



Service Manual



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2. Specifications

2.1 Specification Sheet

Model			GWFRT09S,GRFRT09AS
Product Code			CB464009000_116777
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	9000
Heating Capacity		Btu/h	/
Cooling Power Input		W	841
Heating Power Input		W	/
Cooling Power Current		A	3.73
Heating Power Current		A	/
Rated Input		W	1080
Rated Cooling Current		A	5.9
Rated Heating Current		A	/
Air Flow Volume		CFM	330/294/277/253/224/194/177
Dehumidifying Volume		Pint/h	1.69
EER		(Btu/h)/W	10.70
COP		(Btu/h)/W	/
SEER			17.2(SEER) 17.2(SEER2)
HSPF			/
Application Area		yd ²	14-22
Indoor Unit	Model of indoor unit		GWFRT09S
	Indoor Unit Product Code		CB464N09000_116777
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ98×580
	Cooling Speed		r/min 1300/1200/1120/1050/920/860/800
	Heating Speed		r/min /
	Fan Motor Power Output		W 20
	Fan Motor RLA		A 0.28
	Fan Motor Capacitor		μF 1
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm Φ5
	Evaporator Row-fin Gap		mm 2-1.4
	Evaporator Coil Length (L×D×W)		mm 584×22.8×266.7
	Swing Motor Model		MP24AA
	Swing Motor Power Output		W 1.5
	Fuse Current		A 3.15
	Sound Pressure Level		dB (A) Cooling: 40/37/35/33/29/27/26
	Sound Power Level		dB (A) Cooling: 50/47/45/43/39/37/36
	Dimension (W×H×D)		inch 31 7/64×10 53/64×7 7/8
	Dimension of Carton Box (L×W×H)		inch 33 15/32×13 11/32×10 5/16
	Dimension of Package (L×W×H)		inch 33 35/64×13 31/32×10 3/4
Net Weight		lb 19.8	
Gross Weight		lb 24.3	

Outdoor Unit	Outdoor Unit Model		GRFRT09AS
	Outdoor Unit Product Code		CB444W15500_116777
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD.
	Compressor Model		QXF-A082zC170
	Compressor Oil		ZE-GLES RB68GX or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	/
	Compressor RLA	A	4.7
	Compressor Power Input	W	756.6
	Compressor Overload Protector		/
	Throttling Method		Capillary
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	/
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5
	Condenser Rows-fin Gap	mm	1-1.3
	Condenser Coil Length (L×D×W)	mm	675×11.4×514.4
	Fan Motor Speed	rpm	850
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1070
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		/
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level	dB (A)	50
	Sound Power Level	dB (A)	60
Dimension (W×H×D)	inch	28 13/16×21 27/32×12 63/64	
Dimension of Carton Box (L×W×H)	inch	31 9/64×14 11/16×23 15/64	
Dimension of Package (L×W×H)	inch	31 17/64×14 51/64×24 7/32	
Net Weight	lb	50.7	
Gross Weight	lb	56.2	
Refrigerant		R410A	
Refrigerant Charge	oz	18.0	
Connection Pipe	Connection Pipe Length	ft	24.6
	Connection Pipe Gas Additional Charge	oz/ft	0.2
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max Distance Height	ft	32.8
	Max Distance Length	ft	49.2
	Note: The connection pipe applies metric diameter.		

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

Model			GWFRT12SA,GRFRT12ASA
Product Code			CB464008900_116777
Power Supply	Rated Voltage	V~	115
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	11700
Heating Capacity		Btu/h	/
Cooling Power Input		W	1345
Heating Power Input		W	/
Cooling Power Current		A	14.6
Heating Power Current		A	/
Rated Input		W	1500
Rated Cooling Current		A	16.3
Rated Heating Current		A	/
Air Flow Volume		CFM	371/294/262/235/218/201/182
Dehumidifying Volume		Pint/h	2.96
EER		(Btu/h)/W	8.70
COP		(Btu/h)/W	/
SEER			16.5(SEER) 16.5(SEER2)
HSPF			/
Application Area		yd ²	19-29
Indoor Unit	Model of indoor unit		GWFRT12SA
	Indoor Unit Product Code		CB464N08900_116777
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ98×633.5
	Cooling Speed		r/min 1350/1200/1100/1000/920/850/800
	Heating Speed		r/min /
	Fan Motor Power Output		W 20
	Fan Motor RLA		A 0.31
	Fan Motor Capacitor		μF 4
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm Φ5
	Evaporator Row-fin Gap		mm 2-1.4
	Evaporator Coil Length (L×D×W)		mm 635×22.8×304.8
	Swing Motor Model		MP24BA
	Swing Motor Power Output		W 1.5
	Fuse Current		A 3.15
	Sound Pressure Level		dB (A) Cooling: 45/42/39/35/32/29/28
	Sound Power Level		dB (A) Cooling: 55/52/49/45/42/39/38
	Dimension (W×H×D)		inch 33 17/64×11 3/8×8 15/64
	Dimension of Carton Box (L×W×H)		inch 35 7/16×13 13/16×10 45/64
	Dimension of Package (L×W×H)		inch 35 5/8×14 29/64×11 9/64
Net Weight		lb 22	
Gross Weight		lb 26.5	

Outdoor Unit	Outdoor Unit Model		GRFRT12ASA
	Outdoor Unit Product Code		CB444W15100_116777
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		FTz-AN108ACBD
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA	A	/
	Compressor RLA	A	15
	Compressor Power Input	W	857
	Compressor Overload Protector		/
	Throttling Method		Capillary
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	/
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5
	Condenser Rows-fin Gap	mm	1-1.3
	Condenser Coil Length (L×D×W)	mm	675×11.4×514.4
	Fan Motor Speed	rpm	900
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		/
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level	dB (A)	51
	Sound Power Level	dB (A)	61
Dimension (W×H×D)	inch	28 13/16×21 27/32×12 63/64	
Dimension of Carton Box (L×W×H)	inch	31 9/64×14 11/16×23 15/64	
Dimension of Package (L×W×H)	inch	31 17/64×14 51/64×24 7/32	
Net Weight	lb	55.1	
Gross Weight	lb	60.6	
Refrigerant		R410A	
Refrigerant Charge	oz	19.4	
Connection Pipe	Connection Pipe Length	ft	24.6
	Connection Pipe Gas Additional Charge	oz/ft	0.16
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max Distance Height	ft	40
	Max Distance Length	ft	65.6
	Note: The connection pipe applies metric diameter.		

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

Model			GWFRT12S,GRFRT12AS
Product Code			CB464008401_116777
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	11700
Heating Capacity		Btu/h	/
Cooling Power Input		W	1345
Heating Power Input		W	/
Cooling Power Current		A	6
Heating Power Current		A	/
Rated Input		W	1500
Rated Cooling Current		A	6.6
Rated Heating Current		A	/
Air Flow Volume		CFM	371/294/262/235/218/201/182
Dehumidifying Volume		Pint/h	2.96
EER		(Btu/h)/W	8.70
COP		(Btu/h)/W	/
SEER			17(SEER) 17(SEER2)
HSPF			/
Application Area		yd ²	19-29
Indoor Unit	Model of indoor unit		GWFRT12S
	Indoor Unit Product Code		CB464N08401_116777
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ98×633.5
	Cooling Speed		r/min 1350/1200/1120/1050/980/920/850
	Heating Speed		r/min /
	Fan Motor Power Output		W 20
	Fan Motor RLA		A 0.31
	Fan Motor Capacitor		μF 1.5
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm Φ5
	Evaporator Row-fin Gap		mm 2-1.4
	Evaporator Coil Length (L×D×W)		mm 635×22.8×304.8
	Swing Motor Model		MP24BA
	Swing Motor Power Output		W 1.5
	Fuse Current		A 3.15
	Sound Pressure Level		dB (A) Cooling: 45/42/39/37/35/31/30
	Sound Power Level		dB (A) Cooling: 55/52/49/47/45/41/40
	Dimension (W×H×D)		inch 33 17/64×11 3/8×8 15/64
	Dimension of Carton Box (L×W×H)		inch 35 7/16×13 13/16×10 45/64
	Dimension of Package (L×W×H)		inch 35 5/8×14 29/64×11 9/64
Net Weight		lb 22.1	
Gross Weight		lb 26.5	

Outdoor Unit	Outdoor Unit Model		GRFRT12AS
	Outdoor Unit Product Code		CB444W15000_116777
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		FTz-AN108ACBD
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA	A	/
	Compressor RLA	A	6.80
	Compressor Power Input	W	857
	Compressor Overload Protector		/
	Throttling Method		Capillary
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	/
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ5
	Condenser Rows-fin Gap	mm	1-1.3
	Condenser Coil Length (L×D×W)	mm	675×11.4×514.4
	Fan Motor Speed	rpm	900
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		/
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level	dB (A)	51
	Sound Power Level	dB (A)	61
Dimension (W×H×D)	inch	28 13/16×21 27/32×12 63/64	
Dimension of Carton Box (L×W×H)	inch	31 9/64×14 11/16×23 15/64	
Dimension of Package (L×W×H)	inch	31 17/64×14 51/64×24 7/32	
Net Weight	lb	50.7	
Gross Weight	lb	56.2	
Refrigerant		R410A	
Refrigerant Charge	oz	19.4	
Connection Pipe	Connection Pipe Length	ft	24.6
	Connection Pipe Gas Additional Charge	oz/ft	0.2
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max Distance Height	ft	32.8
	Max Distance Length	ft	65.6
	Note: The connection pipe applies metric diameter.		

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

Model			GWFRT18S,GRFRT18AS
Product Code			CB464008301_116777
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	17100
Heating Capacity		Btu/h	/
Cooling Power Input		W	1829
Heating Power Input		W	/
Cooling Power Current		A	7.85
Heating Power Current		A	/
Rated Input		W	2300
Rated Cooling Current		A	9.5
Rated Heating Current		A	/
Air Flow Volume		CFM	471//436/406/374/335/312/277
Dehumidifying Volume		Pint/h	3.8
EER		(Btu/h)/W	9.35
COP		(Btu/h)/W	/
SEER			17(SEER) 17.5(SEER2)
HSPF			/
Application Area		yd ²	28-41
Indoor Unit	Model of indoor unit		GWFRT18S
	Indoor Unit Product Code		CB464N08301_116777
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ106×706
	Cooling Speed		r/min 1350/1280/1200/1130/1050/980/900
	Heating Speed		r/min /
	Fan Motor Power Output		W 35
	Fan Motor RLA		A 0.3
	Fan Motor Capacitor		μF 2.5
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm Φ7
	Evaporator Row-fin Gap		mm 2-1.4
	Evaporator Coil Length (L×D×W)		mm 715×25.4×304.8
	Swing Motor Model		MP35CJ
	Swing Motor Power Output		W 2.5
	Fuse Current		A 3.15
	Sound Pressure Level		dB (A) Cooling: 47/45/43/41/39/37/34
	Sound Power Level		dB (A) Cooling: 57/55/53/51/49/47/44
	Dimension (W×H×D)		inch 38 3/16×11 13/16×8 55/64
	Dimension of Carton Box (L×W×H)		inch 40 5/32×14 9/16×11 37/64
Dimension of Package (L×W×H)		inch 40 23/64×14 7/8×11 31/32	
Net Weight		lb 29.8	
Gross Weight		lb 35.3	

Outdoor Unit	Outdoor Unit Model		GRFRT18AS	
	Outdoor Unit Product Code		CB444W15700_116777	
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.	
	Compressor Model		QXF-A108zH170C	
	Compressor Oil		FW68DA or equivalent	
	Compressor Type		Rotary	
	Compressor LRA	A		17.0
	Compressor RLA	A		8.6
	Compressor Power Input	W		1000
	Compressor Overload Protector			/
	Throttling Method			Capillary
	Set Temperature Range	°F		61~86
	Cooling Operation Ambient Temperature Range	°F		0~118
	Heating Operation Ambient Temperature Range	°F		/
	Condenser Form			Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm		Φ7
	Condenser Rows-fin Gap	mm		2-1.4
	Condenser Coil Length (L×D×W)	mm		780×23×514
	Fan Motor Speed	rpm		900
	Fan Motor Power Output	W		30
	Fan Motor RLA	A		0.5
	Fan Motor Capacitor	μF		/
	Outdoor Unit Air Flow Volume	CFM		1177
	Fan Type			Axial-flow
	Fan Diameter	mm		Φ420
	Defrosting Method			/
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5
	Sound Pressure Level	dB (A)		54
	Sound Power Level	dB (A)		64
Dimension (W×H×D)	inch		31 37/64×21 27/32×13 25/32	
Dimension of Carton Box (L×W×H)	inch		34 7/32×15 35/64×23 25/64	
Dimension of Package (L×W×H)	inch		34 21/64×15 43/64×24 13/32	
Net Weight	lb		67.3	
Gross Weight	lb		72.8	
Refrigerant			R410A	
Refrigerant Charge	oz		35.3	
Connection Pipe	Connection Pipe Length	ft	24.6	
	Connection Pipe Gas Additional Charge	oz/ft	0.1	
	Outer Diameter Liquid Pipe	inch	1/4	
	Outer Diameter Gas Pipe	inch	1/2	
	Max Distance Height	ft	32.8	
	Max Distance Length	ft	82.0	
	Note: The connection pipe applies metric diameter.			

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

Model			GWFRT24S,GRFRT24AS
Product Code			CB464008102_116777
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	22000
Heating Capacity		Btu/h	/
Cooling Power Input		W	1896
Heating Power Input		W	/
Cooling Power Current		A	8.5
Heating Power Current		A	/
Rated Input		W	2500
Rated Cooling Current		A	12
Rated Heating Current		A	/
Air Flow Volume		CFM	677/588/559/500/471/441/412
Dehumidifying Volume		Pint/h	5.28
EER		(Btu/h)/W	11.60
COP		(Btu/h)/W	/
SEER			18(SEER) 18(SEER2)
HSPF			/
Application Area		yd ²	28-41
Indoor Unit	Model of indoor unit		GWFRT24S
	Indoor Unit Product Code		CB464N08102_116777
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ108×830
	Cooling Speed		r/min 1300/1150/1100/1000/950/900/850
	Heating Speed		r/min /
	Fan Motor Power Output		W 45
	Fan Motor RLA		A 0.3
	Fan Motor Capacitor		μF /
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm Φ7
	Evaporator Row-fin Gap		mm 2-1.4
	Evaporator Coil Length (L×D×W)		mm 850×25.4×342.9
	Swing Motor Model		MP35CJ
	Swing Motor Power Output		W 2.5
	Fuse Current		A 3.15
	Sound Pressure Level		dB (A) Cooling: 51/46/45/42/40/38/37
	Sound Power Level		dB (A) Cooling: 61/56/55/52/50/48/47
	Dimension (W×H×D)		inch 42 7/16×12 51/64×9 11/16
	Dimension of Carton Box (L×W×H)		inch 44 1/4×15 3/4×12 61/64
	Dimension of Package (L×W×H)		inch 44 29/64×16 1/16×13 11/32
Net Weight		lb 36.4	
Gross Weight		lb 43.0	

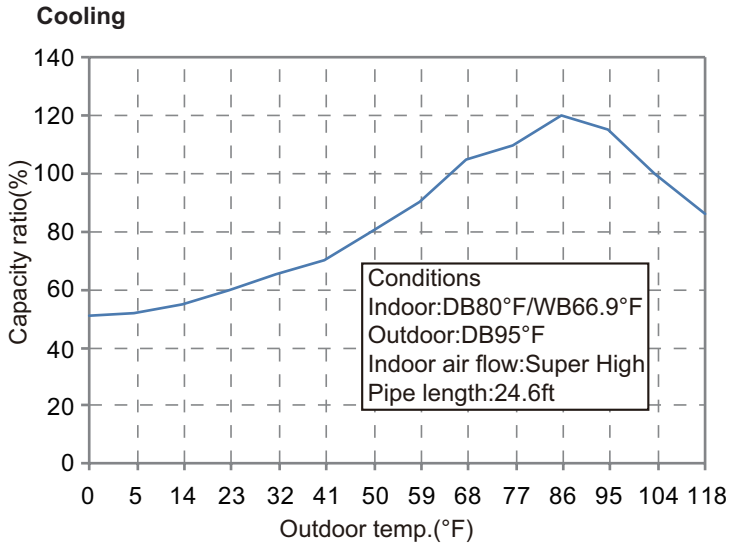
Outdoor Unit	Outdoor Unit Model		GRFRT24AS	
	Outdoor Unit Product Code		CB444W15800_116777	
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.	
	Compressor Model		FTz-SM151AXB	
	Compressor Oil		FW68DA or equivalent	
	Compressor Type		Rotary	
	Compressor LRA	A		35.00
	Compressor RLA	A		10.58
	Compressor Power Input	W		1330
	Compressor Overload Protector			HPC 115/95U1 KSD115°C
	Throttling Method			Capillary
	Set Temperature Range	°F		61~86
	Cooling Operation Ambient Temperature Range	°F		0~118
	Heating Operation Ambient Temperature Range	°F		/
	Condenser Form			Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm		Φ5
	Condenser Rows-fin Gap	mm		2-1.4
	Condenser Coil Length (L×D×W)	mm		855×22.8×609.6
	Fan Motor Speed	rpm		880
	Fan Motor Power Output	W		60
	Fan Motor RLA	A		0.73
	Fan Motor Capacitor	μF		3.5
	Outdoor Unit Air Flow Volume	CFM		1883
	Fan Type			Axial-flow
	Fan Diameter	mm		Φ520
	Defrosting Method			/
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5
	Sound Pressure Level	dB (A)		58
	Sound Power Level	dB (A)		68
Dimension (W×H×D)	inch		37 23/32×25 63/64×15 53/64	
Dimension of Carton Box (L×W×H)	inch		40 33/64×17 53/64×28 5/32	
Dimension of Package (L×W×H)	inch		40 5/8×17 61/64×29 1/64	
Net Weight	lb		89.3	
Gross Weight	lb		99.2	
Refrigerant			R410A	
Refrigerant Charge	oz		42.3	
Connection Pipe	Connection Pipe Length	ft	24.6	
	Connection Pipe Gas Additional Charge	oz/ft	0.2	
	Outer Diameter Liquid Pipe	inch	1/4	
	Outer Diameter Gas Pipe	inch	5/8	
	Max Distance Height	ft	32.8	
	Max Distance Length	ft	82.0	
	Note: The connection pipe applies metric diameter.			

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

2.2 Capacity Variation Ratio According to Temperature

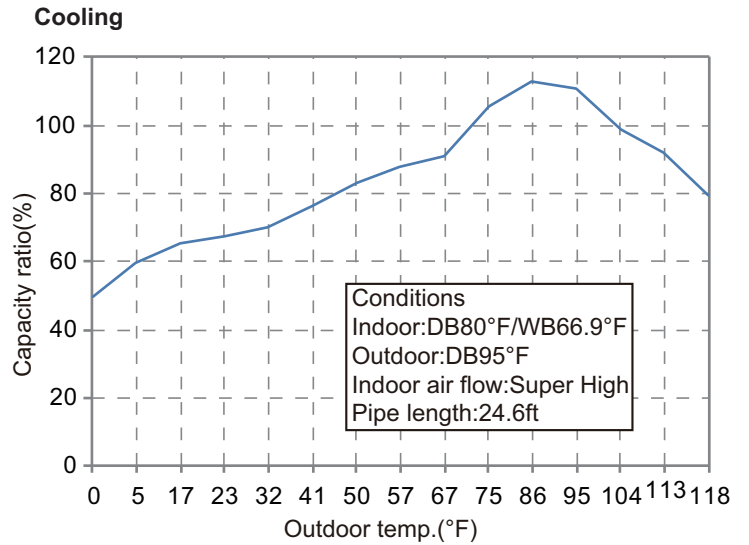
GWFR09S,GRFRT09AS

Cooling operation ambient temperature range is 0°F~118°F.



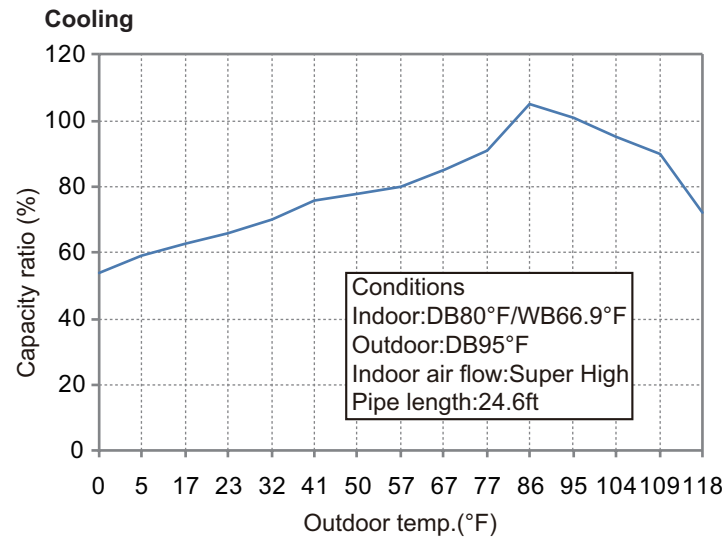
**GWFR12SA,GRFRT12ASA
GWFR12S,GRFRT12AS**

Cooling operation ambient temperature range is 0°F~118°F.



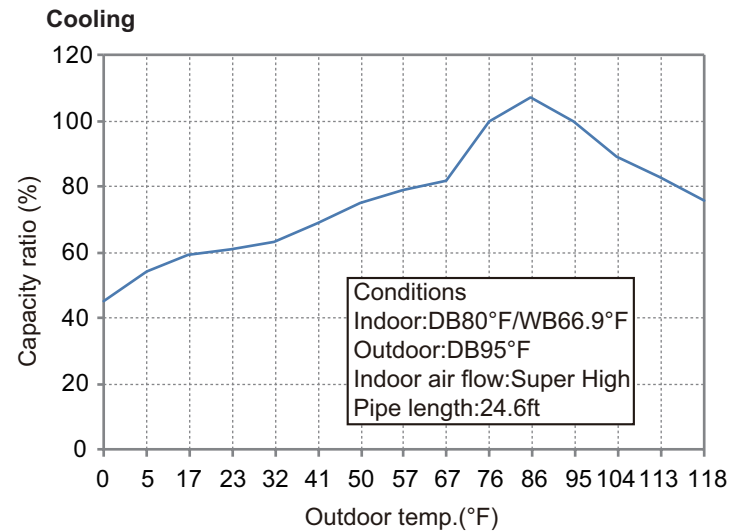
GWFR18S,GRFRT18AS

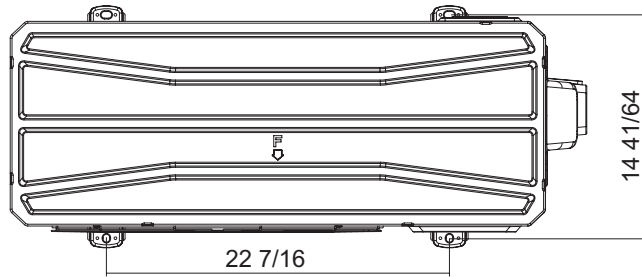
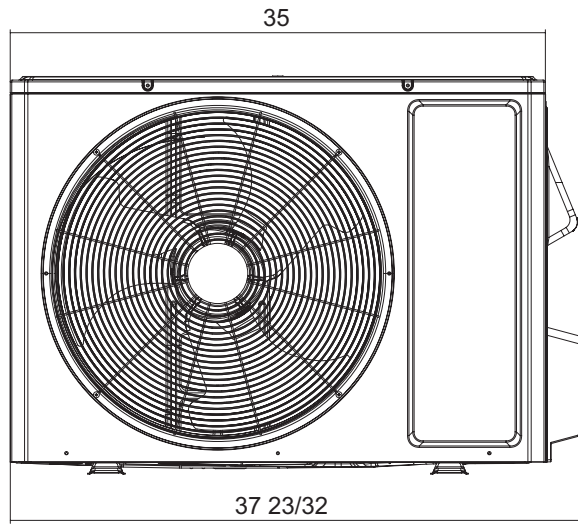
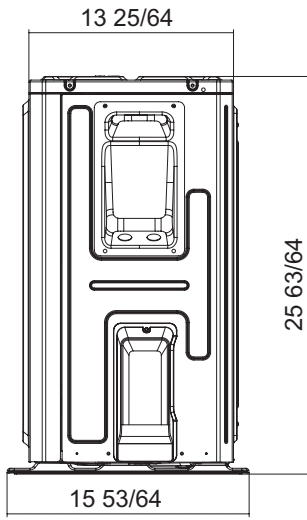
Cooling operation ambient temperature range is 0°F~118°F.



GWFR24S,GRFRT24AS

Cooling operation ambient temperature range is 0°F~118°F.






