

*Classic*  
AIR CONDITIONERS



# Service Manual



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# 1. Summary

## Indoor Unit:

GWHARC09SA2  
GWHARC09S2  
GWHARC12SA2  
GWHARC12S2  
GWHARC18S2  
GWHARC24S2

GWARC09S2  
GWARC12SA2  
GWARC12S2  
GWARC18S2  
GWARC24S2

GWARC36S3  
GWHARC36S3



## Outdoor Unit:

GRHARC09ASA2  
GRHARC09AS2  
GRHARC12ASA2  
GRHARC12AS2

GRARC09AS2  
GRARC12ASA2  
GRARC12AS2

GRARC18AS2

GRHARC18AS2

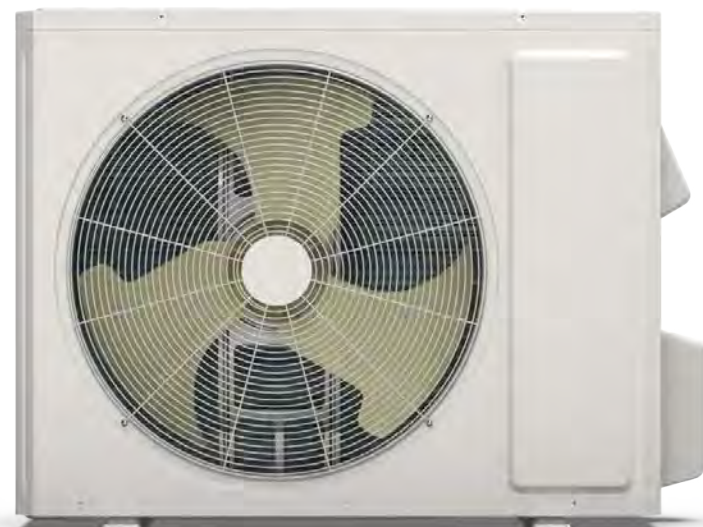
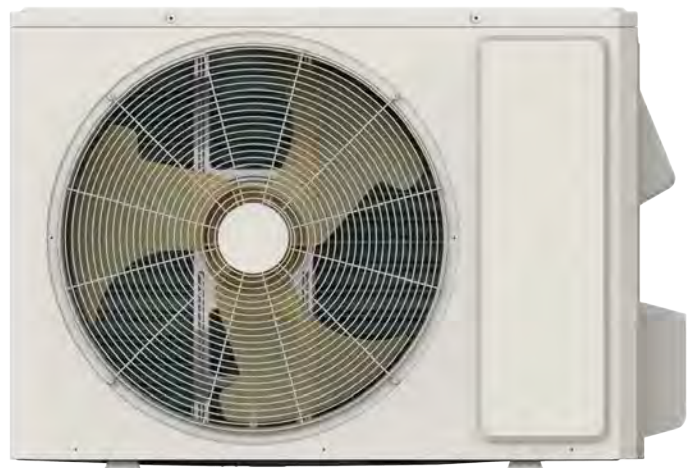


GRARC24AS2

GRHARC24AS2

GRARC36AS3

GRHARC36AS3



# 1. Summary

## Remote Controller:



YAP1F/YAP1FF

## Model list:

No.	Model	Product code	Indoor model	Indoor product code	Outdoor model	Outdoor product code	Remote Controller
1	GWHARC09SA2 GRHARC09ASA2	CB464007300_X29326	GWHARC09SA2	CB464N07300_ X29326	GRHARC09ASA2	CB444W15300_ X29326	YAP1F
2	GWHARC09S2 GRARC09AS2	CB464006900_X29326	GWHARC09S2	CB464N06900_ X29326	GRARC09AS2	CB464W06900_ X29326	
3	GWHARC09S2 GRHARC09AS2	CB464007000_X29326	GWHARC09S2	CB464N07000_ X29326	GRHARC09AS2	CB464W07000_ X29326	
4	GWHARC12SA2 GRARC12ASA2	CB464008600_X29326	GWHARC12SA2	CB464N08600_ X29326	GRARC12ASA2	CB464W08600_ X29326	
5	GWHARC12SA2 GRHARC12ASA2	CB464008700_X29326	GWHARC12SA2	CB464N08700_ X29326	GRHARC12ASA2	CB464W08700_ X29326	
6	GWHARC12S2 GRARC12AS2	CB464008800_X29326	GWHARC12S2	CB464N08800_ X29326	GRARC12AS2	CB464W08800_ X29326	
7	GWHARC12S2 GRHARC12AS2	CB464008500_X29326	GWHARC12S2	CB464N08500_ X29326	GRHARC12AS2	CB464W08500_ X29326	YAP1FF
8	GWHARC18S2 GRARC18AS2	CB464006800_X29326	GWHARC18S2	CB464N06800_ X29326	GRARC18AS2	CB432W29500_ X29326	
9	GWHARC18S2 GRHARC18AS2	CB464006700_X29326	GWHARC18S2	CB464N06700_ X29326	GRHARC18AS2	CB432W29400_ X29326	
10	GWHARC24S2 GRARC24AS2	CB464006500_X29326	GWHARC24S2	CB464N06500_ X29326	GRARC24AS2	CB464W06500_ X29326	
11	GWHARC24S2 GRHARC24AS2	CB464006600_X29326	GWHARC24S2	CB464N06600_ X29326	GRHARC24AS2	CB464W06600_ X29326	
12	GWHARC36S3 GRARC36AS3	CB434026100_X29326	GWHARC36S3	CB434N26100_ X29326	GRARC36AS3	CB432W30900_ X29326	
13	GWHARC36S3 GRHARC36AS3	CB434026200_X29326	GWHARC36S3	CB434N26200_ X29326	GRHARC36AS3	CB432W31000_ X29326	

# 2. Specifications

## 2.1 Specification Sheet

Model			GWHARC09SA2 GRHARC09ASA2
Product Code			CB464007300_X29326
Power Supply	Rated Voltage	V~	115
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	9100
Heating Capacity		Btu/h	10000
Cooling Power Input		W	850
Heating Power Input		W	862
Cooling Power Current		A	9.24
Heating Power Current		A	9.37
Rated Input		W	1310
Rated Cooling Current		A	12.50
Rated Heating Current		A	/
Air Flow Volume		CFM	318/288/265/241/218/194/171
Dehumidifying Volume		Pint/h	1.69
EER		(Btu/h)/W	10.70
COP		(Btu/h)/W	11.60
SEER			18(SEER) 18(SEER2)
HSPF			9.5(HSPF) 8.5(HSPF2)
Application Area		yd <sup>2</sup>	14-22
Indoor Unit	Model of indoor unit		GWHARC09SA2
	Indoor Unit Product Code		CB464N07300_X29326
	Fan Type		Cross-flow
	Fan Diameter Length(D×L)		mm Φ98×580
	Cooling Speed		r/min 1350/1200/1120/1050/950/850/750
	Heating Speed		r/min 1350/1200/1130/1050/990/920/850
	Fan Motor Power Output		W 20
	Fan Motor RLA		A 0.24
	Fan Motor Capacitor		μF 4
	Heater Power Input		W /
	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: 41/38/36/34/32/30/28 Heating: 42/38/36/34/32/30/28
	Sound Power Level		dB (A) Cooling: 51/48/46/44/42/40/38 Heating: 52/48/46/44/42/40/38
	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	

## 2. Specifications

Outdoor Unit	Outdoor Unit Model		GRHARC09ASA2
	Outdoor Unit Product Code		CB444W15300_X29326
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXF-N075zC170A
	Compressor Oil		FW68DA
	Compressor Type		Rotary
	Compressor LRA.	A	-
	Compressor RLA	A	11.20
	Compressor Power Input	W	640
	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	-13~75
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	1-1.2
	Condenser Coil Length (L×D×W)	mm	666×19.05×528
	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		Automatic Defrosting
	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	59.5	
Gross Weight	lb	65.0	
Refrigerant		R410A	
Refrigerant Charge	oz	24.0	
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.

## 2. Specifications

Model			GWARC09S2 GRARC09AS2	GWHARC09S2 GRHARC09AS2
Product Code			CB464006900_X29326	CB464007000_X29326
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	9100	9100
Heating Capacity		Btu/h	/	10500
Cooling Power Input		W	700	728
Heating Power Input		W	/	808
Cooling Power Current		A	3.45	3.45
Heating Power Current		A	/	3.9
Rated Input		W	1350	1450
Rated Cooling Current		A	6.5	6.5
Rated Heating Current		A	/	7
Air Flow Volume		CFM	371/318/253/194	371/318/253/194
Dehumidifying Volume		Pint/h	1.69	1.69
EER		(Btu/h)/W	13.00	12.50
COP		(Btu/h)/W	/	13.00
SEER			20.5(SEER) 20.5(SEER2)	20.5(SEER) 20.5(SEER2)
HSPF			/	10(HSPF) 8.8(HSPF2)
Application Area		yd <sup>2</sup>	14-22	14-22
Indoor Unit	Model of indoor unit		GWARC09S2	GWHARC09S2
	Indoor Unit Product Code		CB464N06900_X29326	CB464N07000_X29326
	Fan Type		Cross-flow	Cross-flow
	Fan Diameter Length(D×L)		mm	Φ98×633.5
	Cooling Speed		r/min	1350/1200/1000/800
	Heating Speed		r/min	/
	Fan Motor Power Output		W	20
	Fan Motor RLA		A	0.32
	Fan Motor Capacitor		μF	1.5
	Heater Power Input		W	/
	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	635×22.8×306.3
	Swing Motor Model			MP24HF
	Swing Motor Power Output		W	1.5
	Fuse Current		A	3.15
	Sound Pressure Level		dB (A)	Cooling: 42/39/34/27
	Sound Power Level		dB (A)	Cooling: 52/49/44/37
	Dimension (W×H×D)		inch	33 17/64×11 3/8×8 15/64
Dimension of Carton Box (L×W×H)		inch	36 9/64×10 15/16×14 21/64	
Dimension of Package (L×W×H)		inch	36 17/64×11 1/16×14 59/64	
Net Weight		lb	22.1	
Gross Weight		lb	26.5	



## 2. Specifications

	GRARC09AS2		GRHARC09AS2	
Outdoor Unit Model		GRARC09AS2		GRHARC09AS2
Outdoor Unit Product Code		CB464W06900_X29326		CB464W07000_X29326
Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD		ZHUHAI LANDA COMPRESSOR CO., LTD
Compressor Model		QXF-A082zC170		QXF-A082zC170
Compressor Oil		ZE-G;ES RB68GX or equivalent		ZE-G;ES RB68GX or equivalent
Compressor Type		Rotary		Rotary
Compressor LRA	A	15.00		15.00
Compressor RLA	A	4.90		4.90
Compressor Power Input	W	756.6		756.6
Compressor Overload Protector		/		/
Throttling Method		Electron expansion valve		Electron expansion valve
Set Temperature Range	°F	61~86		61~86
Cooling Operation Ambient Temperature Range	°F	-4~122		-4~122
Heating Operation Ambient Temperature Range	°F	/		-13~75
Condenser Form		Aluminum Fin-copper Tube		Aluminum Fin-copper Tube
Condenser Pipe Diameter	mm	Φ7		Φ7
Condenser Rows-fin Gap	mm	2-1.4		2-1.4
Condenser Coil Length (L×D×W)	mm	700×38.1×528		700×38.1×528
Fan Motor Speed	rpm	850		850
Fan Motor Power Output	W	30		30
Fan Motor RLA	A	0.57		0.57
Fan Motor Capacitor	μF	/		/
Outdoor Unit Air Flow Volume	CFM	1148		1148
Fan Type		Axial-flow		Axial-flow
Fan Diameter	mm	Φ400		Φ400
Defrosting Method		/		Automatic Defrosting
Climate Type		T1		T1
Isolation		I		I
Moisture Protection		IPX4		IPX4
Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3		4.3
Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5		2.5
Sound Pressure Level	dB (A)	49		51
Sound Power Level	dB (A)	59		61
Dimension (W×H×D)	inch	28 13/16×21 27/32×12 63/64		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		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		31 17/64×14 51/64×24 7/32
Net Weight	lb	59.5		60.6
Gross Weight	lb	65.0		66.2
Refrigerant		R410A		R410A
Refrigerant Charge	oz	30.0		30.0
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft	0.16	0.2
	Outer Diameter Liquid Pipe	inch	1/4	1/4
	Outer Diameter Gas Pipe	inch	3/8	3/8
	Max Distance Height	ft	39.4	39.4
	Max Distance Length	ft	65.6	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.

# 2. Specifications

Model			GWARC12SA2 GRARC12ASA2	GWARC12S2 GRARC12AS2
Product Code			CB464008600_X29326	CB464008800_X29326
Power Supply	Rated Voltage	V~	115	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	12000	12000
Heating Capacity		Btu/h	/	/
Cooling Power Input		W	1062	1062
Heating Power Input		W	/	/
Cooling Power Current		A	11.5	5.0
Heating Power Current		A	/	/
Rated Input		W	1450	1450
Rated Cooling Current		A	15.8	6.8
Rated Heating Current		A	/	/
Air Flow Volume		CFM	400/365/330/288/265/247/230	400/365/288/247
Dehumidifying Volume		Pint/h	2.96	2.96
EER		(Btu/h)/W	11.30	11.30
COP		(Btu/h)/W	/	/
SEER			20(SEER) 20(SEER2)	20(SEER) 20(SEER2)
HSPF			/	/
Application Area		yd <sup>2</sup>	19-29	19-29
Indoor Unit	Model of indoor unit		GWARC12SA2	GWARC12S2
	Indoor Unit Product Code		CB464N08600_X29326	CB464N08800_X29326
	Fan Type		Cross-flow	Cross-flow
	Fan Diameter Length(D×L)		mm	Φ98×633.5
	Cooling Speed		r/min	1400/1200/1120/1050/950/850/750/500
	Heating Speed		r/min	/
	Fan Motor Power Output		W	20
	Fan Motor RLA		A	0.30
	Fan Motor Capacitor		μF	/
	Heater Power Input		W	/
	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	635×22.8×306.3
	Swing Motor Model			MP24HF
	Swing Motor Power Output		W	1.5
	Fuse Current		A	3.15
	Sound Pressure Level		dB (A)	Cooling: 44/39/37/35/32/30/27
	Sound Power Level		dB (A)	Cooling: 54/49/47/45/42/40/37
	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	

## 2. Specifications

	Outdoor Unit Model		GRARC12ASA2	GRARC12AS2
	Outdoor Unit Product Code		CB464W08600_X29326	CB464W08800_X29326
Outdoor Unit	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		FTz-AN108ACBD	FTz-AN108ACBD
	Compressor Oil		FW68DA or equivalent	FW68DA or equivalent
	Compressor Type		Rotary	Rotary
	Compressor LRA		A	/
	Compressor RLA		A	14.50
	Compressor Power Input		W	857
	Compressor Overload Protector			/
	Throttling Method			Electron expansion valve
	Set Temperature Range		°F	61~86
	Cooling Operation Ambient Temperature Range		°F	-4~122
	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	700×38.1×528
	Fan Motor Speed		rpm	900
	Fan Motor Power Output		W	30
	Fan Motor RLA		A	0.90
	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)	52
	Sound Power Level		dB (A)	62
	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	63.9	
Gross Weight		lb	69.5	
Refrigerant			R410A	
Refrigerant Charge		oz	34.6	
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.



## 2. Specifications

	GRHARC12ASA2		GRHARC12AS2	
Outdoor Unit Model		GRHARC12ASA2		GRHARC12AS2
Outdoor Unit Product Code		CB464W08700_X29326		CB464W08500_X29326
Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD		ZHUHAI LANDA COMPRESSOR CO.,LTD
Compressor Model		FTz-AN108ACBD		FTz-AN108ACBD
Compressor Oil		FW68DA or equivalent		FW68DA or equivalent
Compressor Type		Rotary		Rotary
Compressor LRA	A	/		/
Compressor RLA	A	15.40		6.30
Compressor Power Input	W	857		857
Compressor Overload Protector		/		/
Throttling Method		Electron expansion valve		Electron expansion valve
Set Temperature Range	°F	61~86		61~86
Cooling Operation Ambient Temperature Range	°F	-4~122		-4~122
Heating Operation Ambient Temperature Range	°F	-13~75		-13~75
Condenser Form		Aluminum Fin-copper Tube		Aluminum Fin-copper Tube
Condenser Pipe Diameter	mm	Φ7		Φ7
Condenser Rows-fin Gap	mm	2-1.4		2-1.4
Condenser Coil Length (L×D×W)	mm	700×38.1×528		700×38.1×528
Fan Motor Speed	rpm	900		900
Fan Motor Power Output	W	30		30
Fan Motor RLA	A	0.90		0.60
Fan Motor Capacitor	μF	/		/
Outdoor Unit Air Flow Volume	CFM	1148		1148
Fan Type		Axial-flow		Axial-flow
Fan Diameter	mm	Φ400		Φ400
Defrosting Method		Automatic Defrosting		Automatic Defrosting
Climate Type		T1		T1
Isolation		I		I
Moisture Protection		IPX4		IPX4
Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3		4.3
Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5		2.5
Sound Pressure Level	dB (A)	52		52
Sound Power Level	dB (A)	62		62
Dimension (W×H×D)	inch	28 13/16×21 27/32×12 63/64		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		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		31 17/64×14 51/64×24 7/32
Net Weight	lb	65.1		61.7
Gross Weight	lb	70.6		67.3
Refrigerant		R410A		R410A
Refrigerant Charge	oz	34.6		34.6
Connection Pipe Length	ft	24.6		24.6
Connection Pipe Gas Additional Charge	oz/ft	0.2		0.2
Outer Diameter Liquid Pipe	inch	1/4		1/4
Outer Diameter Gas Pipe	inch	3/8		3/8
Max Distance Height	ft	32.8		32.8
Max Distance Length	ft	65.6		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.

## 2. Specifications

Model			GWHARC18S2 GRHARC18AS2	GWARC18S2 GRARC18AS2
Product Code			CB464006700_X29326	CB464006800_X29326
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	18000	18000
Heating Capacity		Btu/h	18000	/
Cooling Power Input		W	1650	1650
Heating Power Input		W	1550	/
Cooling Power Current		A	7.32	7.32
Heating Power Current		A	7.32	/
Rated Input		W	2400	2150
Rated Cooling Current		A	10.50	10.50
Rated Heating Current		A	10.50	/
Air Flow Volume		CFM	530/512/447/371	530/512/447/371
Dehumidifying Volume		Pint/h	3.8	3.80
EER		(Btu/h)/W	10.90	10.90
COP		(Btu/h)/W	11.61	/
SEER			19.5(SEER) 20(SEER2)	19.5(SEER) 19.5(SEER2)
HSPF			9.5(HSPF) 8.5(HSPF2)	/
Application Area		yd <sup>2</sup>	28-41	28-41
Indoor Unit	Model of indoor unit		GWHARC18S2	GWARC18S2
	Indoor Unit Product Code		CB464N06700_X29326	CB464N06800_X29326
	Fan Type		Cross-flow	Cross-flow
	Fan Diameter Length(D×L)		mm	Φ106×706
	Cooling Speed		r/min	1400/1300/1100/900
	Heating Speed		r/min	1400/1270/1130/980/
	Fan Motor Power Output		W	45
	Fan Motor RLA		A	0.25
	Fan Motor Capacitor		μF	/
	Heater Power Input		W	/
	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	1.5
	Fuse Current		A	3.15
	Sound Pressure Level		dB (A)	Cooling: 48/45/40/34 Heating: 50/46/42/38
	Sound Power Level		dB (A)	Cooling: 58/55/50/44 Heating: 60/56/52/48
	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	28.7	
Gross Weight		lb	34.2	

## 2. Specifications

		GRHARC18AS2	GRARC18AS2
Outdoor Unit Model		GRHARC18AS2	GRARC18AS2
Outdoor Unit Product Code		CB432W29400_X29326	CB432W29500_X29326
Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.	ZHUHAI LANDA COMPRESSOR CO. LTD.
Compressor Model		QXF-M130zF170	QXF-M130zF170
Compressor Oil		FW68DA or equivalent	FW68DA or equivalent
Compressor Type		Rotary	Rotary
Compressor LRA	A	/	/
Compressor RLA	A	5.6	5.6
Compressor Power Input	W	1157	1157
Compressor Overload Protector		/	/
Throttling Method		Electron expansion valve	Electron expansion valve
Set Temperature Range	°F	61~86	61~86
Cooling Operation Ambient Temperature Range	°F	-4~122	-4~122
Heating Operation Ambient Temperature Range	°F	-13~75	/
Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Condenser Pipe Diameter	mm	Φ7.94	Φ7.94
Condenser Rows-fin Gap	mm	2-1.4	2-1.4
Condenser Coil Length (L×D×W)	mm	865×38.1×528	865×38.1×528
Fan Motor Speed	rpm	1000	1000
Fan Motor Power Output	W	40	40
Fan Motor RLA	A	0.5	0.5
Fan Motor Capacitor	μF	/	/
Outdoor Unit Air Flow Volume	CFM	1766	1766
Fan Type		Axial-flow	Axial-flow
Fan Diameter	mm	Φ445	Φ445
Defrosting Method		Automatic Defrosting	/
Climate Type		T1	T1
Isolation		I	I
Moisture Protection		IPX4	IPX4
Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
Sound Pressure Level	dB (A)	59	59
Sound Power Level	dB (A)	69	69
Dimension (W×H×D)	inch	34 24/64×21 54/64×14 51/64	34 24/64×21 54/64×14 51/64
Dimension of Carton Box (L×W×H)	inch	37 21/64×16 54/64×23 17/64	37 21/64×16 54/64×23 17/64
Dimension of Package (L×W×H)	inch	37 28/64×16 62/64×24 26/64	37 28/64×16 62/64×24 26/64
Net Weight	lb	82.7	79.4
Gross Weight	lb	89.3	86.0
Refrigerant		R410A	R410A
Refrigerant Charge	oz	45.9	45.9
Connection Pipe Length	ft	24.6	24.6
Connection Pipe Gas Additional Charge	oz/ft	0.2	0.2
Outer Diameter Liquid Pipe	inch	1/4	1/4
Outer Diameter Gas Pipe	inch	1/2	1/2
Max Distance Height	ft	32.8	32.8
Max Distance Length	ft	82.0	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. Specifications

Model			GWARC24S2 GRARC24AS2	GWHARC24S2 GRHARC24AS2
Product Code			CB464006500_X29326	CB464006600_X29326
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	22000	22000
Heating Capacity		Btu/h	/	24000
Cooling Power Input		W	1800	1800
Heating Power Input		W	/	1927
Cooling Power Current		A	9.00	9.0
Heating Power Current		A	/	8.5
Rated Input		W	2600	2650
Rated Cooling Current		A	12.00	12.0
Rated Heating Current		A	/	12.0
Air Flow Volume		CFM	794/647/559/500	794/647/559/500
Dehumidifying Volume		Pint/h	5.07	5.07
EER		(Btu/h)/W	12.21	12.22
COP		(Btu/h)/W	/	12.45
SEER			21(SEER) 22(SEER2)	21(SEER) 22(SEER2)
HSPF			/	10.0(HSPF) 9.0(HSPF2)
Application Area		yd <sup>2</sup>	32-50	28-41
Indoor Unit	Model of indoor unit		GWARC24S2	GWHARC24S2
	Indoor Unit Product Code		CB464N06500_X29326	CB464N06600_X29326
	Fan Type		Cross-flow	Cross-flow
	Fan Diameter Length(D×L)		mm	Φ108×830
	Cooling Speed		r/min	1500/1150/1000/850
	Heating Speed		r/min	/
	Fan Motor Power Output		W	60
	Fan Motor RLA		A	0.30
	Fan Motor Capacitor		μF	/
	Heater Power Input		W	/
	Evaporator Form			Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm	Φ7
	Evaporator Row-fin Gap		mm	2-1.3
	Evaporator Coil Length (L×D×W)		mm	850×25.4×381
	Swing Motor Model			MP35CP
	Swing Motor Power Output		W	2.5
	Fuse Current		A	3.15
	Sound Pressure Level		dB (A)	Cooling: 52/45/40/37
	Sound Power Level		dB (A)	Cooling: 62/55/50/47
	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	35.3	
Gross Weight		lb	41.9	



## 2. Specifications

	Outdoor Unit Model		GRARC24AS2	GRHARC24AS2
	Outdoor Unit Product Code		CB464W06500_X29326	CB464W06600_X29326
Outdoor Unit	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.	ZHUHAI LANDA COMPRESSOR CO. LTD.
	Compressor Model		QXFS-M180zX170	QXFS-M180zX170
	Compressor Oil		/	/
	Compressor Type		Rotary	Rotary
	Compressor LRA		A	24
	Compressor RLA		A	12.2
	Compressor Power Input		W	1350
	Compressor Overload Protector			HPC115/95U1 KSD115°C
	Throttling Method			Electron expansion valve
	Set Temperature Range		°F	61~86
	Cooling Operation Ambient Temperature Range		°F	-4~122
	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	839×38.1×616
	Fan Motor Speed		rpm	800
	Fan Motor Power Output		W	60
	Fan Motor RLA		A	0.55
	Fan Motor Capacitor		μF	/
	Outdoor Unit Air Flow Volume		CFM	2070
	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)	59
	Sound Power Level		dB (A)	69
	Dimension (W×H×D)		inch	37 3/4×25 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	94.8	
Gross Weight		lb	104.7	
Refrigerant			R410A	
Refrigerant Charge		oz	56.4	
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	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. Specifications

Model			GWARC36S3 GRARC36AS3	GWHARC36S3 GRHARC36AS3
Product Code			CB434026100_X29326	CB434026200_X29326
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	33600	33600
Heating Capacity		Btu/h	/	34600
Cooling Power Input		W	3200	3200
Heating Power Input		W	/	3200
Cooling Power Current		A	14	14
Heating Power Current		A	/	14
Rated Input		W	4000	4000
Rated Cooling Current		A	20	20
Rated Heating Current		A	/	18
Air Flow Volume		CFM	912/736/706/647/588/530/471	912/736/706/647/588/530/471
Dehumidifying Volume		Pint/h	7.40	7.40
EER		(Btu/h)/W	10.50	10.50
COP		(Btu/h)/W	/	10.81
SEER			20(SEER) 20(SEER2)	20(SEER) 20(SEER2)
HSPF			/	9(HSPF) 8.5(HSPF2)
Application Area		yd <sup>2</sup>	55-86.11	55-86.11
Indoor Unit	Model of indoor unit		GWARC36S3	GWHARC36S3
	Indoor Unit Product Code		CB434N26100_X29326	CB434N26200_X29326
	Fan Type		Cross-flow	Cross-flow
	Fan Diameter Length(DXL)		mm	Φ108×522.7×2
	Cooling Speed		r/min	1550/1300/1200/1100/1000/950/850
	Heating Speed		r/min	/
	Fan Motor Power Output		W	70
	Fan Motor RLA		A	0.75
	Fan Motor Capacitor		μF	/
	Heater Power Input		W	/
	Evaporator Form			Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm	Φ7
	Evaporator Row-fin Gap		mm	2-1.4
	Evaporator Coil Length (LXD <sub>X</sub> W <sub>H</sub> )		mm	1074×25.4×381
	Swing Motor Model			MP24BA
	Swing Motor Power Output		W	1.5
	Fuse Current		A	5
	Sound Pressure Level		dB (A)	56/50/47/45/42/40/37
	Sound Power Level		dB (A)	66/60/57/55/52/50/47
	Dimension (WXHXD)		inch	53 9/64X12 53/64X9 61/64
	Dimension of Carton Box (LXWXH)		inch	56 39/64X16 29/64X13 55/64
Dimension of Package (LXWXH)		inch	56 47/64X16 37/64X14 7/16	
Net Weight		lb	44.1	
Gross Weight		lb	54.0	

## 2. Specifications

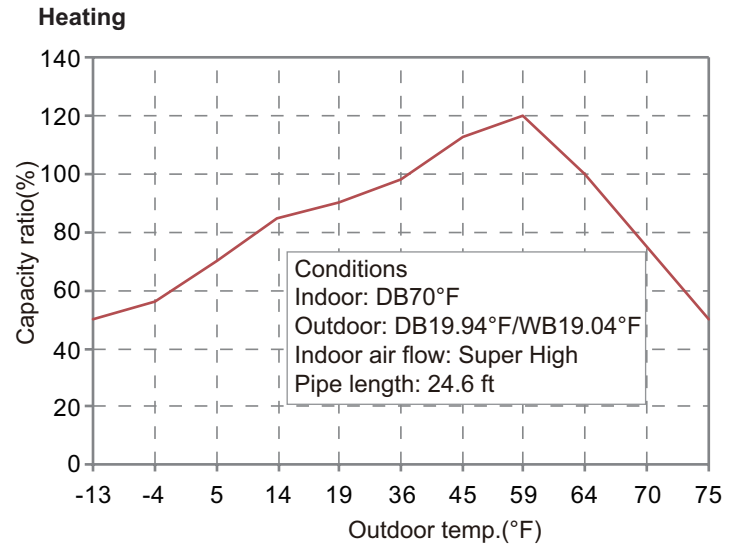
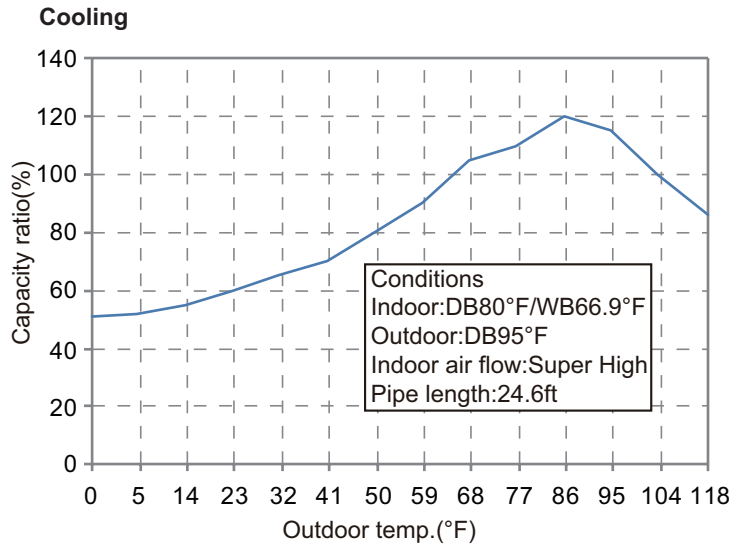
Outdoor Unit	Outdoor Unit Model		GRARC36AS3	GRHARC36AS3
	Outdoor Unit Product Code		CB432W30900_X29326	CB432W31000_X29326
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		QXFS-D280zX070	QXFS-D280zX070
	Compressor Oil		FW68DA or equivalent	FW68DA or equivalent
	Compressor Type		Rotary	Rotary
	Compressor LRA.	A	40.00	40.00
	Compressor RLA	A	16.00	16.00
	Compressor Power Input	W	2294	2294
	Compressor Overload Protector		/	/
	Throttling Method		Electron expansion valve	Electron expansion valve
	Set Temperature Range	°F	61~86	61~86
	Cooling Operation Ambient Temperature Range	°F	-4~122	-4~122
	Heating Operation Ambient Temperature Range	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7.94	Φ7.94
	Condenser Rows-fin Gap	mm	2-1.4	2-1.4
	Condenser Coil Length (LXDXW)	mm	955X38.1X704	955X38.1X704
	Fan Motor Speed	rpm	850	850
	Fan Motor Power Output	W	90	90
	Fan Motor RLA	A	1.50	1.50
	Fan Motor Capacitor	μF	/	/
	Outdoor Unit Air Flow Volume	CFM	2648	2648
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ570	Φ570
	Defrosting Method		/	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IPX4	IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level (H/M/L)	dB (A)	62/-/-	62/-/-
	Sound Power Level (H/M/L)	dB (A)	72/-/-	72/-/-
Dimension(WXHXD)	inch	39 3/8 × 29 3/8 × 16 13/16	39 3/8 × 29 3/8 × 16 13/16	
Dimension of Carton Box (LXWXH)	inch	42 13/32 × 18 57/64 × 30 29/32	42 26/64 X 18 57/64 X 30 58/64	
Dimension of Package(LXWXH)	inch	42 33/64 × 19 1/64 × 31 57/64	42 33/64 × 19 1/64 × 31 57/64	
Net Weight	lb	125.7	127.9	
Gross Weight	lb	136.7	138.9	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	84.7	84.7	
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft	0.2	0.5
	Outer Diameter Liquid Pipe	inch	1/4	1/4
	Outer Diameter Gas Pipe	inch	5/8	5/8
	Max Distance Height	ft	32.8	32.8
	Max Distance Length	ft	82.0	82.0
Note: The connection pipe applies metric diameter.				

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

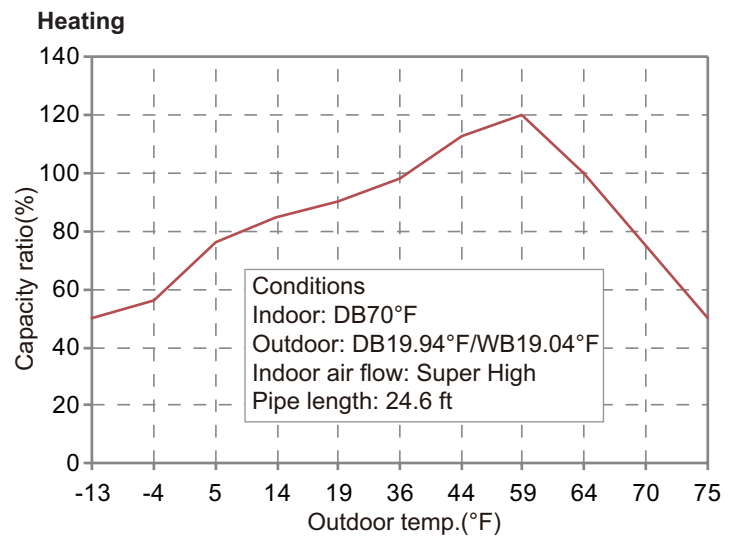
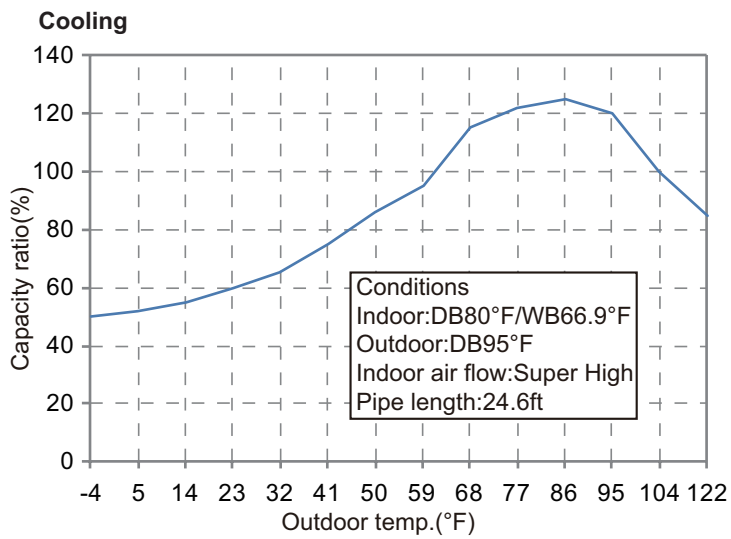
# 2. Specifications

## 2.2 Capacity Variation Ratio According to Temperature

GWHARC09SA2 GRHARC09ASA2

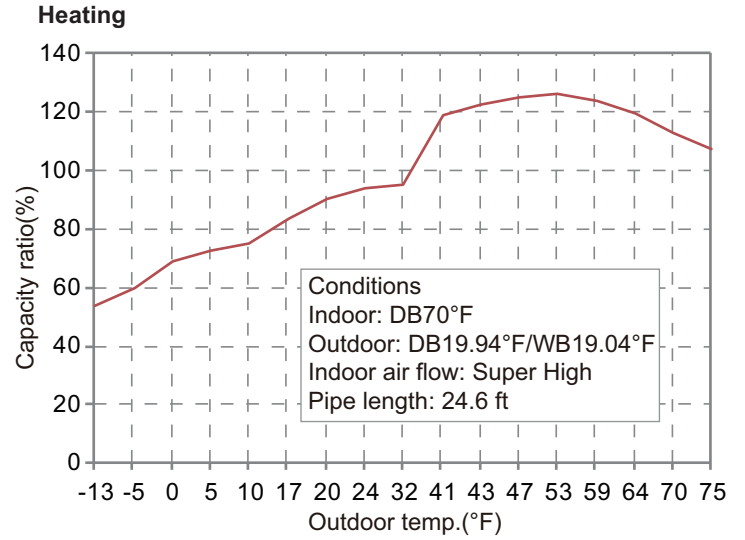
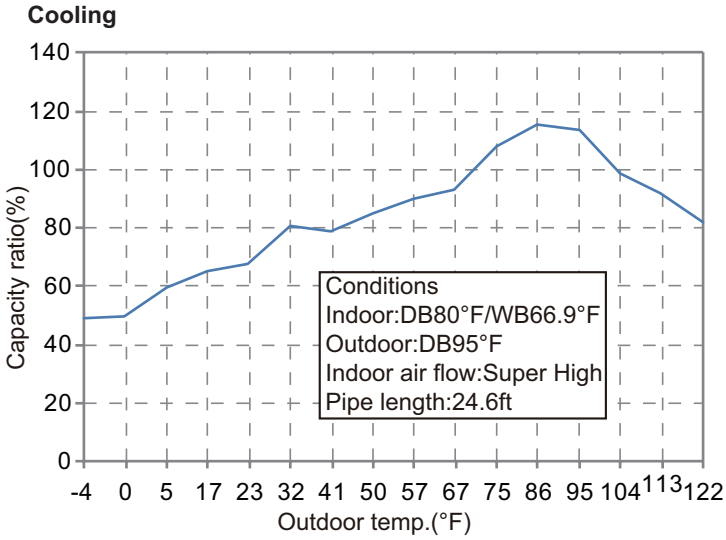


GWARC09S2 GRARC09AS2  
 GWHARC09S2 GRHARC09AS2

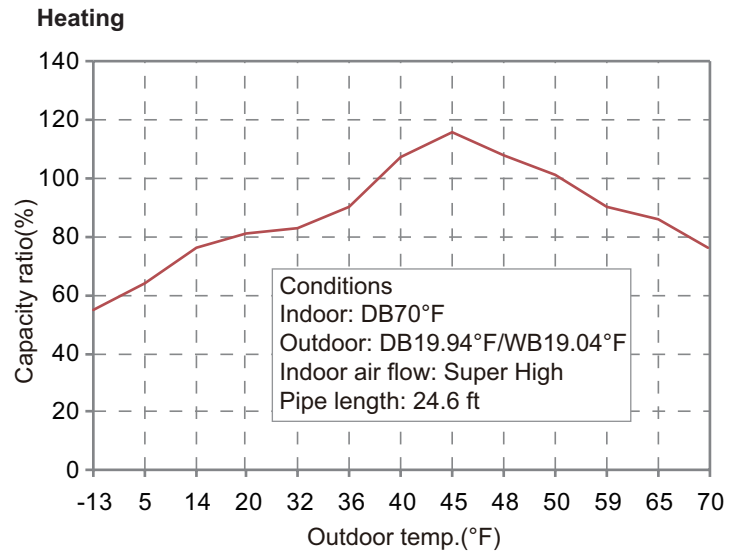
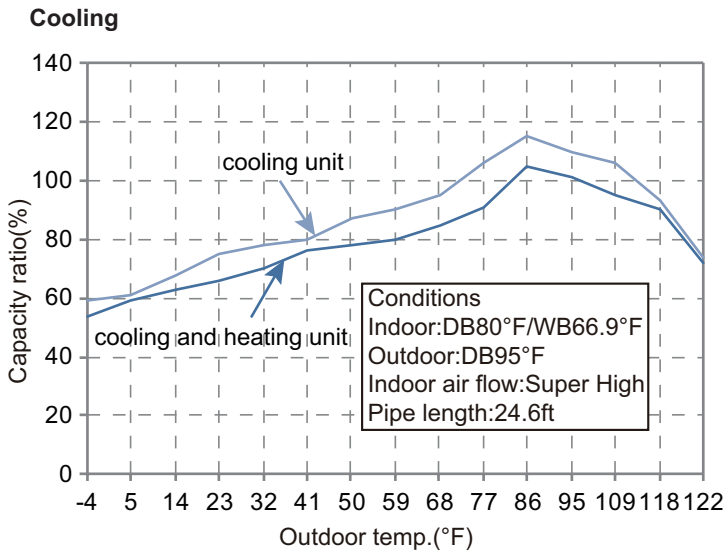


