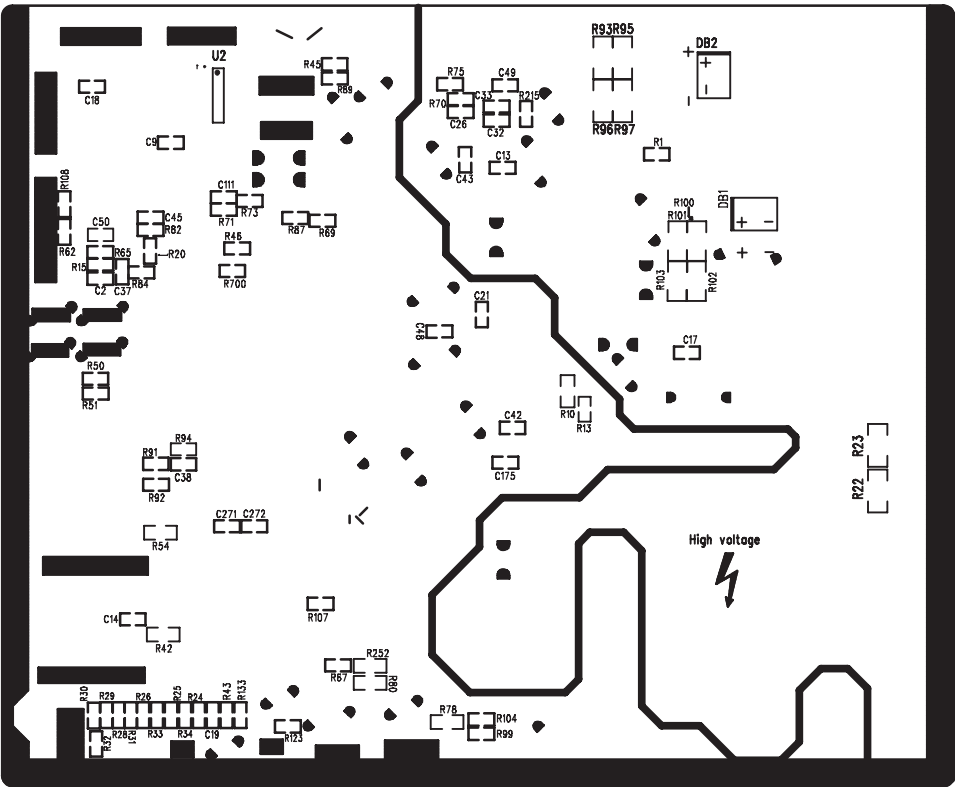
5.3 Printed Circuit Board

Indoor unit

TOP VIEW



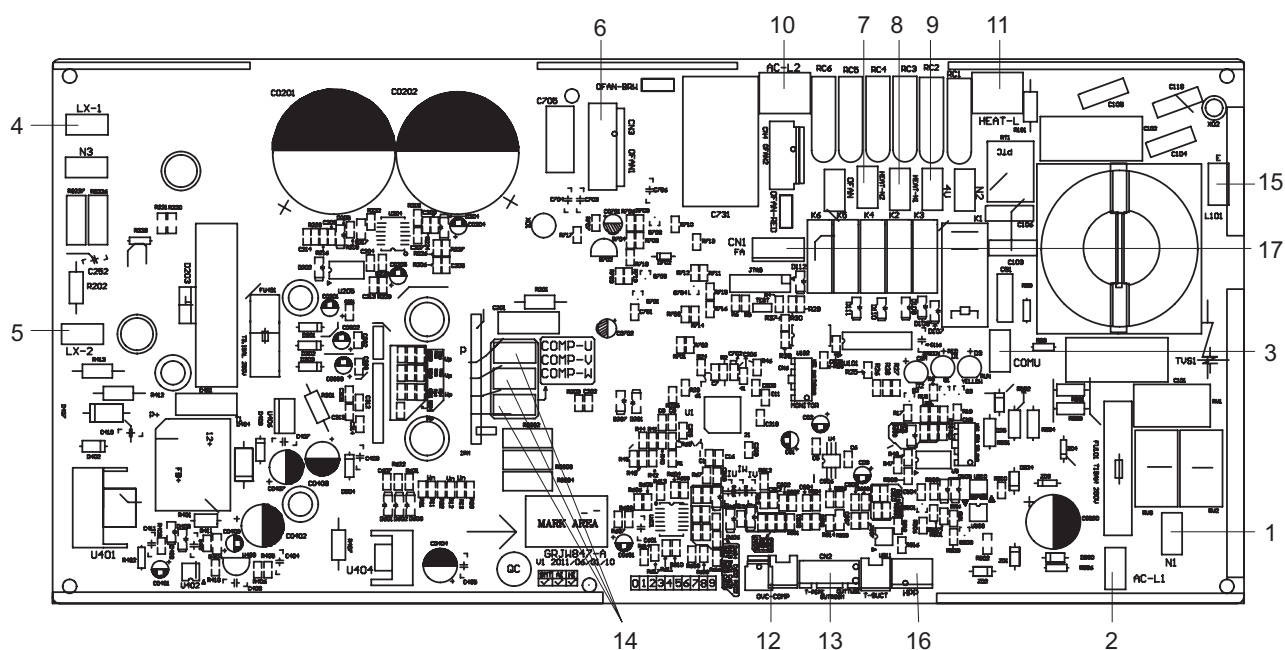
BOTTOM VIEW



•Outdoor unit

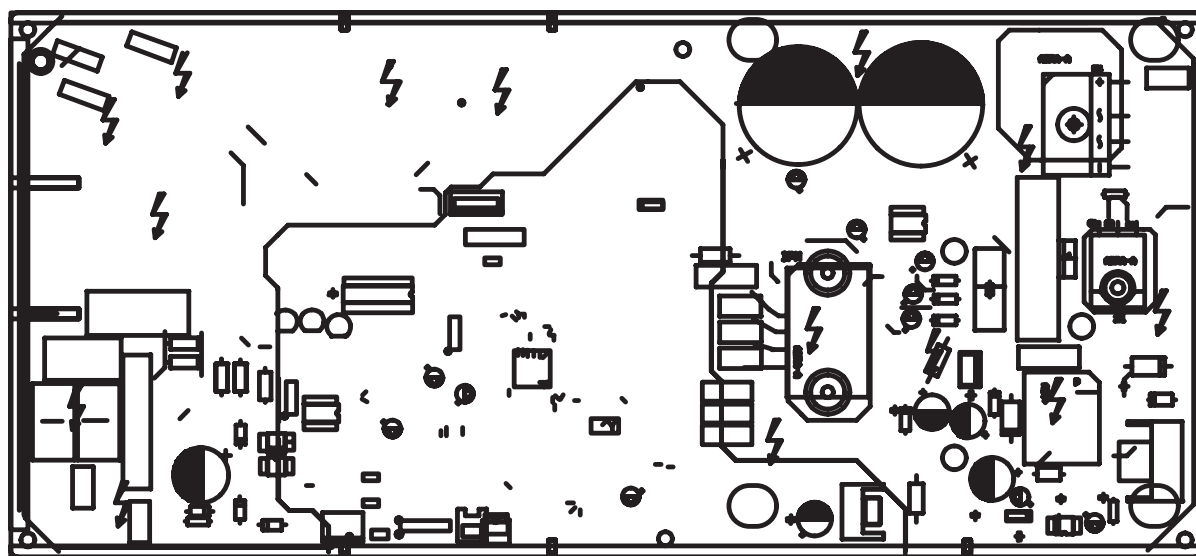
09/12K

• TOP VIEW

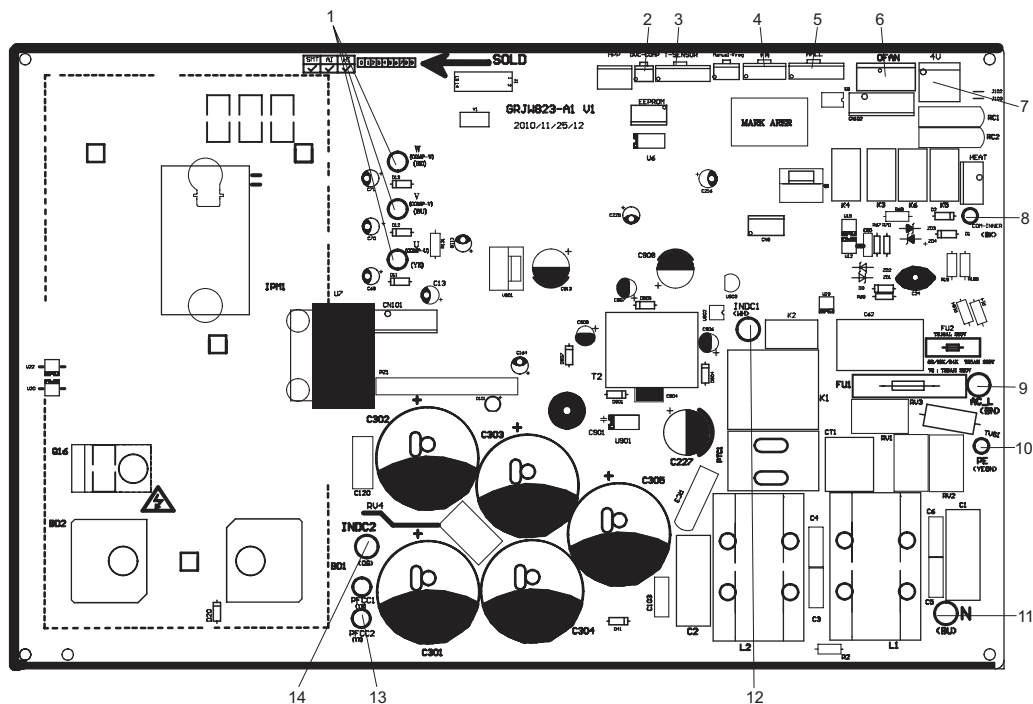


1	Input of neutral wire of power	4	Interface 1 of electric reactor	7	Neutral wire of electric heater of chassis	10	Live wire of 4-way valve	13	Temp sensor
2	Input of live wire of power	5	Interface 2 of electric reactor	8	Neutral wire of electric heater of compressor	11	Live wire of electric heater	14	U, V, W three phases of compressor
3	Communication interface	6	Interface of fan	9	Neutral wire of 4-way valve	12	Input of overload	15	Input of ground wire of power
						16	pressure switch input	17	Electron expansion valve

• BOTTOM VIEW

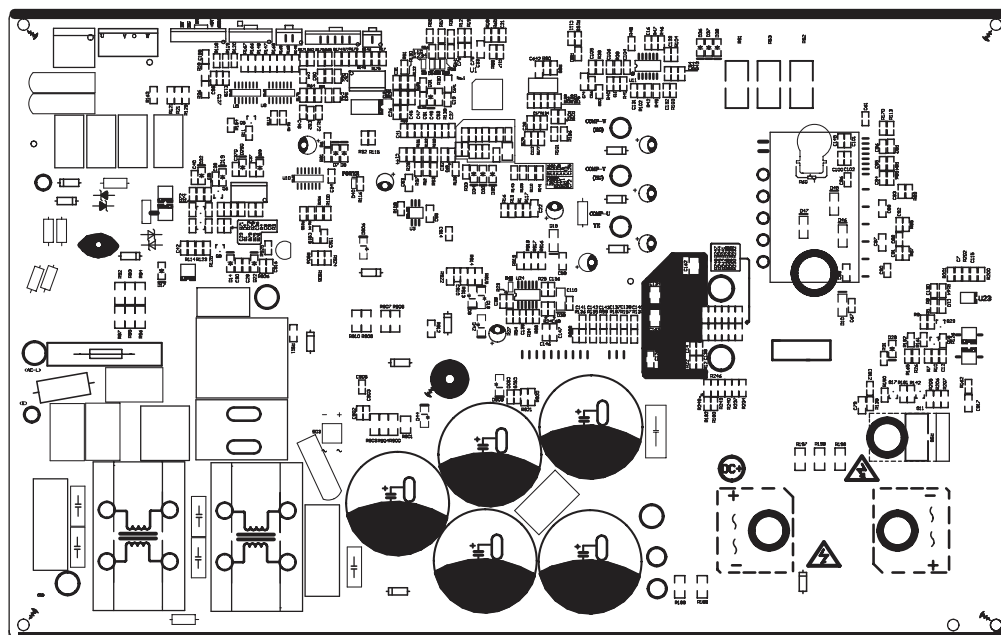


- TOP VIEW



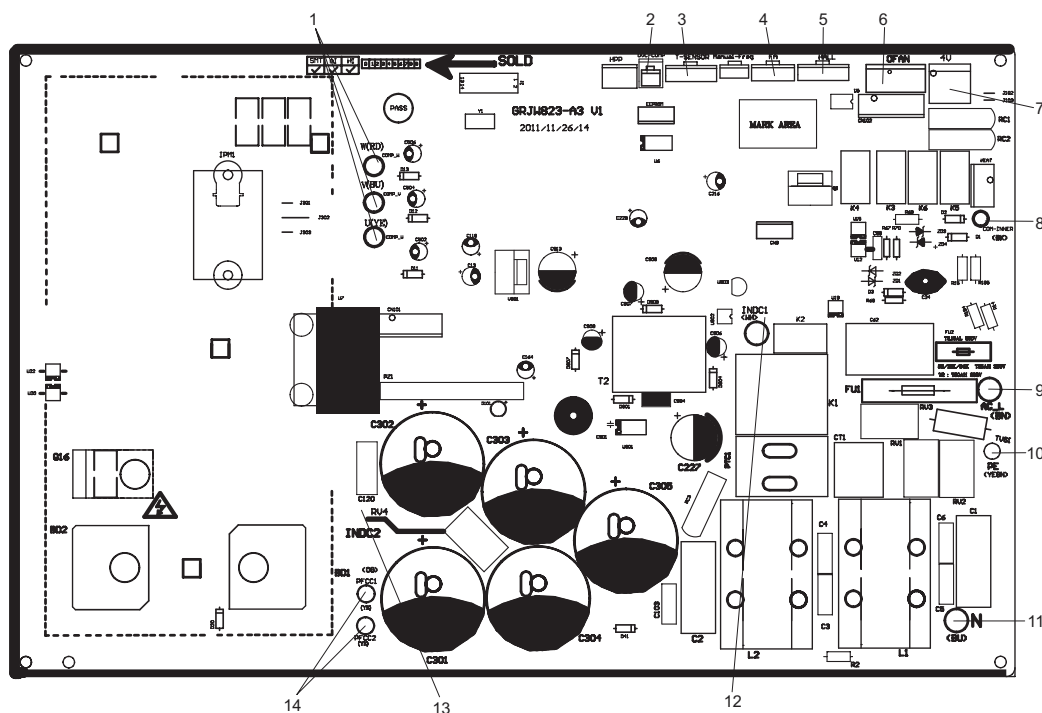
1	Compressor interface	2	Compressor overload protector	3	Temperature sensor	4	Electric expansion valve
5	Fan HALL interface	6	Outdoor fan	7	4-way valve	8	Communication interface with indoor unit
9	Live wire	10	Earthing wire	11	Neutral wire	12	Reactor interface 1
13	PFC capacitor interface 1	14	Reactor interface 2				

- BOTTOM VIEW



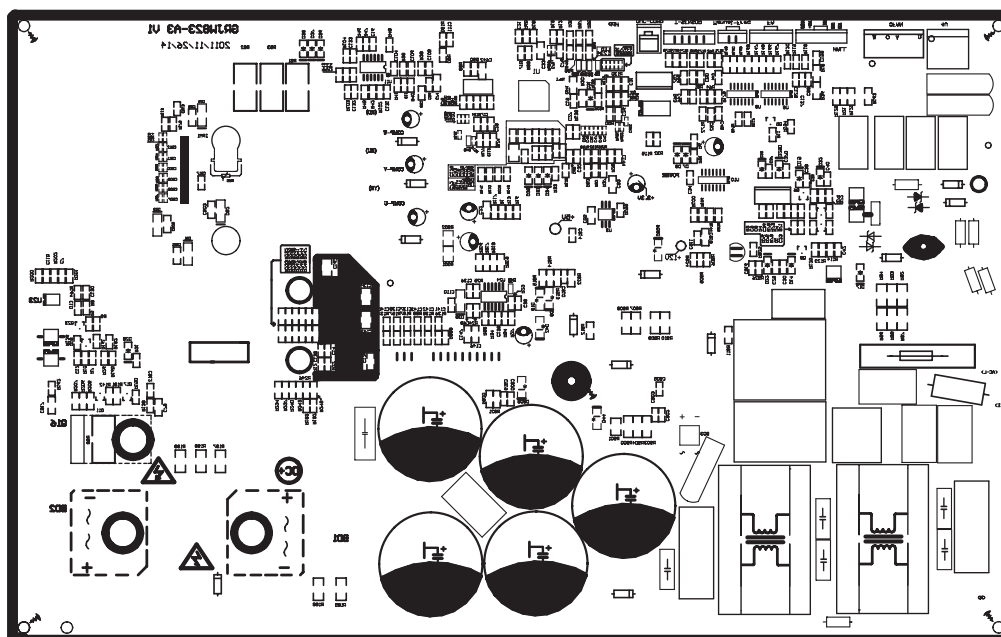
24K

• TOP VIEW



No.	Name	No.	Name	No.	Name	No.	Name
1	Connecting wire of compressor	5	HALL terminal	9	Live wire of power supply	13	Wire 2 of electric reactor
2	Interface of overload of compressor	6	Interface of outdoor fan	10	Ground wire	14	Wire of PFC capacitor
3	Terminal of temp sensor	7	Interface of 4-way valve	11	Neutral wire of power supply		
4	Terminal of electronic expansion valve	8	Communication wire to indoor unit	12	Wire 1 of electric reactor		

• BOTTOM VIEW



6. Function and Control

6.1 Remote Controller Description

Signal transmitter



Remote control

ON/OFF

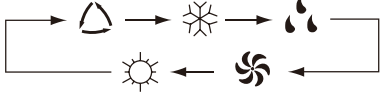
ON/OFF button

- Press this button, the unit will be turned on, press it once more, the unit will be turned off. Sleep function will be canceled, while unit off.

MODE

MODE button

- Press this button, Auto, Cool,Dry, Fan, Heat mode can be selected circularly. Auto mode is default while power on. Under Auto mode,the temperature will not be displayed; Under Heat mode, the initial value is 28℃ (82°F);Under other modes, the initial value is 25℃ (77°F) .



AUTO

COOL

DRY

FAN

HEAT

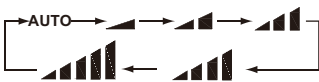
(only for cooling and heating unit)

As for cooling only unit, it won't have any action when it receives the signal of heating operation.)

FAN

FAN button

- Press this button, Auto, Low , Medium-low , Medium, Medium-high, High speed can be circularly selected. After powered on, Auto fan speed is default. Under DRY mode, Low fan speed only can be set up.



Low fan

Medium-low fan

Medium fan

Medium-high fan

High fan

Note: It's Low fan speed under Dry mode.

TEMP

TEMP button

- Press this button, can set up and select: setting temperature (displaying the room), indoor ambient temperature (displaying indoor temperature), outdoor ambient temperature (displaying outdoor temperature),if there no outdoor ambient temperature displaying berequired that will keep original displaystatus. and circulate like this. No signal displayed. Remark: When operating this button,the setting temperature is displayed all the time on the wireless remotecontrol. (There is no this function for this unit. If press this key, the main unit will click, but it also runs under original status.)

Warm tips: When operating buttons on the cover please make sure the cover is closed completely.

Note: Besure that there are no obstructions between receiver and remote controoler;
Don't drop or throw the remote control; **Don't let any liquid in the remote control and**
put the remote control directly under the sunlight or any place where is very hot.



Remote control

CLOCK**CLOCK button**

- Press this button, the clock can be set up, signal ☉ blink and display. Within 5 seconds, the value can be adjusted by pressing + or - button, if continuously press this button for 2 seconds above, in every 0.5 seconds, the value on ten place of Minute will be increased 1. During blinking, repress the Clock button or Confirm button, signal ☉ will be constantly displayed and it denotes the setting succeeded. After powered on, 12:00 is defaulted to display and signal ☉ will be displayed. If there is signal ☉ be displayed that denotes the current time value is Clock value, otherwise is Timer value.

LIGHT**LIGHT button**

- Press this button at unit On or Off status, Light On and Light Off can be set up. After powered on, Light On is defaulted.

TURBO**TURBO button**

- Under Cool or Heat mode, press this button can turn on or turn off the Turbo function. After the Turbo function turned on, the signal of Turbo will display. The signal will be automatically cancelled if changing the mode or fan speed.

X-FAN**X-FAN button**

- Pressing X -FAN button in COOL or DRY mode, the icon ⚙ is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

+**+ button**

- Presetting temperature can be increased. Press this button, the temperature can be set up, continuously press this button and hold for two seconds, the relative contents can quickly change, until unhold this button and send the order that the (°F) signal will be displayed all the time. The temperature adjustment is unavailable under the Auto mode, but the order can be sent by if pressing this button. Temperature of Celsius degree setting: 16-30 ; for Fahrenheit degree setting: 61-86.

-**- button**

- Presetting temperature can be decreased. Press this button, the temperature can be set up, continuously press this button and hold for two seconds, the relative contents can quickly change, until unhold this button and send the order that the °C (°F) signal will be displayed all the time. The temperature adjustment is unavailable under the Auto mode, but the order can be sent by if pressing this button.

QUIET**QUIET button**

- Press this button, the Quiet status is under the Auto Quiet mode (display "🔇" and "Auto" signal) and Quiet mode (display "🔇" signal) and Quiet OFF (there is no signal of "🔇" displayed), after powered on, the Quiet OFF is defaulted. Note: the Quiet function cannot be set up in Fan and Dry mode; Under the Quiet mode (Display "🔇" signal), the fan speed is not available.

This wireless remote control is universal, and it could be used for many units, some buttons of this control which are not available to this unit will not be described below.

Remote control



SWING UP AND DOWN BUTTON

- Press this button to set swing angle, which circularly changes as below:



This remote controller is universal. If it receives three kinds of following status, the swing angle will remain original.



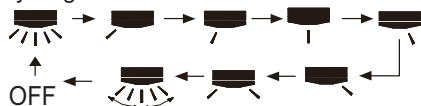
If guide louver is stopped when it is swinging up and down, it will remain its present position.

indicates guide louver swings back and forth in the five places, as shown in the figure.



SWING LEFT AND RIGHT BUTTON

- Press this button to set left & right swing angle cycling as below:



TIMER OFF

TIMER OFF button

- One press this key to enter into TIMER OFF setup, in which case the TIMER OFF icon will blink. The method of setting is the same as for TIMER ON.

TIMER ON

TIMER ON BUTTON

- Timer On setting: Signal "ON" will blink and display, signal will conceal, the numerical section will become the timer on setting status. During 5 seconds blink, by pressing + or - button to adjust the time value of numerical section, every press of that button, the value will be increased or decreased 1 minute. Hold pressing + or - button, 2 seconds later, it quickly change, the way of change is: During the initial 2.5 seconds, ten numbers change in the one place of minute, then the one place is constant, ten numbers change in the ten place of minute at 2.5 seconds speed and carry. During 5s blink, press the Timer button, the timer setting succeeds. The Timer On has been set up, repress the timer button, the Timer On will be canceled. Before setting the Timer, please adjust the Clock to the current actual time.

I FEEL

I FEEL BUTTON




- Press this button once, to turn on the I FEEL function, then the figure of "I FEEL" will be displayed, after every press of other function button, every 200ms to send I FEEL once, after this function started, the remote control will send temperature to the main unit in every 10 minutes. When repress this button, this function will be turned off.



HEALTHY AND SCAVENGING BUTTON

- Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays " ". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays " " and " ". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display " ". Press this button again to repeat the operation above.



- Press this button, can select Sleep 1 (), Sleep 2 (), Sleep 3 () and cancel the Sleep, circulate between these, after electrified, Sleep Cancel is defaulted.
- Sleep 1 is Sleep mode 1, in Cool, Dehumidify modes: sleep status after run for one hour, the main unit setting temperature will increase 1°F~2°F, 2 hours, setting temperature increased 3°F~4°F, the unit will run at this setting temperature; In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1°F~2°F, 2 hours, setting temperature will decrease 3°F~4°F, then the unit will run at this setting temperature.
- Sleep 2 is sleep mode 2, that is air conditioner will run according to the presetting a group of sleep temperature curve.
In Cool mode:
 - (1) When setting the initial temperature 61°F~74°F, after turned on Sleep function, the temperature will be increased 1°F~2°F in every hour, after 5°F~6°F the temperature will be maintained, after 7 hours, the temperature will be decreased 1°F~2°F, after that the unit will keep on running under this temperature;
 - (2) When setting the initial temperature 75°F~81°F, after turned on Sleep function, the temperature will be increased 1°F~2°F in every hour, after 3°F~4°F the temperature will be maintained, after 7 hours, the temperature will be decreased 1°F~2°F, after that the unit will keep on running under this temperature;
 - (3) When setting the initial temperature 82°F~85°F, after turned on Sleep function, the temperature will be increased 1°F~2°F in every hour, after 1°F~2°F the temperature will be maintained, after 7 hours, the temperature will be decreased 1°F~2°F, after that the unit will keep on running under this temperature;
 - (4) When setting the initial temperature 86°F, under this temperature setting, after 7 hours, the temperature will be decreased 1°F~2°F, after that the unit will keep on running under this temperature;
 In Heat mode:
 - (1) Under the initial presetting temperature 61°F, it will run under this setting temperature all along.
 - (2) Under the initial presetting temperature 62°F~68°F, after Sleep function started up, the temperature will decrease 1°F~2°F, in every hour, after 1°F~2°F, decreased, this temperature will be maintained.



(3) Under the initial presetting temperature $69^{\circ}\text{F} \sim 81^{\circ}\text{F}$, after Sleep function started up, the temperature will decrease $1^{\circ}\text{F} \sim 2^{\circ}\text{F}$ in every hour, after $1^{\circ}\text{F} \sim 2^{\circ}\text{F}$ decreased, this temperature will be maintained.

(4) Under the initial presetting temperature $82^{\circ}\text{F} \sim 86^{\circ}\text{F}$, after Sleep function started up, the temperature will decrease $1^{\circ}\text{F} \sim 2^{\circ}\text{F}$ in every hour, after $5^{\circ}\text{F} \sim 6^{\circ}\text{F}$ decreased, this temperature will be maintained.

• Sleep 3- the sleep curve setting under Sleep mode by DIY:

(1) Under Sleep 3 mode, press "Turbo" button for a long time, remote control enters into user individuation sleep setting status, at this time, the time of remote control will display "1hour", the setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink (The first entering will display according to the initial curve setting value of original factory);

(2) Adjust "+" and "-" button, could change the corresponding setting temperature, after adjusted, press "Turbo" button for confirmation;

(3) At this time, 1hour will be automatically increased at the timer position on the remote control, (that are "2 hours" or "3 hours" or "8 hours"), the place of setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink;



(4) Repeat the above step (2) ~ (3) operation, until 8hours temperature setting finished, sleep curve setting finished, at this time, the remote control will resume the original timer display; temperature display will resume to original setting temperature.

• Sleep3 - the sleep curve setting under Sleep mode by DIY could be inquired:

The user could accord to sleep curve setting method to inquire the presetting sleep curve, enter into user individuation sleep setting status, but do not change the temperature, press "Turbo" button directly for confirmation.

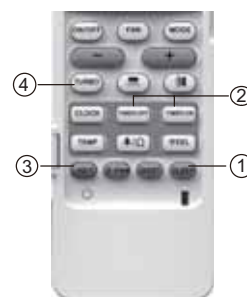
Note: In the above presetting or enquiry procedure, if continuously within 10s, there is no button pressed, the sleep curve setting status will be automatically quit and resume to display the original displaying. In the presetting or enquiry procedure, press "ON/OFF" button, "Mode" button, "Timer" button or "Sleep" button, the sleep curve setting or enquiry status will quit similarly.

Guide for operation- general operation

1. After powered on, press ON/OFF button, the unit will start to run.
(Note: When it is powered on, the guide louver of main unit will close automatically.)
2. Press MODE button, select desired running mode.
3. Pressing + or - button, to set the desired temperature (It is unnecessary to set the temp. at AUTO mode.)
4. Pressing FAN button, set fan speed, can select AUTO FAN, LOW, MEDIUM-LOW, MEDIUM, MEDIUM-HIGH and HIGH.
5. Pressing  and  button, to select the swing.

**Guide for operation- Optional operation**

1. Press SLEEP button, to set sleep.
2. Press TIMER ON and TIMER OFF button, can set the scheduled timer on or timer off.
3. Press LIGHT button, to control the on and off of the displaying part of the unit (This function may be not available for some units).
4. Press TURBO button, can realize the ON and OFF of TURBO function.

**Introduction for special function****★ About X-FAN function**

This function indicates that moisture on evaporator of indoor unit will be blowed after the unit is stopped to avoid mould.

1. Having set X-FAN function on: After turning off the unit by pressing ON/OFF button indoor fan will continue running for about 10 min. at low speed. In this period, press X-FAN button to stop indoor fan directly.
2. Having set X-FAN function off: After turning off the unit by pressing ON/OFF button, the complete unit will be off directly.




★ About AUTO RUN

When AUTO RUN mode is selected, the setting temperature will not be displayed on the LCD, the unit will be in accordance with the room temp. automatically to select the suitable running method and to make ambient comfortable.



★ About turbo function

If start this function, the unit will run at super-high fan speed to cool or heat quickly so that the ambient temp. approaches the preset temp. as soon as possible.



★ About lock

Press  and  buttons simultaneously to lock or unlock the keyboard. If the remote controller is locked, the icon  will be displayed on it, in which case, press any button, the mark will flicker for three times. If the keyboard is unlocked, the mark will disappear.

★ About swing up and down

1. Press swing up and down button continuously more than 2s, the main unit will swing back and forth from up to down, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
2. Under swing up and down mode, when the status is switched from off to , if press this button again 2s later,  status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

★ About swing left and right

1. Press swing left and right button continuously more than 2s, the main unit will swing back and forth from left to right, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
2. Under swing left and right mode, when the status is switched from off to , if press this button again 2s later,  status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

★ About switch between Fahrenheit and Centigrade

Under status of unit off, press MODE and - buttons simultaneously to switch and .

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

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

★ Combination of "TEMP" and "CLOCK" buttons : About 8 Heating Function


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

★ About Quiet function

If Auto Quiet mode has been selected, after the room temperature reached the setting temperature or 10mins later, the AC will immediately enter into the Quiet running status, at this time the fan speed is not adjustable.

★ About Sleep function

Under the Fan and Auto mode, the Sleep function cannot be set up, under Dehumidify mode, only Sleep 1 can be selected. Select and enter into any kind of Sleep mode, the Quiet function will be attached and started, different Quiet status could be optional and turned off.

1. Slightly to press the place with , along the arrowhead direction to push the back cover of wireless remote control. (As show in Fig 1.)

2. Take out the old batteries.

3. Insert two new AAA1.5V dry batteries, and pay attention to the polarity. (As show in Fig 2.)

4. Attach the back cover of wireless remote control.

NOTE:


- When changing the batteries, do not use the old or different batteries, otherwise, it can cause the malfunction of the wireless remote control.
- If the wireless remote control will not be used for along time, please take them out, and don't let the leakage liquid damage the wireless remote control.
- The operation should be in its receiving range.
- It should be placed where is 1m away from the TV set or stereo sound sets.
- If the remote control cannot operate normally, please take the batteries out, and then reinsert it 30s later; if it is also abnormal, please replace the batteries.
- If the main unit needs to be remote controlled, please aim remote controller at the receiver of main unit in order to improve the receiving sensitivity of the main unit.
- When the remote controller sends out signal, a mark  will flicker for about 1s. The bell will ring if the main unit receives effective signal.

Fig.1

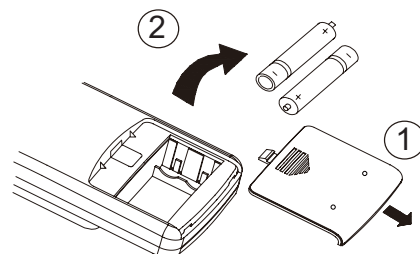
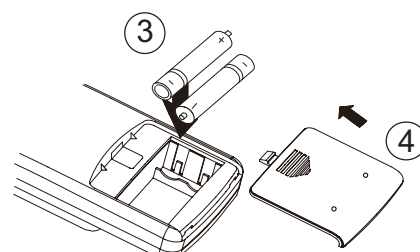


Fig.2



Sketch map for changing batteries

6.2 Description of Each Control Operation

(1) 09/12K Unit

1. Temperature Parameters

◆ Indoor preset temperature (T_{preset})

◆ Indoor ambient temperature (T_{amb})

2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

(1) Cooling Mode

◆ Working conditions and process of cooling

When $T_{\text{indoor amb.}} \geq T_{\text{preset}}$, the unit will enter cooling operation. In that case, the outdoor fan and compressor will operate.

When $T_{\text{indoor amb.}} = T_{\text{preset}} - 35.6^\circ\text{F}$ and compressor has continuously operated at frequency lower than 15Hz (not including 15Hz) for 17 minutes, if $T_{\text{indoor amb.}} = T_{\text{preset}} - 35.6^\circ\text{F}$, the compressor will stop operation;

When $T_{\text{indoor amb.}} \leq T_{\text{preset}} - 37.4^\circ\text{F}$, compressor will stop operation and in 30s later, outdoor fan will stop operation;

When $T_{\text{preset}} - 35.6^\circ\text{F} < T_{\text{indoor amb.}} < T_{\text{preset}}$, the unit will keep its previous operation.

Protection

◆ Antifreeze protection

Under cooling and dehumidifying mode, 6 minutes after the compressor is started:

If $T_{\text{evap}} \leq 35.6^\circ\text{F}$, the compressor will operate at reduced frequency.

If $T_{\text{evap}} \leq 30.2^\circ\text{F}$ is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If $T_{\text{evap.}} \geq 50^\circ\text{F}$ and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

◆ Total current up and frequency down protection

When total current $I_{\text{total}} \leq 6\text{A}$, increase frequency is allowed; when total current $I_{\text{total}} \geq 7\text{A}$, increasing frequency is prohibited; when total current $I_{\text{total}} \geq 8\text{A}$, the unit operates by decreasing frequency. When total current $I_{\text{total}} \geq 9\text{A}$, the compressor stops operation, and indoor fan will stop operation after 30s.

(2) Dehumidifying Mode

① Working conditions and process of dehumidifying

If $T_{\text{amb}} > T_{\text{preset}}$, the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If $T_{\text{preset}} - 35.6^\circ\text{F} \leq T_{\text{amb}} \leq T_{\text{preset}}$, the compressor remains at its original operation state.

If $T_{\text{amb.}} < T_{\text{preset}} - 35.6^\circ\text{F}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② Protection

Protection is the same as that under the cooling mode.

(3) Heating Mode

◆ Working conditions and process of heating

When $T_{\text{preset}} - (T_{\text{indoor amb.}} - T_{\text{compensation}}) \geq 33.8^\circ\text{F}$, the unit will enter heating operation. In that case, compressor, outdoor fan and 4-way valve will operate at the same time.

When $28.4^\circ\text{F} < T_{\text{preset}} - (T_{\text{indoor amb.}} - T_{\text{compensation}}) < 33.8^\circ\text{F}$, the unit will keep its previous operation status.

When $T_{\text{preset}} - (T_{\text{indoor amb.}} - T_{\text{compensation}}) \leq 28.4^\circ\text{F}$, compressor will stop operation and in 30s later, the outdoor will stop operation;

When the unit is turned off at heating mode, or changes to other mode from heating mode, the 4-way valve will be de-energized in 2 minutes later after compressor stops operation (the compressor is operating during heating mode.)

When $T_{\text{outdoor amb.}} > 86^\circ\text{F}$, compressor will stop operation immediately and outdoor fan will stop operation in 30s later.

When the compressor is operation, or changing to heating from cooling or drying mode, the 4-way valve will be energized in 2-3 minutes later.

Note: $T_{\text{compensation}}$ is determined by indoor and outdoor units. If indoor unit controls temperature compensation, $T_{\text{compensation}}$ is determined by the value sent to outdoor unit by indoor unit; If it doesn't controlled by indoor unit, $T_{\text{compensation}}$ will be 37.4°F as default.

② Condition and process of defrost

(1) When Toutdoor amb. $\leq 41^{\circ}\text{F}$ and compressor has accumulated operated for 3 hours, if Toutdoor pipe $< -32^{\circ}\text{F}$, the unit will enter defrosting mode; (Note: when meeting any condition below, the time will be cleared: Toutdoor amb. $> 41^{\circ}\text{F}$; compressor has been started up after changing to cooling/drying mode and defrosting has finished; except the conditions above (including stop of the unit when reaching temperature point, stop of the unit for protection, changing to fan mode, etc), the time will not be cleared.

(2) When heating has operated for continuous 45 minutes, or for accumulated 90 minutes, the unit will enter defrosting mode in 3 minutes after meeting any condition below;

(1). T outdoor ambient $> 41^{\circ}\text{F}$, T outdoor tube $\leq 28.4^{\circ}\text{F}$;

(2) $28.4^{\circ}\text{F} \leq \text{T outdoor ambient} < 41^{\circ}\text{F}$, T outdoor tube $\leq 21.2^{\circ}\text{F}$;

(3) $23^{\circ}\text{F} \leq \text{T outdoor ambient} < 28.4^{\circ}\text{F}$, T outdoor tube $\leq 17.6^{\circ}\text{F}$;

(4) $14^{\circ}\text{F} \leq \text{Toutdoor amb.} < 23^{\circ}\text{F}$, Toutdoor pipe-Tcompensation $\leq (\text{Toutdoor amb.} - 37.4^{\circ}\text{F})$

(5) Toutdoor amb. $< 14^{\circ}\text{F}$, Toutdoor pipe -Tcompensation $\leq (\text{Toutdoor amb.} - 37.4^{\circ}\text{F})$

After energization, for the first defrosting, Tcompensation = 32°F ; if it is not the first time of defrosting, Tcompensation will be determined by Toutdoor pipe when quitting defrosting last time; Toutdoor pipe $> 35.6^{\circ}\text{F}$, Tcompensation = 32°F ; Toutdoor pipe $\leq 35.6^{\circ}\text{F}$, Tcompensation = 37.4°F .

(3) During defrosting, if operation time for compressor doesn't reach 3min, the defrosting will not be entered in the subsequent 2 hours. At that time, compressor stops operation and in 30s later, the outdoor fan will stop operation; in another 30s, 4-way valve will stop operation; in 30s later, compressor will increase its frequency for defrosting. When defrosting lasts for 450s, or Toutdoor pipe $\geq 50^{\circ}\text{F}$, compressor will decrease its frequency. In 30s later, compressor will stop operation; in another 30s, 4-way valve will be started up. In 60s later, compressor and outdoor fan will operate. Frequency for defrosting is 85Hz.

③ Protection**◆ Cold air prevention**

The unit is started under heating mode (the compressor is ON):

① In the case of T indoor amb. $< 75.2^{\circ}\text{F}$: if T tube $\leq 104^{\circ}\text{F}$ and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if T tube $> 104^{\circ}\text{F}$, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if T tube $> 107.6^{\circ}\text{F}$, the fan will run at present speed.

② In the case of T indoor amb. $\geq 75.2^{\circ}\text{F}$: if T tube $\leq 107.6^{\circ}\text{F}$, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if T tube $> 107.6^{\circ}\text{F}$, the indoor fan will be converted to preset speed.

Note: T indoor amb. indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

◆ Total current up and frequency down protection

When total current $I_{\text{total}} \leq 6\text{A}$, increase frequency is allowed; when total current $I_{\text{total}} \geq 7\text{A}$, increasing frequency is prohibited; when total current $I_{\text{total}} \geq 8\text{A}$, the unit operates by decreasing frequency. When total current $I_{\text{total}} \geq 9\text{A}$, the compressor stops operation, and indoor fan will stop operation after 30s.

(4) Fan Mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.

Under the mode, temperature can be set within a range of $60.8 - 86^{\circ}\text{F}$.

(5) AUTO Mode**① Working conditions and process of AUTO mode**

a. When T ambient $\geq 78.8^{\circ}\text{F}$, the unit will operate in Cool mode. The set temperature is 77°F .

b. When T ambient $\leq 71.6^{\circ}\text{F}$, the heat pump unit will operate in Heat mode., set temperature be 20°C ; the cooling only unit will operate in Fan mode, set temperature be 77°F .

c. When $73.4^{\circ}\text{F} \leq \text{T ambient} \leq 77^{\circ}\text{F}$, the unit will operate in the previous state. If it is energized for the first time, it will operate in Fan mode.

d. Under auto mode, if it's cooling mode, operation frequency is same as that under cooling mode; if it's heating mode, operation frequency is same as that under heating mode.