Unit:inch

5. Electrical Part

5.1 Wiring Diagram

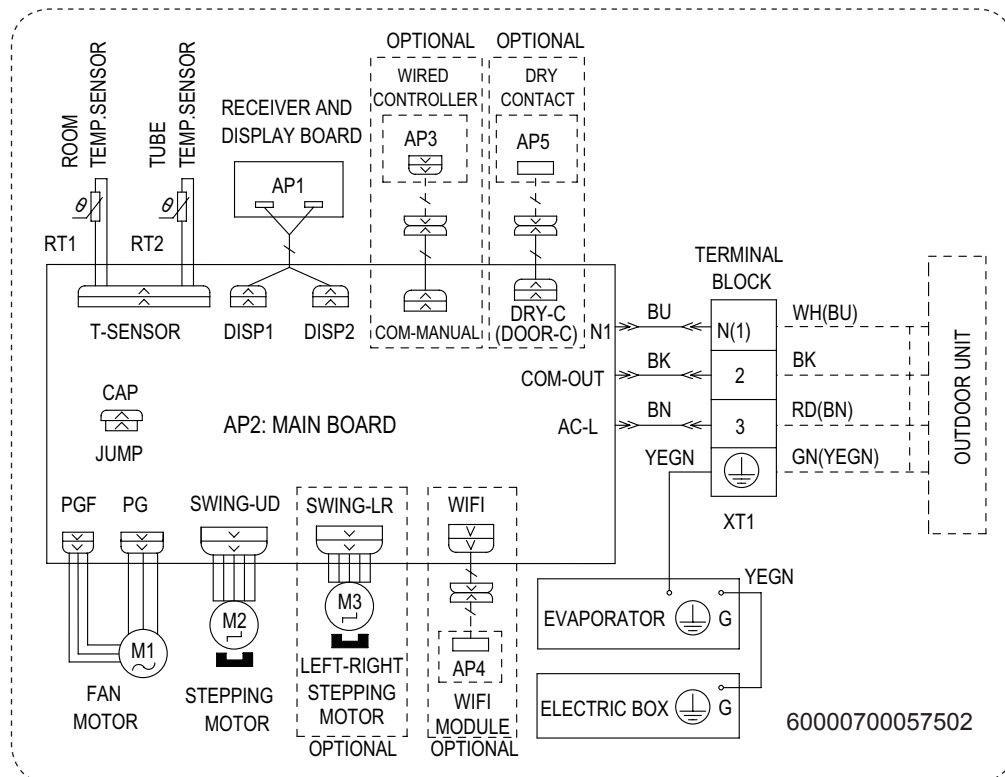
• Instruction

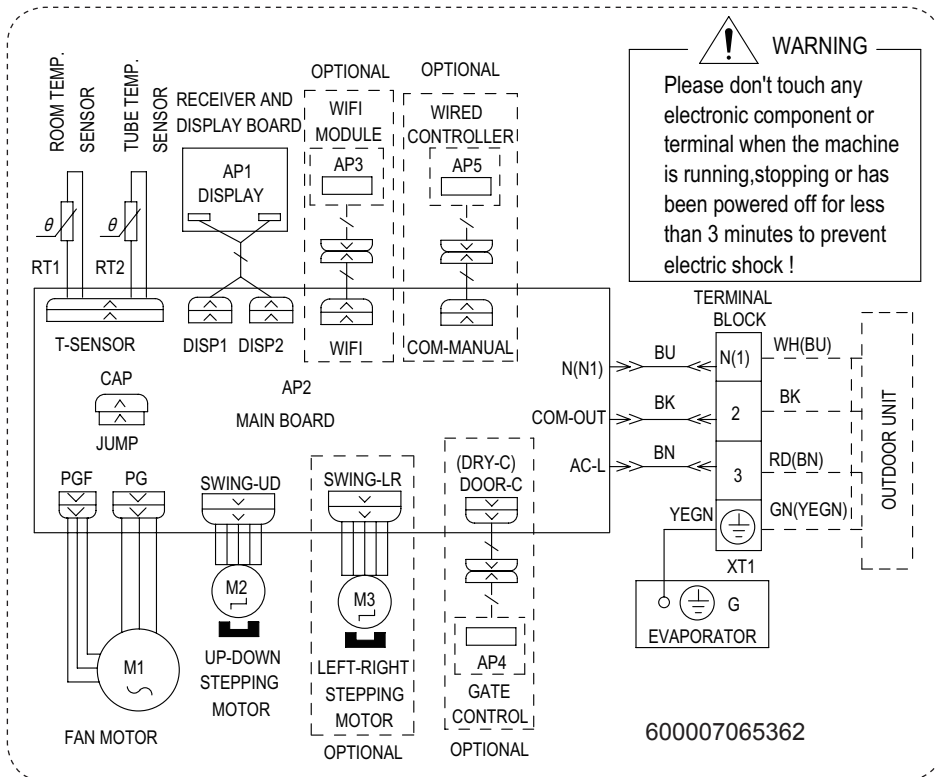
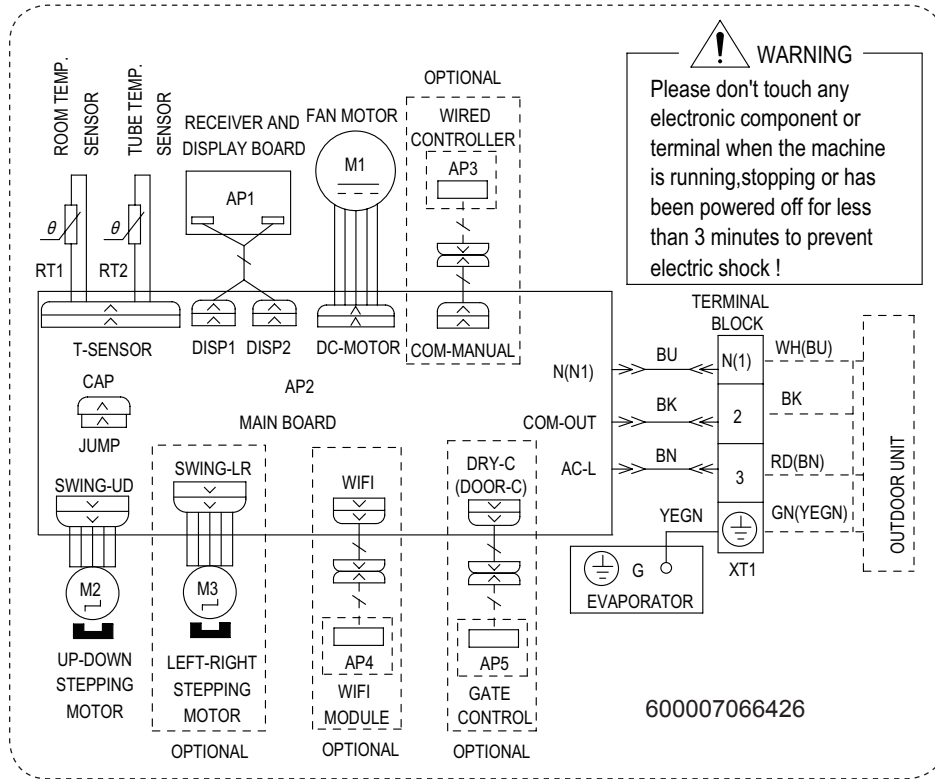
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

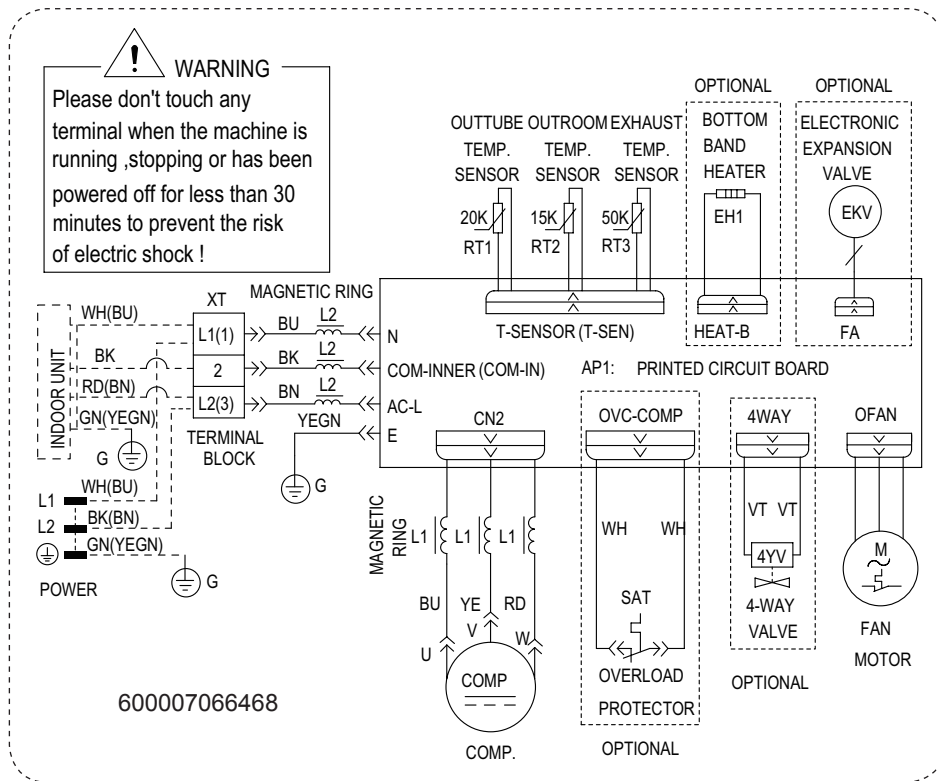
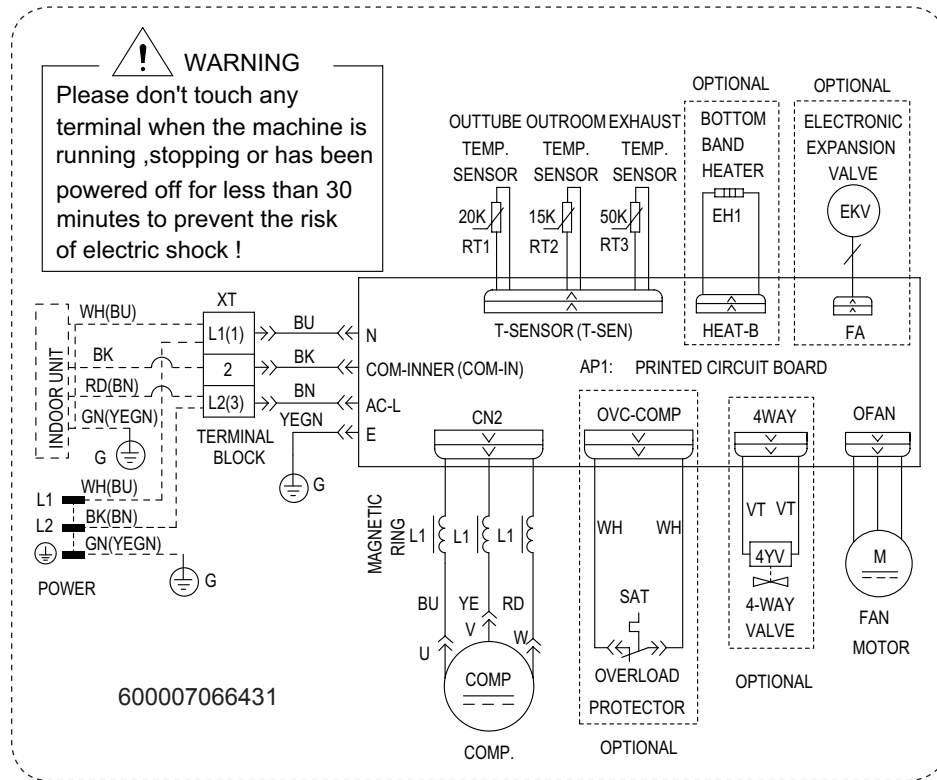
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

• Indoor Unit

GWFR09S GWFR12SA GWFR12S



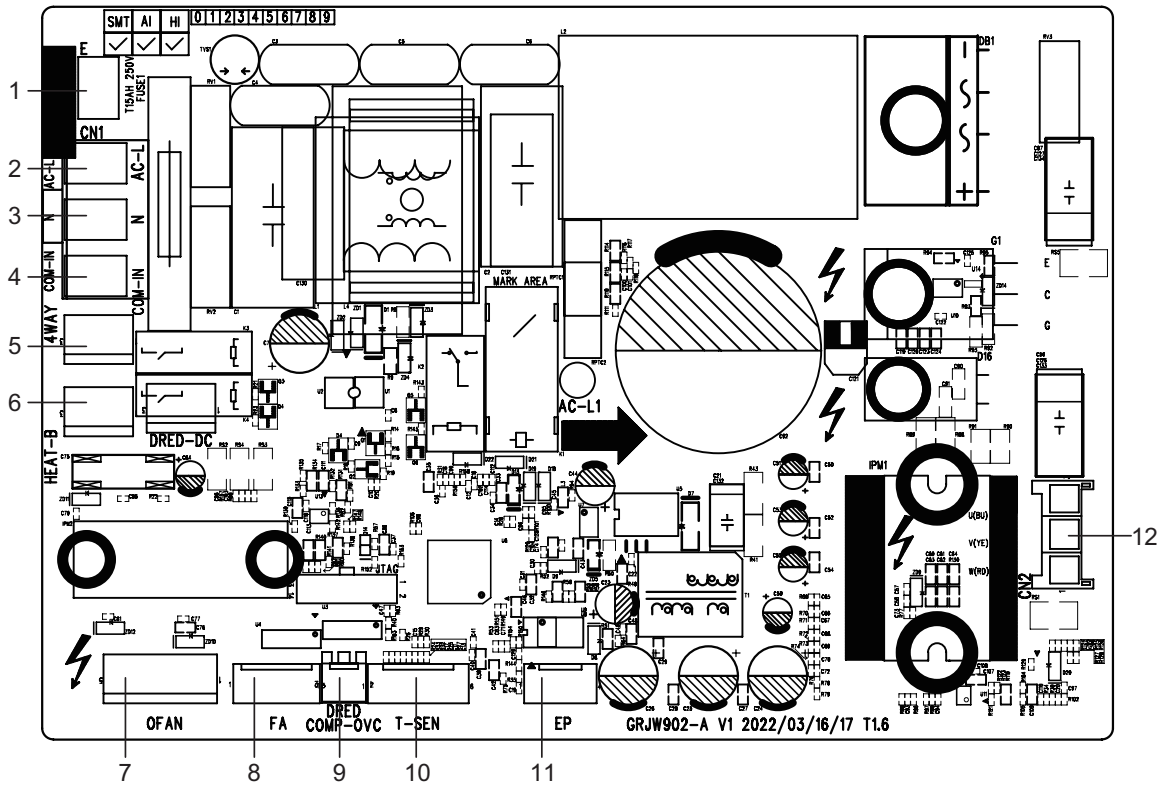




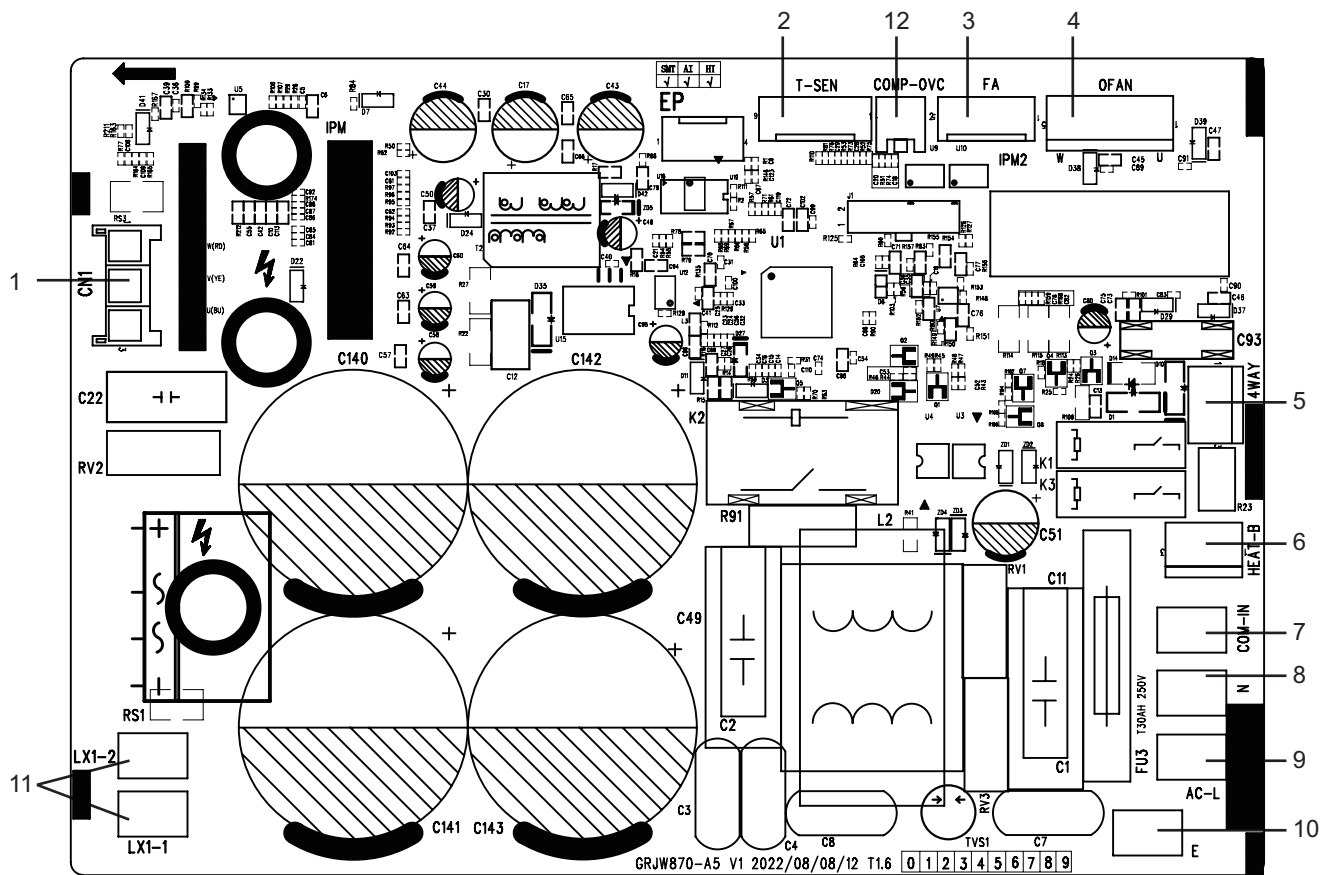
These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

Outdoor Unit

GRFRT09AS GRFRT12AS



No.	Name	No.	Name
1	Earthing wire	7	Outdoor fan
2	Live wire	8	Electronic expansion valve
3	Neutral wire	9	Compressor Overload
4	Communication wire	10	Temperature sensor
5	4-way valve	11	E disk
6	Electric heating of chassis	12	Three-phase terminal of compressor



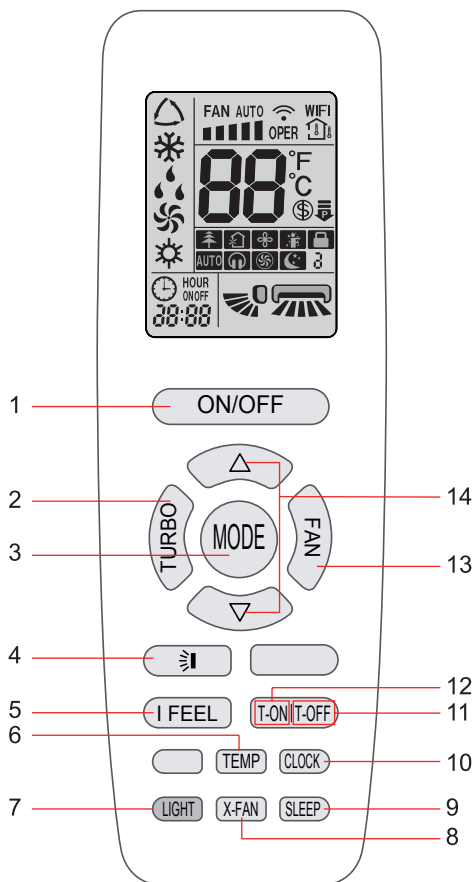
No.	Name
1	Three-phase terminal of compressor
2	Temperature sensor
3	Electronic expansion valve
4	Outdoor fan
5	4-way valve
6	Electric heating of chassis

No.	Name
7	Terminal of communication wire
8	Neutral wire
9	Live wire
10	Earthing wire
11	Interface of reactor
12	Compressor Overload

6. Function and Control

6.1 Remote Controller Introduction

Buttom name and function intruduction



No.	Button name	Function
1	ON/OFF	Turn on or turn off the unit
2	TURBO	Set turbo function
3	MODE	Set operation mode
4		Set up&down swing status
5	I FEEL	Set I FEEL function
6	TEMP	Switch temperature displaying type on the unit's display
7	LIGHT	Set light function
8	X-FAN	Set X-FAN function
9	SLEEP	Set sleep function
10	CLOCK	Set clock of the system
11	TOFF	Set timer off function
12	TON	Set timer on function
13	FAN	Set fan speed
14		Set temperature and time

Preparation before operation

When using the remote controller for the first time or after replacing the batteries, please set the time of the system according to current time in the following steps:

- (1). Pressing CLOCK button, ☀ is blinking.
- (2). Pressing Δ or ∇ button, the clock time will increase or decrease rapidly.
- (3). Press CLOCK button again to confirm the time and return to display current time.

Introduction of operation function

(1). Selecting operation mode
In unit on status, press MODE button to select operation mode in following sequence:

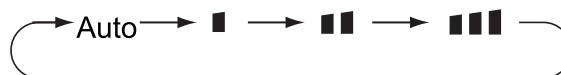


(2). Setting temperature
In unit on status, press Δ button to increase setting temperature and press ∇ button to decrease setting temperature. The range of temperature is from 16°C to 30°C.

Note: Under auto mode, manual adjustment of temperature is not needed.

(3). Adjusting fan speed
In unit on status, press FAN button to adjust fan speed in following

sequence:



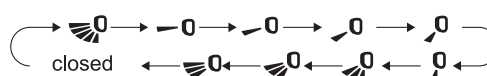
Notes:

- ① When operation mode changes, fan speed is memoried;
- ② Under dry mode, fan speed is low and can not be adjusted.

(4). Setting swing function

Setting up&down swing

- 1). Under simple swing status, press button to adjust up&down swing status;
- 2). Under fixed-angle swing status, press button to adjust up&down swing angle circularly as below:



(5). Setting turbo function

Under cool or heat mode, press TURBO button to set turbo function.

When is displayed, turbo function is on.

When is not displayed, turbo function is off.

When turbo function is on, the unit operates in super high speed to achieve quick cooling or heating. When turbo function is off, the unit operates in setting fan speed.


(6). Setting light function


The light on the receiver light board will display present operation


status. If you want to turn off the light, please press LIGHT button. Press this button again to turn on the light.

(7). Viewing ambient temperature

In unit on status, receiver light board or wired controller is defaulted to display setting temperature. Press TEMP button to view indoor or outdoor ambient temperature.

When  is displayed, it means the displayed temperature is setting temperature.


When  is displayed, it means the displayed temperature is indoor ambient temperature.

When  is displayed, it means the displayed temperature is outdoor ambient temperature.

Note: setting temperature is always displayed in Remote Controller.

(8). Setting X-FAN function

In cool or dry mode, press X-FAN button to set X-FAN function.

When  is displayed, X-FAN function is on.

When  is not displayed, X-FAN function is off.

When X-FAN function is on, the water on the evaporator will be blown away until turning off the unit to avoid mildew.

(9). Setting sleep function

In unit on status, press SLEEP button to turn on or turn off sleep function.

① When  is displayed, sleep function is on.

② When  is not displayed, sleep function is off.

Notes:

① Sleep function can not be set in auto and fan mode;

② When turning off the unit or switching mode, sleep function is cancelled;

(10). Setting I FEEL function

In unit on status, press I FEEL button to turn on or turn off I FEEL function.

When  is displayed, I FEEL function is on.

When  is not displayed, I FEEL function is off.

When I FEEL function is turned on, the unit will adjust temperature according to the temperature detected by the remote controller to achieve the best air-conditioning effect. In this case, you should place the remote controller within the valid receiving range.



(11). Setting timer

You can set the operation time of unit as you need. You can also set timer on and timer off in combination.

Before setting, check if the time of the system is the same as the current time. If not, please set the time according to current time.

(12). Setting timer off

① Pressing TOFF button, "OFF" is blinking and time displaying zone displays the timer time of last setting.

② Press  or  button to adjust the timer time.

③ Press TOFF button again to confirm setting. OFF is displayed and time displaying zone resumes to display current time.

4. Press TOFF button again to cancel timer and OFF is not displayed.

13). Setting timer on

① Pressing TON button, "ON" is blinking and time displaying zone displays the timer time of last setting.




② Press  or  button to adjust the timer time.



③ Press TON button again to confirm setting. ON is displayed and time displaying zone resumes to display current time.


④ Press TON button again to cancel timer and ON is not displayed.

Introduction of special functions


(1). Setting child lock

Press  and  button simultaneously to lock the buttons on remote controller and is  displayed.

Press  and  button simultaneously again to unlock the buttons on remote controller and is not displayed.


If the buttons are locked,  blinks 3 times when pressing the button and any operation on the button is invalid.


(2). Switching temperature scale

In unit off status, press MODE button and  button simultaneously to switch temperature scale between °C and °F.

(3). Setting energy-saving function

In unit on status and under cool mode, press CLOCK and TEMP button simultaneously to enter energy-saving mode.


• When  is displayed, energy-saving function is on.

• When  is not displayed, energy-saving function is off.

If you want to turn off the energy-saving function, press CLOCK and TEMP button and is not displayed.

Note: energy-saving function is only available in cooling mode and it will be exited when switching mode or setting sleep function.

(4). Absence function

In unit on status and under heat mode, press CLOCK and TEMP button simultaneously to enter absence function. Temperature displaying zone displays 8 and is  displayed.

Press CLOCK and TEMP button simultaneously again to exit absence function. Temperature displaying zone resumes previous display and is not displayed.

In winter, absence function can keep the indoor ambient temperature above 0°C to avoid freezing.

Note: Absence function is only available in heating mode and it will be exited when switching mode or setting sleep function.

Replacing batteries in remote controller and notes

(1). Lift the cover along the direction of arrow (as shown in Fig 1 ①).

(2). Take out the original batteries (as shown in Fig 1 ②).

(3). Place two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar is correct (as shown in Fig 2 ③).

(4). Reinstall the cover (as shown in Fig 2 ④).

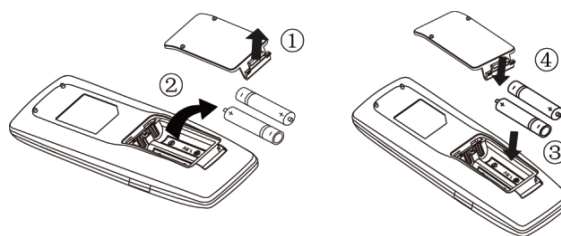


Fig.1


Fig.2

Notes:

① The remote controller should be placed 1m away from the TV set or stereo sound sets.

② The operation of remote controller should be performed within its receiving range.

③ If you need to control the main unit, please point the remote controller at the signal receiving window of the main unit to improve the receiving sensibility of main unit.

④ When the remote controller is sending signal, " " icon will be blinking for 1 second. When the main unit receives valid remote control signal, it will give out a sound.

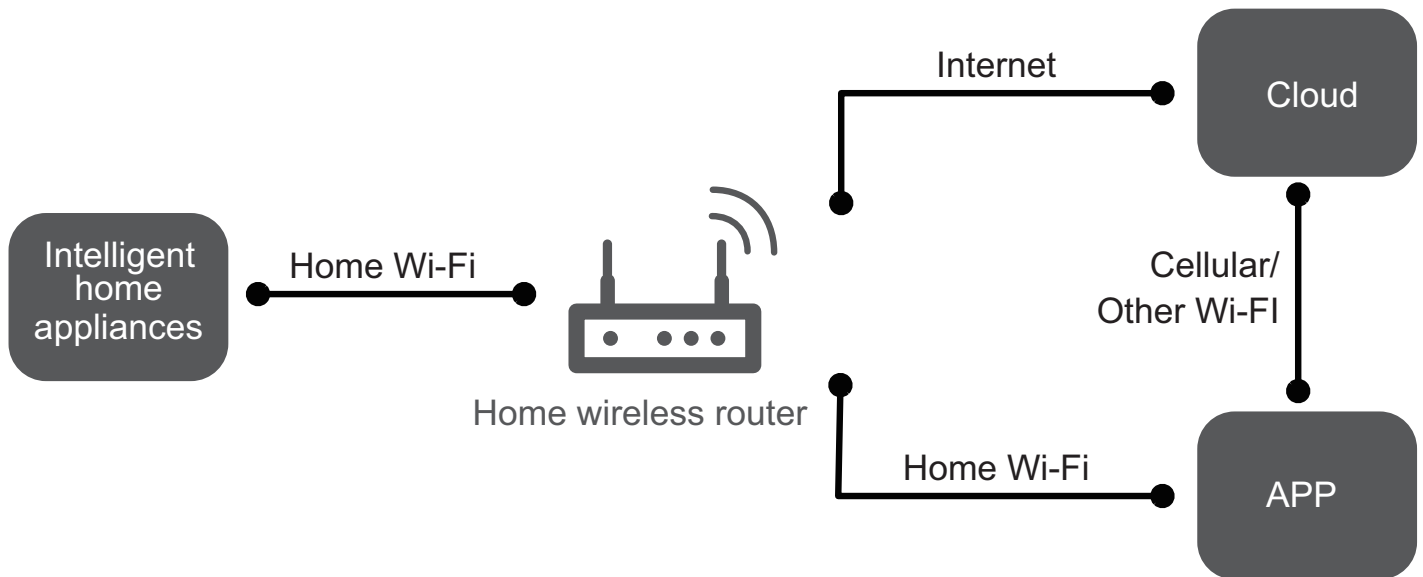
⑤ If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds. If it still can't operate properly, replace the batteries.

⑥ When replacing the batteries, do not use old or different types of batteries, otherwise, it may cause malfunction.

⑦ When you won't use the remote controller for a long time, please take out the batteries.

6.2 Ewpe Smart App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation



App Download Linkage

Scan the QR code or search "Ewpe Smart" in the application market to download and install it. When "Ewpe Smart" App is installed, register the account and add the device to achieve long-distance control and LAN control of smart home appliances.

For more information, please refer to "Help" in App.

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

b. Exit refrigerant recycling function

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

(11) Ambient temperature display control mode

a. When user set the remote controller to display set temperature (corresponding remote control code: 01), current set temperature will be displayed.

b. Only when remote control signal is switched to indoor ambient temperature display status (corresponding remote control code: 10) from other display status (corresponding remote control code: 00, 01,11), controller will display indoor ambient temperature for 3s and then turn back to display set temperature.

Under this mode, indoor fan operates at set fan speed. Compressor, outdoor fan, 4-way valve and electric heating tube stop operation. Indoor fan can select to operate at high, medium, low or auto fan speed. Temperature setting range is 60.8~86.0°F.

(12) Off-peak energization function:

Adjust compressors minimum stop time. The original minimum stop time is 180s and then we change to:

The time interval between two start-ups of compressor can't be less than $180+T$ s ($0 \leq T \leq 15$). T is the variable of controller. That's to say the minimum stop time of compressor is 180s~195s. Read-in T into memory chip when refurbish the memory chip each time. After power recovery, compressor can only be started up after $180+T$ s at least.

(13) SE control mode

The unit operates at SE status.

(14) X-fan mode

When X-fan function is turned on, after turn off the unit, indoor fan will still operate at low speed for 2min and then the complete unit will be turned off. When x-fan function is turned off, after turn off the unit, the complete unit will be turned off directly.

(15) 46.4°F heating function

Under heating mode, you can set 46.4°F heating function by remote controller. The system will operate at 46.4°F set temperature.

(16) Turbo fan control function

Set turbo function under cooling or heating mode to enter into turbo fan speed. Press fan speed button to cancel turbo wind.

No turbo function under auto, dry or fan mode.

(17) Auto cleaning function (only available on some models)

The automatic cleaning function of the indoor heat exchanger can be dedusted and sterilized by the condensation, frosting, defrosting and high temperature stages of the evaporator.

1. Under the power off, press and hold the "Internal Clean" button for 3 seconds while holding down the "MODE" and "FAN" buttons for 5 seconds to turn on the Auto Clean function. After the function is turned on, the air conditioner displays "CL".

2. The evaporator will be rapidly cooled or heated during the automatic cleaning process. There may be noise or even noise. The noise generated by the plastic parts due to thermal expansion and contraction is normal. During the cleaning and disinfection process, the room temperature may increase slightly, please keep the room well ventilated.

Tips:

The automatic cleaning function can only be started under normal environmental conditions. If the indoor environment is easy to dust, it is recommended to clean it once a month. If the indoor environment is not so dusty, it is recommended to clean it once every three months.

After turning on the automatic cleaning mode, the user can leave the room. When cleaning is complete, the unit will automatically enter standby mode.