# 2. Specifications

GWARC12SA2 GRARC12ASA2  
 GWHARC12SA2 GRHARC12ASA2  
 GWARC12S2 GRARC12AS2  
 GWHARC12S2 GRHARC12AS2

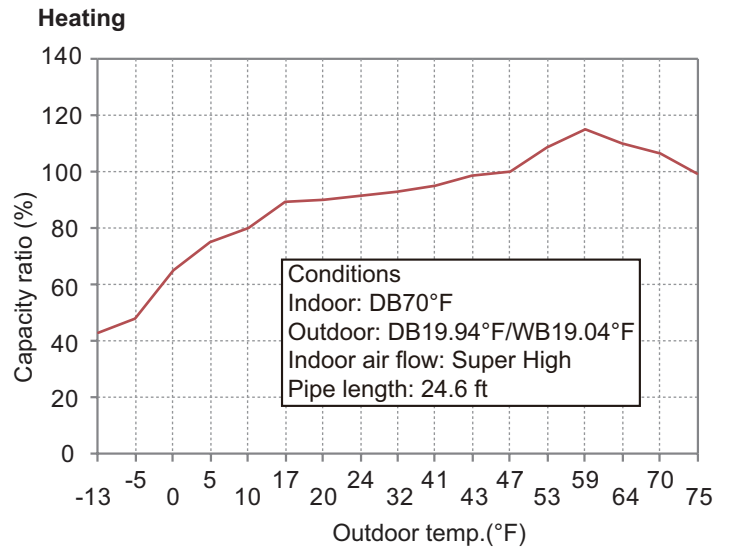
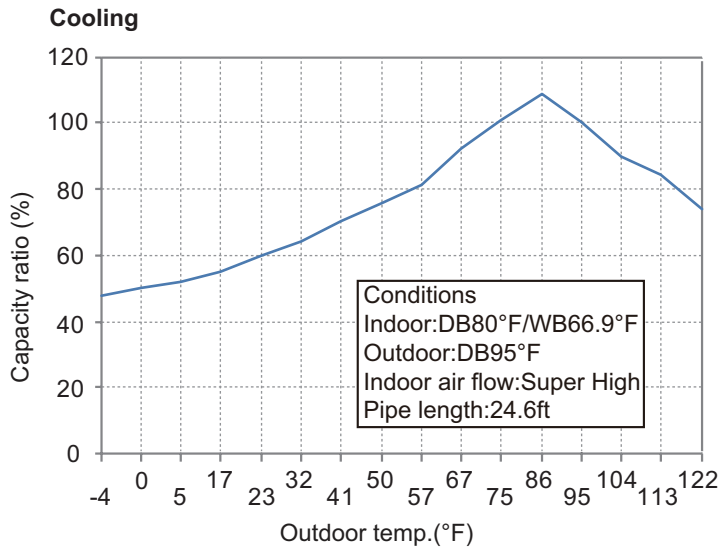


GWARC18S2 GRARC18AS2  
 GWHARC18S2 GRHARC18AS2

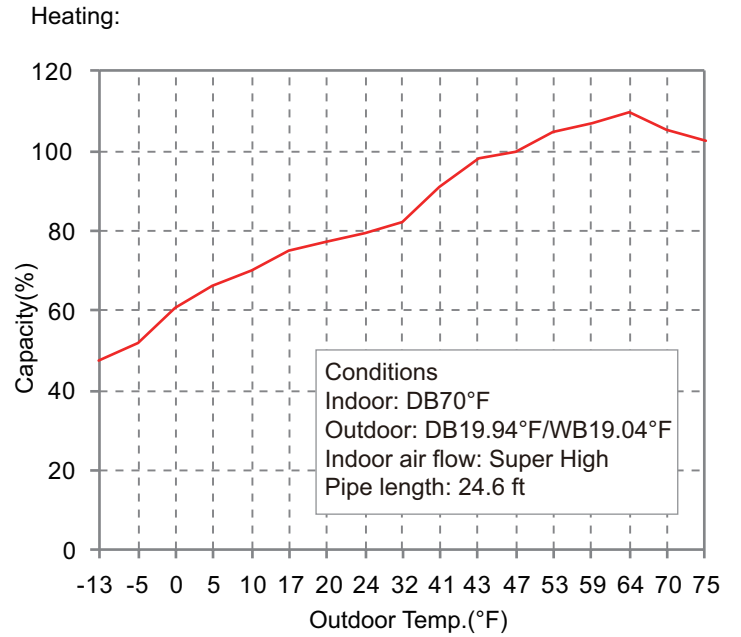
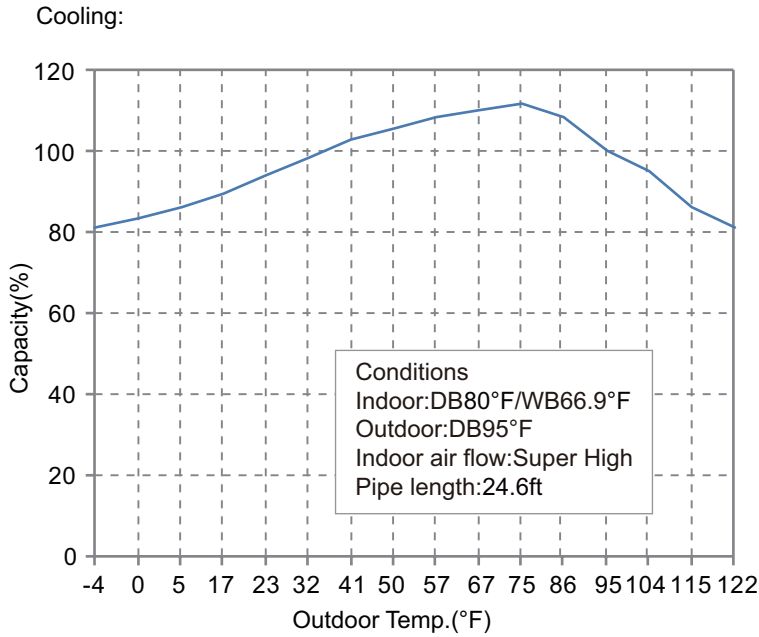


# 2. Specifications

GWARC24S2 GRARC24AS2  
 GWHARC24S2 GRHARC24AS



GWARC36S3 GRARC36AS3  
 GWHARC36S3 GRHARC36AS3



# 2. Specifications

## 2.3 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor			PSIG	T1 (°F)		
80/66.9	95/-	09K	130~142	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High
80/66.9	95/-	12K	130~142	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High
80/66.9	95/-	18K	130~142	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High
80/66.9	95/-	24K	130~142	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High
80/66.9	95/-	36K	130~145	46.8 to 52.8	127 to 96.8	Super High	High

Heating:

Rated heating condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor			PSIG	T1 (°F)		
70/60	19.94/19.04	09K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High
70/60	19.94/19.04	12K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High
70/60	19.94/19.04	18K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High
70/60	19.94/19.04	24K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High
70/-	19.94/19.04	36K	507~550	134.4 to 102	36 to 39	Super High	High

**Instruction:**

T1: Inlet and outlet pipe temperature of evaporator

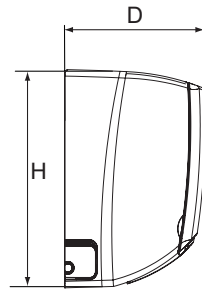
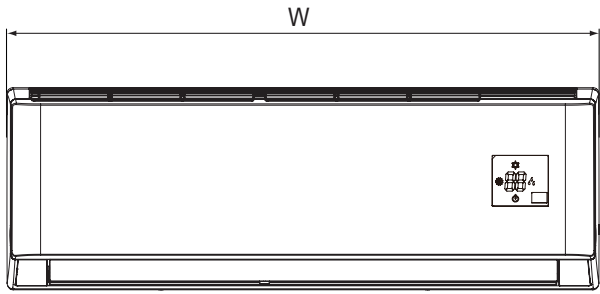
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

Connection pipe length: 24.6 ft.

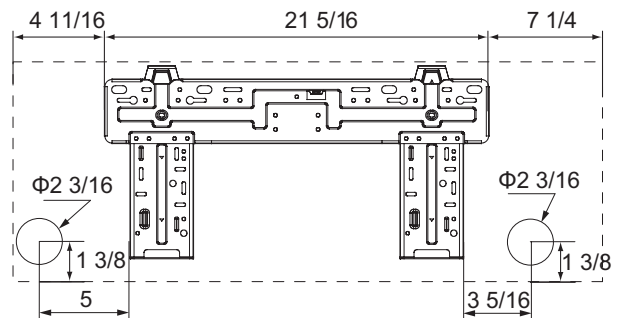
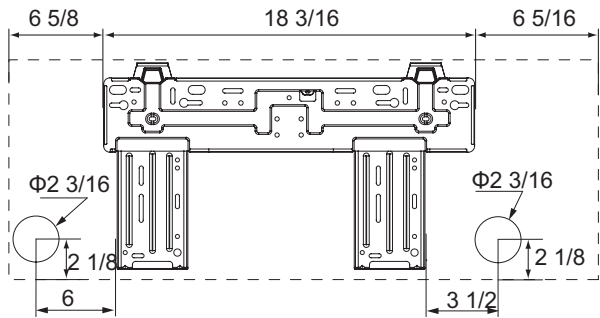
# 3. Outline Dimension Diagram

## 3.1 Indoor Unit



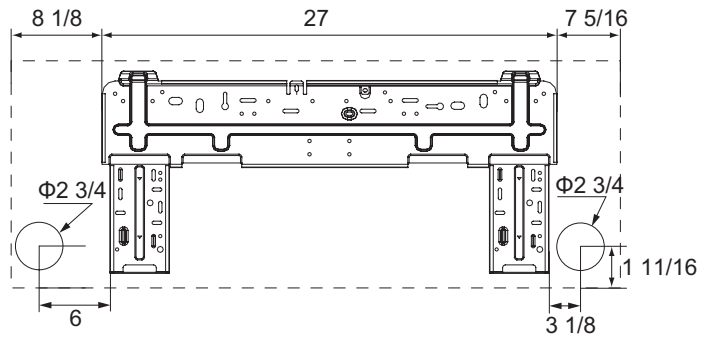
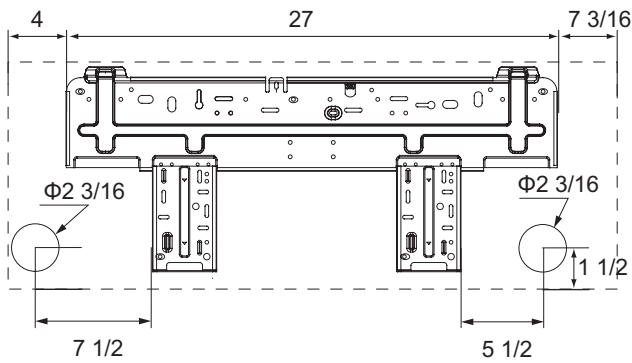
GWHARC09SA2

GWARC09S2 GWHARC09S2 GWARC12SA2  
GWHARC12SA2 GWARC12S2 GWHARC12S2



GWARC18S2 GWHARC18S2

GWARC24S2 GWHARC24S2



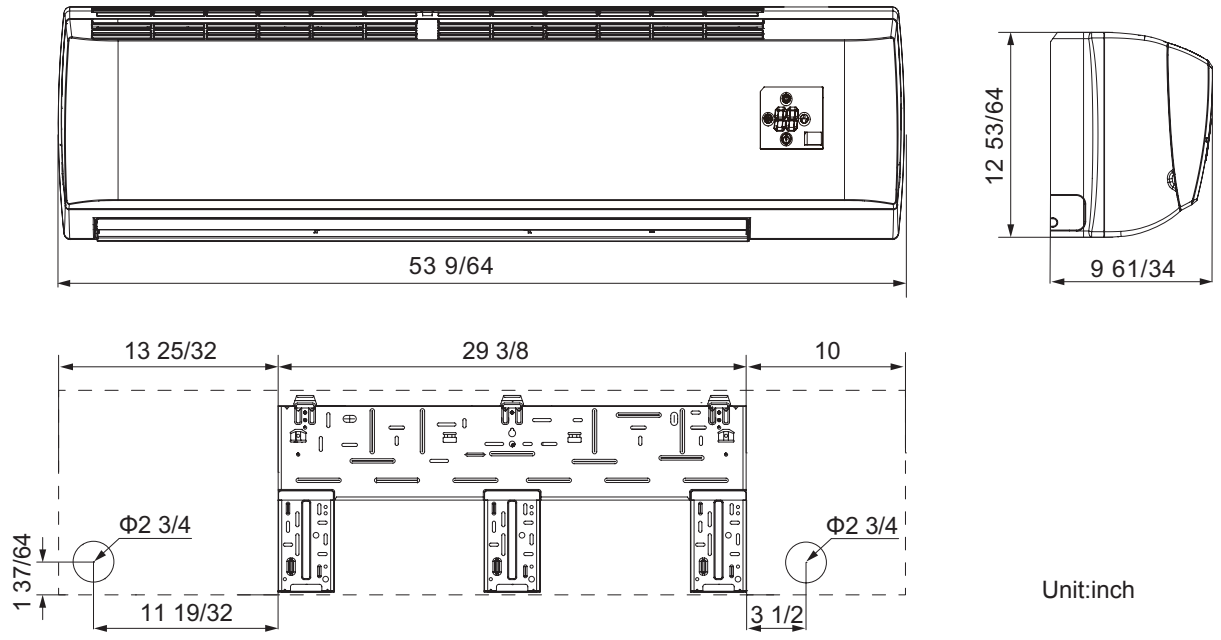
Unit:inch

Model	W	H	D
GWHARC09SA2	31 7/64	10 53/64	7 7/8
GWARC09S2	33 17/64	11 3/8	8 15/64
GWHARC09S2			
GWARC12SA2			
GWHARC12SA2			
GWARC12S2	42 7/16	12 51/64	9 11/16
GWHARC12S2			
GWARC18S2	38 3/16	11 13/16	8 55/64
GWHARC18S2	42 7/16	12 51/64	9 11/16
GWARC24S2			
GWHARC24S2			



# 3. Outline Dimension Diagram

GWARC36S3    GWHARC36S3



# 3. Outline Dimension Diagram

## 3.2 Outdoor Unit

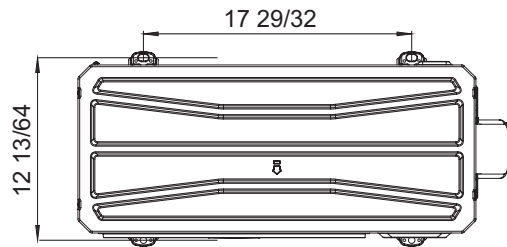
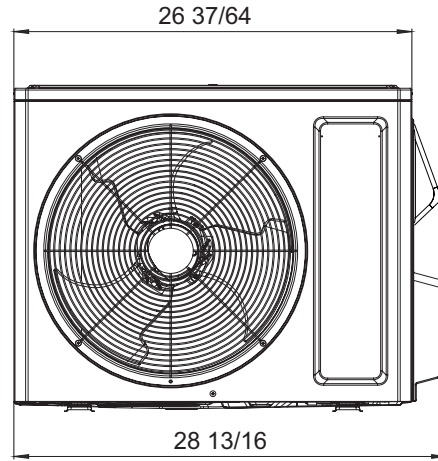
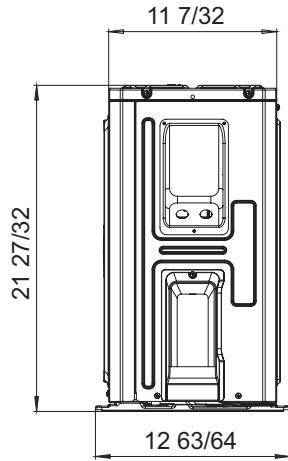
GRHARC09ASA2  
GRARC12AS2

GRARC09AS2  
GRHARC12AS2

GRHARC09AS2

GRARC12ASA2

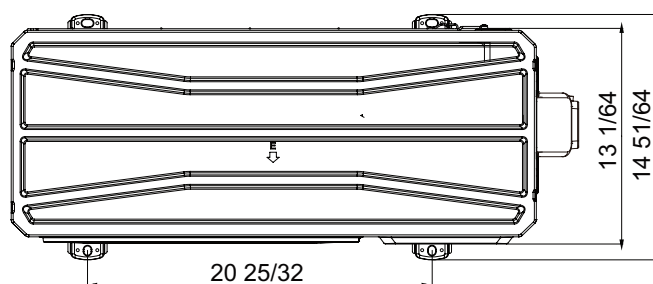
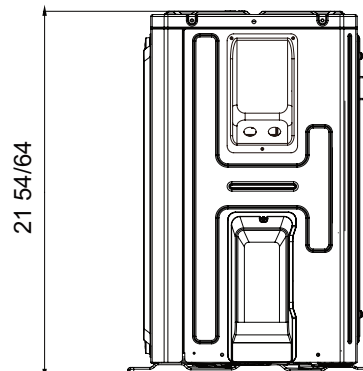
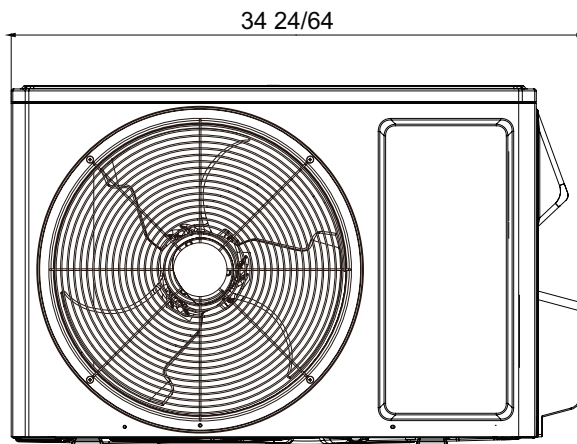
GRHARC12ASA2



Unit:inch

GRARC18AS2

GRHARC18AS2

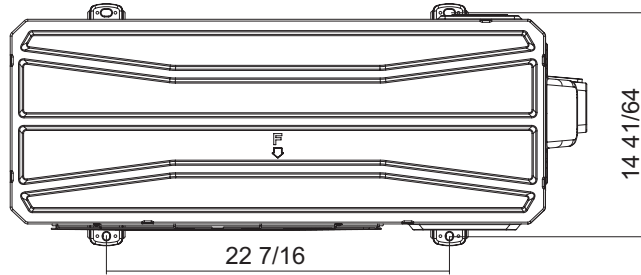
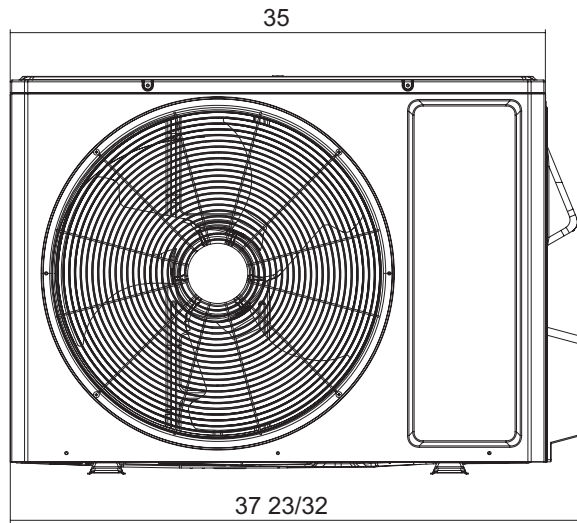
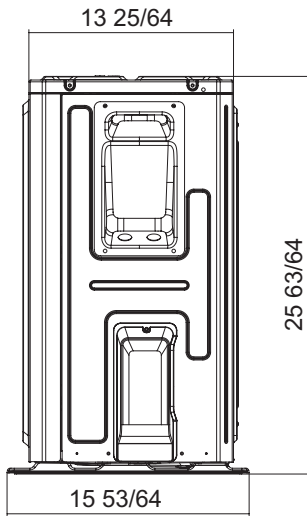


Unit:inch

# 3. Outline Dimension Diagram

GRARC24AS2

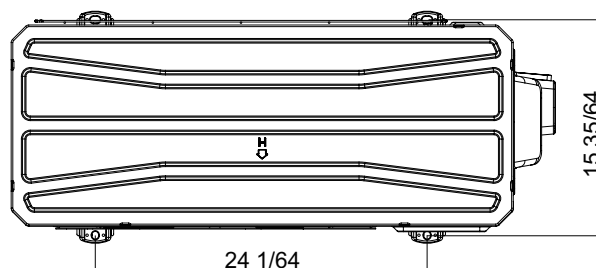
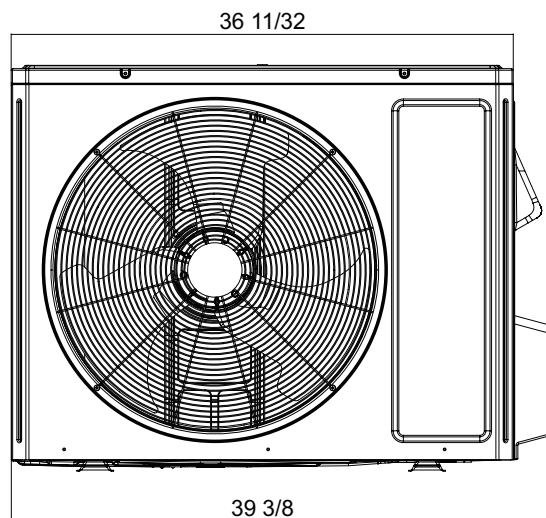
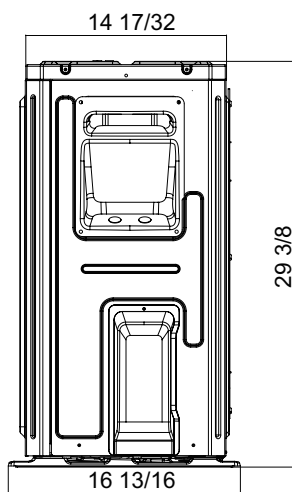
GRHARC24AS2



Unit: inch

GRARC36AS3

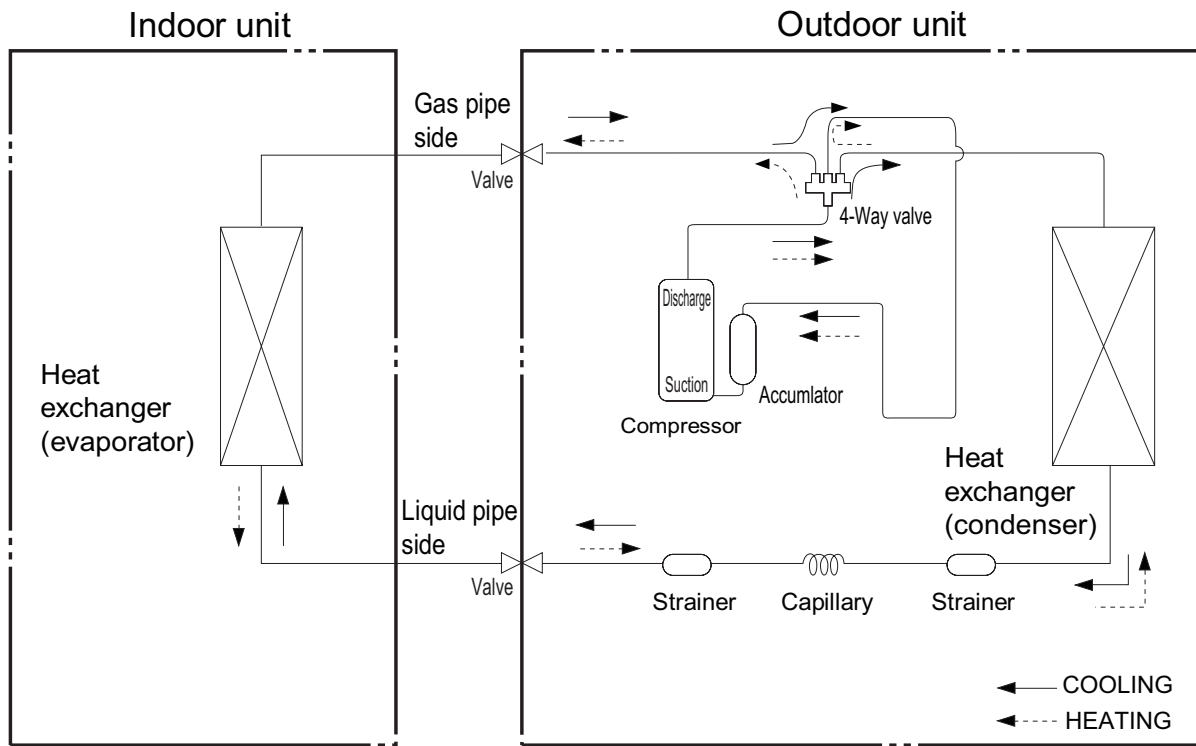
GRHARC36AS3



Unit: inch

# 4. Refrigerant System Diagram

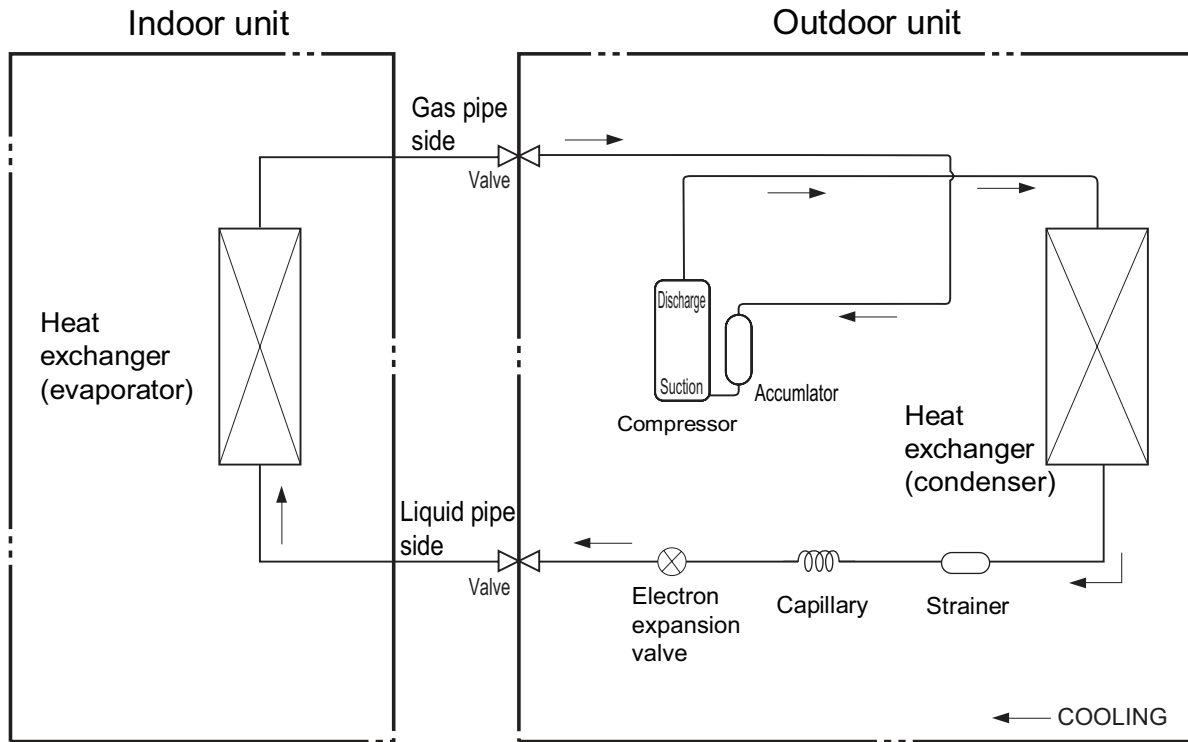
GWHARC09SA2



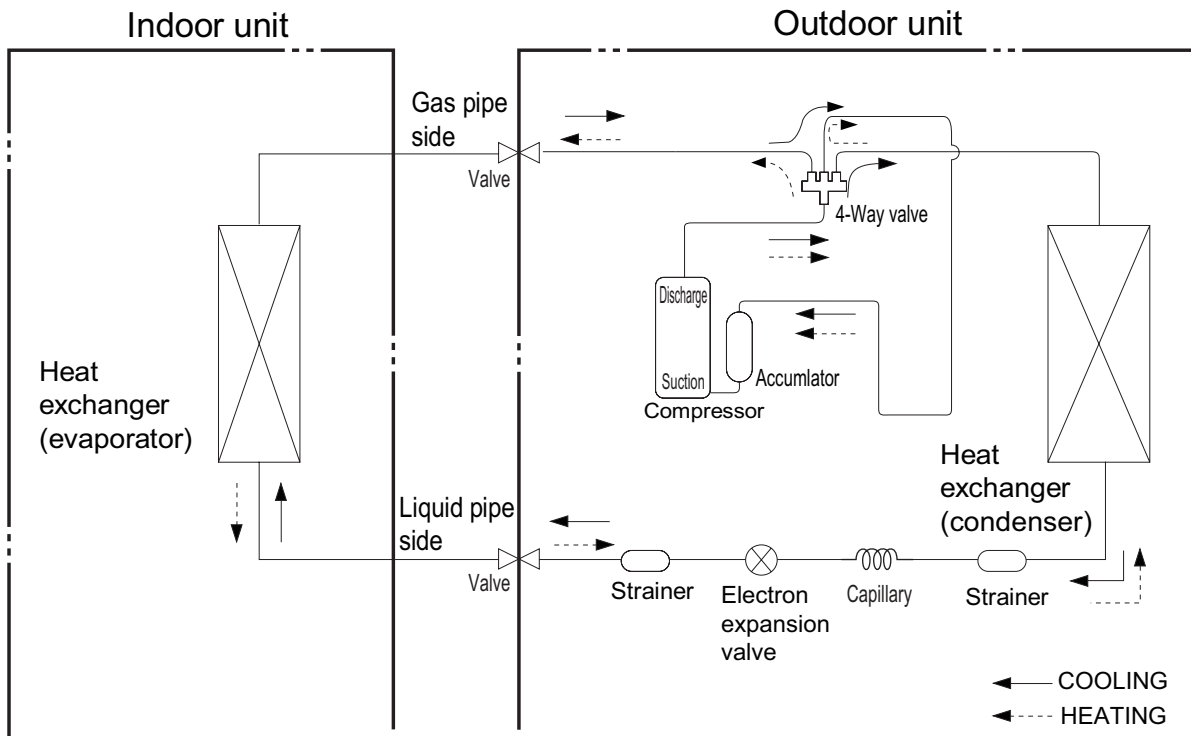
Connection pipe specification:  
Liquid pipe: 1/4"  
Gas pipe: 3/8"

# 4. Refrigerant System Diagram

GWARC09S2    GWARC12SA2    GWARC12S2    GWARC18S2    GWARC24S2



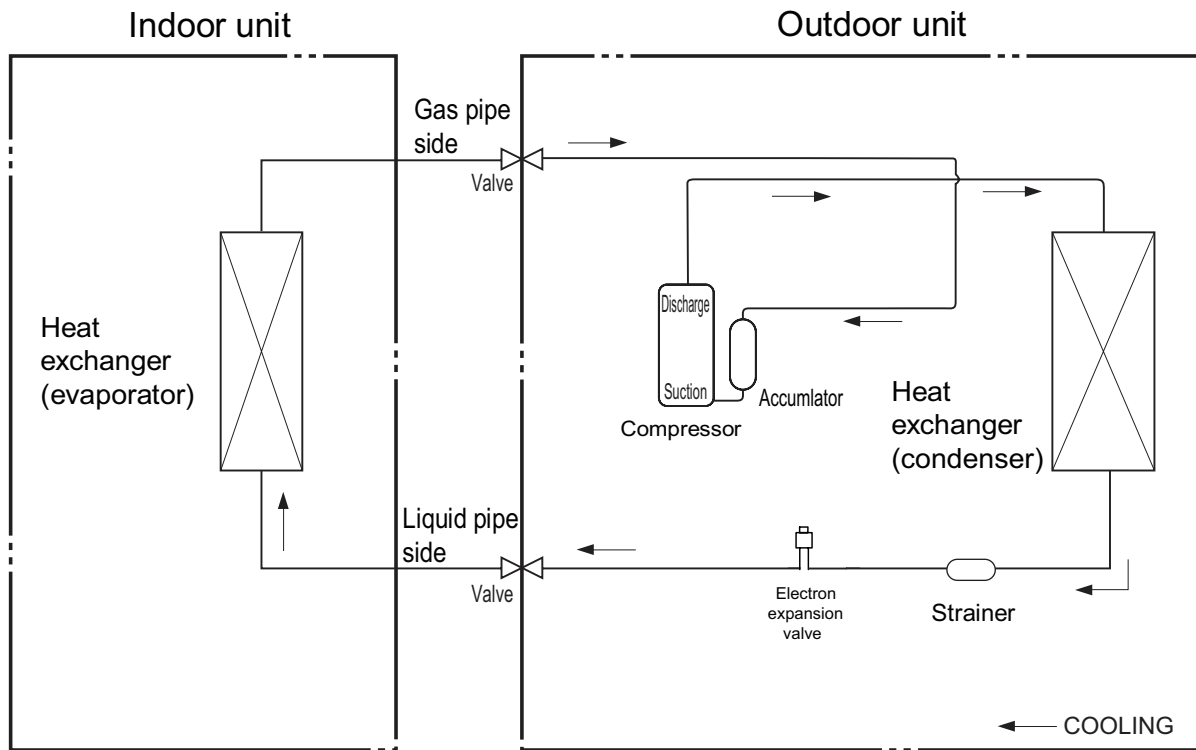
GWHARC09S2    GWHARC12SA2    GWHARC12S2    GWHARC18S2    GWHARC24S2



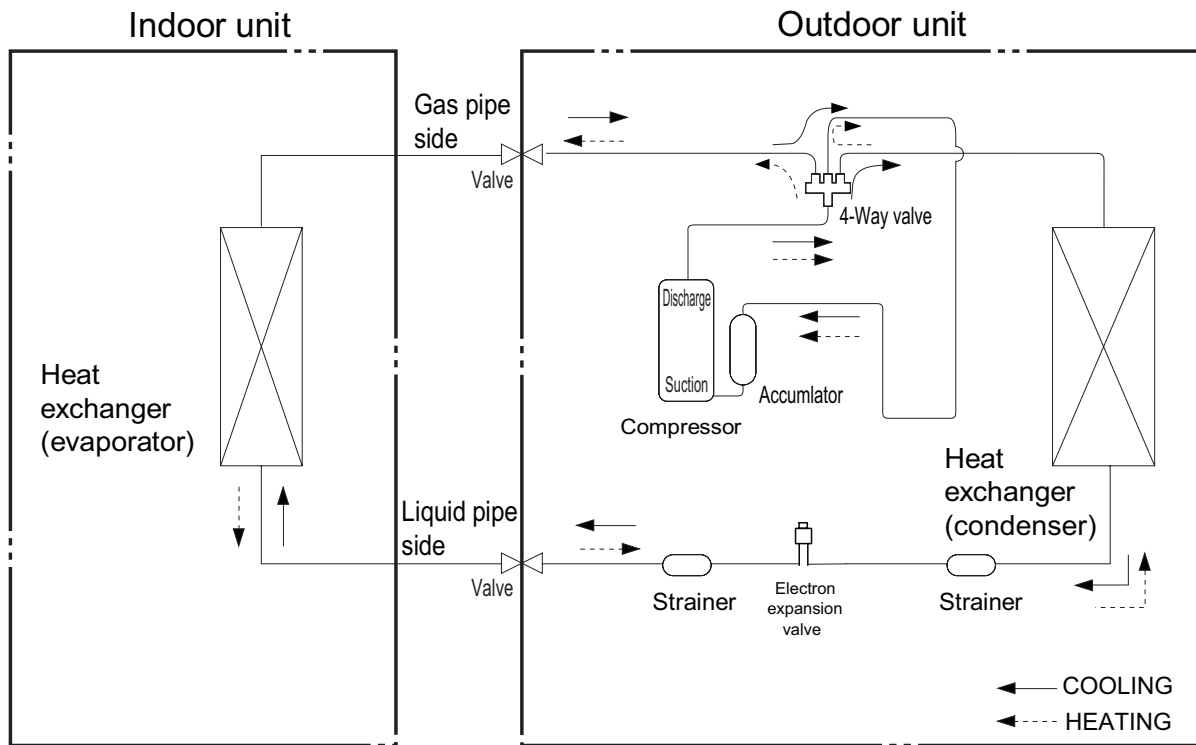
Connection pipe specification:  
 Liquid pipe: 1/4"  
 Gas pipe: 3/8" (09K/12K)  
 Gas pipe: 1/2" (18K)  
 Gas pipe: 5/8" (24K)

# 4. Refrigerant System Diagram

GWARC36S3



GWHARC36S3




Connection pipe specification:  
 Liquid pipe: 1/4"  
 Gas pipe: 5/8"

# 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	/	/

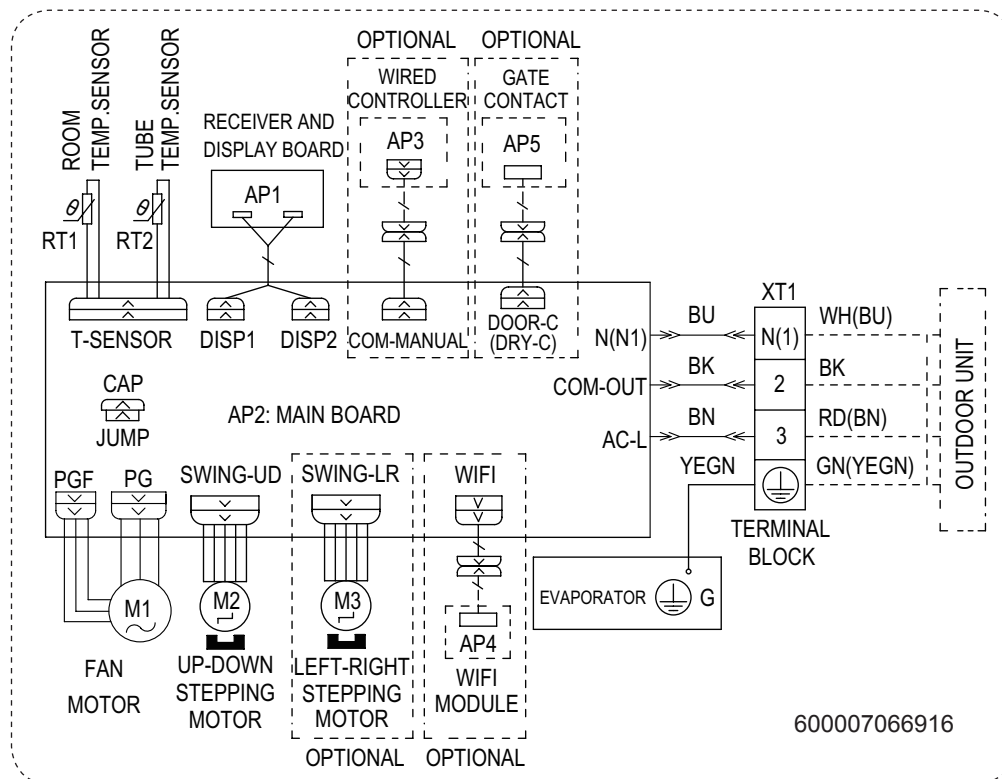
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