② Protection

a. In cooling operation, protection is the same as that under the cooling mode;

b. In heating operation, protection is the same as that under the heating mode;

c. When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

(6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes

① Overload protection

T tube: measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

1) Cooling overload

- a. If T tube $\leq 125.6^{\circ}\text{F}$, the unit will return to its original operation state.
- b. If T tube $\geq 131^{\circ}\text{F}$, frequency rise is not allowed.
- c. If T tube $\geq 136.4^{\circ}\text{F}$, the compressor will run at reduced frequency.
- d. If T tube $\geq 143.6^{\circ}\text{F}$, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

- a. If T tube $\leq 122^{\circ}\text{F}$, the unit will return to its original operation state.
- b. If T tube $\geq 127.4^{\circ}\text{F}$, frequency rise is not allowed.
- c. If T tube $\geq 132.8^{\circ}\text{F}$, the compressor will run at reduced frequency.
- d. If T tube $\geq 140^{\circ}\text{F}$, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature $\geq 208.4^{\circ}\text{F}$, frequency is not allowed to rise.

If exhaust temperature $\geq 217.4^{\circ}\text{F}$, the compressor will run at reduced frequency.

If exhaust temperature $\geq 230^{\circ}\text{F}$, the compressor will stop.

If exhaust temperature $\leq 194^{\circ}\text{F}$ and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

④ Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

⑤ Overload protection

If temperature sensed by the overload sensor is over 239°F , the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 203°F , the overload protection will be relieved.

⑥ DC bus voltage protection

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

3. Other Controls

(1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 33.8°F . Regulating Range: $60.8 - 86^{\circ}\text{F}$, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

(5) SLEEP State Control

- a. When the air conditioner is under the mode of COOL, DRY, and the SLEEP mode has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will raise 33.8°F , and it will raise 33.8°F again after 2 hours, so it raise 35.6°F in 2 hours, then it will run on at the setting temperature and wind speed.
- b. When the air conditioner is under the mode of HEAT, and the Timer has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will reduce 33.8°F , and it will reduce 33.8°F again after 2 hours, so it reduce 35.6°F in 2 hours, then it will run on at the setting temperature and wind speed.
- c. The setting temperature keeps the same under the FAN mode and AUTO mode.

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

Cooling mode:

$T_{ring} \geq T_{setting} + 35.6^{\circ}\text{F}$, high speed;

$T_{setting} - 35.6^{\circ}\text{F} < T_{ring} < T_{setting} + 35.6^{\circ}\text{F}$, medium speed;

$T_{ring} \leq T_{setting} - 35.6^{\circ}\text{F}$, low speed.

Sending wind mode:

$T_{ring} > T_{setting} + 39.2^{\circ}\text{F}$, high speed;

$T_{setting} + 35.6^{\circ}\text{F} \leq T_{ring} \leq T_{setting} + 39.2^{\circ}\text{F}$, medium speed;

$T_{ring} < T_{setting} + 35.6^{\circ}\text{F}$, low speed.

Moisture removal mode: force to be set as the low speed

Heating mode:

$T_{ring} \leq T_{setting} + 33.8^{\circ}\text{F}$, high speed;

$T_{setting} + 33.8^{\circ}\text{F} < T_{ring} < T_{setting} + 41^{\circ}\text{F}$, medium speed;

$T_{ring} \geq T_{setting} + 35.6^{\circ}\text{F}$, low speed.

(7) Buzzer Control

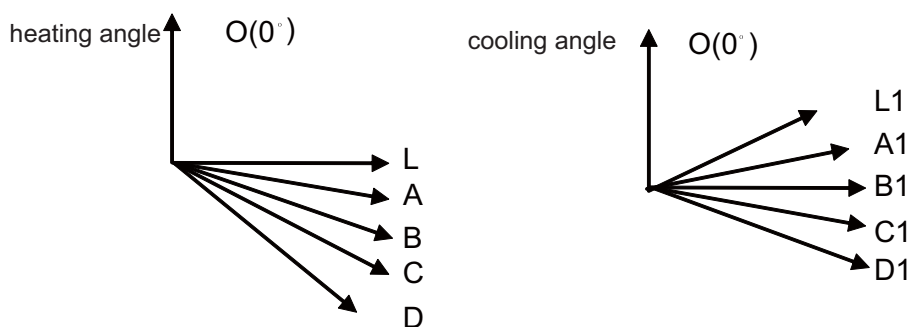
The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn’t receive the remote control ON signal under the mode of heating mode.

(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to counter-clockwise, close the air outlet. After starting the machine, if you don’t set the swinging function, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine, then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location C, Location D, Location L to Location D, stop at any location between L-D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Display

① Operation pattern and mode pattern display

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 60.8 to 86°F) and indoor ambient temperature. The heating and air supply temperature will display 77°F under auto-mode, the temperature will display 64.4°F under the heating mode, and the temperature will display H1 under the defrosting mode. (If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 10 minutes under low air damper (The swing will operate as the former status within 10 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly. When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(12) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according to it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted from power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

(13) Control of Outdoor Electric Heating Band

If not in heating mode or temp sensor has malfunction, electric heating bands of compressor and of condenser will stop operation, otherwise, the below control logic will be followed.

1. Control of Compressor Electric Heating Band

- a. Conditions for startup: the compressor is off and meanwhile outdoor ambient temp $\leq 23^{\circ}\text{F}$;
- b. Conditions for turning off: it will be turned off when meeting any condition below:

Compressor is operating

Compressor is turned off and meanwhile the outdoor ambient temperature $\geq 28^{\circ}\text{F}$;

- c. Outdoor ambient temp sensor has malfunction and electric heater band stops operation.

2. Control of electric heater band of condenser

① When Toutdoor amb. $\leq 33.8^{\circ}\text{F}$, electric heater band of condenser will operate.

② During defrosting process, electric heater band of chassis will operate in 3min after compressor starts operating. When compressor has operated for 3min and Toutdoor amb. $\geq 37.4^{\circ}\text{F}$, electric heater band will stop operating.

③ When Toutdoor amb. $\geq 37.4^{\circ}\text{F}$, electric heater band of condenser will not operate.

④ When $33.8^{\circ}\text{F} < \text{Toutdoor amb.} < 37.4^{\circ}\text{F}$, electric heater band of condenser will keep its previous status.

When outdoor ambient temp sensor has malfunction, electric heater band stops operation; once electric heater stops operation, it has to wait at least 2 min before it can be restarted up again.

(2)18/24K Unit

• Indoor Unit

1 Temperature Parameters

◆ Indoor preset temperature (T_{preset})

◆ Indoor ambient temperature ($T_{\text{amb.}}$)

2 Basic functions (The temperature in this manual is expressed by Centigrade. If Fahrenheit is used, the switchover between them is $T_f = T_c \times 1.8 + 32$.)

Once the compressor is energized, there should be a minimum interval of 3 minutes between two start-ups. But if the unit is de-energized and then energized, the compressor can restart within 3 minutes.

2.1 Cooling mode

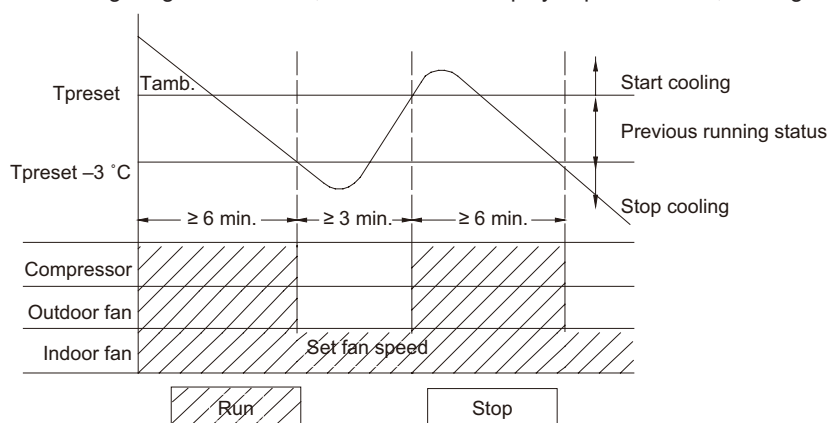
2.1.1 Cooling conditions and process

When $T_{\text{amb.}} \geq T_{\text{preset}}$, the unit starts cooling operation. In this case, the compressor and the outdoor fan operate and the indoor fan operates at set speed.

When $T_{\text{amb.}} \leq T_{\text{preset}} - 3^\circ\text{C}$, the compressor and the outdoor fan stop while the indoor fan runs at set speed.

When $T_{\text{preset}} - 3^\circ\text{C} < T_{\text{amb.}} < T_{\text{preset}}$, the unit will maintain its previous running status.

In cooling mode, temperature setting range is $16 \sim 30^\circ\text{C}$; the indoor unit displays operation icon, cooling icon and set temperature.



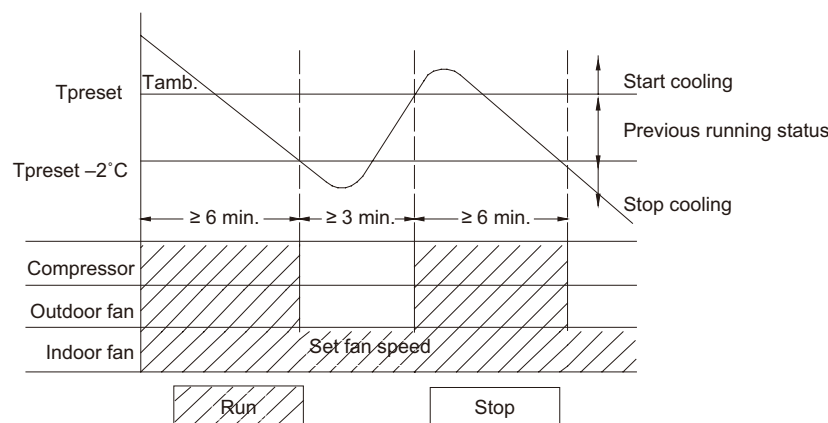
2.1.2 When outdoor unit has malfunction or stops for protection, indoor unit will keep previous operation status and display malfunction code.

2.1.3 The protection status is as the same as the cooling mode.

2.2 Dry Mode

2.2.1 Dry Conditions and Process

When $T_{\text{amb.}} > T_{\text{preset}}$, the unit operates in cooling mode. Meanwhile, compressor and outdoor fan operate, and indoor fan operates at set fan speed (low fan speed, quiet fan speed or auto quiet fan speed). When $T_{\text{preset}} - 2^\circ\text{C} < T_{\text{amb.}} \leq T_{\text{preset}}$, the unit keeps previous operation status. When $T_{\text{amb.}} \leq T_{\text{preset}} - 2^\circ\text{C}$, compressor, outdoor fan and indoor fan operate at set fan speed (low fan speed, quiet fan speed or auto quiet fan speed). Under this mode, the temperature setting range is $16 \sim 30^\circ\text{C}$. Display displays operation icon, drying icon and set temperature.



2.3 Heating mode (not available for cooling only type)

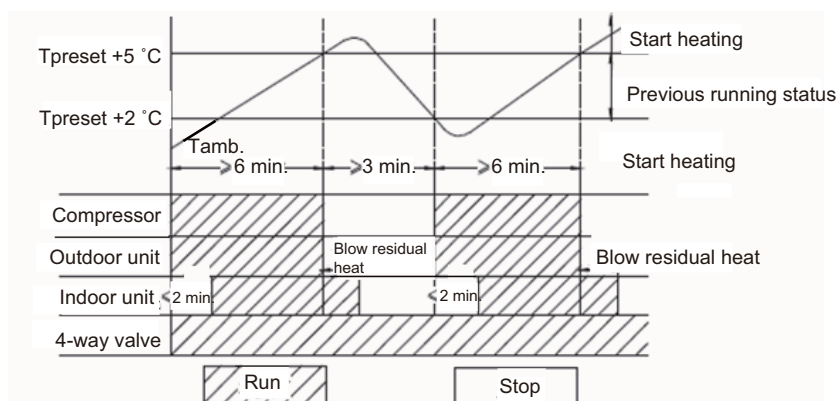
2.3.1 Heating conditions and process

When $T_{\text{amb.}} \leq T_{\text{preset}} + 2^\circ\text{C}$, the unit starts heating operation. In this case, compressor and outdoor fan operate simultaneously; the indoor fan operates at cold-air prevention mode.

When $T_{\text{amb.}} \geq T_{\text{preset}} + 5^\circ\text{C}$, the compressor and outdoor fan stop operation; the indoor fan blows residual heat.

When $T_{\text{preset}} + 2^\circ\text{C} < T_{\text{amb.}} < T_{\text{preset}} + 5^\circ\text{C}$, the unit will maintain its previous running status.

Under this mode, temperature setting range is $16 \sim 30^\circ\text{C}$; the indoor unit displays operation icon, heating icon and set temperature.



2.3.2 Defrosting and Oil Return

When receiving the signal of defrosting and oil return, the horizontal louver(big one) will rotate to the position where the angle is minimum and the other horizontal louver(small one) will close. In 10 seconds later, indoor fan will stop operation. During defrosting, oil return and 5 minutes after quit, all indoor pipe temperature sensors will not be detected. When receiving oil return signal or defrosting signal sent by outdoor unit, "dual 8" nixie tube will display "H1". (H1 is not malfunction code.)

2.3.3 Blow residual heat

In heating mode, when temperature reaches the set temperature, the compressor and outdoor fan will stop.

The horizontal louver (big one) will rotate to the default position for cooling and the other one (small one) will close. Indoor unit will operate at set speed for 60s and then stop operation.

When the unit is in heating mode or auto heating mode, and also the compressor and indoor fan are operating, if turning off the unit, compressor and outdoor fan will stop. Horizontal louver (big one) will rotate to the position where gentle wind is blown out (default position for cooling) and the other horizontal louver (small one) will close. Indoor unit will operate at low speed for 10 seconds and then the unit will be turned off.

2.4 Fan Mode

In this mode, indoor fan operates at set speed while compressor and outdoor fan stop operation. The set temperature range is 16~30°C. Operation icon and set temperature are displayed.

2.5 Auto Mode

In this mode, operation mode (Cool, Heat, Fan) will be automatically selected according to change of ambient temperature. Operation icon, actual operation icon and set temperature will be displayed. There is 30s delay for protection when changing mode. The protection function is as the same as that under each mode.

2.5.1 When $T_{amb} \geq 26^\circ\text{C}$, the unit will operate at cooling mode, the default set temperature is 25°C .

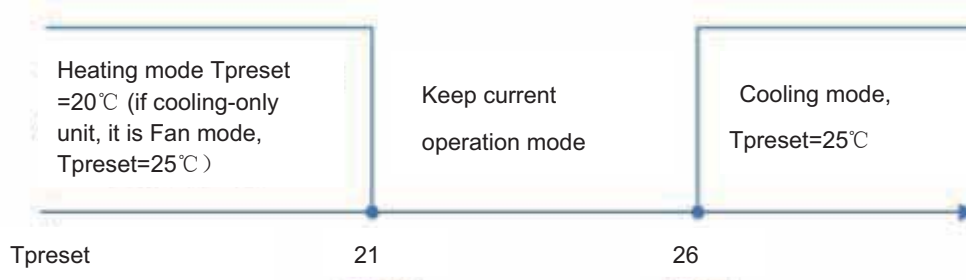
2.5.2 When $T_{amb} \leq 21^\circ\text{C}$, the unit will operate at heating mode, the default set temperature is 20°C (if the cooling only unit operates at fan mode, the default set temperature is 25°C);

2.5.3 When $22^\circ\text{C} \leq T_{amb} \leq 25^\circ\text{C}$, and the unit is turned on for the first time, if it changes to auto mode from other mode, the previous operation mode will be maintained; If it changes to auto mode from dry mode, the unit will operate at fan mode.

2.5.4 When the unit operates at auto mode, the frequency of compressor is as the same as that under cooling mode, while it is as the same as that under heating mode.

Protection function

- A. Under cooling mode, the protection function is as the same as that under cooling mode.
- B. Under heating mode, the protection function is as the same as that under heating mode.



2.6. "8°C" Heating

Under heating mode, press buttons "Temp" and "Clock" simultaneously, the 8°C heating function will be activated and "cold air prevention" will be shielded.

2.6.1 8°C heating can't co-exist with sleep function. If 8°C heating function is set, it can be cancelled by pressing sleep button. In that case, the set temperature will be that before entering 8°C heating; If sleep function is set, press buttons "Temp" and "Clock" simultaneously to activate 8°C function and cancel sleep function at the same time.

2.6.2 Set temperature is 8°C, and it is displayed on the indoor display panel.

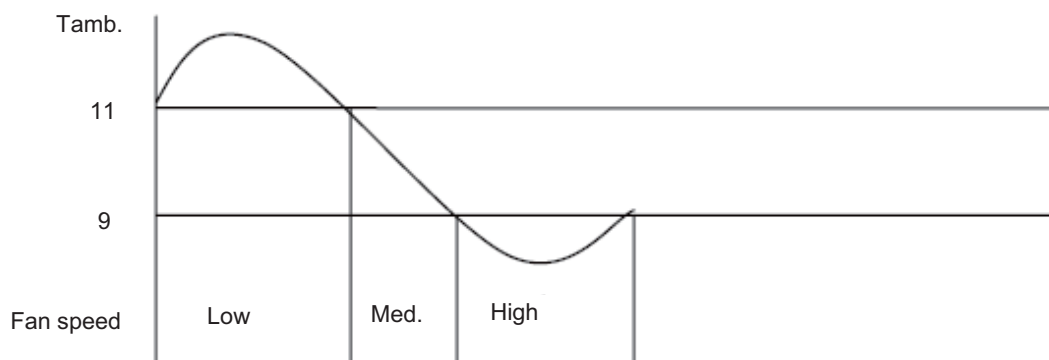
2.6.3 In this mode, TURBO can't be set and fan speed can't be adjusted.

2.6.4 In this mode, when compressor operates, fan speed will be adjusted as follows; when compressor stops operation, indoor unit will operate at blowing residual heat.

When $T_{indoor\ amb} \leq 9^\circ\text{C}$, indoor unit will operate at high speed;

When $9^{\circ}\text{C} < T_{\text{indoor amb.}} < 11^{\circ}\text{C}$, indoor unit will operate at medium speed;
 When $T_{\text{indoor amb.}} \geq 11^{\circ}\text{C}$, indoor fan will operate at low speed;
 When changing among low high, medium, and low speeds, the minimum operation time is 210 seconds.

2.6.5 If the unit has memory function, 8°C heating function will be memorized.



2.7 Energy-saving Function

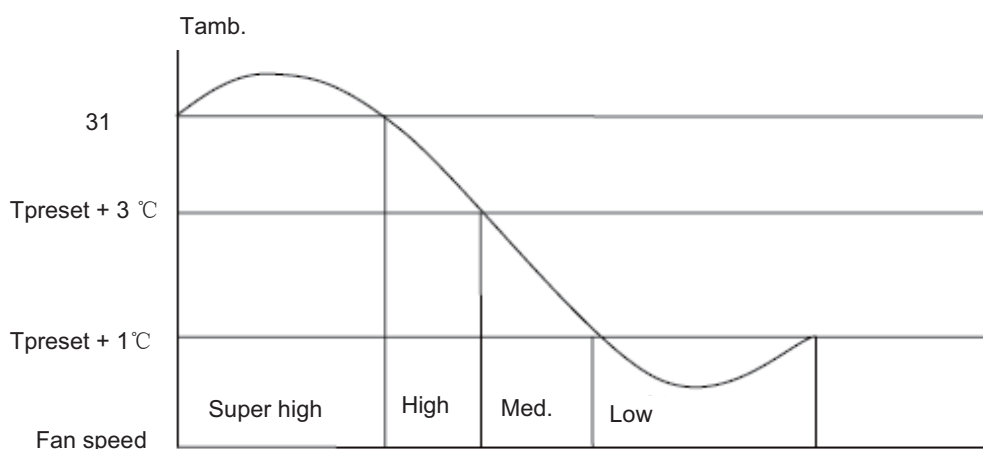
2.7.1 In cooling mode, when receiving command of energy-saving sent by remote control, the controller enters energy-saving mode; If the unit is under energy-saving mode already, such command will not be executed.

2.7.2 When remote control is set to display set temperature, "dual 8" nixie tube displays "SE".

2.7.3 In this mode, when compressor operates, fan speed will be adjusted according to auto fan mode under energy-saving operation; when compressor stops operation, indoor fan will operate at low speed.

- When $T_{\text{amb.}} \geq 31^{\circ}\text{C}$, indoor fan will operate at super high speed;
- When $31^{\circ}\text{C} > T_{\text{amb.}} \geq T_{\text{preset}} + 3^{\circ}\text{C}$, indoor fan will operate at high speed;
- When $T_{\text{preset}} + 1^{\circ}\text{C} < T_{\text{amb.}} < T_{\text{preset}} + 3^{\circ}\text{C}$, indoor fan will operate at medium speed;
- When $T_{\text{amb.}} \leq T_{\text{preset}} + 1^{\circ}\text{C}$, indoor fan will operate at low speed;

Note: The switchover among superhigh speed, high speed, medium speed and low speed requires minimum 210seconds of operation.



2.7.4 In this mode, set temperature will be automatically adjusted according to actual operation conditions.

3 Other Control

3.1 Timer function

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

3.1.1 General Timer

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

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

3.1.2 Clock Timer

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 operate according to previous setting status.

Timer OFF

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

Timer Change

Although timer has been set, the unit still can be turned on/off by pressing ON/OFF button of the remote controller. You can also set the timer once again, and then the unit will operate according to the last setting.

If timer ON and timer OFF are set at the same time during operation of the unit, the unit will keep operating at current status till OFF time reaches.

If timer ON and timer OFF are set at the same time at unit OFF, the unit will keep off status till ON time reaches.

Each day in future, the system will operate according to preset mode till OFF time reaches and stop operation till ON time reaches. If ON time and OFF time are the same, OFF command will prevail.

3.2 Auto Button

If this button is pressed, the unit will operate in AUTO mode and indoor fan will operate at auto speed; meanwhile, the swing motor operates. Press this button again to turn off the unit.

3.3 Buzzer

Upon energization or availably operating the unit or remote controller, the buzzer will give out a beep.

3.4 Sleep Function

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

3.5 Turbo Function

This function can be set in cooling or heating mode to quickly cool or heat the room.

3.6 X-FAN Function

3.6.1 When the unit is operating at COOL or DRY mode(it is not available under AUTO, HEAT, FAN modes), the X-FAN function can be turned on/off. When it is turned on,once pressing ON/OFF button to turn off the unit, indoor fan will continue operation at low speed for 10 minutes. Within the 10 minutes, horizontal louver will keep its previous status while cold plasma and static dedusting will be forced to be turned on and other loads will be turned off. Then the complete unit will be turned off; When X-FAN function is set to be off, once pressing ON/OFF button, the complete unit will be turned on immediately.

3.6.2 During X-FAN operation, press X-FAN button, the indoor fan, horizontal louver, cold plasma and static-dedusting will be turned off immediately.

3.7 Control of Indoor Fan

Indoor fan can be set by remote control within the range of Mute, Fan speed 1, Fan speed 2, Fan speed 3, Fan speed 4, Fan speed 5 and Turbo and Fan will operate at low, med. high or super high speed accordingly. And also, auto fan speed can be set. Under auto fan speed mode, indoor fan will automatically select high, med., low or mute speed according to change of ambient temperature.

3.7.1 Under Auto Heat mode or regular Heat mode, auto fan speed will be as follows:

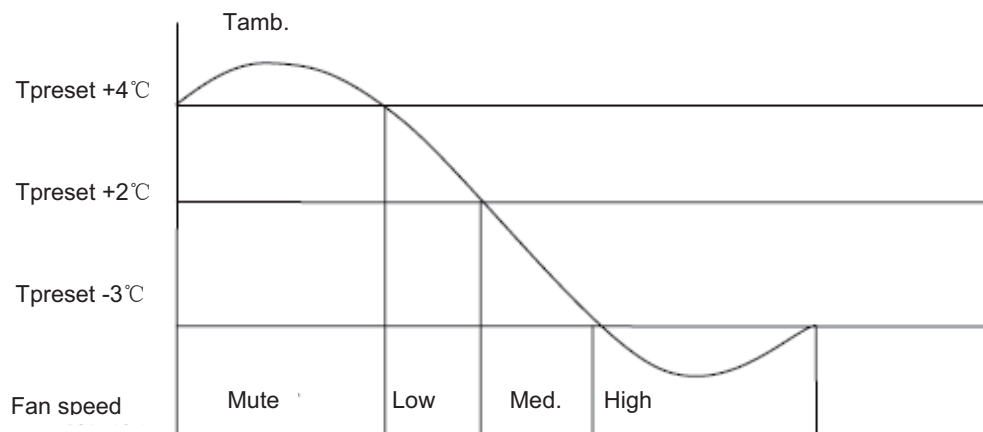
When $T_{amb} < T_{preset} - 3^{\circ}\text{C}$, indoor fan will operate at high speed;

When $T_{preset} - 3^{\circ}\text{C} \leq T_{amb} < T_{preset} + 2^{\circ}\text{C}$, indoor fan will operate at med. speed;

When $T_{preset} + 2^{\circ}\text{C} \leq T_{amb} < T_{preset} + 4^{\circ}\text{C}$, indoor fan will operate at low fan speed;

When $T_{amb} \geq T_{preset} + 4^{\circ}\text{C}$, indoor fan will operate at mute.

Control Diagram of Auto Fan Speed under HEAT Mode



3.7.2 Under FAN or COOL mode: if it is auto cooling mode or regular cooling mode, auto fan speed will be as follows:

When $T_{amb} \geq T_{preset} + 3^{\circ}\text{C}$, indoor fan will operate at high speed;

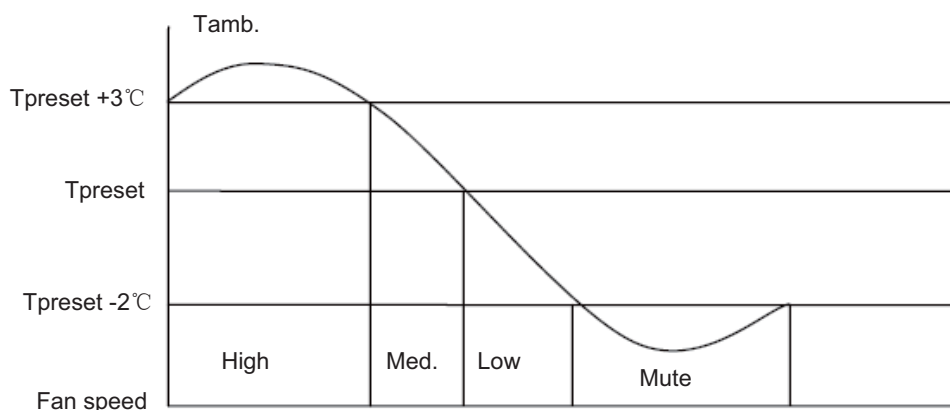
When $T_{preset} < T_{amb} < T_{preset} + 3^{\circ}\text{C}$, indoor fan will operate at med. speed;

When $T_{preset} - 2^{\circ}\text{C} < T_{amb} \leq T_{preset}$, indoor fan will operate at low speed;

When $T_{amb} \leq T_{preset} - 2^{\circ}\text{C}$, indoor fan will operate at mute;

3.7.3 There is no auto fan speed under DRY mode

Note: Fan speed "High", "Med." and "Low" are respectively corresponding to "Fan speed 5", "Fan speed 3" and "Fan speed 1". There is 210 seconds delay for fan speed switchover of auto fan.



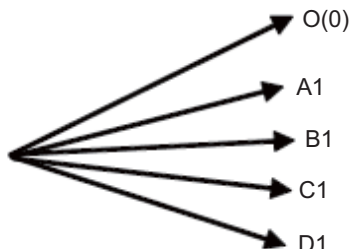
3.8 Vertical Swing

3.8.1 Small Horizontal Louver

After energization, vertical swing motor will firstly have the horizontal louver rotate anticlockwise to position O to close air outlet. If swing function has not been set after startup of the unit, horizontal louver will turn clockwise to position D1 in HEAT mode. If swing function is set when starting up the unit, the horizontal louver will swing between O and D1. There are 7 swing status of horizontal louver: Positions O, A1, B1, C1 and D1, swing between O and D1 and stop at any position between L and D (angles between O and D1 are equiangular). Upon turning off the unit, the horizontal louver will close at position O. Swing function is available only when swing function is set and indoor fan is operating.

Note:

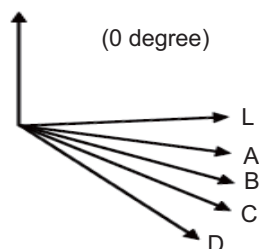
- If the position is set between O and D1, A1 and C1 or B1 and D1 by remote controller, the horizontal louver will swing between O and D1.
- For model 9K/12K, only when big horizontal louver rotates to the second position for heating(62° of corresponding angle), this louver will be activated.
- Under cooling mode, this horizontal louver will be always in the position O.



3.8.2 Big Horizontal Louver

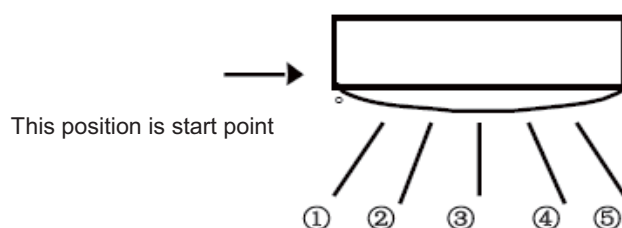
After energization, up & down swing motor will firstly have the horizontal louver rotate anticlockwise to position O to close air outlet. If swing function has not been set after startup of the unit, horizontal louver will turn clockwise to position D in HEAT mode, or turn clockwise to level position L in other modes. 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, A, B, C and D, swing between L and D and stop at any position between L and D (angles between L and D are equiangular). Upon turning off the unit, the horizontal louver will close at position O.

Note: If the position is set between L and B, A and C or B and D by remote controller, the horizontal louver will swing between L and D.



3.9 Horizontal Swing

Upon energization, the vertical louver will be reset to the start position firstly and then stop in the middle position. When setting horizontal swing, there are 7 status: Position ①, Position ②, Position ③, Position ④, Position ⑤, swing between ① and ⑤ and stop at any position between ① and ⑤. If setting horizontal swing during operation of the unit, the horizontal swing motor will drive the louver to swing horizontally. When cancelling horizontal swing or it is not set when turning on the unit, the louver will stop in the current position and it will not move when turning off the unit. Only when swing is set and indoor fan is operating, the vertical louver can horizontally swing.



3.10 Display

3.10.1 Operation and Mode Icons

Upon energization, the unit will display all icons within 3 seconds. Under standby state, LED lamp of standby is on. If the unit is turned on by remote controller, LED lamp of operation is on; meanwhile, the mark of current running mode will be displayed. If the light button is turned off, no mark will be displayed.

3.10.2 Display of Nixie Tube on Indoor Unit

When energized & started for the first time, the indoor unit defaults to displaying current set temperature (16~30°C). When set temperature display is set by remote controller, it will display set temperature; when room temperature display is set, it will display room or outdoor temperature. After that, when operating the remote controller for other settings, the temperature display method will keep original.

When operating the remote controller during room temperature display, the set temperature will be displayed for 5 seconds firstly and then room temperature display returns. If there is malfunction, corresponding malfunction code will be displayed. For example, if ambient temperature sensor has malfunction, "F1" will be displayed; if indoor pipe temperature has malfunction, "F2" will be displayed; if jumper cap has malfunction, "C5" will be displayed.

3.11 Memory Function

Memorized items: mode, up & down swing, light, set temperature and set fan speed.

When power is recovered after power failure, the unit will automatically start operation according to memorized status. After power recovery, the unit without timer setting before power failure will operate according to the last setting; the unit with general timer setting which has not been fulfilled before power failure will memorize the timer setting and re-calculate the time after.

3.12 I FEEL function

When I FEEL command is received by controller, and also the ambient temperature is received from remote control, the controller will operate according to the ambient temperature sent by the remote controller (For cold blow prevention, the unit operates according to the ambient temperature sensed by the air conditioner). The remote controller will send ambient temperature data to the controller for every 10 minutes. When the data has not been received for 11 minutes, the unit will operate according to the temperature sensed by the air conditioner. If I FEEL function is not selected, the ambient temperature will be that sensed by the air conditioner. Ambient temperature of I FEEL displayed by controller is 1°C~59°C.

3.13 Health and Cold Plasma Function

When the unit is operating, turn health or cold plasma to be ON/OFF by health button in remote control (if there is no such button in remote control, the health is on as default). Only when health or cold plasma is turned on and indoor fan is operation, such function can be activated.

3.14 Static Dedusting Function

When the unit is operating, turn static dedusting ON/OFF by health button in remote control (if there is no such button in remote control, the health is on as default). Only when static dedusting is turned on and indoor fan is operation, such function can be activated.

3.15. Fahrenheit Display

Nixie tube displays current set temperature. If remote signal is Fahrenheit, the temperature will be displayed in Fahrenheit. The set temperature range is 16~30°C (61~86°F). Under Auto mode, in COOL operation and FAN operation, 25°C(77°F) will be displayed, while in HEAT operation and FAN operation, 20°C(68°F) will be displayed. For cooling-only controller, only 25°C(77°F) will be displayed.

3.16 Locked protection to Indoor Fan Motor

If the indoor fan motor keeps low rotation speed for a continuous period of time after startup, the unit will stop operation and display "H6".

3.17 Mute Mode

3.17.1 Auto Mute: When selecting fan speed of auto mute, the fan speed will be adjusted according to change of ambient temperature; when temperature meets the requirement of the setting, the unit will operate at lowest speed.

3.17.2 Mute mode: When selecting fan speed of mute, the unit will directly operate at lowest fan speed.

3.18 Compulsory defrosting function

When indoor unit operates in formidable environment, for example, temperature is too low, humidity is very high or there's too much frost on outdoor unit, which affects the heating efficiency of outdoor unit, user can select the compulsory defrosting function to improve outdoor unit's heating efficiency.

Entry method of compulsory defrosting function:

When the unit is turned on in heating by remote controller and the set temperature is 16 , press "+,-,+,-,+,-" continuously within 5s, the indoor unit turns to compulsory defrosting setting and it will send compulsory defrosting mode to outdoor unit. The outdoor fan will operate in compulsory defrosting mode.

• Outdoor Unit

1. Compensation function of input parameters

According to the structure of wall-mounting unit, considering the comfortability for operation, indoor ambient temperature when the compressor is at OFF status is higher than set temperature under heating mode.

2. Control of detecting the availability of parameters

For ensuring the safety and reliability of operation, please insert the outdoor discharge temperature sensor into the corresponding temperature sensor bushing to make sure that the control system can detect system discharge temperature accurately. Otherwise, the unit will stop operation and it displays malfunction of discharge temperature sensor (discharge temperature sensor hasn't been inserted well), which can only be resumed by pressing ON/OFF button on remote controller. Basic functions:

3. Cooling mode

3.1 Working condition and process for cooling

3.1.1 If compressor is at OFF status, and $(T_{\text{preset}} - (T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of cooling}})) \leq 0^{\circ}\text{C}$, the unit operates in cooling mode;

3.1.2 During cooling operation, if $0^{\circ}\text{C} \leq (T_{\text{preset}} - (T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of cooling}})) < 3^{\circ}\text{C}$, the unit still operates in cooling mode;

3.1.3 During cooling operation, if $3^{\circ}\text{C} \leq (T_{\text{preset}} - (T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of cooling}}))$, the unit stops operation when reaching the temperature point in cooling.

3.2 Temperature setting range:

3.2.1 If $T_{\text{outdoor amb.}} \geq T_{\text{cooling temperature (low temperature)}}$, the temperature setting range is 16-30°C (cooling in room temperature);

3.2.2 If $T_{\text{outdoor amb.}} < T_{\text{cooling temperature (low temperature)}}$, the temperature setting range is 25-30°C. That is: the lower limit of set temperature for outdoor unit is 25°C.

4. Dry mode

4.1 Working conditioner and process for drying is same as that for cooling mode;

4.2 Temperature setting range is 16-30°C;

5. Fan mode

5.1 Compressor, outdoor fan and 4-way valve are all turned off;

5.2 Temperature setting range is 16-30°C.

6. Heating mode

6.1 Working conditioner and process of heating: ($T_{\text{indoor amb.}}$ is the actual temperature detected by indoor ambient temperature sensor; $\Delta T_{\text{indoor amb. compensation of heating}}$ is indoor ambient temperature compensation during heating operation).

6.1.1 If compressor is at OFF status, and $(T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of heating}}) - T_{\text{preset}} \leq -1^{\circ}\text{C}$, the unit operates in heating mode.

6.1.2 During heating operation, if $0^{\circ}\text{C} \leq ((T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of heating}}) - T_{\text{preset}}) < 2^{\circ}\text{C}$, the unit still operates in heating mode.

6.1.3 During heating mode, if $2^{\circ}\text{C} \leq ((T_{\text{indoor amb.}} - \Delta T_{\text{indoor amb. compensation of heating}}) - T_{\text{preset}})$, the unit stops operation when reaching the temperature point in heating.

6.2 Under this mode, the temperature setting range is 16-30°C.

7. Defrosting control (heating mode)

7.1 If it turns to defrosting time and it detected that the defrosting temperature is satisfied for 3mins successively, the unit turns into defrosting process.

7.2 Defrosting-starting: compressor stops operation and restart it up after 55s delayed,

7.3 Defrosting-ending: Compressor stops operation and it starts up after 55s delayed.

7.4 When any one of below defrosting-ending conditions is satisfied, the unit will quit from defrosting operation:

7.4.1 $T_{\text{outdoor tube}} \geq T_{\text{quit temperature 1}}$ for defrosting;

7.4.2 Defrosting operation time is reached $T_{\text{max. defrosting time}}$.

8. Control of compressor

8.1 Frequency of compressor intangibly controls the frequency according to the relation between ambient temperature and set temperature, and the change speed of ambient temperature;

8.2 Under cooling, heating or drying mode, compressor will be started up after outdoor fan is started for 5s.

8.3 At the OFF status, stop operation because of protection and switchover to fan mode, the compressor stops operation immediately.

8.4 Under each mode: Once the compressor is started up, it can be stopped only after operation.

8.5 Under each mode, once the compressor is stopped, it can be restarted up only after 3min delayed

9. Control of outdoor fan

9.1 When turn off the unit by remote controller, stop operation because of protection or stop operation after reaching the temperature point, outdoor fan can stop operation only after the compressor is stopped for 1min;

9.2 Under fan mode: outdoor fan stops operation.

9.3 defrosting-starting: enter into defrosting. Outdoor fan stops operation after compressor stops for 50s.

9.4 Defrosting-ending: quit defrosting. When the compressor stops operation, the outdoor fan operates.

10. Control of 4-way valve

10.1 4-way valve status under cooling, drying and fan modes: OFF;

10.2 When the unit turned on and operated in heating mode, the 4-way valve is energized immediately.

10.3 If turn off unit or switch to other mode in heating mode, the 4-way valve is de-energized after the compressor stops for 2min;

10.4 When the unit is turned off because of each protection, the 4-way valve is de-energized after 4 mins delayed.

10.5 Defrosting-starting: enter into defrosting. After the compressor stops for 50s, the 4-way valve will be de-energized.

10.6 Defrosting-ending: quit defrosting. After the compressor stops for 50s, the 4-way valve is energized.

11. Freeze protection

11.1 Under cooling or drying mode, if it's detected that $T_{\text{inner tube}} < 0$ for 3min successively, the unit will stop operation due to freeze protection. If $T_{\text{limit temperature of freeze protection}} < T_{\text{inner tube}}$, and compressor stops for 3min, the complete can resume operation;

11.2 Under cooling or drying mode, if $T_{\text{inner tube}} < 6$, the operation frequency of compressor may increase or decrease;

11.2.1 If the unit is stopped because of freeze protection for 6 times successively, it can't resume operation automatically and the malfunction will be displayed continuously, which can only be resumed by pressing ON/OFF button. During operation, if operation time of compressor is over, the times of stop operation because of freeze protection will be cleared. If turn off the unit or switch to fan/heating mode, malfunction and times of malfunction is eliminated immediately.

12. Overload protection

12.1 Overload protection under cooling or drying mode: If $T_{\text{overload stop operation temp. in cooling}} \leq T_{\text{outdoor tube}}$, the unit stops operation because of overload in cooling; if $T_{\text{outdoor tube}} < T_{\text{overload limit-frequency temp in cooling}}$ and the compressor has stopped for 3min, the complete unit can resume operation.

12.2 Under cooling or drying mode, if $T_{\text{overload limit-frequency temp. in cooling}} \leq T_{\text{outdoor tube}}$, the frequency of compressor may increase or decrease;

12.3 Overload protection under heating mode: If $T_{\text{overload stop operation temp. in heating}} \leq T_{\text{indoor tube}}$, the unit stops operation because of overload in heating; if $T_{\text{indoor tube}} < T_{\text{overload limit-frequency temp. in heating}}$ and the compressor has stopped for 3min, the complete unit can resume operation.

12.4 Under heating mode. If $T_{\text{overload limit-frequency temp. in heating}} \leq T_{\text{indoor tube}}$, operation frequency of compressor may increase or decrease;

12.5 If the unit is stopped because of overload protection for 6 times successively, it can't resume operation automatically and the malfunction will be displayed continuously, which can only be resumed by pressing ON/OFF button. During operation, if operation time of compressor is over, the times of stop operation because of overload protection will be cleared. If turn off the unit, fan or switch to fan/heating mode, malfunction and times of malfunction is eliminated immediately.