● Outdoor Unit

09/12K

1. Cooling mode:

Working condition and process of cooling mode:

- ① When Tindoor ambient temperature $\geq T_{\text{preset}}$, unit enters into cooling mode. Indoor fan, outdoor fan and compressor start operation. Indoor fan operates according to set fan speed.
- ② When Tindoor ambient temperature $\leq T_{\text{preset}} - 2^{\circ}\text{C}$, compressor stops operation and outdoor fan will stop 30s later. Indoor fan operates according to set fan speed.
- ③ When $T_{\text{preset}} - 2^{\circ}\text{C} < \text{Tindoor ambient temperature} < T_{\text{preset}}$, unit operates according to the previous status.

Under cooling mode, 4-way valve is not energized. Temperature setting range is $16 \sim 30^{\circ}\text{C}$. If compressor stops because of malfunction in cooling mode, indoor fan and swing motor will work according to the original status.

2. Drying mode

(1) Working condition and process of drying mode

- ① When Tindoor ambient temperature $> T_{\text{preset}}$, unit will be in drying mode. Outdoor fan and compressor start operation while indoor fan will operate at low fan speed.
- ② When $T_{\text{preset}} - 2^{\circ}\text{C} \leq \text{Tindoor ambient temperature} \leq T_{\text{preset}}$, unit operates according to the previous status.
- ③ When Tindoor ambient temperature $< T_{\text{preset}} - 2^{\circ}\text{C}$, compressor stops operation and outdoor fan will stop 30s later.

(2) Under drying mode, 4-way valve is not energized. Temperature setting range is $16 \sim 30^{\circ}\text{C}$.

(3) Protection function: same as in cooling mode.

3. Fan mode

(1) Under this mode, indoor fan can select different fan speed (except Turbo) or auto fan speed. Compressor, outdoor fan and 4-way valve all stop operation.

(2) In fan mode, temperature setting range is $16 \sim 30^{\circ}\text{C}$.

4. Heating mode

Working condition and process of heating mode:

- ① When $T_{\text{preset}} - (\text{Tindoor ambient temperature} - T_{\text{compensation}}) \geq 1^{\circ}\text{C}$, unit enters into heating mode. Compressor, outdoor fan and 4-way valve start operation.
- ② When $-2^{\circ}\text{C} < T_{\text{preset}} - (\text{Tindoor ambient temperature} - T_{\text{compensation}}) < 1^{\circ}\text{C}$, unit operates according to the previous status.
- ③ When $T_{\text{preset}} - (\text{Tindoor ambient temperature} - T_{\text{compensation}}) \leq -2^{\circ}\text{C}$, compressor stops operation and outdoor fan will stop 30s later. Indoor fan will be in residual-heat blowing status.
- ④ When unit is turned off under heating mode or changed to other modes from heating mode, 4-way valve will be power-off 2min after compressor stops working (compressor is in operation status under heating mode).

⑤ When Tindoor ambient temperature $> 30^{\circ}\text{C}$, compressor stops operation immediately. Outdoor fan will stop 30s later.

⑥ Under the condition that compressor is turned on, when unit is changed to heating mode from cooling or drying mode, 4-way valve will be energized in 2~3mins delay.

Note: Tcompensation is determined by IDU and ODU. If IDU controls the compensation temperature, then Tcompensation is determined according to the value sent by IDU to ODU; If IDU does not control the compensation temperature, then Tcompensation will default to 3°C by the ODU.

5. Freon recovery mode

After the Freon recovery signal from IDU is received, cooling at rated frequency will be forcibly turned on to recover Freon.

Indoor unit will display Fo. If any signal from remote controller is received, unit will exit from Freon recovery mode and indoor unit stops displaying Fo.

6. Compulsory defrosting

If unit is turned on under heating mode and set temperature is 16°C (by remote controller), press " $\Delta, \nabla, \Delta, \nabla, \Delta, \nabla$ " within 5s, unit will enter into compulsory defrosting mode and send the signal to ODU. When the compulsory defrosting signal from ODU is received, IDU will exit from the compulsory defrosting mode and stop sending the signal to ODU.

After ODU receives the compulsory defrosting code, it will start compulsory defrosting. Defrosting frequency and opening angle will be the same as in normal defrosting mode. When compulsory defrosting is finished, the complete unit resumes original status.

7. Auto mode

Auto mode is determined by controller of IDU. See IDU logic for details.

8. 8°C heating

Set temperature is 8°C . Display board of IDU displays 8°C . Under this mode, "Cold air prevention" function is shielded.

If compressor is operating under this mode, fan speed will adjust according to auto fan speed; if compressor stops operation under this mode, indoor fan will be in residual-heat blowing status.

When power on, communication light will be blinking in a normal way (after receiving a group of correct signals, blinking stops for 0.2s~0.3s). If theres no communication, communication light will be always on. If other ODU has malfunction, communication light will be on for 1s and off for 1s in a circular way.

18/24K

1. Input Parameter Compensation and Calibration

(1) Check the ambient temperature compensation function Indoor ambient temperature compensation function.

a. In cooling mode, the indoor ambient temperature participating in computing control = (T_{indoor ambient temperature} - Δ T_{cooling indoor ambient temperature compensation})

b. In heating mode, the indoor ambient temperature participating in computing control = (T_{indoor ambient temperature} - Δ T_{heating indoor ambient temperature compensation})

(2) Check effective judgment controls of parameters

Effective judgment function of the outdoor exhaust temperature thermo-bulb When conditions a and b are satisfied, the outdoor exhaust temperature thermo-bulb is judged not to be connected into place, the mainboard of outer units will display failure of the outdoor exhaust temperature thermo-bulb (not connected into place), stop the machine for repairing, and resume the machine by remote controls of ON/OFF.

a. Judgment of exhaust detection temperature change:

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and the rising value T_{exhaust} (T_{exhaust} (after start-up for 10 minutes) - T_{exhaust} (before start-up)) $< 35.6^\circ\text{F}$, the outdoor exhaust temperature thermo-bulb can be judged not to be connected into place (judging once when the power is on the first time).

b. Comparative judgment of exhaust detection temperature and condenser detection temperature ($T_{\text{pipe temperature}} = T_{\text{outdoor pipe temperature in cooling mode}}$, $T_{\text{pipe temperature}} = T_{\text{indoor pipe temperature in heating mode}}$):

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and $T_{\text{pipe temperature}} \geq (T_{\text{exhaust}} + 37.4)$, the outdoor exhaust temperature thermobulb can be judged not to be connected into place (judging once when power is on the first time).

2. Basic Functions

(1) Cooling Mode

1. Conditions and processes of cooling operation:

(1) If the compressor is shut down, and $[T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] \leq 32.9^\circ\text{F}$, start up the machine for cooling, the cooling operation will start;

(2) During operations of cooling, if $32^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 35.6^\circ\text{F}$, the cooling operation will be still running;

(3) During operations of cooling, if $35.6^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})]$, the cooling operation will stop after reaching the temperature point.

2. Temperature setting range

(1) If $T_{\text{outdoor ambient temperature}} \geq [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: 60.8~86°F (Cooling at room temperature);

(2) If $T_{\text{outdoor ambient temperature}} < [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: 77~86°F (Cooling at low temperature),

that is, the minimum setting temperature for outer units judgment is 77°F .

(2) Dehumidifying Mode

1. Conditions and processes of dehumidifying operations: Same as the cooling mode;

2. The temperature setting range is: 60.8~86°F;

(3) Air-supplying Mode

1. The compressor, outdoor fans and four-way valves are switched off;

2. The temperature setting range is: 60.8~86°F.

(4) Heating Mode

1. Conditions and processes of heating operations: (T_{indoor ambient temperature} is the actual detection temperature of indoor environment thermo-bulb, T_{heating indoor ambient temperature compensation} is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and $[(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] \leq 32.9^\circ\text{F}$, start the machine to enter into heating operations for heating;

(2) During operations of heating, if $32^\circ\text{F} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 35.6^\circ\text{F}$, the heating operation will be still running;

(3) During operations of heating, if $35.6^\circ\text{F} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}]$, the heating operation will stop after reaching the temperature point.

2. The temperature setting range in this mode is: 60.8~86°F .

3. Special Functions

Defrosting Control

① Conditions for starting defrosting

After the time for defrosting is judged to be satisfied, if the temperature for defrosting is satisfied after detections for continuous 3minutes, the defrosting operation will start.

② Conditions of finishing defrosting

The defrosting operation can exit when any of the conditions below is satisfied:

③ $T_{\text{outdoor pipe temperature}} \geq (T_{\text{outdoor ambient temperature}} - [T_{\text{temperature 1 of finishing defrosting}}])$;

④ The continuous running time of defrosting reaches [t_{max. defrosting time}].

4. Control Logic

(1) Compressor Control

Start the compressor after starting cooling, heating, dehumidifying operations, and the outer fans start for 5s; When the machine is shutdown, in safety stops and when switching to air-supplying mode, the compressor will stop immediately. In all modes: once the compressor starts up, it will not be allowed to stop until having run for the [t_{min. compressor running time}] (Note: including cases of shutdown when the temperature point is reached; except the cases requiring stopping the compressor such as fault protection, remote shutdown, mode switching etc.); In all modes: once the compressor stops, it will be allowed be restart after 3-minute delay (Note: The indoor units have a function of power memory,

the machine can be restarted after remote shutdown and powering up again without delay).

1. Cooling mode

Start the machine to enter into cooling operation for cooling, the compressor is switched on.

2. Dehumidifying mode

Same as the cooling mode.

3. Air-supplying mode

The compressor is switched off.

4. Heating mode

(1) Start the machine to enter into heating operation for heating, the compressor is switched on.

(2) Defrosting:

a. Defrosting starts: the compressor is shut down, and restarts it after 55-second delay.

b. Defrosting ends: the compressor stops, then starts it after 55-second delay.

(2) Outer Fans Control

Notes:

Only the outer fans run for at least 80s in each air flow speed can the air flow be switched;

After the outer fans run compulsively in high speed for 80s when the machine starts up, control the air flow according to the logic.

After remote shutdown, safety stops, and when the machine stops after reaching the temperature point, as well as after the compressor stops, extend 1 minute, the outer fans will stop (During the period in the 1 minute, the air flow of outer fans can be changed according to the outdoor ambient temperature changes); When running with force, the outdoor fans shall run in the highest air flow.

(3) 4-way valve control

1. The 4-way valve control under the modes of Cooling, dehumidification and supplying air: closing;

2. The status of 4-way valve control under the heating mode: getting power;

(1) 4-way valve power control under heating mode

a. Starts the machine under heating mode, the 4-way valve will get power immediately.

(2) 4-way valve power turn-off control under heating mode

a. When you should turn off the power or switch to other mode under heating mode, the power of 4-way valve will be cut after 2 minutes of the compressor stopped.

b. When all kinds of protection stops, the power of 4-way valve will be cut after delaying 4 minutes.

(3) Defrosting control under heating mode:

a. Defrosting begins: The power of 4-way valve will be cut after 50s of entering into the defrosting compressor.

b. Defrosting stops: The 4-way valve will get power after 50s of exiting the defrosting compressor.

(4) Evaporator frozen-preventing protection function

At the mode of Cooling, dehumidifying:

Evaporator frozen-preventing protection function is allowed to

begin after 6 min of starting the compressor.

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{inner pipe}} > [T_{\text{frozen-preventing frequency-limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is only allowed to start for operating, otherwise it should not be started, and should be stopped to treat according to the frozen-preventing protection: Clear the trouble under the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{frozen-preventing normal speed frequency-reducing temperature}}] \leq [T_{\text{inner pipe}} T_{\text{frozen-preventing frequency-limited temperature}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed:

If $[T_{\text{frozen-preventing high speed frequency-reducing temperature}}] \leq [T_{\text{inner pipe}} T_{\text{frozen-preventing normal speed frequency-reducing temperature}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit;

4. Reducing frequency at high speed:

If $[T_{\text{frozen-preventing power turn-off temperature}}] \leq T_{\text{inner pipe}} [T_{\text{frozen-preventing high speed frequency-reducing temperature}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit;

5. Power turn-off:

If the $T_{\text{inner pipe}} < [T_{\text{frozen-preventing power turn-off temperature}}]$, then frozen-preventing protect to stop the machine; If $T_{\text{frozen-preventing frequency-limited temperature}} < T_{\text{inner pipe}}$, and the compressor has stopped working for 3 minutes, the whole machine should be allowed to operate.

6. If the frozen-preventing protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the $t_{\text{evaporator frozen-preventing protection times zero clearing time}}$, the times of frozen-preventing power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, mode transferring will not clear it).

(5) Overload protection function

Overload protection function at the mode of Cooling and dehumidifying

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{outer pipe}} < [T_{\text{Cooling overload frequency-limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection: Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Cooling overload frequency-limited temperature}}] \leq [T_{\text{outer pipe}} T_{\text{Cooling overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and power turn-off:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}} < [T_{\text{Cooling}}$

overload power turn-off temperature], you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Reducing frequency at high speed and stop machine:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}}$ $[T_{\text{Cooling overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq [T_{\text{outer pipe}}]$, then Cooling overload protects machine stopping;

5. Power turn-off:

If the $[T_{\text{Cooling overload power turn-off temperature}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping; If $[T_{\text{outer pipe}}] < [T_{\text{Cooling overload frequency-limited temperature}}]$ and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

6. If the Cooling overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it).

Overload protection function at the mode of heating

Starting estimation :

After the compressor stopped working for 180s, if T inner pipe T heating overload frequency-limited temperature (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection:

Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

1. Frequency limited

If $[T_{\text{heating overload frequency-limited temperature}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

2. Reducing frequency at normal speed and stopping machine:

If $[T_{\text{heating overload frequency reducing temperature at normal speed}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at high speed}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if T heating overload frequency reducing temperature at normal speed $\leq T_{\text{inner pipe}}$, then overload protects machine stopping;

3. Reducing frequency at high speed and power turn-off:

If $[T_{\text{heating overload frequency reducing temperature at high speed}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if T heating overload frequency

reducing temperature at normal speed $\leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Power turn-off:

If the $[T_{\text{heating overload power turn-off temperature}}] \leq T_{\text{inner pipe}}$, then overload protects machine stopping; If T inner pipe T heating overload frequency-limited temperature and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

5. If the overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it). Protective function for discharge temperature of compressor

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{Discharge}} < T_{\text{Discharge limited temperature}}$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the discharge temperature:

The machine should be stopped or transferred to supply air, the trouble should be cleared immediately, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{limited frequency temperature during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at normal speed during discharging}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and stopping machine:

If $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at high speed during discharging}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping;

4. Reducing frequency at high speed and power turn-off:

If $[T_{\text{frequency reducing temperature at high speed during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{stop temperature during discharging}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping;

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping; If $[T_{\text{Discharge}}] < [T_{\text{limited frequency temperature during discharging}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

6. If the discharging temperature protection of compressor continuously occurs for six times, it should not be resumed

automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $t_{\text{Protection times clearing of discharge}}$, the discharge protection is cleared to recount. Stopped or transferred to supply air mode will clear the trouble times immediately (if the trouble can not be resumed, mode transferring also will not clear it).

7. Frequency limited

If $[I_{\text{Limited frequency when overcurrent}}] \leq [I_{\text{AC Electric current}}] < [I_{\text{frequency reducing when overcurrent}}]$, you should limit the frequency raising of compressor.

8. Reducing frequency:

If $[I_{\text{Frequency reducing when overcurrent}}] \leq [I_{\text{AC Electric current}}]$ Power turn-off when overcurrent, you should reduce the compressor frequency till the lower limit or exit the frequency reducing condition;

9. Power turn-off:

If $[I_{\text{Power turn-off machine when overcurrent}}] \leq [I_{\text{AC Electric current}}]$, you should carry out the overcurrent stopping protection; If $I_{\text{AC Electric current}} < [T_{\text{Limited frequency when overcurrent}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

10. If the overcurrent protection continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Protection times clearing of over current}}]$, the discharge protection is cleared to recount.

(6) Voltage sag protection

After start the compressor, if the time of DC link Voltage sag $[U_{\text{Sagging protection voltage}}]$ is measured to be less than $t_{\text{Voltage sag protection time}}$, the machine should be stop at once, hand on the voltage sag trouble, reboot automatically after 30 minutes.

(7) Communication fault

When you have not received any correct signal from the inner machine in three minutes, the machine will stop for communication fault. When you have not received any correct signal from driver IC (aim to the controller for the separating of main control IC and driver IC), and the machine will stop for communication fault. If the communication is resumed, the machine will be allowed to operate.

(8) Module protection

Testing the module protective signal immediately after started, once the module protective signal is measured, stop the machine with module protection immediately. If the module protection is resumed, the machine will be allowed to operate. If the module protection continuously occurs for three times, it should not be resumed automatically, and you should press the ON/OFF button to resume. If the running time of compressor exceeds the $[t_{\text{Protection times clearing of module}}]$, the module protection is cleared to recount.

(9) Module overheating protection

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{Module}} < [T_{\text{Module frequency limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the module overheating protection: The machine should be stopped or transferred to

supply air, the trouble should be cleared immediately, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Limited frequency temperature of module}}] \leq T_{\text{Module}} < [T_{\text{frequency reducing temperature at normal speed of module}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and power turn-off:

If $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}} < [T_{\text{frequency reducing temperature at high speed of module}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection;

4. Reducing frequency at high speed and power turn-off:

If $[T_{\text{frequency reducing temperature at high speed of module}}] \leq T_{\text{Module}} < [T_{\text{Power turn-off temperature of module}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection;

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection; If $T_{\text{Module}} < [T_{\text{Limited frequency temperature of module}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

6. If protection continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Protection times clearing of module}}]$, the discharge protection is cleared to recount. Stopped or transferred to supply air mode will clear the trouble times immediately (if the trouble can not be resumed, mode transferring also will not clear it).

(10) Compressor overloads protection

If you measure the compressor overload switch action in 3s, the compressor should be stopped for overloading. The machine should be allowed to operate after overload protection was measured to resume. If the overloading protection continuously occurs for three times, it should not be resumed automatically, and you should press the ON/OFF button to resume. The protection times of compressor is allowed to clear after the compressor run $[t_{\text{Protection times clearing of compressor overloading}}]$ 30 minutes.

(11) Phase current overcurrent protection of compressor

During the running process of compressor, you could measure the phase current of the compressor, and control it according to the following steps:

1. Frequency limited

If $[I_{\text{Limited frequency phase current}}] \leq [I_{\text{Phase current}}] < [I_{\text{frequency reducing phase current}}]$, you should limit the frequency raising of compressor.

2. Reducing Frequency

If $[I_{\text{Frequency Reducing Phase Current}}] \leq [I_{\text{Phase Current}}] < [I_{\text{Power Turn-Off Phase Current}}]$, the compressor shall continue to reduce frequency till the lowest frequency limit or out of the condition of reducing frequency;

3. Power turn-off

If $[I_{\text{Phase Current}}] \geq [I_{\text{Power Turn-Off Phase Current}}]$, the compressor phase current shall stop working for overcurrent protection; if $[I_{\text{Phase Current}}] \leq [I_{\text{Phase Current}}]$

Frequency Reducing Phase Current], and the compressor have stopped working for 3 min, the machine shall be allowed to operate;

4. If the overcurrent protection of compressor phase current continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the [t_{Clearing Time of Compressor Phase Current Times}], the overcurrent protection is cleared to recount.

(12) Starting-up Failure Protection for Compressor

Stop the compressor after its starting-up fails, restart it after 20s if the fault doesn't show, and if they are all failing for the successive start 3 times, it shall be reported as Starting-up Failure, and then restart up it after 3 min. When it still not be able to operate through carry out the above process for 5 times, it is available if press ON/OFF. And the compressor should be cleared the times after it run 2 min.

(13) Out-of-Step Protection for Compressor

The out-of-step protection signal should be detected immediately after starting-up compressor, and once find the out-of-step protection signal, the out-of-step protection shall be stopped; if it can run for lasting power turn-off 3 min, the machine shall be allowed to operate. If it still can't run automatically when the out-of-step protection for compressor happens to stop working for 6 times in succession, it needs to press ON/OFF to operate. And if the running time is more than 10 min, the power turn-off times for out-of-step protection shall be cleared and recounted.

(14) Voltage Abnormity Protection for DC Bus

To detect voltage abnormity protection for dc bus after completing the pre-charge:

1. Over-High Voltage Protection for DC Bus:

If it found the DC bus voltage $U_{DC} > [U_{DC}^{\text{Jiekuangchun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-high voltage failure; it should clear out the failure when the voltage dropped to $U_{DC} < [U_{DC}^{\text{Jiekuangchun Recovery}}]$ and the compressor stopped for 3 min.

2. Over-Low Voltage Protection for DC Bus:

If it found the DC bus voltage $U_{DC} < [U_{DC}^{\text{Wantuochun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-low voltage; and it should clear out the failure when the voltage raised to $U_{DC} > [U_{DC}^{\text{Wantuochun Recovery}}]$ and the compressor stopped for 3 min.

3. To detect voltage abnormity protect for DC bus when getting electricity:

If it found the DC bus voltage $U_{DC} > [U_{DC}^{\text{Over-High Voltage}}]$, turn off the relay at once, and shows voltage abnormity failure for DC Bus. And the failure can't recover except to break off and get the electricity.

(15) Abnormity Protection for Four-way Valve

Under the model of heating operation in good condition: the compressor is detected $[T_{\text{Inner Tube}} < (T_{\text{Inner Ring}} - T_{\text{Abnormity Temperature Difference}}^{\text{For Four-Way Valve Reversion}})]$, during the running, it should be regarded as four-way valve reversion abnormity. And then it can run if stop the reversion abnormity protection for four-way valve 3 min; and

if it still can't run when the reversion abnormity protection for four-way valve happens to stop working for 3 times in succession, it is available if presses ON/OFF.

Attention: the protection shall be shielded during the testing mode and defrosting process, and it shall be cleared out the failure and its times immediately when turning off or delivering wind / cooling / dehumidifying mode conversed (the inverted mode don't clear out the failure when it can't recover to operate).

(16) PFC Protection

1. After start up the PFC, it should detect the protection signal of PFC immediately; under the condition of PFC protection, it should turn off the PFC and compressor at one time;

2. It shows the failure is cleared out if PFC Protection stopped working 3 min and recovers to run automatically;

3. If it still can't run when it occurs PFC protection for 3 times in succession, it is available if presses ON/OFF; and clear the PFC Protection times when start up PFC for 10min.

(17) Failure Detection for Sensor

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.

2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.

3. Outdoor Exhaust Sensor:

(a) The compressor only detect the sensor failure after it start up 3 min in normal mode;

(b) It should detect the exhaust sensor failure immediately in the testing mode.

4. Module Temperature Sensor:

(a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;

(b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).

(c) Detect the sensor failure at all times in the testing mode.

5. Disposal for Sensor Protection

(1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).

(2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.

6. Electric Heating Function of Chassis

(1) When $T_{\text{outdoor amb}} \leq 32^{\circ}\text{F}$, the electric heating of chassis will operate;

(2) When Toutdoor amb.>35.6°F , the electric heating of chassis will stop operation;

(3)When 32°F <Toutdoor amb.≤35.6°F, the electric heating of chassis will keep original status.

7. Electric Heating Function of Compressor

(1) When Toutdoor amb.≤23°F , compressor stops operation, while the electric heating of compressor starts operation;

(2) When Toutdoor amb.>28.4°F , the electric heating of compressor stops operation;

(3) When 23°F <Toutdoor amb.≤28.4°F , the electric heating of compressor will keep original status.

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Caution: Installation Must be Performed in Accordance with the NEC/CEC by Authorized Personnel Only.

Please follow the instructions below.

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



WARNINGS

Electrical Safety Precautions:

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

wire by yourself.

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.
12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; Don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

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

Refrigerant Safety Precautions:

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

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

Main Tools for Installation and Maintenance



Level meter



Measuring tape



Screw driver



Impact drill



Drill head



Electric drill



Electroprobe



Universal meter



Torque wrench



Open-end wrench



Inner hexagon spanner



Electronic leakage detector



Vacuum pump



Pressure meter



Pipe pliers



Pipe pliers



Pipe cutter



Pipe expander



Pipe bender



Soldering appliance

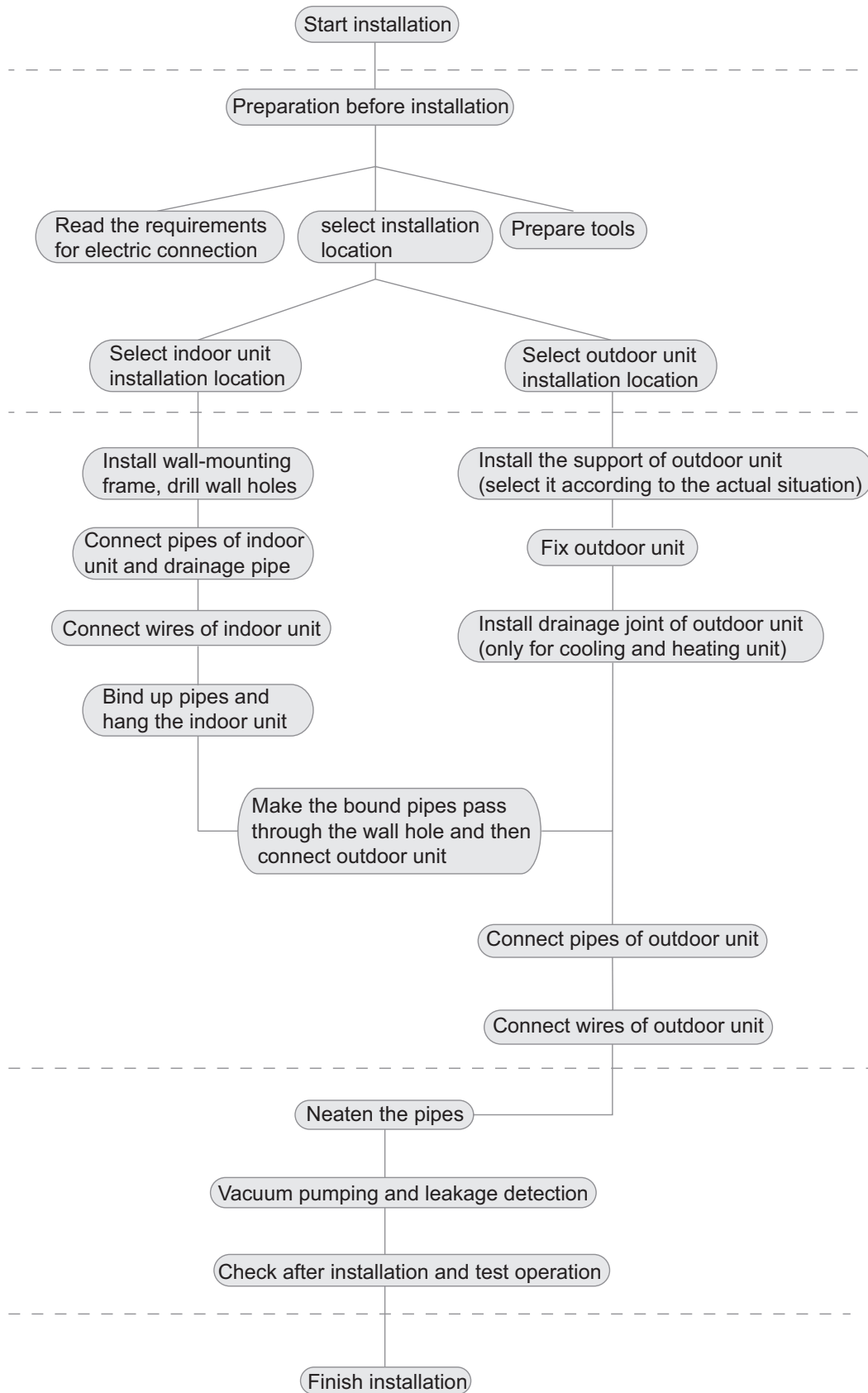


Refrigerant container



Electronic scale

Installation Procedures



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

8.2 Installation Parts-checking

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

⚠ Note:

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

8.3 Selection of Installation Location

1. Basic Requirement:

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

- (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air.
- (5) The place with sulfured gas.
- (6) Other places with special circumstances.
- (7) The appliance shall not be installed in the laundry.
- (8) It's not allowed to be installed on the unstable or motive base structure (such as truck) or in the corrosive environment (such as chemical factory).

2. Indoor Unit:

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

3. Outdoor Unit:

- (1) Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
- (2) The location should be well ventilated and dry, in which the

- outdoor unit won't be exposed directly to sunlight or strong wind.
- (3) The location should be able to withstand the weight of outdoor unit.
 - (4) Make sure that the installation follows the requirement of installation dimension diagram.
 - (5) Select a location which is out of reach for children and far away from animals or plants. If it is unavoidable, please add fence for safety purpose.

8.4 Electric Connection Requirement

1. Safety Precaution

- (1) Must follow the electric safety regulations when installing the unit.
- (2) According to the local safety regulations, use qualified power supply circuit and air switch.
- (3) Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock, fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.
- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- (8) The appliance shall be installed in accordance with national wiring regulations.