### • Indoor Unit

GWHARC09SA2

GWARC09S2

GWHARC09S2



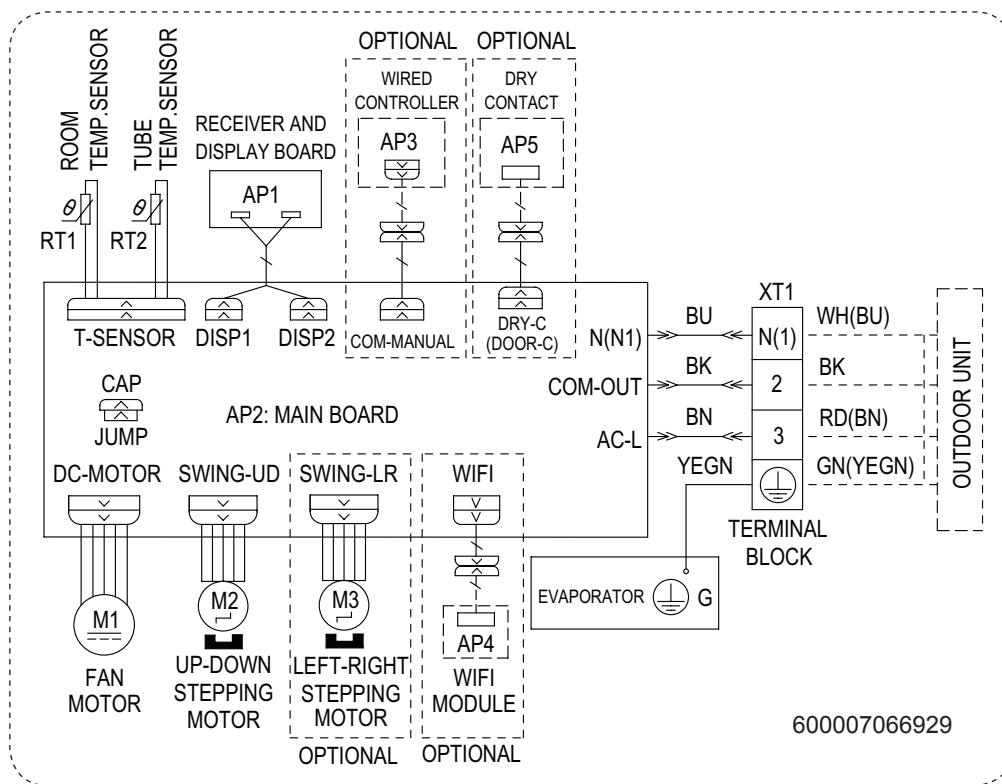
# 5. Electrical Part

GWARC12SA2

GWHARC12SA2

GWARC12S2

GWHARC12S2

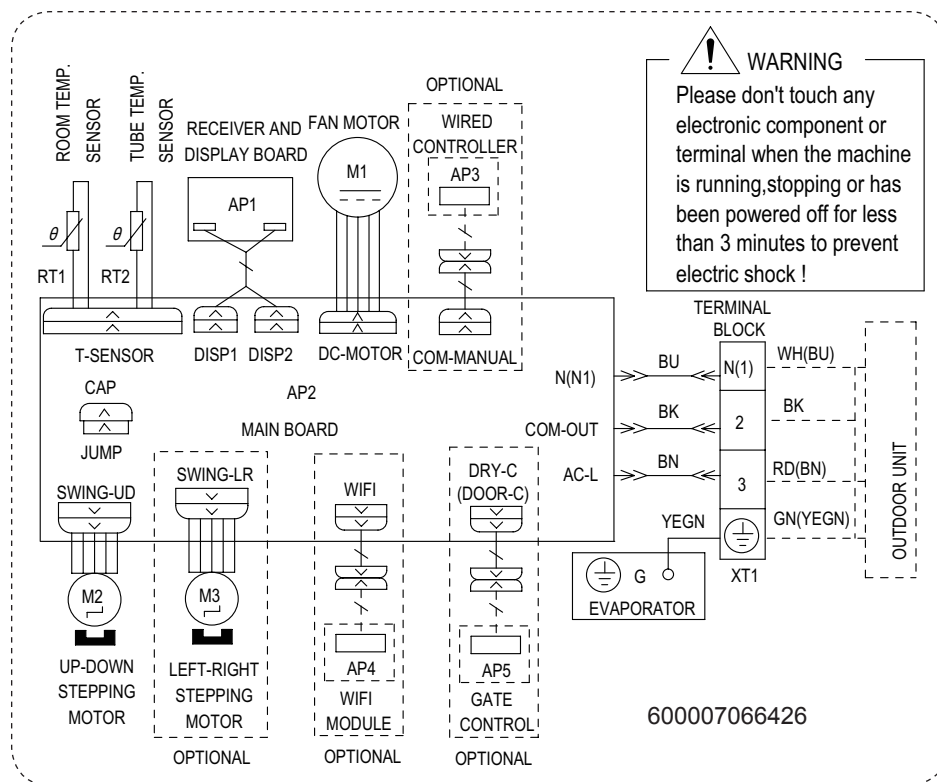


GWARC18S2

GWHARC18S2

GWARC24S2

GWHARC24S2

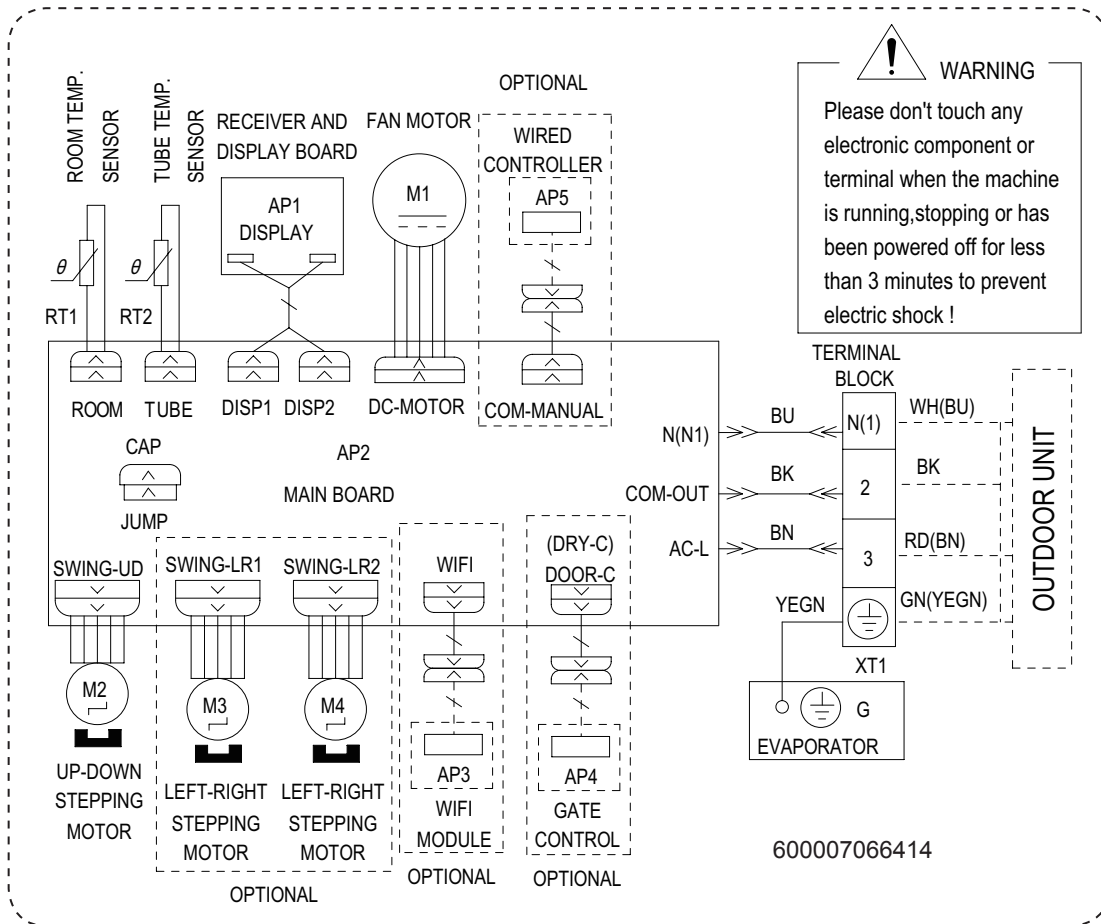




# 5. Electrical Part

GWARC36S3

GWHARC36S3



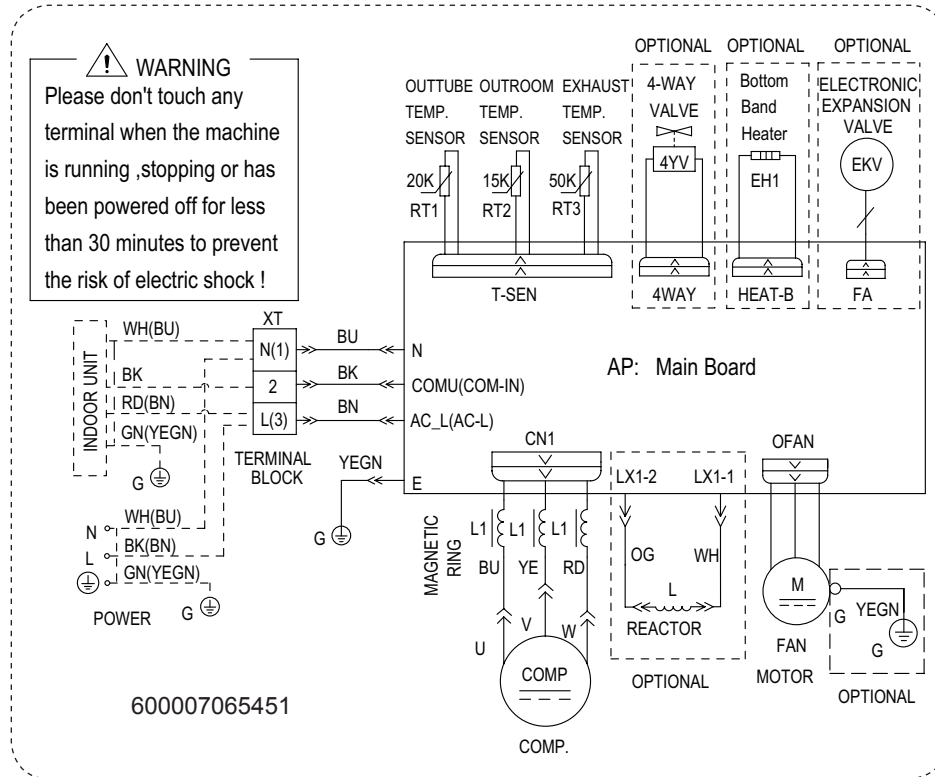
# 5. Electrical Part

## • Outdoor Unit

GRHARC09ASA2

GRARC12ASA2

GRHARC12ASA2

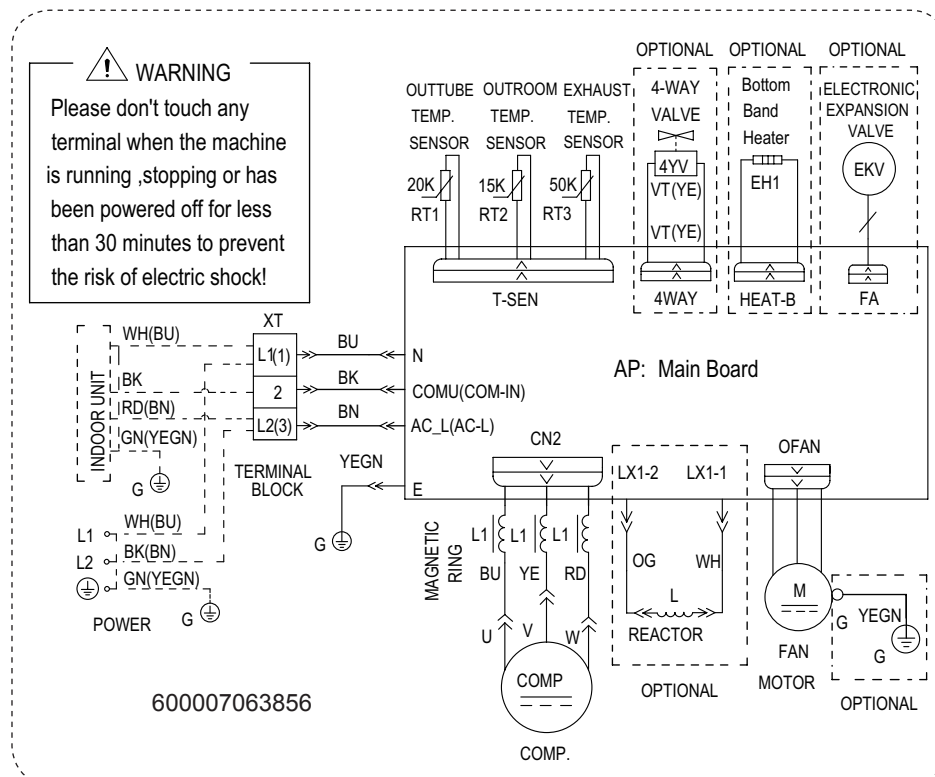


GRARC09AS2

GRHARC09AS2

GRARC12AS2

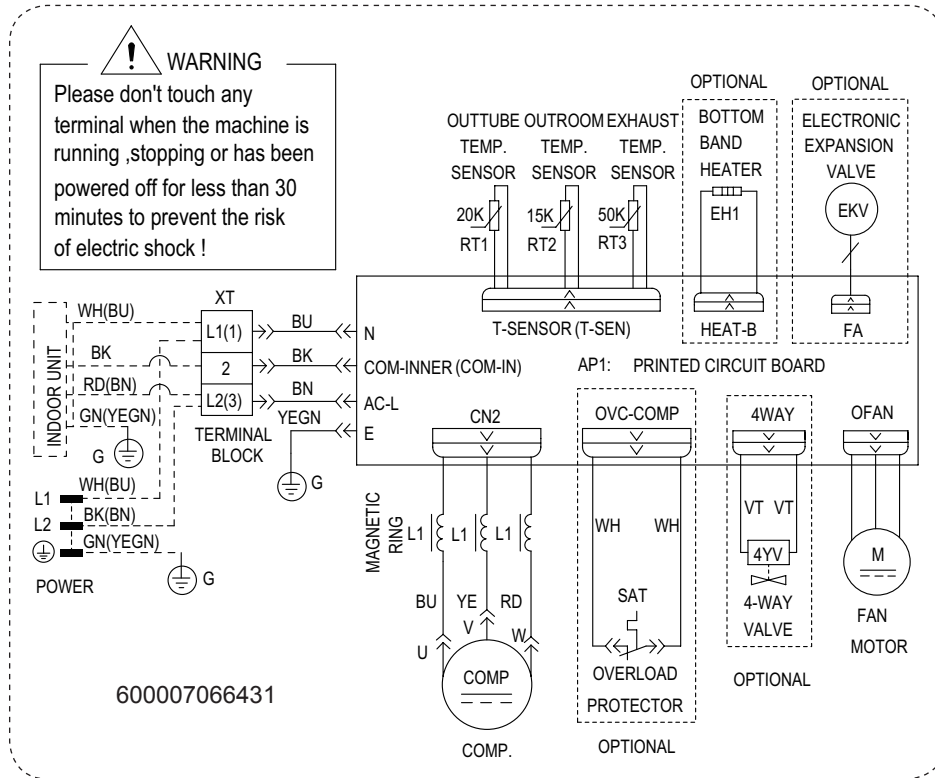
GRHARC12AS2



# 5. Electrical Part

GRARC18AS2

GRHARC18AS2

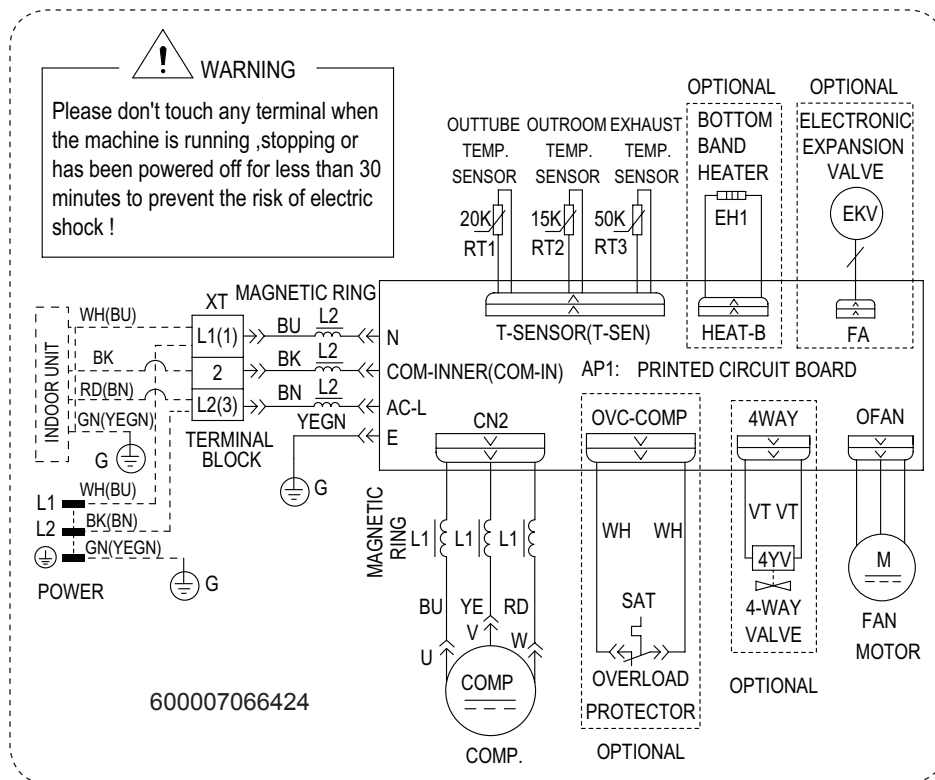


GRARC24AS2

GRHARC24AS2

GRARC36AS3

GRHARC36AS3



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

# 5. Electrical Part

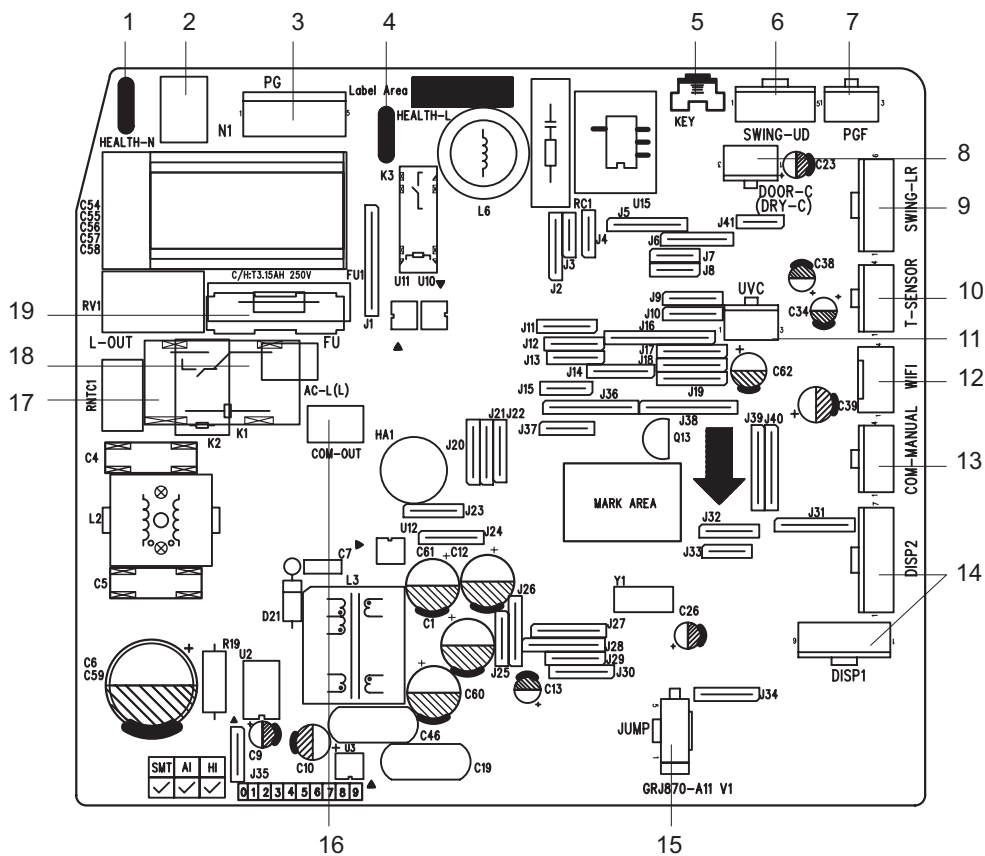
## 5.2 PCB Printed Diagram

### Indoor Unit

GWHARC09SA2

GWARC09S2

GWHARC09S2



No.	Name
1	Interface of health function neutral wire
2	Neutral wire terminal
3	Motor terminal
4	Interface of health function live wire
5	Auto button
6	Up&down swing terminal
7	Interface of Motor feedback
8	Interface of gate-control
9	Left&right swing terminal
10	Terminal of temperature sensor

No.	Name
11	UVC terminal
12	WIFI terminal
13	Wired controller terminal
14	Interface of display board
15	Jumper cap
16	Communication terminal for indoor unit and outdoor unit
17	Terminal of live wire used for supplying power for outdoor unit
18	Live wire terminal
19	Fuse

# 5. Electrical Part

GWARC12SA2  
GWARC24S2

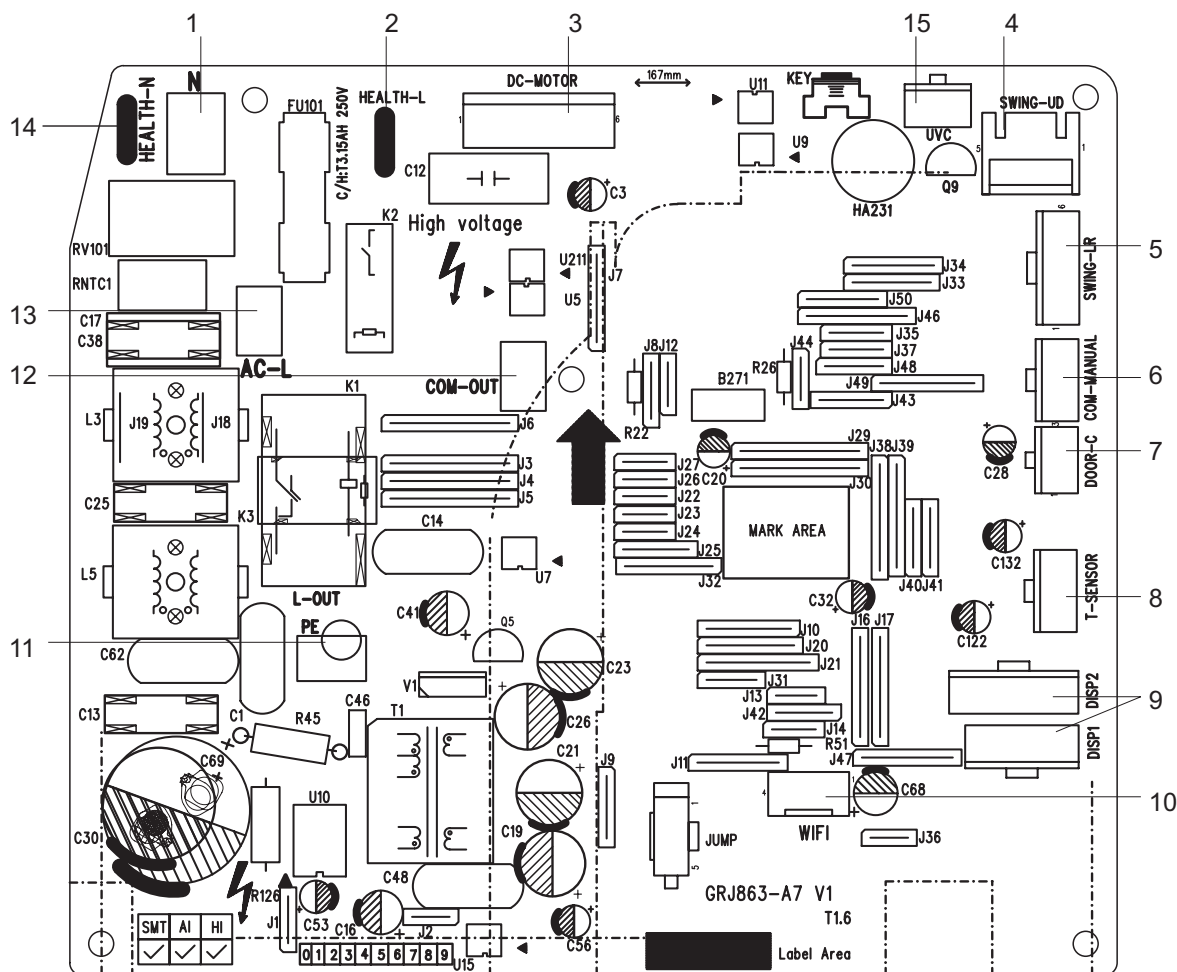
GWHARC12SA2  
GWHARC24S2

GWARC12S2

GWHARC12S2

GWARC18S2

GWHARC18S2



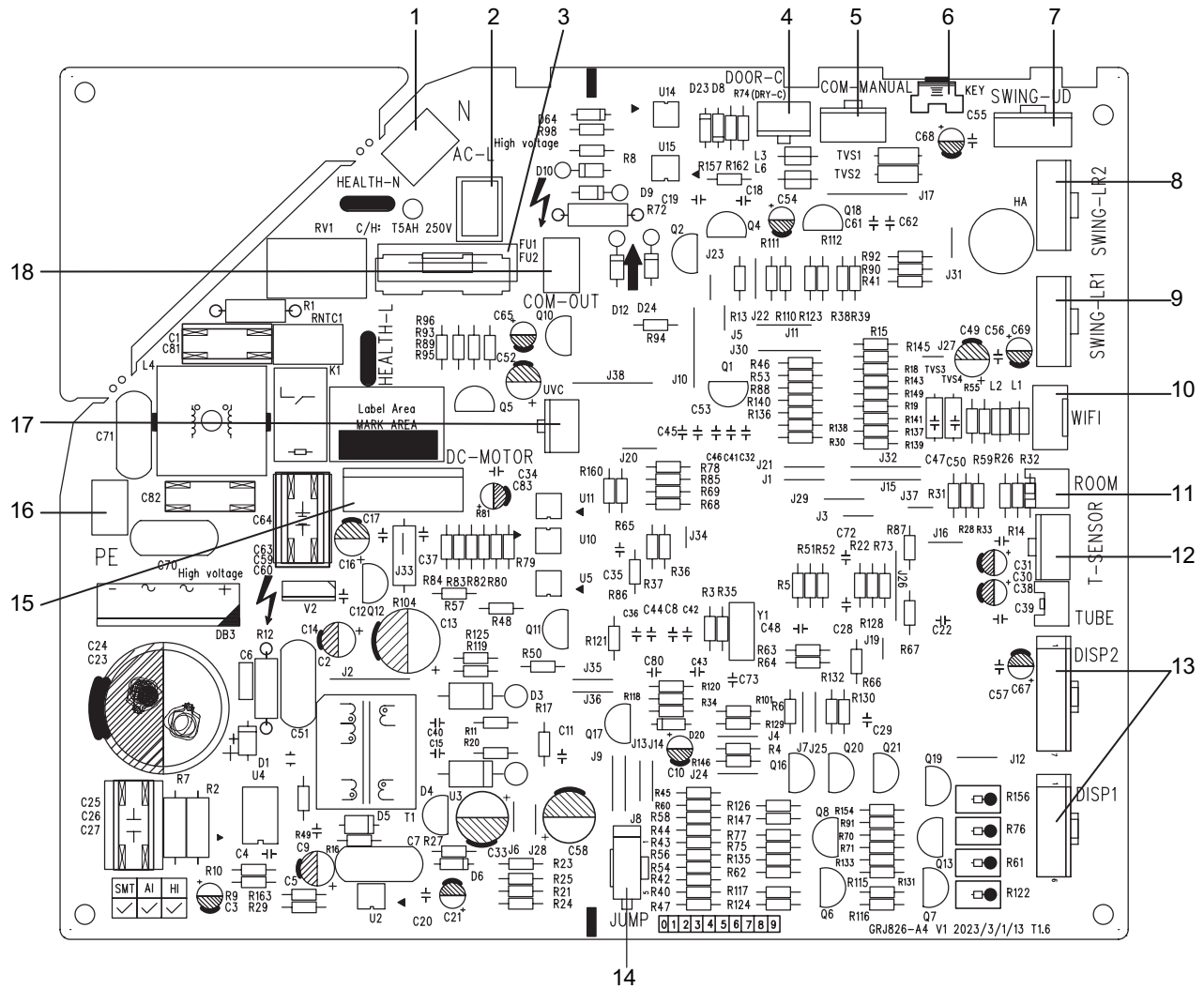
No.	Name
1	Neutral wire
2	Interface of health function live wire
3	DC fan interface
4	Up&down swing interface
5	Left&right swing interface
6	Interface of wired controller
7	Interface of gate control
8	Interface of temperature sensor

No.	Name
9	Display interface
10	WIFI interface
11	Grounding wire
12	Terminal with outdoor unit communication wire
13	Live wire interface
14	Interface of health function neutral wire
15	Interface of ultraviolet clean

# 5. Electrical Part

GWARC36S3

GWHARC36S3



No.	Name	No.	Name
1	Neutral wire	11	Ambient temperature sensor
2	Live wire	12	Tube temperature sensor
3	Fuse	13	Display board
4	Door control	14	Jumper cap
5	Wired controller	15	DC fan
6	Auto button	16	Earthing wire
7	Up&down swing	17	UVC interface
8	Left&right swing 2	18	Communication wire
9	Left&right swing 1		
10	WiFi		

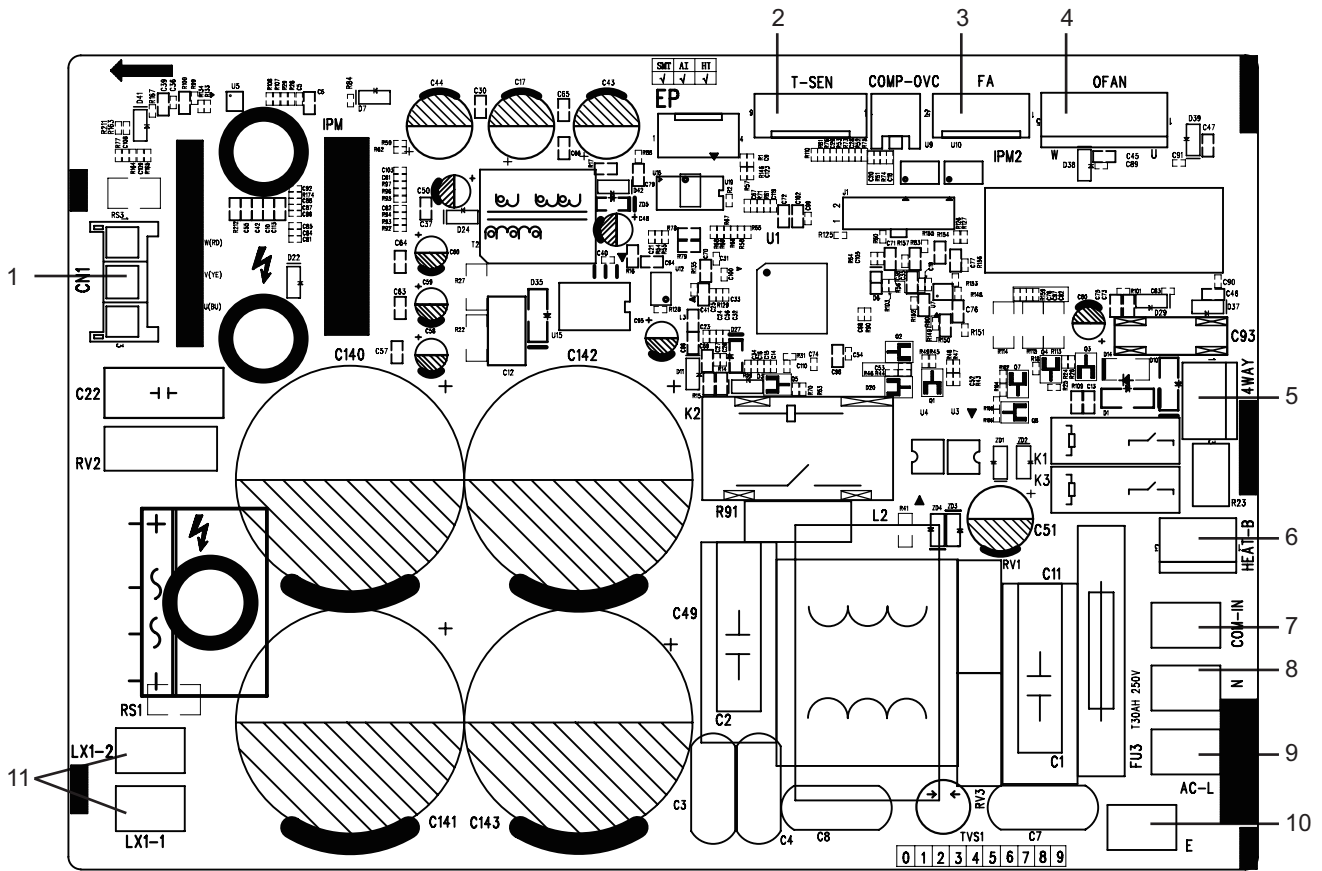
# 5. Electrical Part

## Outdoor Unit

GRHARC09ASA2

GRARC12ASA2

GRHARC12ASA2



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

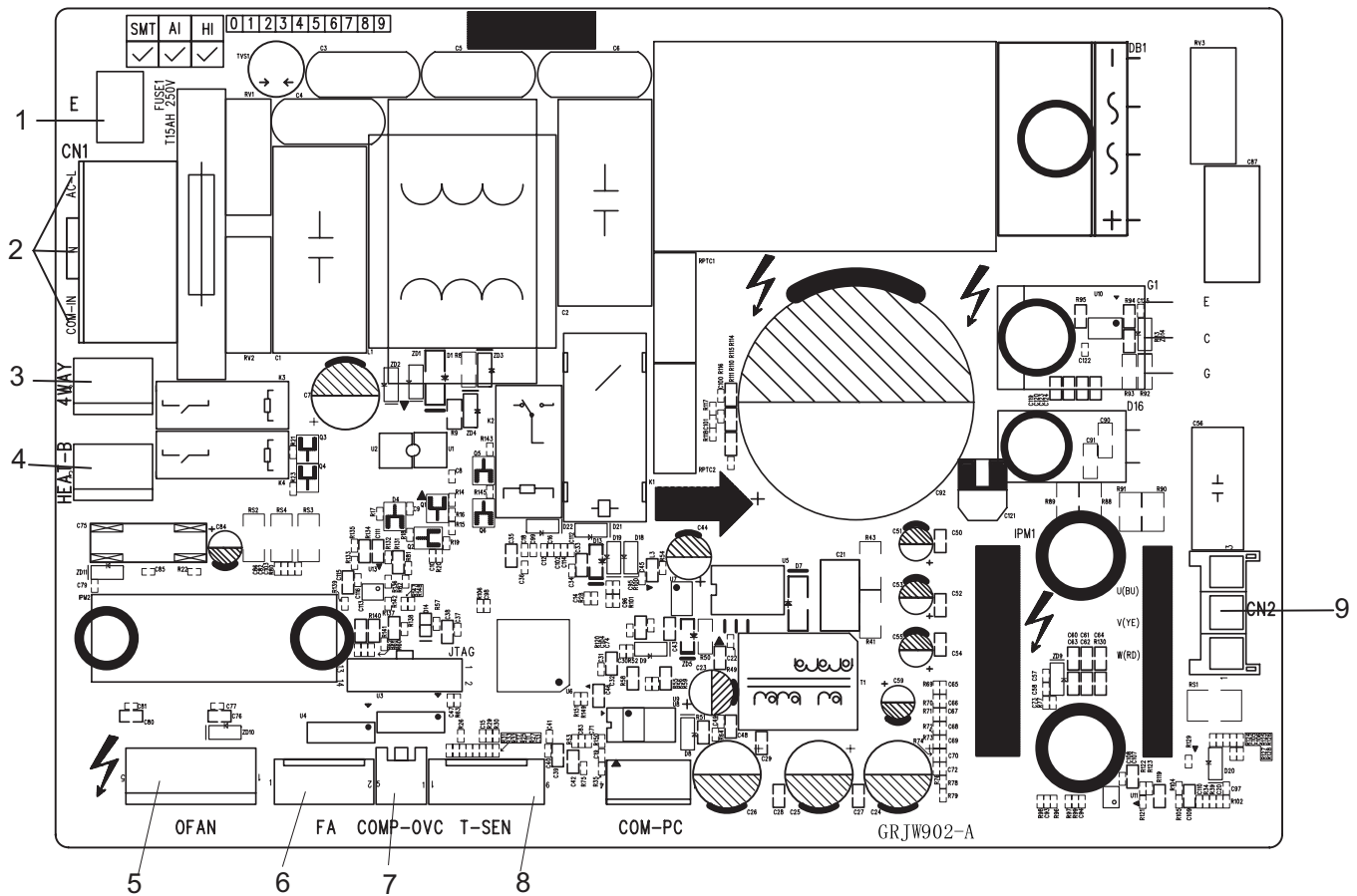
# 5. Electrical Part

GRARC09AS2

GRHARC09AS2

GRARC12AS2

GRHARC12AS2



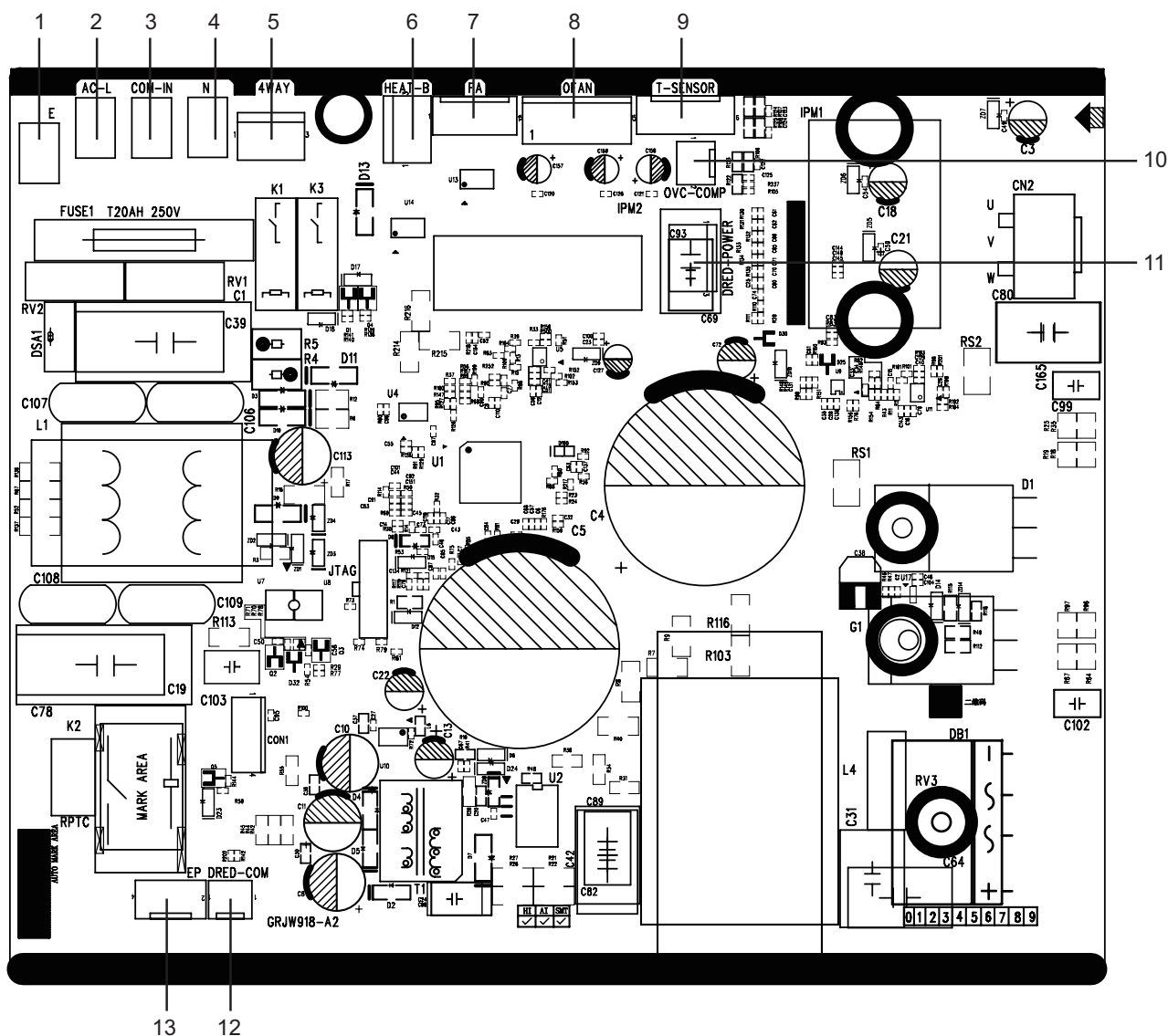
No.	Name
1	Earthing wire
2	Neutral wire, live wire and communication cable
3	4-way valve
4	Electric heating belt of chassis
5	Outdoor fan
6	Electronic expansion valve
7	Overload
8	Temperature sensor
9	Three-phase terminal of compressor