13. Discharge temperature protection of compressor

13.1 If $T_{\text{stop operation temperature for discharge}} \leq T_{\text{discharge}}$, the unit stops operation because of discharge protection; If $T_{\text{discharge}} < T_{\text{limit-frequency temperature for discharge}}$ and compressor has stopped for 3min, the complete unit can resume operation;

13.2 If $T_{\text{normal speed decrease-frequency for discharge}} \leq T_{\text{discharge}}$, operation frequency of compressor may decrease or increase;

13.3 If the unit is stopped because of discharge protection of compressor for 6 times successively, it can't resume operation automatically, which can only be resumed by pressing ON/OFF button. During operation, if operation time of compressor is over, the times of stop operation because of discharge protection will be cleared. If turn off the unit, or switch to fan/heating mode, malfunction and times of malfunction is eliminated immediately.

14. Current protection function

14.1 If $13A \leq I_{AC \text{ current}}$, operation frequency of compressor may decrease or increase;

14.2 If $17A \leq I_{AC \text{ current}}$, the system will stop operation because of overcurrent; the complete unit can resume operation only after the compressor stops for 3min;

14.3 If the unit is stopped because of overcurrent for 6 times successively, it can't resume operation automatically, which can only be resumed by pressing ON/OFF button. During operation, if operation time of compressor is over, the times of stop operation because of overcurrent protection will be cleared.

15. Voltage drop protection

During operation of compressor, if the voltage is decreasing quickly, the system may stop operation and voltage drop malfunction is caused. 3min later, the system will be restarted up automatically.

16. Communication malfunction

When it hasn't received the correct signal from indoor unit for 3min, the unit will stop operation because of communication malfunction; If communication malfunction is eliminated and compressor has stopped for 3min, the complete unit can resume operation.

17. OPM module protection

After compressor is turned on, if the overcurrent happens for IPM module, or control voltage is too low because of abnormal causes, IPM will detect module protection signal immediately. Once it detected the module protection signal, the unit will stop operation because of module protection. If module protection is resumed and compressor has stopped for 3min, the complete unit will resume operation.

If the unit is stopped because of module protection for 3 times successively, the unit can resume operation automatically unless press ON/OFF button. If the operation time for compressor is over, the times of stop operation because of module protection will be cleared.

18. Overheat protection of module

18.1 If $T_{\text{normal speed frequency-decreasing temp. of module}} \leq T_{\text{module}}$, the operation frequency of compressor may decrease or increase;

18.2 If $T_{\text{stop operation temperature of module}} \leq T_{\text{module}}$, the system will stop operation for protection. If $T_{\text{module}} < T_{\text{frequency-limiting temperature of module}}$ and compressor has stopped for 3min, the complete unit will resume operation;

18.3 If the unit is stopped because of overheating of compressor module for 6 times successively, it can't resume operation automatically, which can only be resumed by pressing ON/OFF button. During operation, if operation time of compressor is over, the times of stop operation because of compressor overheating protection will be cleared. If turn off the unit, or switch to fan mode, times of malfunction is eliminated immediately.

19. Overload protection of compressor

19.1 If it detected that the overload switch for compressor is open for 3min successively, the complete unit will stop operation for protection;

19.2 If overload protection is resumed and compressor has stopped for 3min, the complete unit can resume operation;

19.3 If the unit stops operation because of overload protection for compressor for 3 times successively, it can't resume operation automatically, which can only be resumed by pressing ON/OFF button. After compressor has operated for 30min, overload protection times for compressor will be eliminated.

7. Installation Manual

7.1 Notices for Installation

Caution

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

7.1.1 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

- strong heat sources, vapours, flammable gas or volatile liquids are emitted.
- high-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment.
- salt-laden air prevails (such as close to coastal areas).
- the air is contaminated with industrial vapours and oils.
- the air contains sulphur gas such as in hot spring zones.
- corrosion or poor air quality exists.

7.1.2 Installation Site of Indoor Unit

- 1.The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.
- 2.Select a site where the condensate can be easily drained out, and where it is easily connected to outdoor unit.
- 3.Select a place where it is out of reach of children.
- 4.Select a place where the wall is strong enough to withstand the full weight and vibration of the unit.
- 5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 8.2ft or more above the floor.
- 6.Select a place about 1m or more away from TV set or any other electric appliance.
- 7.Select a place where the filter can be easily taken out.
- 8.Make sure that the indoor unit is installed in accordance with installation dimension instructions.
- 9.Do not use the unit in the laundry or by swimming pool etc.

7.1.3 Installation Site of Outdoor Unit

- 1.Select a site where noise and outflow air emitted by the unit will not annoy neighbors.
- 2.Select a site where there is sufficient ventilation.
- 3.Select a site where there is no obstruction blocking the inlet and outlet.
- 4.The site should be able to withstand the full weight and vibration.
- 5.Select a dry place, but do not expose the unit to direct sunlight or strong wind.
- 6.Make sure that the outdoor unit is installed in accordance with the installation instructions, and is convenient for maintenance and repair.
- 7.The height difference between indoor and outdoor units is within 32.8ft, and the length of the connecting tubing does not exceed 49.2ft (09K), 65.6ft (12K) and 82ft (18/24K).
- 8.Select a place where it is out of reach of children.
- 9.Select a place where the unit does not have negative impact on pedestrians or on the city.

7.1.4 Safety Precautions for Electric Appliances

1. A dedicated power supply circuit should be used in accordance with local electrical safety regulations.
2. Don't drag the power cord with excessive force.
3. The unit should be reliably earthed and connected to an exclusive earth device by the professionals.
4. The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
5. The minimum distance between the unit and combustive surface is 4.9ft.
6. The appliance shall be installed in accordance with national wiring regulations.
7. An all-pole disconnection switch with a contact separation of at least 0.1in in all poles should be connected in fixed wiring.

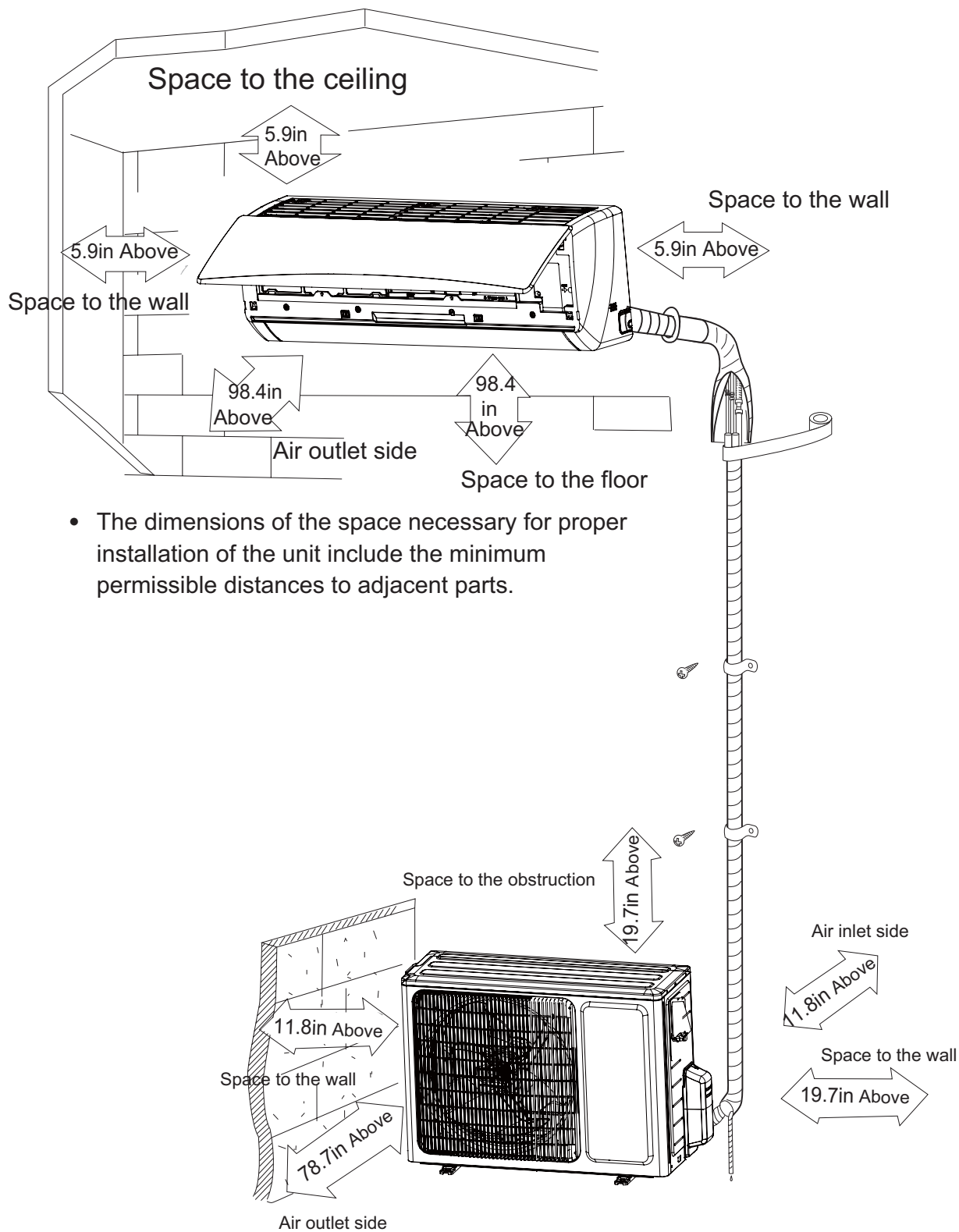
Note:

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

7.1.5 Earthing Requirements

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

7.2 Installation Drawing

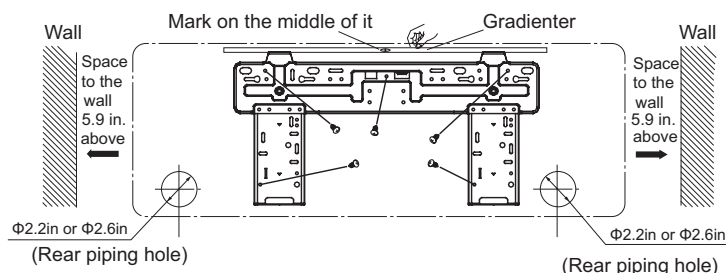


- The dimensions of the space necessary for proper installation of the unit include the minimum permissible distances to adjacent parts.

7.3 Install Indoor Unit

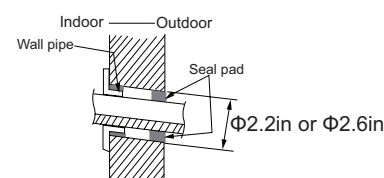
7.3.1 Installation of Mounting Plate

1. Mounting plate should be installed horizontally. As the water tray's outlet for the indoor unit is two-way type, during installation, the indoor unit should slightly slant to water tray's outlet for smooth drainage of condensate.
2. Fix the mounting plate on the wall with screws.
3. Be sure that the mounting plate has been fixed firmly enough to withstand about 132.3lb. Meanwhile, the weight should be evenly shared by each screw.



7.3.2 Drill Piping Hole

1. Slant the piping hole (Φ2.2 or Φ2.6) on the wall slightly downward to the outdoor side.
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



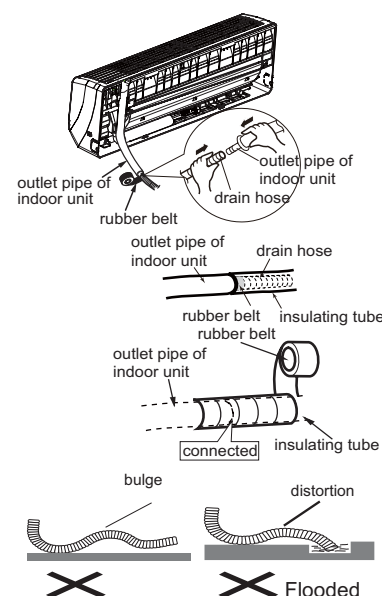
7.3.3 Installation of Drain Hose

1. Connect the drain hose to the outlet pipe of the indoor unit. Bind the joint with rubber belt.

2. Put the drain hose into insulating tube.

3. Wrap the insulating tube with wide rubber belt from the joint of outlet pipe and insulating pipe so as to prevent shift of insulating tube. The drain hose should be placed at a downward slant for easy discharge of condensate.

Note: the insulating tube should be connected reliably with the sleeve outside the outlet pipe. The drain hose should be downward slant, without distortion, bulge or fluctuation. Do not put the water outlet in the water.



7.3.4 Connecting Indoor and Outdoor Electric Wires

1. Open the front panel.
2. Remove the wiring cover. Connect and fix power connection cord to the terminal board as shown in Fig.2.
3. Make the power connection cord through the hole in the back of indoor unit.
4. Reinstall the cord anchorage and wiring cover.
5. Reinstall the front panel.

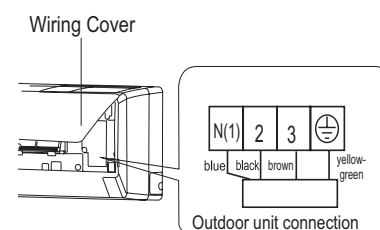


Fig.2

NOTE:

All wires between indoor and outdoor units must be connected by the qualified electric contractor.

- Electric wires must be connected correctly. Improper connection may cause malfunction.
- Tighten the terminal screws securely.
- After tightening the screws, pull the wire slightly to confirm whether it is firm or not.
- Make sure that the electric connections are earthed properly to prevent electric shock.
- Make sure that all wiring connections are secure and the cover plates are reinstalled properly. Poor installation may cause fire or electric shock.

7.3.5 Installation of Indoor Unit

- The piping can be output from right, right rear, left or left rear.

1. When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis when necessary (As shown in Fig.3)

- (1) Cut off the tailing 1 when routing the wiring only;
- (2) Cut off the tailing 1 and tailing 2 when routing both the wiring and piping.

2. Take out the piping from body case, wrap the piping, power cords, drain hose with the tape and make them through the piping hole. (As shown in Fig.4)

3. Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough. (As shown in Fig.5)

4. The installation site should be 98.4in or more above the floor.

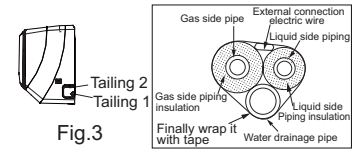


Fig.3

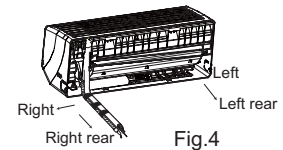


Fig.4

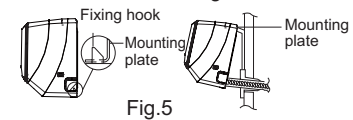
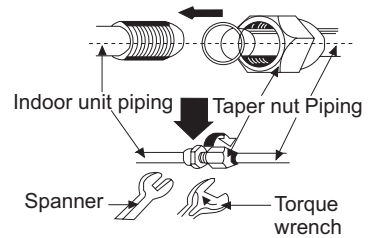


Fig.5

7.3.6 Installation of Connection Pipe

1. Align the center of the pipe flare with the relevant valve.
2. Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench referring to the following:

Tube diameter	Tightening torque, approximate (N·m)
Φ6.35(1/4")	14~18N·m(140-180kgf.cm)
Φ9.52(3/8")	34~42N·m(340-420kgf.cm)
Φ12.7(1/2")	49~61N·m(490-610kgf.cm)
Φ15.88(5/8")	68~82N·m(680-820kgf.cm)



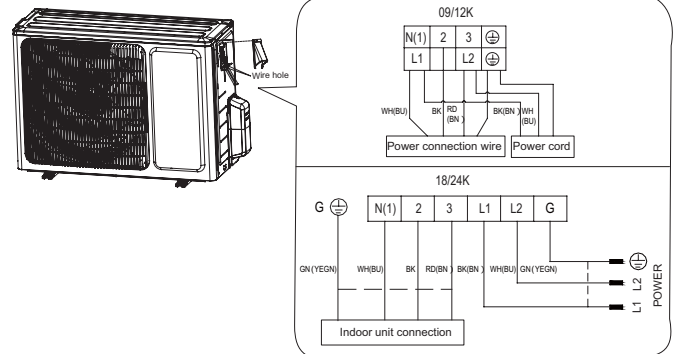
NOTE:

Connect the connection pipe to indoor unit at first and then to outdoor unit. Handle piping bending with care. Do not damage the connection pipe. Ensure that the joint nut is tightened firmly, otherwise, it may cause leakage.

7.4 Installation of Outdoor Unit

7.4.1 Electric Wiring

1. Remove the handle on the right side plate of outdoor unit.
2. Take off wire cord anchorage. Connect and fix power connection cord to the terminal board. Wiring should fit that of indoor unit.
3. Fix the power connection cord with wire clamps and then connect the corresponding connector.
4. Confirm if the wire has been fixed properly.
5. Reinstall the handle.

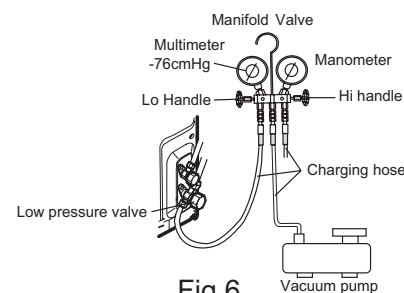


NOTE:

- Incorrect wiring may cause malfunction of spare part.
- After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire.

7.4.2 Air Purging and Leakage Test

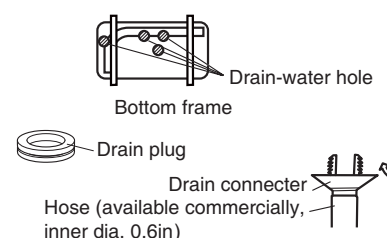
1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
2. Connect joint of charging hose to vacuum pump.
3. Fully open the handle of Lo manifold valve.
4. Open the vacuum pump for vacuumization. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
5. Keep evacuating for more than 15mins and make sure the reading of multi-meter is -1.0×10^5 pa (-76 cmHg).
6. Fully open high/low pressure valves.
7. Remove charging hose from charging end of low pressure valve.
8. Tighten bonnet of low pressure valve. (As shown in Fig.6)



7.4.3 Outdoor condensate Drainage (only for heat pump type)

During heating operation, the condensate and defrosting water should be drained out reliably through the drain hose. Install the outdoor drain connector in a $\Phi 0.98$ in hole on the base plate and attach the drain hose to the connector so that the waste water formed in the outdoor unit can be drained out .The hole diameter 0.98 must be plugged.

Whether to plug other holes will be determined by the dealers according to actual conditions.



7.5 Check after Installation and Test Operation

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has the unit been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating)
Is thermal insulation sufficient?	It may cause condensation.
Is water drainage satisfactory?	It may cause water leakage.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the unit.
Is the electric wiring or piping connection installed correctly and securely?	It may cause electric malfunction or damage the parts.
Has the unit been securely earthed?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the parts.
Is the inlet or outlet blocked?	It may cause insufficient cooling(heating)
Is the length of connection pipes and refrigerant capacity recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1.Before Operation Test

- (1)Do not switch on power before installation is finished completely.
- (2)Electric wiring must be connected correctly and securely.
- (3)Cut-off valves of the connection pipes should be opened.
- (4)All the impurities such as scraps and thrums must be cleared from the unit.

2.Operation Test Method

- (1)Switch on power and press "ON/OFF" button on the wireless remote controller to start the operation.
- (2)Press MODE button to select the COOL, HEAT (Not available for cooling only unit), FAN to check whether the operation is normal or not.

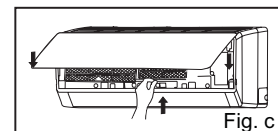
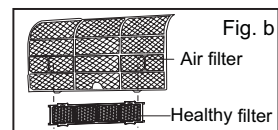
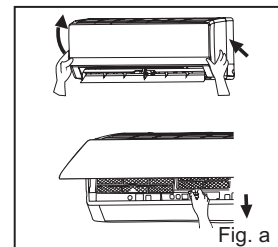
7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

1.Lift up the front panel from its two ends, as shown by the arrow direction, and then remove the air filter.(as shown Fig.a)

2.Attach the healthy filter onto the air filter, (as shown Fig.b).

3. Install the air filter properly along the arrow direction in Fig.c, and then close the panel .



7.6.2 Cleaning and Maintenance

Remove the healthy filter and reinstall it after cleaning according to the installation instruction. Do not use brush or hard objects to clean the filter. After cleaning, be sure to dry it in the shade.

7.6.3 Service Life

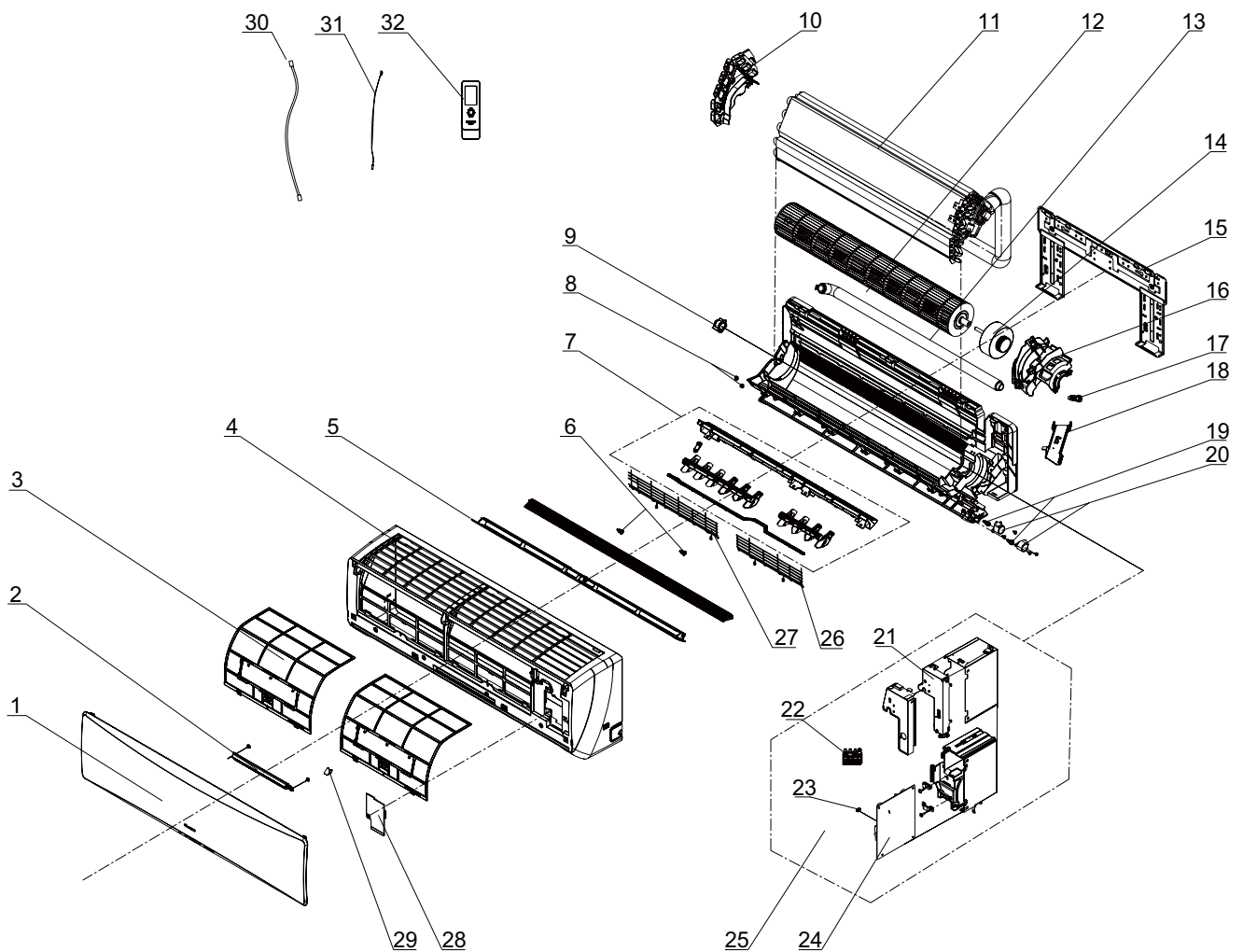
The general service life for the healthy filter is about one year under normal condition. As for silver ion filter, it is ineffective when its surface becomes black (green).

●This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein are different from the actual product, please refer to the actual product. The quantity of healthy filters is based on the actual delivery.

8. Exploded Views and Parts List

8.1 Indoor Unit

(1)Models:09/12K

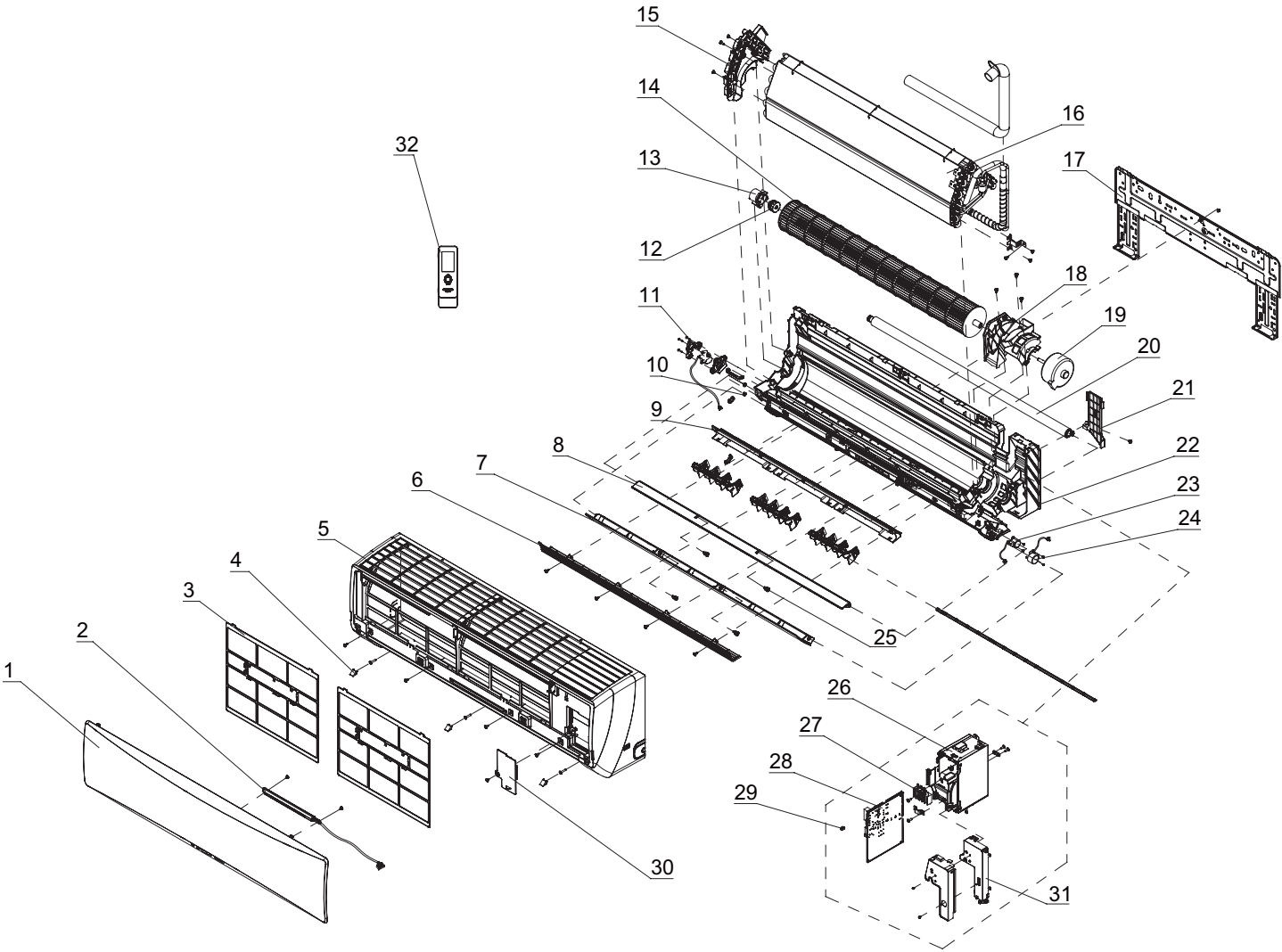


Exploded Views and Parts List

NO.	Description	Part Code		Qty
		GWH09TB-D3DNA1A/I	GWH12TB-D3DNA1A/I	
	Product Code	CB148N02200	CB148N02300	
1	Front Panel	20012850K	20012850K	1
2	Display Board	30565140	30565140	1
3	Filter Sub-Assy	1112211602	1112211602	2
4	Front Case Sub-assy	2001288902	2001288902	1
5	Guide Louver (small)	10512127	10512127	1
6	Crank	10582070	10582070	1
7	Helicoid Tongue sub-assy	2611224404	2611224404	1
8	Left Axile Bush	10512037	10512037	2
9	Propeller Axile Bush	1054202101	1054202101	1
10	Evaporator Support	24212114	24212114	1
11	Evaporator Assy	01002364	01002364	1
12	Cross Flow Fan	10352033	10352033	1
13	Drainage Hose	05230014	05230014	1
14	Brushless DC Motor	15013068	15013068	1
15	Wall Mounting Frame	01252484	01252484	1
16	Motor Press Plate	26112209	26112209	1
17	Rubber Plug (Water Tray)	76712012	76712012	1
18	Pipe Clamp	2611216402	2611216402	1
19	Axile Bush	10542036	10542036	2
20	Step Motor	15212125	15212125	1
21	Electric Box Cover	2012240901	2012240901	1
22	Terminal Board	42011233	42011233	1
23	Jumper	4202300107	4202300108	1
24	Main Board	30148296	30148296	1
25	Electric Box Assy	20302492	20302490	1
26	Rear Grill	01472029	01472029	1
27	Rear Grill	01472030	01472030	1
28	Electric Box Cover2	20122075	20122075	1
29	Screw Cover	24252016	24252016	1
30	Ambient Temperature Sensor	390000451	390000451	1
31	Temperature Sensor	390000598	390000598	1
32	Remote Controller	30510138	30510138	1

The data above are subject to change without notice.

(2)Model:18K

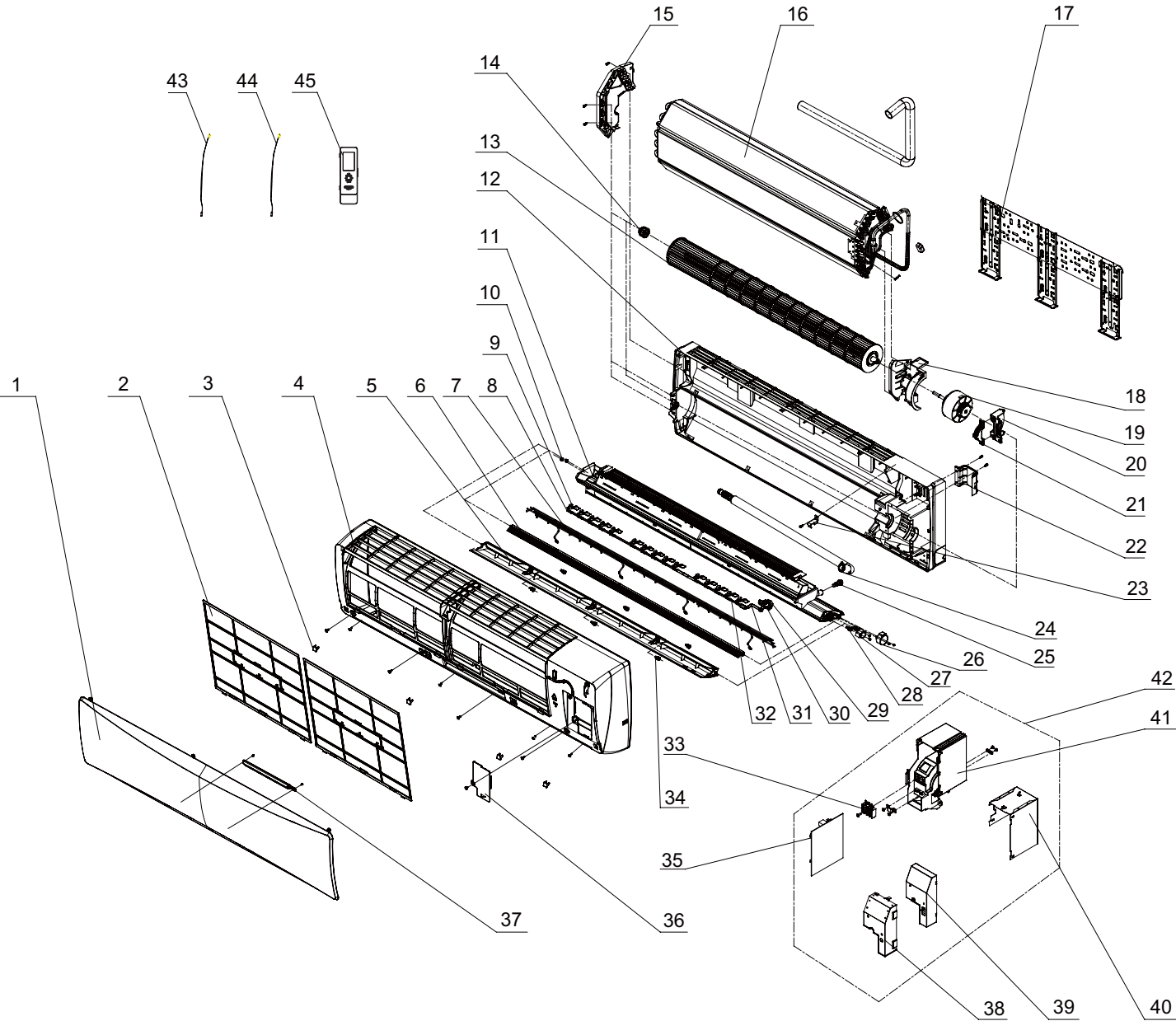


Exploded Views and Parts List

NO.	Description	Part Code	Qty
		GWH18TC-D3DNA1A/I	
	Product Code	CB148N04000	
1	Front Panel	20012820U	1
2	Display Board	30565141	1
3	Filter Sub-Assy	1112209105	2
4	Screw Cover	24252016	3
5	Front Case	20012821	1
6	Rear Grill	01472028	1
7	Guide Louver	10512283	1
8	Guide Louver (small)	1051222601	1
9	Helicoid Tongue	2611234901	1
10	Left Axile Bush	1051203701	2
11	Step Motor	1501208602	1
12	O-Gasket of Cross Fan Bearing	76512203	1
13	Ring of Bearing	26152025	1
14	Cross Flow Fan	10352045	1
15	Evaporator Support	24212139	1
16	Evaporator Assy	0100229901	1
17	Wall Mounting Frame	01252123	1
18	Motor Press Plate	26112316	1
19	Fan Motor	15012127	1
20	Drainage Hose	0523001406	1
21	Pipe Clamp	26112188	1
22	Rear Case assy	22202499	1
23	Step Motor	1521212901	1
24	Step Motor	15212404	1
25	Axile Bush	10542036	4
26	Electric Box Assy	20302705	1
27	Terminal Board	42011233	1
28	Main Board	30148469	1
29	Jumper	4202300115	1
30	Electric Box Cover2	20122142	1
31	Electric Box Cover	2012240901	1
32	Remote Controller	30510137	1

The data above are subject to change without notice.

(3)Model:24K



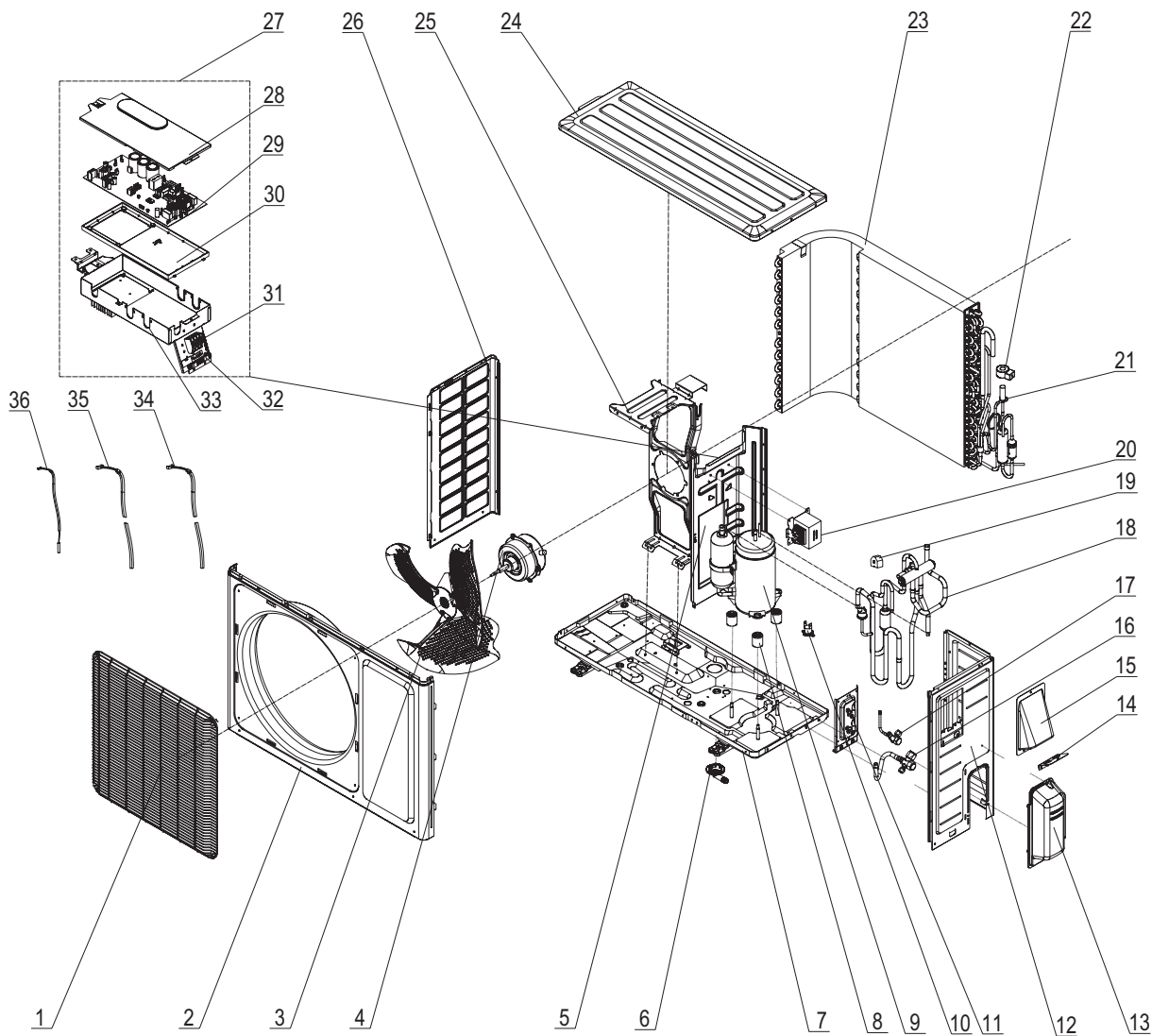
Exploded Views and Parts List

NO.	Description	Part Code	Qty
		GWH24TD-D3DNA1A/I	
	Product Code	CB148N03800	
1	Front Panel	20012894U	1
2	Filter Sub-Assy	11122136	2
3	Screw Cover	242520053	4
4	Front Case Sub-assy	20022004	1
5	Guide Louver	10512236	1
6	Small Guide Louver	1051223701	1
7	Rear Grill	01472032	1
8	Swing Lever2	1058211601	1
9	Air Louver	10512252	15
10	Left Axile Bush	1051203701	2
11	Water Tray Assy	01272119	1
12	Rear Case Sub-Assy	22202092	1
13	Cross Flow Fan	10352420	1
14	O-Gasket of Cross Fan Bearing	76512203	1
15	Left Evaporator Support	24212041	1
16	Evaporator Assy	01002340	1
17	Wall Mounting Frame	01252398	1
18	Right Support of Evaporator	2421204201	1
19	Fan Motor	1501213401	1
20	Motor Fixed Clip 1	26112324	1
21	Motor Fixed Clip 2	26112325	1
22	Pipe Clamp	26112071	1
23	Fixed Clip (Evaporator)	02112009	1
24	Drainage Hose	0523001403	1
25	Rubber Plug (Water Tray)	76712012	1
26	Step Motor	1521240208	1
27	Step Motor	1521212602	1
28	Crank	73012021	2
29	Step Motor	1521212301	1
30	Motor Holder	26152046	1
31	Swing Lever 3	1058211701	1
32	Swing Lever 1	1058211501	1
33	Terminal Board	42011233	1
34	Axile Bush	10542036	3
35	Main Board	30148469	1
36	Electric Box Cover2	20122142	1
37	Display Board	30565141	1
38	Shield Cover of Electric Box Cover	01592108	1
39	Electric Box Cover	20122164	1
40	Shield Cover of Electric Box	01592107	1
41	Electric Box	20112140	1
42	Electric Box Assy	20302612	1
43	Ambient Temperature Sensor	390000451	1
44	Temperature Sensor	390000598	1
45	Remote Controller	30510138	1

The data above are subject to change without notice.