2. Grounding Requirement:

- (1) The air conditioner is I class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- (2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- (3) The grounding resistance should comply with national electric safety regulations.
- (4) The appliance must be positioned so that the plug is accessible.
- (5) An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

8.5 Installation of Indoor Unit

1. Choosing Installation location

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

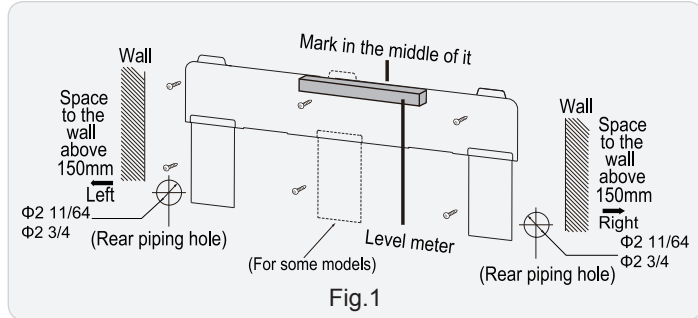
2. Install Wall-mounting Frame

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

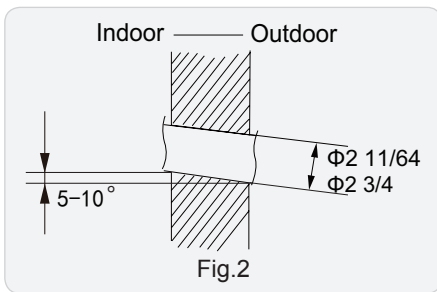
(3) Fix the wall-mounting frame on the wall with tapping screws and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Drill Piping Hole

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



(2) Drill a piping hole with the diameter of Φ2 3/4 or Φ2 11/64 on the selected outlet pipe position. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°. (As show in Fig.2)



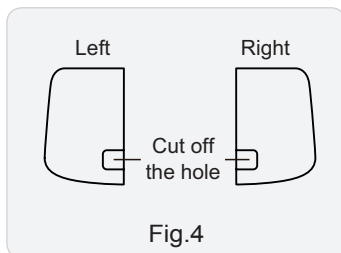
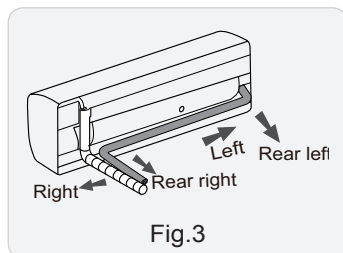
⚠ Note:

Pay attention to dust prevention and take relevant safety measures when drilling the hole.

4. Outlet Pipe

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

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



5. Connect the Pipe of Indoor Unit

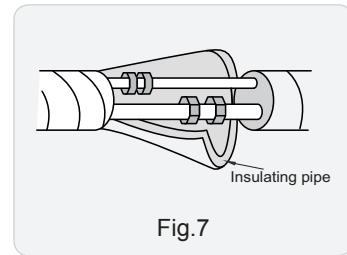
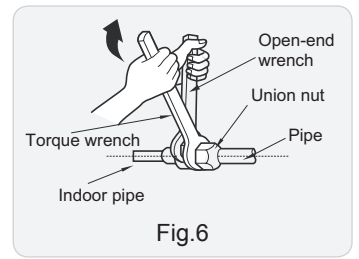
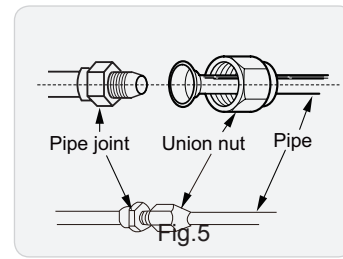
(1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)

(2) Pretightening the union nut with hand.

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

wrench. (As show in Fig.6)

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



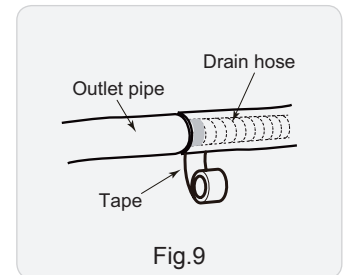
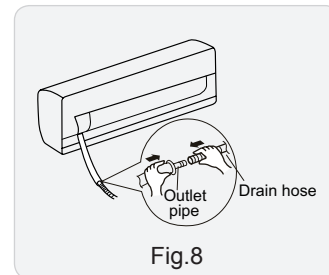
Refer to the following table for wrench moment of force:

Piping size (inch)	Tightening torque (N·m)
1/4	15~20
3/8	30~40
1/2	45~55
5/8	60~65
3/4	70~75

6. Install Drain Hose

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

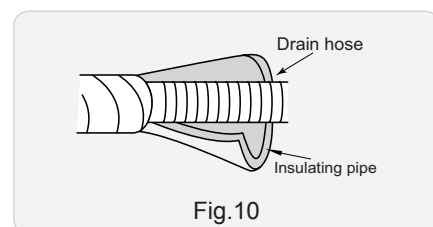
(2) Bind the joint with tape. (As show in Fig.9)



⚠ Note:

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

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



7. Connect Wire of Indoor Unit

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

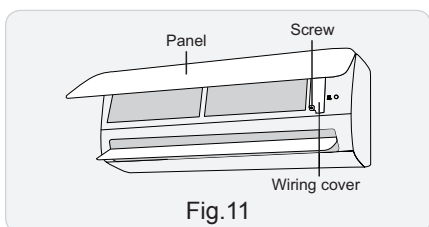


Fig.11

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

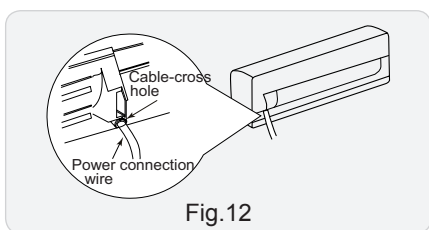


Fig.12

(3) Remove the wire clip; connect the power connection wire/signal control wire (only for cooling and heating unit) to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip. (As show in Fig.13)

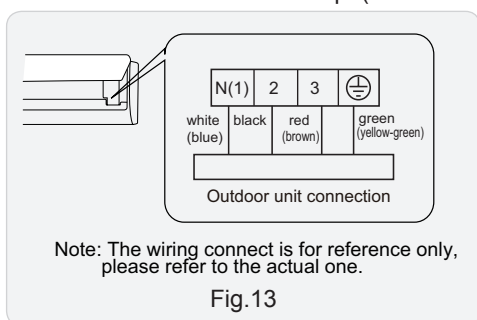


Fig.13

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

⚠ Note:

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

8. Bind up Pipe

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

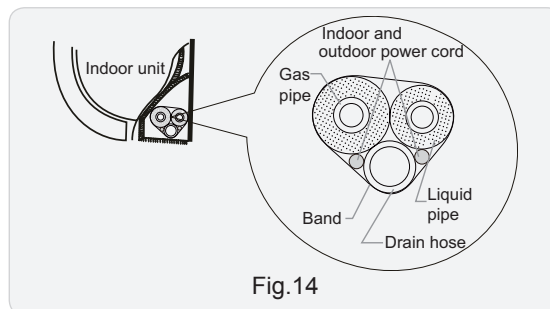


Fig.14

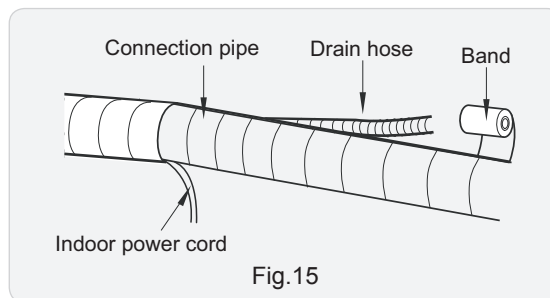


Fig.15

⚠ Note:

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

9. Hang the Indoor Unit

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

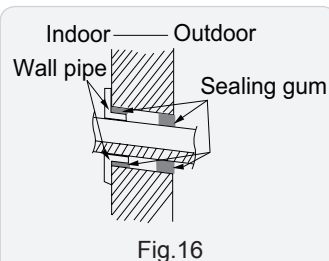


Fig.16

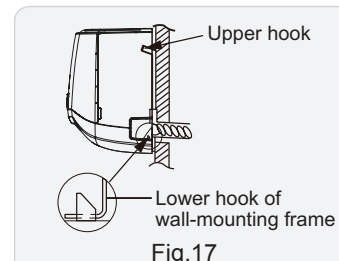


Fig.17

⚠ Note:

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

8.6 Installation of Outdoor Unit

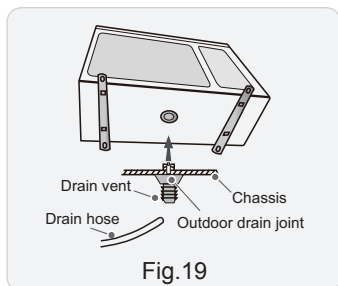
1. Fix the Support of Outdoor Unit(Select it according to the actual installation situation)

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

⚠ Note:

- (1) Take sufficient protective measures when installing the outdoor unit.
- (2) Make sure the support can withstand at least four times the unit weight.
- (3) The outdoor unit should be installed at least 3cm above the floor in order to install drain joint.(As show in Fig.18)

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

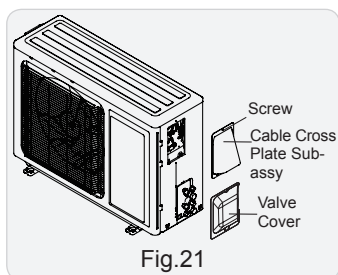
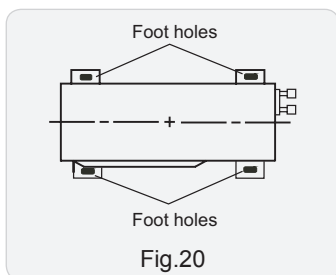


2. Install Drain Joint(Only for cooling and heating unit)

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

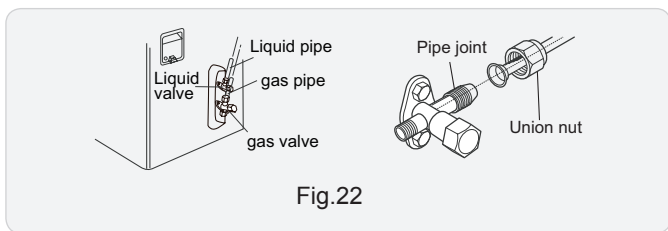
3. Fix Outdoor Unit

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



4. Connect Indoor and Outdoor Pipes

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



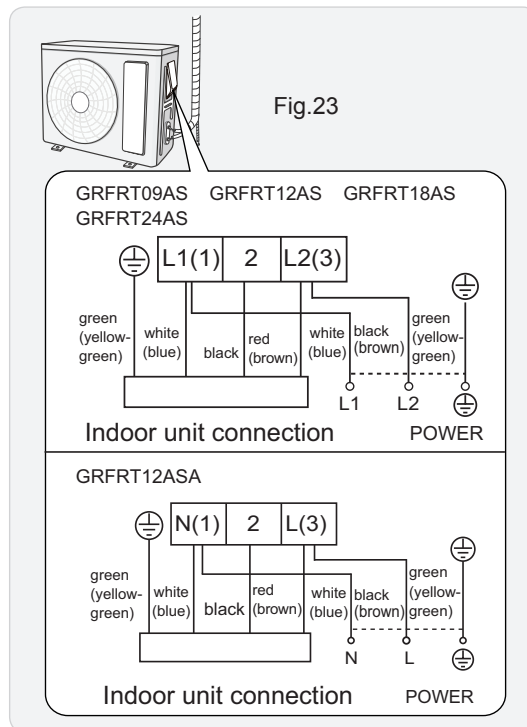
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force :

Piping size (inch)	Tightening torque (N·m)
1/4	15~20
3/8	30~40
1/2	45~55
5/8	60~65
3/4	70~75

5. Connect Outdoor Electric Wire

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

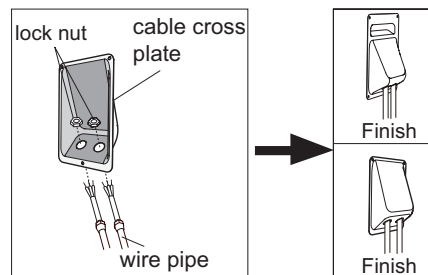


Note: the wiring connect is for reference only, please refer to the actual one.

⚠ Note:

- (1) After tightening the screw, pull the power cord slightly to check if it is firm.
- (2) Never cut the power connection wire to prolong or shorten the distance.
- (3) The connecting wire and connection pipe cannot touch each other.
- (4) Top cover of outdoor unit and electric box assembly should be fixed by the screw. Otherwise, it can cause a fire, or short circuit caused by water or dust.

Install the over line pipe



6. Neaten the Pipes

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

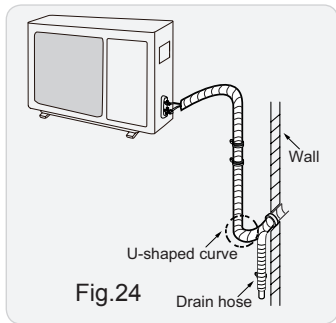


Fig.24

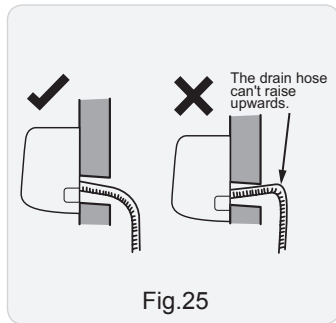


Fig.25

⚠ Note:

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

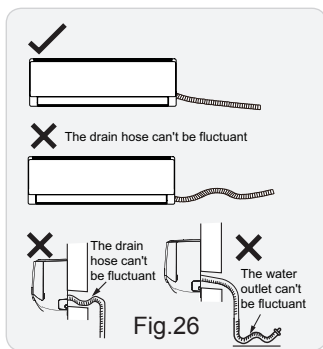


Fig.26

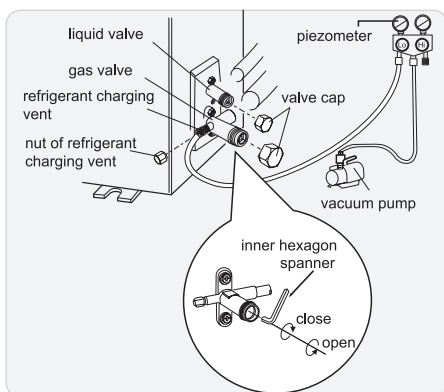


Fig.27

8.7 Vacuum Pumping and Leak Detection

1. Use vacuum pump

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



2. Leakage Detection

(1) With leakage detector:

Check if there is leakage with leakage detector.

(2) With soap water:

If leakage detector is not available, please use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water for more than 3min. If there are air bubbles coming out of this position, There's a leakage.

8.8 Check after Installation and Test Operation

1. Check after Installation

Check according to the following requirement after finishing installation.

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

2. Test Operation

(1) Preparation of test operation

- The client approves the air conditioner installation.
- Specify the important notes for air conditioner to the client.

(2) Method of test operation

- Put through the power, press ON/OFF button on the remote controller to start operation.
- Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
- If the ambient temperature is lower than 16°C , the air conditioner can't start cooling.

9. Maintenance

9.1 Error Code List

Error code	Malfunction name	AC status	Possible causes
C5	Malfunction of jumper cap	The complete unit stops operation	1. Jumper cap is not installed in control panel; 2. Poor contact of jumper cap; 3. Jumper cap is damaged; 4. The tested circuit of jumper cap on control panel is abnormal.
E6	Communication malfunction between indoor unit and outdoor unit	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Communication malfunction"
H5	IPM protection	Cool/Dry: compressor stops operation, while indoor fan operates. Heat: all loads stops operation.	See "IPM protection, over-phase current of compressor"
L3 LA	Malfunction of outdoor fan/ malfunction of DC motor	Cool/Dry: all loads stops operation except indoor fan. Heat: all loads stops operation.	1. Outdoor condenser, air inlet and air outlet are blocked by filth or dirt; 2. Fan is blocked or loosened; 3. Motor or connection wire of motor is damaged; 4. Main board of outdoor unit is damaged; (As for dual-outdoor fan, L3 indicates fan 1; LA indicates fan 2)
H3	Overload protection of compressor	Cool/Dry: compressor stops operation, while indoor fan operates. Heat: all loads stops operation.	1. Overload wire of compressor is loose; 2. The overload protector is damaged. Under normal circumstances, the resistance between both ends of terminal is less than 1ohm. 3. See "Overload protection of compressor , High discharge temperature protection of compressor"
F0	Refrigerant insufficient protection, cut-off protection of refrigerant	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: Compressor, outdoor fan and indoor fan stops operation.	1. Is system cooling under high humidity environment, thus temperature difference of heat transfer is small; 2. Check whether the big valve and small valve of outdoor unit are opened completely; 3. Is the temperature sensor of evaporator of indoor unit loose? 4. Is the temperature sensor of condenser of outdoor unit loose? 5. Is the capillary or the electronic expansion valve blocked? 6. Is refrigerant leaking?
F1	Indoor ambient temperature sensor is open/short-circuited	Cool/Dry: indoor fan operates, while compressor and outdoor fan stops operation; Heat: all loads stops operation.	1. Temperature sensor is not well connected; 2. Temperature sensor is damaged 3. Main board of indoor unit is damaged.
F2	Indoor evaporator temperature sensor is open/short-circuited	Cool/Dry: indoor fan operates, while compressor and outdoor fan stops operation; Heat: all loads stops operation.	1. Temperature sensor is not well connected; 2. Temperature sensor is damaged 3. Main board of indoor unit is damaged.
H6	No feedback from indoor unit's motor	The complete unit stops operation	1. Is the fan blocked? 2. Is the motor terminal loose? 3. Is the connection wire of motor damaged? 4. Is the motor damaged? 5. Is the main board of indoor unit damaged?
LP	Indoor unit and outdoor can be matched with each other	Heat: compressor, outdoor unit and indoor fan stops operation.	Capacity of indoor unit and outdoor unit can't be matched.
C4	Malfunction of jumper cap of outdoor unit	Heat: all loads are stopped; other modes: outdoor unit stops operation.	Jumper cap of outdoor unit hasn't been installed.
b7	Gas valve temperature sensor is ON / short-circuited		1. Temperature sensor is not well connected or damaged; 2. The wire of temperature sensor is damaged, causing short circuit to copper pipe or outer casing; 3. Main board of outdoor unit is damaged.

Error code	Malfunction name	AC status	Possible causes
b5	Liquid valve temperature sensor is ON / short-circuited		<ol style="list-style-type: none"> 1. Temperature sensor is not well connected or damaged; 2. The wire of temperature sensor is damaged, causing short circuit to copper pipe or outer casing; 3. Main board of outdoor unit is damaged.
E1	High pressure protection of system	Cool/Dry: all loads stops operation except indoor fan; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Heat exchange of outdoor unit is too dirty, or it blocked the air inlet/outlet; 2. Is power voltage normal; (three-phase unit) 3. Ambient temperature is too high; 4. Wiring of high pressure switch is loose or high pressure switch is damaged; 5. The internal system is blocked; (dirt blockage, ice blockage, oil blockage, angle valve is not completely opened) 6. Main board of outdoor unit is damaged; 7. Refrigerant is too much.
E3	Low pressure/low system pressure protection/ compressor low pressure protection	Cool: compressor, outdoor fan and indoor fan stop operation; Heat: compressor and outdoor fan stop operation at first. About 1min later, indoor fan stops operation; 2mins later, the 4-way valve stop operation.	<ol style="list-style-type: none"> 1. Low pressure switch is damaged; 2. Refrigerant inside the system is insufficient.
E4	High discharge temperature protection of compressor	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Overload protection of compressor , High discharge temperature protection of compressor"
E5	AC overcurrent protection	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Power voltage is unstable; 2. Power voltage is too low; 3. System load is too high, which leads to high current; 4. Heat exchange of indoor unit is too dirty, or it blocked the air inlet/outlet; 5. Fan motor operation is abnormal; the fan speed is too low or not functioning; 6. Compressor is blocked; 7. The internal system is blocked; (dirt blockage, ice blockage, oil blockage, angle valve is not completely opened) 8. Main board of outdoor unit is damaged. See "AC overcurrent protection"
E7	Mode shock/sysmte mode shock	Load of indoor unit stops operation (indoor fan, E-heater, swing)	Malfunction of one-to-more system; there may be two indoor units which has set the shock mode, such as one is cooling and the other is heating.
E8	High temperature prevention protection	Cool: compressor stops operation while indoor fan operates; Heat: all loads stops operation.	See "High temperature prevention protection; high power; system isabnormal"
EE	Malfunction of EEPROM	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Main board of outdoor unit is damaged.
F0	Refrigerant-recovery mode	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates.	Refrigerant recovery. The maintenance personnel operate it when he is maintaining the unit.
F3	Outdoor ambient temperature is open/short-circuited	Cool/Dry: compressor and outdoor fan stop operation, while indoor fan operates; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Temperature sensor is not connected well or damaged; 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case 3. Main board of outdoor unit is damaged;

Error code	Malfunction name	AC status	Possible causes
F4	Outdoor condenser temperature sensor is open/short-circuited	Cool/Dry: compressor and outdoor fan stop operation, while indoor fan operates; Heat: after operating for 3mins, all loads stops operation.	1. Temperature sensor is not connected well or damaged; 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case; 3. Main board of outdoor unit is damaged.
F5	Outdoor air discharge temperature is open/short-circuited	Complete unit stops operation; motor of sliding door is cut off power.	1. The exhaust temperature sensor is not connected well or damaged. 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case 3. Main board of outdoor unit is damaged;
FC	Malfunction of micro switch	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. The sliding door is blocked; 2. Malfunction of the photoelectric inspection panel of sliding door;
H4	System is abnormal	Cool/Dry: all loads stops operation except indoor fan; Heat: all loads stops operation.	See "High temperature prevention protection; high power; system is abnormal"
H7	Desynchronizing of compressor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Desynchronization diagnosis for compressor"
HC	PFC protection	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. The power grid quality is bad; AC input voltage fluctuates sharply; 2. Power plug of air conditioner or wiring board or reactor is not connected reliably; 3. Indoor and outdoor heat exchanger is too dirty, or air inlet/outlet is blocked; 4. Main board of outdoor unit is damaged.
HE	Demagnetization protection of compressor	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. Compressor is damaged;
UF	Communication malfunction between indoor unit and inspection board	Normal operation	1. Poor connection between the indoor unit and the inspection board. 2. The main board of indoor unit is damaged; 3. The inspection board is damaged;
L1	Malfunction of humidity sensor	Compressor, outdoor fan and indoor fan stop operation;	The inspection board is damaged.
L9	High power protection	Cool: compressor and outdoor fan stops operation, while indoor fan operates.	See "High temperature prevention protection; high power; system is abnormal"
Lc	Start-up failed	Cool/Dry: compressor stops, while indoor fan operates; Heat: all loads stops operation.	See "Malfunction diagnosis for failure startup"
Ld	Lost phase	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. The compressor is damaged; 3. The connection wire of compressor is not connected well.
PS	Over-phase current protection of compressor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Overload protection of compressor , High discharge temperature protection of compressor"

Error code	Malfunction name	AC status	Possible causes
OE	Undefined outdoor unit error	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stop operation.	1. Outdoor ambient temperature exceeds the operation range of unit (eg: less than -20°C or more than 60°C for cooling; more than 30°C for heating); 2. Are wires of compressor not connected tightly? 3. Failure startup of compressor? 4. Is compressor damaged? 5. Is main board damaged?
PE	Communication malfunction between the drive board and the main board	Cool: compressor and outdoor fan stops operation; Heat: compressor and outdoor fan stop at first; about 1min later, indoor fan stops operation;	1. The drive board is damaged; 2. The main board of outdoor unit is damaged; 3. The drive board and the main board is not connected well.
PF	Circuit malfunction of module temperature sensor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Replace outdoor control board
PE	Module overheating protection	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Air inlet / air outlet of outdoor unit are blocked by filth or dirt; 2. Condenser of outdoor unit is blocked by filth or dirt; 3. IPM screw of main board is not tightened; 4. Main board of outdoor unit is damaged;
PF	Malfunction of ambient temperature sensor of drive board	Cool: compressor, outdoor fan and indoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The ambient temperature sensor of the drive board is not connected well; 2. Malfunction of the ambient temperature sensor of drive board.
PH	DC bus voltage is too high	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Measure the voltage between position L and position N on the wiring board (XT). If it's higher than 265 VAC, please turn on the unit until the power voltage is decreased to the normal range; 2. If the AC input is normal, please replace the outdoor control board.
PL	DC bus voltage is too low	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Measure the voltage between position L and position N on the wiring board (XT). If it's lower than 150 VAC, please turn on the unit until the power voltage is increased to the normal range; 2. If the AC input is normal, please replace the outdoor control board.
PU	Charging malfunction of capacitor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Charging malfunction of capacitor"
RF	Malfunction of RF module	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The connection wire of RF module is not connected well. 2. Malfunction of RF module;
UI	Phase current detection circuit malfunction of	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stops operation.	The control board is damaged
U2	Lost phase protection of compressor	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. The compressor is damaged; 3. The connection wire of compressor is not connected well.

Error code	Malfunction name	AC status	Possible causes
U3	DC bus voltage drop malfunction	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	The power voltage is unstable.
U5	Current detection malfunction of unit	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stops operation.	1. Is the complete unit lacking of refrigerant? 2. There's malfunction for the circuit of control board of outdoor unit. Replace the control board of outdoor unit.
U7	4-way valve is abnormal	This malfunction occurs when the unit is heating. All loads stops operation.	1. Power voltage is lower than AC175V; 2. Wiring terminal of 4-way valve is loose or broken;3. 4-way valve is damaged. Replace the 4-way valve.
U8	Malfunction of zero-crossing signal of indoor unit	Compressor, outdoor fan and indoor fan stop operation.	1. The power is abnormal; 2. Main board of indoor unit is damaged.
U9	Zero-crossing malfunction of outdoor unit	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Replace the control board of outdoor unit.
E2	Evaporator anti-freezing protection		Not error code, it is the status code in cooling process
E9	Anti cold air protection		Not error code, it is the status code in cooling process
	Defrosting	Heat indicator Flash once/10s	Not error code, it is the status code in cooling process

Analysis or processing of some of the malfunction display:

1. Compressor discharge protection

Possible causes: 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 cause: 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 causes: insufficient or too much refrigerant; blockage of capillary and increase 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 compress or is fine when it is not overheated, if not replace the protector.

6. System malfunction

i.e. 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 causes: 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 .