# 5. Electrical Part

GRARC18AS2

GRHARC18AS2

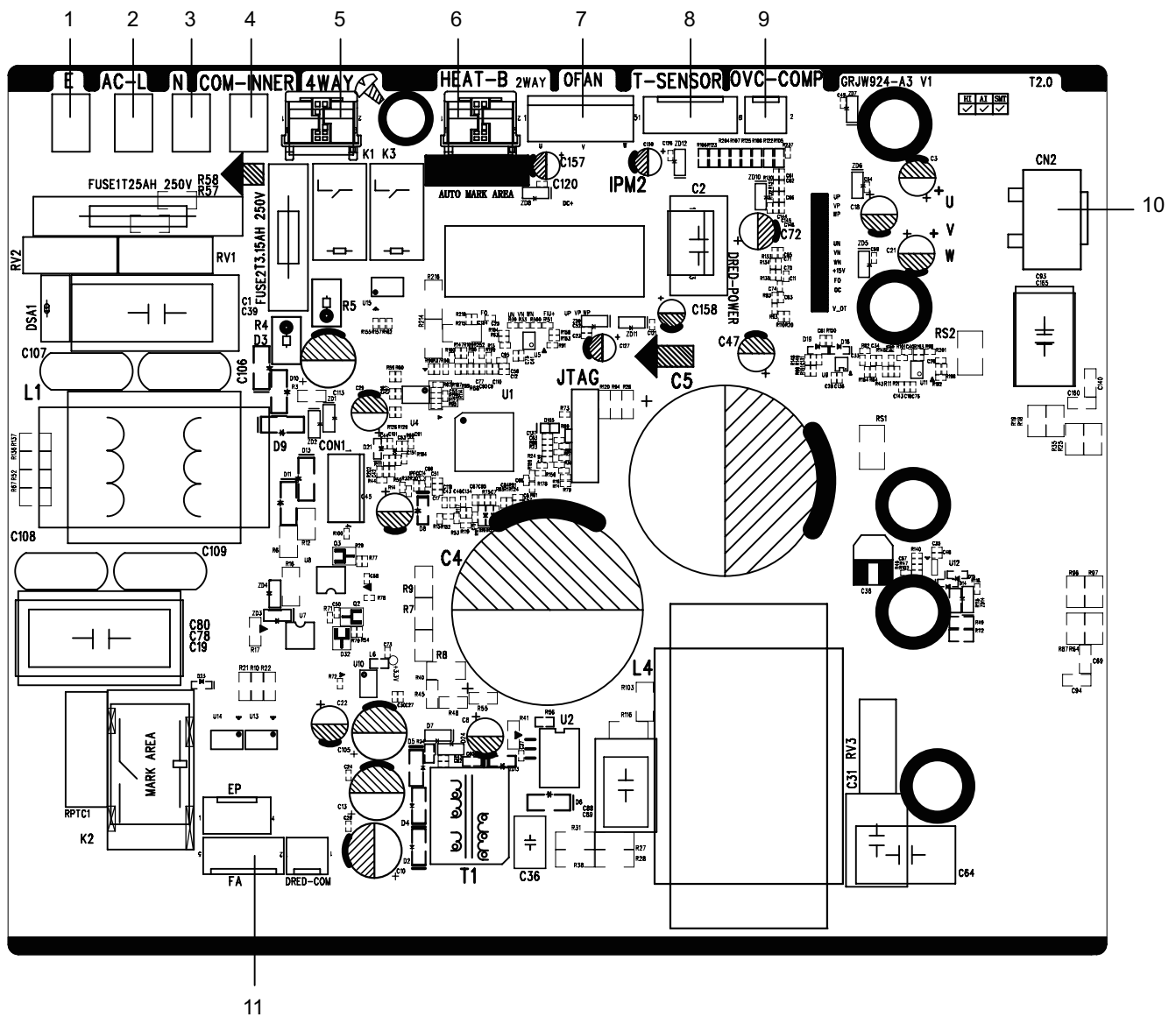


No.	Name	No.	Name
1	Earthing wire	8	Fan terminal
2	Live wire	9	Temperature sensor
3	Communication wire	10	Overload of compressor
4	Neutral wire	11	Dred power supply
5	4-way valve	12	Dred communication
6	Electric heating of chassis	13	E disk
7	Electronic expansion valve		

# 5. Electrical Part

GRARC24AS2

GRHARC24AS2



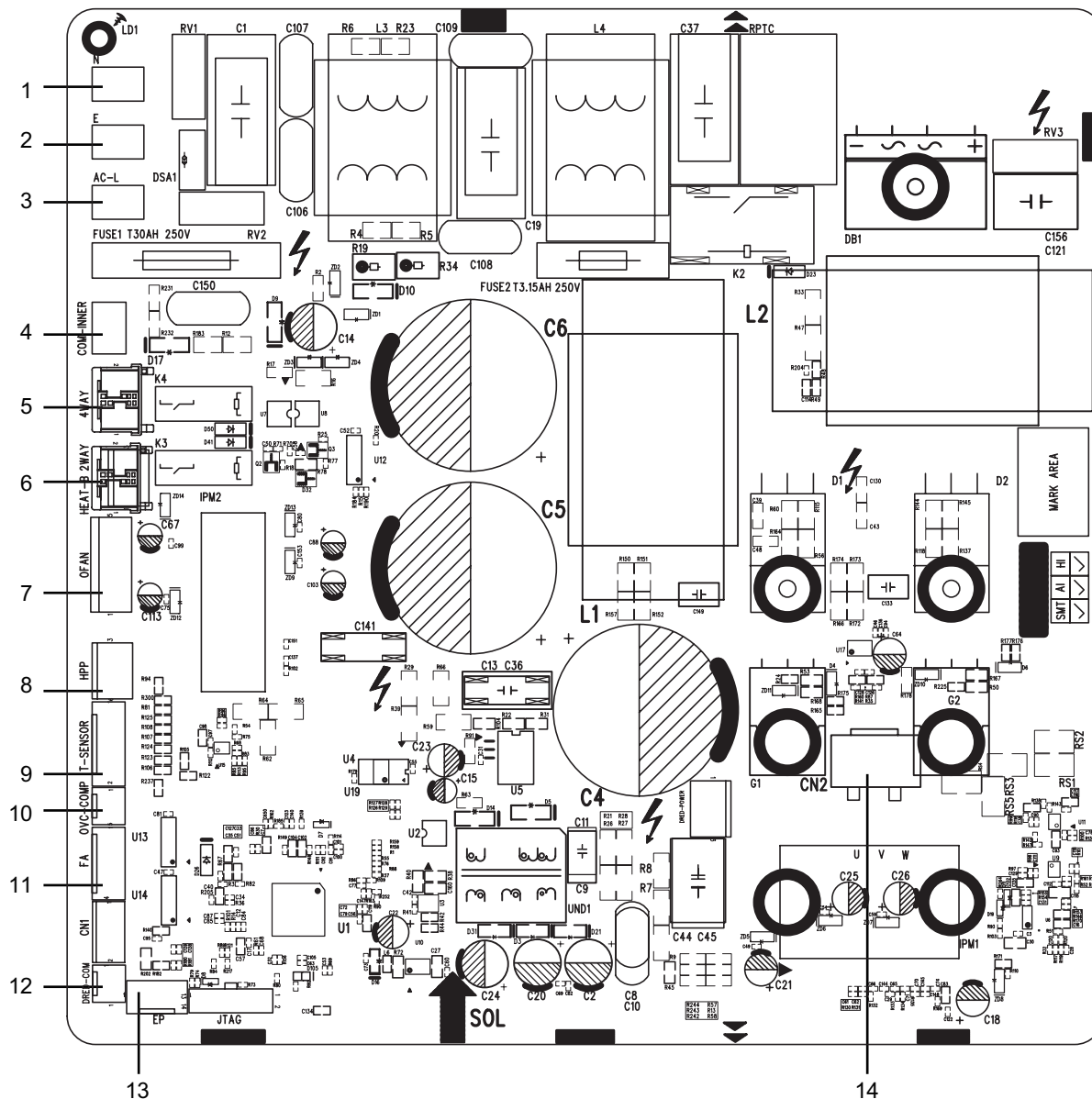
No.	Name
1	Earthing wire
2	Live wire
3	Neutral wire
4	Communication cable
5	4-way valve
6	Electric heating belt of chassis

No.	Name
7	Outdoor fan
8	Temperature sensor
9	Overload
10	Three-phase terminal of compressor
11	Electronic expansion valve

# 5. Electrical Part

GRARC36AS3

GRHARC36AS3

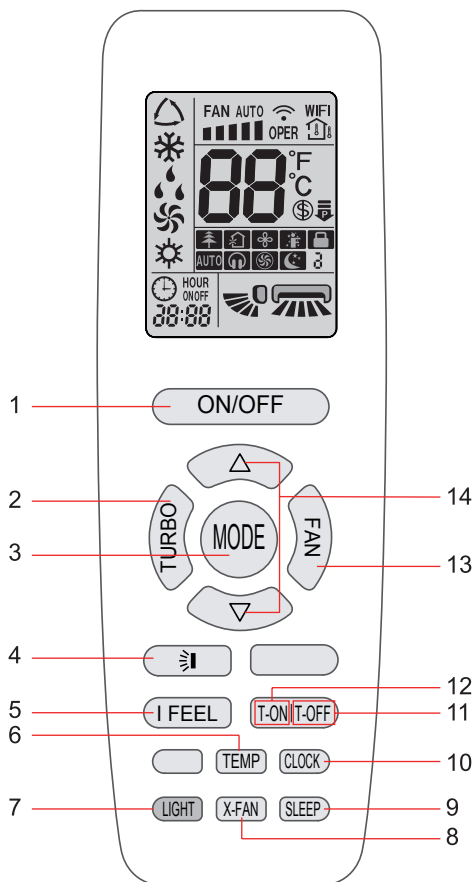


No.	Name	No.	Name
1	Neutral wire	8	Terminal of high pressure protection
2	Grounding wire	9	Temperature sensor
3	Live wire	10	Overload interface of compressor
4	Communication wire	11	Terminal of electronic expansion valve
5	4-way valve	12	Terminal of DRED
6	Electric heating belt of chassis	13	E disk(Reserved)
7	Outdoor fan	14	Terminal of compressor wire

# 6. Function and Control

## 6.1 Remote Controller Introduction

### Button name and function introduction



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  $\Delta$  or  $\nabla$  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

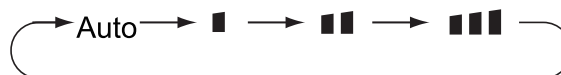
In unit on status, press  $\Delta$  button to increase setting temperature and press  $\nabla$  button to decrease setting temperature. The range of temperature is from 16°C to 30°C.

**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:



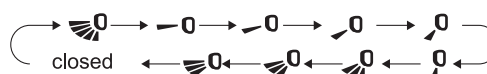
**Notes:**

- 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


# 6. Function and Control


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).

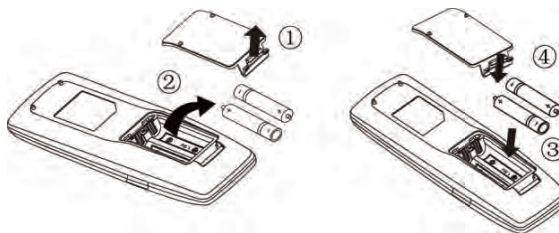


Fig.1


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.

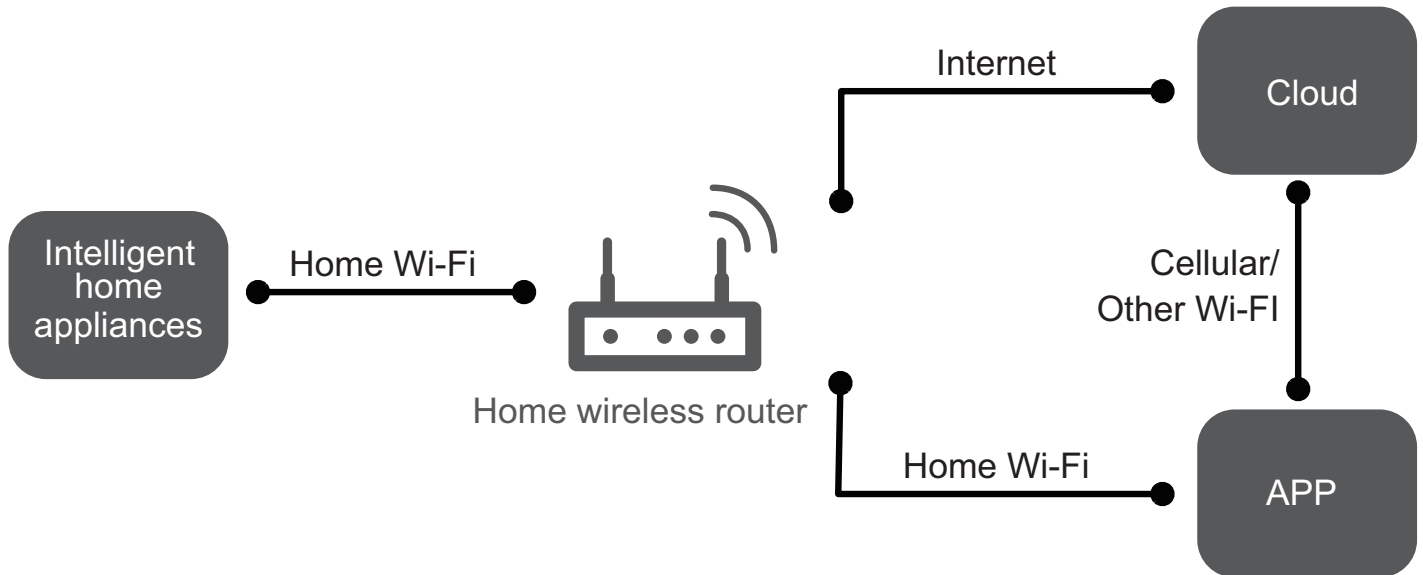
⑥ When replacing the batteries, do not use old or different types of batteries, otherwise, it may cause malfunction.

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

# 6. Function and Control

## 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.

# 6. Function and Control

## 6.3 Brief Description of Modes and Functions

09/12/18/24K

### ● Indoor Unit

#### 1. Basic function of system

##### (1) Cooling mode

(1) Under this mode, fan and swing operates at setting status. Temperature setting range is 60.8~86.0°F.

(2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.

##### (2) Drying mode

(1) Under this mode, fan operates at low speed and swing operates at setting status. Temperature setting range is 60.8~86.0°F.

(2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.

(3) Protection status is same as that under cooling mode.

(4) Sleep function is not available for drying mode.

##### (3) Heating mode

(1) Under this mode, Temperature setting range is 60.8~86.0°F.

(2) Working condition and process for heating mode:

When turn on the unit under heating mode, indoor unit enters into cold air prevention status. When the unit is stopped or at OFF status, and indoor unit has been started up just now, the unit enters into residual heat-blowing status.

##### (4) Working method for AUTO mode:

1. Working condition and process for AUTO mode:

a. Under auto mode set temperature can be adjusted. The unit switch mode automatically according to ambient temperature.

2. Protection function

a. During cooling operation, protection function is same as that under cooling mode.

b. During heating operation, protection function is same as that under heating mode.

3. Display: Set temperature is the set value under each condition. Ambient temperature is (Tamb.-Tcompensation) for heat pump unit and Tamb. for cooling only unit.

4. If there's I feel function, Tcompensation is 0. Others are same as above.

##### (5) Fan mode

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.

#### 2. Other control

##### (1) Buzzer

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

##### (2) Auto button

If press this auto button when turning off the unit, the complete unit will operate at auto mode. Indoor fan operates at auto fan speed and swing function is turned on. Press this auto button at ON status to turn off the unit.

##### (3) Auto fan

Heating mode: During auto heating mode or normal heating mode, auto fan speed will adjust the fan speed automatically according to ambient temperature and set temperature.

##### (4) Sleep function

After setting sleep function for a period of time, system will adjust set temperature automatically.

##### (5) Timer function

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

##### (6) Memory function

Memorize compensation temperature, off-peak energization value. Memory content: mode, up&down swing, light, set temperature, set fan speed, general timer (clock timer can't be memorized). After power recovery, the unit will be turned on automatically according to memory content.

##### (7) Health function

During operation of indoor fan, set health function by remote controller. Turn off the unit will also turn off health function.

Turn on the unit by pressing auto button, and the health is defaulted ON.

##### (8) I feel control mode

After controller received I feel control signal and ambient temperature sent by remote controller, controller will work according to the ambient temperature sent by remote controller.

##### (9) Compulsory defrosting function

a. Start up compulsory defrosting function

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

b. Exit compulsory defrosting mode

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

# 6. Function and Control

## (10) Refrigerant recovery function:

a. Enter refrigerant recycling function

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

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.



# 6. Function and Control

## ● 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  $3^{\circ}\text{C}$  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  $16^{\circ}\text{C}$  (by remote controller), press "+, -, +, -, +, -" 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. $8^{\circ}\text{C}$ heating

Set temperature is  $8^{\circ}\text{C}$ . Display board of IDU displays  $8^{\circ}\text{C}$ . 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.**

# 6. Function and Control

## 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<sub>indoor ambient temperature</sub> - Δ T<sub>cooling indoor ambient temperature compensation</sub>)

b. In heating mode, the indoor ambient temperature participating in computing control = (T<sub>indoor ambient temperature</sub> - Δ T<sub>heating indoor ambient temperature compensation</sub>)

#### (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  $T_{\text{exhaust}}$  ( $T_{\text{exhaust}}$  (after start-up for 10 minutes) -  $T_{\text{exhaust}}$  (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<sub>indoor ambient temperature</sub> is the actual detection temperature of indoor environment thermo-bulb, T<sub>heating indoor ambient temperature compensation</sub> 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<sub>max. defrosting time</sub>].

### 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<sub>min. compressor running time</sub>] (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

# 6. Function and Control

compressor stops, it will be allowed to 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 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.

# 6. Function and Control

## 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. Function and Control

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  $[I_{\text{Frequency reducing when overcurrent}}] \leq [I_{\text{AC Electric current}}] | \text{Power turn-off when overcurrent}]$ , 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  $35.6^{\circ}\text{F}$ ), 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  $[I_{\text{Limited frequency phase current}}] \leq [I_{\text{Phase current T frequency reducing phase current}}]$ , 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

# 6. Function and Control

If  $[I_{\text{Phase Current}}] \geq [I_{\text{Power Turn-Off Phase Current}}]$ , the compressor phase current shall stop working for overcurrent protection; if  $[I_{\text{Phase Current}}] \leq [I_{\text{Frequency Reducing Phase Current}}]$ , 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  $[t_{\text{Clearing Time of Compressor Phase Current Times}}]$ , 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  $[T_{\text{Inner Tube}} < (T_{\text{Inner Ring}} - T_{\text{Abnormity Temperature Difference}})]$ , during the running, it should be regarded as

For Four-Way Valve Reversion

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

# 6. Function and Control

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

(2) When Toutdoor amb.  $> 35.6^{\circ}\text{F}$  , the electric heating of chassis will stop operation;

(3) When  $32^{\circ}\text{F} < \text{Toutdoor amb.} \leq 35.6^{\circ}\text{F}$ , the electric heating of chassis will keep original status.

## 7. Electric Heating Function of Compressor

(1) When Toutdoor amb.  $\leq 23^{\circ}\text{F}$  , compressor stops operation, while the electric heating of compressor starts operation;

(2) When Toutdoor amb.  $> 28.4^{\circ}\text{F}$  , the electric heating of compressor stops operation;

(3) When  $23^{\circ}\text{F} < \text{Toutdoor amb.} \leq 28.4^{\circ}\text{F}$  , the electric heating of compressor will keep original status.

# 6. Function and Control

## 36K

### 1. Temperature Parameters

Indoor preset temperature ( $T_{\text{preset}}$ )

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

### 2. Basic Functions

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

#### (1) Cooling Mode

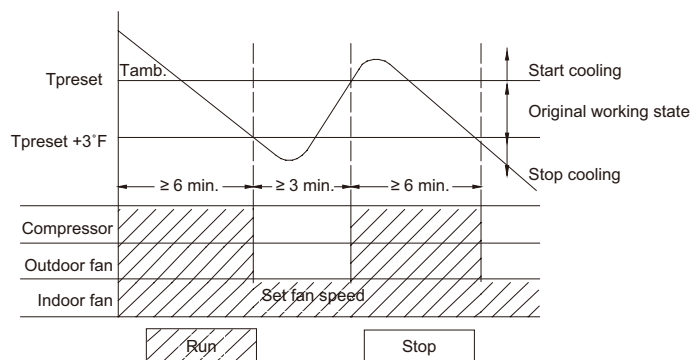
##### ① Working conditions and process of cooling

When  $T_{\text{amb.}} \geq T_{\text{preset}}$ , the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When  $T_{\text{amb.}} \leq T_{\text{preset}} + 28.4^\circ\text{F}$ , the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will run at preset speed.

When  $T_{\text{preset}} + 28.4^\circ\text{F} < T_{\text{amb.}} < T_{\text{preset}}$ , the unit will remain at its previous state.

Under this mode, the four-way valve will be de-energized and temperature can be set within a range from  $61^\circ\text{F} \sim 86^\circ\text{F}$ . If the compressor is shut down for some reason, the indoor fan and the swing device will operate at original state.



##### ② Protection

###### Antifreeze protection

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

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

If  $T_{\text{evap}} \leq 30.2^\circ\text{F}$  is detected for durative 3 minutes, the compressor will stop, and after 60 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If  $T_{\text{evap.}} \geq 42.8^\circ\text{F}$  and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

###### Total current up and frequency down protection

If  $I_{\text{total}} \leq 16\text{A}$ , frequency rise will be allowed; if  $I_{\text{total}} \geq 17\text{A}$ , frequency

rise will not be allowed; if  $I_{\text{total}} \geq 18\text{A}$ , the compressor will run at reduced frequency; and if  $I_{\text{total}} \geq 20\text{A}$ , the compressor will stop and the outdoor fan will stop with a time lag of 60s.

#### (2) Dehumidifying Mode

##### ① Working conditions and process of dehumidifying

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

If  $T_{\text{preset}} + 28.4^\circ\text{F} \leq T_{\text{amb.}} \leq T_{\text{preset}}$  the compressor remains at its original operation state.

If  $T_{\text{amb.}} < T_{\text{preset}}$ , the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will operate at low speed.

##### ② Protection

Protection is the same as that under the cooling mode.

#### (3) Heating Mode

##### ① Working conditions and process of heating

If  $T_{\text{amb.}} \leq T_{\text{preset}} + 35.6^\circ\text{F}$  ( $T_{\text{indoor ambient}} \leq T_{\text{setting}} + 2^\circ\text{C}$ , start with heating mode), the unit enters heating mode, in which case the four-way valve, the compressor and the outdoor fan will operate simultaneously, and the indoor fan will run at preset speed in the condition of preset cold air prevention.

If  $T_{\text{amb.}} \geq T_{\text{preset}} + 37.4^\circ\text{F}$  ( $T_{\text{indoor ambient}} \geq T_{\text{setting}} + 3^\circ\text{C}$ , it stops when reaches temperature point), the compressor will stop, the outdoor fan will stop with a time lag of 60s, and the indoor fan will stop after 60-second blow at low speed.

If  $T_{\text{preset}} < T_{\text{amb.}} < T_{\text{preset}} + 37.4^\circ\text{F}$  ( $T_{\text{setting}} < T_{\text{indoor ambient}} < T_{\text{setting}} + 3^\circ\text{C}$ , maintain heating mode), the unit will maintain its original operating status.

Under this mode, the four-way valve is energized and temperature can be set within a range of  $61^\circ\text{F} \sim 86^\circ\text{F}$ . The operating symbol, the heating symbol and preset temperature are revealed on the display.

##### ② Condition and process of defrost

When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes.

- $T_{\text{outdoor amb.}} \geq 41^\circ\text{F}$ ,  $T_{\text{outdoor pipe}} \leq 28.4^\circ\text{F}$ ;
- $28.4^\circ\text{F} \leq T_{\text{outdoor amb.}} \leq 41^\circ\text{F}$ ,  $T_{\text{outdoor pipe}} - T_{\text{compensation}} \leq 23^\circ\text{F}$ ;
- $23^\circ\text{F} < T_{\text{outdoor amb.}} \leq 28.4^\circ\text{F}$ ,  $T_{\text{outdoor pipe}} - T_{\text{compensation}} \leq 17.6^\circ\text{F}$ ;
- $14^\circ\text{F} < T_{\text{outdoor amb.}} < 23^\circ\text{F}$ ,  $T_{\text{outdoor pipe}} - T_{\text{compensation}} \leq T_{\text{outdoor amb.}} + 26.6^\circ\text{F}$ ;
- $T_{\text{outdoor amb.}} < 14^\circ\text{F}$ ,  $T_{\text{outdoor pipe}} - T_{\text{compensation}} \leq T_{\text{outdoor amb.}} + 26.6^\circ\text{F}$ ;

After energization, when defrosting for the first time  $T_{\text{compensation}} = 0^\circ\text{F}$ . If it is not the firstly time for defrosting, the  $T_{\text{compensation}}$  is determined by the  $T_{\text{outdoor pipe}}$  of last time quitting defrosting.

- $T_{\text{outdoor pipe}} > 35.6^\circ\text{F}$ ,  $T_{\text{compensation}} = 32^\circ\text{F}$ ;
- $T_{\text{outdoor pipe}} \leq 35.6^\circ\text{F}$ ,  $T_{\text{compensation}} = 33.8^\circ\text{F}$ .

At that time, the indoor fan stops and the compressor stops, and after 60 seconds the outdoor fan will stop, and then after 30 seconds, the four-way valve will stop. After 30 seconds, the compressor is initiated for raising the frequency to defrost frequency.



# 6. Function and Control

When the compressor has operated under defrost mode for 10 minutes, or T<sub>outlet</sub> ≥ 50°F, the compressor will be converted to 46Hz operation. After 30 seconds, the compressor will stop. And after another 30 seconds, the four-way valve will be opened, and after 60 seconds, the compressor and the outdoor fan will be started, the indoor fan will run under preset cold air prevention conditions, and H1 will be displayed at temperature display area on the display panel. Defrost frequency is 70 Hz.

## 3. Protection

Cold air prevention

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

① In the case of T<sub>indoor amb.</sub> < 75°F: if T<sub>tube</sub> ≤ 104°F and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if T<sub>tube</sub> > 104°F, the indoor fan also will run at low speed; and after 1 minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1 minute low speed operation or 2 minute non-operation, if T<sub>tube</sub> > 108°F, the fan will run at present speed.

② In the case of T<sub>indoor amb.</sub> < 75°F: if T<sub>tube</sub> ≤ 108°F, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within 1 minute low speed operation, if T<sub>tube</sub> > 104°F, the indoor fan will be converted to preset speed. Note: T<sub>indoor amb.</sub> indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

Total current up and frequency down protection

If the total current I<sub>total</sub> ≤ 16A, frequency rise will be allowed; if I<sub>total</sub> ≥ 17A, frequency rise will not be allowed; if I<sub>total</sub> ≥ 18A, the compressor will run at reduced frequency; and if I<sub>total</sub> ≥ 20A, the compressor will stop and the outdoor fan will stop with a time lag of 60s.

## (4) Fan Mode

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

Under the mode, temperature can be set within a range of 61°F~86°F.

## (5) AUTO Mode

① Working conditions and process of AUTO mode

Under AUTO mode, standard cooling temperature T<sub>preset</sub> is 77°F and standard heating temperature T<sub>preset</sub> is 68°F.

a. Once energized, if T<sub>amb.</sub> ≤ 71.6°F, the unit will be started under heating mode; if 71.6°F < T<sub>amb.</sub> < 78.8°F, the unit will run under fan mode and the run indicator will be bright; and if T<sub>amb.</sub> ≥ 78.8°F, the unit will be started under cooling mode.

b. Under AUTO mode, if T<sub>amb.</sub> ≥ T<sub>preset</sub> + 1.8°F is detected, the unit will select to run under cooling mode, in which case implicit preset temperature is 77°F; if T<sub>amb.</sub> ≤ T<sub>preset</sub> - 1.8°F, the compressor will stop, the outdoor fan will stop with a time lag of 1 minute, and the indoor fan will run at preset speed; and if T<sub>preset</sub> - 1.8°F < T<sub>amb.</sub> < T<sub>preset</sub> + 1.8°F, the unit will remain at its original state.

c. Under AUTO mode, if T<sub>amb.</sub> ≤ T<sub>preset</sub> + 3.6°F is detected, the unit will select to run under heating mode, in which case

implicit preset temperature is 64°F; if T<sub>amb.</sub> ≥ T<sub>preset</sub> + 9°F, the compressor will stop, the outdoor fan will stop with a time lag of 1 minute, and the indoor fan will run under the mode of residue heat blowing; and if T<sub>preset</sub> + 3.6°F < T<sub>amb.</sub> < T<sub>preset</sub> + 41°F, the unit will remain at its original state. The cooling-only unit will run under fan mode.

d. Under AUTO mode, if 71.6°F < T<sub>amb.</sub> < 78.8°F, the unit will remain at its original state.

## ② Protection

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

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

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

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

## ① Overload protection

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

### 1) Cooling overload

a. If T<sub>tube</sub> ≤ 126°F, the unit will return to its original operation state.

b. If T<sub>tube</sub> ≥ 131°F, frequency rise is not allowed.

c. If T<sub>tube</sub> ≥ 136°F, the compressor will run at reduced frequency.

d. If T<sub>tube</sub> ≥ 144°F, the compressor will stop and the indoor fan will run at preset speed.

### 2) Heating overload

a. If T<sub>tube</sub> ≤ 126°F, the unit will return to its original operation state.

b. If T<sub>tube</sub> ≥ 131°F, frequency rise is not allowed.

c. If T<sub>tube</sub> ≥ 136°F, the compressor will run at reduced frequency.

d. If T<sub>tube</sub> ≥ 144°F, the compressor will stop and the indoor fan will blow residue heat and then stop.

## ② Exhaust temperature protection of compressor

If exhaust temperature ≥ 208°F, frequency is not allowed to rise.

If exhaust temperature ≥ 217°F, the compressor will run at reduced frequency.

If exhaust temperature ≥ 230°F, the compressor will stop.

If exhaust temperature ≤ 194°F, the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

## ③ Communication fault

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

## ④ Module protection

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

## ⑤ Overload protection

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

# 6. Function and Control

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

## ⑥ Faults of temperature sensors

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 5 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

# 7. Notes for Installation and Maintenance

## Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

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

## WARNINGS

### Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.
10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
11. For the air conditioner without plug, an air switch must

be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; Don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

### Installation Safety Precautions:

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

### Refrigerant Safety Precautions:

1. 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.

# 7. Notes for Installation and Maintenance

## Safety Precautions for Installing and Relocating the Unit:

---

To ensure safety, please be mindful of the following precautions.

### WARNINGS

**1. When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.**

Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.

**2. When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.**

Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.

**3. When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode. Then, fully close the valve at high pressure side (liquid valve). About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.**

If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.

**4. During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.**

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

**5. When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.**

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

**6. Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.**

If there leaked gas around the unit, it may cause explosion and other accidents.

**7. Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.**

Poor connections may lead to electric shock or fire.

**8. Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.**

Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

# 7. Notes for Installation and Maintenance

## 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



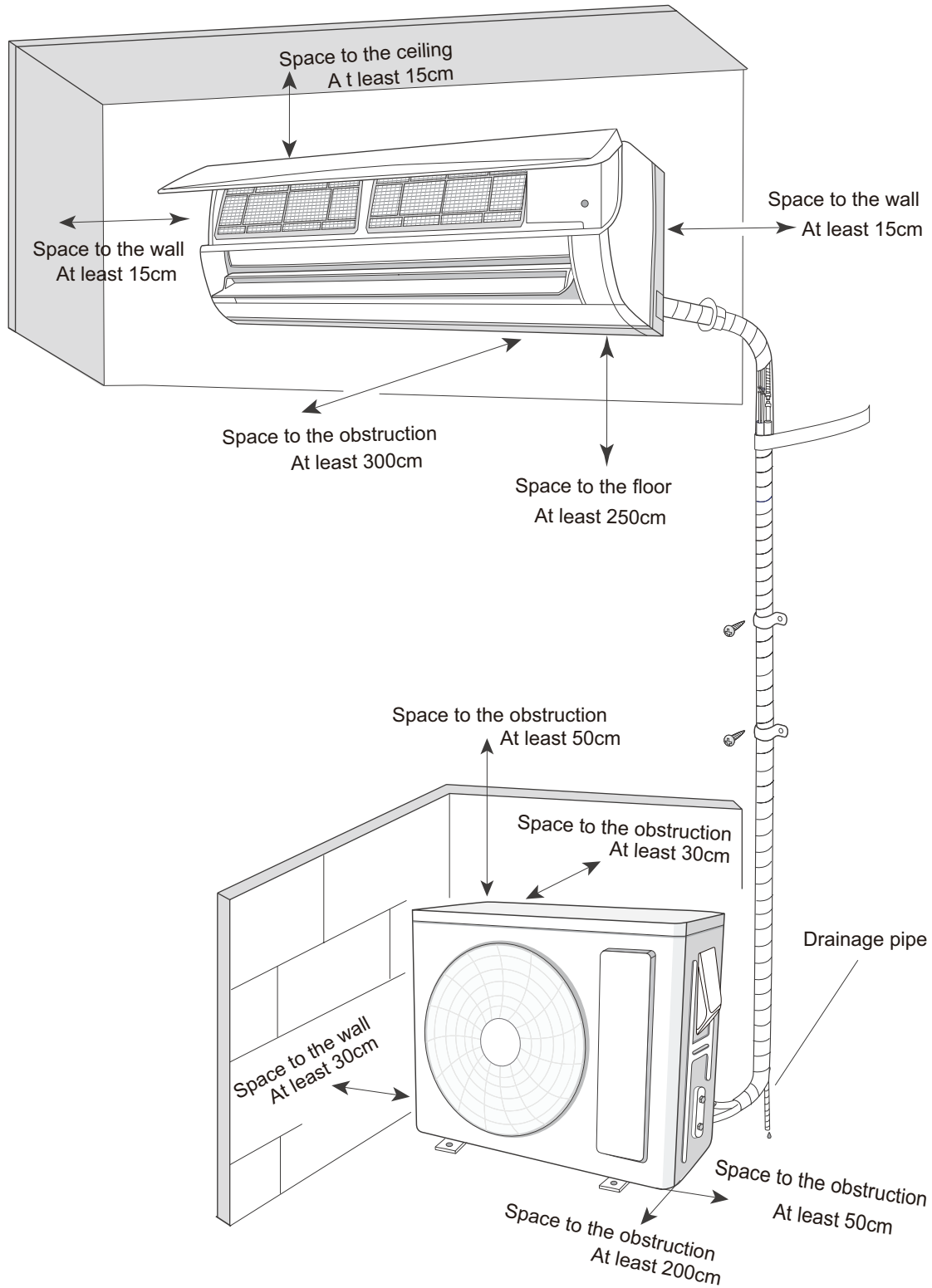
Refrigerant container



Electronic scale

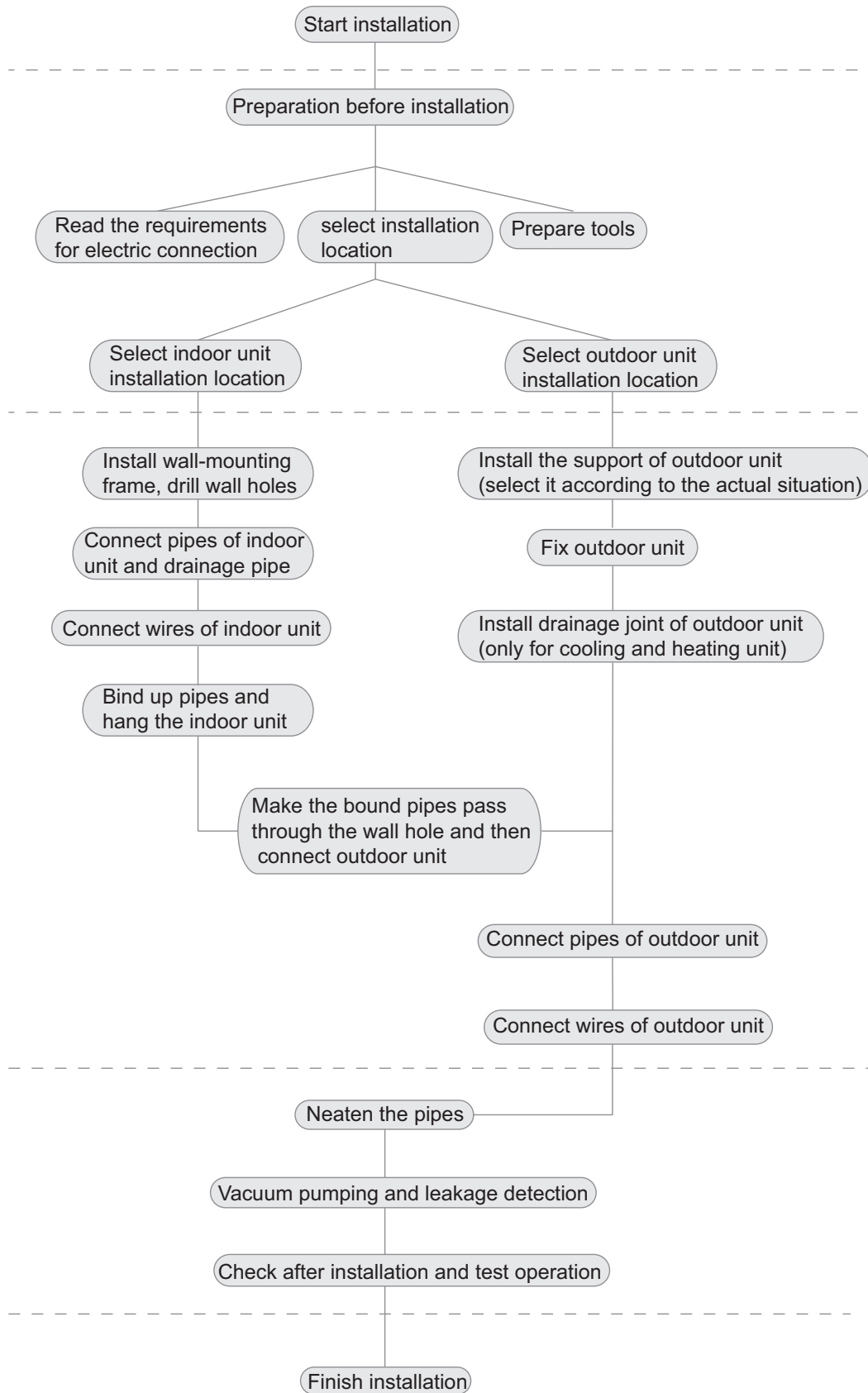
# 8. Installation

## 8.1 Installation Dimension Diagram



# 8. Installation

## Installation Procedures



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

# 8. Installation

## 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 sulfureted 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.

(6) Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

## 8.5 Installation of Indoor Unit

### 1. Choosing Installation location

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

### 2. Install Wall-mounting Frame

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

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



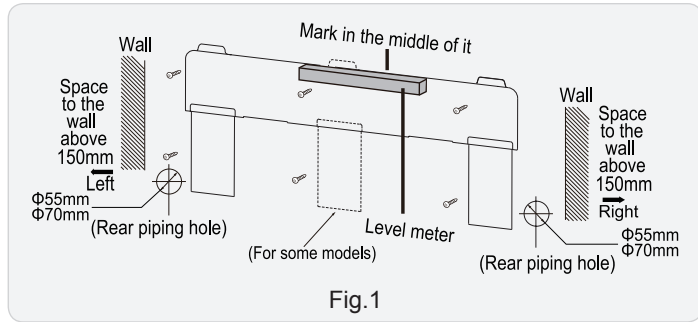
# 8. Installation

the holes.