8.2 Outdoor Unit

(1)Models:09/12K



Exploded Views and Parts List

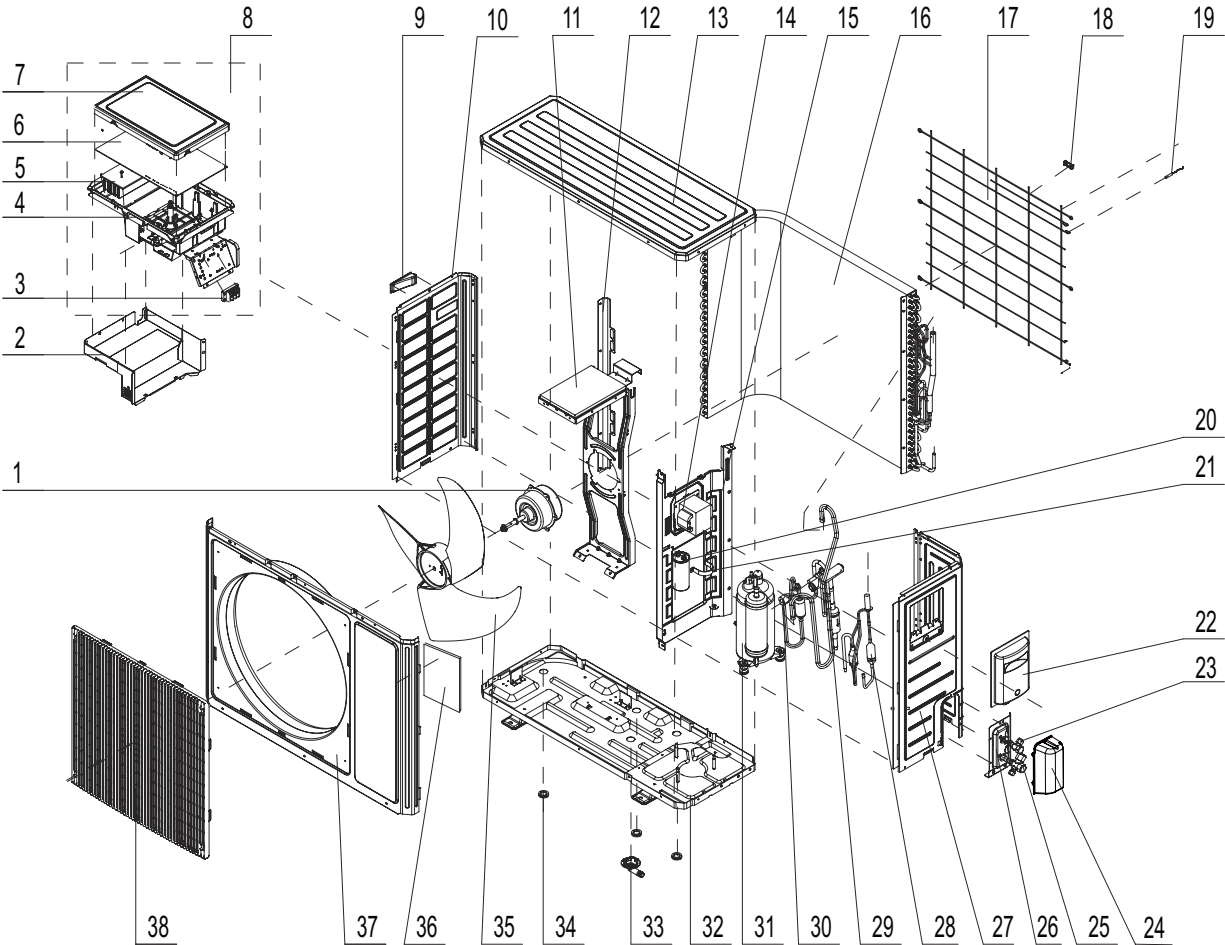
No.	Description	Part Code		Qty
		GWH09TB-D3DNA1A/O (electrical heater)	GWH12TB-D3DNA1A/O (electrical heater)	
	Product Code	CB148W02200	CB148W02300	
1	Front Grill	01473065	01473065	1
2	Cabinet	01433034P	01433034P	1
3	Axial Flow Fan	10333417	10333417	1
4	Fan Motor	1501307901	1501307901	1
5	Clapboard	01233125	01233125	1
6	Drainage Joint	26113009	26113009	1
7	Chassis Sub-assy	02803086P	02803086P	1
8	Compressor Gasket	76710290	76710290	3
9	Compressor and Fittings	00103851	00103851	1
10	Compressor Overload Protector(External)	00183066	00183066	1
11	Valve Support Sub-Assy	01713115P	01713115P	1
12	Right Side Plate	01303244P	01303244P	1
13	Valve Cover	22243005	22243005	1
14	Cable Cross Plate 1	02123013P	02123013P	1
15	Cable Cross Plate 2	02123014P	02123014P	1
16	Cut off Valve Sub-Assy	07133674	07133674	1
17	Cut off Valve Sub-Assy	07133204	07133204	1
18	4-Way Valve Assy	03123870	03123870	1
19	Magnet Coil	430004002	430004002	1
20	Reactor	43130184	43130184	1
21	Electric Expansion Valve Sub-Assy	07133623	07133623	1
22	Magnet Coil	4300876701	4300876701	1
23	Condenser Assy	01113882	01113882	1
24	Top Cover	01253034P	01253034P	1
25	Motor Support Sub-Assy	01703433	01703433	1
26	Left Side Plate	01303169P	01303169P	1
27	Electric Box Assy	02613007	02613006	1
28	Electric Box Cover Sub-Assy	0260309601	0260309601	1
29	Main Board	30148104	30148110	1
30	Electric Box 1	20113005	20113005	1
31	Terminal Board	42010313	42010313	1
32	Wire Clamp	71010003	71010003	1
33	Electric Box Sub-Assy	02603616	02603616	1
34	Electrical Heater (Chassis)	76510004	76510004	1
35	Electrical Heater(Compressor)	76513004	76513004	1
36	Temperature Sensor	3900030903G	3900030903G	1

The data above are subject to change without notice.

No.	Description	Part Code		Qty
		GWH09TB-D3DNA1A/O	GWH12TB-D3DNA1A/O	
	Product Code	CB148W02201	CB148W02301	
1	Front Grill	01473065	01473065	1
2	Cabinet	01433034P	01433034P	1
3	Axial Flow Fan	10333417	10333417	1
4	Fan Motor	1501307901	1501307901	1
5	Clapboard	01233125	01233125	1
6	Drainage Joint	26113009	26113009	1
7	Chassis Sub-assy	02803086P	02803086P	1
8	Compressor Gasket	76710290	76710290	3
9	Compressor and Fittings	00103851	00103851	1
10	Compressor Overload Protector(External)	00183066	00183066	1
11	Valve Support Sub-Assy	01713115P	01713115P	1
12	Right Side Plate	01303244P	01303244P	1
13	Valve Cover	22243005	22243005	1
14	Cable Cross Plate 1	02123013P	02123013P	1
15	Cable Cross Plate 2	02123014P	02123014P	1
16	Cut off Valve Sub-Assy	07133674	07133674	1
17	Cut off Valve Sub-Assy	07133204	07133204	1
18	4-Way Valve Assy	03123870	03123870	1
19	Magnet Coil	430004002	430004002	1
20	Reactor	43130184	43130184	1
21	Electric Expansion Valve Sub-Assy	07133623	07133623	1
22	Magnet Coil	4300876701	4300876701	1
23	Condenser Assy	01113882	01113882	1
24	Top Cover	01253034P	01253034P	1
25	Motor Support Sub-Assy	01703433	01703433	1
26	Left Side Plate	01303169P	01303169P	1
27	Electric Box Assy	02613007	02613006	1
28	Electric Box Cover Sub-Assy	0260309601	0260309601	1
29	Main Board	30148104	30148110	1
30	Electric Box 1	20113005	20113005	1
31	Terminal Board	42010313	42010313	1
32	Wire Clamp	71010003	71010003	1
33	Electric Box Sub-Assy	02603616	02603616	1
34	Electrical Heater (Chassis)	/	/	/
35	Electrical Heater(Compressor)	76513004	76513004	1
36	Temperature Sensor	3900030903G	3900030903G	1

The data above are subject to change without notice.

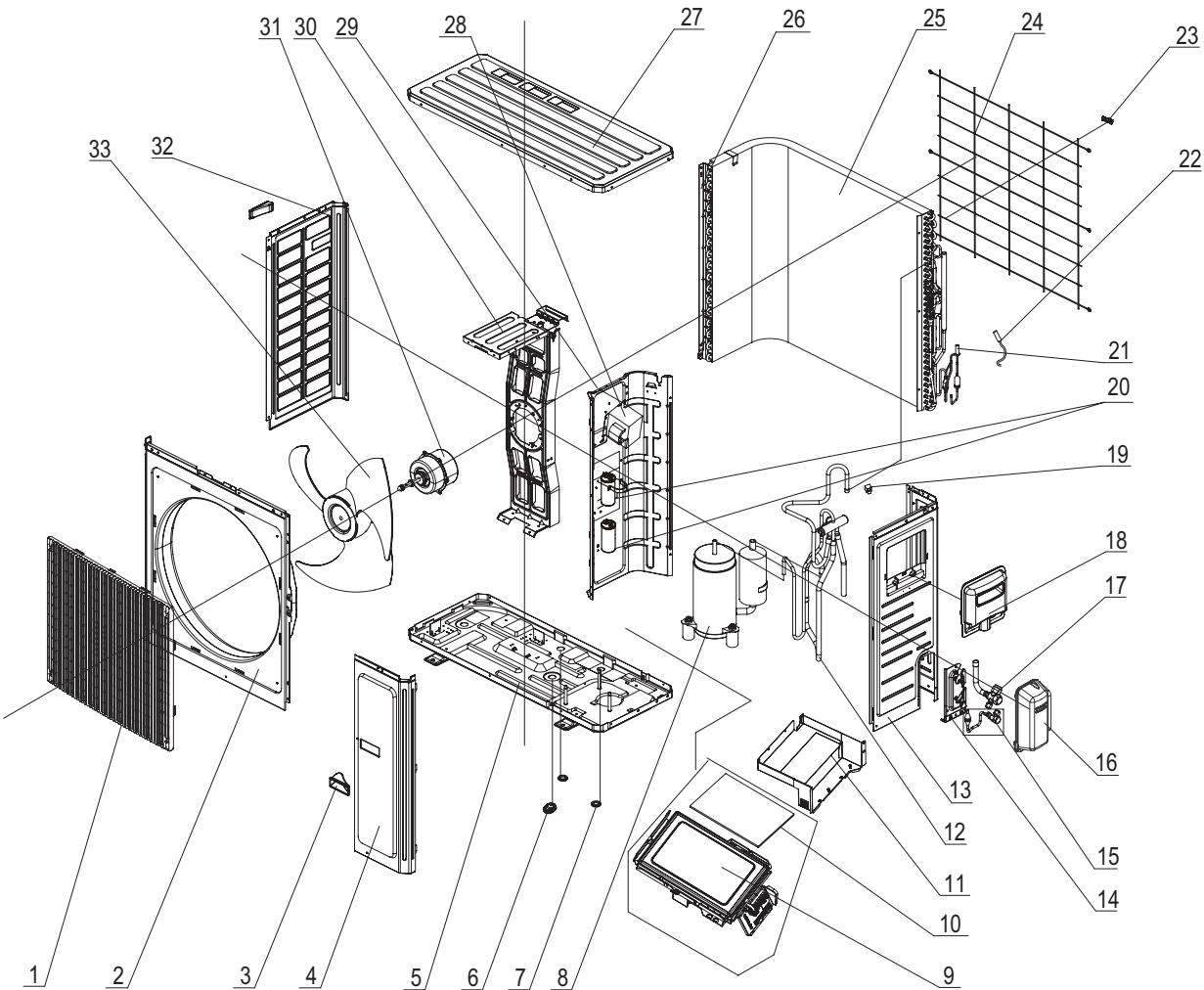
(2)Model:18K



No.	Description	Part Code	Qty
		GWH18TC-D3DNA1A/O	
	Product Code	CB148W04000	
1	Fan Motor	15015064	1
2	Electric Box (Fireproofing)	01413148	1
3	Terminal Board	42010255	1
4	Electric Box	20113015	1
5	Radiator	49013024	1
6	Main Board	301388331	1
7	Electric Box Cover	01413150	1
8	Electric Box Assy	02603623	1
9	Left Handle	26235401	1
10	Left Side Plate	01305041P	1
11	Motor Support Sub-Assy	01705259	1
12	Supporting board(condenser)	01795021	1
13	Top Cover	01255005P	1
14	Reactor	43130021	1
15	Clapboard Sub-Assy	01232902	1
16	Condenser Assy	01163079	1
17	Rear Grill	01473043	1
18	Wiring clamp	26115004	1
19	Temperature Sensor	3900030901	1
20	Capacitor CBB65	33000065	1
21	Capacitor Clamp Sub-assy	01413098	1
22	Handle	26235254	1
23	Cut off Valve Sub-Assy	07133093	1
24	Valve cover	22245002	1
25	Cut off Valve	07133157	1
26	Valve Support Sub-Assy	01713087	1
27	Right Side Plate	01305053P	1
28	Electronic Expansion Valve assy	07133092	1
29	4-Way Valve Assy	03123664	1
30	Magnet Coil	4300040033	1
31	Compressor and Fittings	00103807	1
32	Chassis Sub-assy	01203865P	1
33	Drainage Connector	06123401	1
34	Drainage Plug	06813401	3
35	Axial Flow Fan	10335008	1
36	Insulated Board (Cover of Electric Box)	20113003	1
37	Cabinet	01433047P	1
38	Front Grill	01473049	1

The data above are subject to change without notice.

(3)Model:24K

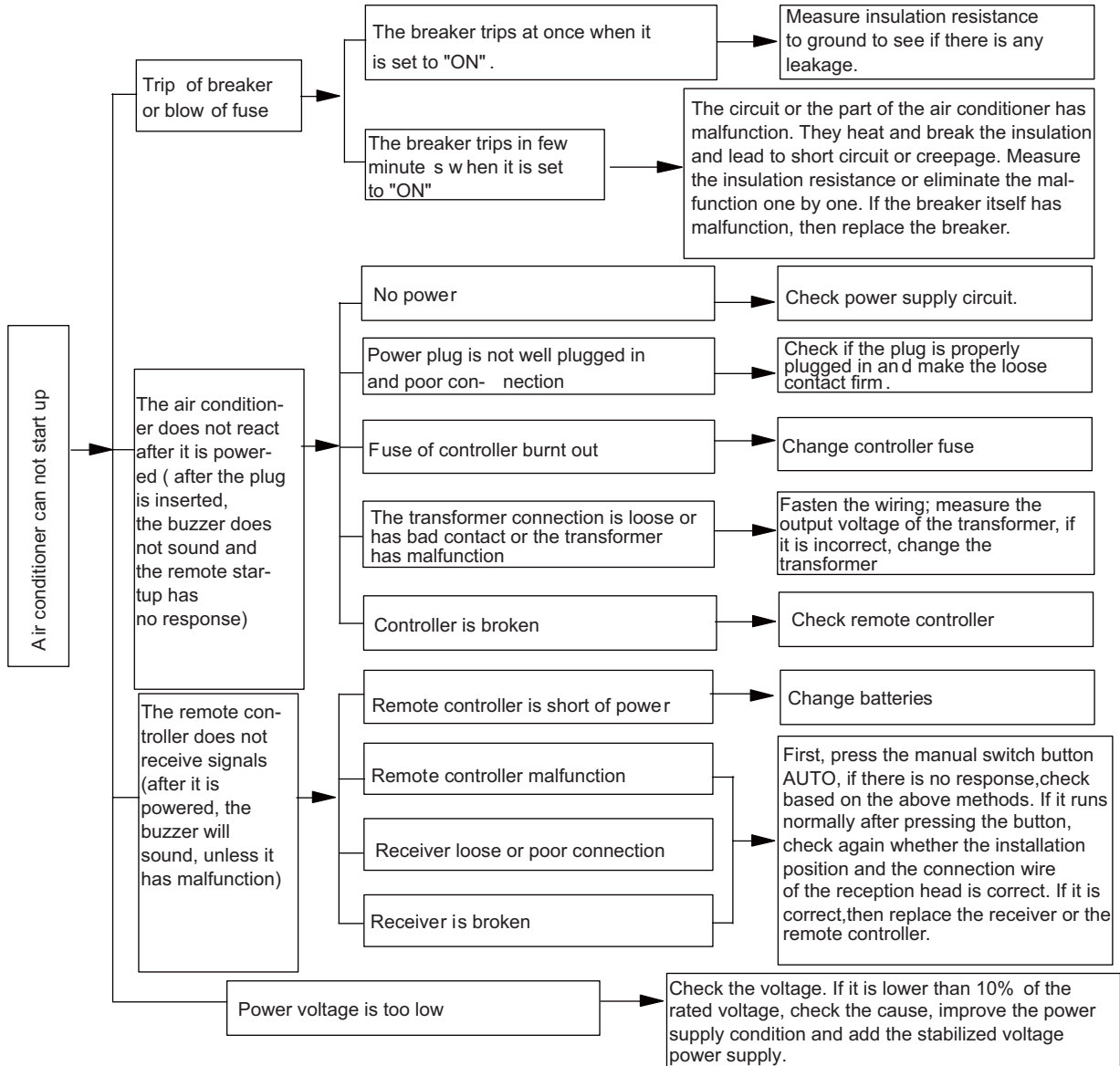


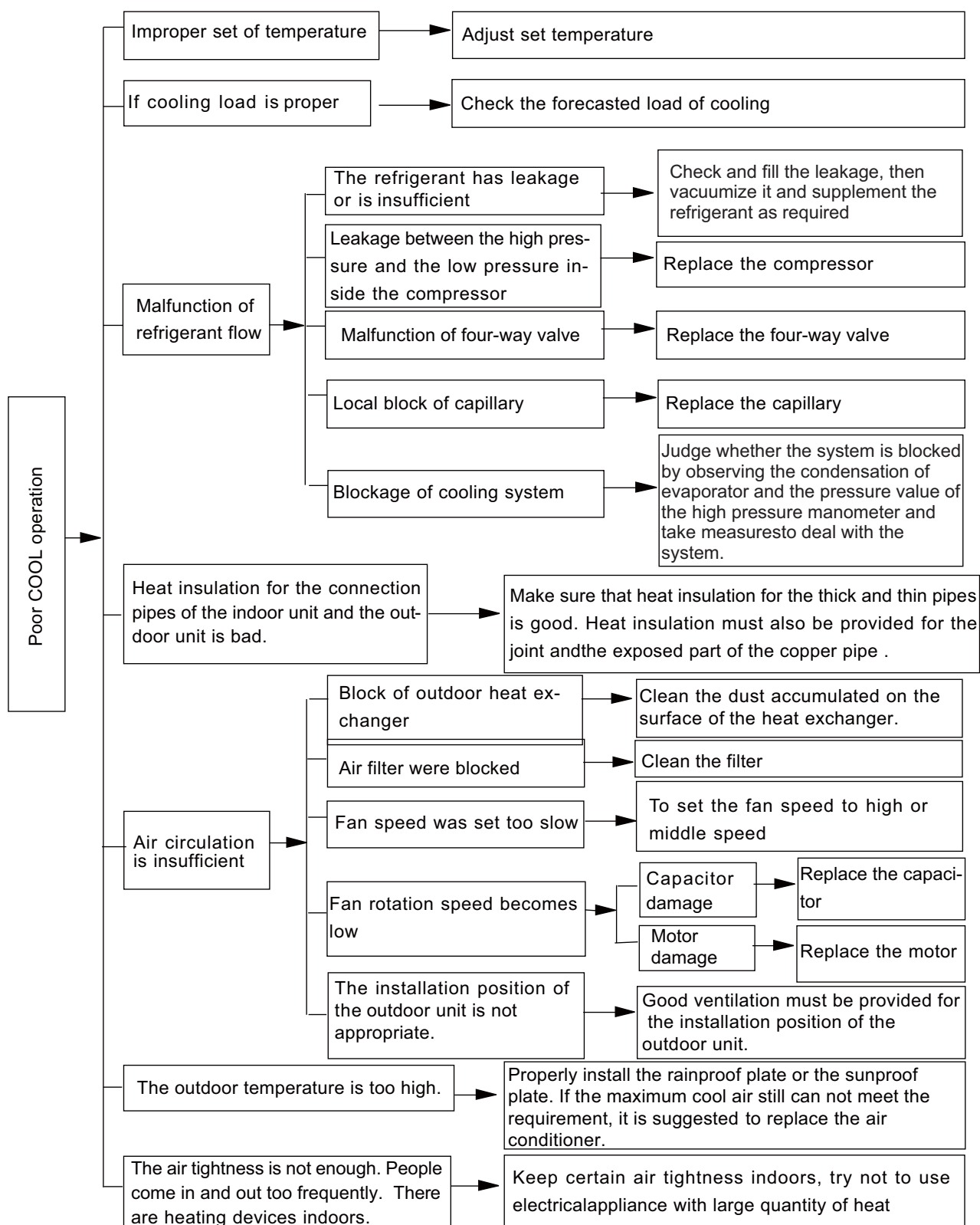
No.	Description	Part Code	Qty
		GWH24TD-D3DNA1A/O	
		Product Code	
		CB148W03800	
1	Front Grill	22415003	1
2	Cabinet	01435004P	1
3	Handle	26235401	1
4	Front Side Plate	01305086P	1
5	Chassis Sub-assy	02803016P	1
6	Drainage Connector	06123401	1
7	Drainage Plug	06813401	3
8	Compressor and Fittings	00105051	1
9	Electric Box Assy	02613078	1
10	Main Board	301484431	1
11	Electric Box (Fireproofing)	01413426	1
12	4-Way Valve Assy	03123843	1
13	Right Side Plate	01305044P	1
14	Valve Support Sub-Assy	01715020P	1
15	Cut off Valve	07130239	1
16	Valve cover	/	/
17	Cut off Valve	07133157	1
18	Big Handle	26235001	1
19	Magnet Coil	4300040033	1
20	Capacitor	3300008107	2
21	Electric Expand Valve Fitting	4300876705	1
22	Temperature Sensor	3900030901	1
23	Wiring Clamp	26115004	1
24	Rear Grill	01475013	1
25	Condenser Assy	01163118	1
26	Condenser Support Plate	01175092	1
27	Top Cover	01255006P	1
28	Reactor	43130183	1
29	Clapboard Assy	01233138	1
30	Motor Support Sub-Assy	01705437	1
31	Fan Motor	15014034	1
32	Left Side Plate	01305043P	1
33	Axial Flow Fan	10335005	1

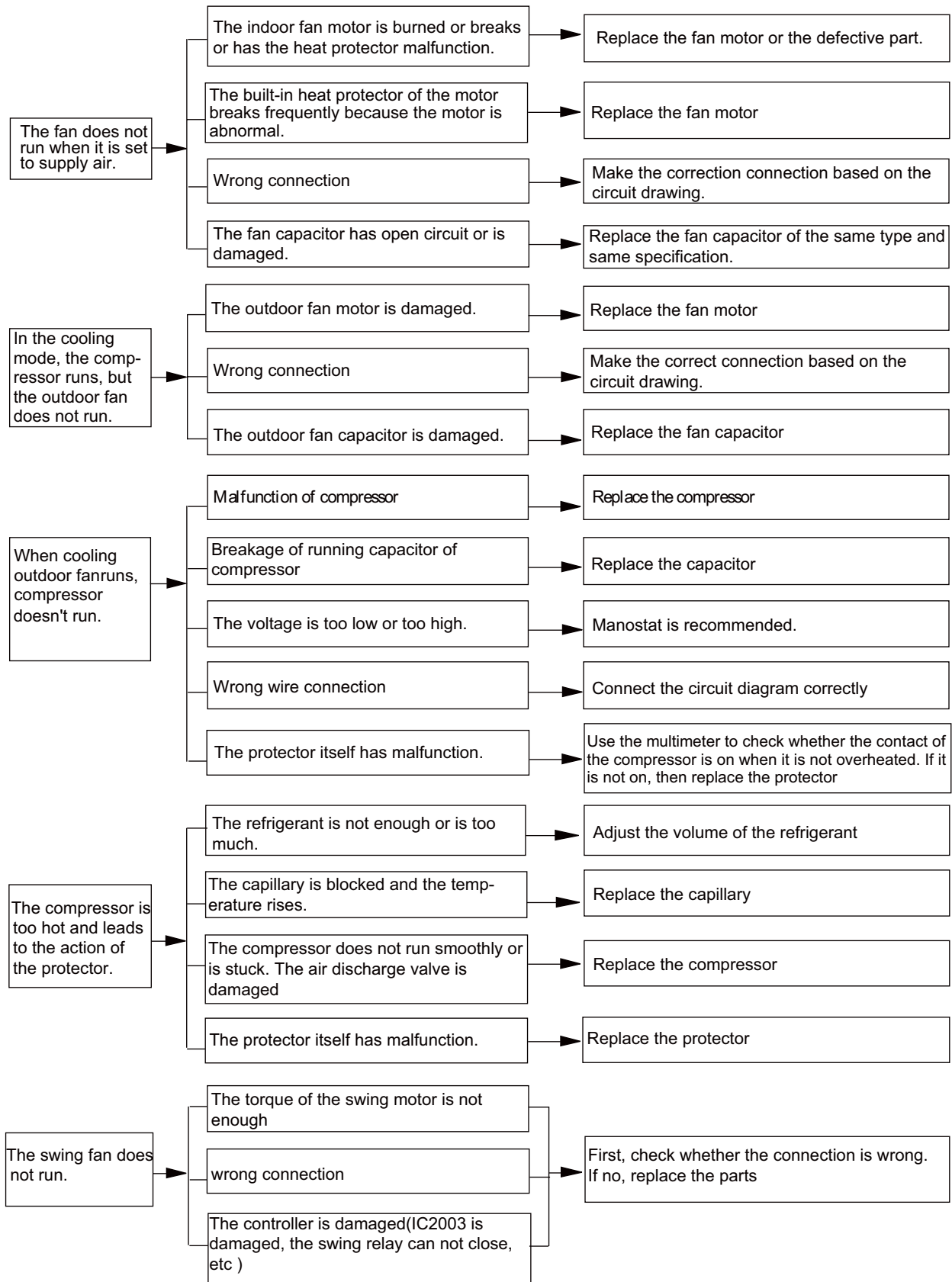
The data above are subject to change without notice.

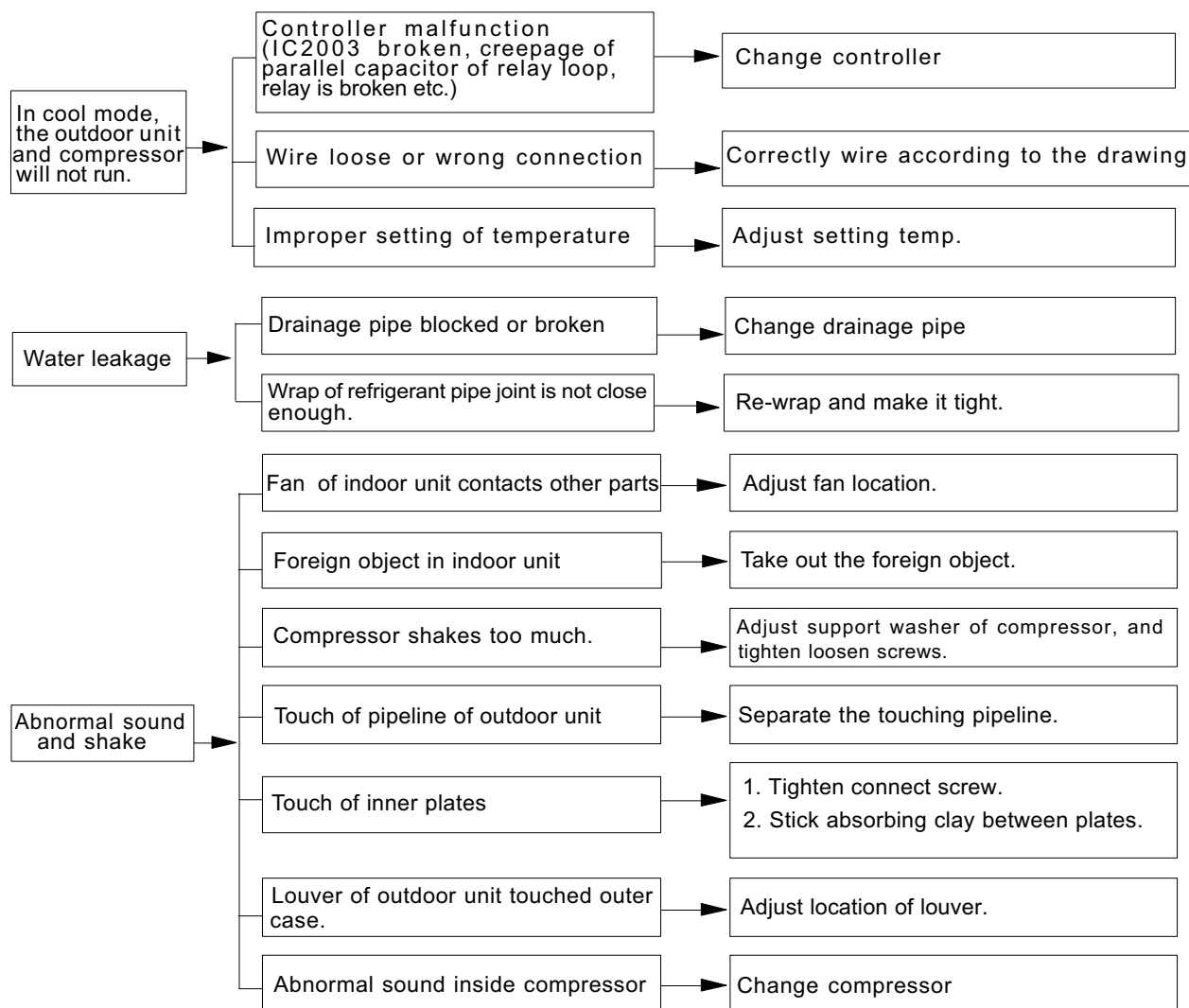
9. Troubleshooting

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









9.1 Precautions before Performing Inspection or Repair

Be cautious during installation and maintenance. Do operation following the regulations to avoid electric shock and casualty or even death due to drop from high attitude.

* Static maintenance is the maintenance during de-energization of the air conditioner.

For static maintenance, make sure that the unit is de-energized and the plug is disconnected.

*dynamic maintenance is the maintenance during energization of the unit.

Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site. Check if there is electricity on the housing and connection copper pipe of the air conditioner with voltage tester. After ensure insulation place and the safety, the maintenance can be performed.

Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power.

At times such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position.

Normally,diagnose troubles according to the trouble diagnosis procedure as described below.(Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

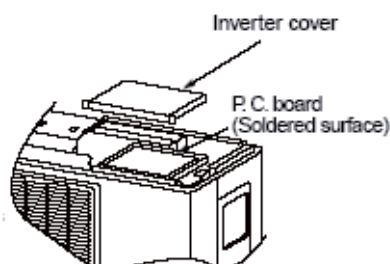
No.	Troubleshooting procedure
1	Confirmation
2	Judgement by Flashing LED of Indoor/Outdoor Unit
3	How to Check Simply the Main Part

NOTE:

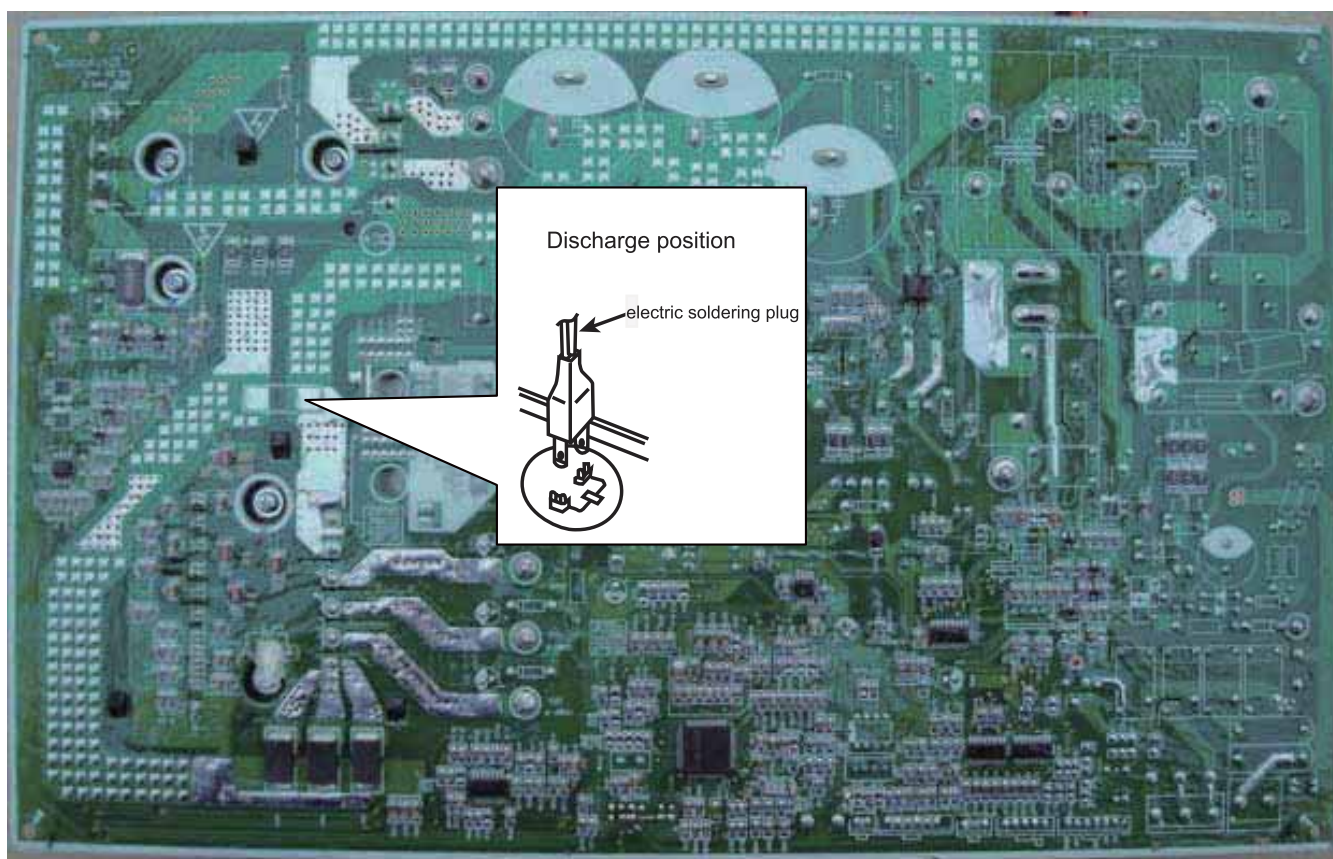
A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter).Therefore,if the power supply is turned off,charge(charging voltage DC280V to 380V)remains and discharging takes a lot of time. After turning off the power source,if touching the charging section before discharging,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

Discharging method

(1)remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge rescharge resistance(approx.100Ω,20W) or plug of the soldering iron to voltage between + - terminals of the electrolytic capacitor (test 3*D* and *E* point) on PC Board for 30s ,and then perform discharging



9.2 Confirmation

(1) Confirmation of Power Supply

Confirm that the power breaker operates(ON) normally;

(2) Confirmation of Power Voltage

Confirm that power voltage is AC 208-230 $\pm 10\%$. If power voltage is not in this range, the unit may not operate normally.

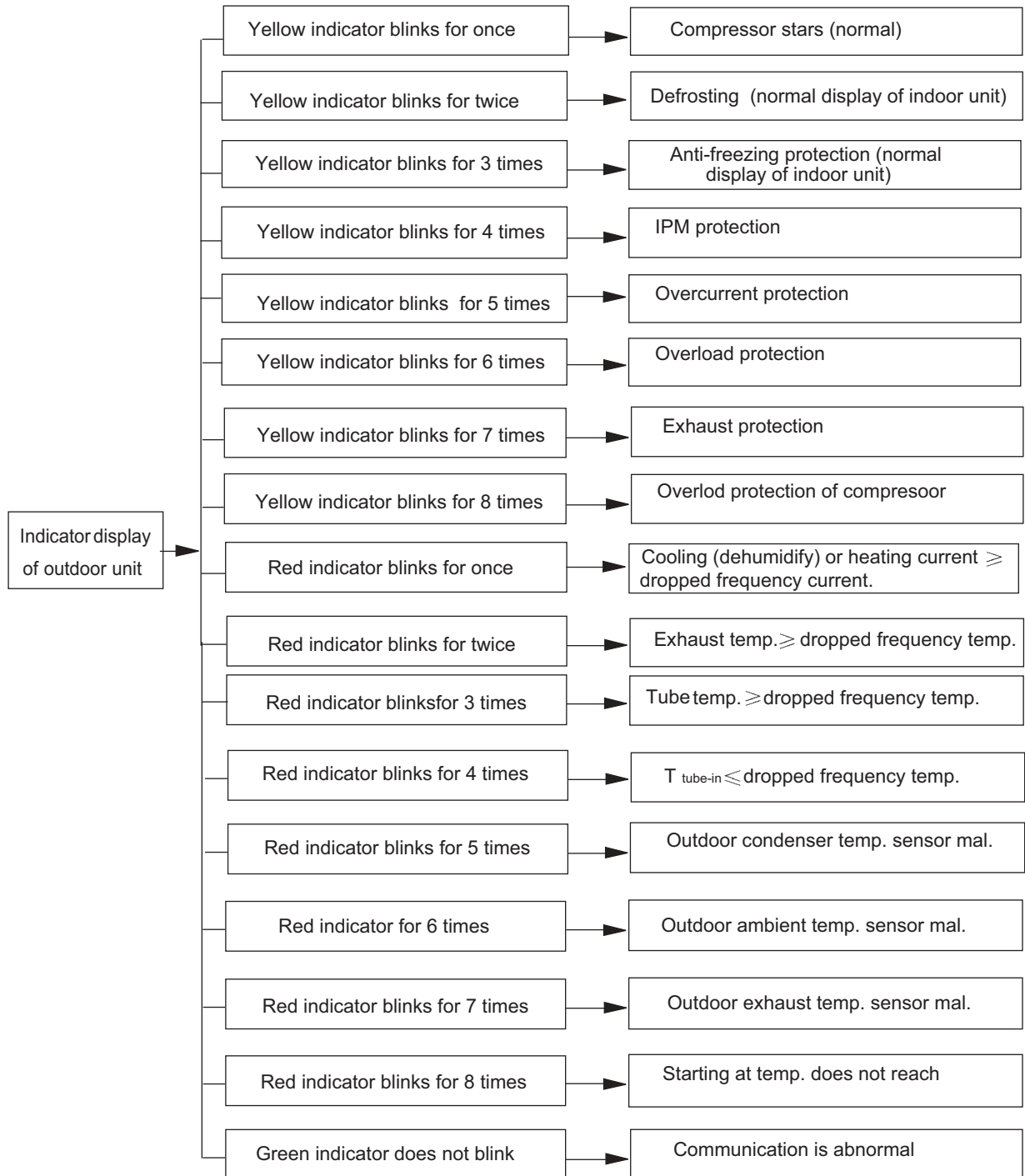
9.3 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

(1)Models:09/12K:

Malfunction and Status Display Table								
No.	Malfunction Name	Malfunction Type	Display of Malfunction of Indoor Unit			Malfunction of Outdoor Unit		
			Display Nixie Tube	Status of LED Lamp			Status of LED Lamp	
				LED Lamp for Operation	LED Lamp for Cooling	LED Lamp for Heating	Yellow LED Lamp	Red LED Lamp
1	Malfunction of Circuit for zero cross detection	Malfunction of hardware	U8	Blinks for 17 times				
2	Malfunction protection for jumper cap		C5	Blinks for 15 times				
3	No feedback from indoor motor		H6	Blinks for 11 times				
4	Indoor ambient temp sensor has open or short circuit		F1		Blinks once			
5	Indoor evaporator temp sensor has open or short circuit		F2		Blinks twice			
6	Liquid valve temp sensor has open or short circuit		b5		Blinks for 19 times			
7	Gas valve temp sensor has open or short circuit		b7		Blinks for 22 times			
8	Module temp sensor has open or short circuit		P7			Blinks for 18times		
9	Outdoor ambient temp sensor has open or short circuit		F3		Blinks for 3 times			Blinks for 6 times
10	Outdoor inlet pipe temp sensor of condenser has open or circuit (for commercial use)		A5					
11	Outdoor middle pipe temp sensor of condenser has open or short circuit		F4		Blinks for 4 times			Blinks for 5 times
12	Outdoor outlet pipe of condenser has open or short circuit (for commercial use)		A7					
13	Outdoor discharge temp sensor has open or short circuit		F5		Blinks for 5 times			Blinks for 7 times
14	Communication malfunction of indoor and outdoor units		E6	Blinks for 6 times				
15	Malfunction of circuit for detecting phase current of compressor		U1			Blinks for 12 times		
16	Demagnetization protection of compressor		HE			Blinks for 14 times		
17	Malfunction of voltage drop of DC bus bar		U3			Blinks for 20 times		
18	Module temperature protection		P8			Blinks for 19 times	Blinks for 10 times	
19	Lack of refrigerant or block protection for the system (not applicable to residential air conditioner)		F0		Blinks for 10 times			Blinks for 9 times
20	Malfunction of charging for capacitor		PU			Blinks for 17 times		
21	High pressure protection for the system		E1	Blinks once				
22	Low pressure protection for the system (reserved)		E3	Blinks for 3 times				
23	Lock of compressor (for commercial air conditioner)		LE	/	/	/		
24	Reset of drive module (for commercial air conditioner)		P0	/	/	/		
25	Overspeed (for commercial air conditioner)		LF	/	/	/		
26	Malfunction of		PF	/	/	/		
27	AC contactor protection (for commercial air conditioner)		P9	/	/	/		
28	Temperature drift protection (for commercial air conditioner)		PE	/	/			
29	Sensor connection protection (for commercial air conditioner)		Pd	/	/	/		
30	Communication malfunction for drive board (for commercial air conditioner)		P6	Blinks for 16 times				
31	Thermal overload protection for compressor		H3			Blinks for 3 times	Blinks for 8 times	
32	Non-match between indoor and outdoor units		LP				Blinks for 16 times	
33	Malfunction of memory chip		EE			Blinks for 15 times		

34	Wrong connection of communication wire or malfunction of expansion valve (free match)	Display is controlled by remote control	dn	/	/	/		
35	Malfunction of current detection for the complete unit		U5		Blinks for 13 times			
36	Wrong connection of communication wire or status of detecting malfunction of expansion valve (free match)		dd	/	/	/		
37	Mode conflict		E7	Blinks for 7 times				
38	Refrigerant reclaiming mode		Fo	Blinks once	Blinks once			
39	Oil return under defrosting or heating		H1			Blinks once	Blinks twice	
40	Nominal cooling or heating (capacity test code)		P1	/	/	/		
41	Max. cooling or heating (capacity test code)		P2	/	/	/		
42	Middle cooling or heating (capacity test code)		P3	/	/	/		
43	Min. cooling or heating (capacity test code)		P0	/	/			
44	Failure of startup of compressor		Lc			Blinks for 11 times		
45	High discharge temperature protection of compressor		E4	Blinks for 4 times			Blinks for 7 times	
46	Overload protection		E8	Blinks for 8 times			Blinks for 6 times	
47	Overcurrent protection for the complete unit		E5	Blinks for 5 times			Blinks for 5 times	
48	Overcurrent protection for the complete unit		P5			Blinks for 15 times		
49	Desynchronizing of compressor		H7			Blinks for 7 times		
50	Lack/reverse phase protection of		Ld	/	/	/		
51	Module current protection (IPM protection)		H5			Blinks for 5 times	Blinks for 4 times	
52	Overlow voltage protection for DC bus bar		PL			Blinks for 21 times	Blinks for 12 times	
53	Overhigh voltage protection for DC bus bar		PH		Blinks for 11 times		Blinks for 13 times	
54	PFC protection		HC			Blinks for 6 times	Blinks for 14 times	
55	Overhigh power protection (not for outdoor		L9	Blinks for 20 times			Blinks for 9 times	
56	Abnormal reversing of 4-way valve		U7		Blinks for 20 times			
57	Frequency limit/decrease for current protection of the complete unit		F8		Blinks for 8 times			Blinks once
58	Frequency limit/decrease for current protection of the module (phase current)		En	/	/	/		
59	Frequency limit/decrease for high discharge temperature		F9		Blinks for 9 times			Blinks twice
60	Frequency limit/decrease for freeze protection		FH		Blinks twice	Blinks twice		Blinks for 4 times
61	Frequency limit/decrease for overload		F6		Blinks for 6 times			Blinks for 3 times
62	Frequency limit/decrease for module temperature protection		EU		Blinks for 6 times	Blinks for 6 times		Blinks for 11 times
63	Oil return in cooling		F7		Blinks for 7 times			
64	Cold air prevention		E9	Blinks for 9 times				
65	Freeze protection		E2	Blinks twice			Blinks for 3 times	
66	Reading malfunction of EEPROM						Blinks for 11 times	
67	Reaching temperature for turning on the unit							Blinks for 8 times
68	Frequency limit (power)							Blinks for 13 times
69	Malfunction of outdoor fan							Blinks for 14 times

If malfunction occurs, corresponding code will display and the unit will resume normal until protection or malfunction disappears.