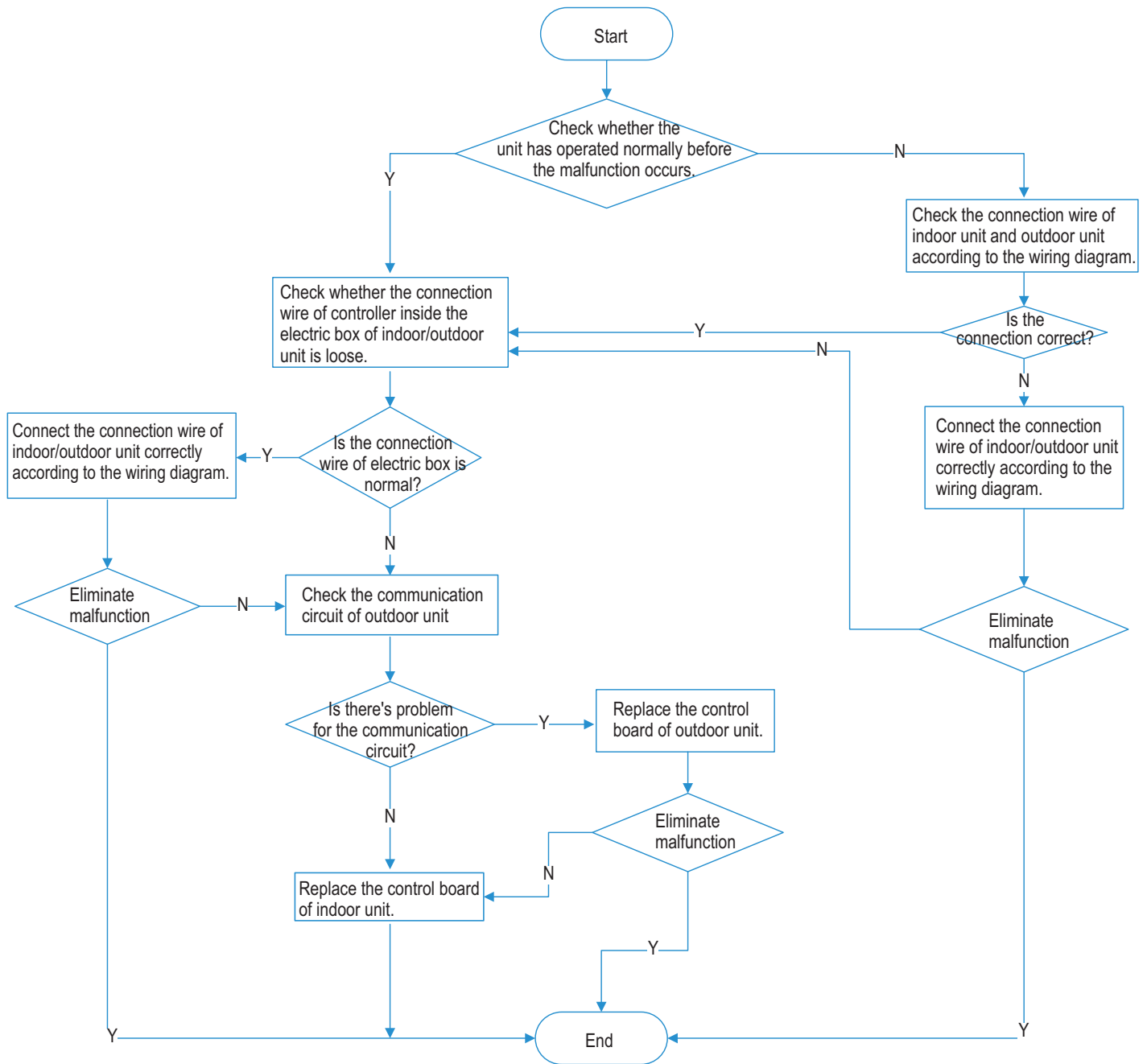
7. IPM module protection

Processing method: Once the module malfunction happens, if it persists for a long time and can not 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. Communication malfunction E5

Main check points:

- (1) Connection wire between indoor unit and outdoor unit
- (2) Wiring inside the unit
- (3) Communication circuit of control board of indoor unit
- (4) Communication circuit of control board of outdoor unit

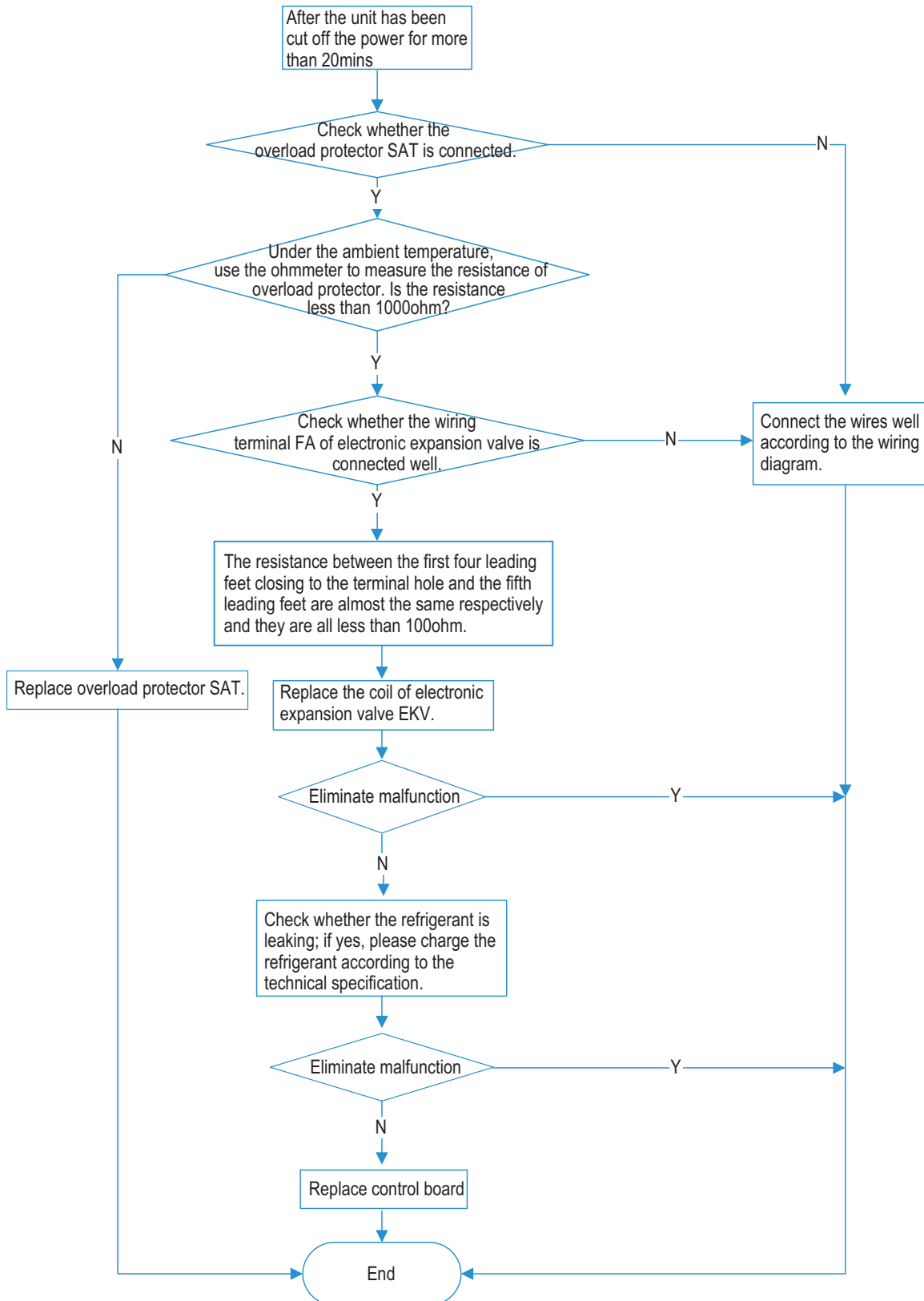


4. Overload protection of compressor H3, high discharge temperature, protection of compressor E4

Main check points:

- (1) electronic expansion valve
- (2) expansion valve terminal
- (3) charging amount of refrigerant
- (4) overload protector

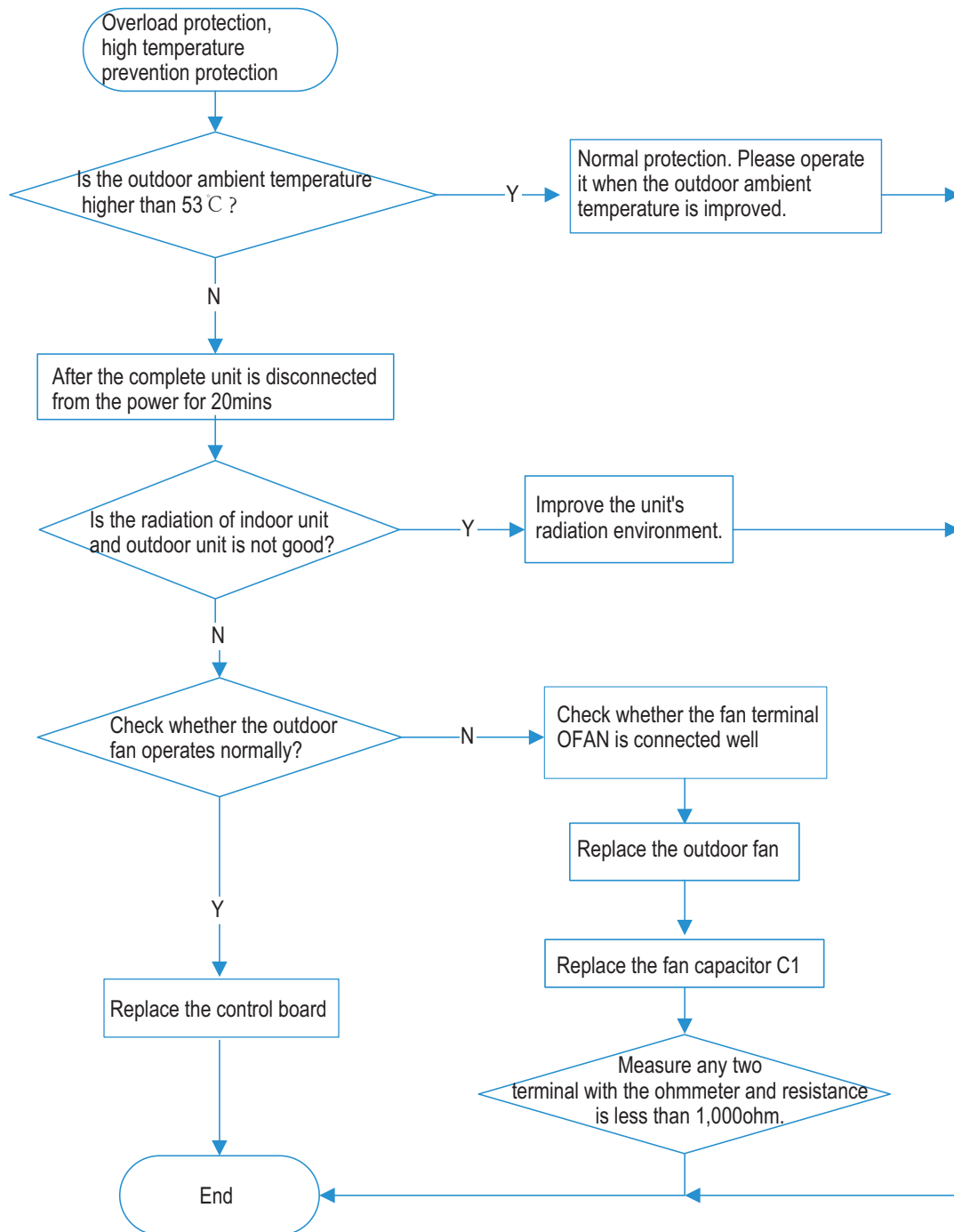
NOTE: The control board as below means the control board of outdoor unit.



6.High temperature prevention protection E8 ; high power L9 ; system is abnormal H4

Main check points:

- (1) outdoor temperature (2) fan (3)air inlet and air outlet of indoor/outdoor unit
NOTE:The control board as below means the control board of outdoor unit.

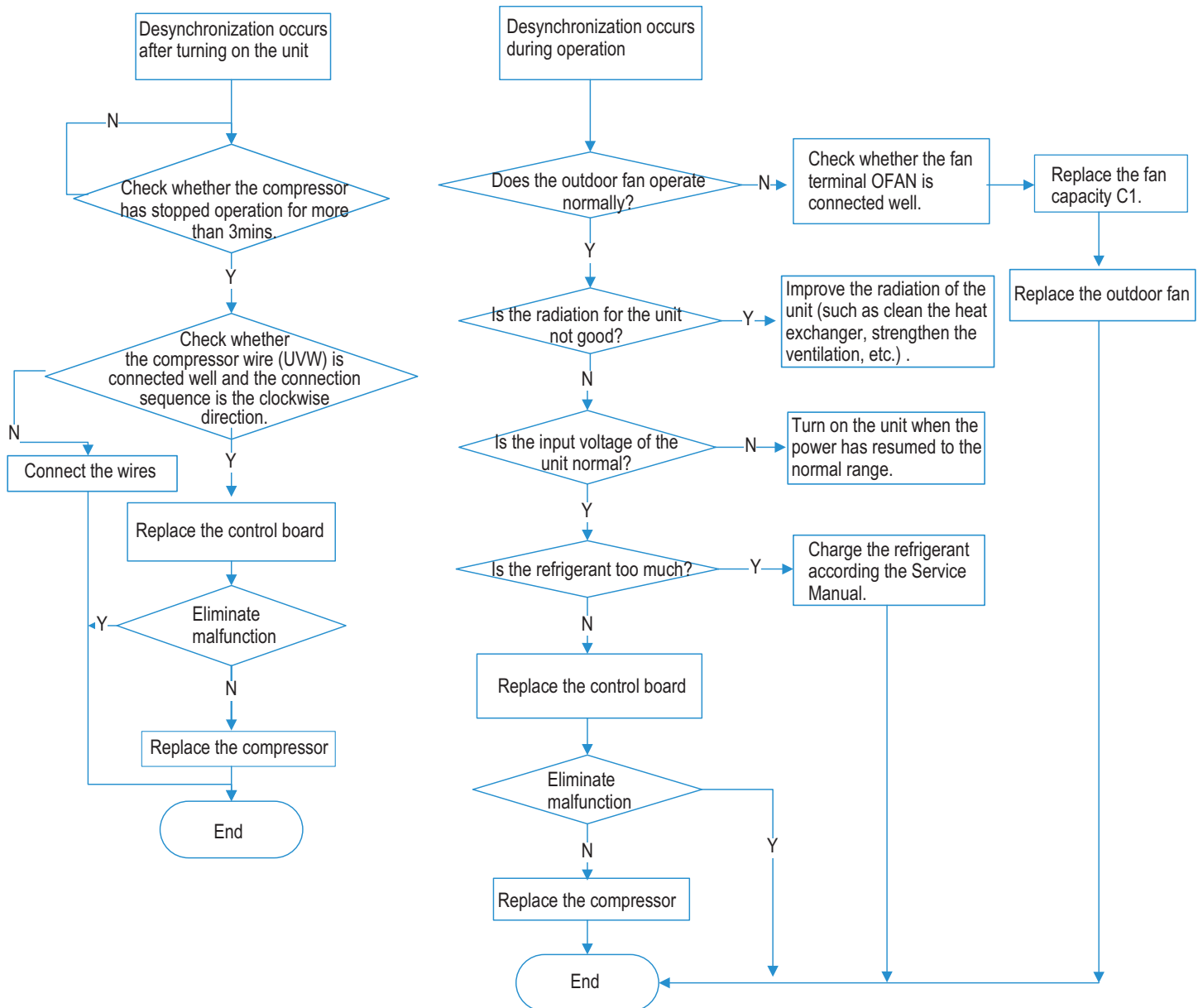


7.Desynchronization diagnosis for compressor H7

Main check point:

(1) system pressure (2) power supply voltage

NOTE:The control board as below means the control board of outdoor unit.

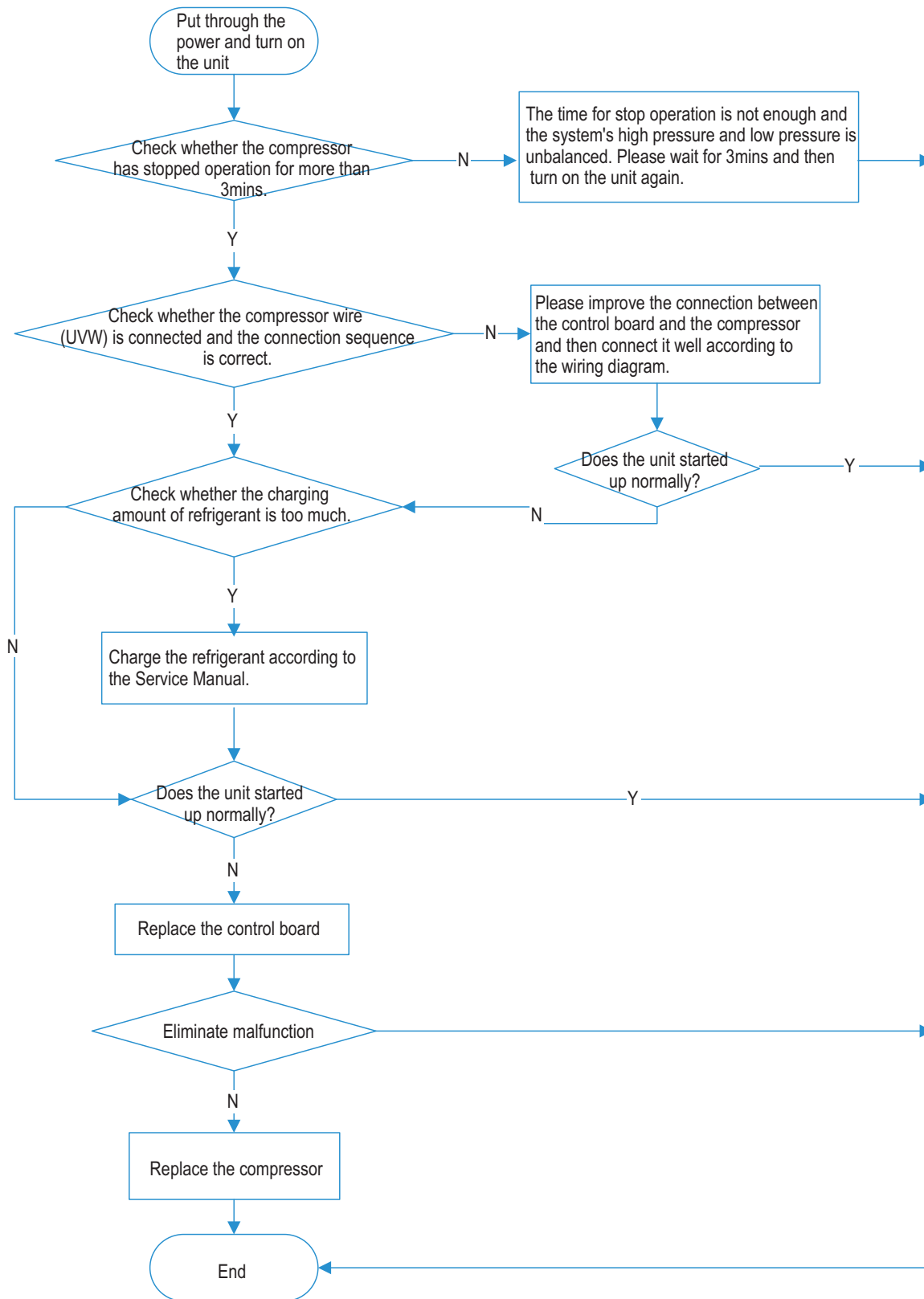


8. Malfunction diagnosis for failure startup Lc

Main check points:

(1) compressor wire (2) compressor (3) charging amount of refrigerant

NOTE: The control board as below means the control board of outdoor unit.

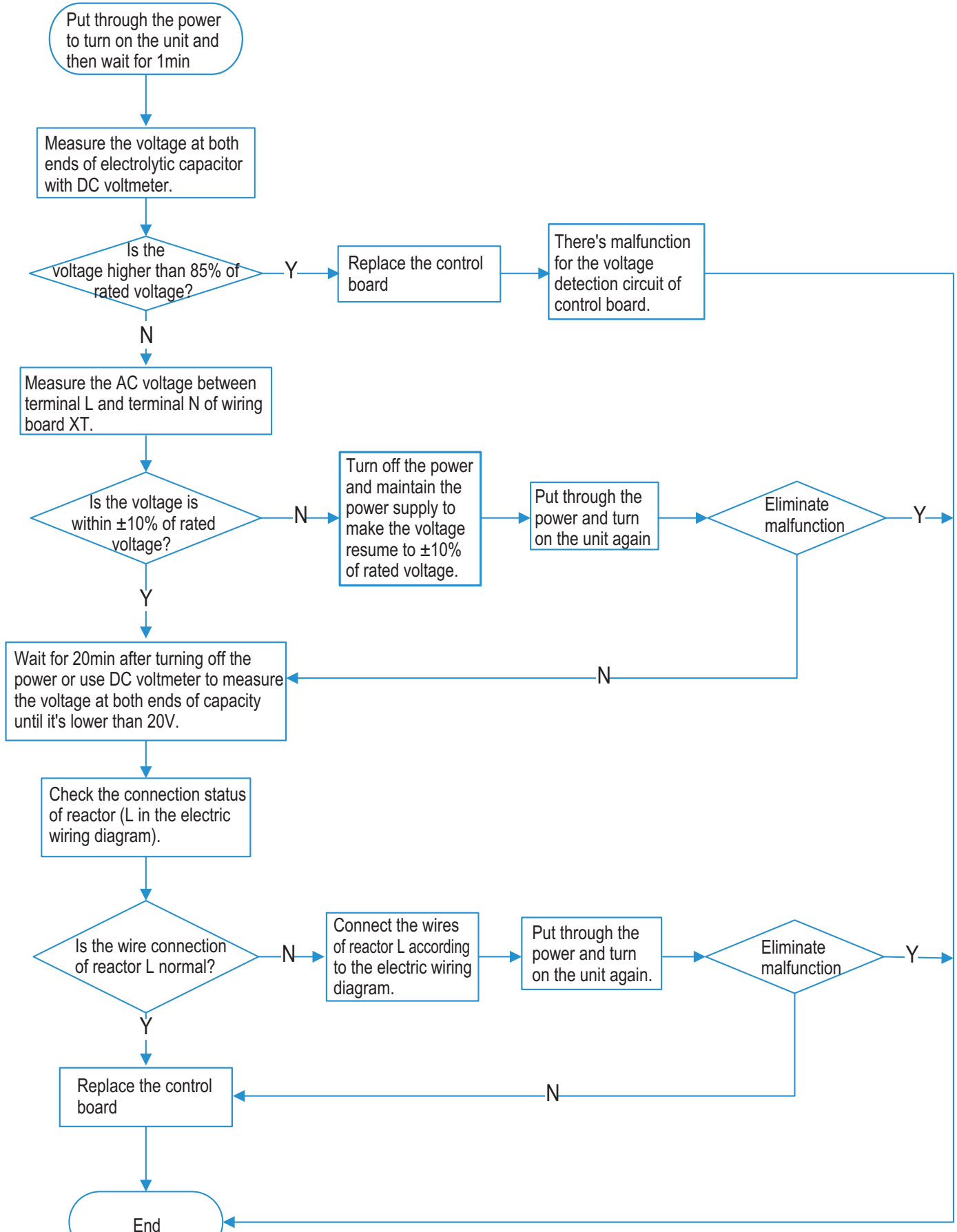


9. Charging malfunction of capacitor PU

Main check points:

(1) wiring board XT (2) reactor

NOTE: The control board as below means the control board of outdoor unit.

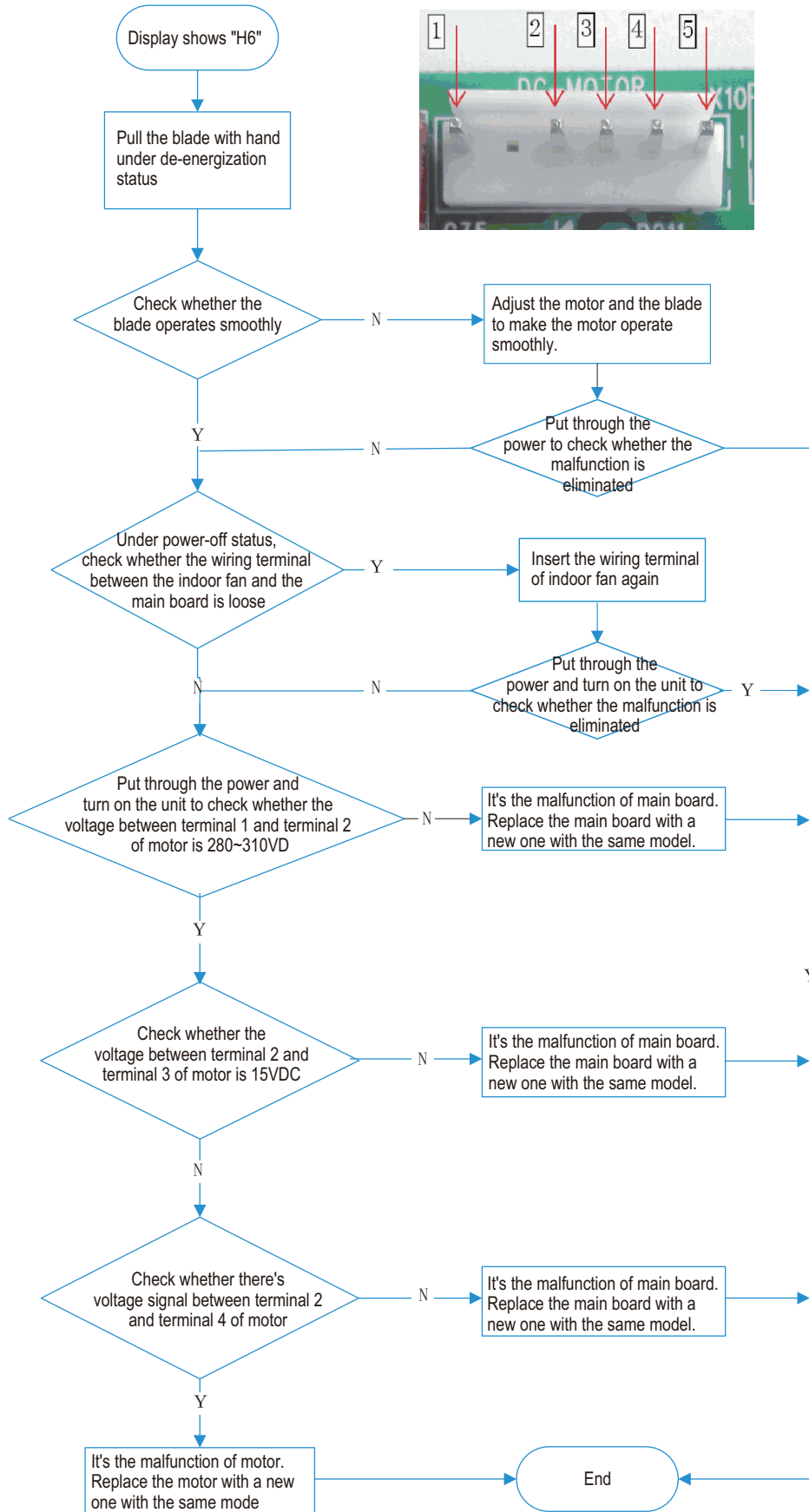


10. Troubleshooting-motor(indoor fan) doesn't operate H6

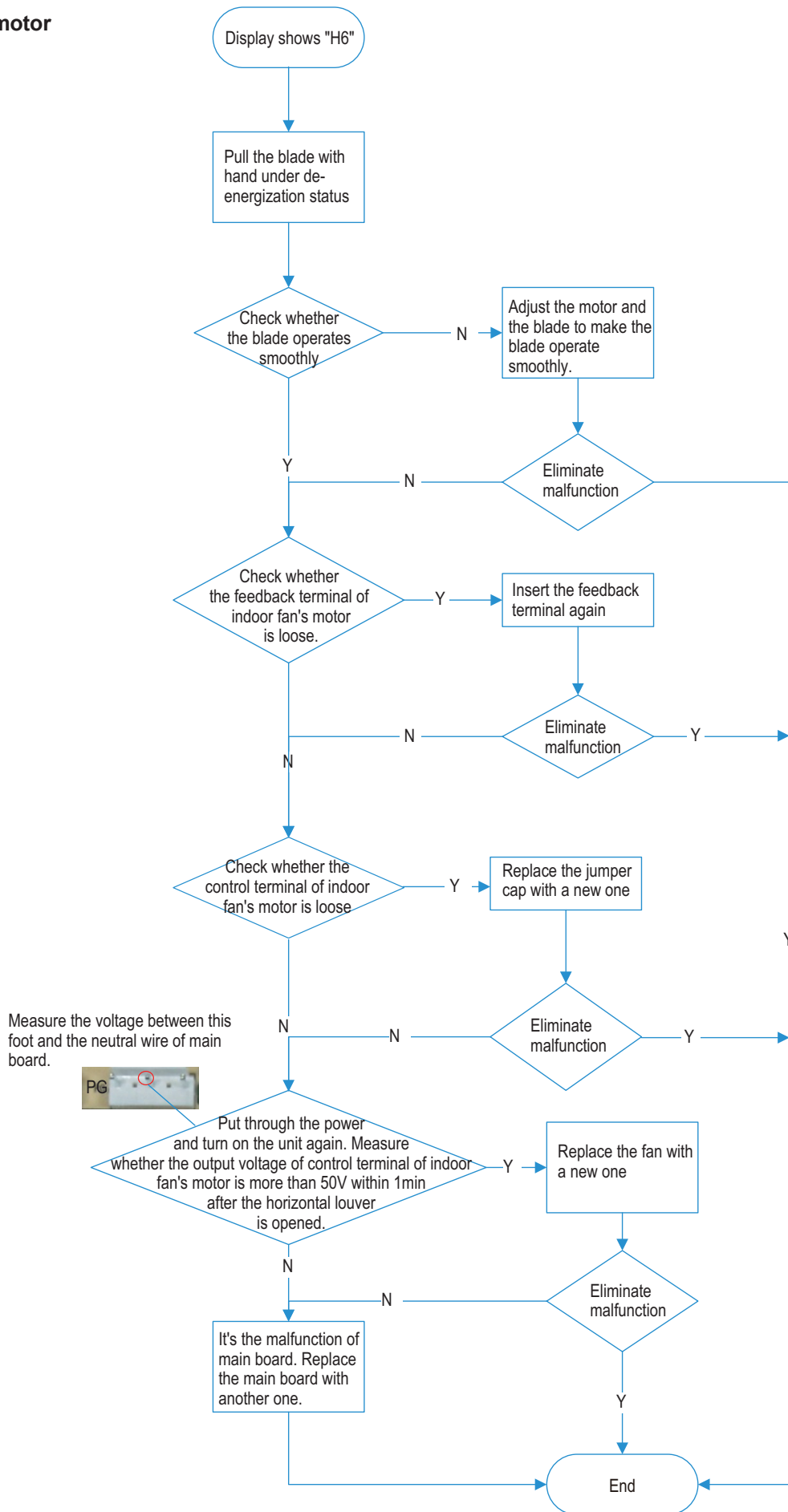
Main check points:

(1) connection terminal (2) motor (3) control board AP1 of indoor unit (4) blade

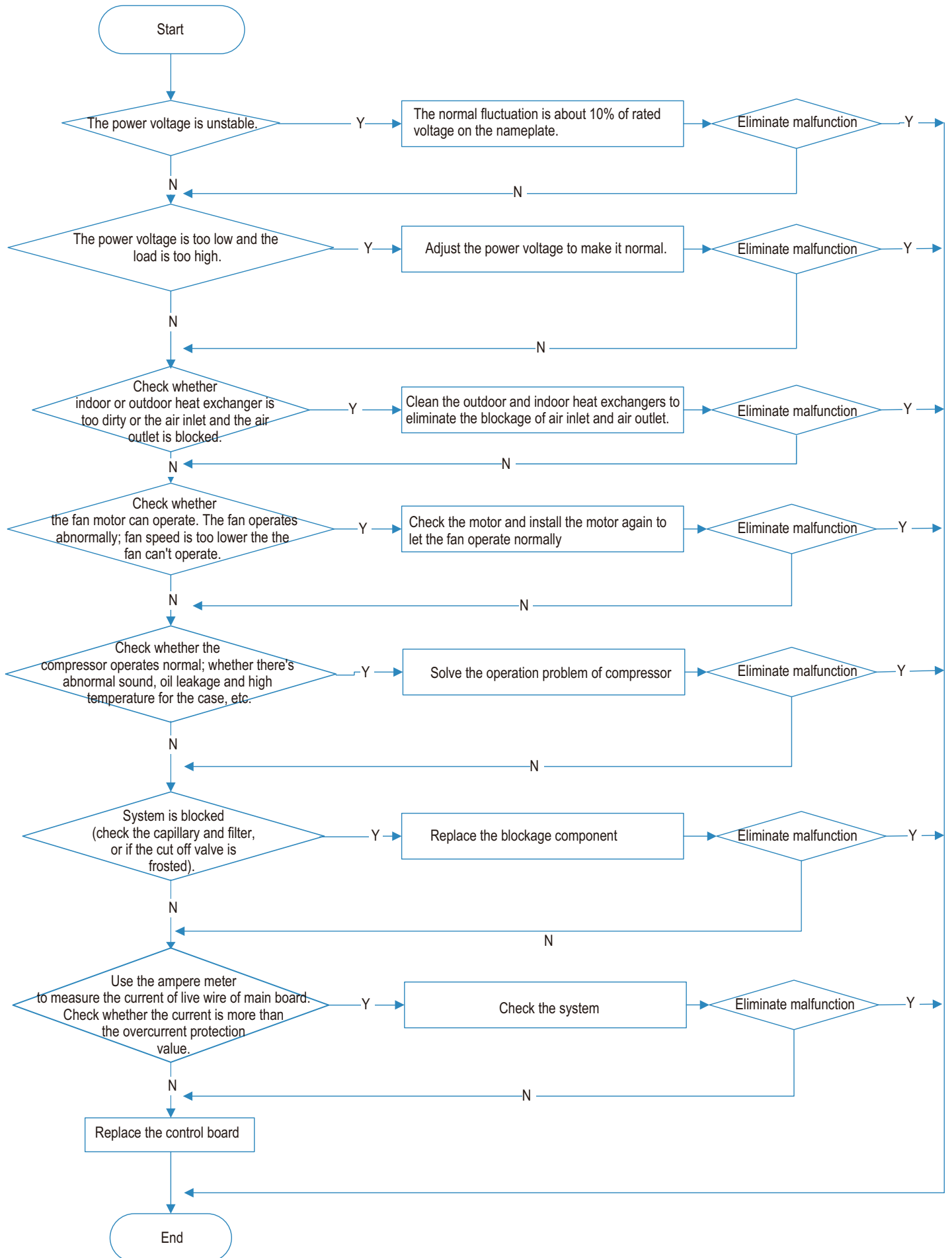
10.1 DC motor



10.2 PG motor



11. AC overcurrent protection E5



9.3 Troubleshooting for Normal Malfunction

1. Air Conditioner can't be Started Up

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

2. Poor Cooling (Heating) for Air Conditioner

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

3. Horizontal Louver can't Swing

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

4. ODU Fan Motor can't Operate

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

5. Compressor can't Operate

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

6. Air Conditioner is Leaking

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

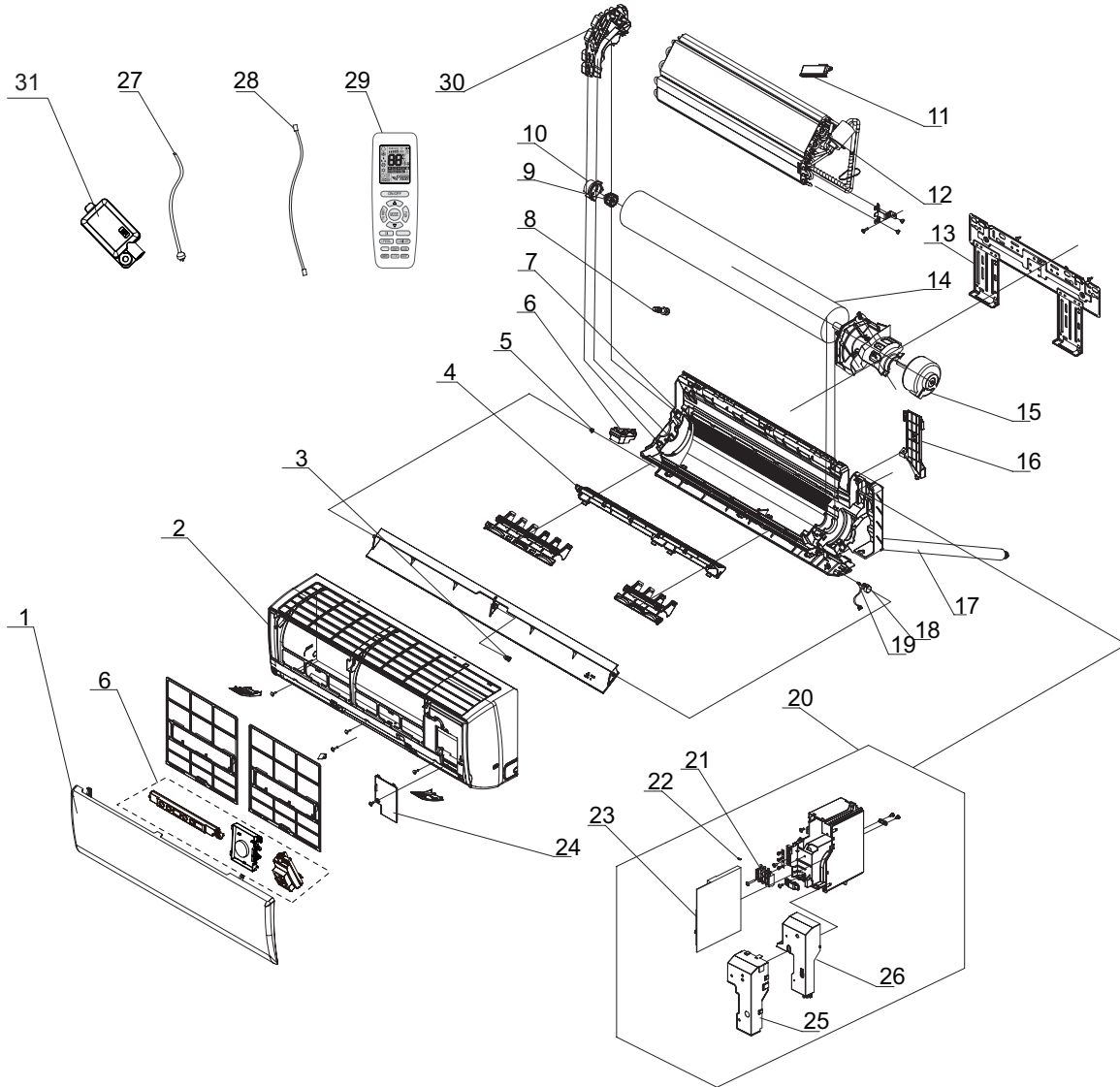
7. Abnormal Sound and Vibration

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

10. Exploded View and Parts List

10.1 Indoor Unit

GWFR09S



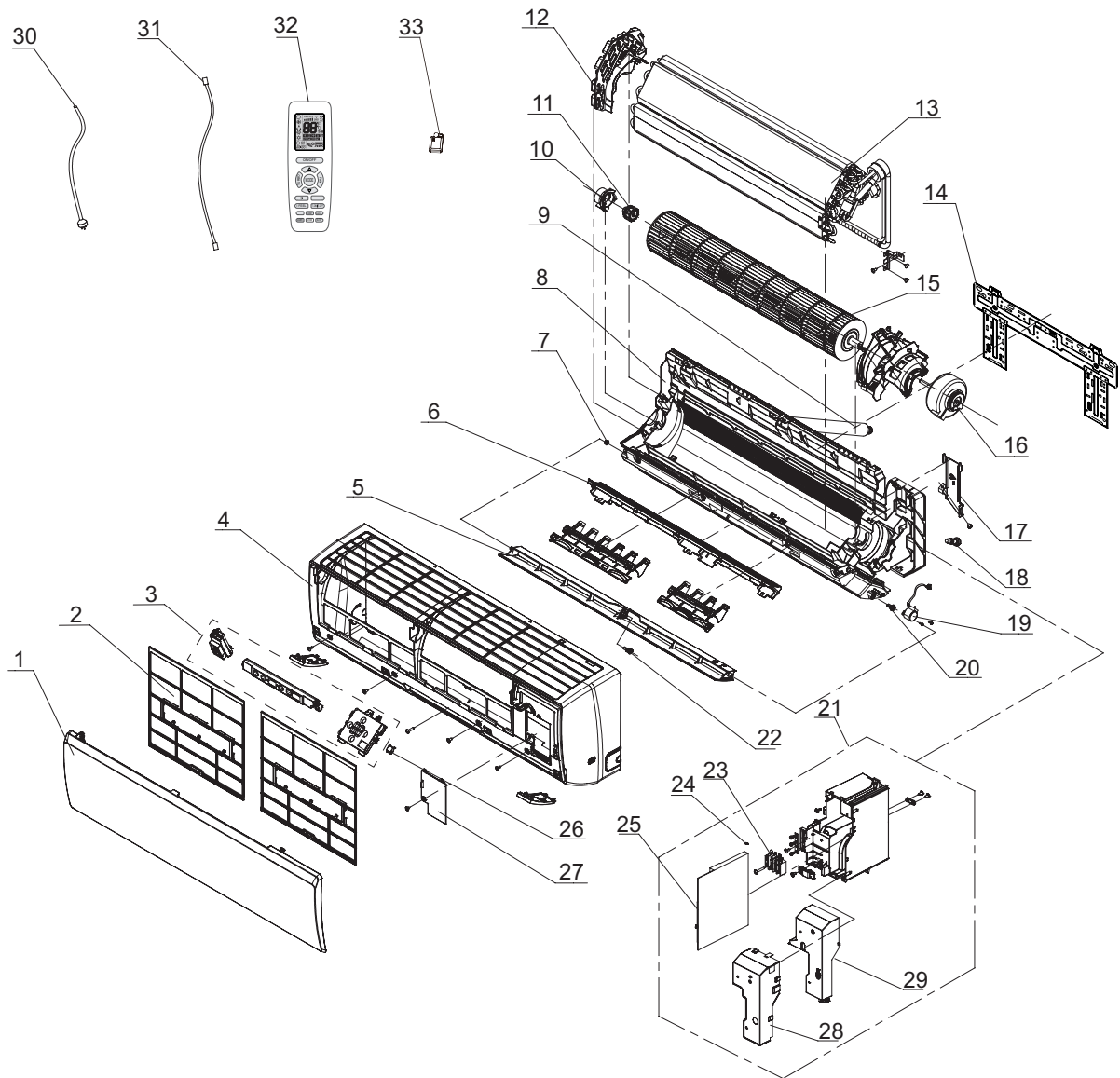
The component picture is only for reference; please refer to the actual product.

No.	Description
1	Front Panel
2	Front Case
3	Axile Bush
4	Helicoid Tongue
5	Left Axile Bush
6	Display Board
7	Rear Case assy
8	Rubber Plug (Water Tray)
9	O-Gasket sub-assy of Bearing
10	Ring of Bearing
11	Cold Plasma Generator
12	Evaporator Assy
13	Wall Mounting Frame
14	Cross Flow Fan
15	Fan Motor
16	Connecting pipe clamp

No.	Description
17	Drainage Hose
18	Stepping Motor
19	Crank
20	Electric Box Assy
21	Terminal Board
22	Jumper
23	Main Board
24	Electric Box Cover Sub-Assy
25	Shield Cover of Electric Box Cover
26	Electric Box Cover

Some models may not contain some parts, please refer to the actual product.

GWFR12SA GWFR12S



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

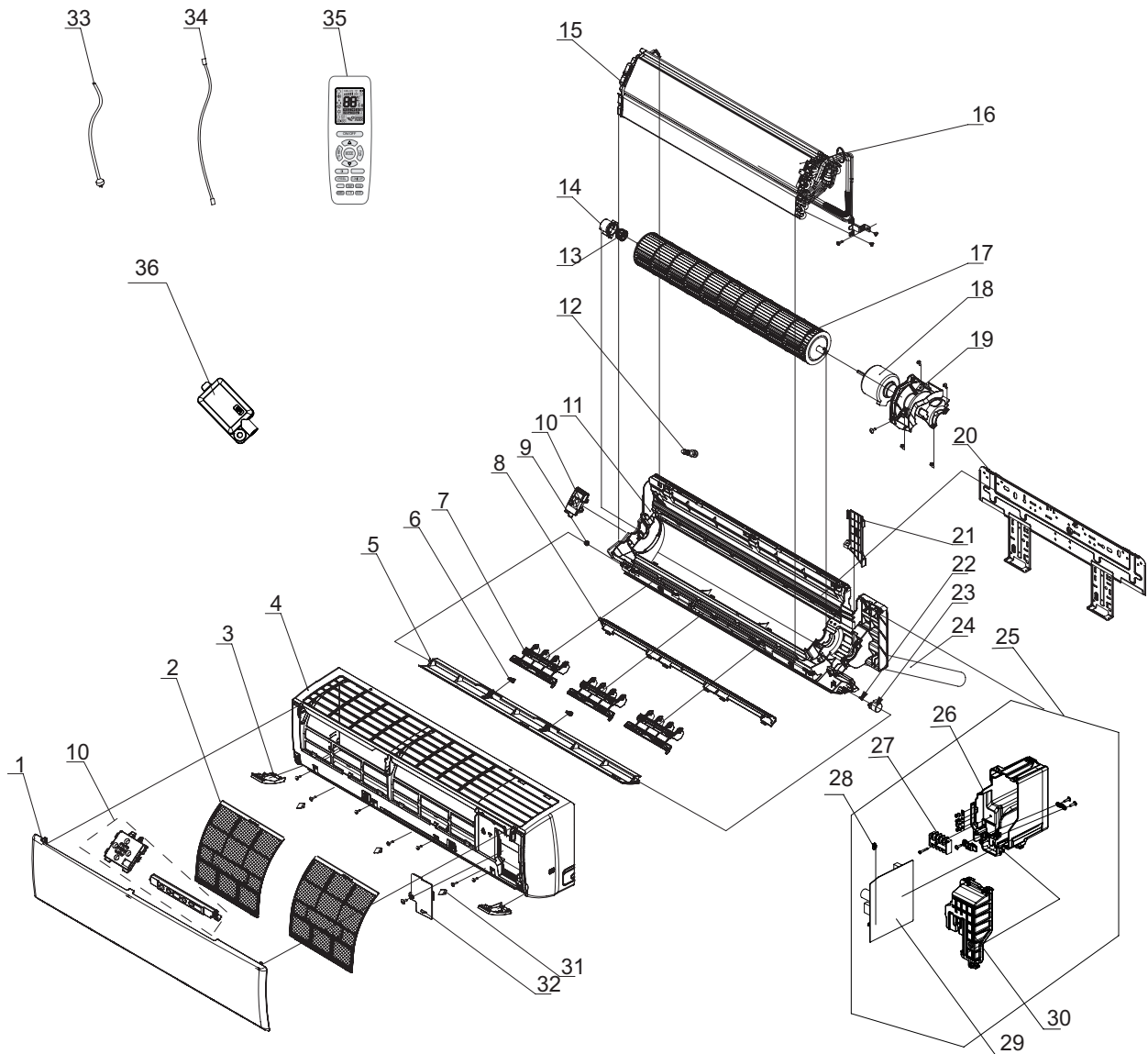
NO.	Description
1	Front Panel
2	Filter Sub-Assy
3	Display Board
4	Front Case Assy
5	Guide Louver
6	Helicoid Tongue
7	Left Axile Bush
8	Rear Case assy
9	Drainage Hose
10	Ring of Bearing
11	O-Gasket sub-assy of Bearing
12	Evaporator Supper

NO.	Description
13	Evaporator Assy
14	Wall Mounting Frame
15	Cross Flow Fan
16	Fan Motor
17	Connecting pipe clamp
18	Rubber Plug (Water Tray)
19	Stepping Motor
20	Crank
21	Electric Box Assy
22	Axile Bush
23	Terminal Board
24	Jumper

NO.	Description
25	Main Board
26	Screw Cover
27	Electric Box Cover Sub-Assy
28	Shield Cover of Electric Box Cover
29	Electric Box Cover
30	Power Cord
31	Connecting Cable
32	Remote Controller
33	Detecting Plate(WIFI)

Some models may not contain some parts, please refer to the actual product.

GWFR18S



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

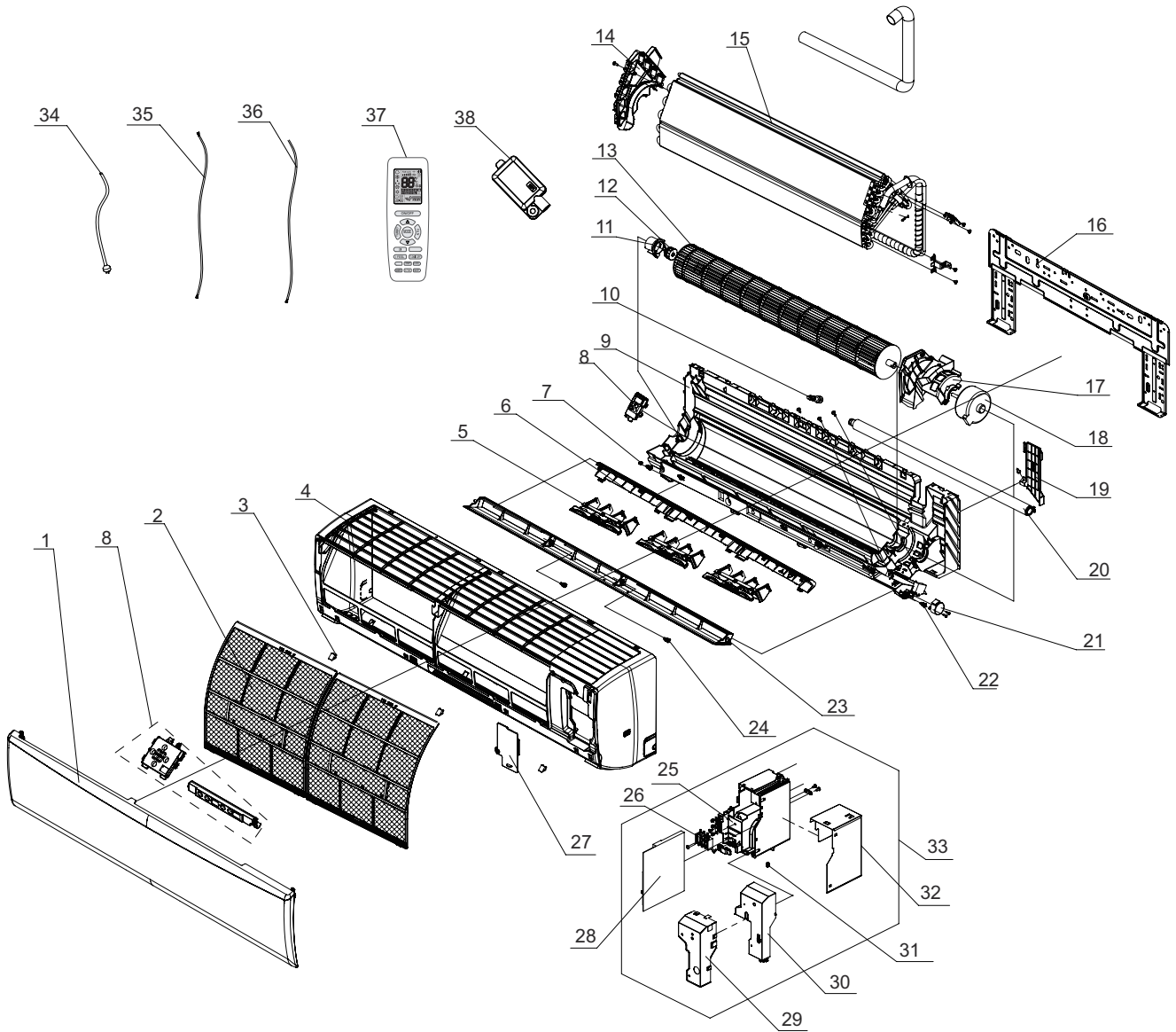
NO.	Description
1	Front Panel
2	Filter Sub-Assy
3	Decoration board(left and right)
4	Front Case
5	Guide Louver
6	Axile Bush
7	Air Louver(Manual)
8	Helicoid Tongue
9	Left Axile Bush
10	Display Board
11	Rear Case assy
12	Rubber Plug (Water Tray)

NO.	Description
13	O-Gasket sub-assy of Bearing
14	O-Gasket of Cross Fan Bearing
15	Evaporator Support
16	Evaporator Assy
17	Cross Flow Fan
18	Fan Motor
19	Motor Press Plate
20	Wall Mounting Frame
21	Connecting pipe clamp
22	Crank
23	Stepping Motor
24	Drainage Hose

NO.	Description
25	Electric Box Assy
26	Electric Box
27	Terminal Board
28	Jumper
29	Main Board
30	Electric Box Cover
31	Screw Cover
32	Electric Box Cover2
33	Power Cord
34	Connecting Cable
35	Remote Controller
36	Detecting plate(WIFI)

Some models may not contain some parts, please refer to the actual product.

GWFR24S



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

NO.	Description
1	Front Panel
2	Filter Sub-Assy
3	Screw Cover
4	Front Case
5	Air Louver(Manual)
6	Helicoid Tongue
7	Left Axile Bush
8	Display Board
9	Rear Case assy
10	Rubber Plug (Water Tray)
11	Ring of Bearing
12	O-Gasket sub-assy of Bearing
13	Cross Flow Fan

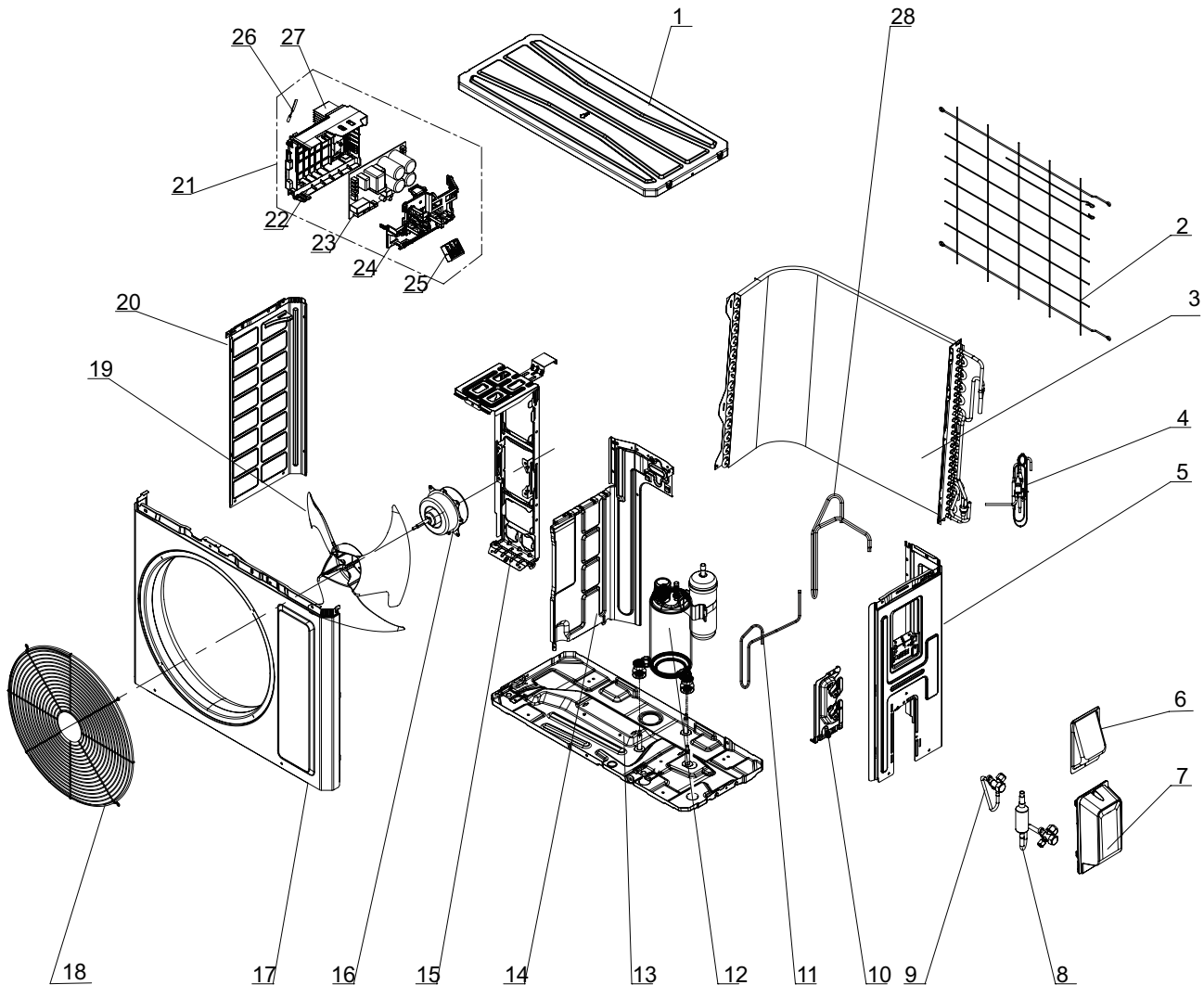
NO.	Description
14	Evaporator Support
15	Evaporator Assy
16	Wall Mounting Frame
17	Motor Press Plate
18	Fan Motor
19	Connecting pipe clamp
20	Drainage Hose
21	Stepping Motor
22	Crank
23	Guide Louver
24	Axile Bush
25	Electric Box
26	Terminal Board

NO.	Description
27	Electric Box Cover2
28	Main Board
29	Shield Cover of Electric Box
30	Electric Box Cover
31	Jumper
32	Lower Shield of Electric Box
33	Electric Box Assy
34	Power Cord
35	Connecting Cable
36	Temperature Sensor
37	Remote Controller
38	Detecting plate(WIFI)

Some models may not contain some parts, please refer to the actual product.