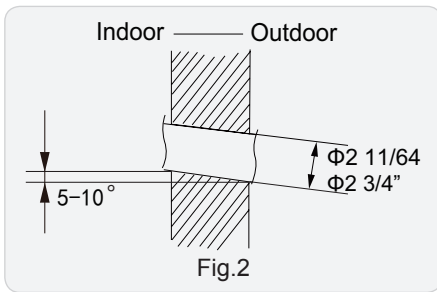
(3) Fix the wall-mounting frame on the wall with tapping screws and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

### 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  $\Phi 2 \frac{3}{4}$ " 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)



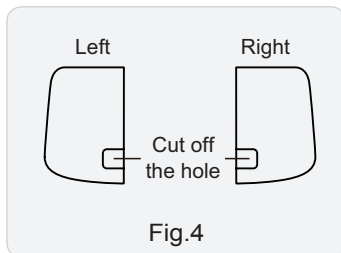
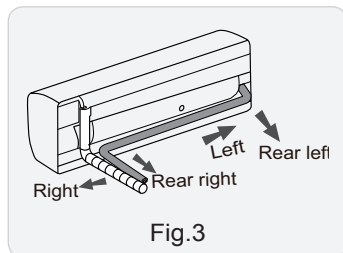
#### ⚠ Note:

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

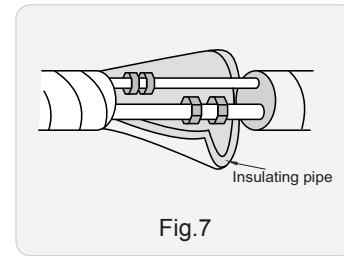
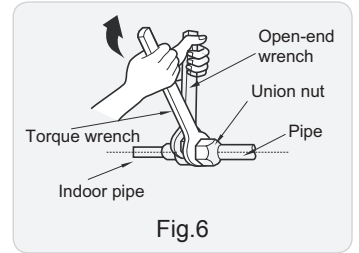
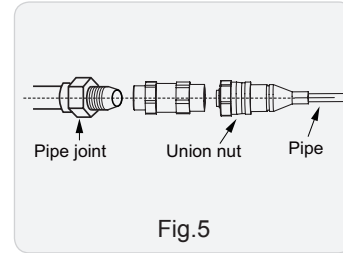
(1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)

(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)



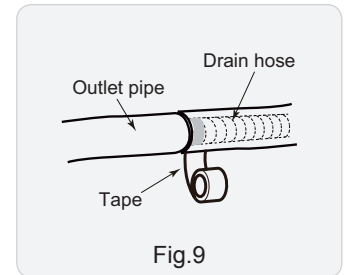
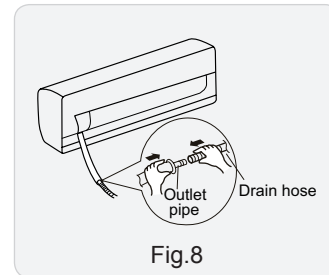
Refer to the following table for wrench moment of force:

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)

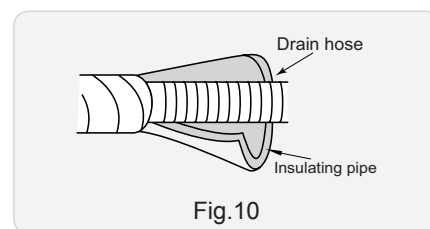
(2) Bind the joint with tape. (As show in Fig.9)



#### ⚠ 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)



# 8. Installation

## 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)

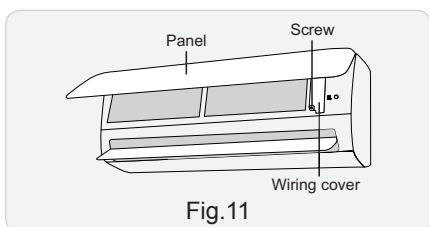


Fig.11

(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)

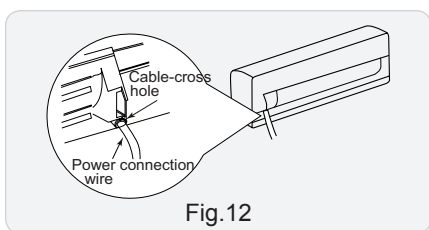


Fig.12

(3) Remove the wire clip; connect the power connection wiresignal 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)

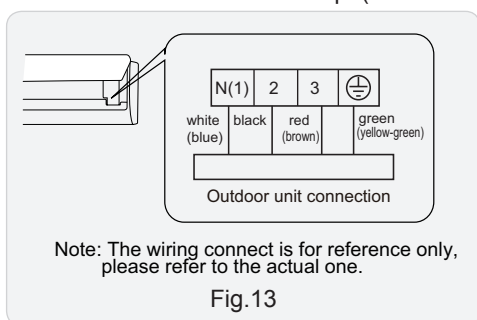


Fig.13

(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.

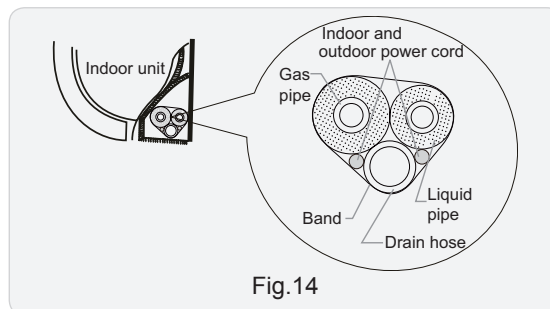


Fig.14

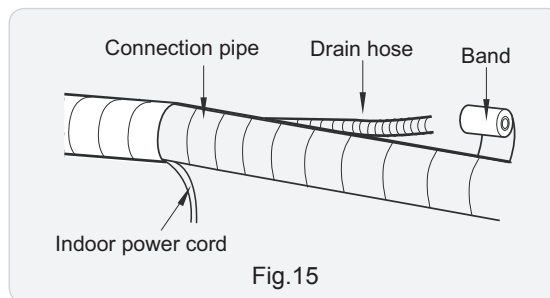


Fig.15

### ⚠ 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)

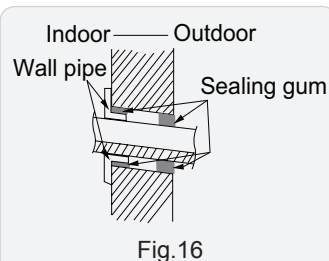


Fig.16

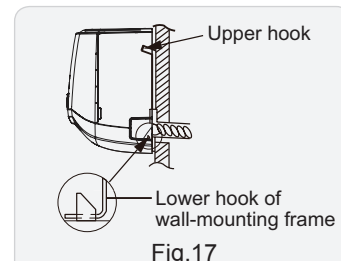


Fig.17

### ⚠ 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)

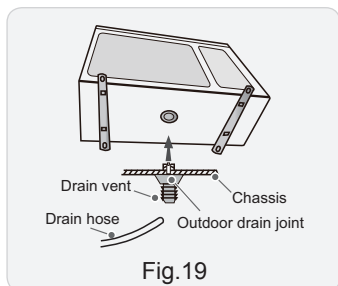
- (1) Select installation location according to the house structure.
- (2) Fix the support of outdoor unit on the selected location with expansion screws.

### ⚠ 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)

# 8. Installation

(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.

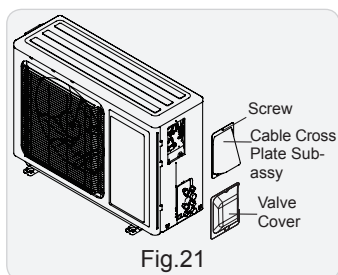
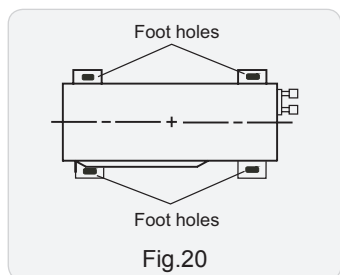


## 2. Install Drain Joint(Only for cooling and heating unit)

- (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)

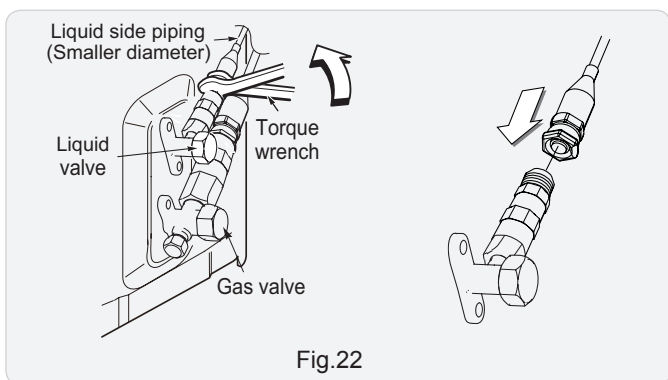
## 3. Fix Outdoor Unit

- (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 big hanging ring.
- (3) Remove the protective rubber plug of the valve.



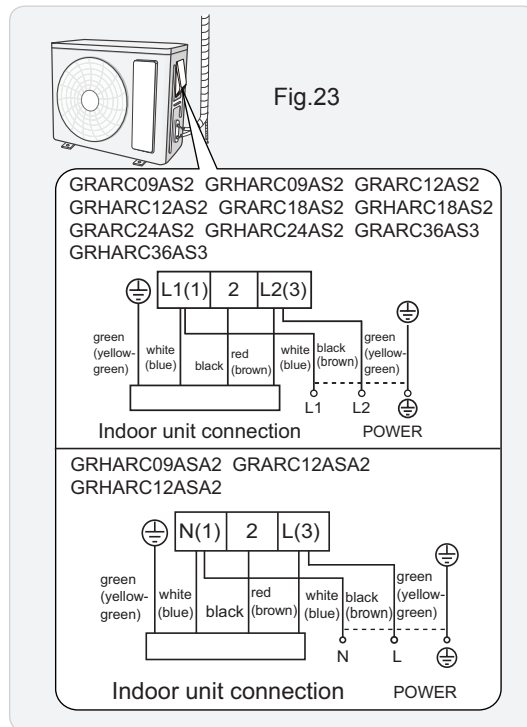
- (4) Adjust the connecting pipe. Connect the female connector of the pipe to the male connector of the unit. (Note: connect the small pipe first)

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)

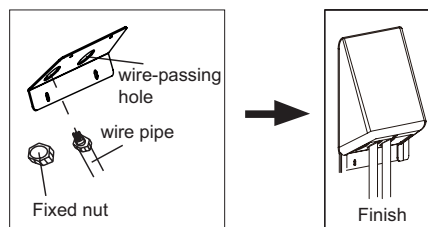


Note: the wiring connect is for reference only, please refer to the actual one.

### ⚠ 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.

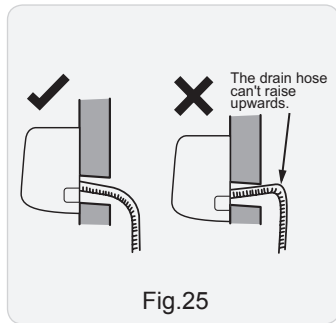
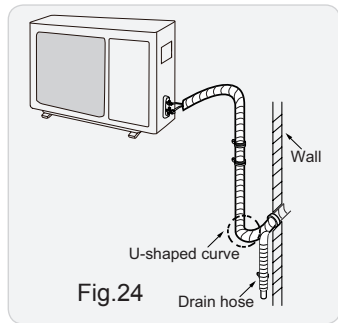
## Install the over line pipe



## 6. Neaten the Pipes

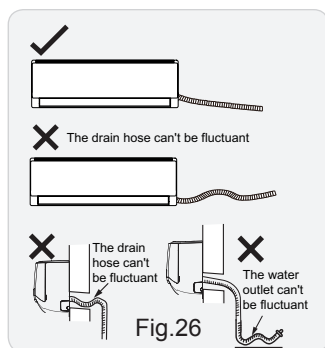
- (1) The pipes should be placed along the wall, bent reasonably and hidden possibly. Min. semidiameter of bending the pipe is 10cm.
- (2) If the outdoor unit is higher than the wall hole, you must set a U-shaped curve in the pipe before pipe goes into the room, in order to prevent rain from getting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

# 8. Installation



### ⚠ Note:

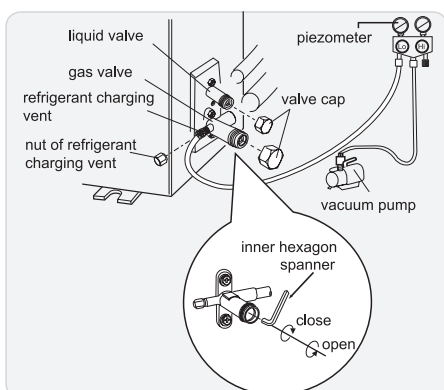
- (1) The through-wall height of drain hose shouldn't be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fluctuant, etc.(As show in Fig.26)
- (3) The water outlet can't be placed in water in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



## 8.7 Vacuum Pumping and Leak Detection

### 1. Use vacuum pump

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

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
1	High pressure protection of system	E1	During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment ); Ambient temperature is too high.
2	Low pressure protection of system	E3	The Dual-8 Code Display will show E3 until the low pressure switch stop operation.	1.Low-pressure protection 2.Low-pressure protection of system 3.Low-pressure protection of compressor
3	High discharge temperature protection of compressor	E4	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
4	Overcurrent protection	E5	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.
5	Communication Malfunction	E6	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
6	High temperature resistant protection	E8	During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
7	EEPROM malfunction	EE	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
8	Limit/decrease frequency due to high temperature of module	EU	All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If it's no use, please replace control panel AP1.
9	Malfunction protection of jumper cap	C5	Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.
10	Refrigerant insufficient protection, cut off protection of refrigerant	F0	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?

# 9. Maintenance

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
11	Indoor ambient temperature sensor is open/short circuited	F1	During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	<ol style="list-style-type: none"> <li>1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal.</li> <li>2. Components in mainboard fell down leads short circuit.</li> <li>3. Indoor ambient temp. sensor damaged. (check with sensor resistance value chart)</li> <li>4. Mainboard damaged.</li> </ol>
12	Indoor evaporator temperature sensor is open/short circuited	F2	AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	<ol style="list-style-type: none"> <li>1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal.</li> <li>2. Components on the mainboard fall down leads short circuit.</li> <li>3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing)</li> <li>4. Mainboard damaged.</li> </ol>
13	Outdoor ambient temperature sensor is open/short circuited	F3	During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
14	Outdoor condenser temperature sensor is open/short circuited	F4	During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
16	Outdoor discharge temperature sensor is open/short circuited	F5	During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	<ol style="list-style-type: none"> <li>1.Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)</li> <li>2.The head of temperature sensor hasn't been inserted into the copper tube</li> </ol>
17	Limit/decrease frequency due to overload	F6	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
18	Decrease frequency due to overcurrent	F8	All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload
19	Decrease frequency due to high air discharge	F9	All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
20	Limit/decrease frequency due to antifreezing	FH	All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low
21	Voltage for DC bus-bar is too high	PH	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	<ol style="list-style-type: none"> <li>1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range.</li> <li>2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if it's normal, There's malfunction for the circuit, please replace the control panel (AP1)</li> </ol>

# 9. Maintenance

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
22	Voltage of DC bus-bar is too low	PL	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if it's normal, There's malfunction for the circuit, please replace the control panel (AP1)
23	Compressor Min frequency in test state	P0		Showing during min. cooling or min. heating test
24	Compressor rated frequency in test state	P1		Showing during nominal cooling or nominal heating test
25	Compressor maximum frequency in test state	P2		Showing during max. cooling or max. heating test
26	Compressor intermediate frequency in test state	P3		Showing during middle cooling or middle heating test
27	Overcurrent protection of phase current for compressor	P5	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
28	Charging malfunction of capacitor	PU	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor
29	Malfunction of module temperature sensor circuit	P7	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
30	Module high temperature protection	P8	During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If it's no use, please replace control panel AP1.
31	Overload protection for compressor	H3	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2.Refer to the malfunction analysis ( discharge protection, overload)
32	IPM protection	H5	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
33	Module temperature is too high	P8	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Radiating grease on IPM module of outdoor unit main board is not enough; screws have not been fixed tightly; Hardware malfunction of outdoor unit main board;
34	Internal motor (fan motor) do not operate	H6	Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard revdetecting circuit.

# 9. Maintenance

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
35	Desynchro-nizing of compressor	H7	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
36	Outdoor DC fan motor malfunction	L3	Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
37	power protection	L9	compressor stop operation and Outdoor fan motor will stop 30s latter , 3 minutes latter fan motor and compressor will restart	To protect the electronical components when detect high power
38	Indoor unit and outdoor unit doesn't match	LP	compressor and Outdoor fan motor can't work	Indoor unit and outdoor unit doesn't match
39	Failure start-up	LC	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
40	Cold air prevention protection	E9		Not the error code. It's the status code for the operation.
41	Anti-freezing rotection for evaporator	E2		Not the error code. It's the status code for the operation.
42	Malfunction of phase current detection circuit for compressor	U1	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
43	Malfunction of voltage dropping for DC bus-bar	U3	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
44	Malfunction of complete unit's current detection	U5	During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	There's circuit malfunction on outdoor unit control panel AP1, please replace the outdoor unit control panel AP1.
45	The four-way valve is abnormal	U7	If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.
46	Malfunction of zero-cross detection circuit	U8	The complete unit stops	1.Power supply is abnormal; 2.Detection circuit of indoor control mainboard is abnormal.
47	Malfunction of detecting plate(WIFI )	JF	Loads operate normally, while the unit can't be normally controlled by APP.	1. Main board of indoor unit is damaged; 2. Detection board is damaged; 3. The connection between indoor unit and detection board is not good;
48	Refrigerant recovery mode	Fo		Refrigerant recovery. The Serviceman operates it for maintenance.
49	Undefined outdoor unit error	oE	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. Failure startup of compressor? 3. Are wires of compressor not connected tightly? 4. Is compressor damaged? 5. Is main board damaged?



# 9. Maintenance

## 9.2 Procedure of Troubleshooting

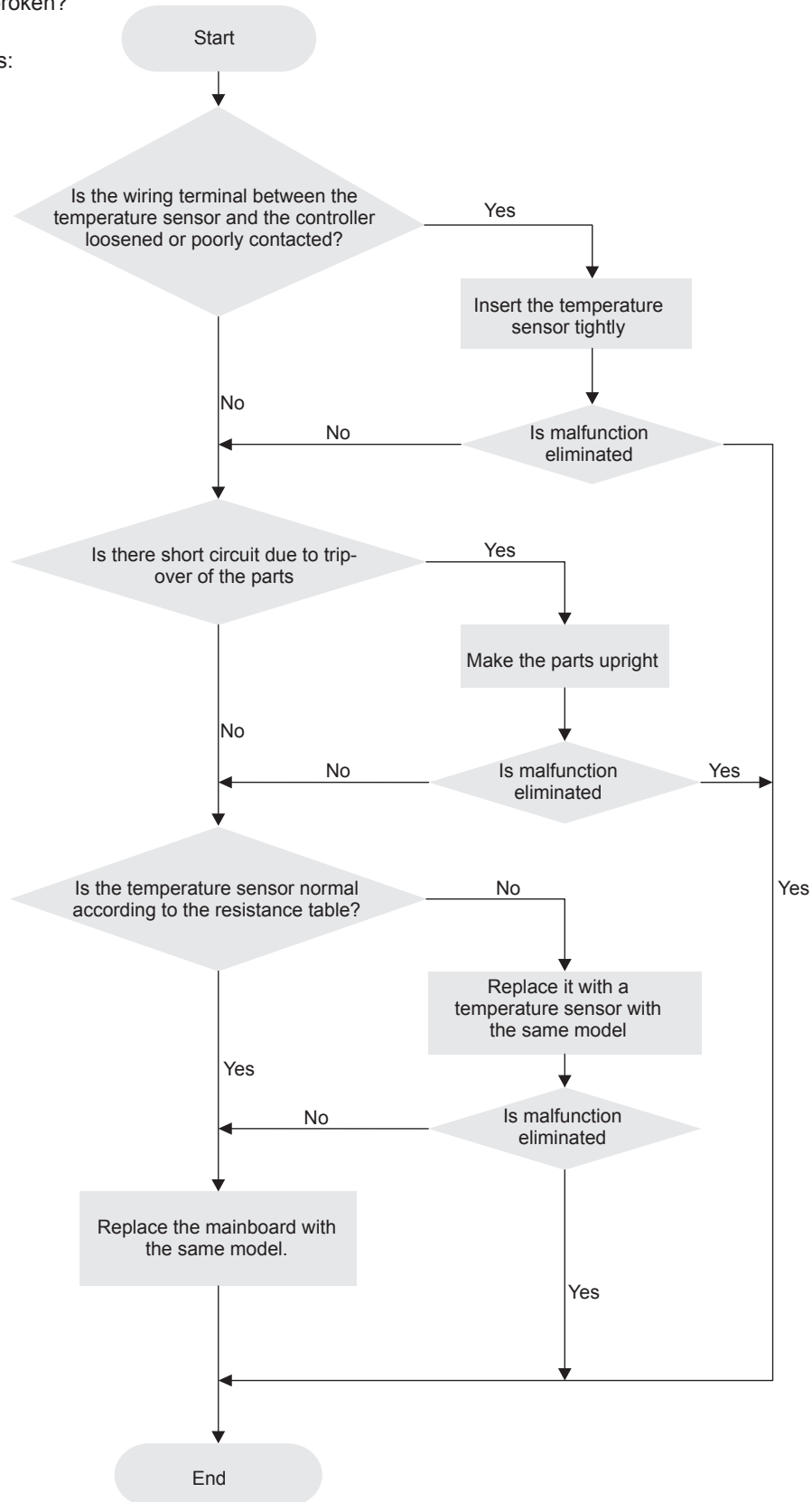
### • Indoor unit:

#### 1. Malfunction of Temperature Sensor F1, F2

Main detection points:

- Is the wiring terminal between the temperature sensor and the controller loosened or poorly contacted?
- Is there short circuit due to trip-over of the parts?
- Is the temperature sensor broken?
- Is mainboard broken?

Malfunction diagnosis process:



# 9. Maintenance

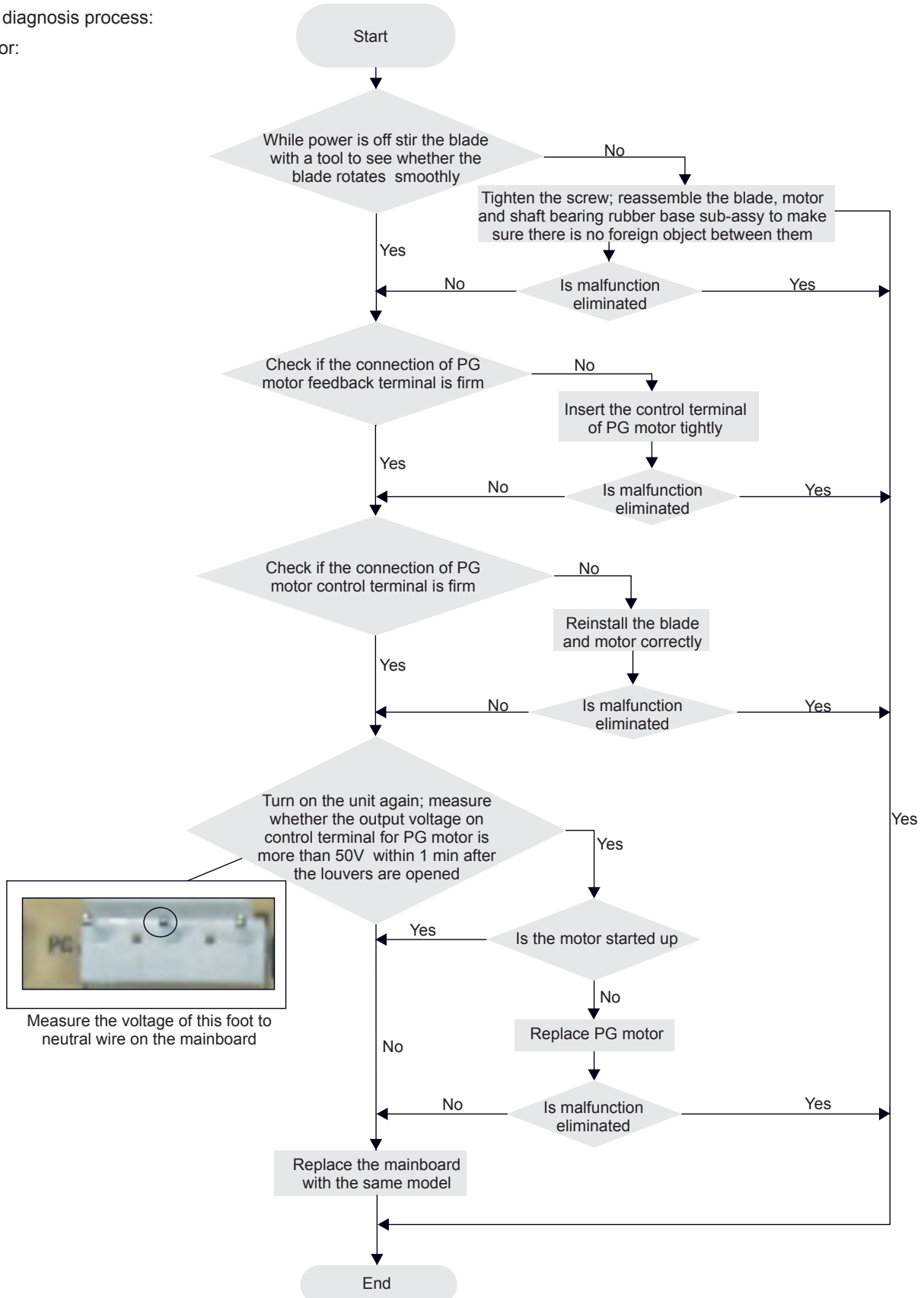
## 2. Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- SmoothlyIs the control terminal of motor connected tightly?
- SmoothlyIs the feedback interface of motor connected tightly?
- The fan motor can't operate?
- The motor is broken?
- Detectioncircuit of the mainboard is defined abnormal?

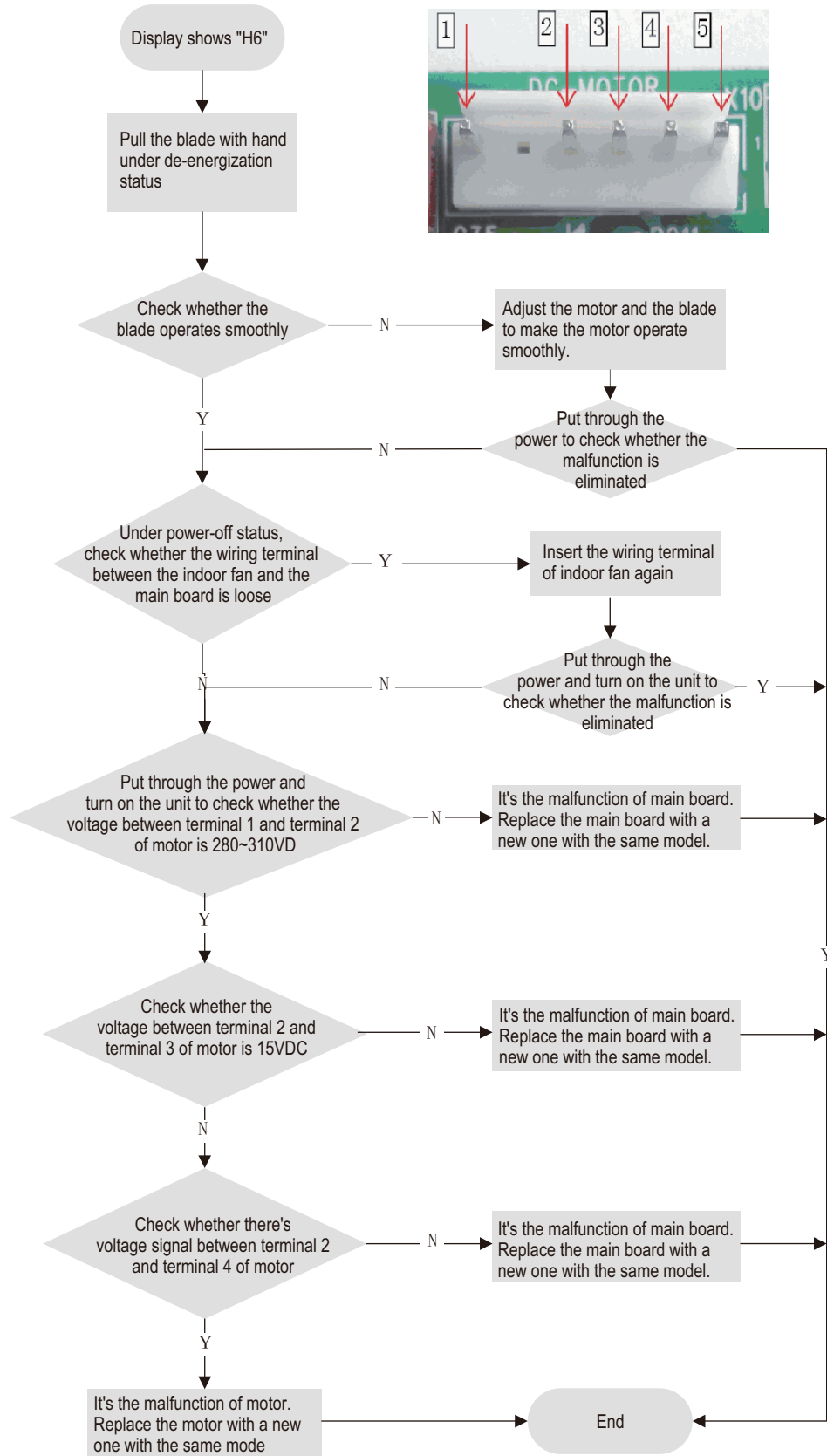
Malfunction diagnosis process:

For PG motor:



# 9. Maintenance

For DC motor:



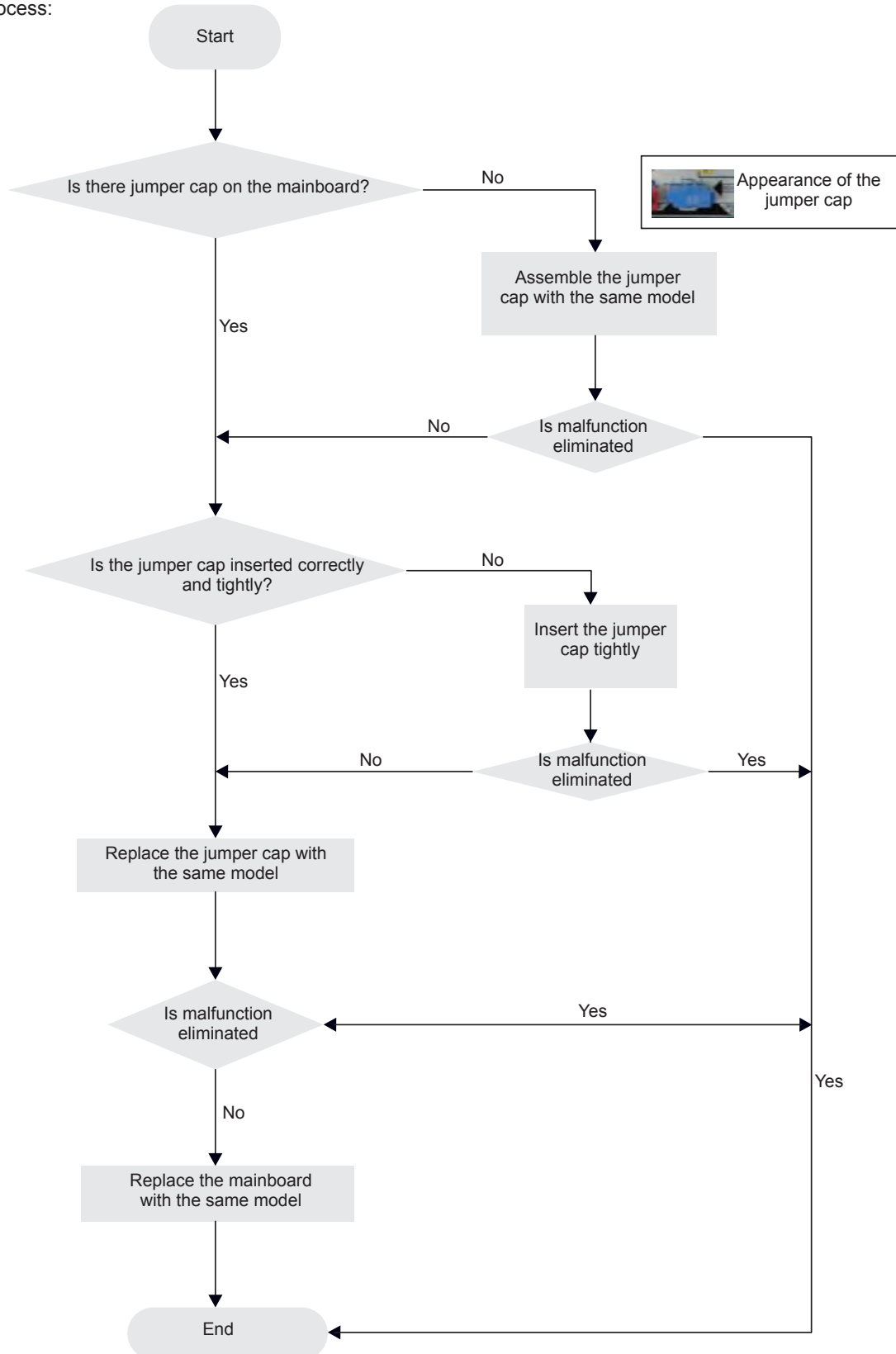
# 9. Maintenance

## 3. Malfunction of Protection of Jumper Cap C5

Main detection points:

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

Malfunction diagnosis process:



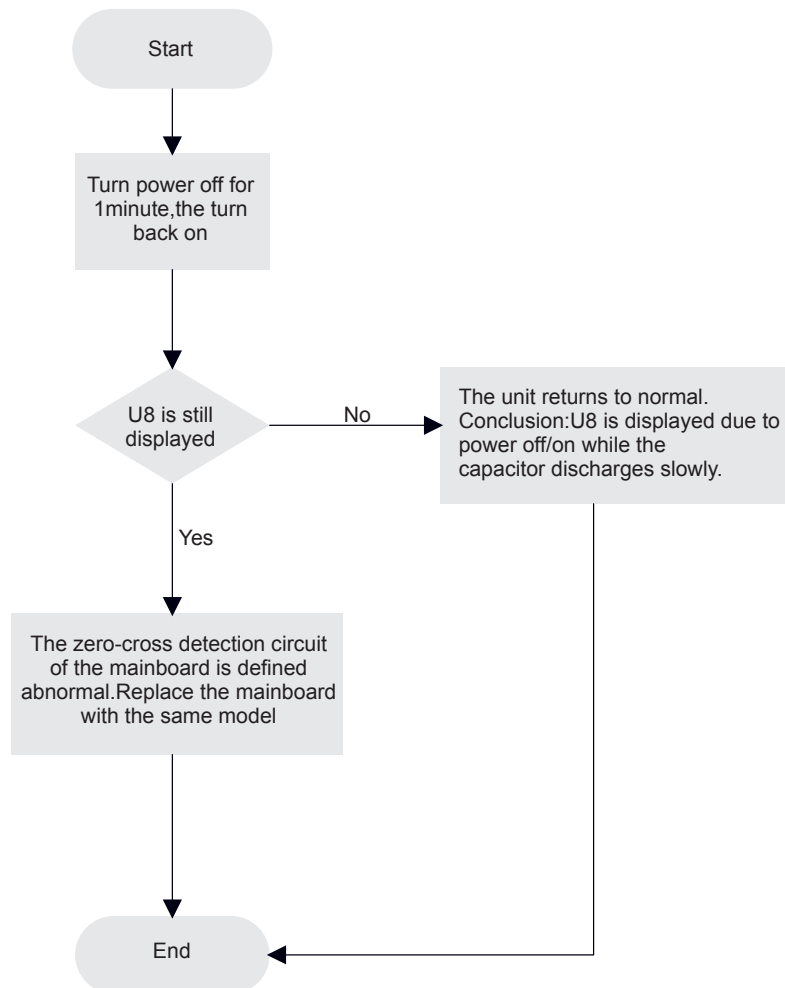
# 9. Maintenance

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

Main detection points:

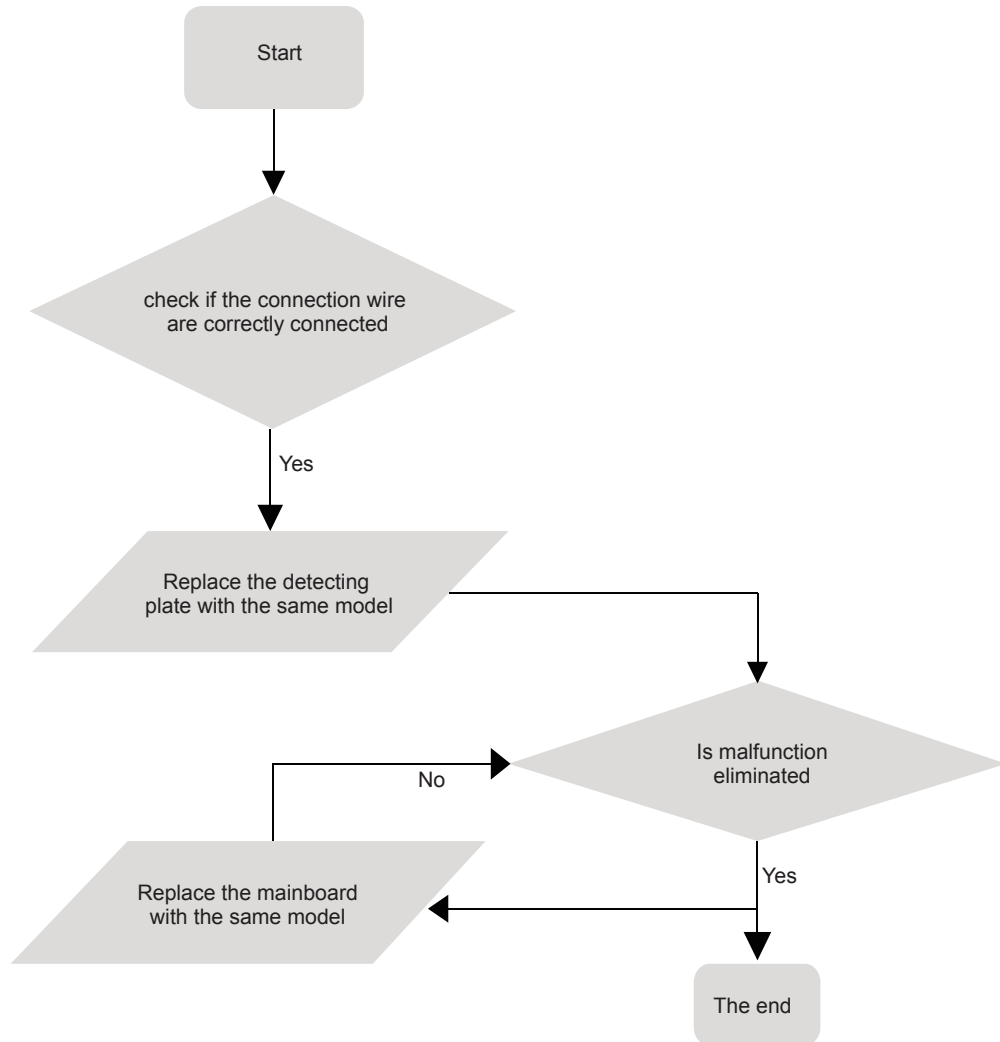
- Instant energization after de-energization while the capacitor discharges slowly?
- The zero-cross detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