Analysis or processing of some of the malfunction display:

1. Compressor discharge protection

Possible reasons: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser; the system has noncondensing gas (such as air, water etc.); blockage of capillary assy (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor; malfunction of protection relay; malfunction of discharge sensor; outdoor temperature too high.

Processing method: refer to the malfunction analysis in the above section.

2. Low voltage overcurrent protection

Possible reason: Sudden drop of supply voltage.

3. Communication malfunction

Processing method: Check if communication signal cable is connected reliably.

4. Sensor open or short circuit

Processing method: Check whether sensor is normal, connected with the corresponding position on the controller and if damage of lead wire is found.

5. Compressor over load protection

Possible reasons: insufficient or too much refrigerant; blockage of capillary and decrease of suction temp.; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.

Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compressor is fine when it is not overheated, if not replace the protector.

6. System malfunction

Overload protection. When tube temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature of indoor heat exchanger when heating) is too high, protection will be activated.

Possible reasons: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction.

Please refer to the malfunction analysis in the previous section for handling method.

7. IPM module protection

Processing method: Once the module malfunction happens, if it persists for a long time and cannot be self-canceled, cut off the power and turn off the unit, and then re-energize the unit again after about 10 min. After repeating the procedure for several times, if the malfunction still exists, replace the module.

(2) Models: 18/24K:

Troubleshooting

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)				A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			□OFF ■Illuminated ☆Blink					
			Operation Indicator	Cool Indicator	Heating Indicator	D5 (D40)	D6 (D41)	D16 (D42)	D30 (D43)		
1	High pressure protection of system	E1	OFF 3s and blink once			□	☆	☆	☆	During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment); Ambient temperature is too high.
2	Antifreezing protection	E2	OFF 3S and blink twice			■	□	■	□	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
3	High discharge temperature protection of compressor	E4	OFF 3S and blink 4 times			■	□	■	☆	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
4	Overcurrent protection	E5	OFF 3S and blink 5 times			□	■	☆	□	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.
5	Communi- cation Malfunction	E6	OFF 3S and blink 6 times			□	□	□	☆	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
6	High temperature resistant protection	E8	OFF 3S and blink 8 times			■	□	■	■	During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
7	Internal motor (fan motor) do not operate	H6	OFF 3S and blink 11 times							Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard rev detecting circuit.
8	Malfunction protection of jumper cap	C5	OFF 3S and blink 15 times							Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.
9	Indoor ambient temperature sensor is open/short circuited	F1		OFF 3S and blink once						During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged. (check with sensor resistance value chart) 4. Mainboard damaged.
10	Overcurrent protection of phase current for compressor	P5		OFF 3S and blink 15 times		□	☆	□	□	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)				A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			□OFF ■Illuminated ☆ Blink					
			Operation Indicator	Cool Indicator	Heating Indicator	D5 (D40)	D6 (D41)	D16 (D42)	D30 (D43)		
11	Indoor evaporator temperature sensor is open/short circuited	F2		OFF 3S and blink twice						AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.
12	Outdoor ambient temperature sensor is open/short circuited	F3		OFF 3S and blink 3 times		□	□	☆	■	During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
13	Outdoor condenser temperature sensor is open/short circuited	F4		OFF 3S and blink 4 times		□	□	☆	□	During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
14	Outdoor discharge temperature sensor is open/short circuited	F5		OFF 3S and blink 5 times		□	□	☆	☆	During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasnt been inserted into the copper tube
15	Limit/ decrease frequency due to overload	F6		OFF 3S and blink for 6 times		■	□	☆	☆	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
16	Decrease frequency due to overcurrent	F8		OFF 3S and blink 8 times		■	■	□	■	All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload
17	Decrease frequency due to high air discharge	F9		OFF 3S and blink 9 times		■	■	□	□	All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
18	Voltage for DC bus-bar is too high	PH		OFF 3S and blink 11 times		□	■	□	☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
19	Malfunction of complete units current detection	U5		OFF 3S and blink 13 times		□	■	☆	■	During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.

Troubleshooting

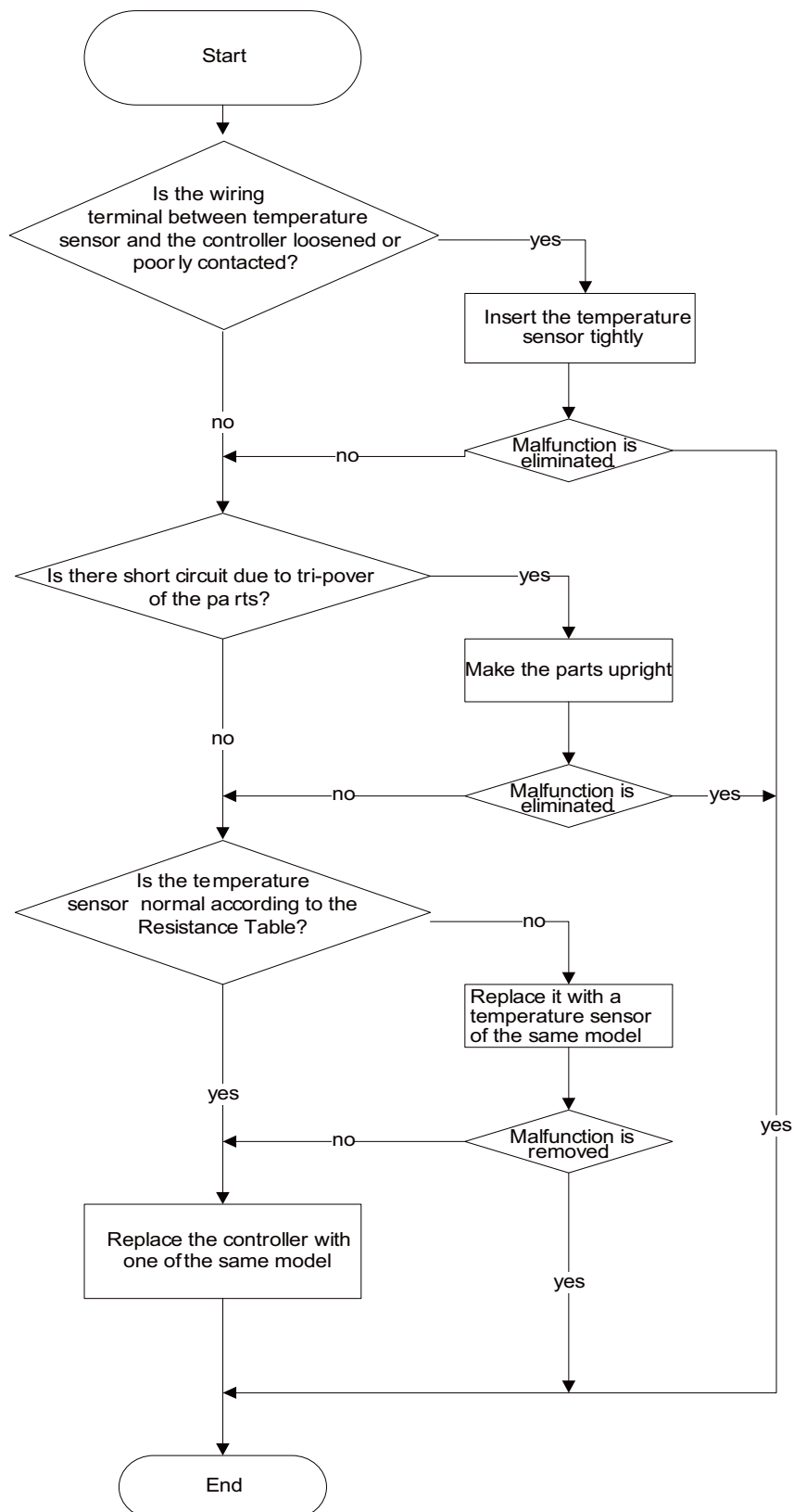
NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)				A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			□OFF ■Illuminated ☆ Blink					
			Operation Indicator	Cool Indicator	Heating Indicator	D5 (D40)	D6 (D41)	D16 (D42)			D30 (D43)
20	Defrosting	H1			OFF 3S and blink once					Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state
21	Static dedusting protection	H2			OFF 3S and blink twice						/
22	Overload protection for compressor	H3			OFF 3S and blink 3 times	□	☆	☆	□	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2.Refer to the malfunction analysis (discharge protection, overload)
23	System is abnormal	H4			OFF 3S and blink 4 times	■	□	■	■	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (overload, high temperature resistant)
24	IPM protection	H5			OFF 3S and blink 5 times	□	☆	□	■	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
25	PFC protection	HC			OFF 3S and blink 6 times	□	■	☆	☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
26	Desynchron-izing of compressor	H7			OFF 3S and blink 7 times	□	☆	■	☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
27	Decrease frequency due to high temperature resistant during heating operation	H0			OFF 3S and blink 10 times	■	□	☆	☆	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
28	Failure start-up	LC			OFF 3S and blink 11 times	□	☆	□	☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
29	Malfunction of phase current detection circuit for compressor	U1			OFF 3S and blink 13 times	□	☆	■	□	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)				A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			□OFF ■Illuminated ☆Blink					
			Operation Indicator	Cool Indicator	Heating Indicator	D5 (D40)	D6 (D41)	D16 (D42)			D30 (D43)
30	EEPROM malfunction	EE			OFF 3S and blink 15 times	□	□	□	■	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
31	Charging malfunction of capacitor	PU			OFF 3S and blink 17 times	□	■	□	■	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor
32	Malfunction of module temperature sensor circuit	P7			OFF 3S and blink 18 times	□	□	■	☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
33	Module high temperature protection	P8			OFF 3S and blink 19 times	■	□	☆	■	During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
34	Malfunction of voltage dropping for DC bus-bar	U3			OFF 3S and blink 20 times	□	■	■	■	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
35	Voltage of DC bus-bar is too low	PL			OFF 3S and blink 21 times	□	■	■	□	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
36	Limit/ decrease frequency due to high temperature of module	EU				■	■	■	☆	All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
37	The four-way valve is abnormal	U7				■	□	☆	□	If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.
38	Zero-crossing malfunction of outdoor unit	U9				■	■	☆	□	During cooling operation, compressor will stop while indoor fan will operate; during heating,the complete unit will stop operation.	Replace outdoor control panel AP1
39	Limit/ decrease frequency due to antifreezing	FH				■	■	■	□	All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low

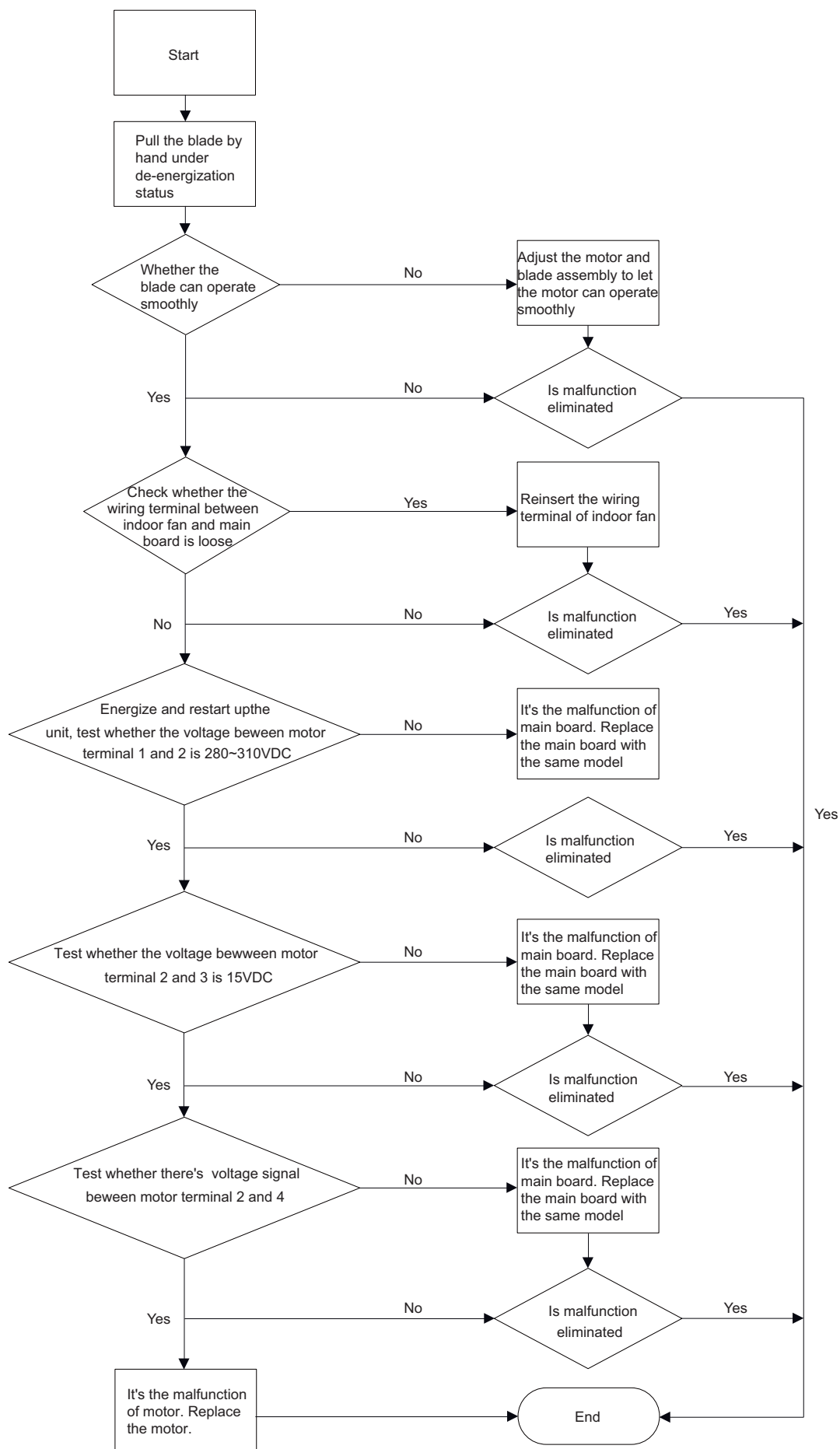
9.4 How to Check Simply the Main Part

Indoor unit:

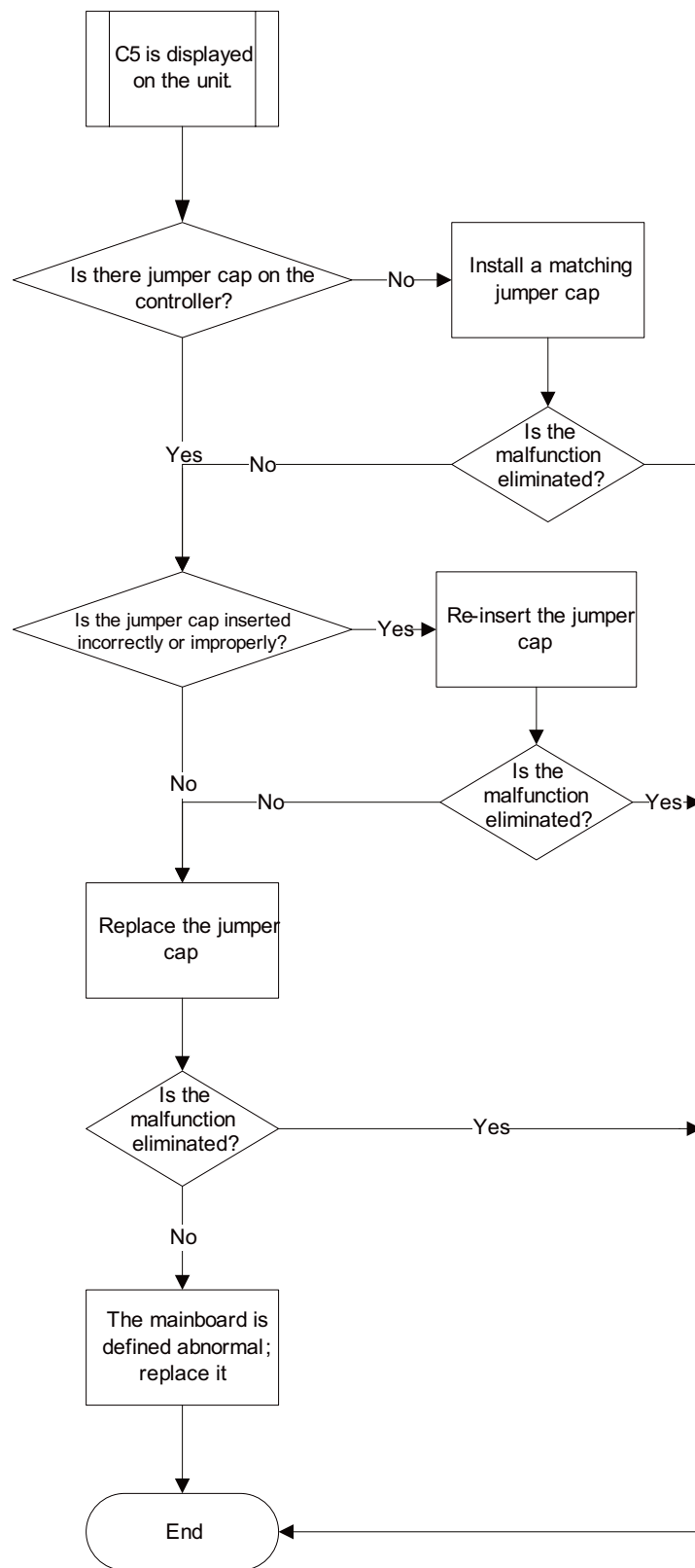
(1)Temperature sensor malfunction



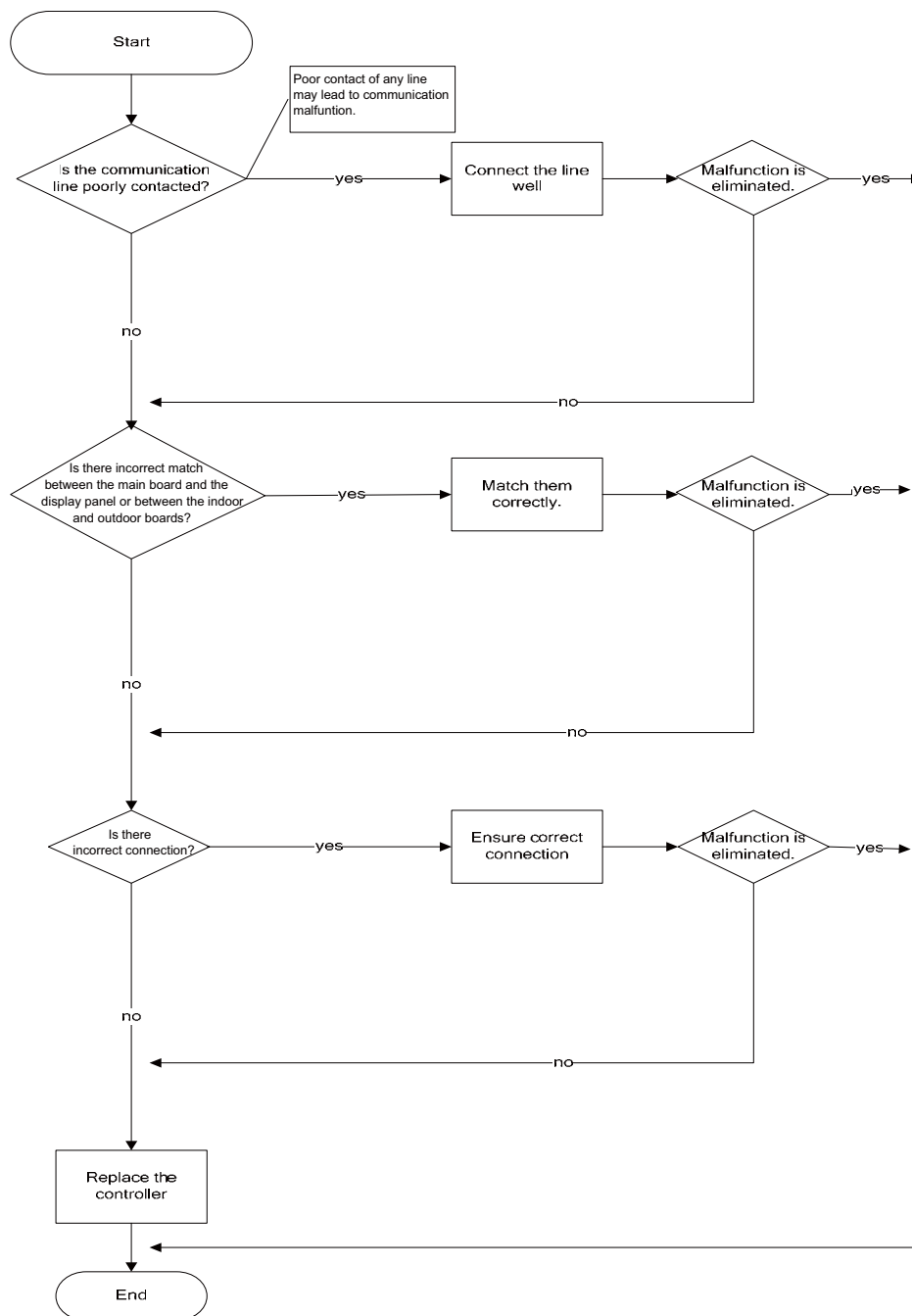
(2)Indoor fan does not operate (H6)



(3) Jumper cap malfunction (C5)



(4) Communication malfunction (E6)



Notice:

1. Before replacing mainboard of indoor unit, make sure the mainboard for replacement is qualified. The following testes shall be done:

- Check if protective tube FUSE 1 has open circuit. If so, replace it with a protective tube of the same model.
- Energize the unit and check if buzzer is sound. If not, the mainboard of indoor unit can't be used.
- Energize the unit with display and check if all icons are displayed after energization and if the display is normal. If not, the main board can't be used.

2. The mainboard for replacement shall has the same model with the original mainboard, so do the jumper cap.

3. The wiring and assembly methods shall also be the same with that of the original mainboard when replacing the mainboard.

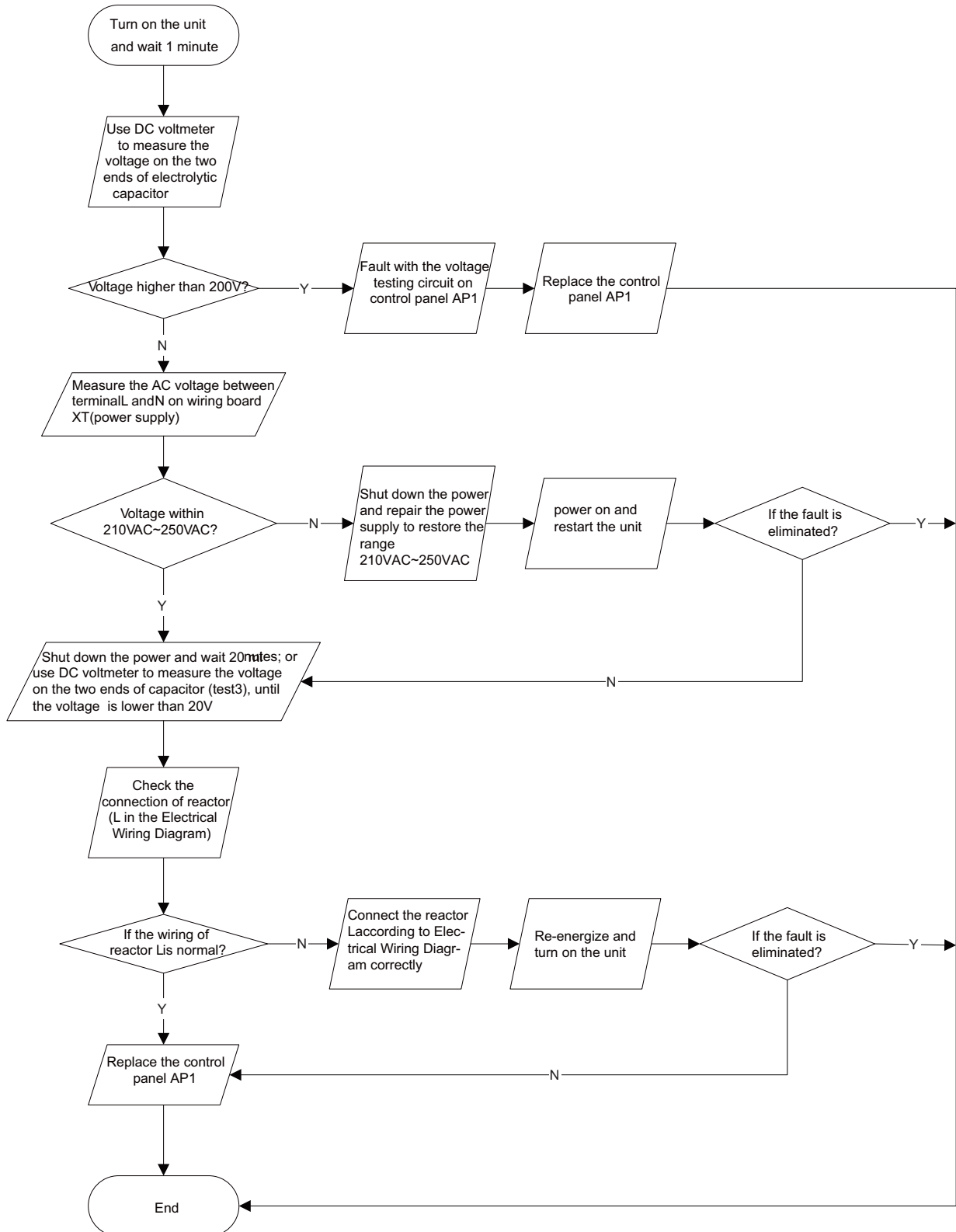
Outdoor unit:

(1) Capacity charging malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)

Main detection point:

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

Malfunction diagnosis process:



(2) IPM protection, desynchronizing malfunction, phase current of compressor is overcurrent (AP1 below is control board of outdoor unit)

Main detection point:

If control board AP1 and compressor COMP is well connected? If they are loosened? If the connection sequence is correct?

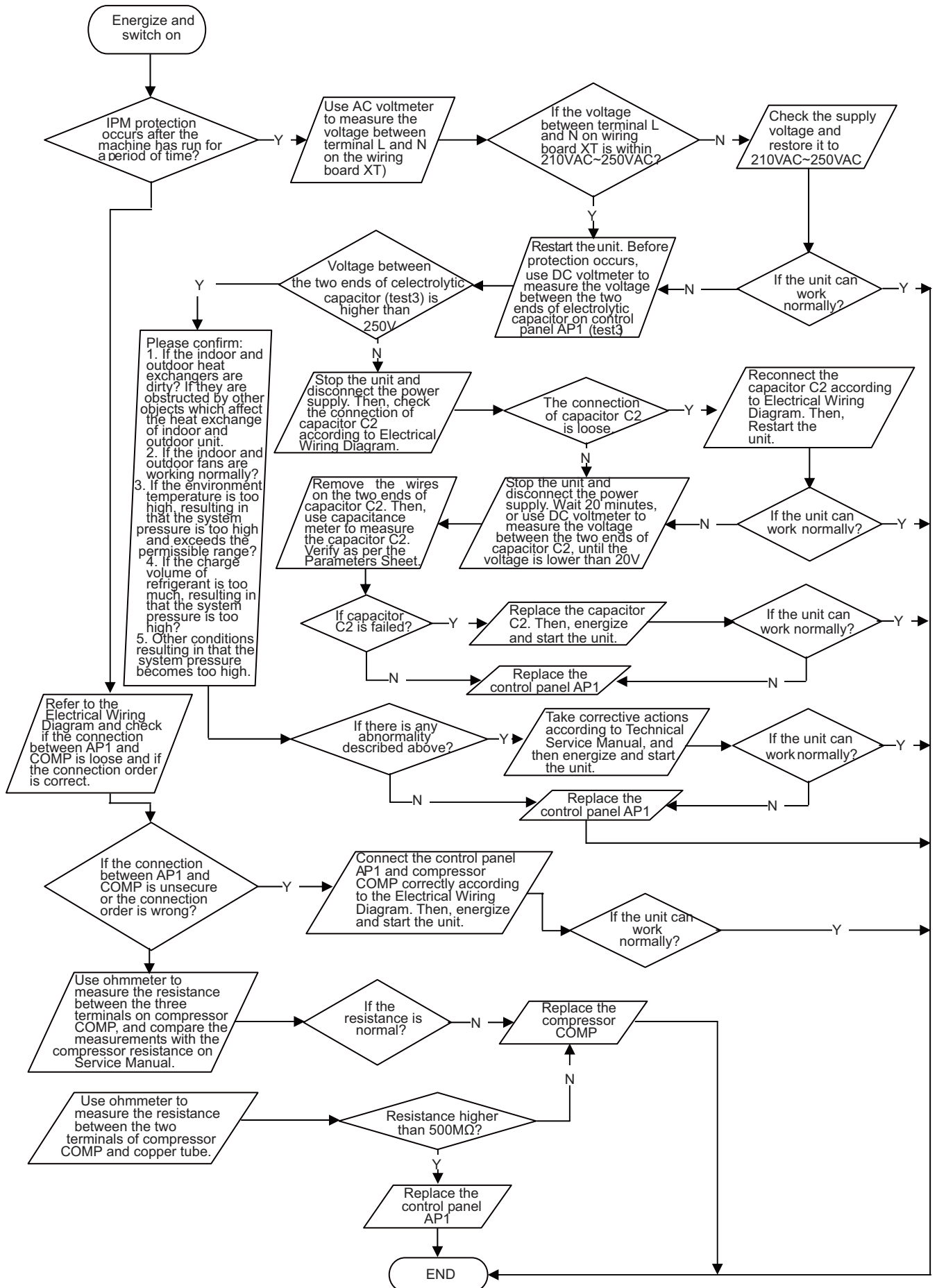
Is voltage input in the normal range (Test the voltage between L, N of wiring board XT by DC voltage meter)?

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:

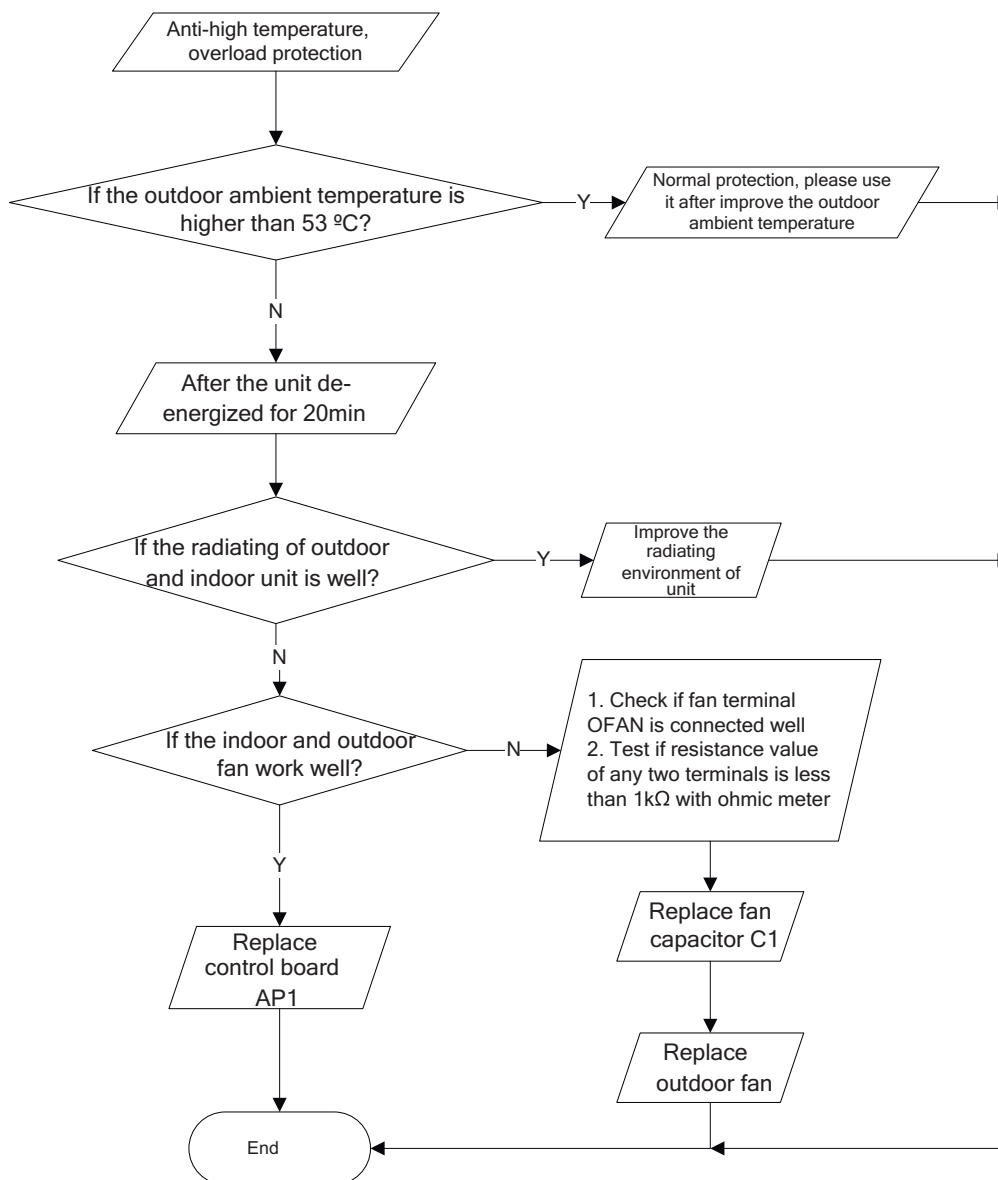


(3) Diagnosis for anti-high temperature, overload protection (AP1 below is control board of outdoor unit)

Main detection point:

- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan is running normal;
- If the radiating environment of indoor and outdoor unit is well.