10.2 Outdoor Unit

GRFRT09AS GRFRT12ASA GRFRT12AS



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

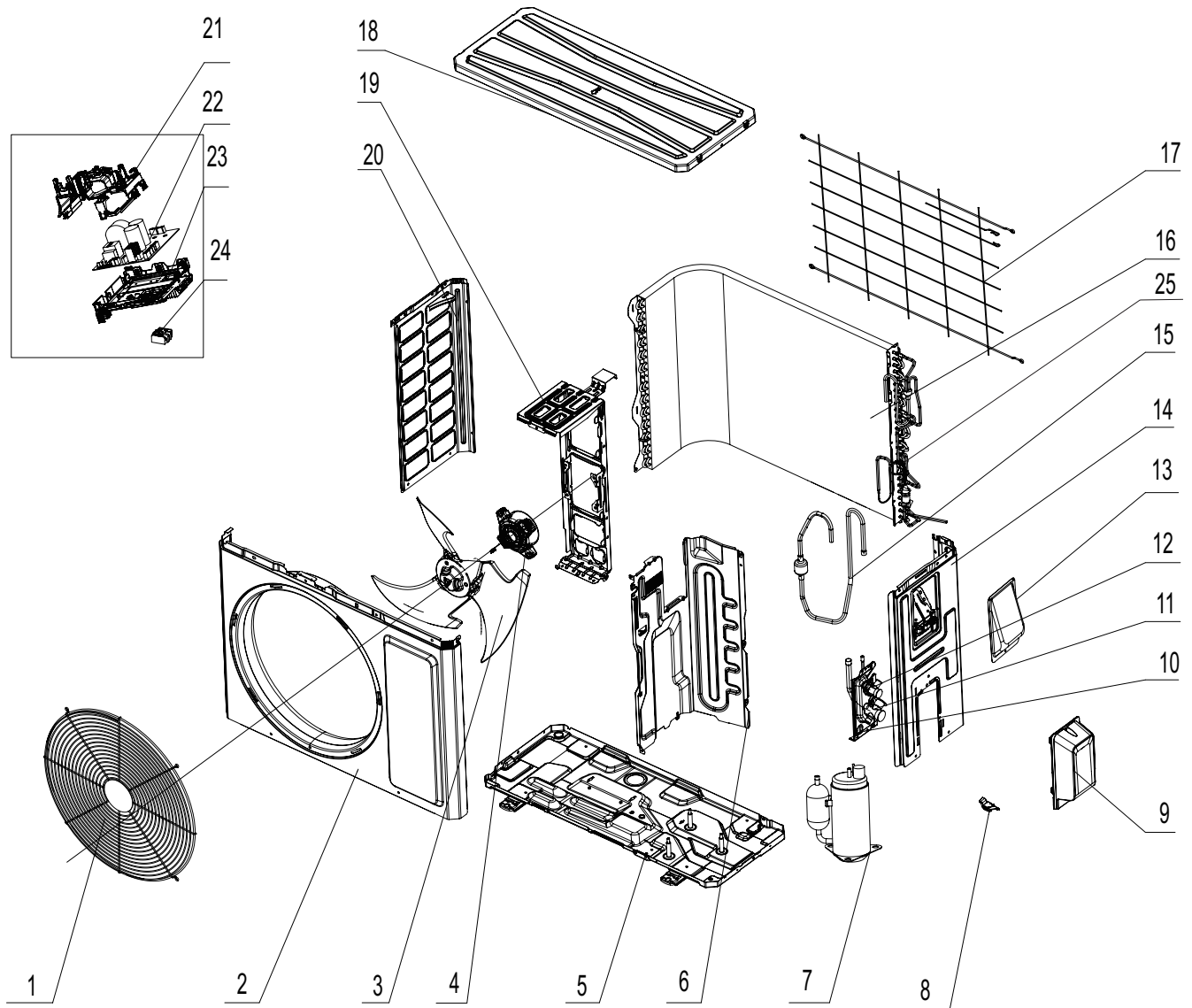
NO.	Description
1	Coping
2	Rear Grill
3	Condenser Assy
4	Capillary Sub-Assy
5	Right Side Plate
6	Cover of Pass Wire
7	Valve Cover
8	Cut-off valve Sub-Assy
9	Cut-off valve
10	Valve Support

NO.	Description
11	Discharge Tube
12	Compressor and Fittings
13	Chassis Sub-Assy
14	Clapboard
15	Motor Support
16	Brushless DC Motor
17	Cabinet
18	Front Grill
19	Axial Flow Fan
20	Left Side Plate

NO.	Description
21	Electric Box Assy
22	Electric Box
23	Main Board
24	Electric Box Cover
25	Terminal Board
26	Temperature Sensor
27	Radiator
28	Inhalation Tube

Some models may not contain some parts, please refer to the actual product.

GRFRT18AS

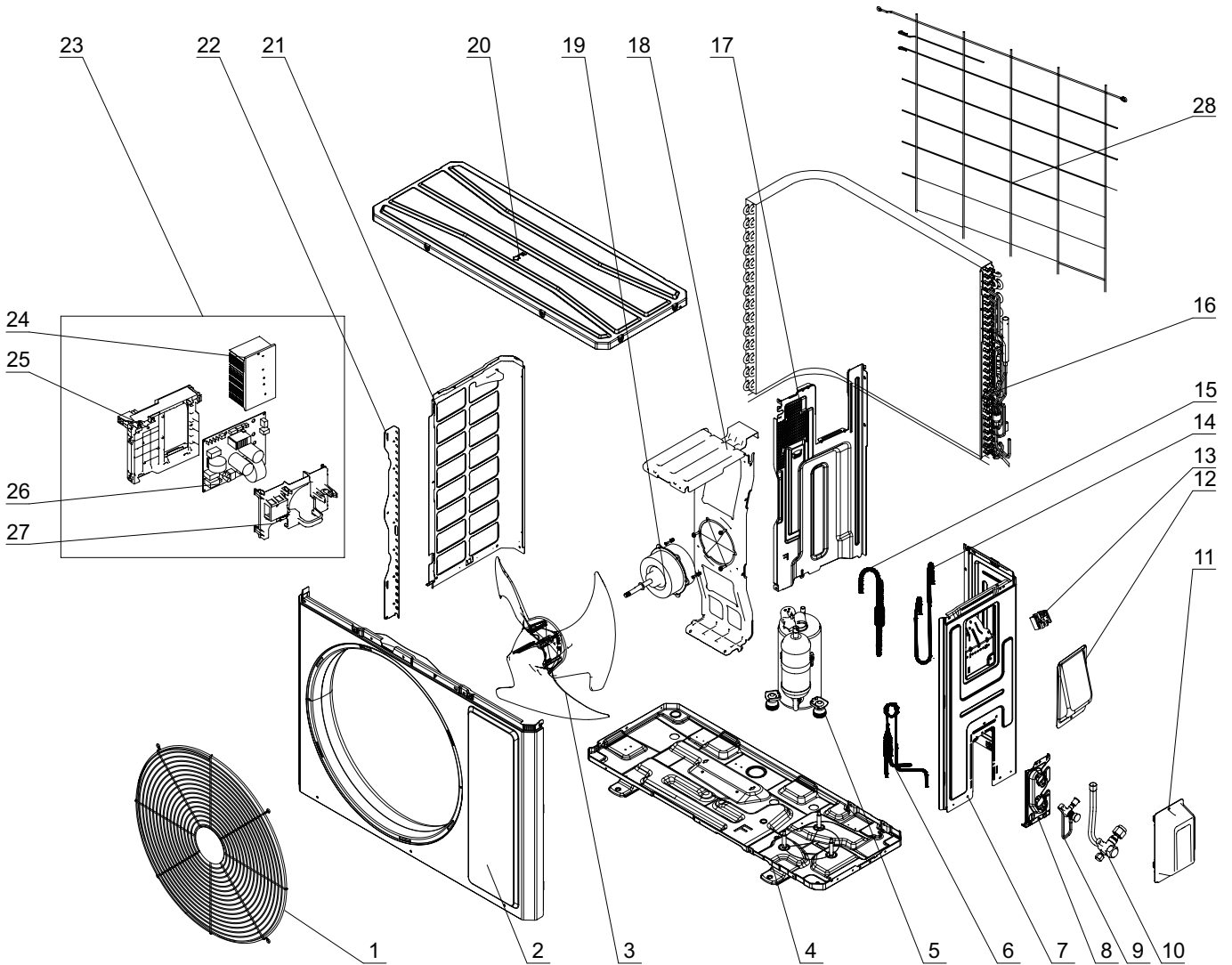


The component is only for reference; please refer to the actual product

NO.	Description
1	Front Grill
2	Cabinet
3	Axial Flow Fan
4	Brushless DC Motor
5	Chassis Sub-assy
6	Clapboard
7	Compressor and Fittings
8	Valve Support Block
9	Valve Cover
10	Valve Support
11	Cut-off valve 1/2(N)
12	Cut-off valve 1/4(N)
13	Cover of Pass Wire

NO.	Description
14	Right Side Plate
15	Inhalation Tube Sub-assy
16	Condenser Assy
17	Rear Grill
18	Coping
19	Motor Support
20	Left Side Plate
21	Electric Box Cover
22	Main Board
23	Electric Box
24	Terminal Board
25	Capillary Sub-assy

Some models may not contain some parts, please refer to the actual product.



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

NO.	Description
1	Front Grill
2	Front Panel
3	Axial Flow Fan
4	Chassis Sub-assy
5	Compressor and Fittings
6	Capillary Sub-assy
7	Right Side Plate
8	Valve Support
9	Cut-off valve 1/4(N)
10	Cut-off valve 1/2(N)
11	Valve Cover
12	Cover of Pass Wire
13	Terminal Board
14	Suction Tube-Assy

NO.	Description
15	Discharge Tube-Assy
16	Condenser Assy
17	Clapboard
18	Motor Support
19	Motor
20	Top Cover Assy
21	Left Side Plate
22	Condenser Left Border Plate
23	Electric Box Assy
24	Radiator
25	Electric Box
26	Main Board
27	Electric Box Cover
28	Rear Grill

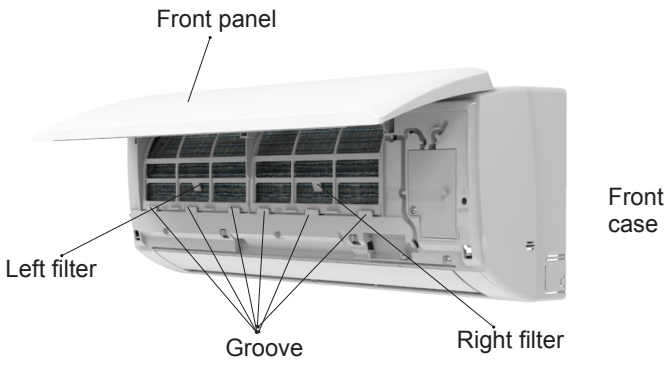
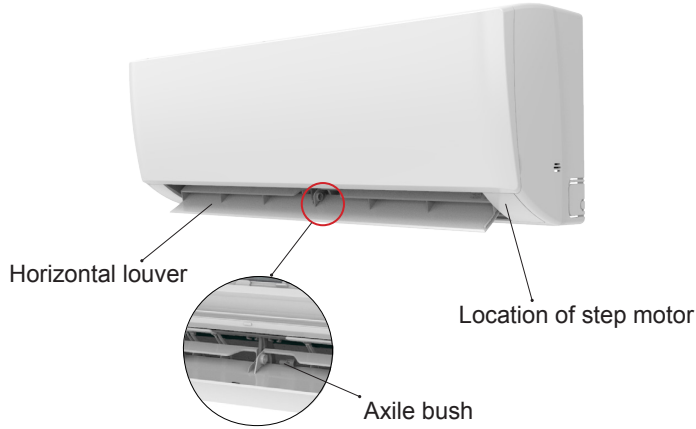
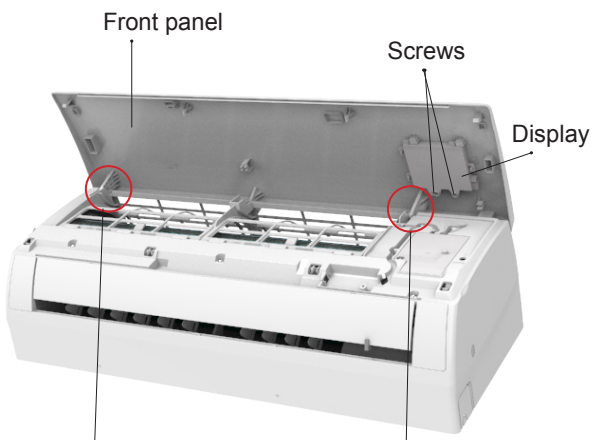
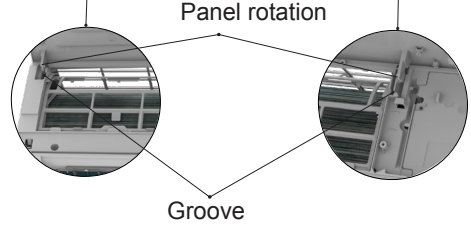
Some models may not contain some parts, please refer to the actual product.

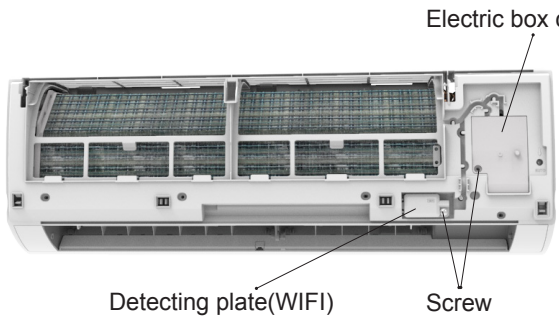
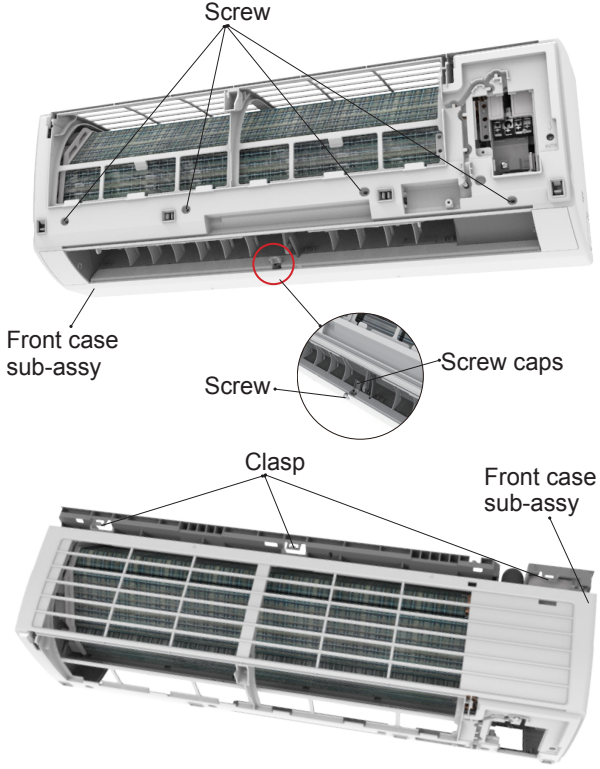
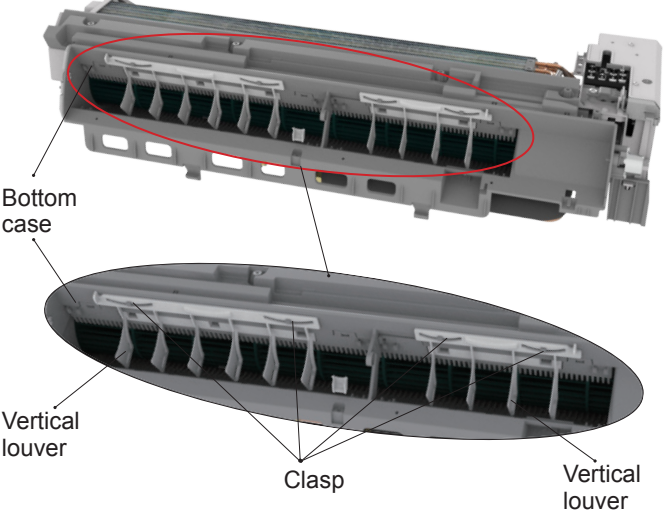
11. Removal Procedure

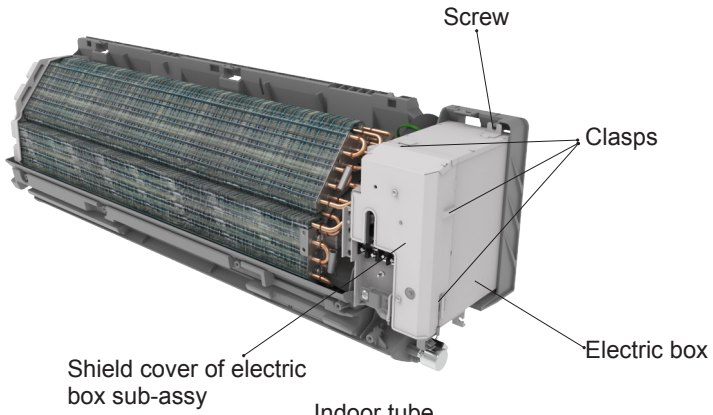
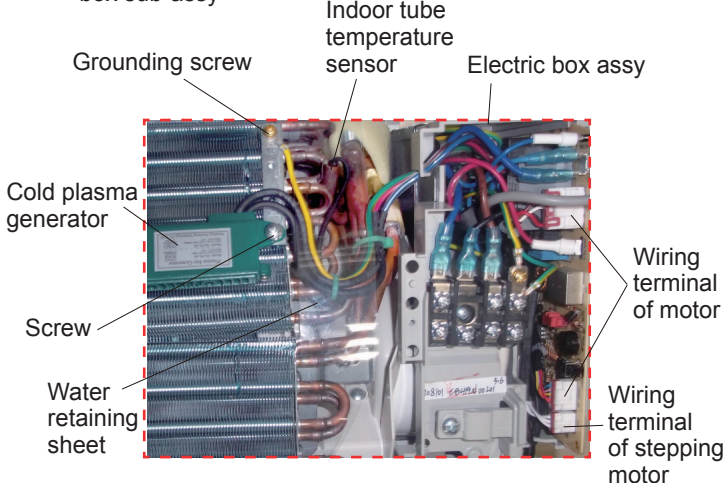
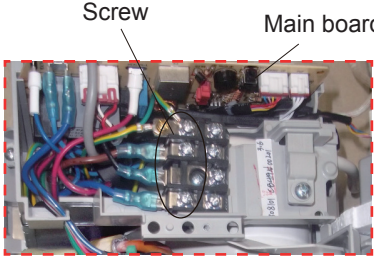
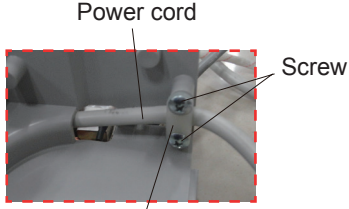
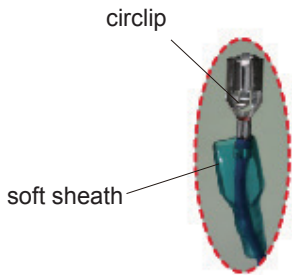
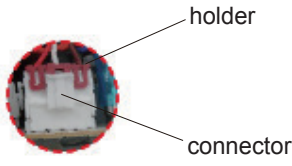
11.1 Removal Procedure of Indoor Unit

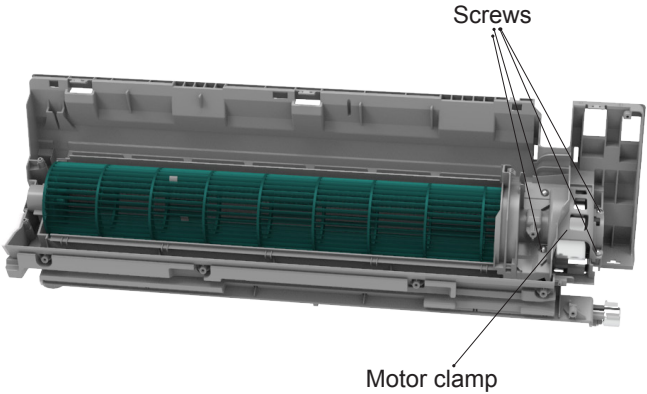
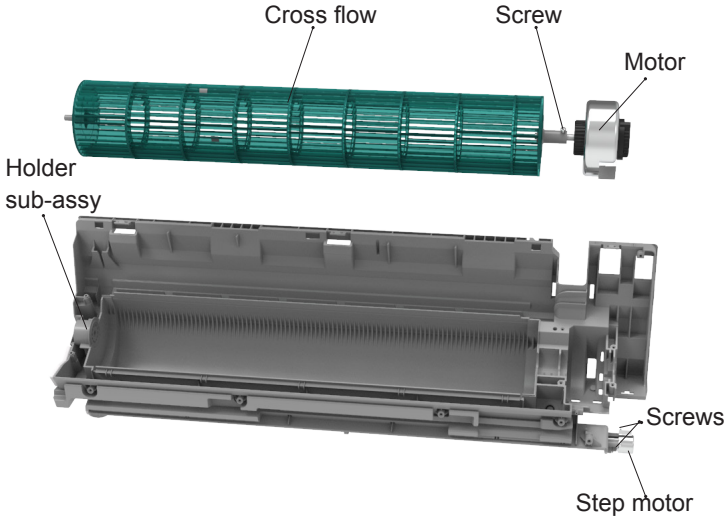


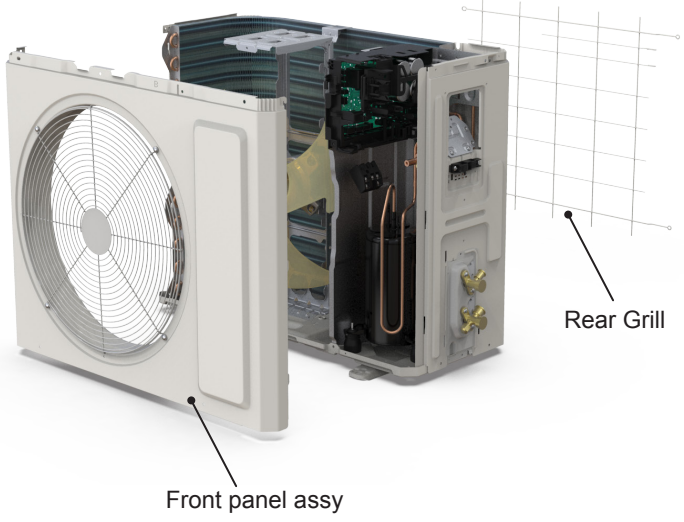
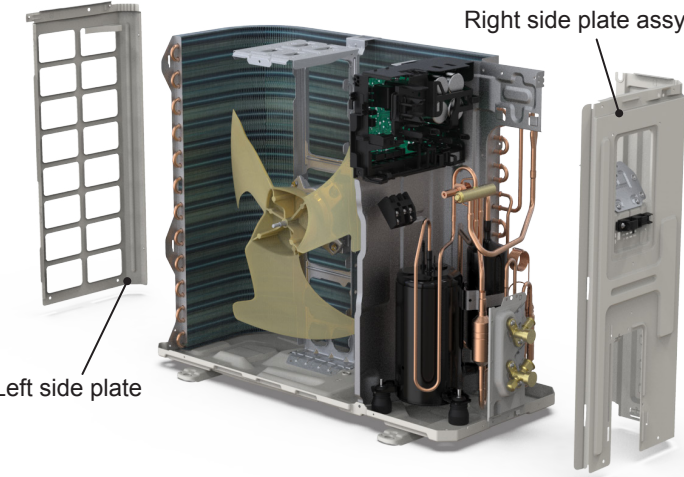
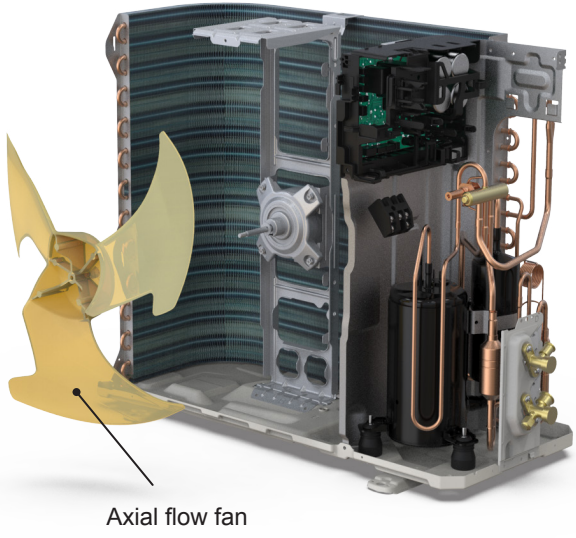
Caution: discharge the refrigerant completely before removal.

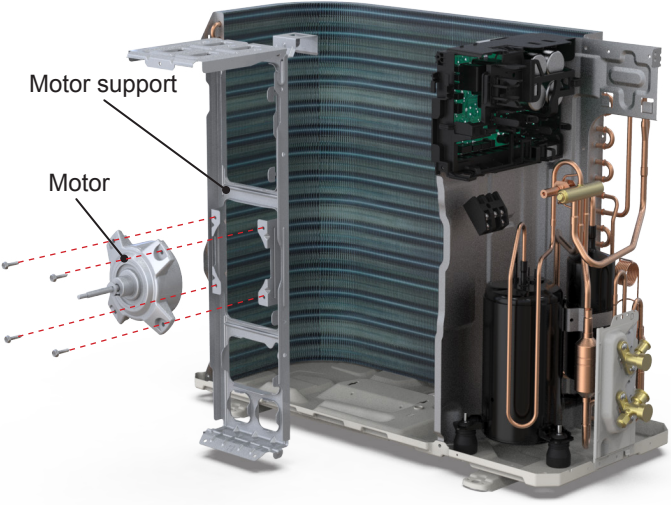
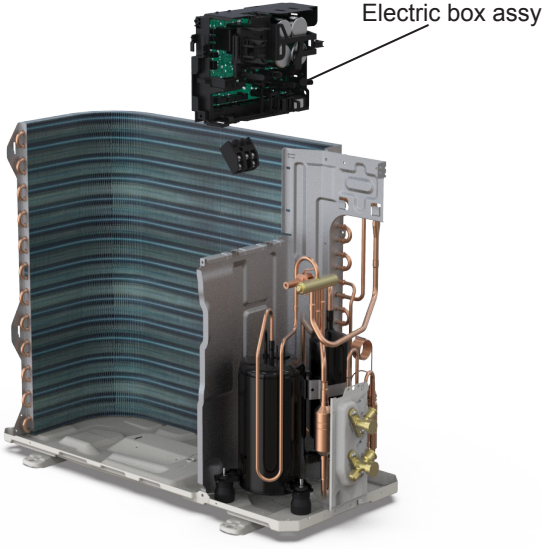
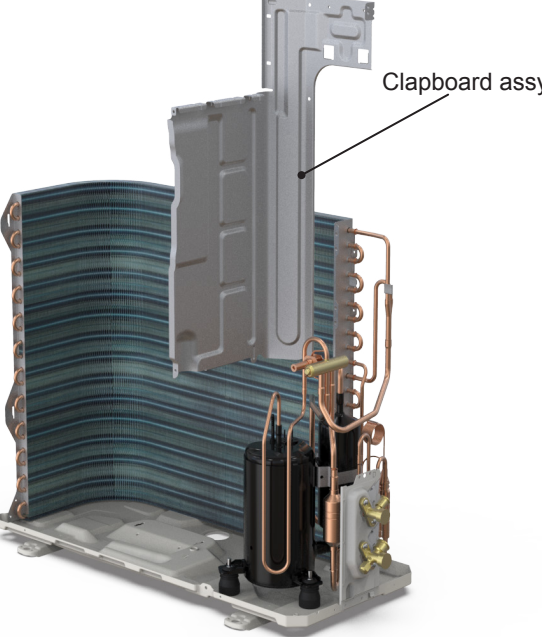
Step	Procedure
<p>1. Remove filter assembly</p>	<p>Open the front panel. Push the left filter and right filter until they are separate from the groove on the front panel. Remove the left filter and right filter respectively.</p> 
<p>2. Remove horizontal louver</p>	<p>Push out the axle bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p> 
<p>3. Remove panel</p>	<p> ① A1/B6/C2/C4 display: Screw off the 2 screws that are locking the display board. Separate the display board from the front panel. ② A2/A3 display: Screw off the 2 screws that are locking the display board. This display can be disassembled only after removing the front case (refer to step 5 of disassembly). ③ A5/B2/B4/B8/C6/D2 display: Screw off the 2 screws that are locking the display board. </p> <p>a</p>  <p>b</p> <p>Separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> 