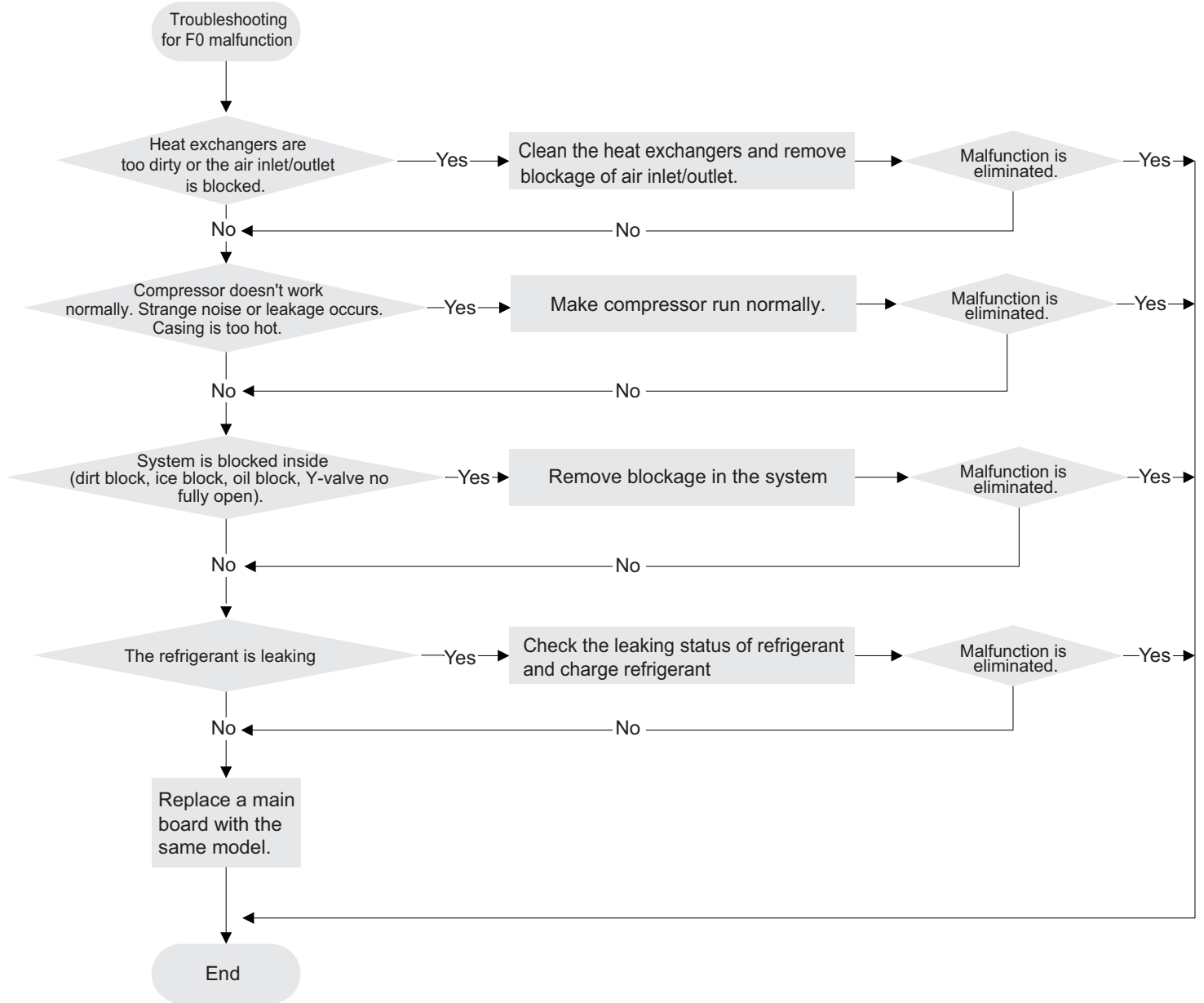
# 9. Maintenance

## 5. Malfunction of detecting plate(WIFI) JF



# 9. Maintenance

## 6. Malfunction of Insufficient fluorine protection F0



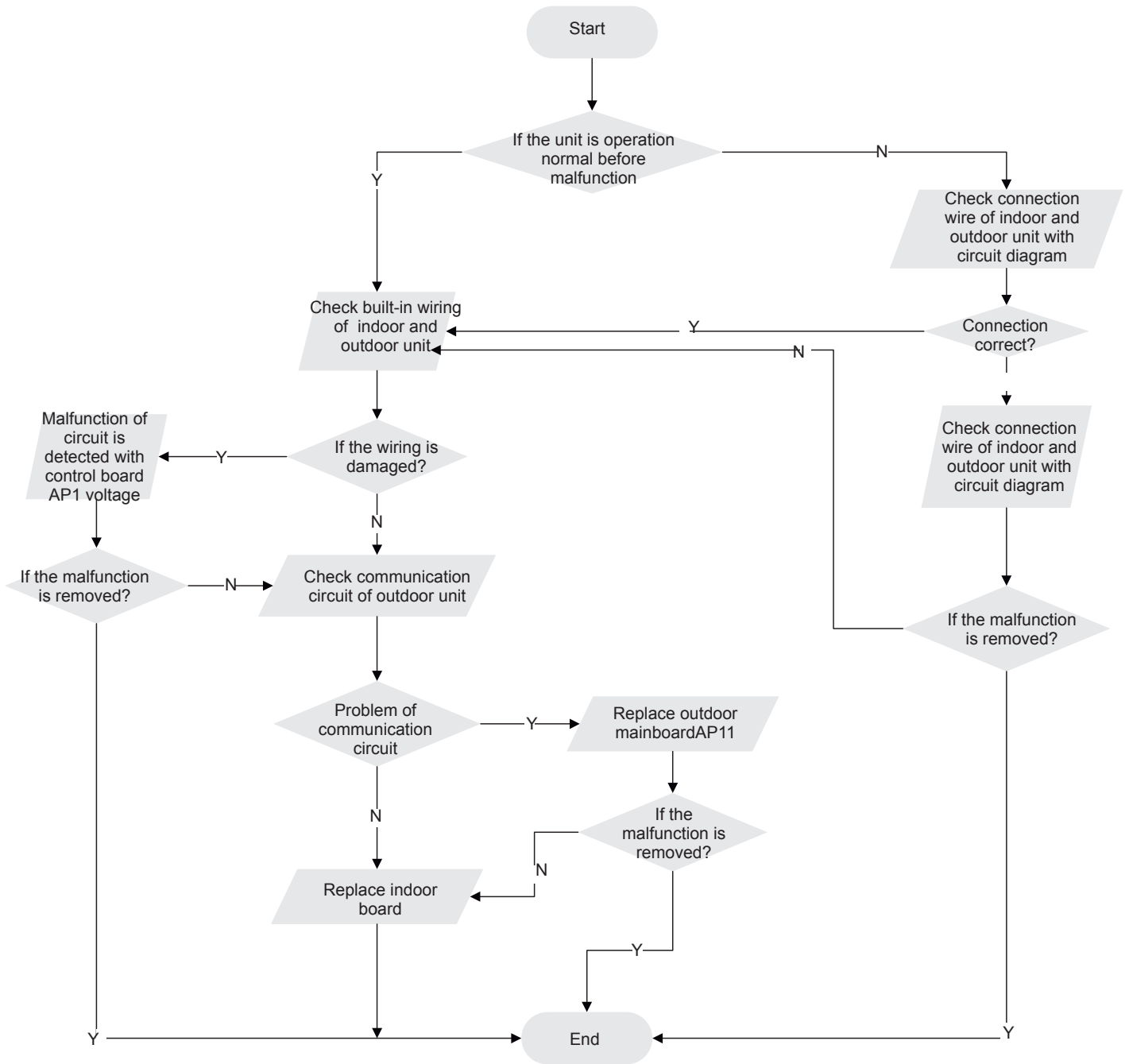
# 9. Maintenance

## 7. Communication malfunction E6

Main detection points:

- Check if the connection wire and the built-in wiring of indoor and outdoor unit are connected well and without damage;
- If the communication circuit of indoor mainboard is damaged? If the communication circuit of outdoor mainboard (AP1) is damaged?

Malfunction diagnosis process:



Note: method for checking the communication circuit of outdoor unit: cut off the communication wires of indoor/outdoor unit, and then measure the voltage between COM and N of the control board of outdoor unit (DC notch, about 56V)



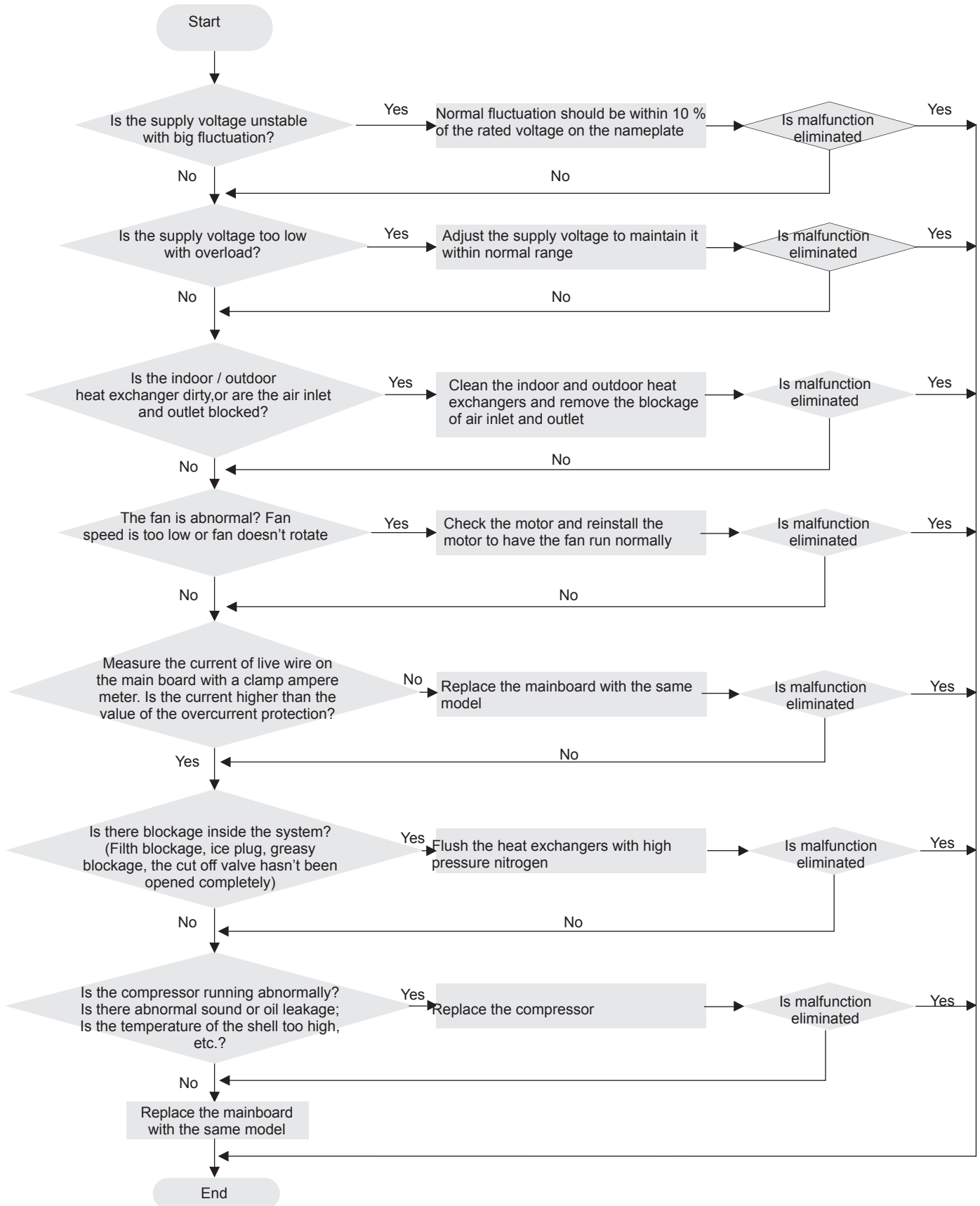
# 9. Maintenance

## 8. Malfunction of Overcurrent Protection E5

Main detection points:

- Is the supply voltage unstable with big fluctuation?
- Is the supply voltage too low with overload?
- Hardware trouble?

Malfunction diagnosis process:



# 9. Maintenance

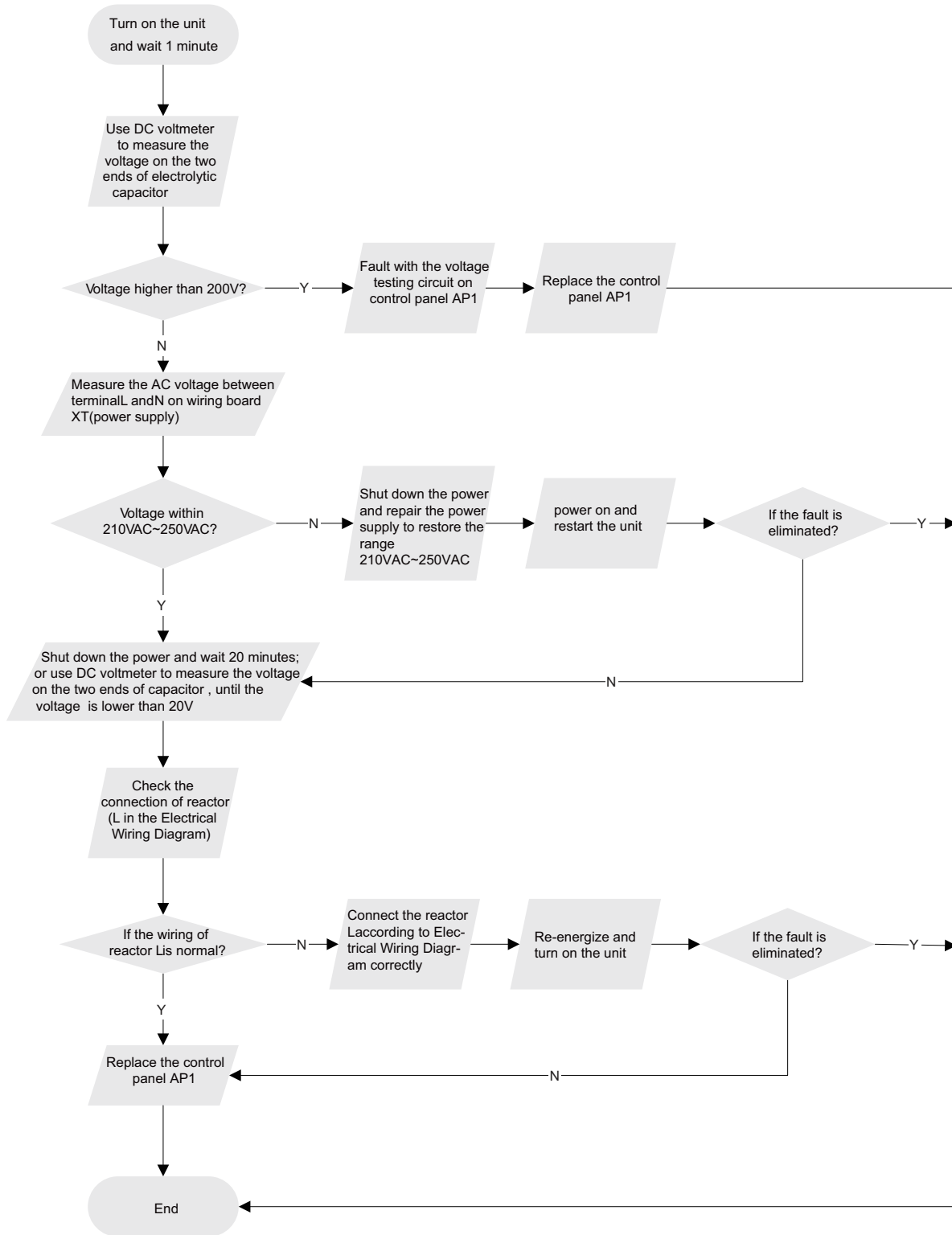
## •Outdoor unit:

### 1. Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

Main Check Points:

- Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
- Is the reactor (L) correctly connected? Is the connection loose or fallen? Is the reactor (L) damaged?

Fault diagnosis process:



# 9. Maintenance

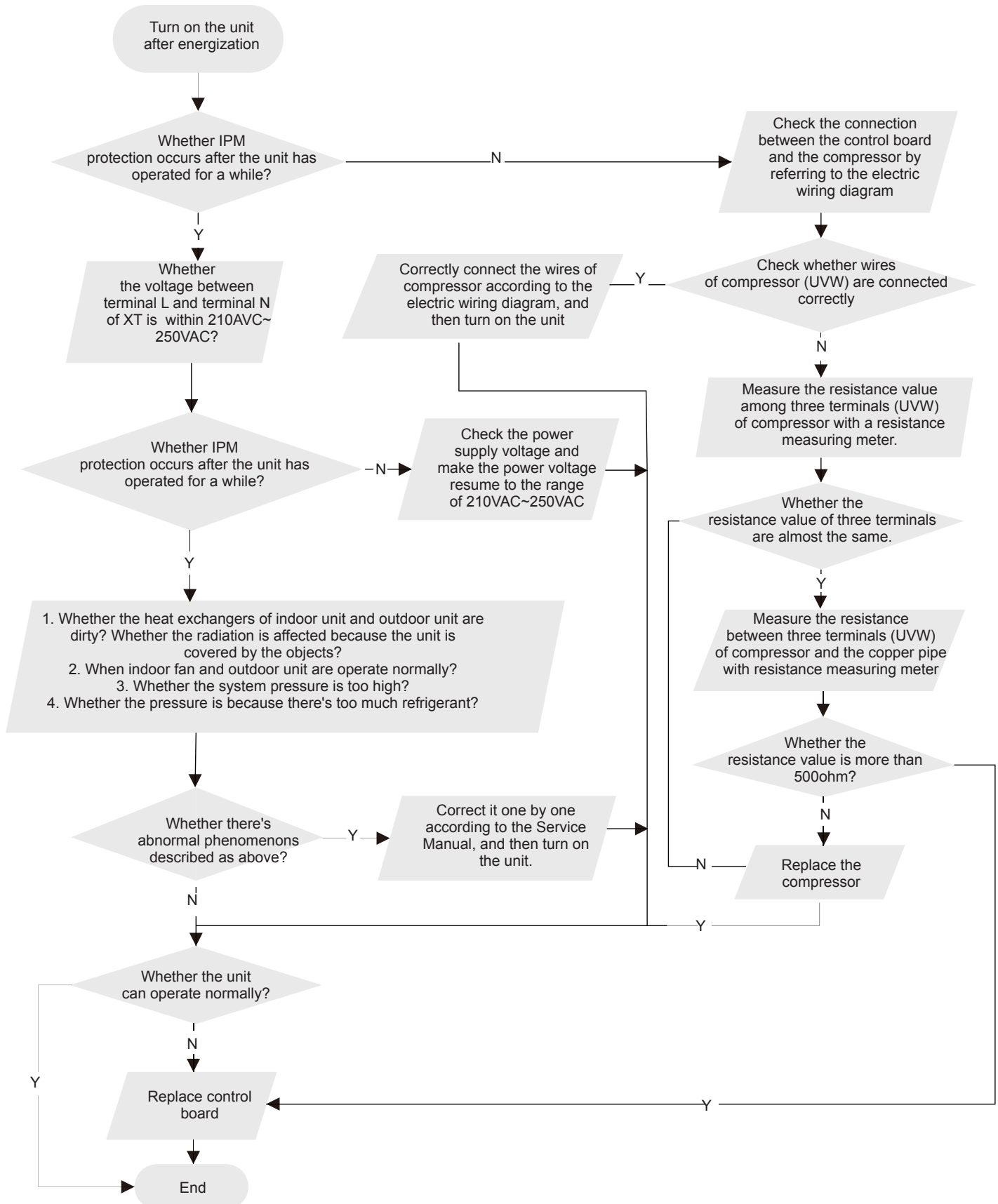
## 2. IPM protection H5 , over-phase current of compressor P5

(AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

(1) compressor COMP terminal (2) power supply voltage (3) compressor (4) charging amount of refrigerant (5) air inlet and air outlet of indoor/outdoor unit

Malfunction diagnosis process:



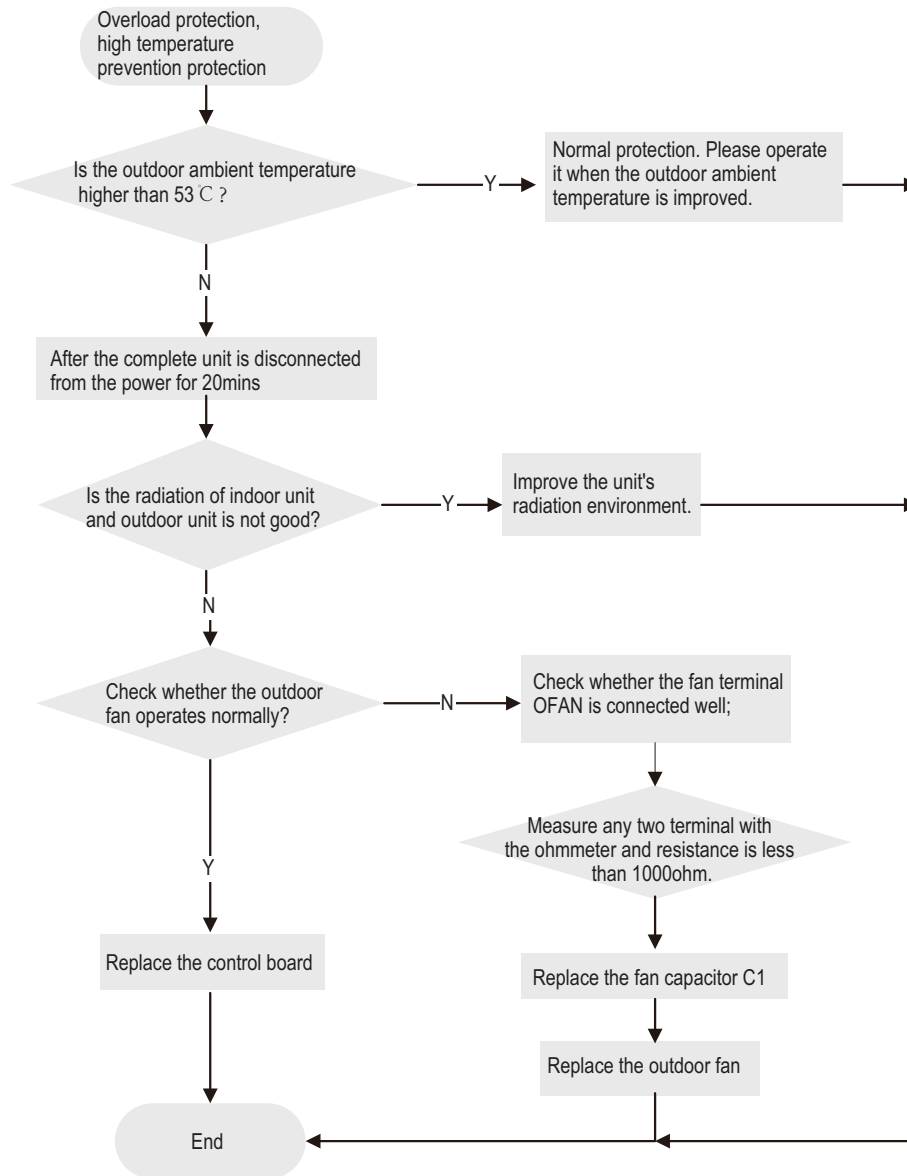
# 9. Maintenance

## 3. High temperature and overload protection (E8)(AP1 below means control board of outdoor unit)

Main detection points:

(1) outdoor temperature (2) fan (3)air inlet and air outlet of indoor/outdoor unit

Malfunction diagnosis process:



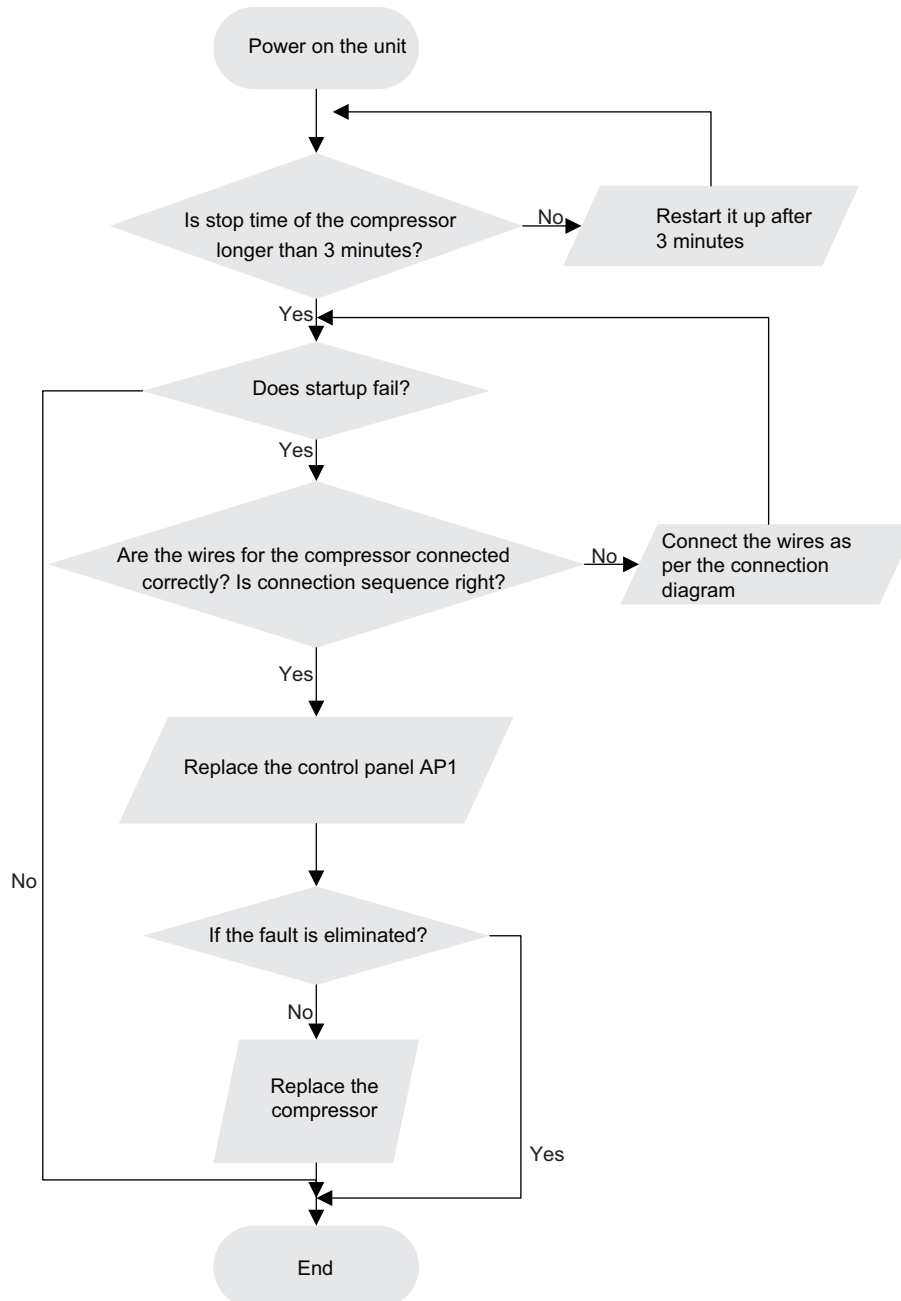
# 9. Maintenance

## 4. Start-up failure LC (following AP1 for outdoor unit control board)

Main detection points:

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

Malfunction diagnosis process:



# 9. Maintenance

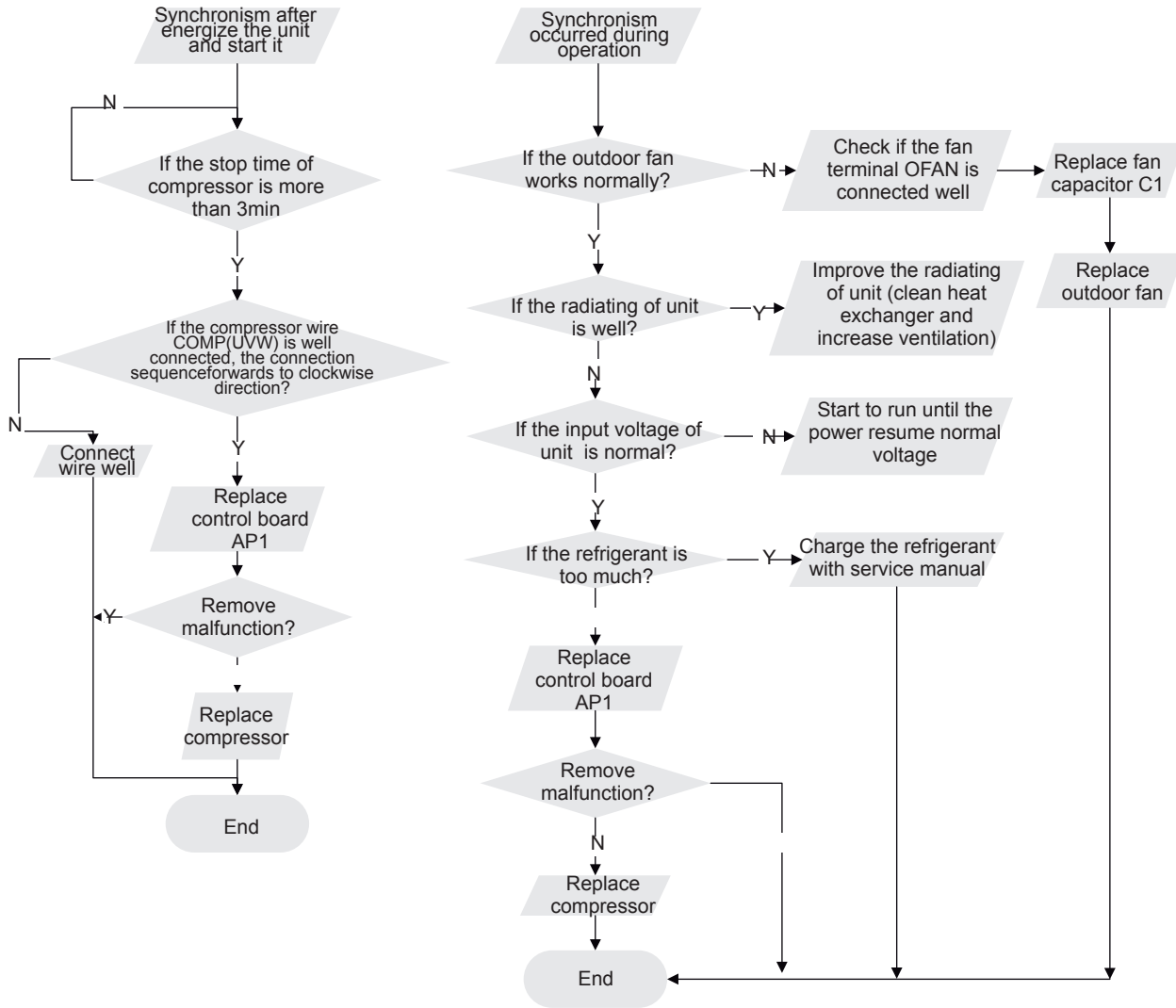
## 5. Desynchronization diagnosis for compressor H7

(AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

(1) system pressure (2) power supply voltage

Malfunction diagnosis process:



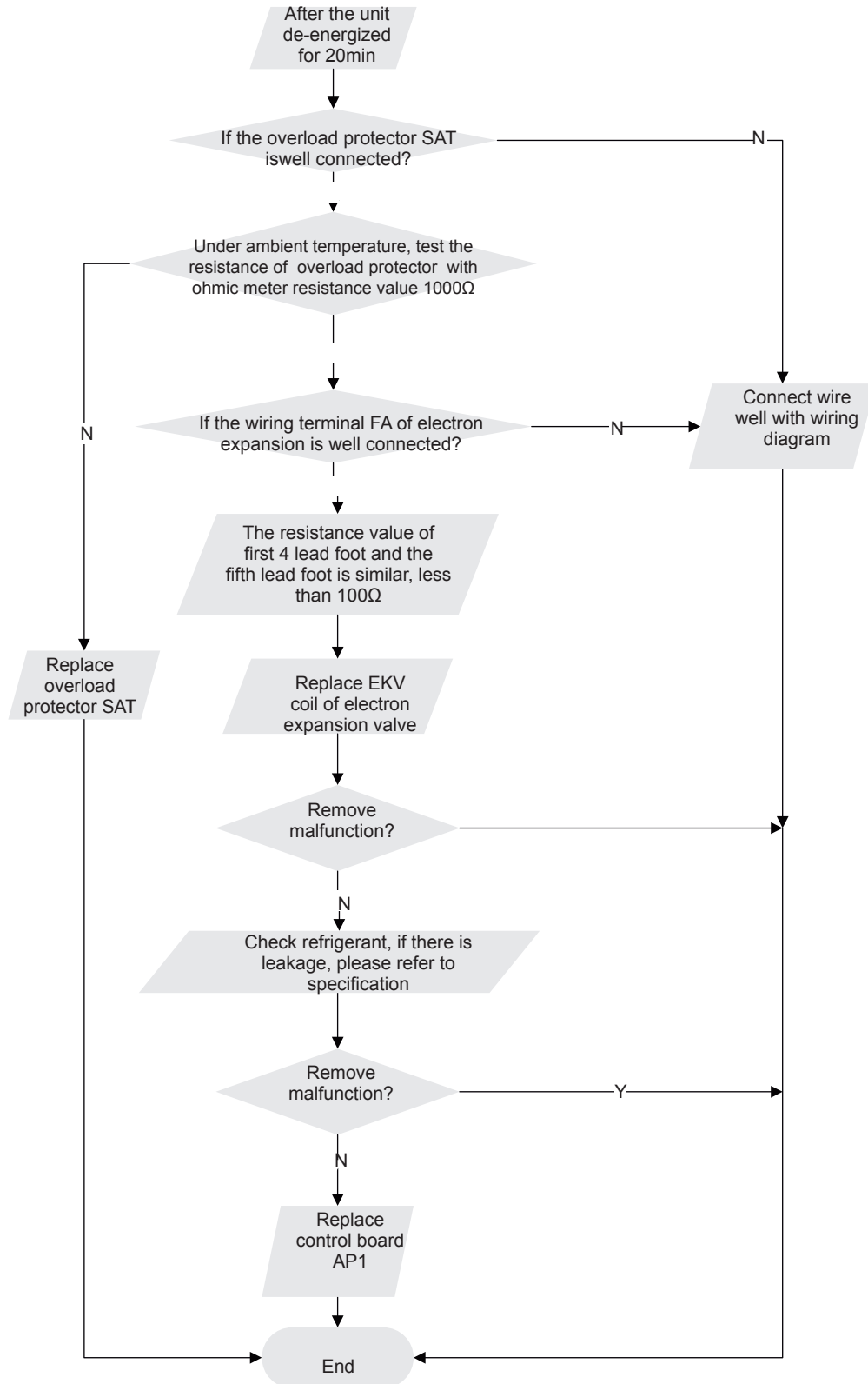
# 9. Maintenance

## 6. Overload protection of compressor H3, high discharge temperature protection of compressor E4 (AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

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

Malfunction diagnosis process:



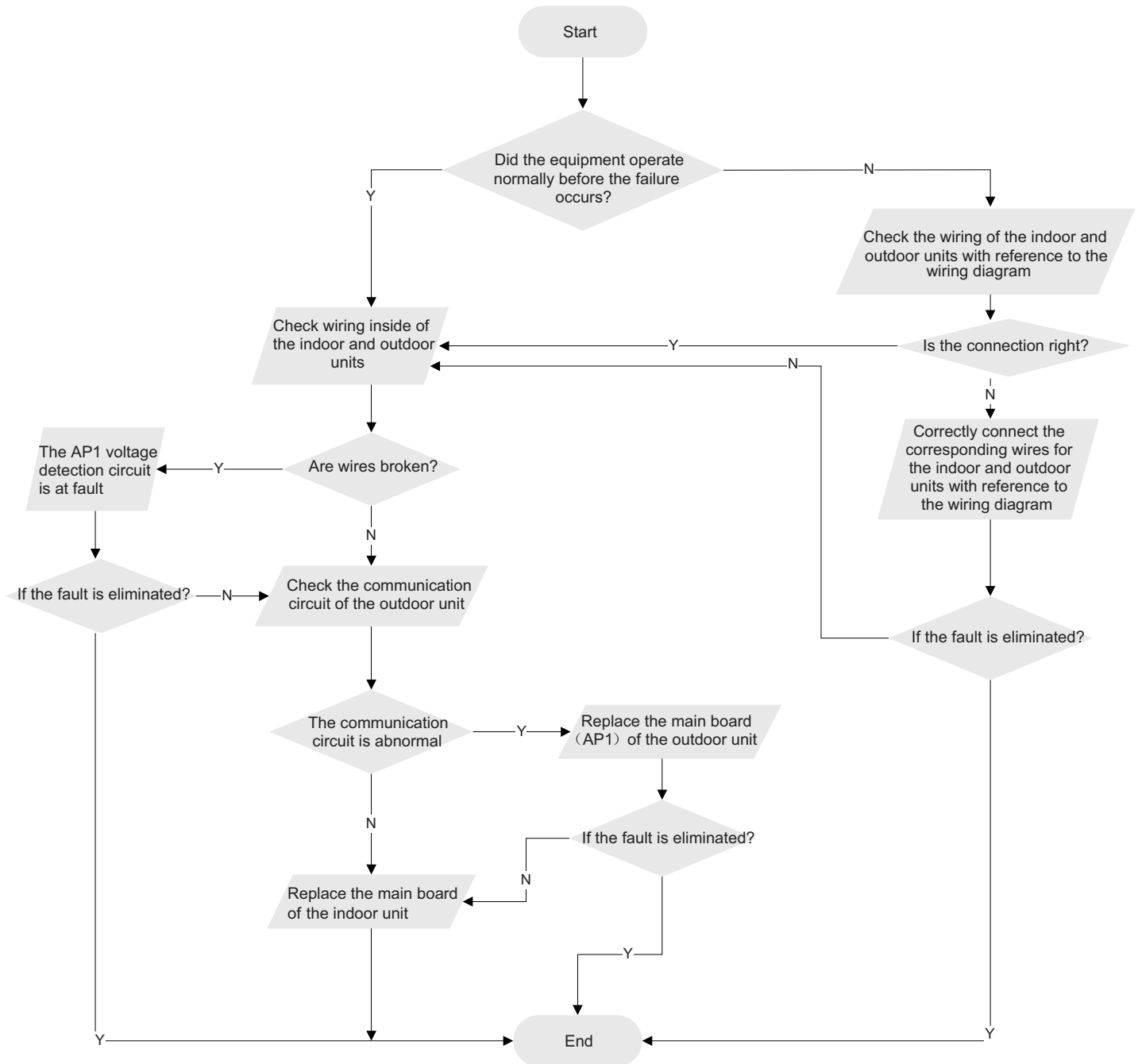
# 9. Maintenance

## 7 Communication malfunction: (following AP1 for outdoor unit control board)

Mainly detect:

- Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?
- Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any damage?

Fault diagnosis process:





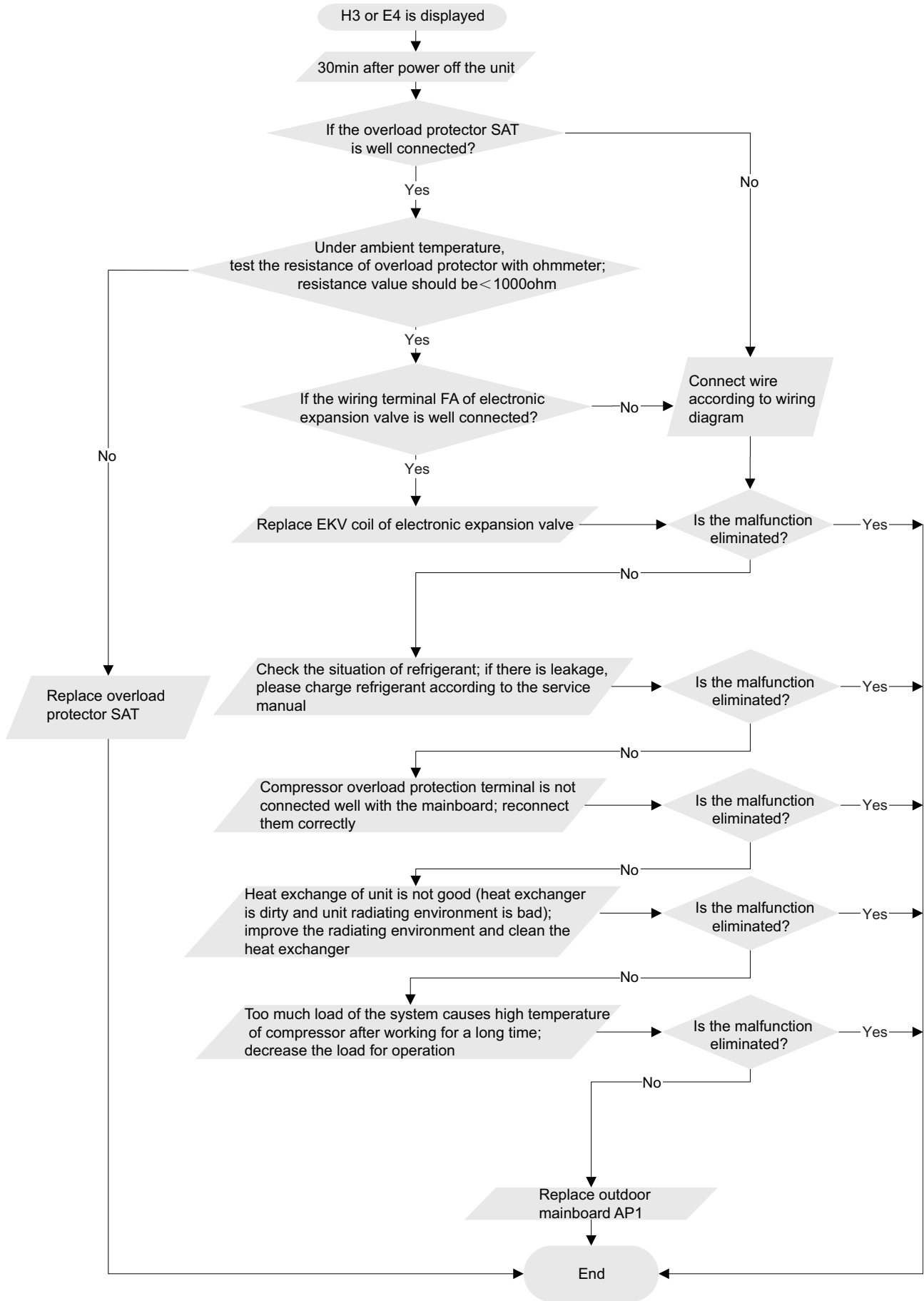
# 9. Maintenance

## 8. Overload and high discharge temperature malfunction

Main detection points:

- If the electronic expansion valve is connected well? Is the electronic expansion valve damaged?
- If the refrigerant is leaked?
- The compressor overload protection terminal is not connected well with the mainboard?
- If the overload protector is damaged?
- Heat exchange of unit is not good? (heat exchanger is dirty and unit radiating environment is bad)
- Too much load of the system causes high temperature of compressor after working for a long time?
- Malfunction of discharge temperature sensor?