Malfunction diagnosis process:

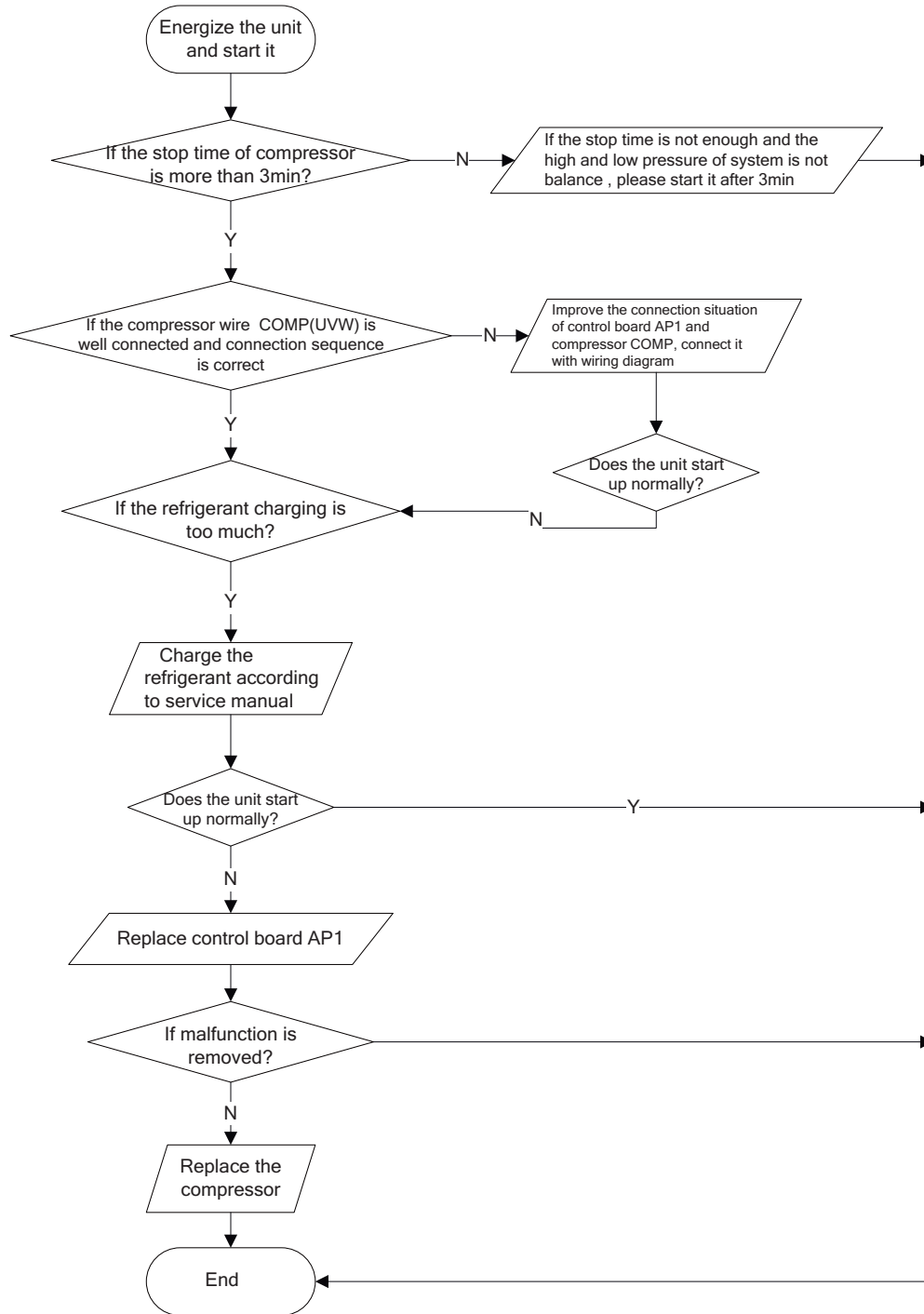


(4) Diagnosis for failure start up malfunction (AP1 below is control board of outdoor unit)

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:

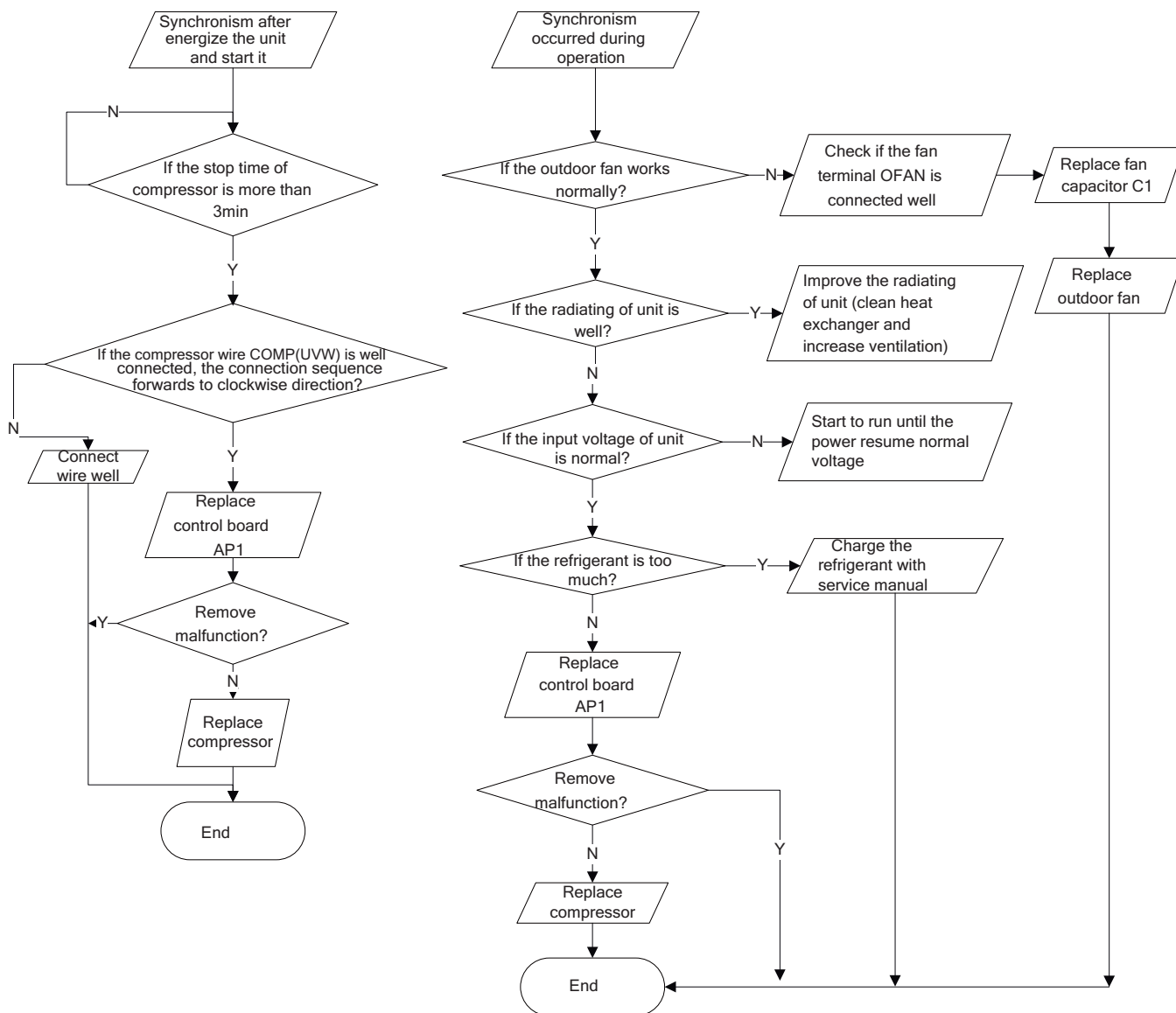


(5) Diagnosis for compressor synchronism (AP1 below is control board of outdoor unit)

Main detection point:

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

Malfunction diagnosis process:

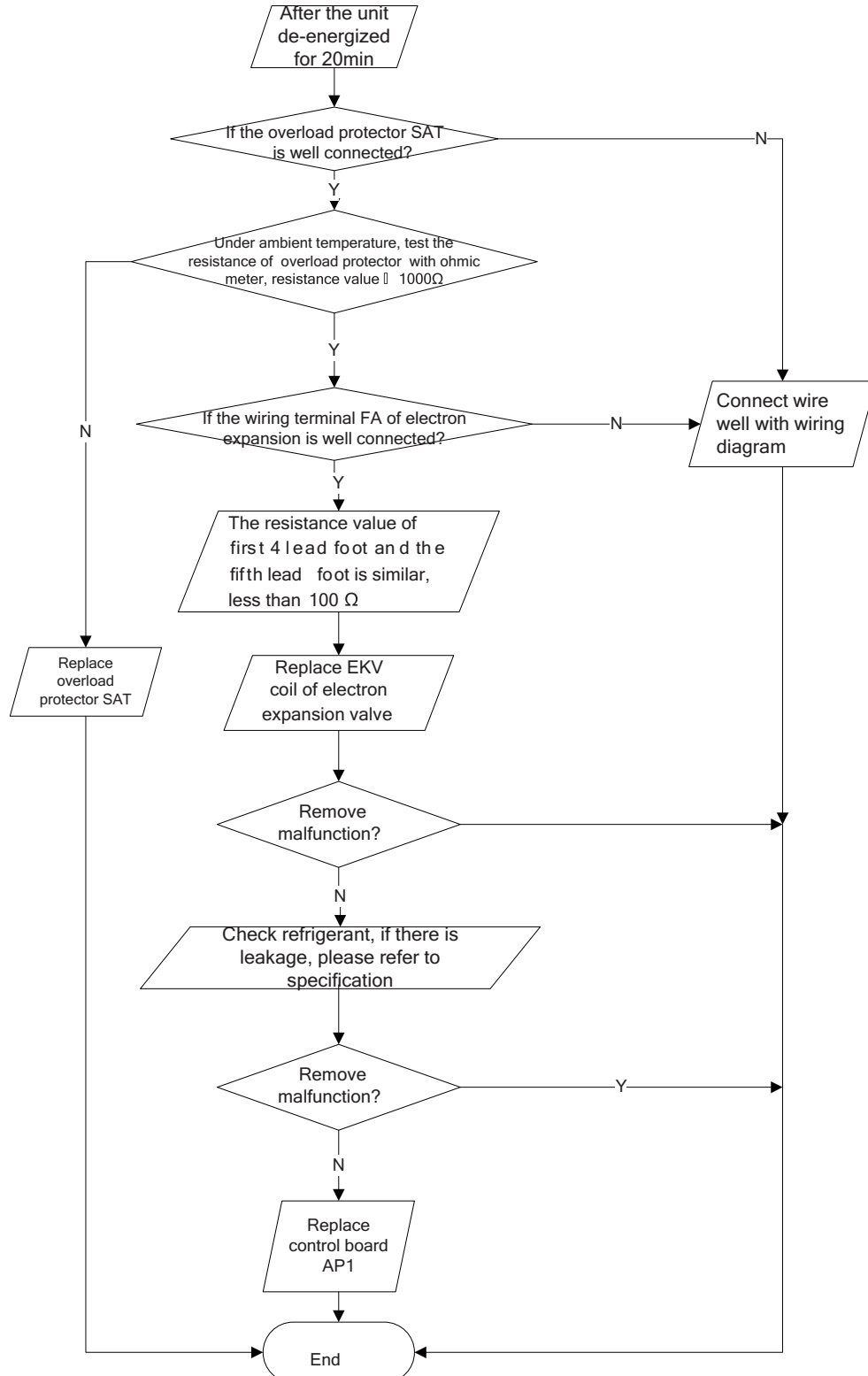


(6) Diagnosis for overload and discharge malfunction (AP1 below is control board of outdoor unit)

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?

Malfunction diagnosis process:

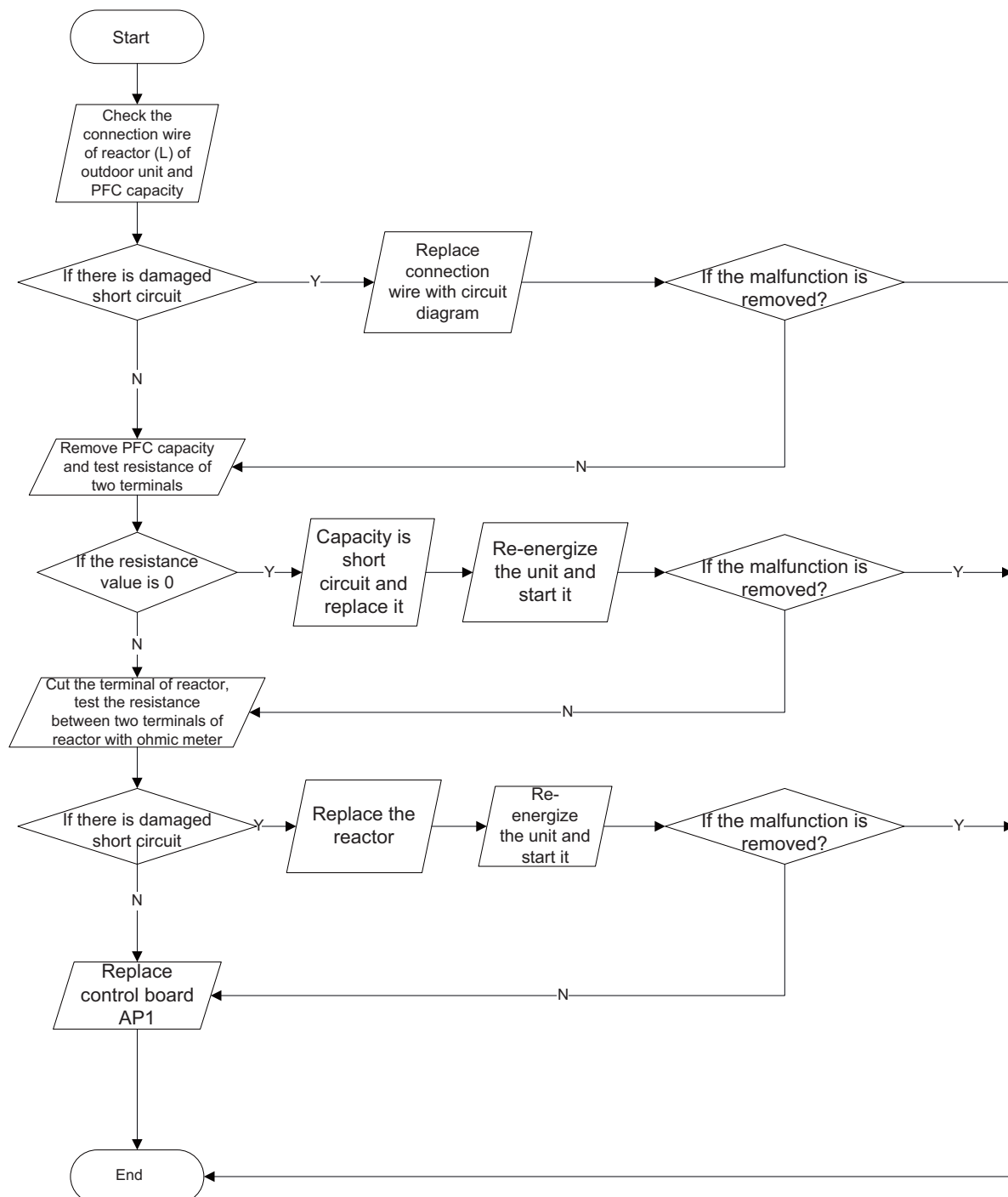


(7) PFC (correction for power factor) malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)

Main detection point:

- Check if reactor (L) of outdoor unit and PFC capacity are damaged.

Malfunction diagnosis process:

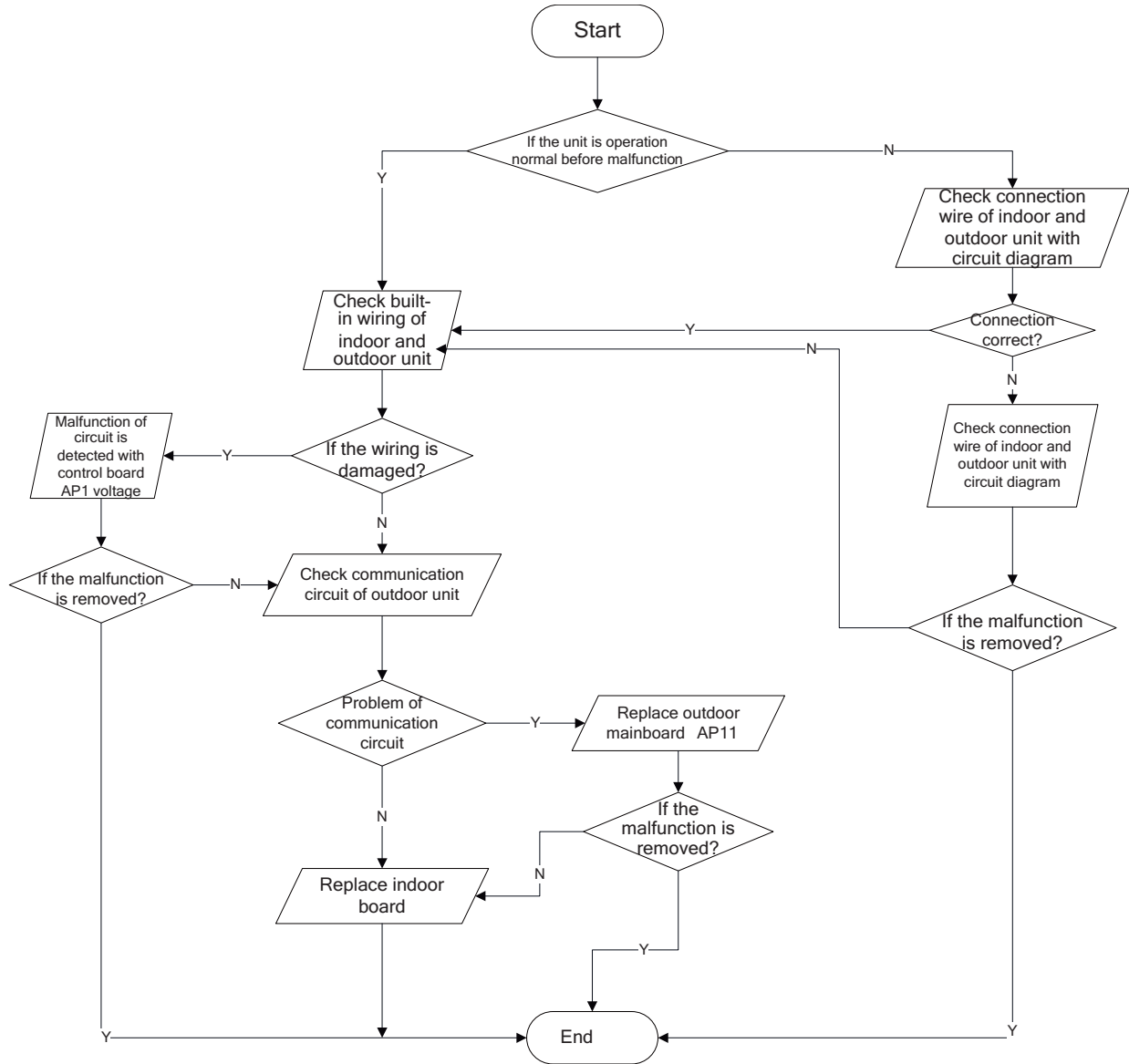


(8) Communication malfunction (AP1 below is control board of outdoor unit)

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:



Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)

Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Appendix 2: Resistance Table of Outdoor and Indoor Tube Temperature Sensors(20K)

Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)		Temp.(℃)	Resistance (kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Appendix 3: Resistance Table of Outdoor Discharge Temperature Sensor(50K)

Temp.(°C)	Resistance (kΩ)		Temp.(°C)	Resistance (kΩ)		Temp.(°C)	Resistance (kΩ)		Temp.(°C)	Resistance (kΩ)
-29	853.5		10	98		49	18.34		88	4.754
-28	799.8		11	93.42		50	17.65		89	4.609
-27	750		12	89.07		51	16.99		90	4.469
-26	703.8		13	84.95		52	16.36		91	4.334
-25	660.8		14	81.05		53	15.75		92	4.204
-24	620.8		15	77.35		54	15.17		93	4.079
-23	580.6		16	73.83		55	14.62		94	3.958
-22	548.9		17	70.5		56	14.09		95	3.841
-21	516.6		18	67.34		57	13.58		96	3.728
-20	486.5		19	64.33		58	13.09		97	3.619
-19	458.3		20	61.48		59	12.62		98	3.514
-18	432		21	58.77		60	12.17		99	3.413
-17	407.4		22	56.19		61	11.74		100	3.315
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.129
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.955
-12	306.2		27	45.07		66	9.827		105	2.872
-11	289.6		28	43.16		67	9.489		106	2.792
-10	274		29	41.34		68	9.165		107	2.715
-9	259.3		30	39.61		69	8.854		108	2.64
-8	245.6		31	37.96		70	8.555		109	2.568
-7	232.6		32	36.38		71	8.268		110	2.498
-6	220.5		33	34.88		72	7.991		111	2.431
-5	209		34	33.45		73	7.726		112	2.365
-4	198.3		35	32.09		74	7.47		113	2.302
-3	199.1		36	30.79		75	7.224		114	2.241
-2	178.5		37	29.54		76	6.998		115	2.182
-1	169.5		38	28.36		77	6.761		116	2.124
0	161		39	27.23		78	6.542		117	2.069
1	153		40	26.15		79	6.331		118	2.015
2	145.4		41	25.11		80	6.129		119	1.963
3	138.3		42	24.13		81	5.933		120	1.912
4	131.5		43	23.19		82	5.746		121	1.863
5	125.1		44	22.29		83	5.565		122	1.816
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.222		124	1.725
8	108		47	19.81		86	5.06		125	1.682
9	102.8		48	19.06		87	4.904		126	1.64

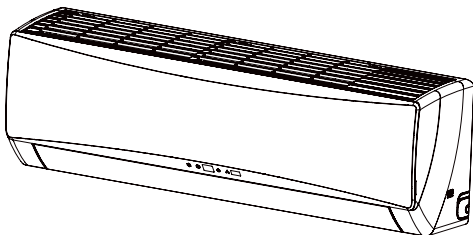
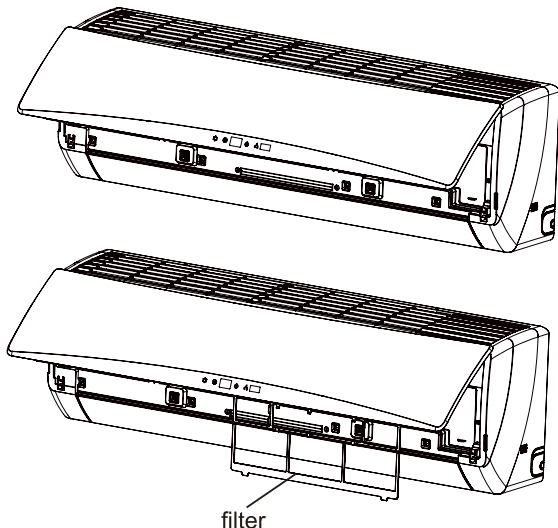
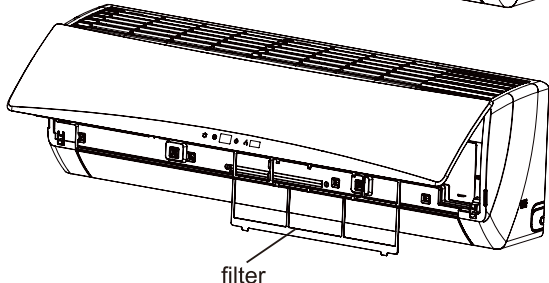
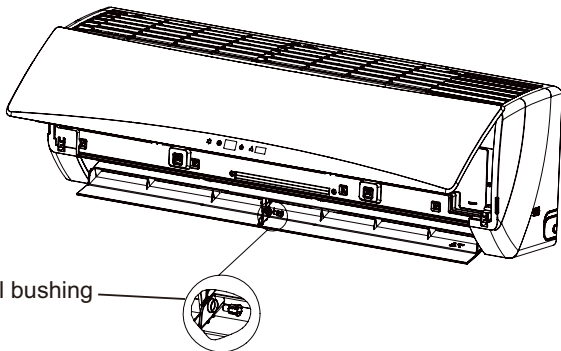
Note: The information above is for reference only.

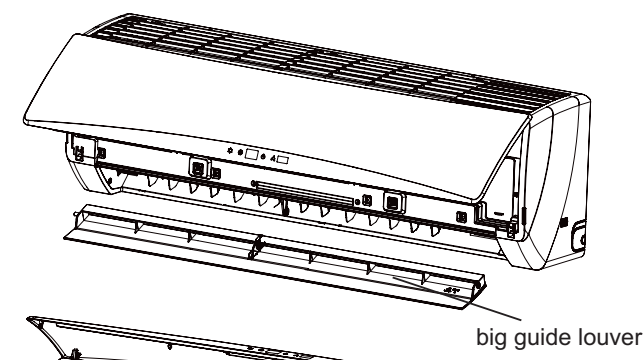
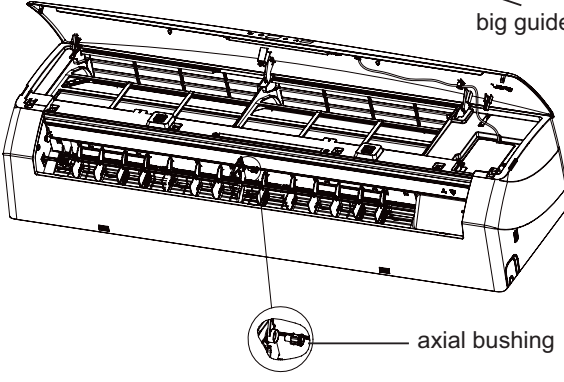
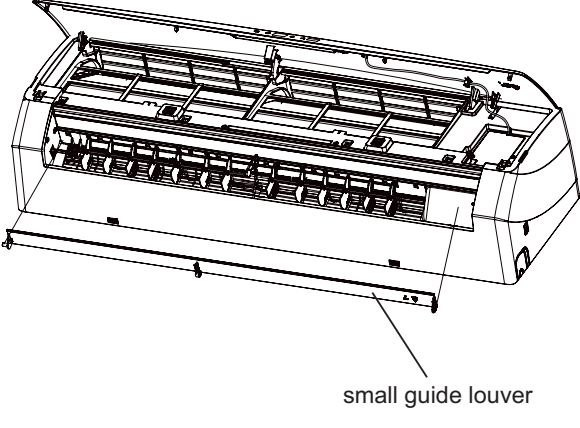
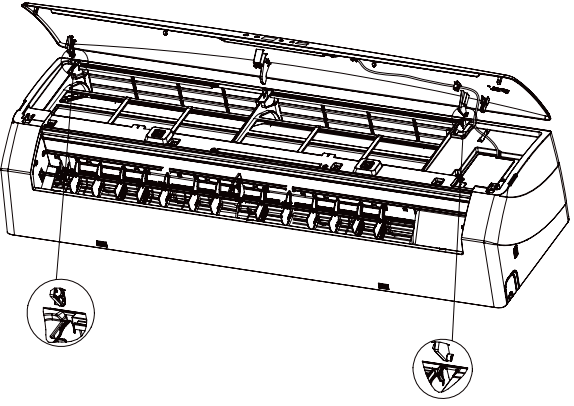
10. Removal Procedure

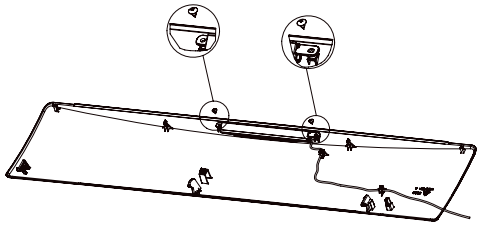
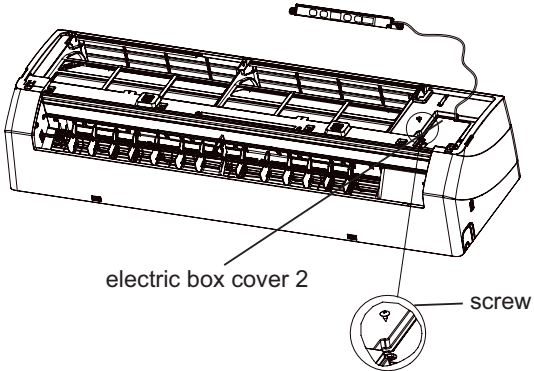
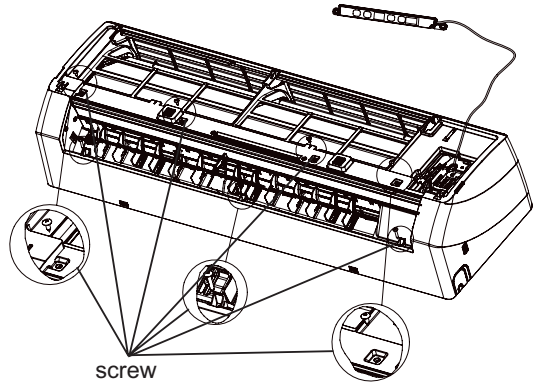
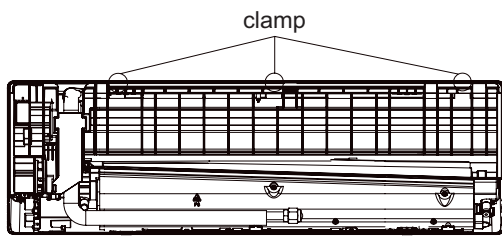
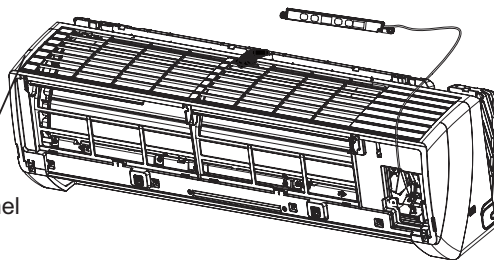
10.1 Removal Procedure of Indoor Unit

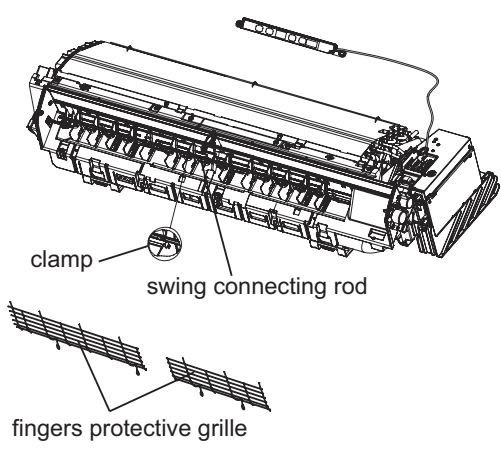
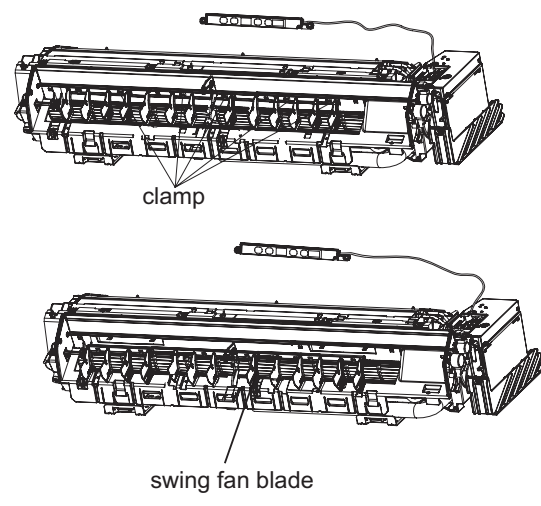
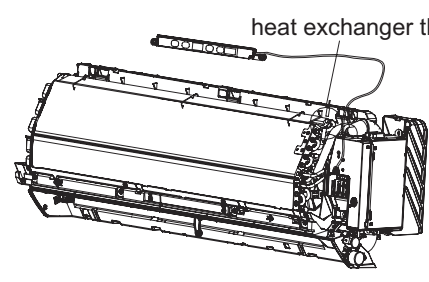
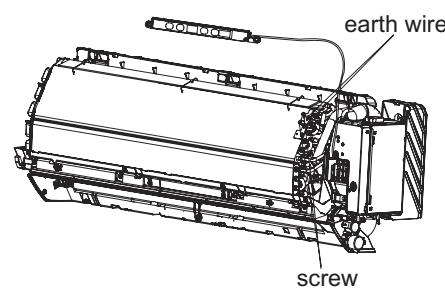
 **Warning** Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

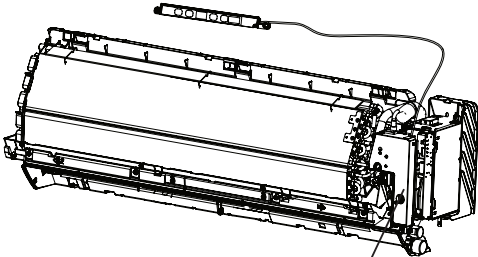
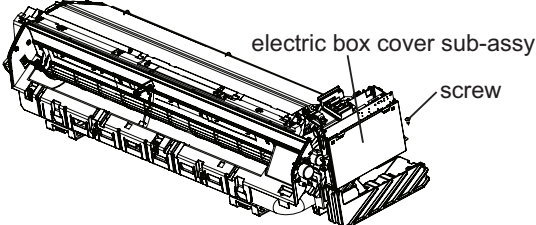
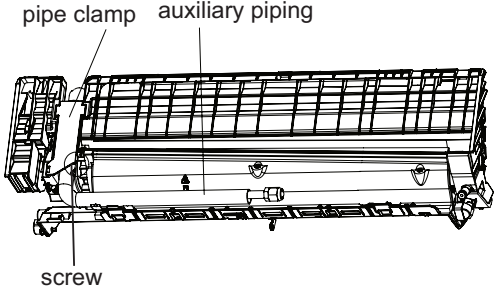
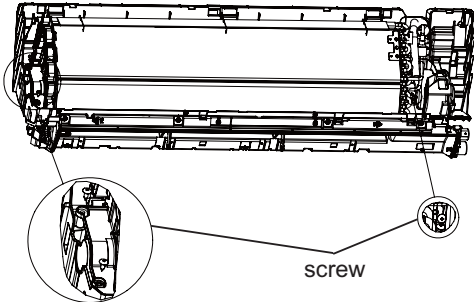
(1)Models:09/12K

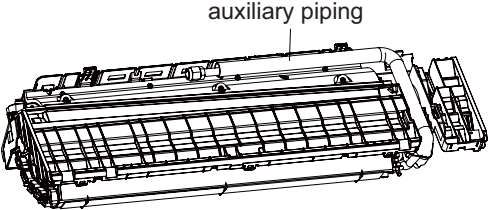
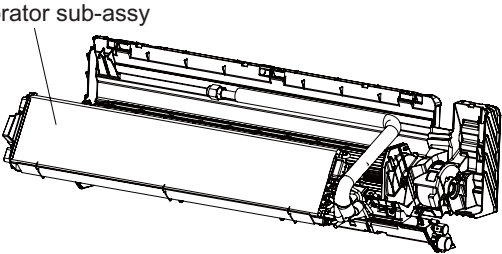
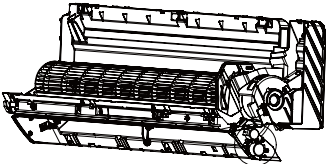

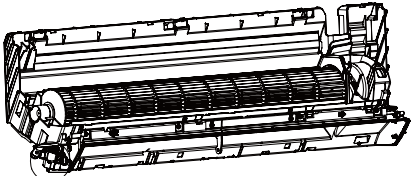

Steps		Procedure
1. Before disassembling the unit		
	Before disassembling the unit.	
2. Remove filter		  filter
1	Open the panel.	
2	Loosen the clasps on filter, push the filter inward and then pull it upward, then the filter can be removed.	
3.Remove guide louver		 axial bushing
1	Remove the axial bushing of big guide louver.	

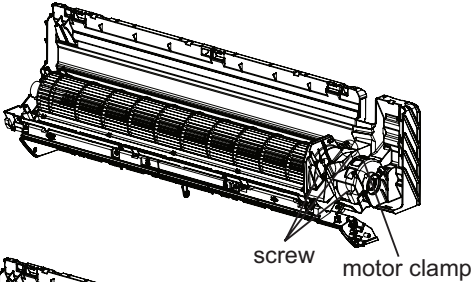
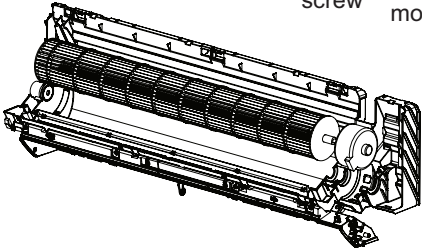
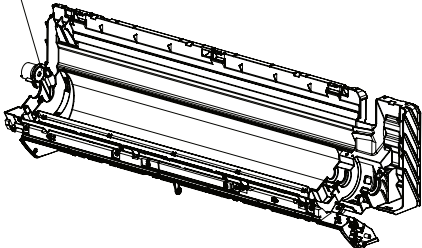
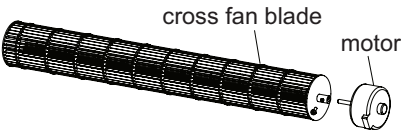
Steps	Procedure	
2	Remove the rotating shaft of big guide louver from the groove, slightly bend the big guide louver to remove it.	 big guide louver
3	Remove the axial bushing of small guide louver.	 axial bushing
4	Remove the rotating shaft of small guide louver from the groove, slightly bend the small guide louver to remove it.	 small guide louver
4.Remove panel		
1	Loosen the clamps of the panel to remove the panel.	

Steps	Procedure	
2	Remove the screws fixing display on the panel, to remove the display.	
5.Remove front case		
1	Remove the screws fixing electric box cover 2, to remove the electric box cover 2.	
2	Remove the screws fixing front panel, loosen the clamps, to remove the front panel.	  

Steps	Procedure	
6.Remove swing fan blade		
1	Remove 4 screws fixing the fingers protective grille, and then remove the fingers protective grille. Loosen the clamps fixing swing connecting rod, to remove the swing connecting rod.	
2	Remove the clamps fixing swing fan blade, to remove the swing fan blade.	
7.Remove electric box sub-assy		
1	Remove the indoor tube temp. sensor.	
2	Remove the screws fixing earth wire, to remove the earthwire.	