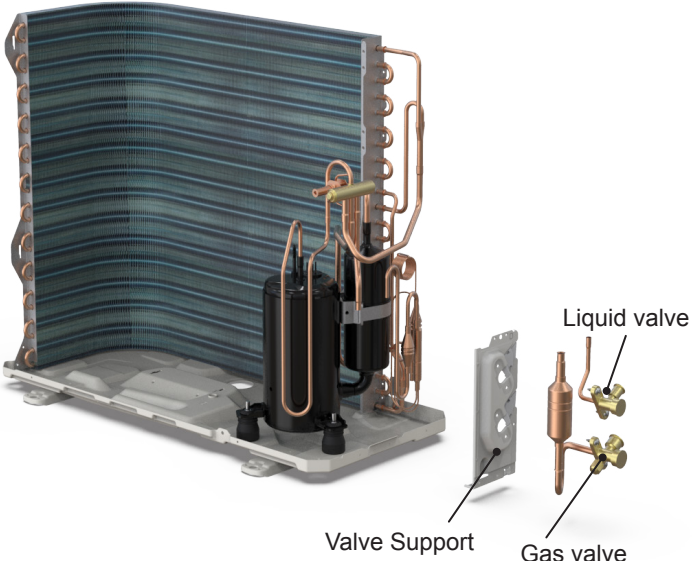
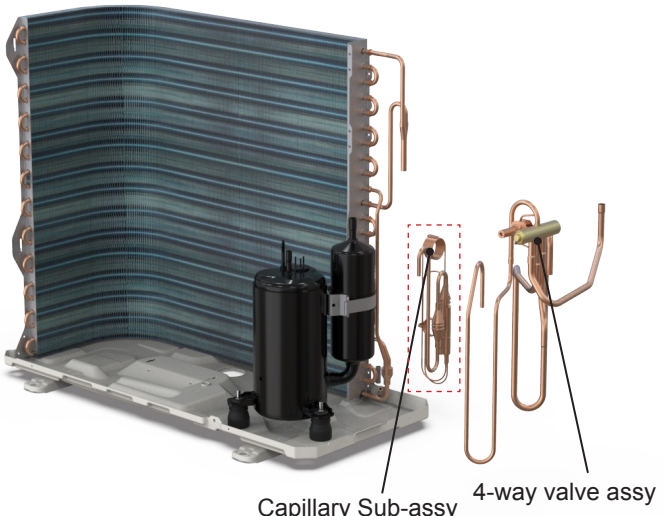
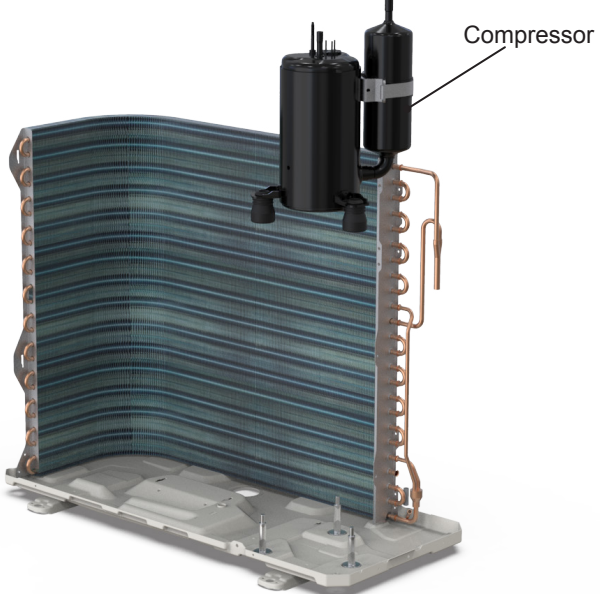
Step	Procedure
<p>4. Remove detecting plate(wifi) and electric box cover2</p>	<p>Remove the screws fixing detecting plate and remove detecting plate(wifi).</p> <p>Remove the screws fixing electric box cover 2 and remove electric box cover 2.</p> 
<p>5. Remove front case sub-assy</p>	<p>Remove the screws fixing front case.</p> <p>Note:</p> <p>a 1.Open the screw caps before removing the screws around the air outlet.</p> <p>2.The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the connection clasps between front case sub-assy and bottom case. Lift up the front case sub-assy and take it out.</p> 
<p>6. Remove vertical louver</p>	<p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p> 

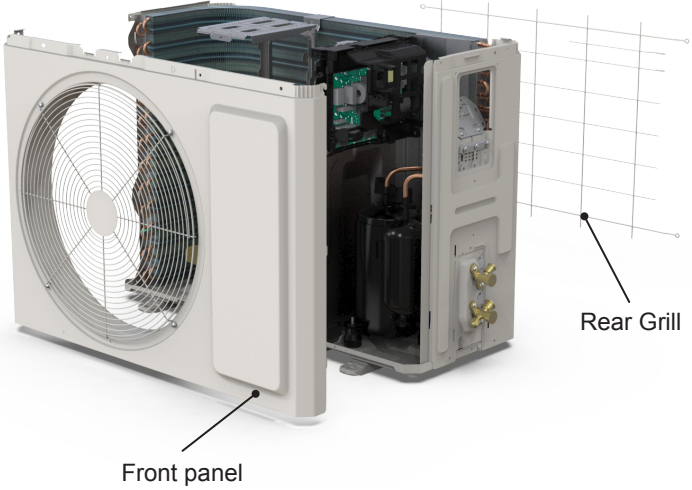
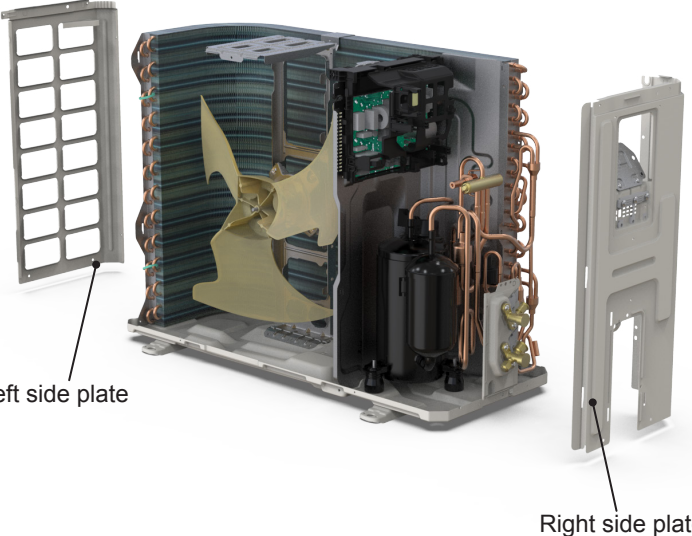
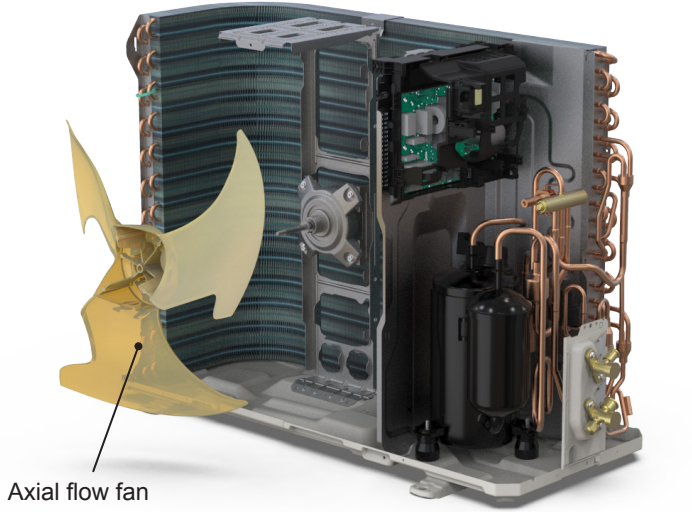
Step	Procedure
7. Remove electric box assy	
a	<p>Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy. Remove the screw fixing electric box assy .</p> 
b	<p>① Take off the water retaining sheet. Remove the cold plasma generator by screwing off the locking screw on the generator. ② Take off the indoor tube temperature sensor. ③ Screw off 1 grounding screw. ④ Remove the wiring terminals of motor and stepping motor. ⑤ Remove the electric box assy.</p> 
c	<p>Twist off the screws that are locking each lead wire and rotate the electric box assy. Twist off the screws that are locking the wire clip. Loosen the power cord and remove its wiring terminal. Lift up the main board and take it off.</p>  
d	<p>Instruction: Some wiring terminal of this product is with lock catch and other devices. The pulling method is as below: 1.Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals. 2.Pull out the holder for some terminals at first (holder is not available for some wiring terminal), hold the connector and then pull the terminal.</p>  

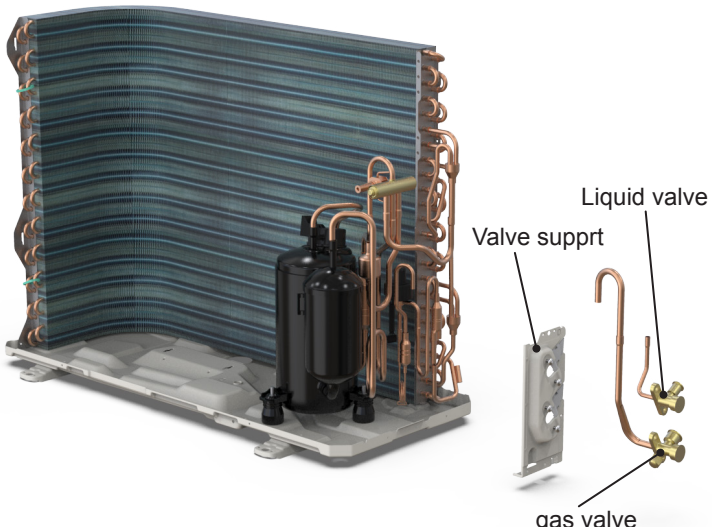
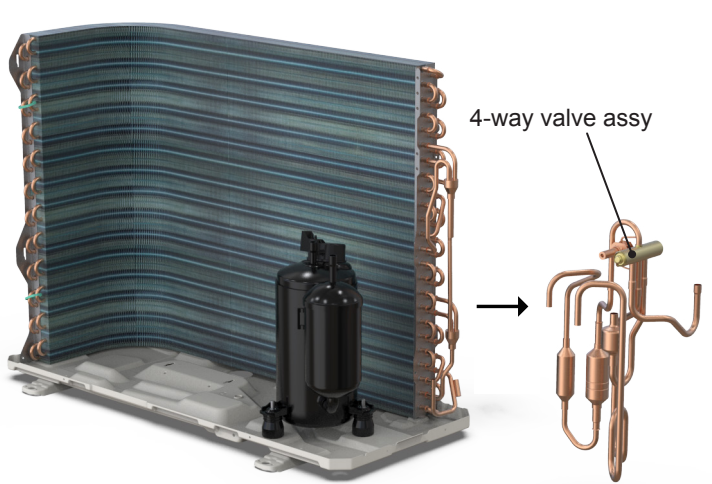
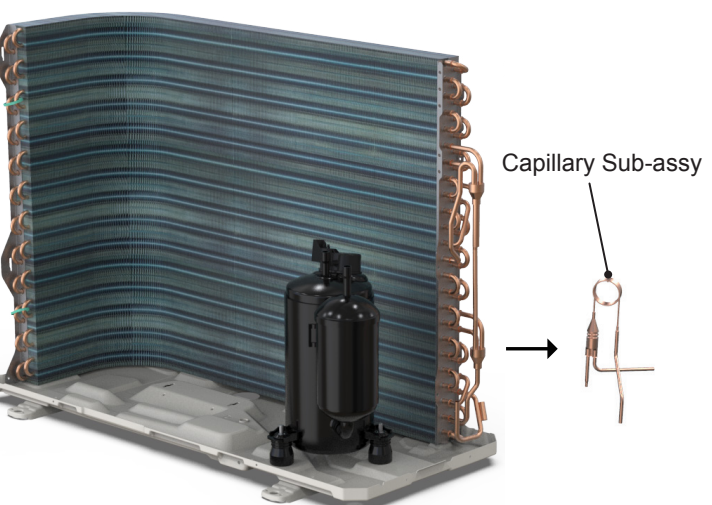
Step	Procedure
9. Remove motor and cross flow blade	
a	<p>Remove the screws fixing motor clamp and then remove the motor clamp.</p> 
b	<p>Remove the screws at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them. Remove the bearing holder sub-assy.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

Step	Procedure
<p>4. Remove front panel assy and Rear Grill</p>	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p> 
<p>5. Remove right side plate assy and left side plate</p>	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy. Rescrew the screws fixing the left side plate, and remove the left side plate assy.</p> 
<p>6. Remove axial flow fan</p>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 




Step	Procedure
<p>7. Remove motor support and motor</p>	<p>Remove the screws fixing the motor support and lift the motor support to remove it. Remove the screws fixing the motor and then remove the motor.</p> 
<p>8. Remove electric box assy</p>	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
<p>9. Remove clapboard assy</p>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

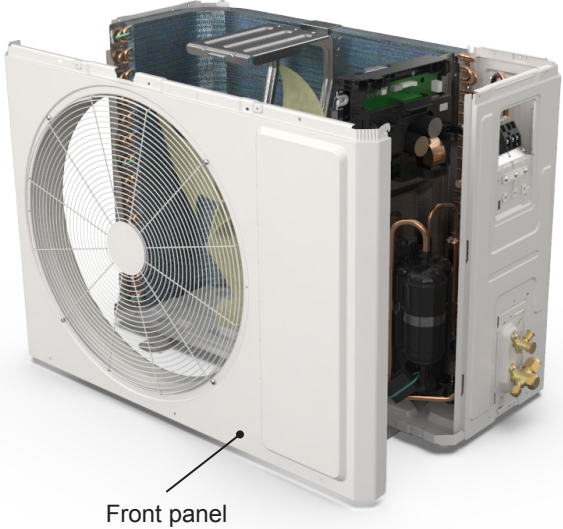
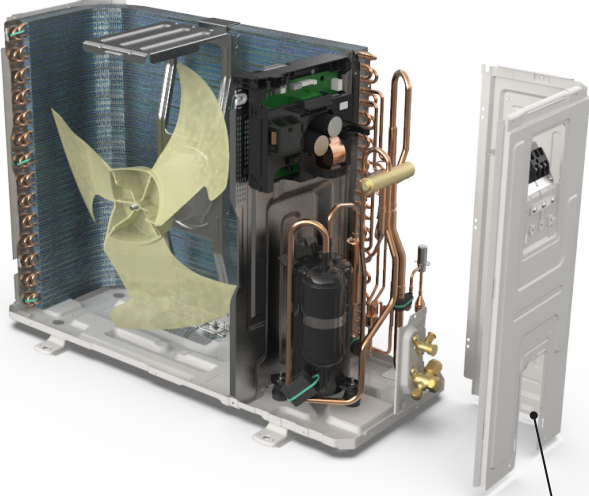
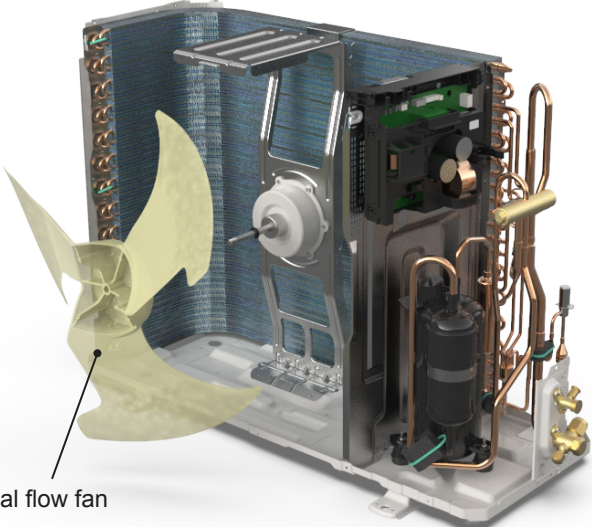
Step	Procedure
<p>10. Remove gas valve and liquid valve</p> <p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>	 <p>Valve Support</p> <p>Liquid valve</p> <p>Gas valve</p>
<p>11. Remove 4-way valve and capillary Sub-assy</p> <p>Unsolder the welding joints connecting capillary Sub-assy, and then remove it.</p> <p>Unsolder the welding joints connecting the 4-way valve assy with capillary sub-assy, compressor and condenser; remove the 4-way valve and capillary Sub-assy. Cooling only unit removes Discharge Tube and Inhalation Tube.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>	 <p>Capillary Sub-assy</p> <p>4-way valve assy</p>
<p>12. Remove compressor</p> <p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p>	 <p>Compressor</p>

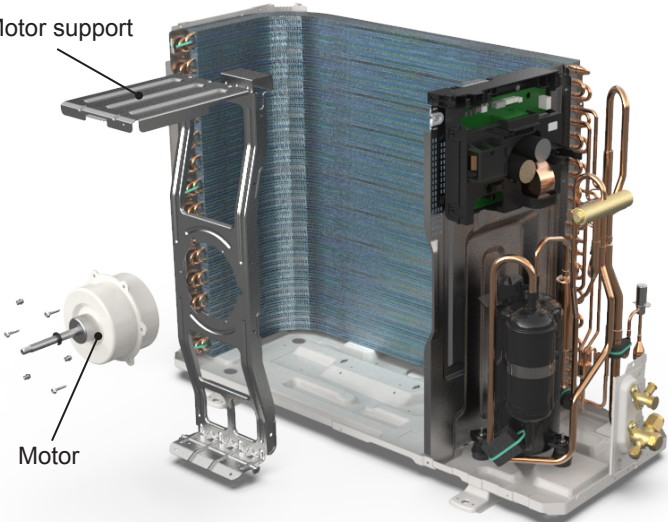

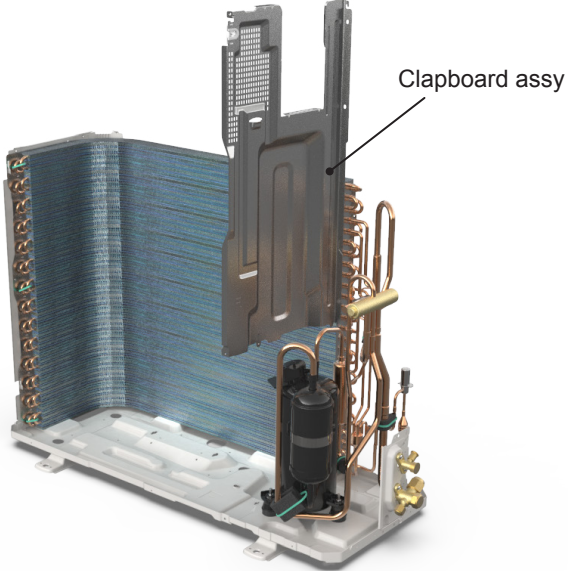
Step	Procedure
<p>4. Remove front panel assy and Rear Grill</p>	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p> 
<p>5. Remove right side plate assy and left side plate</p>	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy. Rescrew the screws fixing the left side plate, and remove the left side plate assy.</p> 
<p>6. Remove axial flow fan</p>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

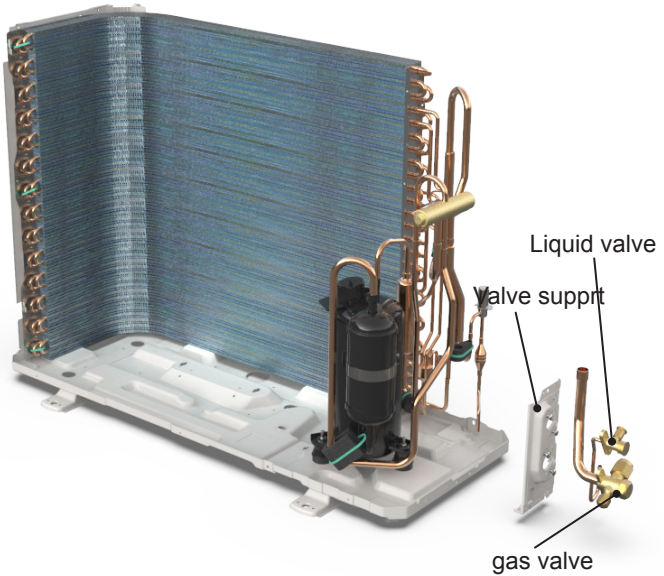
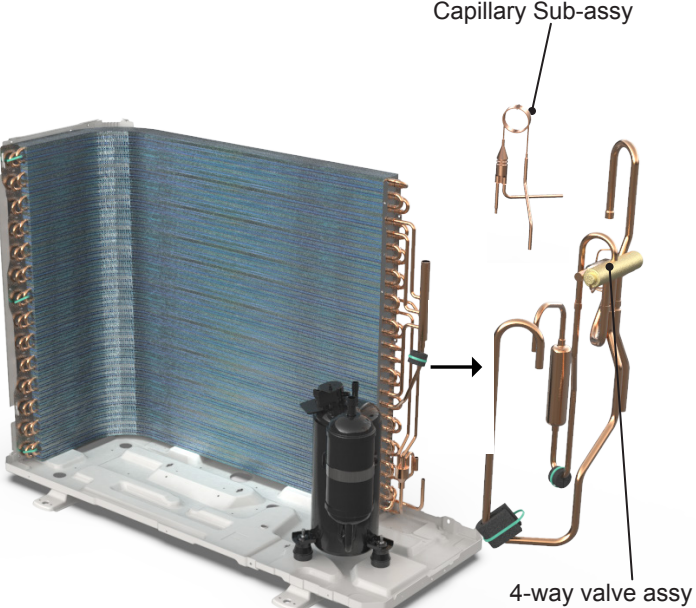
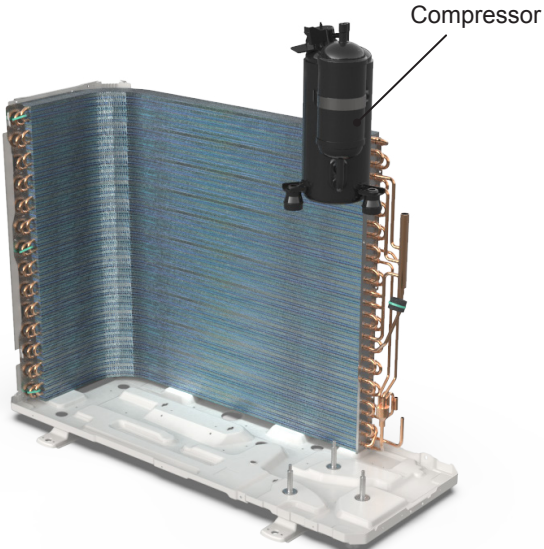
Step	Procedure
<p>10. Remove gas valve, liquid valve and valve support</p>	<p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature. Remove the screws fixing valve support, then remove the valve support.</p> 
<p>11. Remove 4-way valve assy</p>	<p>Unsolder the welding joints connecting the 4-way valve assy, remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>12. Remove Capillary Sub-assy</p>	<p>Unsolder the spot weld of Capillary Sub-assy and condenser, and then remove the Capillary Sub-assy.</p> <p>Note: When unsoldering the spot weld, wrap the Capillary Sub-assy with wet cloth completely to avoid damaging the valve due to high temperature.</p> 



Step	Procedure
<p>1. Before disassembly</p>	
<p>2. Remove Cover of Pass Wire and valve cover</p>	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
<p>3. Remove top cover</p>	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

Step	Procedure
<p>4. Remove front panel assy</p>	<p>Remove connection screws connecting the front panel assy, and then remove the front panel assy.</p> 
<p>5. Remove right side plate assy</p>	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy.</p> 
<p>6. Remove axial flow fan</p>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

Step	Procedure
<p>7. Remove motor and motor support</p>	<p>Remove the screws fixing the motor and then remove the motor. Remove the screws fixing the motor support and lift the motor support to remove it.</p> 
<p>8. Remove electric box assy</p>	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
<p>9. Remove clapboard assy</p>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

Step	Procedure
<p>10. Remove gas valve, liquid valve and valve support</p>	<p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> <p>Remove the screws fixing valve support, then remove the valve support.</p> 
<p>11. Remove 4-way valve assy, Capillary Sub-assy</p>	<p>Unsolder the welding joints connecting the 4-way valve assy, remove the 4-way valve.</p> <p>Unsolder the spot weld of Capillary Sub-assy and condenser, and then remove the Capillary Sub-assy.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>13. Remove compressor</p>	<p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

Set temperature

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

Ambient temperature

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

Appendix 2: Configuration of Connection Pipe

- Standard length of connection pipe (More details please refer to the specifications.)
- Min length of connection pipe for the unit with standard connection pipe of 16.4ft, there is no limitation for the min length of connection pipe. For the unit with standard connection pipe of 24.6ft and 26.2ft, the min length of connection pipe is 9.8ft.
- Max. length of connection pipe and max. high difference. (More details please refer to the specifications.)
- The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
 - After the length of connection pipe is prolonged for 32.8ft at the basis of standard length, you should add 5ml of refrigerant oil for each additional 16.4ft of connection pipe.
 - The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):
 - Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.
 - Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe	Gas pipe	Cooling only(g/m)	Cooling and heating(g/m)
1/4"	3/8" or 1/2"	15	20
1/4" or 3/8"	5/8" or 3/4"	15	50
1/2"	3/4" or 7/8"	30	120
5/8"	1" or 1 1/4"	60	120

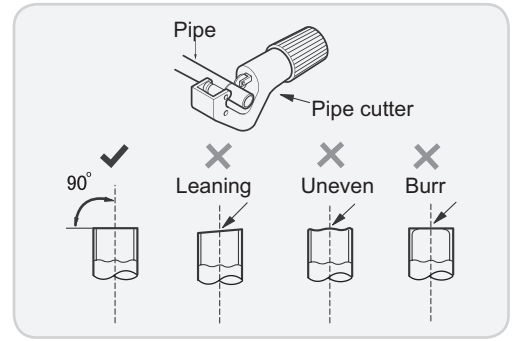
Appendix 3: Pipe Expanding Method

⚠ Note:

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

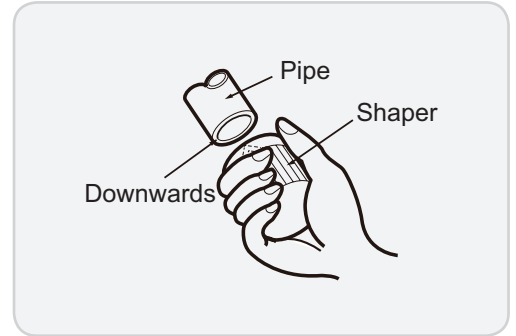
A: Cut the pipe

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



B: Remove the burrs

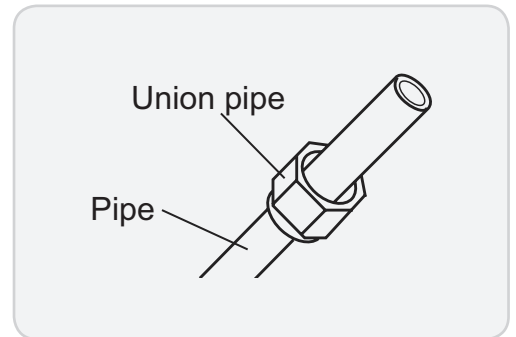
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe.

D: Put on the union nut

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



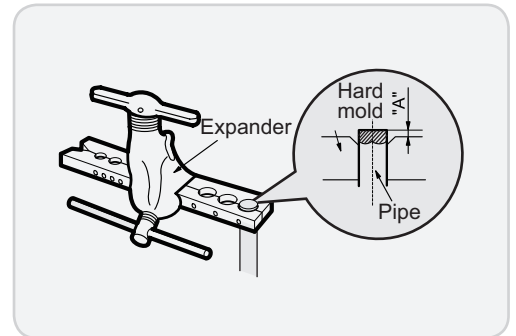
E: Expand the port

- Expand the port with expander.

⚠ Note:

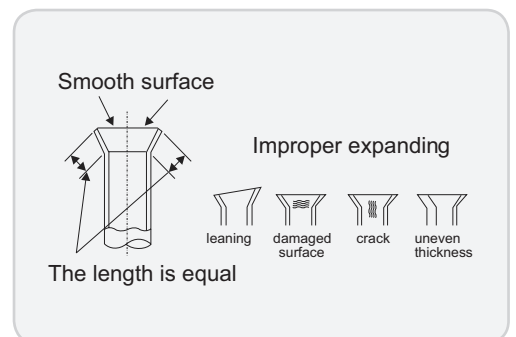
- "A" is different according to the diameter, please refer to the sheet below:

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



F: Inspection

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



Appendix 4: List of Resistance for Temperature Sensor

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

Temp(°C)	Resistance(kΩ)
-19	138.10
-18	128.60
-16	115.00
-14	102.90
-12	92.22
-10	82.75
-8	74.35
-6	66.88
-4	60.23
-2	54.31

Temp(°C)	Resistance(kΩ)
0	49.02
2	44.31
4	40.09
6	36.32
8	32.94
10	29.90
12	27.18
14	24.73
16	22.53
18	20.54

Temp(°C)	Resistance(kΩ)
20	18.75
22	17.14
24	15.68
26	14.36
28	13.16
30	12.07
32	11.09
34	10.20
36	9.38
38	8.64

Temp(°C)	Resistance(kΩ)
40	7.97
42	7.35
44	6.79
46	6.28
48	5.81
50	5.38
52	4.99
54	4.63
56	4.29
58	3.99

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

Temp(°C)	Resistance(kΩ)
-19	181.40
-15	145.00
-10	110.30
-5	84.61
0	65.37
5	50.87
10	39.87
15	31.47

Temp(°C)	Resistance(kΩ)
20	25.01
25	20.00
30	16.10
35	13.04
40	10.62
45	8.71
50	7.17
55	5.94

Temp(°C)	Resistance(kΩ)
60	4.95
65	4.14
70	3.48
75	2.94
80	2.50
85	2.13
90	1.82
95	1.56

Temp(°C)	Resistance(kΩ)
100	1.35
105	1.16
110	1.01
115	0.88
120	0.77
125	0.67
130	0.59
135	0.52

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

Temp(°C)	Resistance(kΩ)
-30	911.400
-25	660.8
-20	486.5
-15	362.9
-10	274
-5	209
0	161
5	125.1

Temp(°C)	Resistance(kΩ)
10	98
15	77.35
20	61.48
25	49.19
30	39.61
35	32.09
40	26.15
45	21.43

Temp(°C)	Resistance(kΩ)
50	17.65
55	14.62
60	12.17
65	10.18
70	8.555
75	7.224
80	6.129
85	5.222

Temp(°C)	Resistance(kΩ)
90	4.469
95	3.841
100	3.315
105	2.872
110	2.498
115	2.182
120	1.912
125	1.682



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