# 9. Maintenance



# 9. Maintenance

## 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 it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; 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

# 9. Maintenance

## 4. ODU Fan Motor can't Operate

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

## 5. Compressor can't Operate

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

## 6. Air Conditioner is Leaking

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

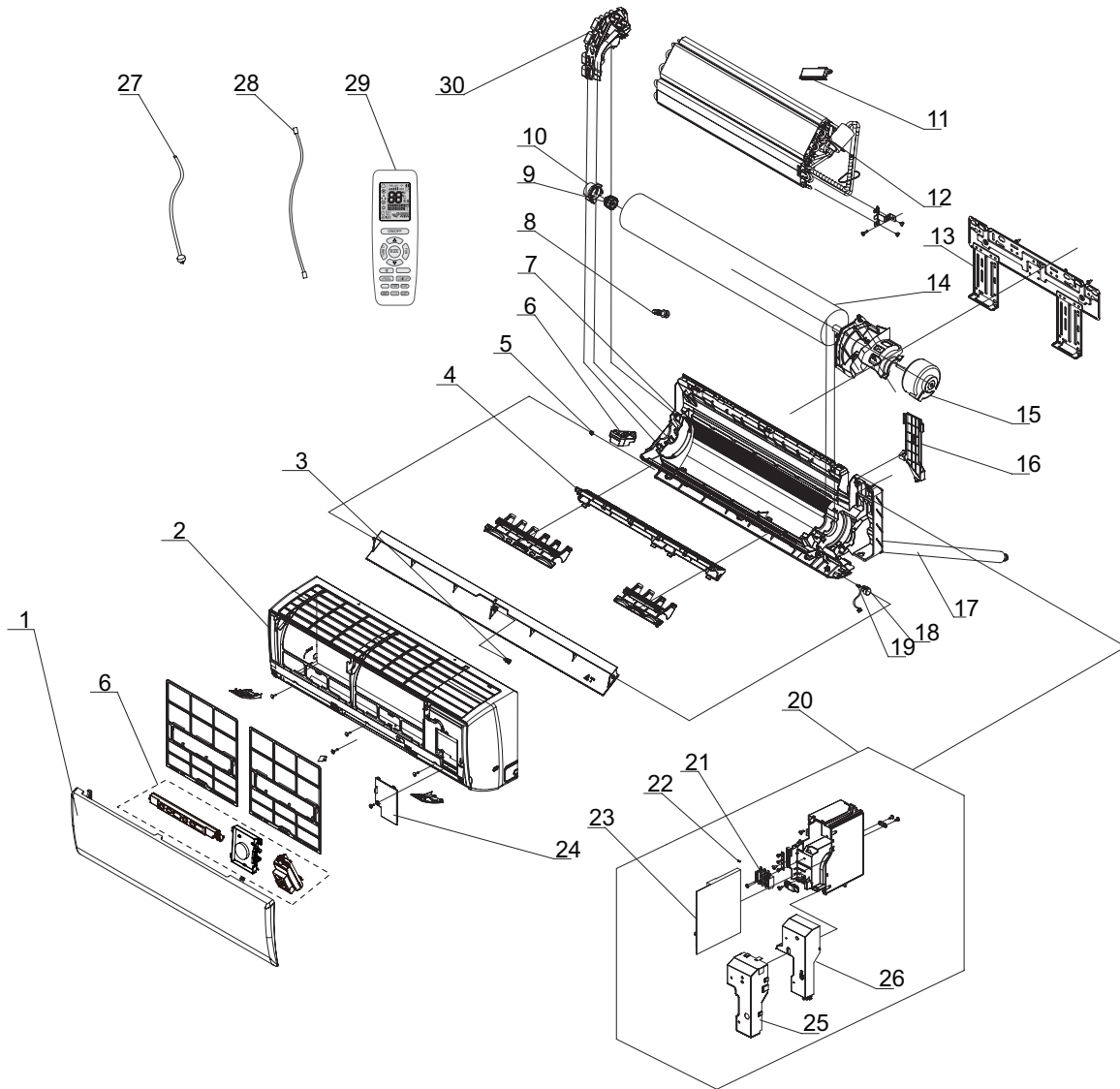
## 7. Abnormal Sound and Vibration

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

# 10. Exploded View and Parts List

## 10.1 Indoor Unit

GWHARC09SA2



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

No.	Description
16	Connecting pipe clamp
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
27	Power Cord
28	Connecting Cable
29	Remote Controller
30	Evaporator Support

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

# 10. Exploded View and Parts List

GWARC09S2

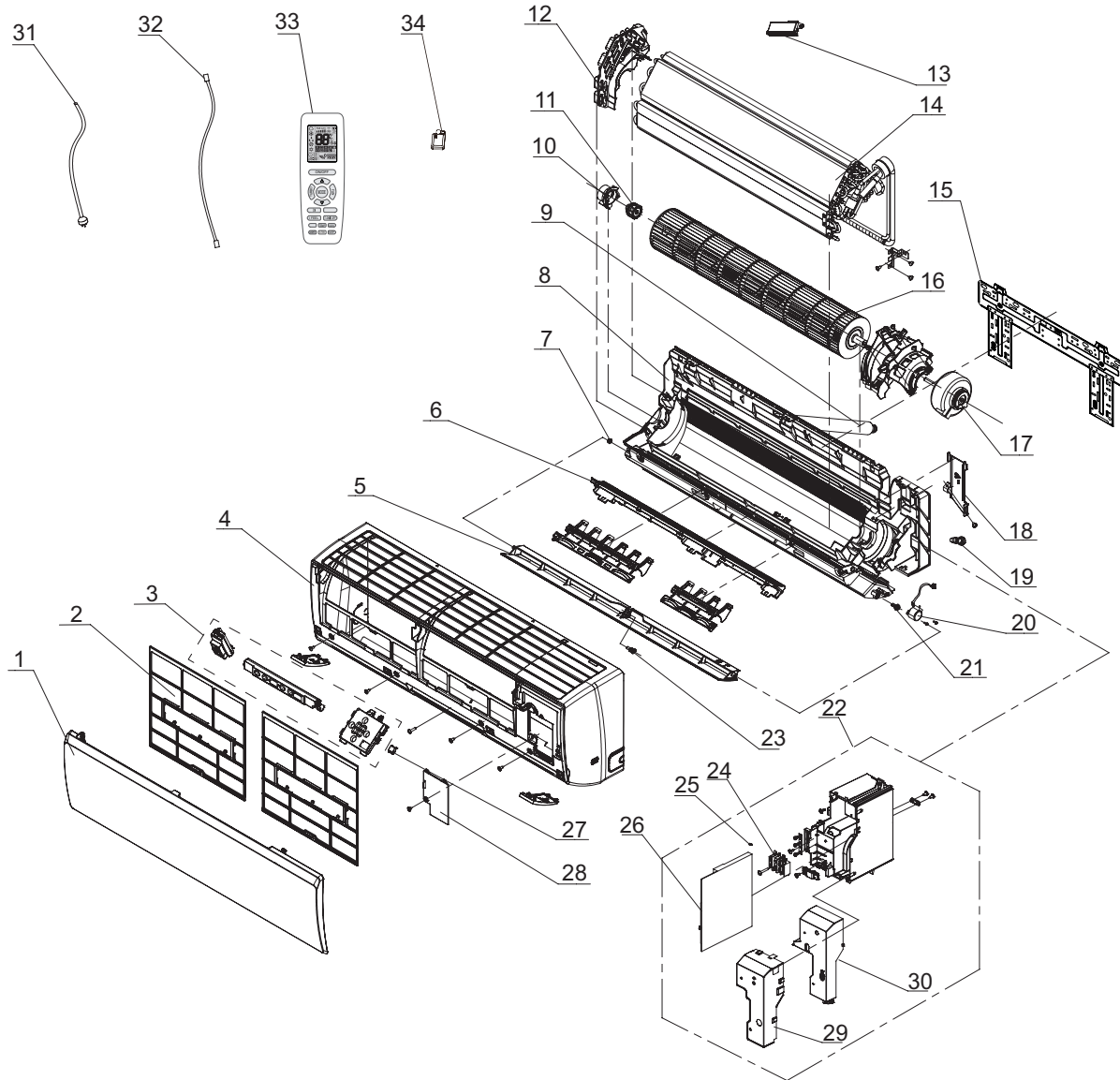
GWHARC09S2

GWARC12SA2

GWHARC12SA2

GWARC12S2

GWHARC12S2



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

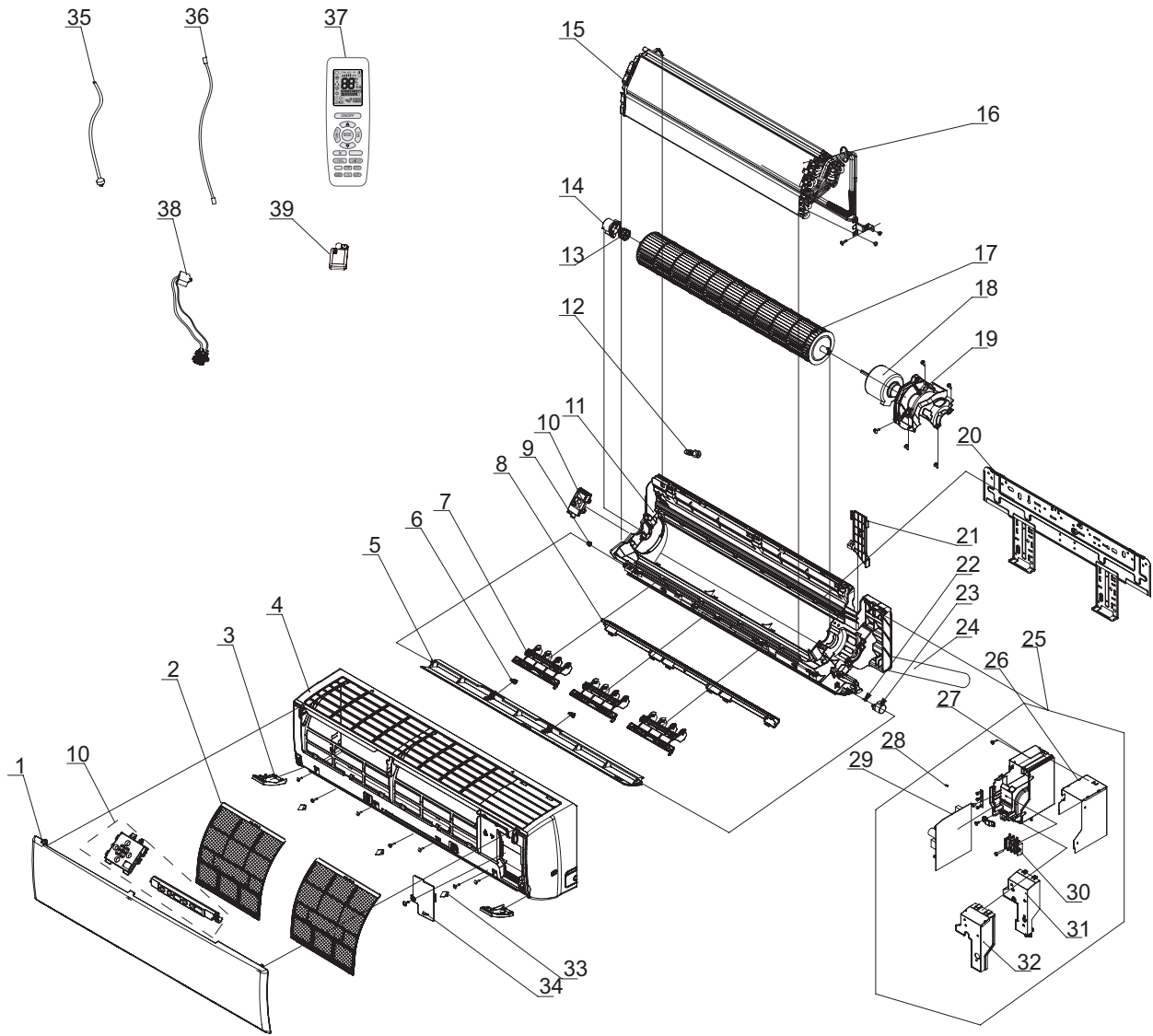
NO.	Description
13	Cold Plasma Generator
14	Evaporator Assy
15	Wall Mounting Frame
16	Cross Flow Fan
17	Fan Motor
18	Connecting pipe clamp
19	Rubber Plug (Water Tray)
20	Stepping Motor
21	Crank
22	Electric Box Assy
23	Axile Bush
24	Terminal Board

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

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

# 10. Exploded View and Parts List

GWARC18S2 GWHARC18S2



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)
13	O-Gasket sub-assy of Bearing

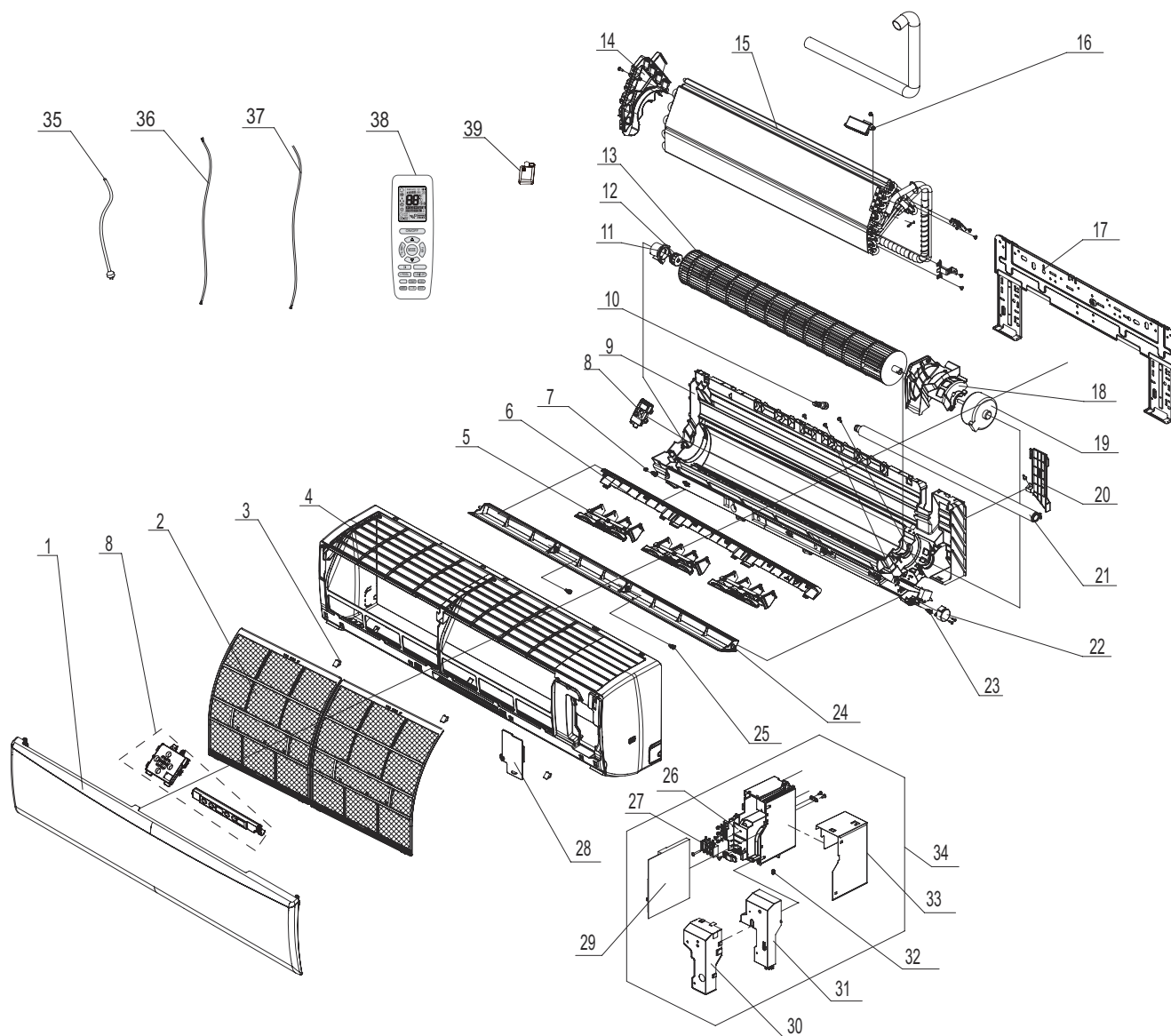
NO.	Description
14	O-Gasket of Cross Fan Bearing
15	Evaporator Support
16	Evaporator Assy
17	Cross Flow Fan
18	Fan Motor
19	Motor Press Plate
20	Wall Mounting Frame
21	Connecting pipe clamp
22	Crank
23	Stepping Motor
24	Drainage Hose
25	Electric Box Assy
26	Lower Shield of Electric Box

NO.	Description
27	Electric Box
28	Jumper
29	Main Board
30	Terminal Board
31	Electric Box Cover
32	Shield Cover of Electric Box
33	Screw Cover
34	Electric Box Cover2
35	Power Cord
36	Connecting Cable
37	Remote Controller
38	Cold Plasma Generator
39	Detecting plate(WIFI)

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

# 10. Exploded View and Parts List

GWARC24S2 GWHARC24S2



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	Cold Plasma Generator
17	Wall Mounting Frame
18	Motor Press Plate
19	Fan Motor
20	Connecting pipe clamp
21	Drainage Hose
22	Stepping Motor
23	Crank
24	Guide Louver
25	Axile Bush
26	Electric Box

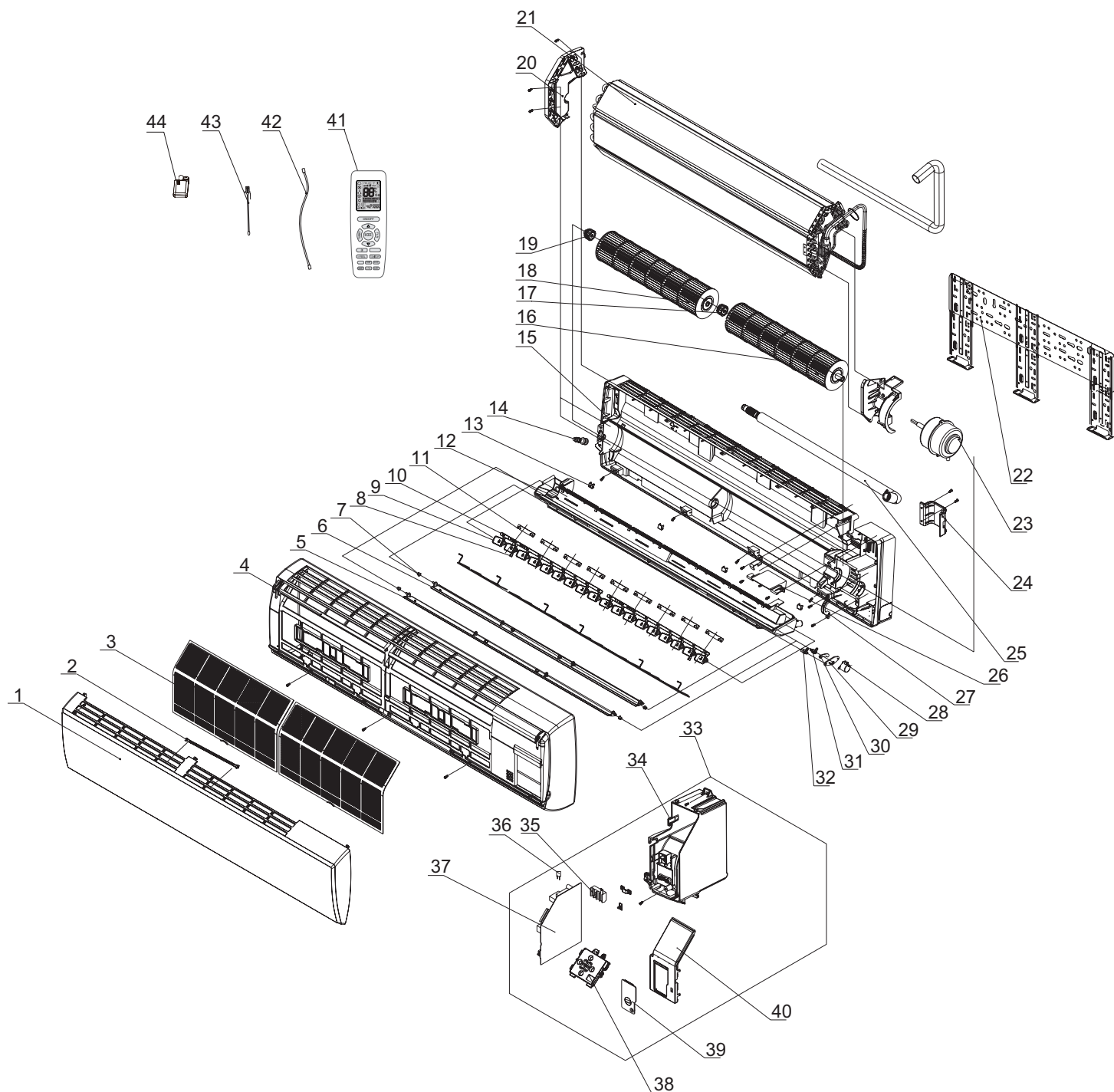
NO.	Description
27	Terminal Board
28	Electric Box Cover2
29	Main Board
30	Shield Cover of Electric Box
31	Electric Box Cover
32	Jumper
33	Lower Shield of Electric Box
34	Electric Box Assy
35	Power Cord
36	Connecting Cable
37	Temperature Sensor
38	Remote Controller
39	Detecting plate(WIFI)

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



# 10. Exploded View and Parts List

GWARC36S3 GWHARC36S3



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

# 10. Exploded View and Parts List

NO.	Description
1	Front Panel
2	Stand Bar
3	Filter Sub-Assy
4	Front Case Sub-assy
5	Upper Guide Louver
6	Lower Guide Louver
7	Axile Bush
8	Air Louver 2
9	Air Louver 1
10	Connecting Rod
11	Louver Clamp
12	Water Tray
13	Screw Cover
14	Rubber Plug (Water Tray)
15	Rear Case assy
16	Cross Flow Fan 1
17	Bearing Holder Sub-assy
18	Cross Flow Fan 2
19	O-Gasket sub-assy of Bearing
20	Left Evaporator Support
21	Evaporator Assy
22	Wall Mounting Frame

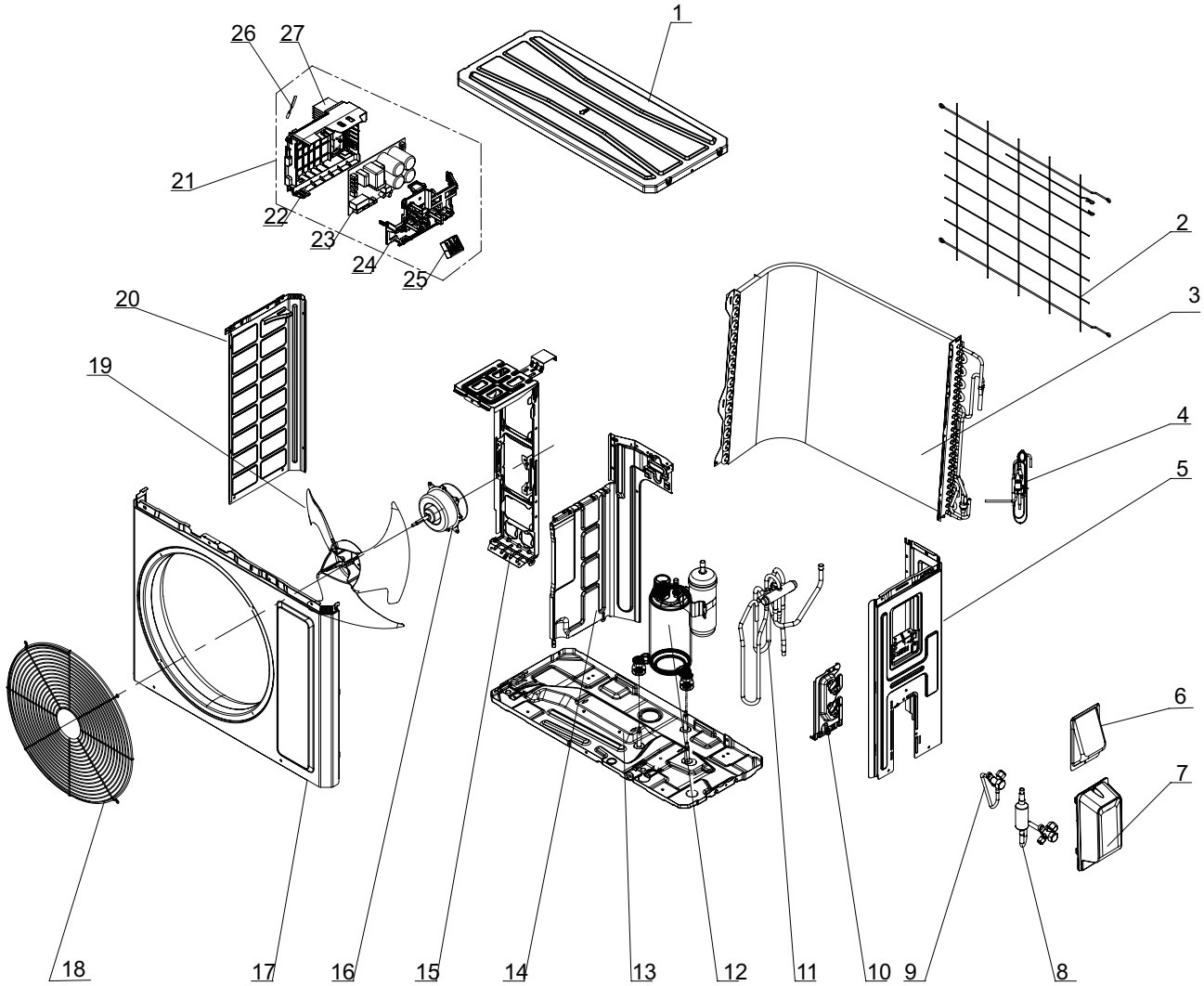
NO.	Description
23	Fan Motor
24	Pipe Clamp
25	Drainage Hose
26	Cover Plate
27	Motor Fixed Clip 1
28	Stepping Motor
29	Press Plate(Crank)
30	Crank-guide
31	Upper Crank
32	Lower crank
33	Electric Box Assy
34	Electric Box
35	Terminal Board
36	Jumper
37	Main Board
38	Display Board
39	Electric Box Cover 2
40	Electric Box Cover
41	Remote Controller
42	Connecting Cable
43	Temperature Sensor
44	Detecting Plate

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

# 10. Exploded View and Parts List

## 10.2 Outdoor Unit

GRHARC09ASA2



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

NO.	Description
10	Valve Support
11	4-way valve assy
12	Compressor and Fittings
13	Chassis Sub-Assy
14	Clapboard
15	Motor Support
16	Brushless DC Motor
17	Cabinet
18	Front Grill

NO.	Description
19	Axial Flow Fan
20	Left Side Plate
21	Electric Box Assy
22	Electric Box
23	Main Board
24	Electric Box Cover
25	Terminal Board
26	Temperatue Sensor
27	Radiator

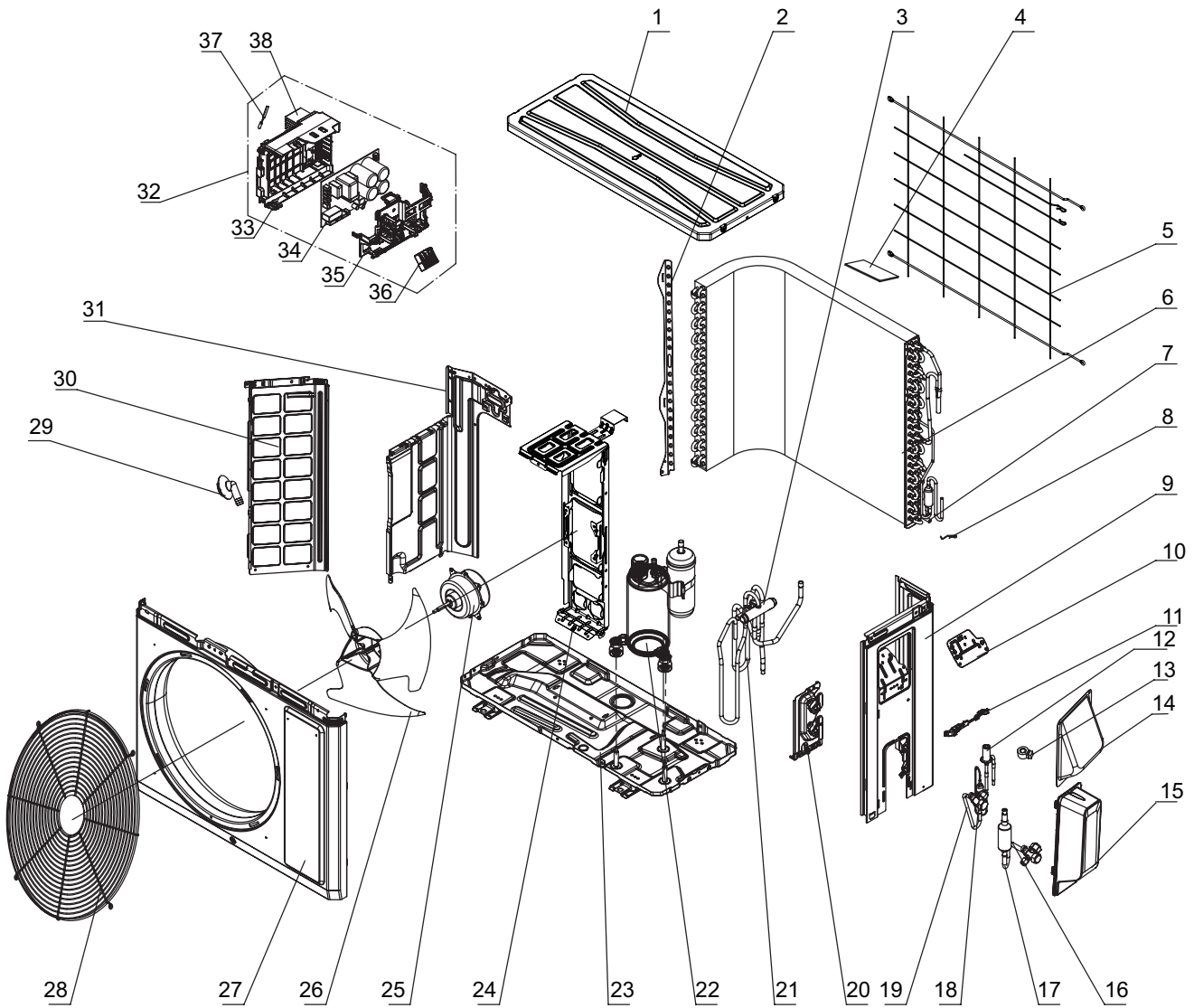
Some models may not contain some parts, please refer to the actual product.

# 10. Exploded View and Parts List

GRHARC09AS2

GRHARC12ASA2

GRHARC12AS2



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

NO.	Description
1	Top Cover Assy
2	Condenser Left Border Plate
3	4-Way Valve
4	Sponge(Condenser)
5	Rear Grill
6	Condenser Assy
7	Temp Sensor Sleeving
8	Sensor Insert
9	Right Side Plate
10	Earthing Plate Subassy
11	Wire Clamp
12	Electronic Expansion Valve
13	Electric Expand Valve Fitting

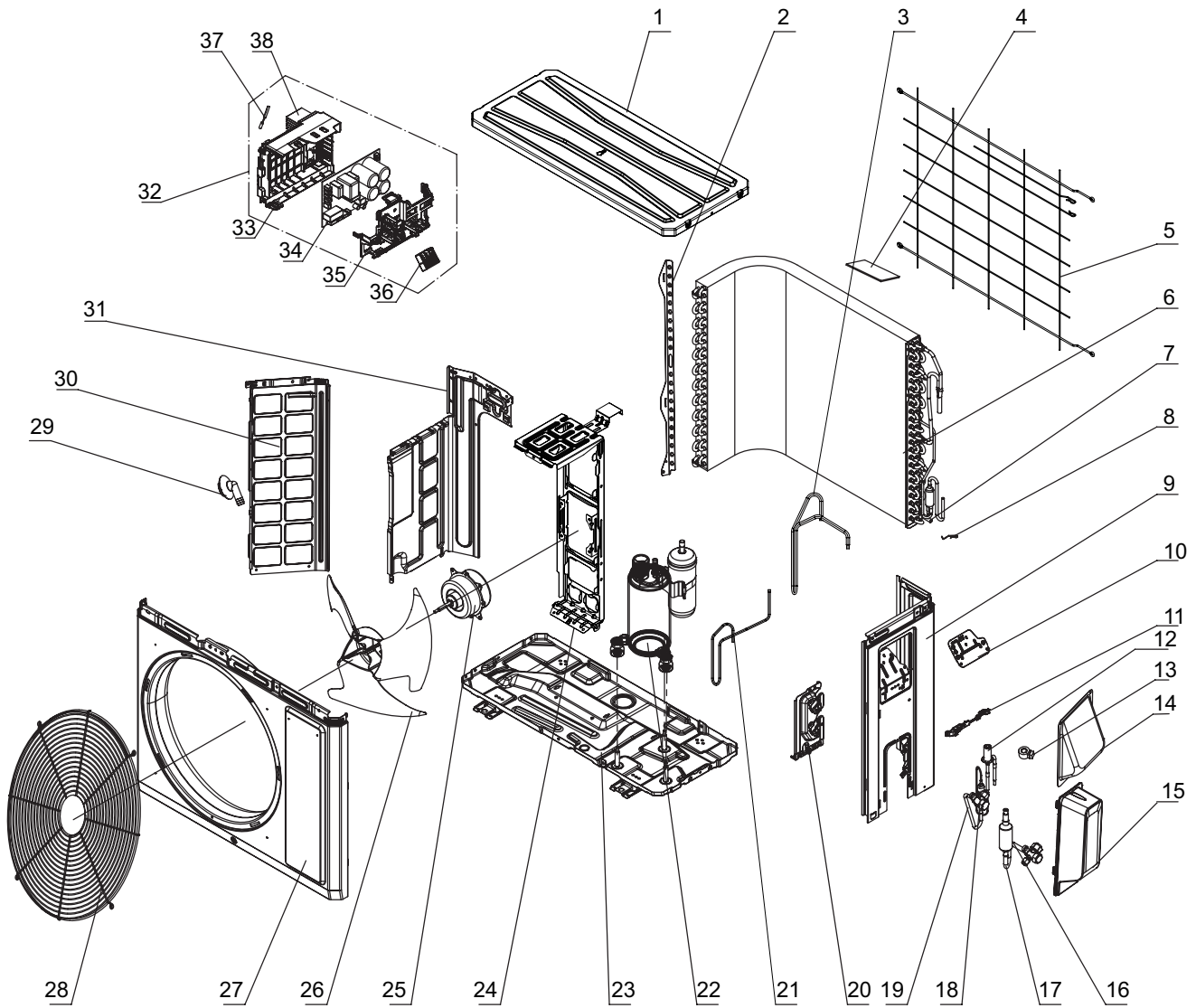
NO.	Description
14	Cable Cross Plate
15	Valve Cover
16	Silencer
17	Cut off Valve Sub-Assy
18	Strainer
19	Cut-off valve 1/4(N)
20	Valve Support
21	4-Way Valve Assy
22	Compressor and Fittings
23	Chassis Sub-assy
24	Motor Support
25	Brushless DC Motor
26	Axial Flow Fan

NO.	Description
27	Cabinet
28	Front Grill
29	Drainage Joint
30	Left Side Plate
31	Clapboard
32	Electric Box Assy
33	Electric Box
34	Main Board
35	Electric Box Cover
36	Terminal Board
37	Temperature Sensor
38	Radiator

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

# 10. Exploded View and Parts List

GRARC09AS2 GRARC12ASA2 GRARC12AS2



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

NO.	Description
1	Top Cover Assy
2	Condenser Left Border Plate
3	Inhalation Tube
4	Sponge(Condenser)
5	Rear Grill
6	Condenser Assy
7	Temp Sensor Sleeveing
8	Sensor Insert
9	Right Side Plate
10	Earthing Plate Subassy
11	Wire Clamp
12	Electronic Expansion Valve
13	Electric Expand Valve Fitting

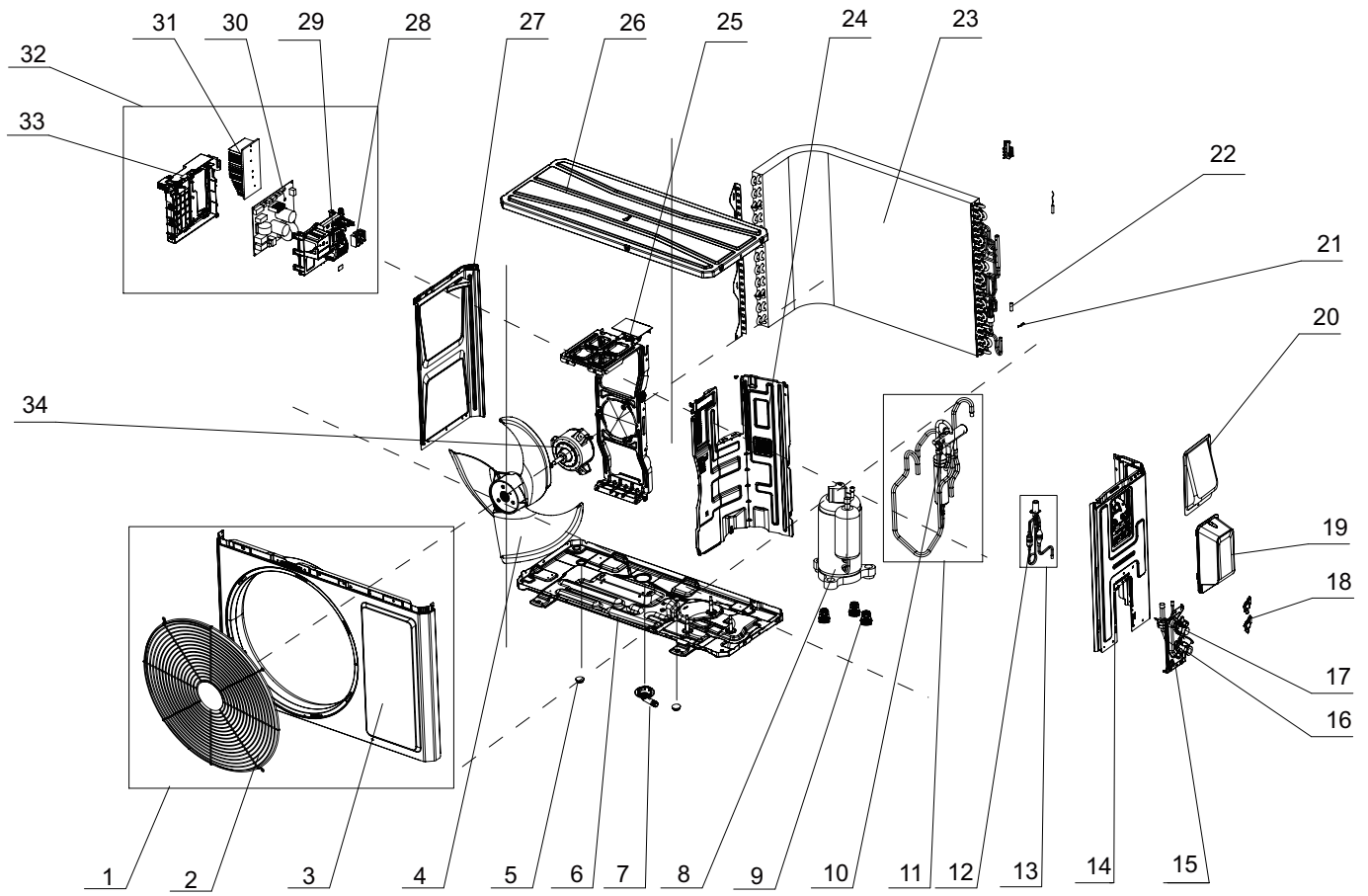
NO.	Description
14	Cable Cross Plate
15	Valve Cover
16	Silencer
17	Cut off Valve Sub-Assy
18	Strainer
19	Cut-off valve 1/4(N)
20	Valve Support
21	Discharge Tube
22	Compressor and Fittings
23	Chassis Sub-assy
24	Motor Support
25	Brushless DC Motor
26	Axial Flow Fan