Steps	Procedure	
3	Remove the clamps fixing electric box cover, to remove the cover.	 electric box cover
4	Remove every wiring terminals, and remove the screws fixing electric box cover, to remove the electric box cover sub-assy.	 electric box cover sub-assy screw
8.Remove evaporator sub-assy		
1	Remove the screws fixing connection pipe clamp, to remove the connection pipe clamp.	 pipe clamp auxiliary piping screw  screw

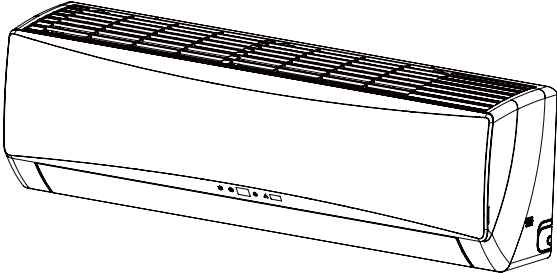
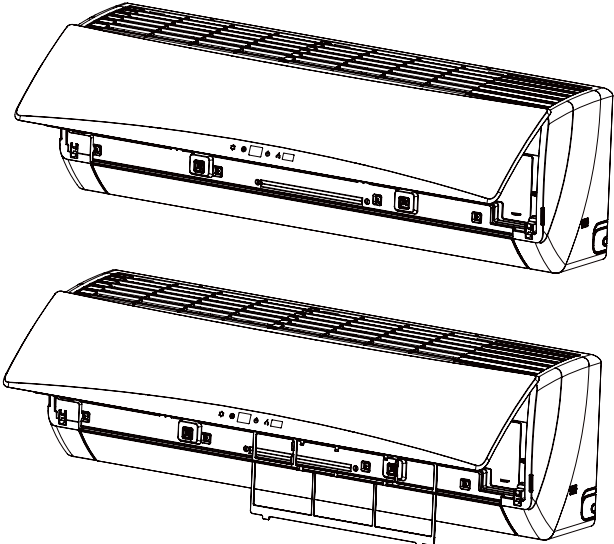
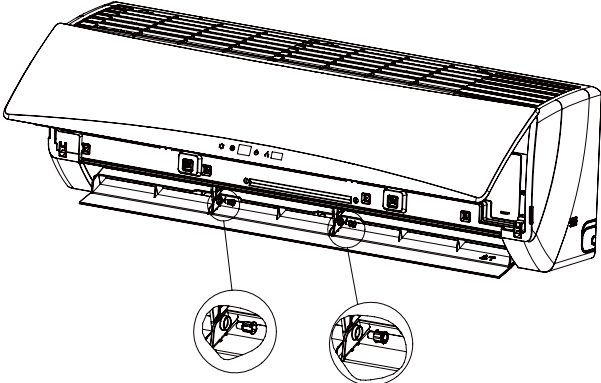
Steps	Procedure	
2	Remove the screws fixing evaporator sub-assy, slightly regulate the tube, to remove the evaporator sub-assy.	<div><p>auxiliary piping</p><p>evaporator sub-assy</p></div>
9.Remove cross fan blade and motor		
1	Remove the screws fixing up&down swing motor, to remove the motor.	<div><p>up&down swing motor</p></div>
2	Remove the screws fixing left&right swingmotor, to remove the motor.	<div><p>left&right swing motor</p></div>

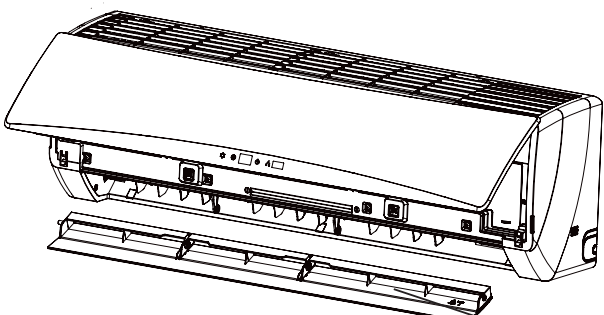
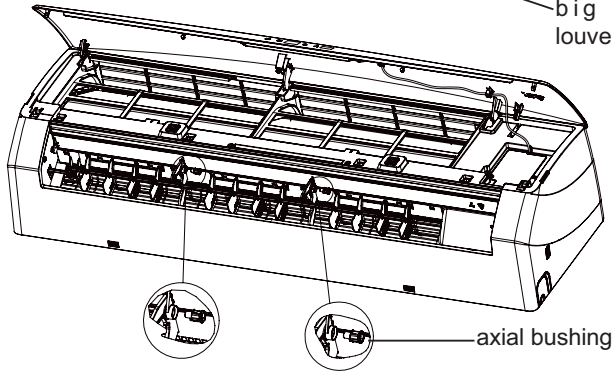
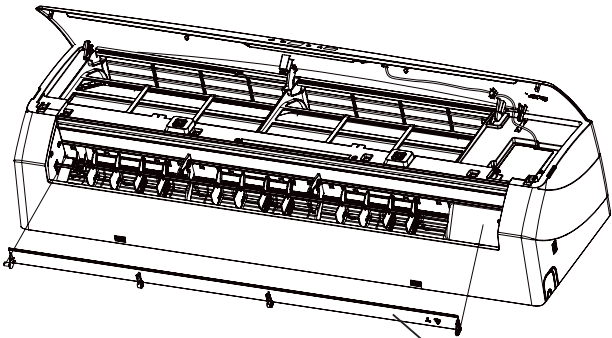
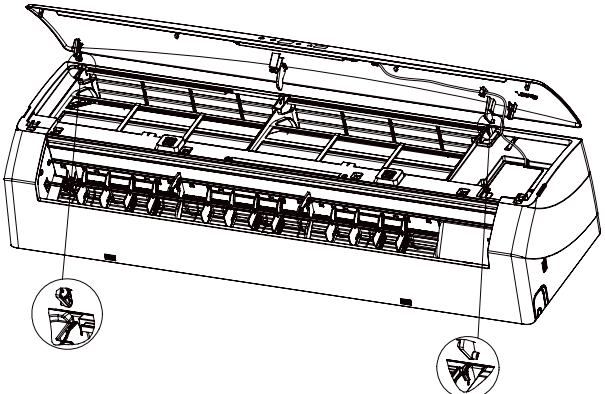
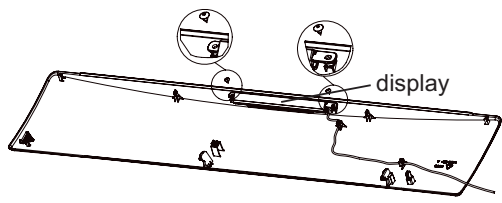
Steps	Procedure	
3	Remove the screws fixing motor clamp, to remove the motor clamp.	 screw motor clamp
4	Remove the cross fan blade and motor.	 bearing cushion rubber base
5	Remove the shafting bearing cushion rubber base	
6	Remove the screws fixing cross fan blade and motor, and then remove the motor.	 cross fan blade motor

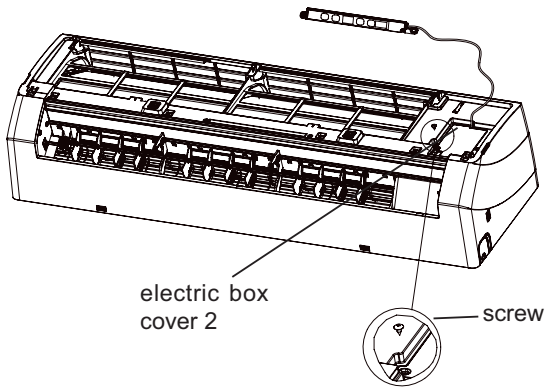
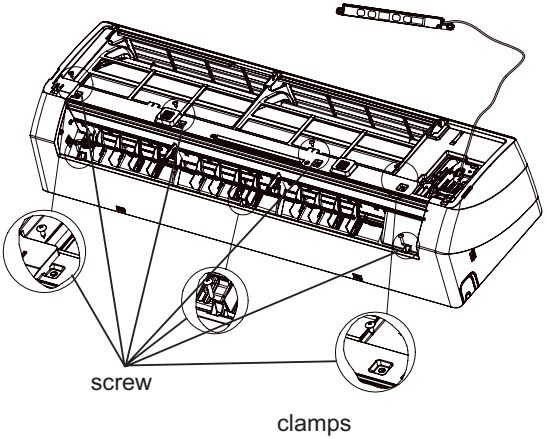
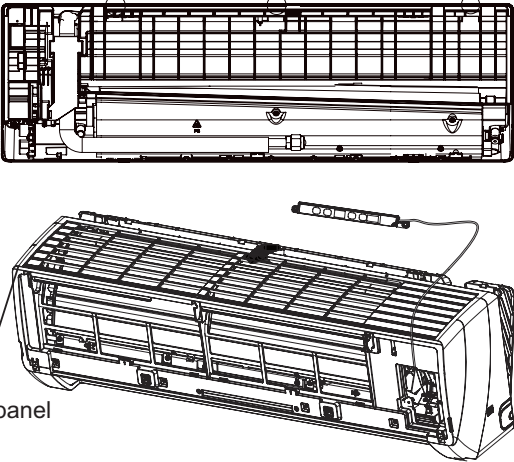
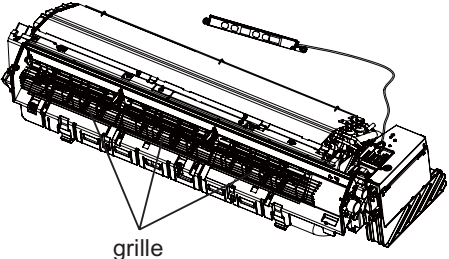


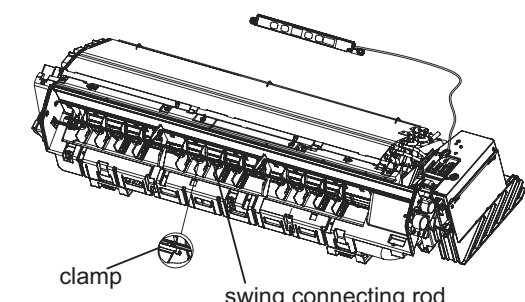
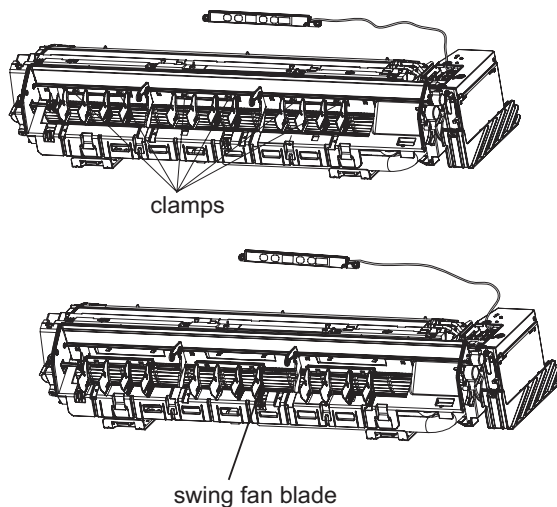
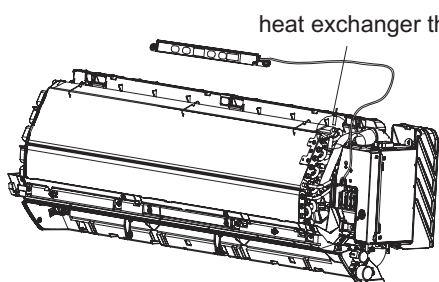
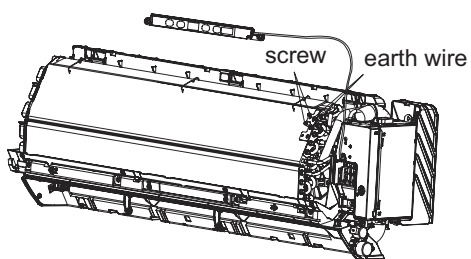
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

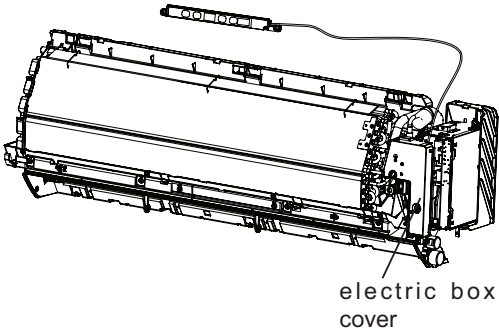
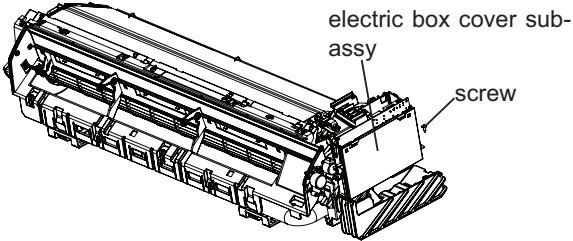
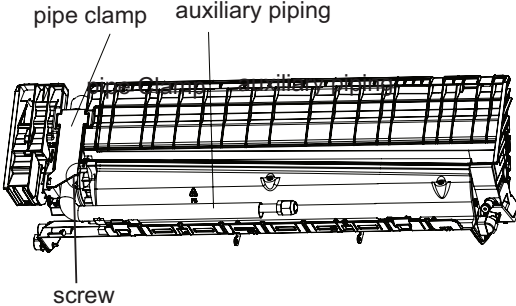
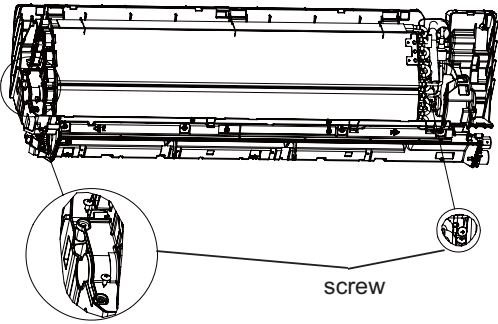
(2)Model:18K

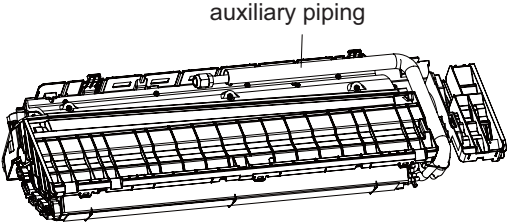
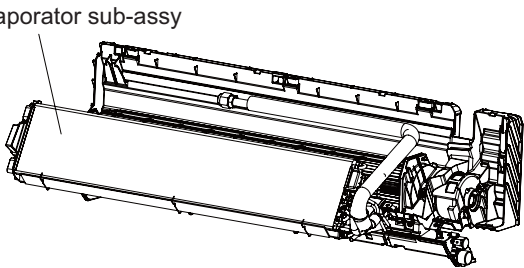
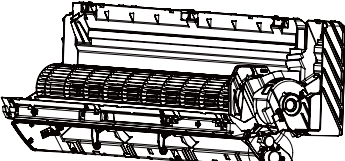
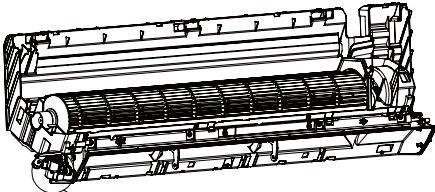
Steps	Procedure	
1. Before disassembling the unit		
Before disassembling the unit.		
2. Remove filter		
1		
Open the panel.		
2	Loosen the clasps on filter, push the filter inward and then pull it upward, then the filter can be removed.	
3.Remove guide louver		
1		
Remove the axial bushing of big guide louver.		

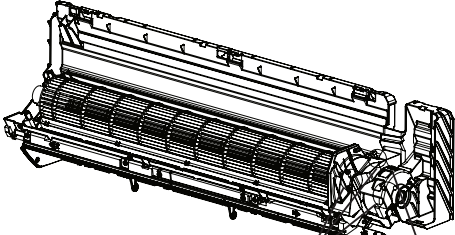
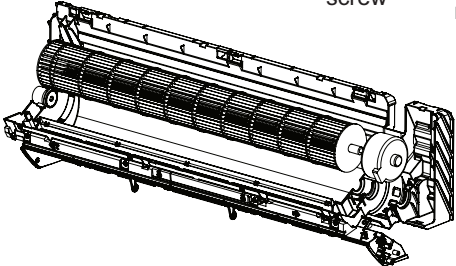
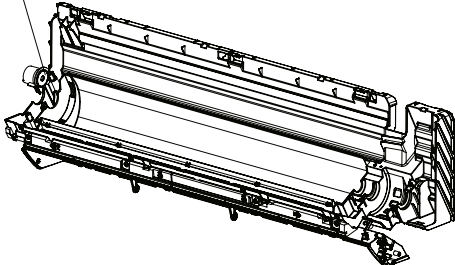
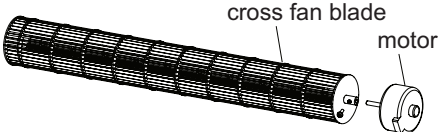
Steps	Procedure	
2	Remove the rotating shaft of big guide louver from the groove, slightly bend the big guide louver to remove it.	 big guide louver
3	Remove the axial bushing of small guide louver.	 axial bushing
4	Remove the rotating shaft of small guide louver from the groove, slightly bend the small guide louver to remove it.	 small guide louver
4.Remove panel		
1	Loosen the clamps of the panel to remove the panel.	
2	Remove the screws fixing display on the panel, to remove the display.	 display

Steps	Procedure
5. Remove front case	
1	<p>Remove the screws fixing electric box cover 2, to remove the electric box cover 2.</p> 
2	<p>Remove the screws fixing front panel, loosen the clamps, to remove the front panel.</p>   

Steps	Procedure	
6. Remove swing fan blade		
1	Loosen the clamps fixing swing connecting rod, to remove the swing connecting rod.	
2	Remove the clamps fixing swing fan blade, to remove the swing fan blade.	
7. Remove electric box sub-assy		
1	Remove the indoor tube temp. sensor.	
2	Remove the screws fixing earth wire, to remove the earth wire.	

Steps	Procedure	
3	Remove the clamps fixing electric box cover, to remove the cover.	 <p>electric box cover</p>
4	Remove every wiring terminals, and remove the screws fixing electric box cover, to remove the electric box cover sub-assy.	 <p>electric box cover sub-assy screw</p>
8. Remove evaporator sub-assy		
1	Remove the screws fixing connection pipe clamp, to remove the connection pipe clamp.	 <p>pipe clamp auxiliary piping screw</p>  <p>screw</p>

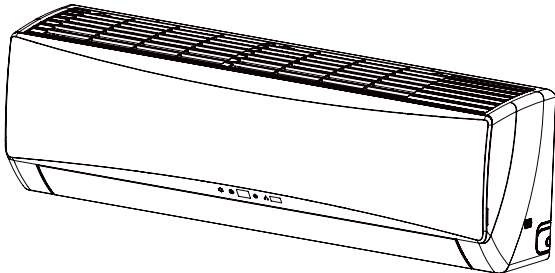
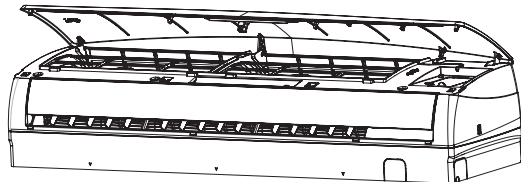
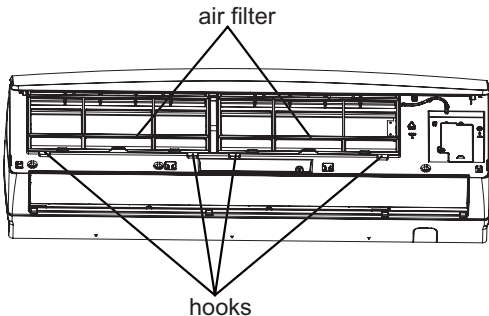
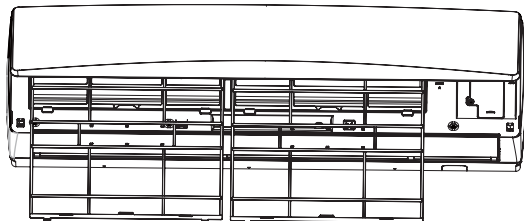
Steps	Procedure	
2	Remove the screws fixing evaporator sub-assy, slightly regulate the tube, to remove the evaporator sub-assy.	<div><p>auxiliary piping</p><p>evaporator sub-assy</p></div>
9.Remove cross fan blade and motor		
1	Remove the screws fixing up&down swing motor, to remove the motor.	<div><p>up & down swing motor</p></div>
2	Remove the screws fixing left&right swing motor, to remove the motor.	<div><p>left&right swing motor</p></div>

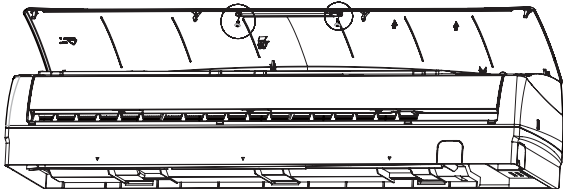
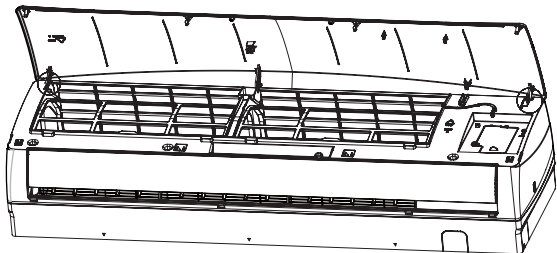
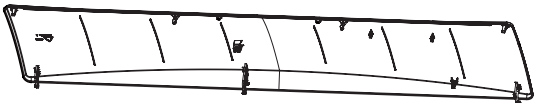
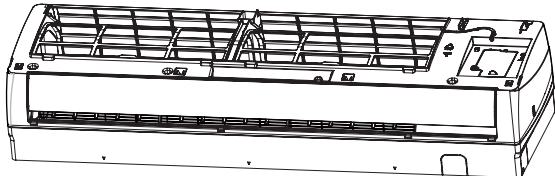
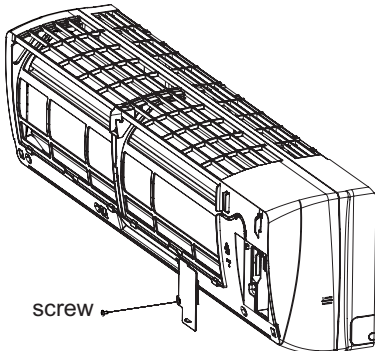
Steps	Procedure	
3	Remove the screws fixing motor clamp, to remove the motor clamp.	 screw motor clamp
4	Remove the cross fan blade and motor.	
5	Remove the shafting bearing cushion rubber base	
6	Remove the screws fixing cross fan blade and motor, and then remove the motor.	 cross fan blade motor

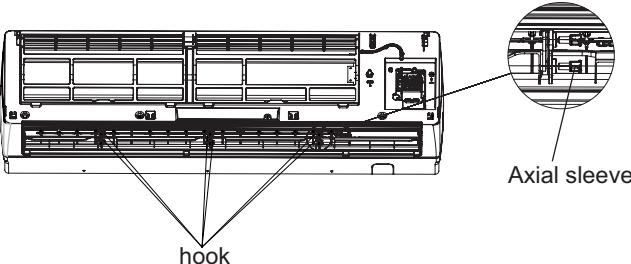
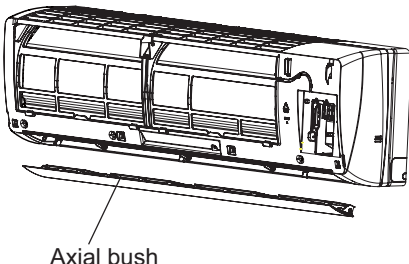
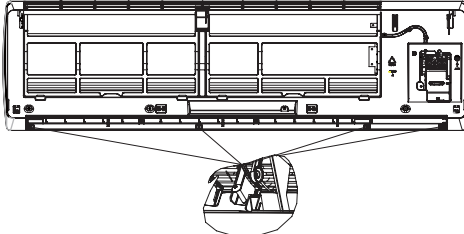
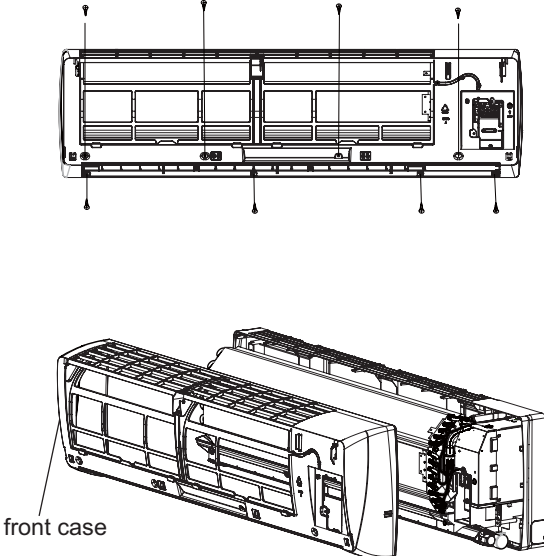
 **Warning**

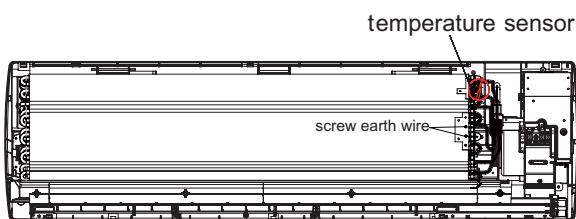
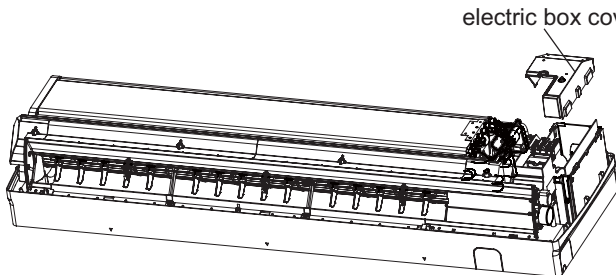
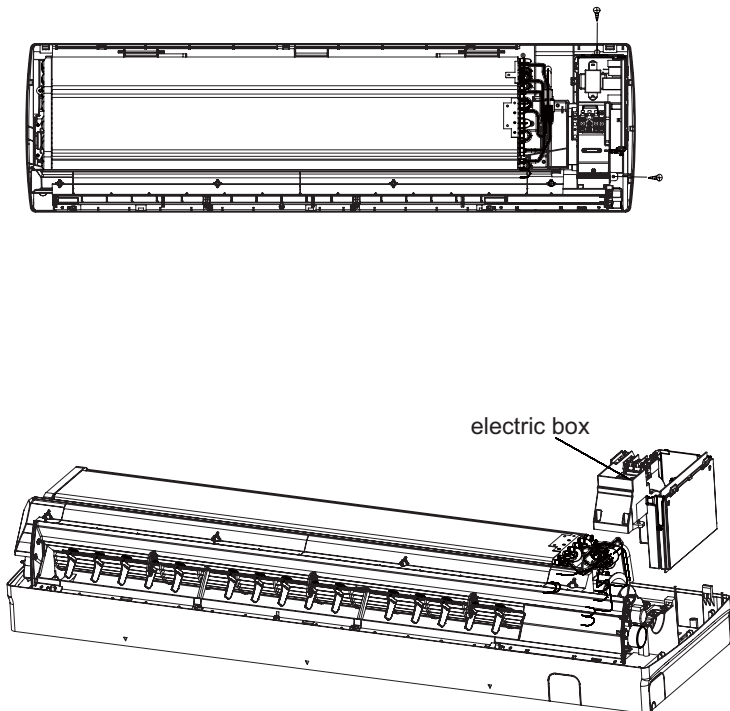
Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

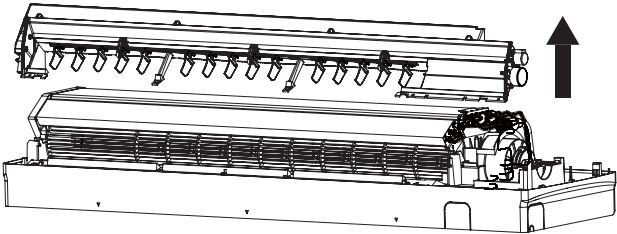
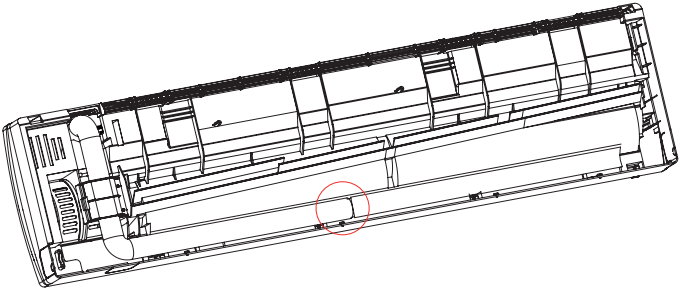
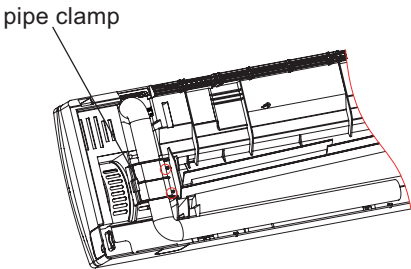
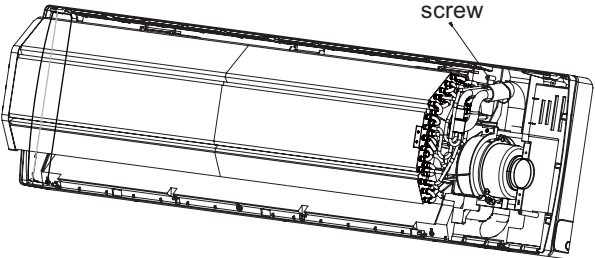
(3)Model:24K

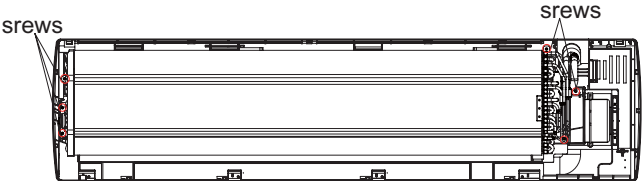
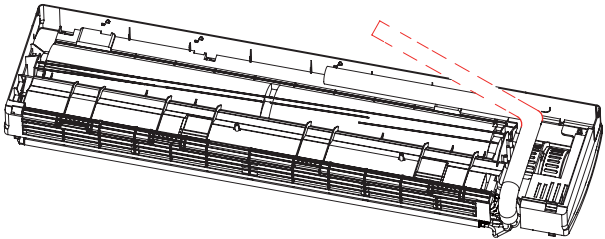
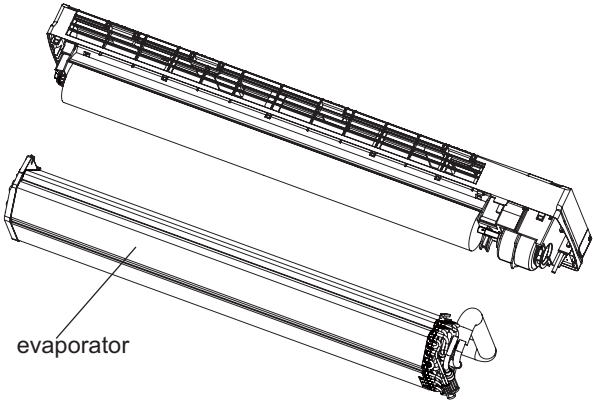
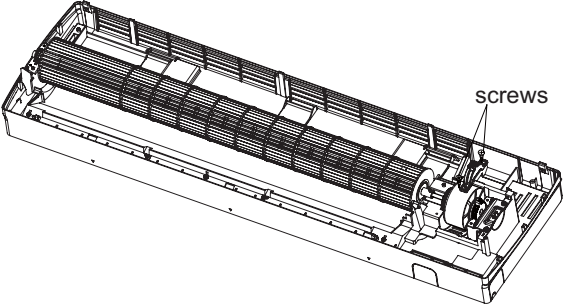
Steps	Procedure		
1. Before disassembly of the unit			
			Before disassembling the unit.
2. Remove filter	  		
1			Open the panel.
2			Loosen the clasps on filter, push the filter inward and then pull it upward, then the filter can be removed.

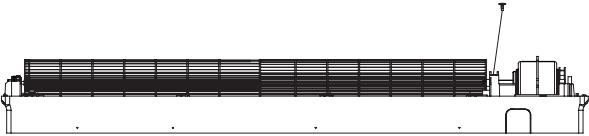
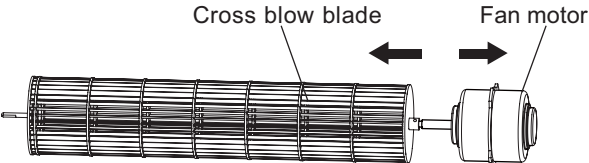
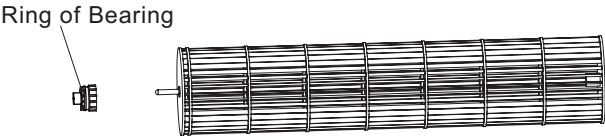
Steps		Procedure	
3. Remove the panel			
1	Along the groove fixing front panel, slide the rotor shaft outward to remove the front panel.		
2	Remove the panel.	  	
4. Remove electric box cover			
	Unscrew a screw of electric box cover with screwdriver. Then take out the electric box cover.		

Steps		Procedure
5. Remove Axial bush		
1	Remove the axial bush of horizontal louver to remove the axial bush.	 hook Axial sleeve
2	Remove Axial bush	 Axial bush
6. Remove front case		
1	Remove the screw cover of front case, unscrew the 8 screws of front case with screwdriver.	
2	Take out the front case to separate the front case with bottom assembly.	 front case

Steps	Procedure	
7. Remove electric box		
1	Remove Temperature Sensor; Twist off the earthing screw fixing the evaporator.	
2	Remove the screw of electric box. Take out the electric box cover to separate the electric box cover 2.	
3	Remove every wiring terminals, and remove the screws fixing electric box to remove the electric box sub-assy.	

Steps	Procedure
8. Remove evaporator sub-assy	
1	<div>Loosen the clasps connecting the water tray and chassis, and then remove the water tray.</div> <div></div>
2	<div>Remove the screws fixing connection pipe clamp, to remove the connection pipe clamp.</div> <div></div> <div><p>pipe clamp</p></div>
3	<div>Remove the screws fixing evaporator sub-assy, slightly regulate the tube, to remove the evaporator sub-assy.</div> <div><p>screw</p></div>

Steps	Procedure	
4	Turn over the indoor unit and adjust the pipe line to the position as shown by the broken line.	
		
5	Lift up the evaporator, and then remove the evaporator.	
9. Remove the cross-flow louver and motor		
1	Remove the 2 screws of step motor with screwdriver, and remove the step motor.	

Steps	Procedure	
2	Remove screws fixing cross flow blade and motor.	
3	Remove the motor sub-assy.	
4	Pull out the plug of ring of bearing.	

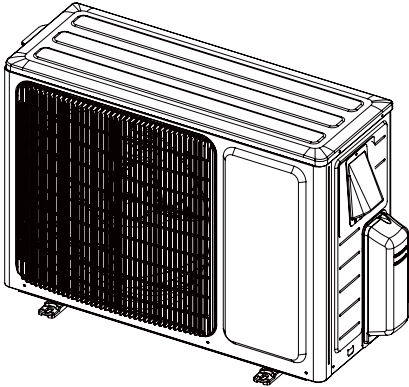
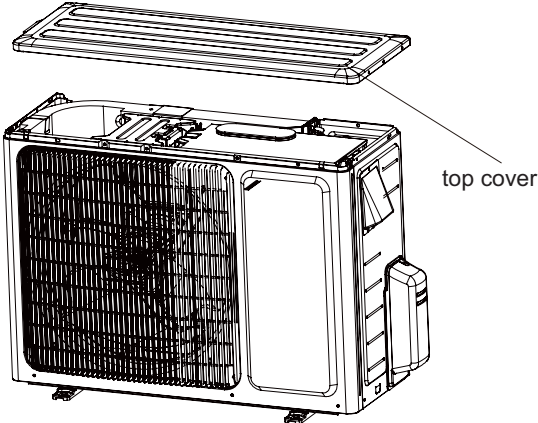
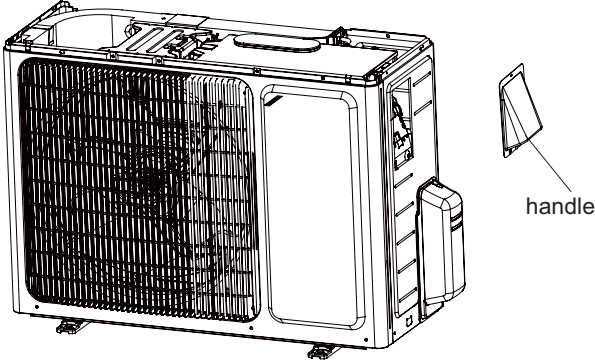
10.2 Removal Procedure of Outdoor Unit

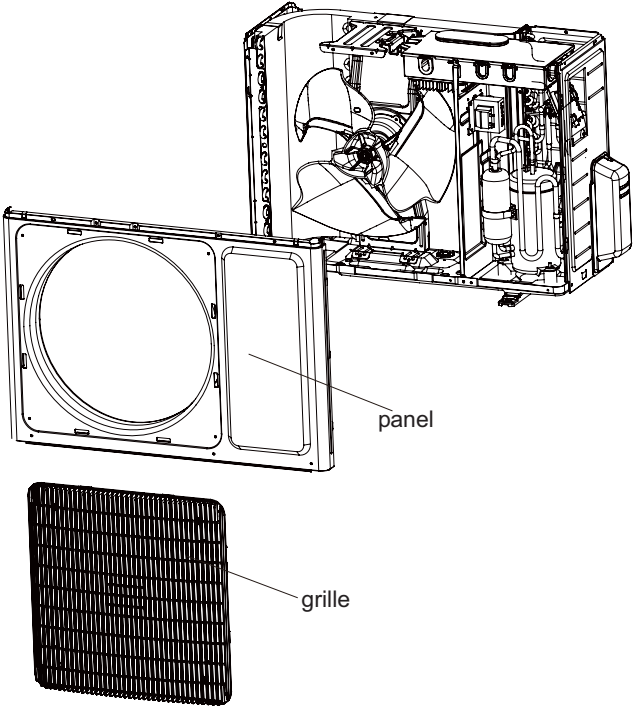
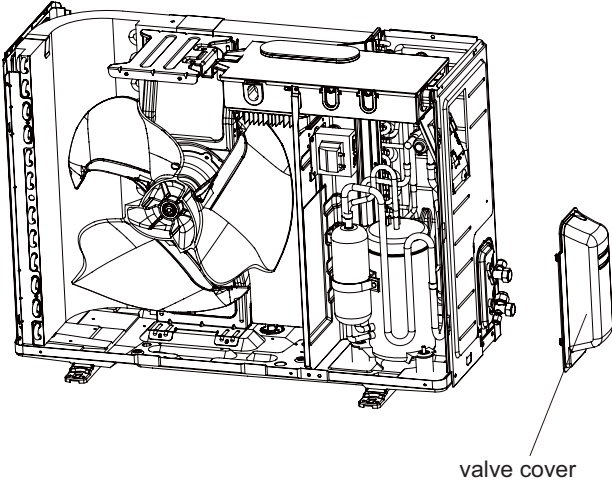


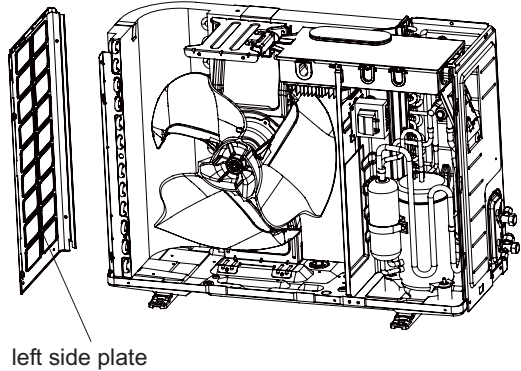
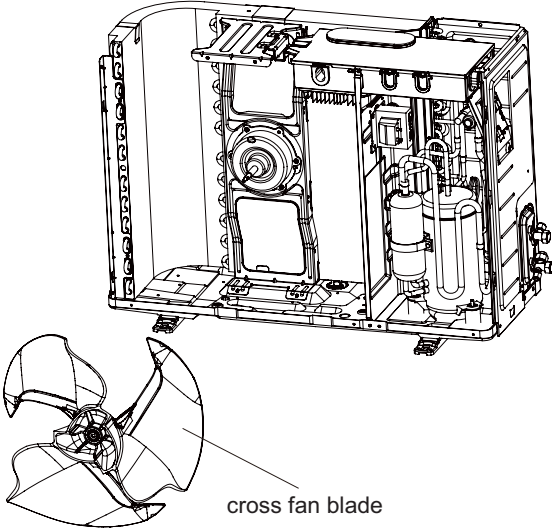
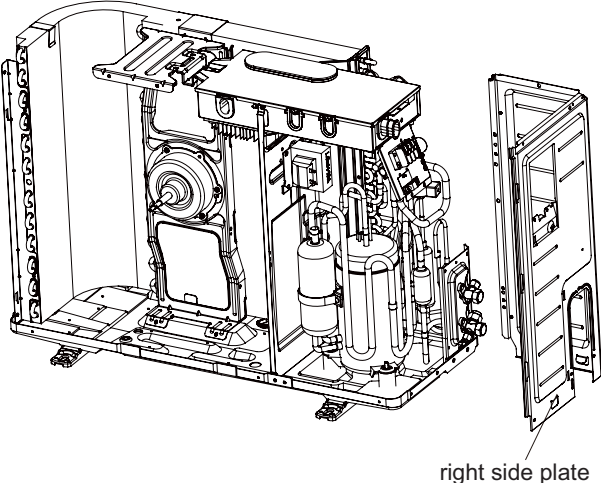
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

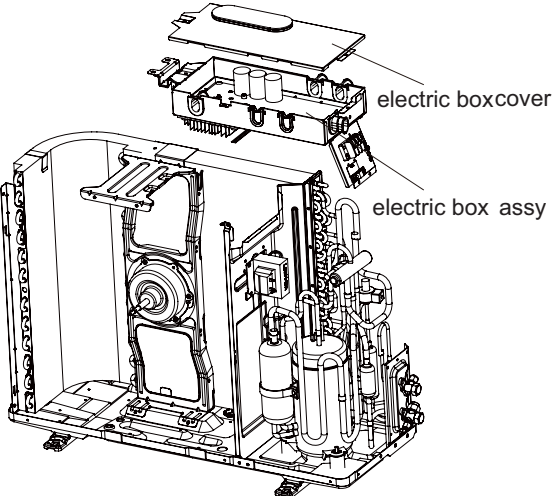
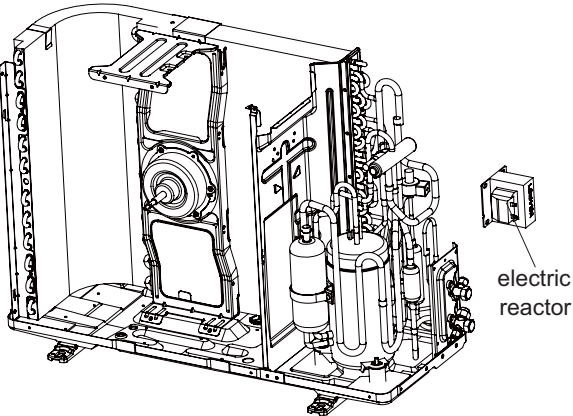
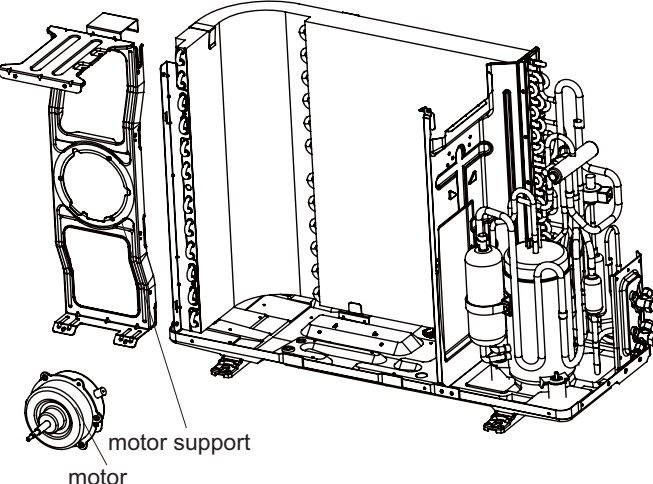
(1)Models:09/12K

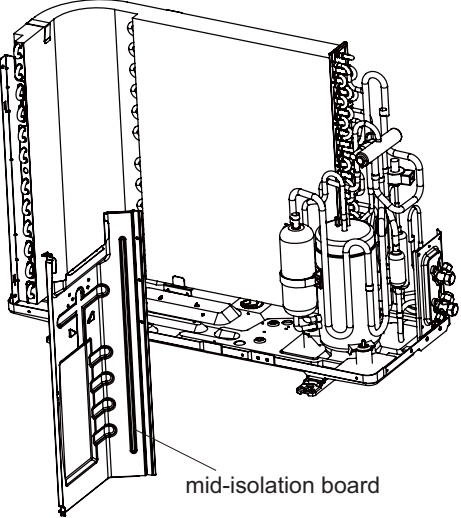
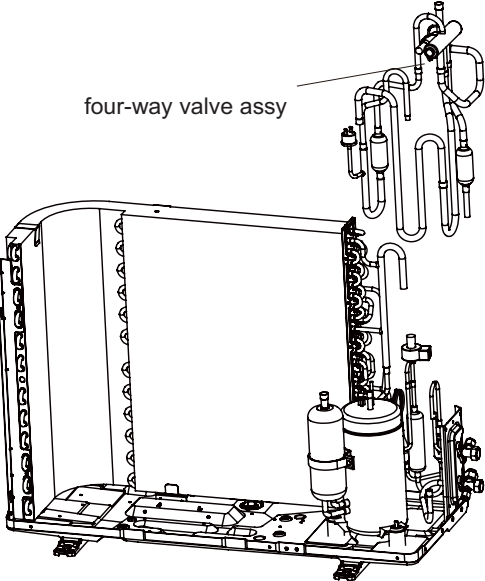
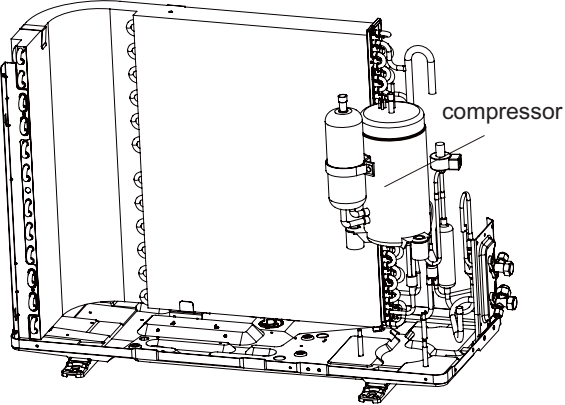
Note:
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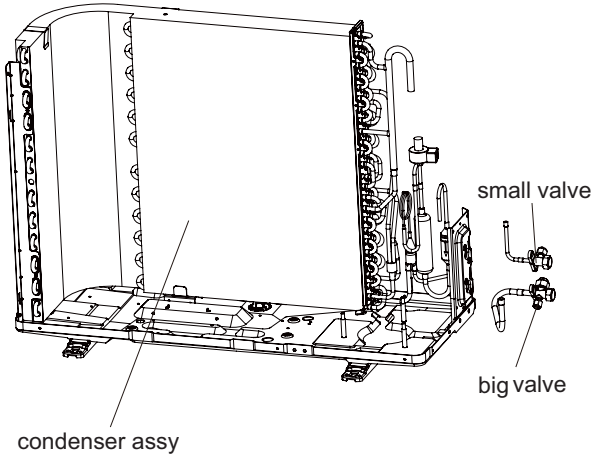
Steps	Procedure
1. Before disassembly	
2. Remove top cover	<div>Remove the screws connecting top cover, left and right side plate, as well as panel, to remove the top cover.</div> 
3. Remove handle	<div>Remove the screws connecting handle and right side plate, to remove the handle.</div> 

Steps	Procedure	
4. Remove panel and grille		
	<p>Remove the screws fixing panel, to remove the panel. Remove the screws connecting panel grille and panel, loosen the clamp, to remove the panel grille.</p>	 <p>The diagram illustrates the removal of the front panel and grille. It shows a perspective view of the unit with the panel partially detached. A separate view shows the panel and grille being removed. Labels 'panel' and 'grille' point to the respective components.</p>
5. Remove valve cover		
	<p>Remove the screw fixing valve cover, to remove the cover.</p>	 <p>The diagram illustrates the removal of the valve cover. It shows a perspective view of the unit with the valve cover detached. A separate view shows the valve cover being removed. A label 'valve cover' points to the removed component.</p>

Steps	Procedure	
6. Remove left side plate	<p>Remove the screws fixing left side plate and condenser support board, to remove the left side plate.</p>	 <p>left side plate</p>
7. Remove cross fan blade		
8. Remove right side plate	<p>Remove the screws fixing right side plate and valve support, to remove the right side plate.</p>	 <p>cross fan blade</p>
	 <p>right side plate</p>	

Steps	Procedure	
9. Remove electric box assy	<p>Remove screws fixing electric box assy and mid-isolation board, loosen the bonding tie, pull off the wiring terminal, lift to remove the electric box assy.</p>	 <p>electric boxcover</p> <p>electric box assy</p>
10. Remove electric reactor		
11. Remove motor and motor support	<p>Remove the screws fixing electric reactor, to remove the electric reactor.</p>	 <p>electric reactor</p>
	<p>Remove the four tapping screws fixing motor, pull out the contact tag of motor wiring, to remove the motor.</p> <p>Remove the two tapping screws fixing motor support and chassis, lift to remove the motor support.</p>	 <p>motor support</p> <p>motor</p>

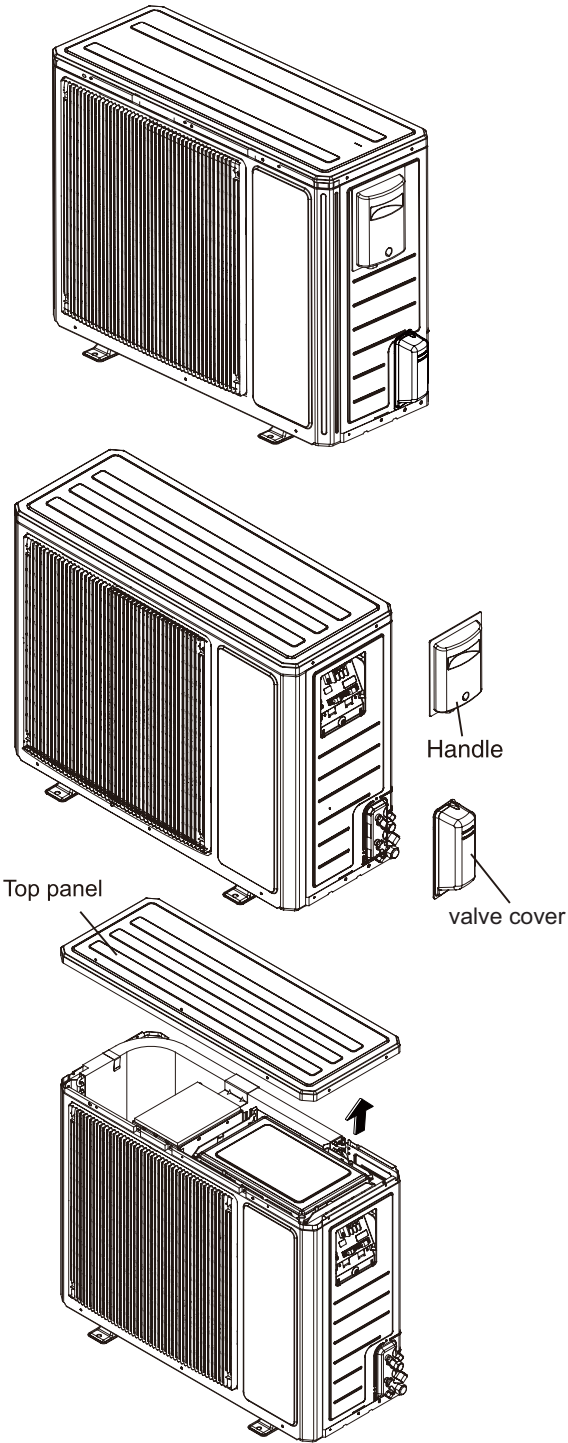
Steps	Procedure
12. Remove mid-isolation board	 <p>mid-isolation board</p>
13. Remove four-way valve assy	 <p>four-way valve assy</p>
14. Remove compressor	 <p>compressor</p>

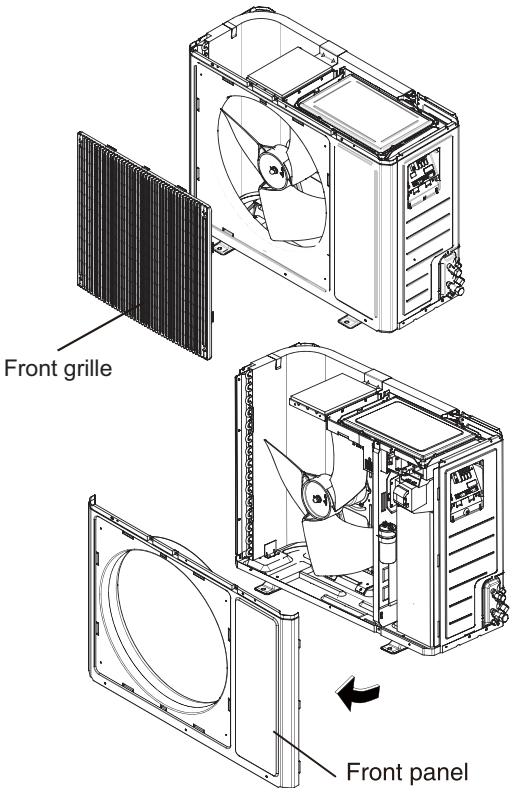
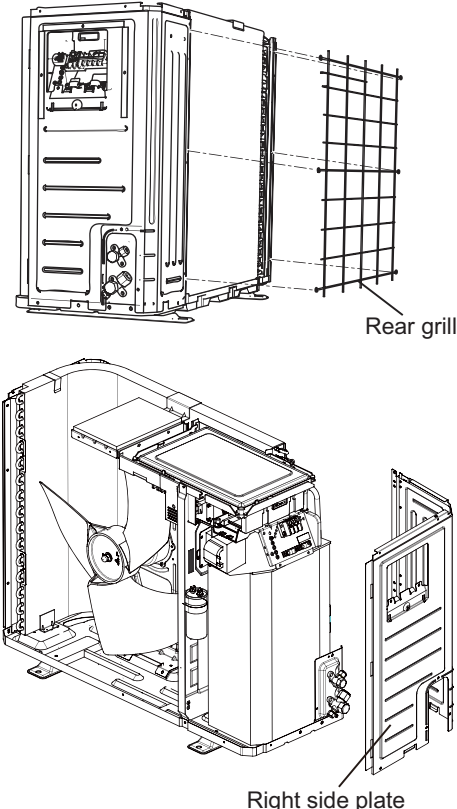
Steps	Procedure	
15. Remove big and small valve assy		
	<p>Remove screws connecting condenser assy and chassis, to remove the condenser assy. Remove the screws fixing big and small valve, to remove the valves.</p>	 <p>The diagram illustrates the removal of the condenser assembly and valves from a chassis. A line points to the condenser assembly, which is a large, rectangular unit with a series of vertical fins. Another line points to the small valve, which is a small, cylindrical component. A third line points to the big valve, which is a larger, cylindrical component. The chassis is shown as a metal frame with various components attached.</p>

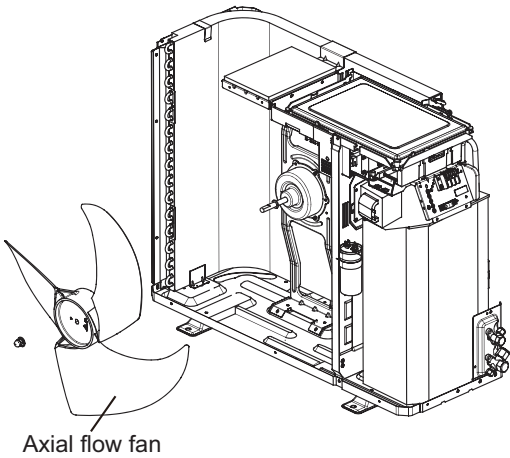
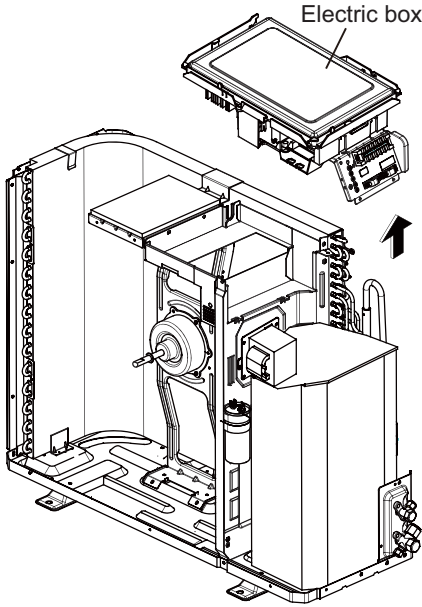
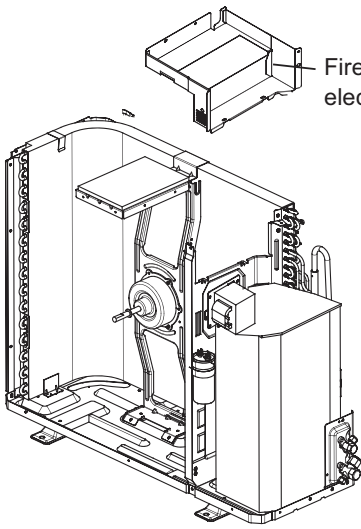


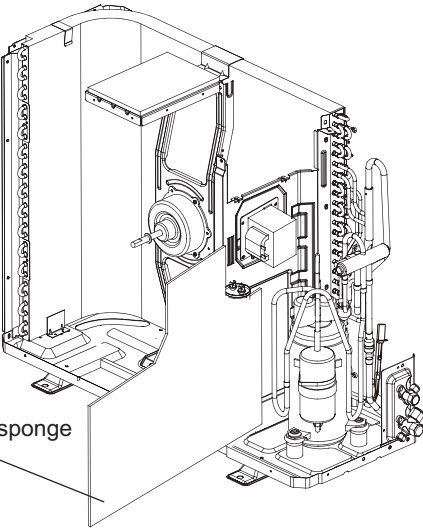
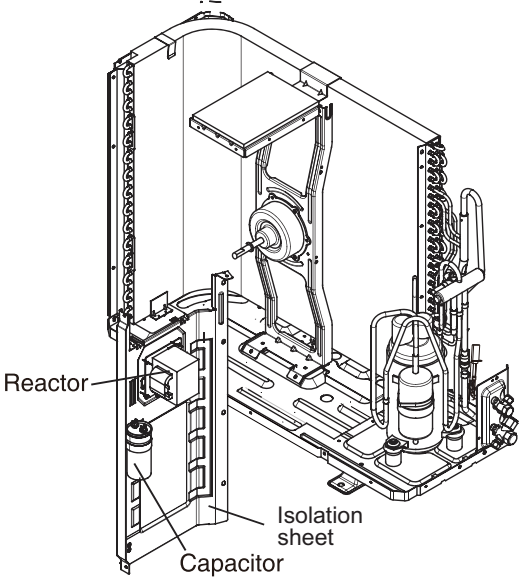
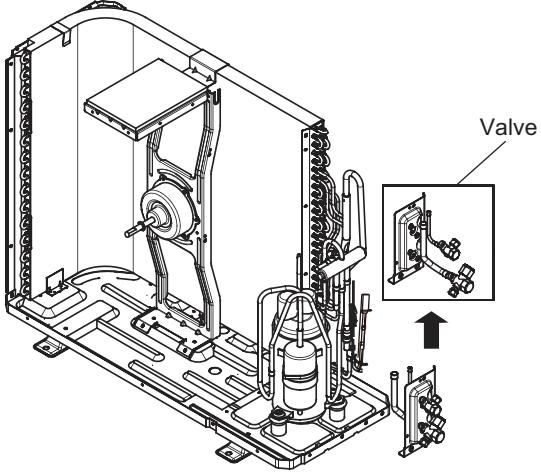
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

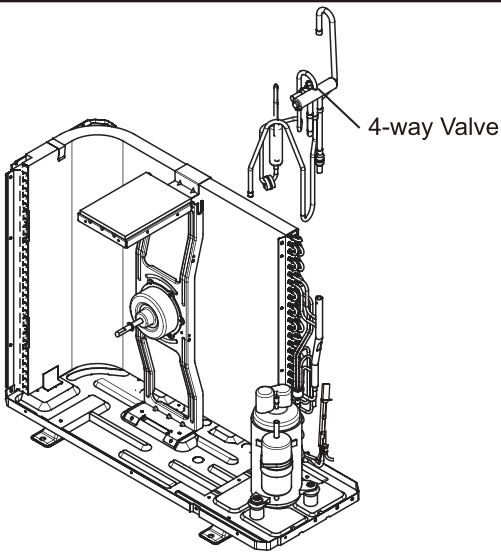
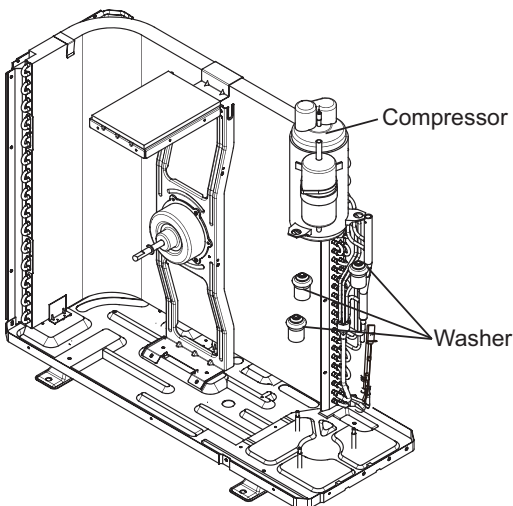
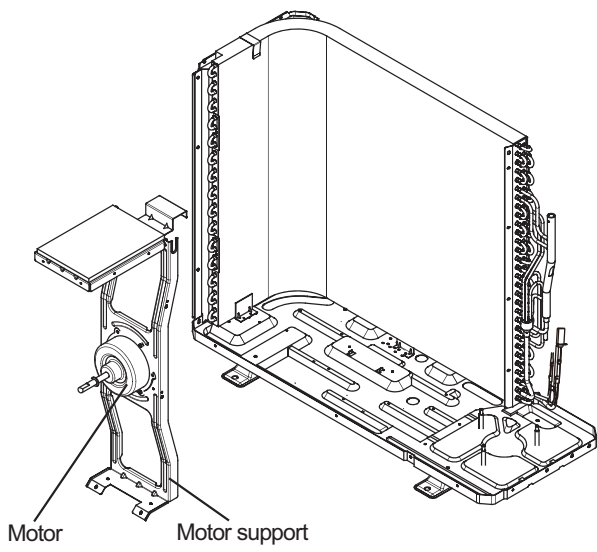
(2)Model:18K

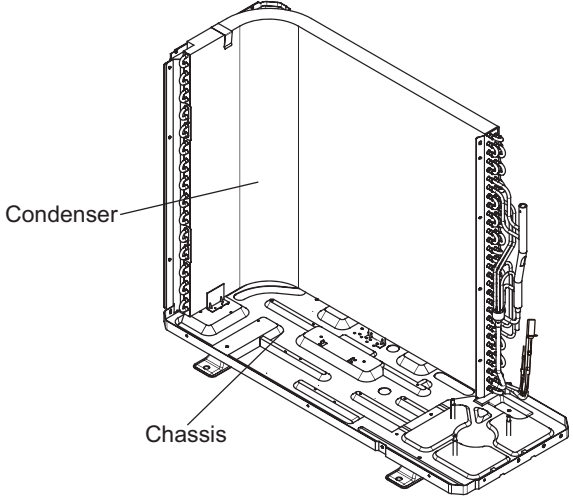
Steps	Procedure
1. Remove top cover and handle	<div><div>Before disassembly</div><div><p>Twist off the screws used for fixing the handle, pull the handle upward to remove it.</p><p>Remove the screw fixing valve cover, to remove the cover.</p></div><div><p>Twist off the screws used for fixing the top cover, pull the top cover upward to remove it.</p></div></div> <div><p>Top panel</p><p>Handle</p><p>valve cover</p></div>

Steps	Procedure	
2. Remove the front grille and the panel		
	<p>Remove the screws connecting the front grille and the front panel. Remove the front grille.</p> <p>Twist off the screws fixing the panel, pull it upward, loosen the clasp on the right side, rotate it to the left and then remove the panel.</p>	 <p>Front grille</p> <p>Front panel</p>
3. Remove right side plate		
	<p>Remove screws fixing grill and then remove the grill.</p> <p>Twist off the screws fixing the right side plate and end plate of condenser and valve support, pull it upward and then remove the right side plate sub-assy.</p>	 <p>Rear grill</p> <p>Right side plate</p>

Steps	Procedure
4. Remove the axial flow fan	 <p>Axial flow fan</p>
5. Remove Electric Box Assy	<p>Unplug wiring terminals of motor, compressor, reactor and capacitor. Remove earthing screws on side patch board. Remove screws fixing electric box and then, lift the electric box and remove it.</p>  <p>Electric box</p> <p>Remove screws fixing fire retardant electric box and then, remove the electric box.</p>  <p>Fire retardant electric box</p>

Steps	Procedure	
6. Removal of sound-proof sponge	 <p>Sound-proof sponge</p>	
7. Removal of isolation sheet	 <p>Reactor</p> <p>Isolation sheet</p> <p>Capacitor</p>	
8. Removal of valve	 <p>Valve</p>	

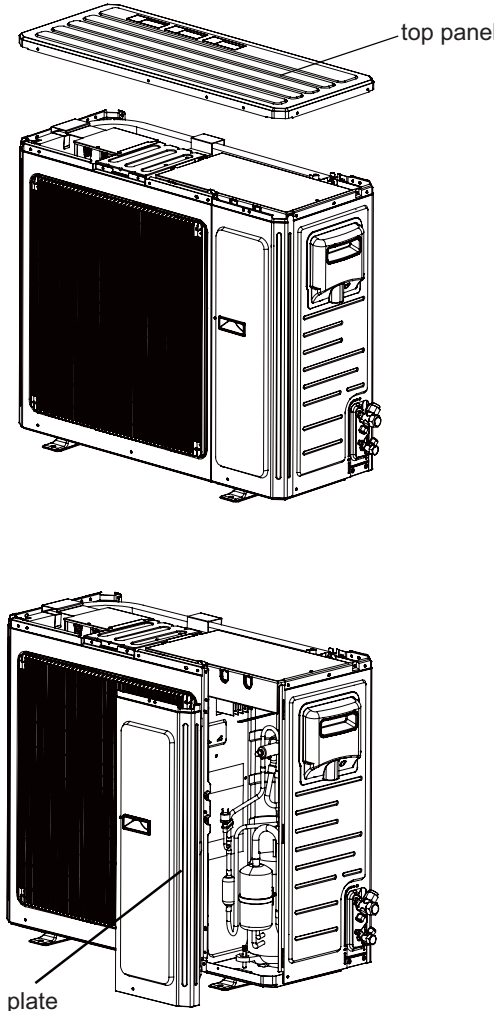
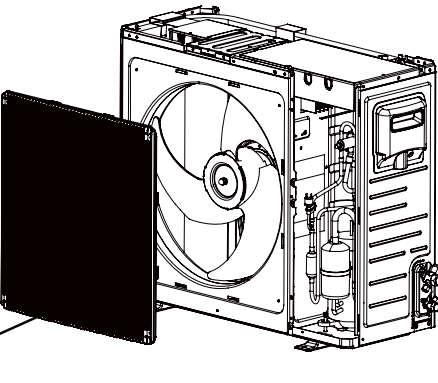
Steps	Procedure
9. Removal of 4-way valve	
	<p>Loosen the screw of the four way valve coil; Heat up the brazed part and withdraw the piping with pliers.</p> <p>Be careful so as not to burn the compressor terminals or the name plate.</p>
	
10. Removal of compressor	
	<p>Twist off the three foot nuts on compressor and then remove the compressor.</p>
	
11. Removal of motor support and motor	
	<p>Remove screws fixing motor support and then remove the support.</p> <p>Remove screws fixing motor and then remove the motor.</p>
	

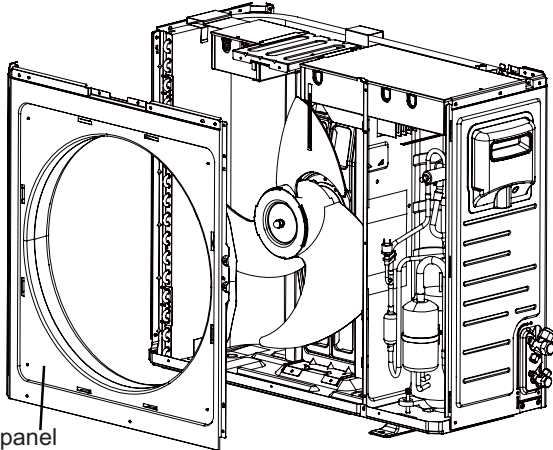
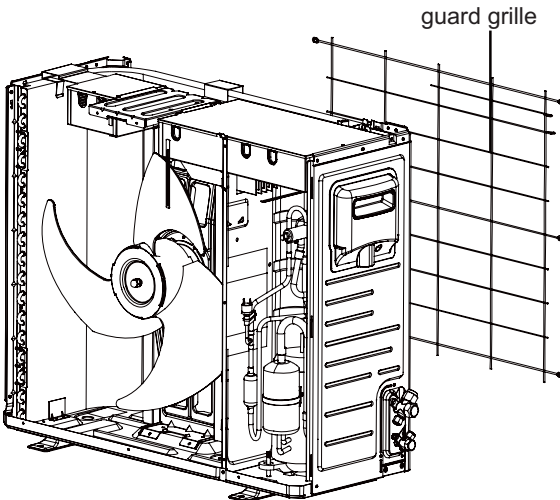
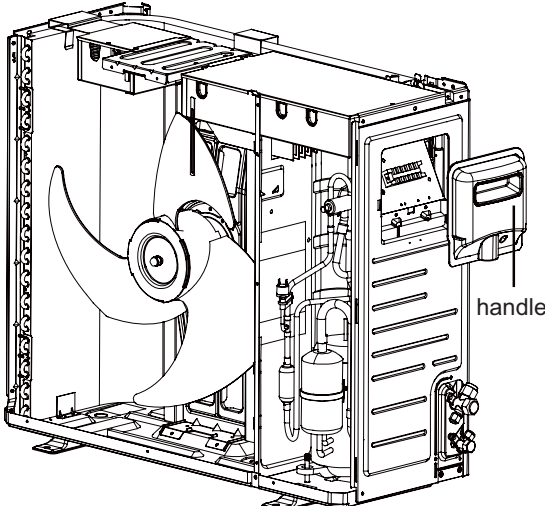
Steps	Procedure	
12. Remove the condenser		

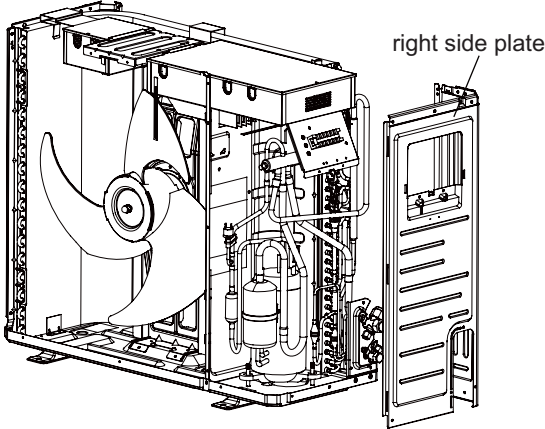
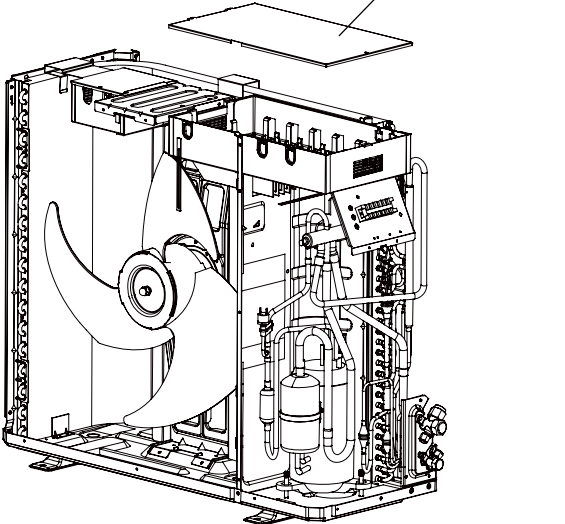
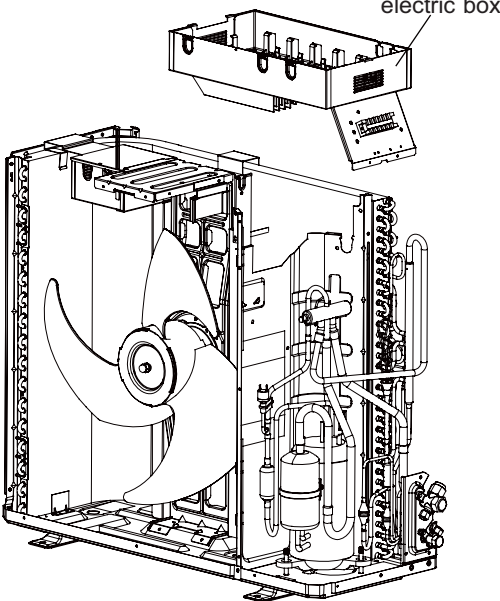


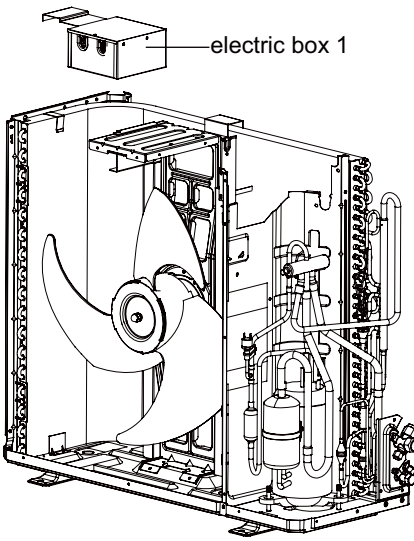
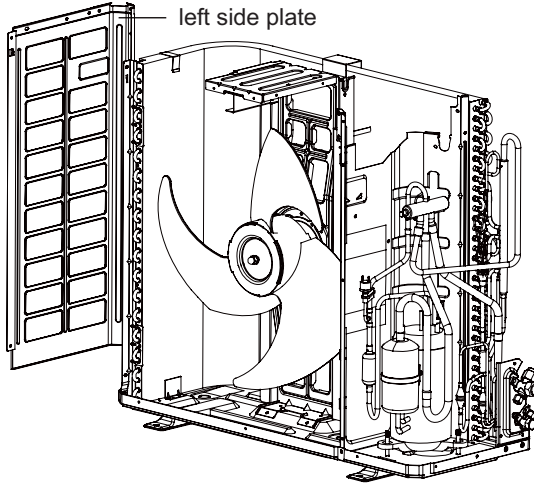
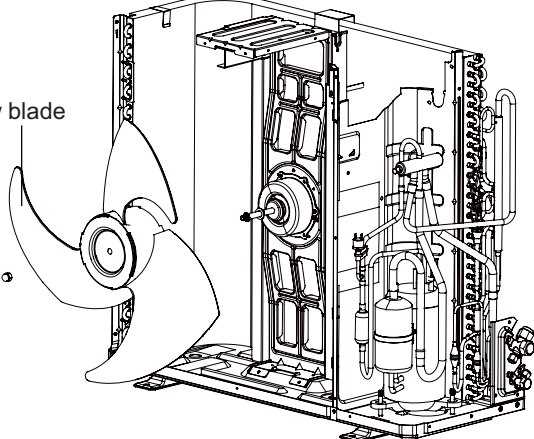
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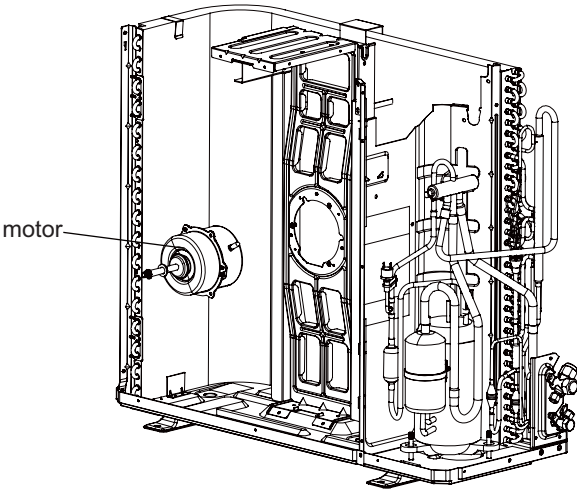
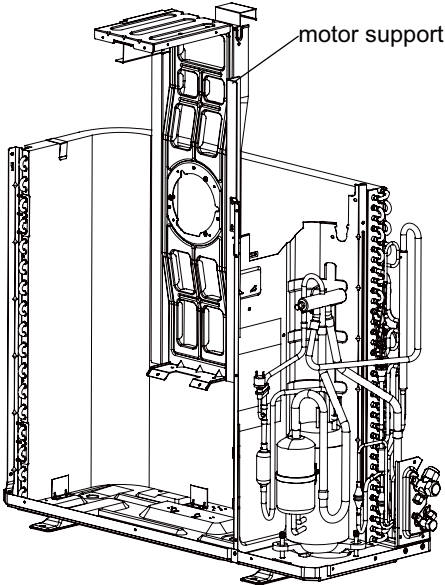
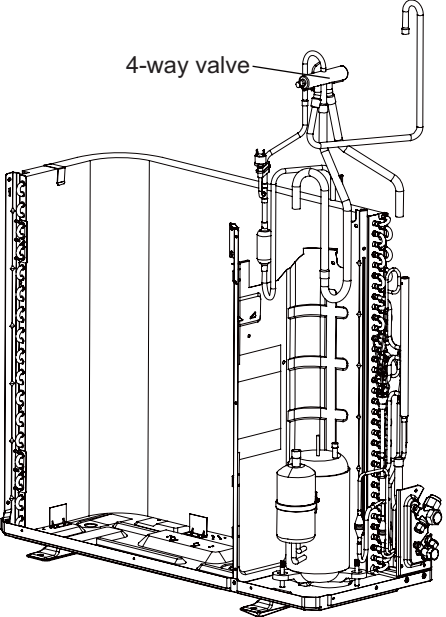
(3)Model:24K

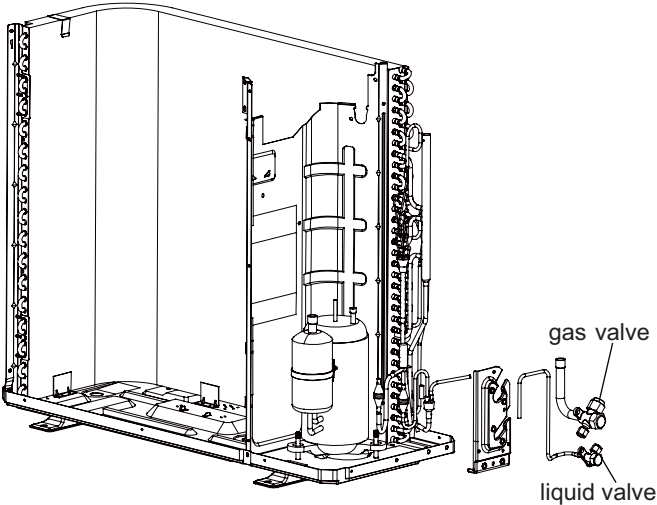
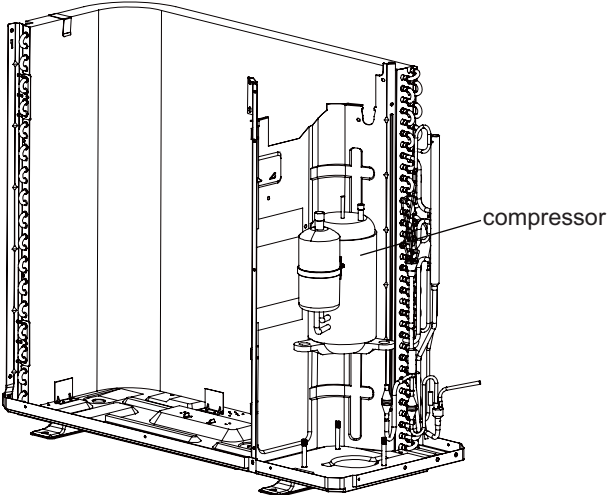
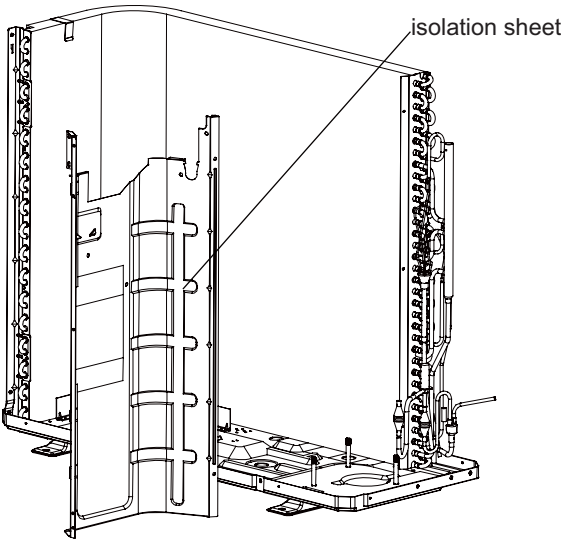
Steps	Procedure
1. Remove top cover and front side plate	 <p>a Use the screwdriver to remove the screws connecting the top panel and panel and side panels. Remove the top panel.</p> <p>b Loosen the screws connecting the front side panel and mask and chassis. Remove the front side panel.</p>
2. Remove grille	 <p>Twist off the screws connecting the grille and panel, and then remove the grille.</p>

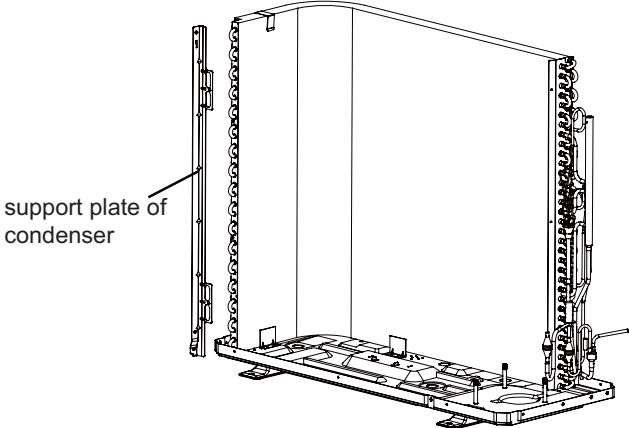
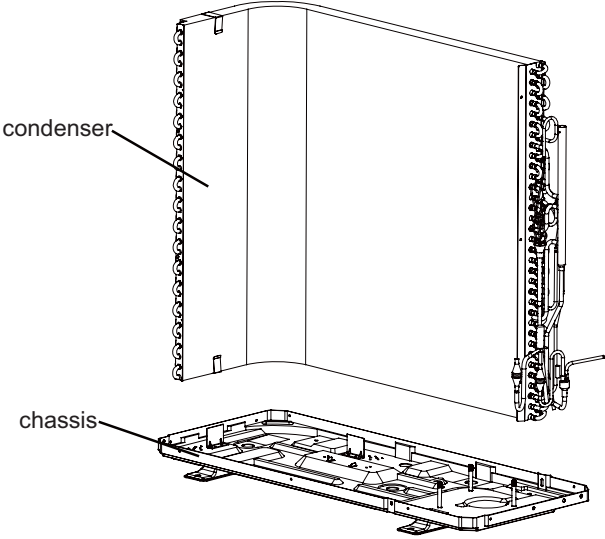
Steps	Procedures
3. Remove panel	<p>Twist off the screws connecting the panel, chassis and motor support with screwdriver, and then remove the panel.</p>  <p>panel</p>
4. Remove guard grille	<p>Twist off the screws fixing the guard grille and then remove the guard grille.</p>  <p>guard grille</p>
5. Remove handle	<p>Twist off the screws fixing the handle and then remove the handle.</p>  <p>handle</p>

Steps	Procedure
6. Remove right side plate	
7. Remove electric box	<div><div><p>a Twist off the screws on electric box cover with screwdriver, and then remove the electric box cover.</p></div><div><p>b Twist off the screws on electric box, cut off the tieline with scissors or pliers, pull out the wiring terminal, pull it upwards to remove the electric box.</p></div></div>

Steps	Procedure	
c	Twist off the screws between electric box 1 and left side plate with screwdriver, pull it upwards to remove the electric box 1.	 <p>The diagram shows a side view of the engine compartment. An electric box, labeled 'electric box 1', is shown being pulled away from the top of the chassis. The box is a small, rectangular metal enclosure. The chassis features a large axial flow fan on the left and various mechanical components on the right.</p>
8. Remove left side plate		 <p>The diagram shows the left side plate, which is a large, rectangular metal plate with a grid of rectangular openings, being removed from the chassis. The plate is shown detached from the left side of the engine compartment.</p>
9. Remove axial flow blade		 <p>The diagram shows the axial flow blade, a large, curved metal blade, being removed from the chassis. The blade is shown detached from the left side of the engine compartment.</p>

Steps		Procedure
10. Remove motor and motor support		
a	Twist off the tapping screws fixing the motor, pull out the pin of leading wire for motor and then remove the motor.	 <p>motor</p>
b	Twist off the tapping screws fixing the motor support, pull it upwards and then remove the motor support.	 <p>motor support</p>
11. Remove 4-way valve		
	Unsolder the pipeline between compressor, condenser, gas and liquid valve, and then remove the 4-way valve. (note: release all refrigerant before unsoldering).	 <p>4-way valve</p>

Steps	Procedure
12. Remove gas valve and liquid valve	 <p>Twist off the 2 bolts fixing the valve sub-assy. Unsolder the soldering joint between gas valve and air-return pipe and then remove the gas valve.(note: when unsoldering the soldering joint, wrap the gas valve with wet cloth completely to avoid the damage to valve, and release all refrigerant completely at first). Unsolder the soldering joint between liquid valve and connection pipe of liquid valve, and then remove the liquid valve.</p>
13. Remove compressor	 <p>Twist off the 3 foot nuts on compressor and then remove the compressor.</p>
14. Remove isolation sheet	 <p>Twist off the screws connecting isolation sheet and end plate of condenser and chassis, and then remove the isolation sheet.</p>

Steps	Procedure	
15. Remove support plate of condenser	<p>Twist off the screws connecting the support plate of condenser and condenser with screwdriver, and then remove the support plate of condenser.</p>	
16. Remove chassis and condenser		
	<p>Pull it upwards to separate the chassis and condenser.</p>	

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