NO.	Description
27	Cabinet
28	Front Grill
29	Drainage Joint
30	Left Side Plate
31	Clapboard
32	Electric Box Assy
33	Electric Box
34	Main Board
35	Electric Box Cover
36	Terminal Board
37	Temperature Sensor
38	Radiator

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

# 10. Exploded View and Parts List

GRHARC18AS2



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

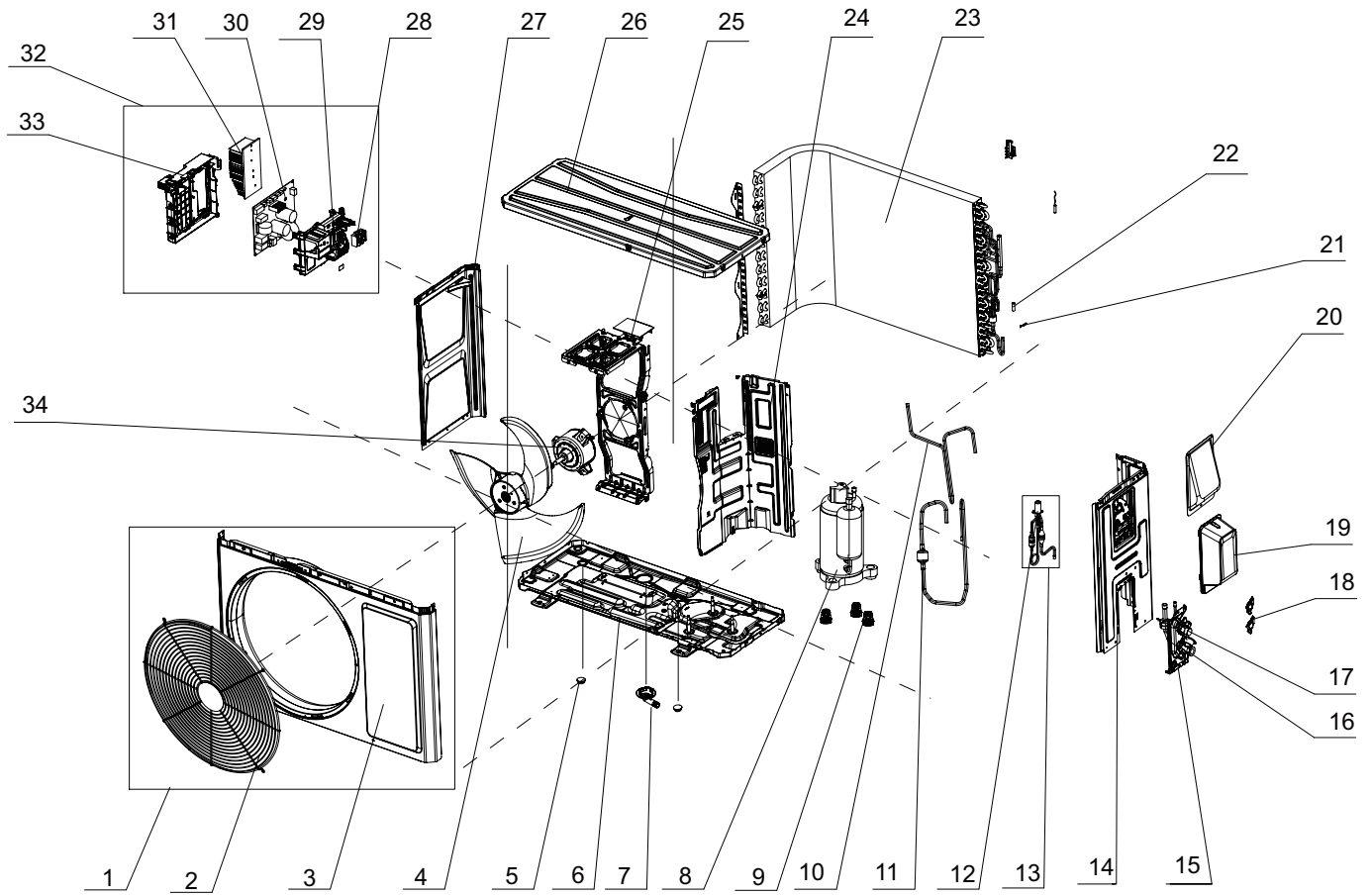
NO.	Description
1	Front Panel Assy
2	Front grill
3	Front Panel
4	Axial Flow Fan
5	Drainage hole Cap
6	Chassis Sub-assy
7	Drainage Joint
8	Compressor and Fittings
9	Compressor Gasket
10	4-Way Valve
11	4-Way Valve Assy
12	Electronic Expansion Valve
13	Electronic Expansion Valve assy
14	Right Side Plate Assy
15	Valve Support
16	Cut-off valve 1/2(N)
17	Cut-off valve 1/4(N)

NO.	Description
18	Valve Support Block
19	Valve Cover
20	Cover of Pass Wire
21	Sensor Insert
22	Temp Sensor Sleeving
23	Condenser Assy
24	Clapboard Sub-Assy
25	Motor Support Sub
26	Top Cover Sub-Assy
27	Left Side Plate
28	Terminal Board
29	Electric Box Cover
30	Main Board
31	Radiator
32	Electric Box Assy
33	Electric Box
34	Brushless DC Motor

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

# 10. Exploded View and Parts List

GRARC18AS2



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

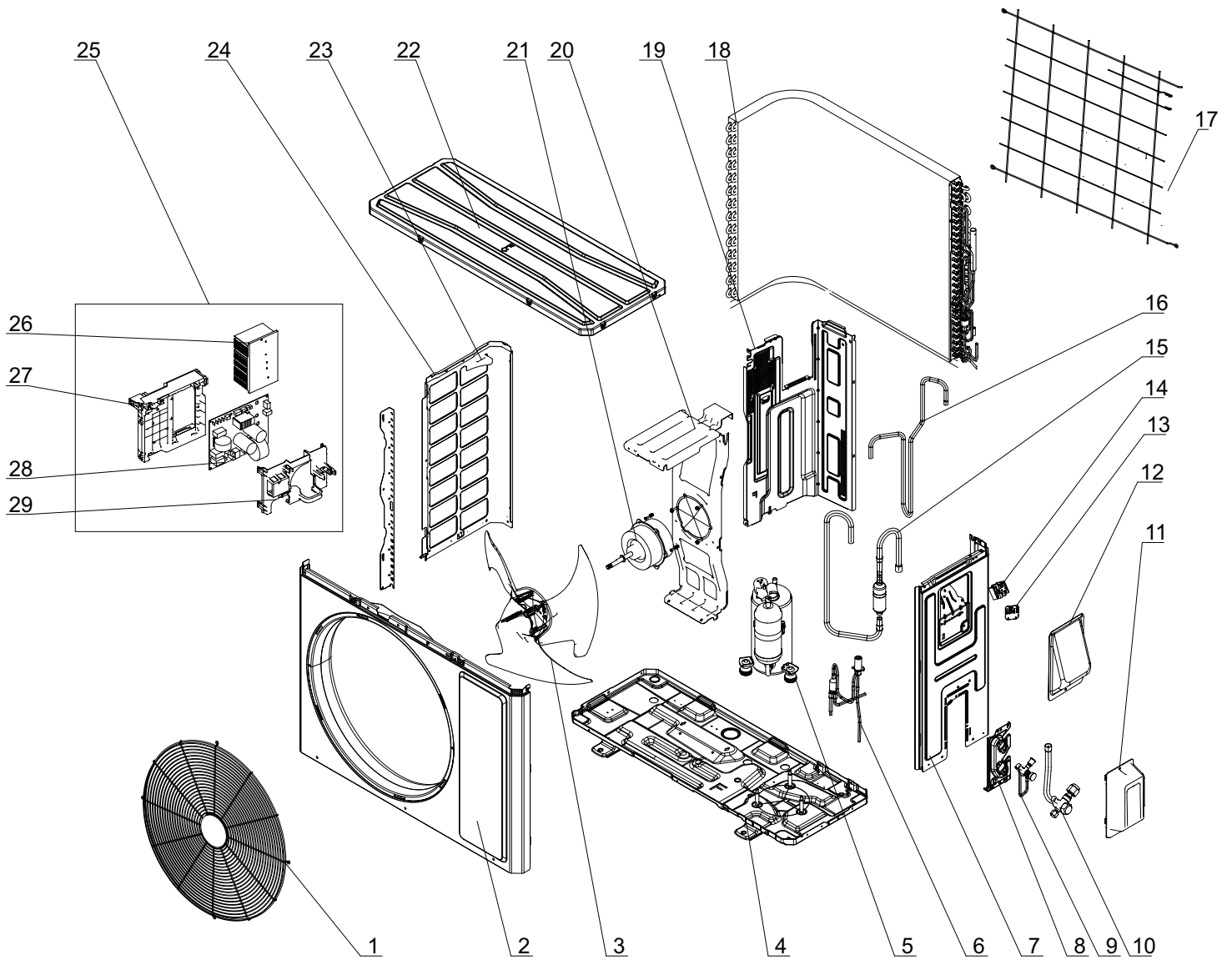
NO.	Description
1	Front Panel Assy
2	Front grill
3	Front Panel
4	Axial Flow Fan
5	Drainage hole Cap
6	Chassis Sub-assy
7	Drainage Joint
8	Compressor and Fittings
9	Compressor Gasket
10	Discharge Tube
11	Inhalation Tube Sub-assy
12	Electronic Expansion Valve
13	Electronic Expansion Valve assy
14	Right Side Plate Assy
15	Valve Support
16	Cut-off valve 1/2(N)
17	Cut-off valve 1/4(N)

NO.	Description
18	Valve Support Block
19	Valve Cover
20	Cover of Pass Wire
21	Sensor Insert
22	Temp Sensor Slewing
23	Condenser Assy
24	Clapboard Sub-Assy
25	Motor Support Sub
26	Top Cover Sub-Assy
27	Left Side Plate
28	Terminal Board
29	Electric Box Cover
30	Main Board
31	Radiator
32	Electric Box Assy
33	Electric Box
34	Brushless DC Motor

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

# 10. Exploded View and Parts List

GRARC24AS2



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

NO.	Description
1	Grill
2	Front Panel
3	Axial Flow Fan
4	Chassis Sub-assy
5	Compressor and Fittings
6	Electronic expansion valve parts
7	Right Side Plate
8	Valve Support
9	Cut off Valve
10	Cut off Valve
11	Valve Cover
12	Handle
13	Earthing Plate Sub-assy
14	Terminal Board
15	Inspiration Tube Assembly

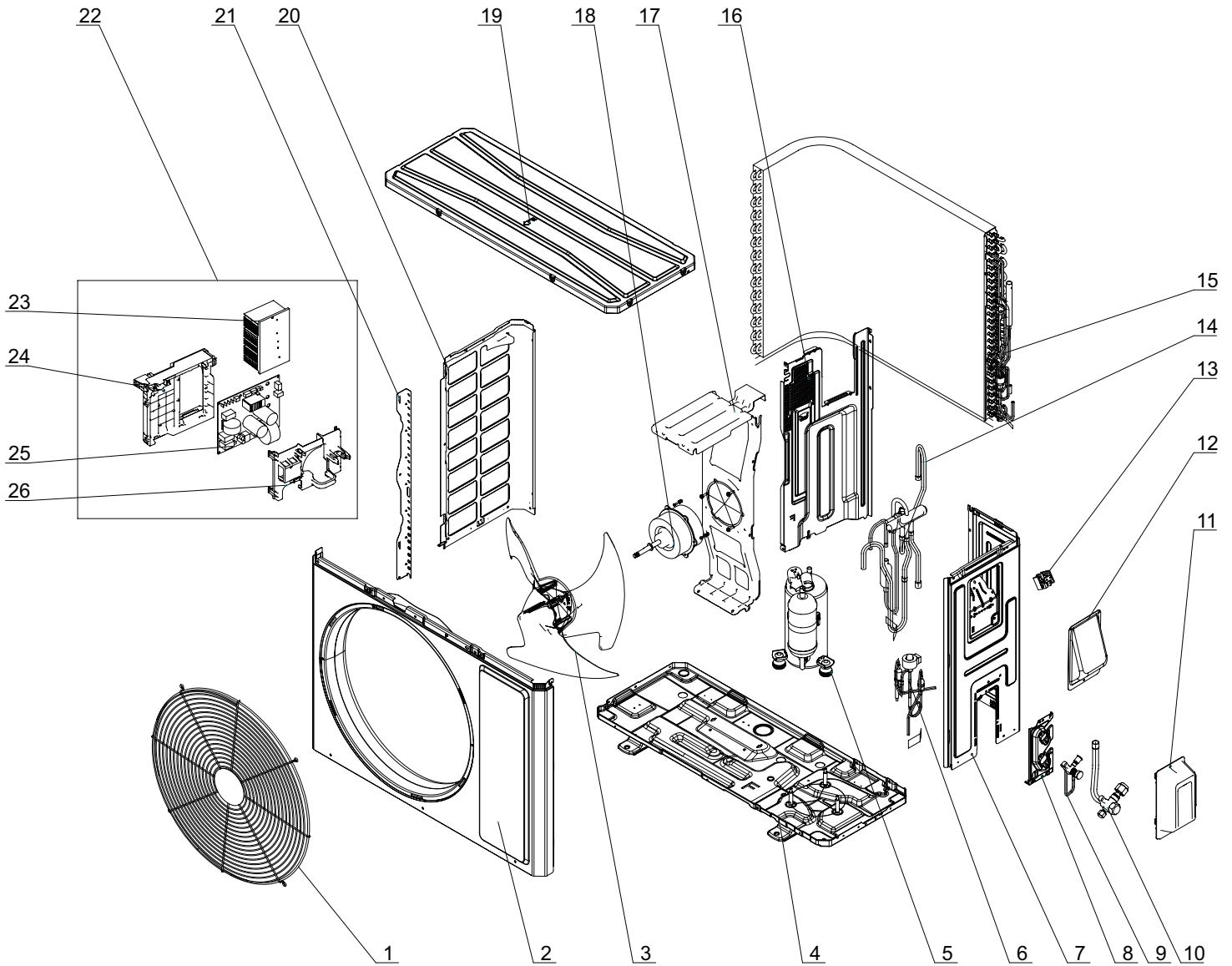
NO.	Description
16	Exhaust Pipe
17	Rear Grill
18	Condenser Assy
19	Clapboard Assy
20	Motor Support
21	Brushless DC Motor
22	Top Cover Assy
23	Left Side Plate
24	Condenser Left Border Plate
25	Electric Box Assy
26	Radiator
27	Electric Box
28	Main Board
29	Electric Box Cover

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



# 10. Exploded View and Parts List

GRHARC24AS2



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

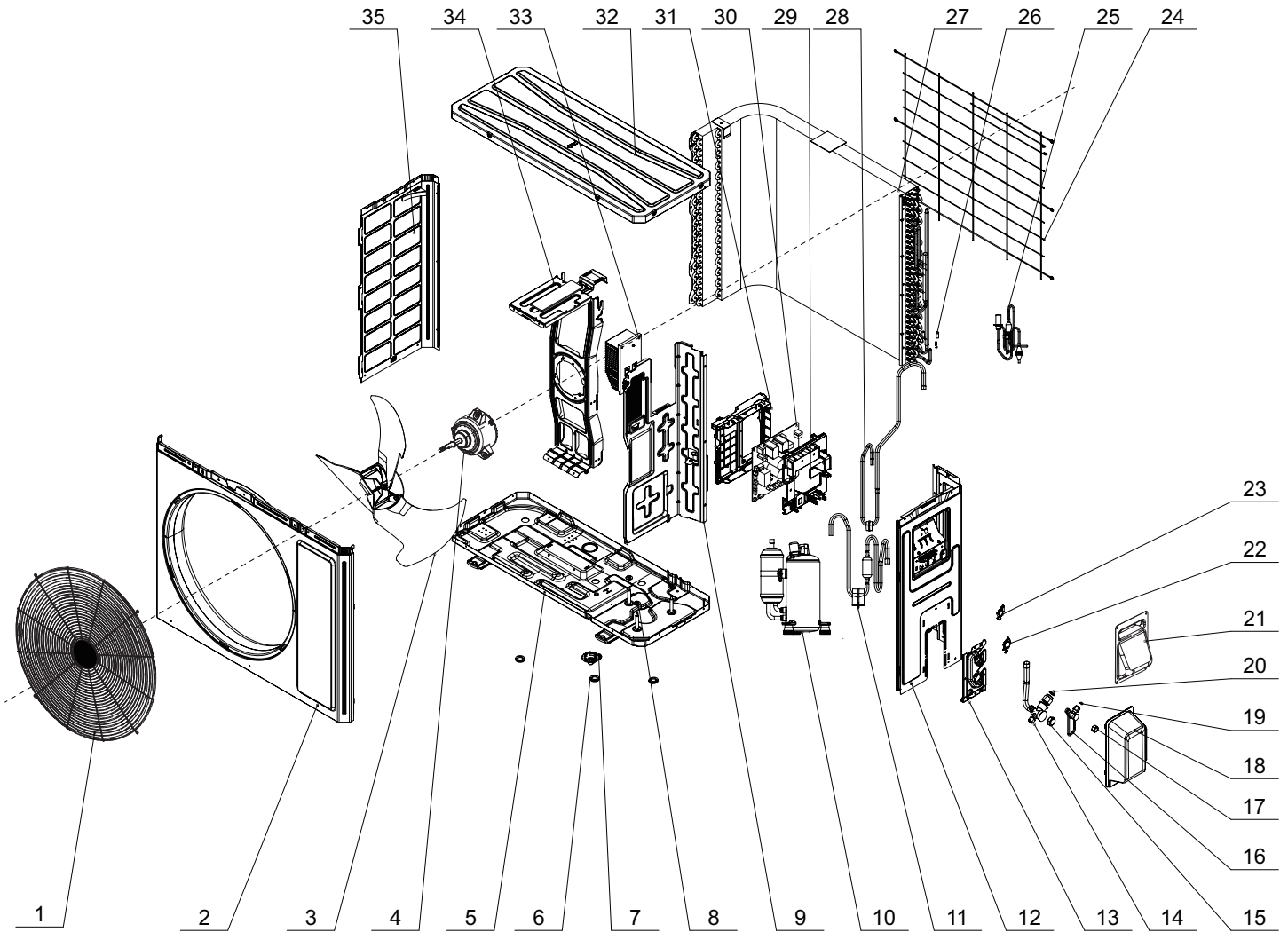
NO.	Description
1	Front Grill
2	Front Panel
3	Axial Flow Fan
4	Chassis Sub-assy
5	Compressor and Fittings
6	Electronic Expansion Valve
7	Right Side Plate
8	Valve Support
9	Cut-off valve 1/4(N)
10	Cut-off valve 5/8(N)
11	Valve Cover
12	Cover of Pass Wire
13	Terminal Board

NO.	Description
14	4-Way Valve Assy
15	Condenser Assy
16	Clapboard Assy
17	Motor Support
18	Brushless DC Motor
19	Top Cover Assy
20	Left Side Plate
21	Condenser Left Border Plate
22	Electric Box Assy
23	Radiator
24	Electric Box
25	Main Board
26	Electric Box Cover

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

# 10. Exploded View and Parts List

GRARC36AS3



The component picture 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	Drainage Plug
7	Drainage Connector
8	Cushioned Nut
9	Clap Board Assy
10	Compressor and fittings
11	Inhalation Tube Sub-assy
12	Right Side Plate Assy

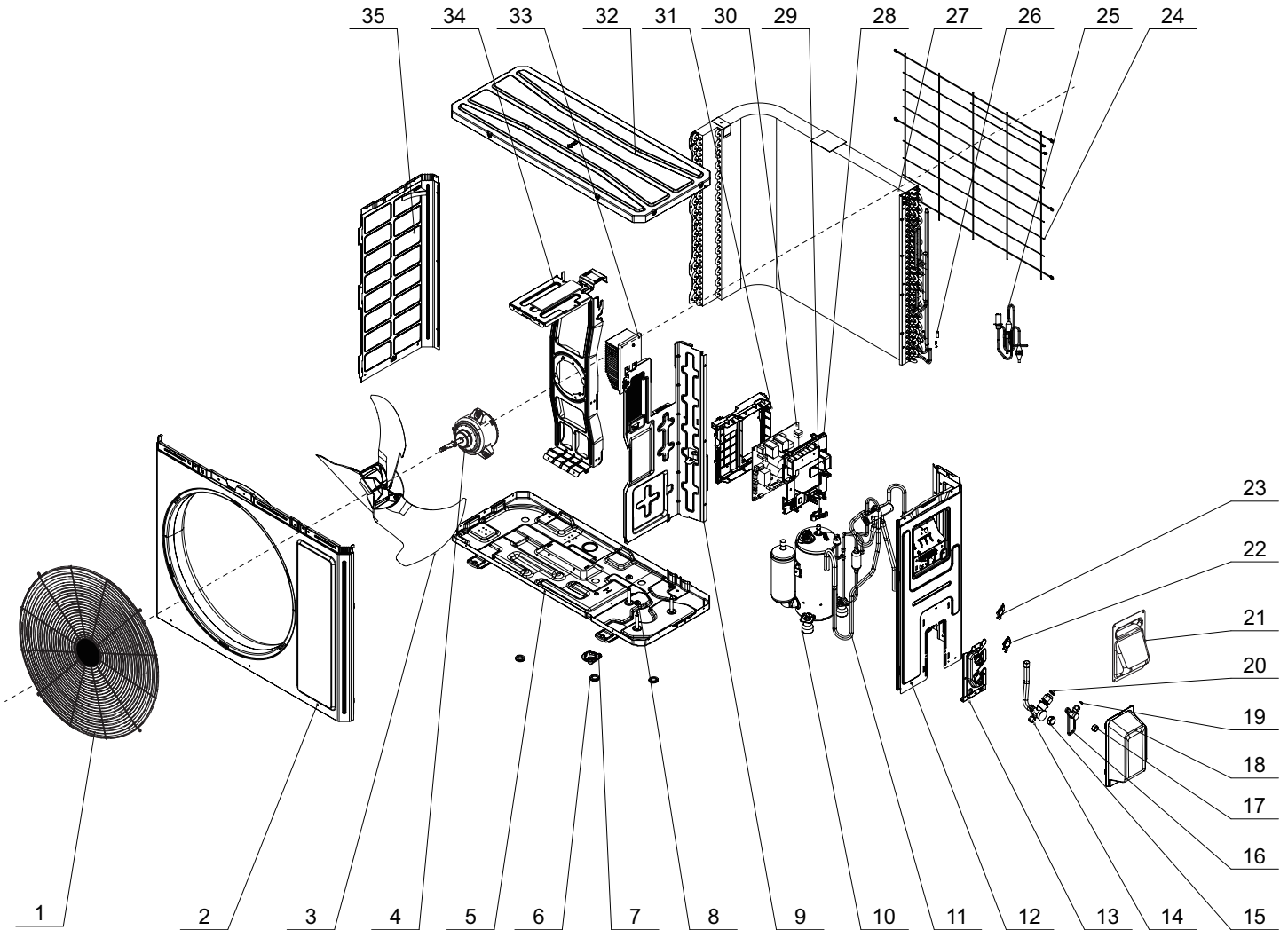
NO.	Description
13	Valve Support Sub
14	Cut-off Valve
15	Back Cover Nut
16	Cut-off Valve
17	Back Cover Nut
18	Valve Cover
19	Union Nut
20	Union Nut
21	Handle
22	Support
23	Valve Support Baffle
24	Rear Grill

NO.	Description
25	Electronic Expansion Valve assy
26	Temperature Sensor
27	Condenser Assy
28	Discharge Tube Sub-assy
29	Electric Box Cover
30	Main Board
31	Electric box
32	Top Cover-assy
33	Motherboard radiator
34	Motor Support Sub-Assy
35	Left Side Plate

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

# 10. Exploded View and Parts List

GRHARC36AS3



The component picture 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	Drainage Plug
7	Drainage Connector
8	Cushioned Nut
9	Clap Board Assy
10	Compressor and fittings
11	4-way Valve Assy
12	Right Side Plate Assy

NO.	Description
13	Valve Support Sub
14	Cut-off Valve
15	Back Cover Nut
16	Cut-off Valve
17	Back Cover Nut
18	Valve Cover
19	Union Nut
20	Union Nut
21	Handle
22	Support
23	Valve Support Baffle
24	Rear Grill

NO.	Description
25	Electronic Expansion Valve assy
26	Temperature Sensor
27	Condenser Assy
28	Electric Box Cover
29	Pipe Clamp
30	Main Board
31	Electric box
32	Top Cover-assy
33	Motherboard radiator
34	Motor Support Sub-Assy
35	Left Side Plate

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

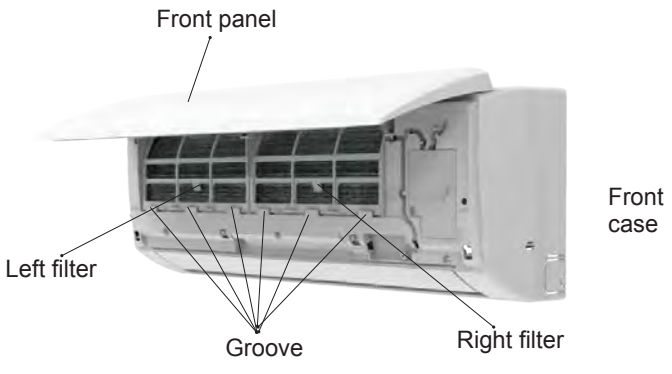
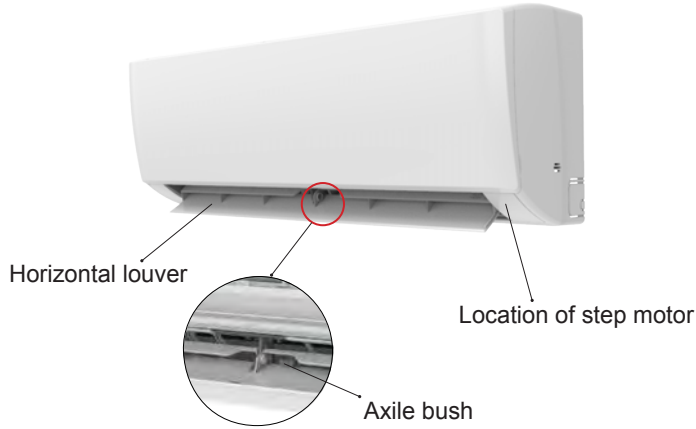
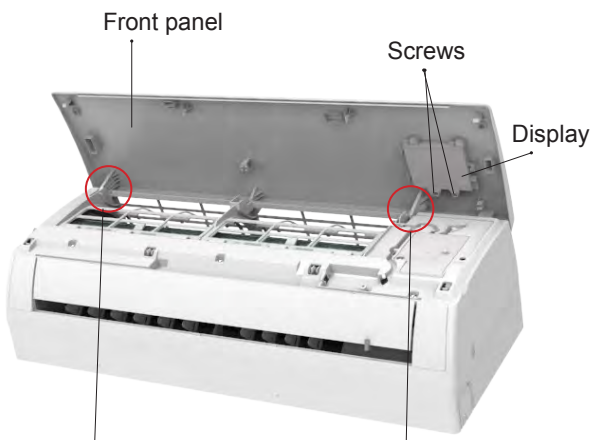
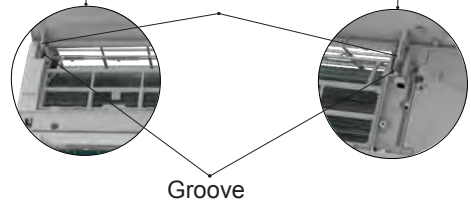
# 11. Removal Procedure

## 11.1 Removal Procedure of Indoor Unit

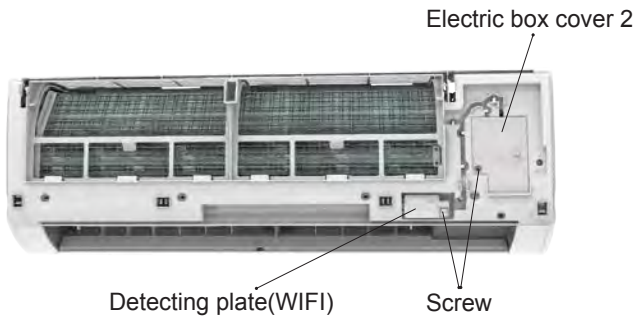
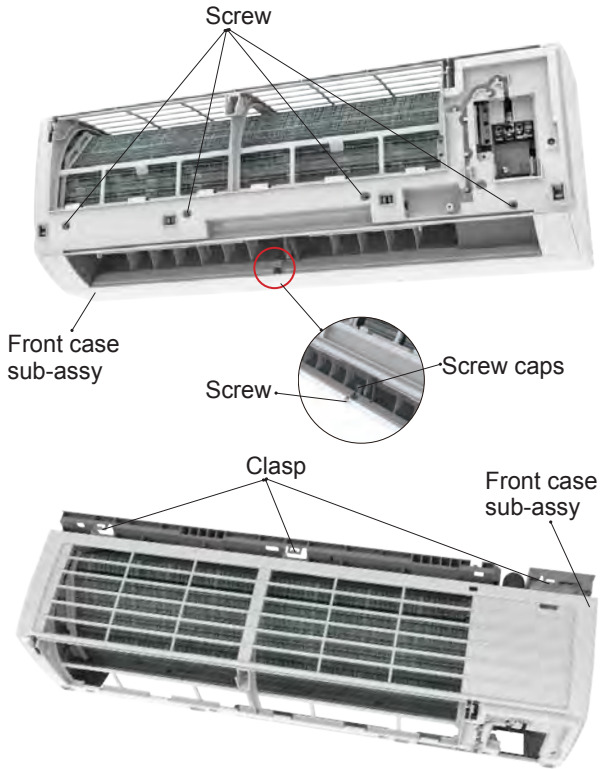
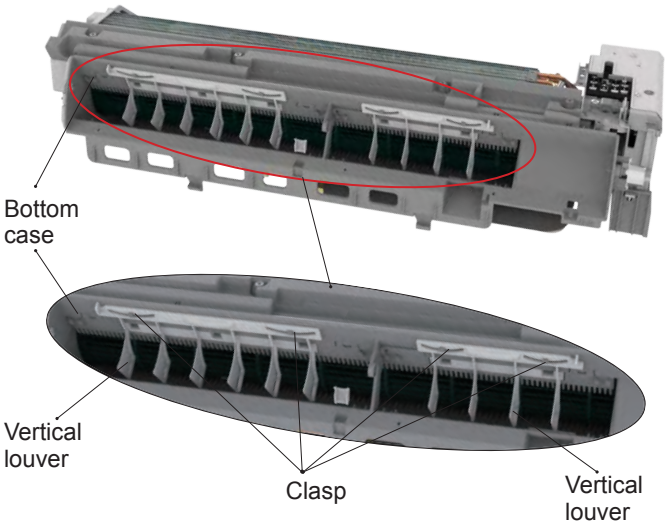
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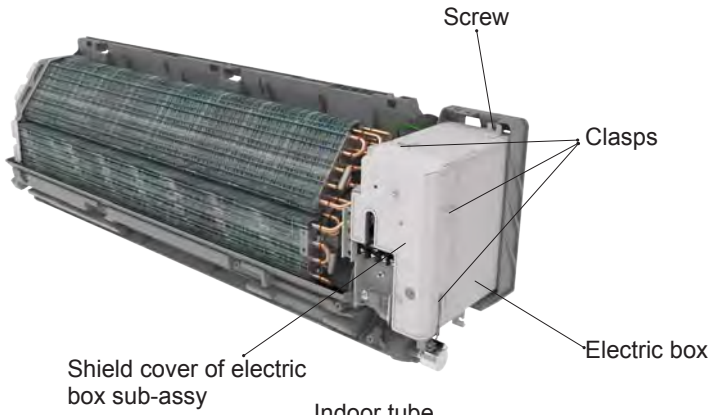
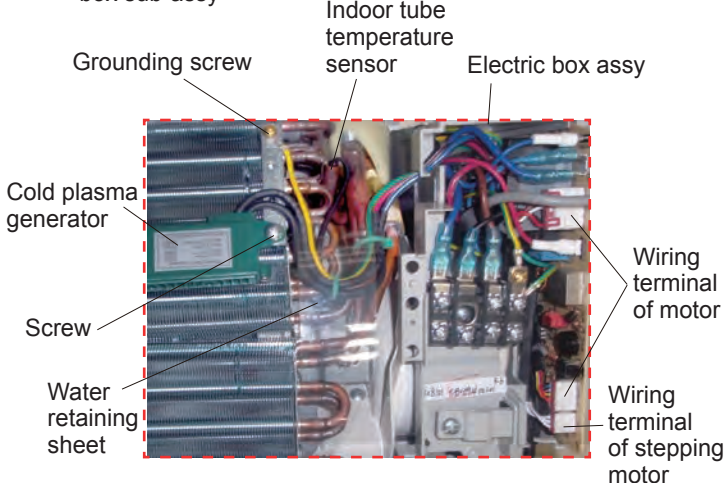
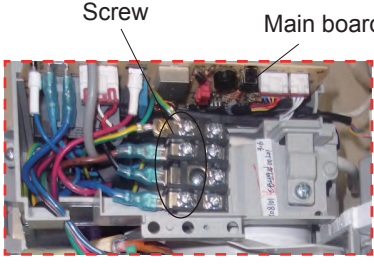
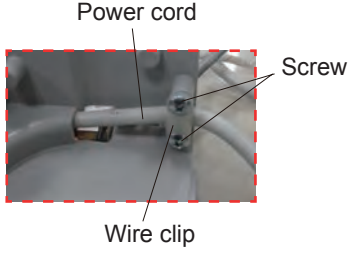
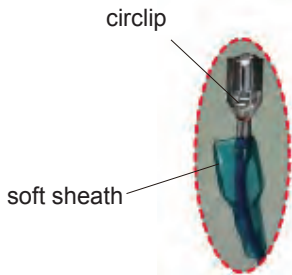
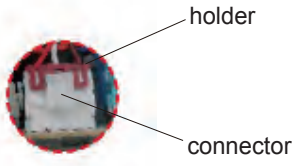
**Caution: discharge the refrigerant completely before removal.**

Step	Procedure
<p><b>1. Remove filter assembly</b></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><b>2. Remove horizontal louver</b></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><b>3. Remove panel</b></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> 

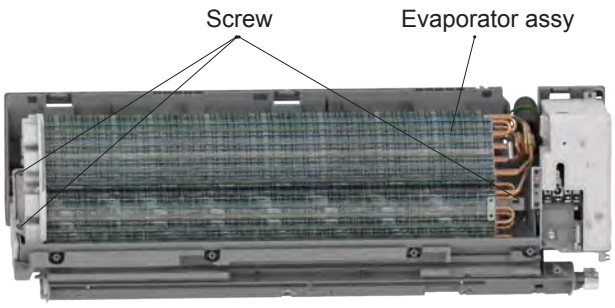
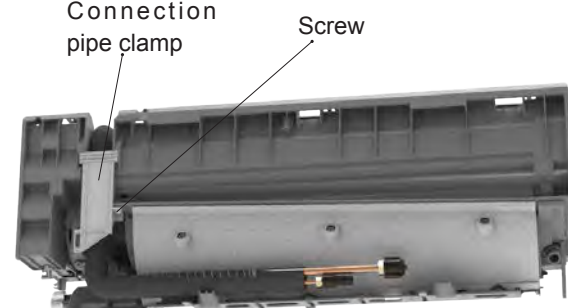
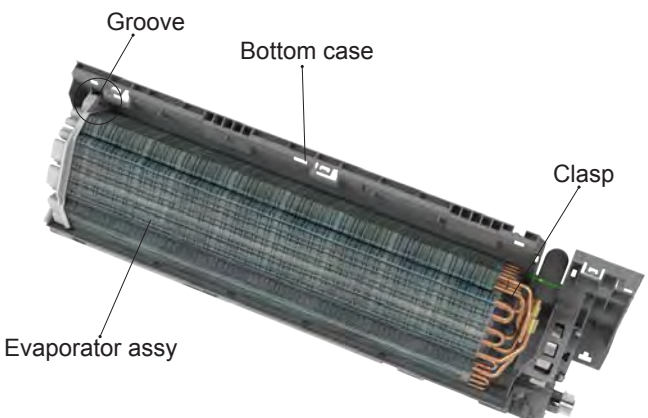
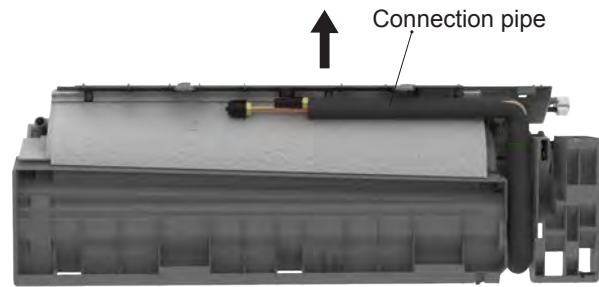
# 11. Removal Procedure

Step	Procedure
<p><b>4. Remove detecting plate(wifi) and electric box cover2</b></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><b>5. Remove front case sub-assy</b></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><b>6. Remove vertical louver</b></p>	<p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p> 

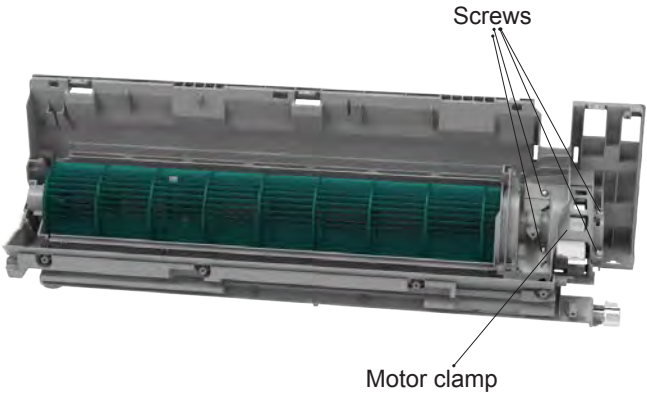
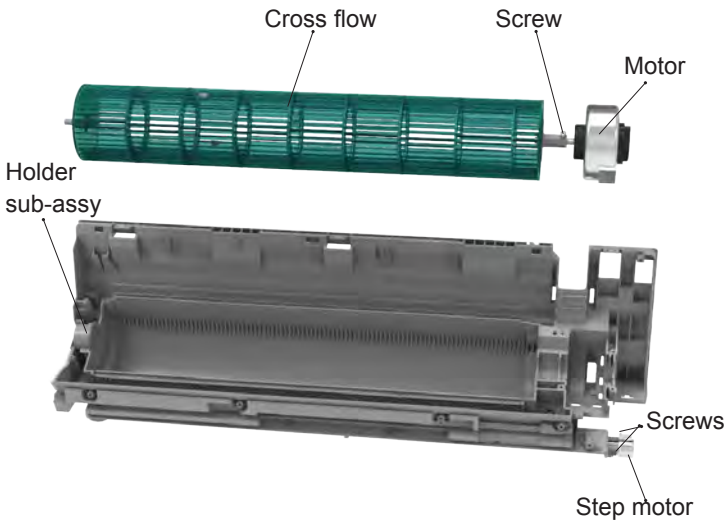
# 11. Removal Procedure

Step	Procedure
<b>7. Remove electric box assy</b>	
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>  

# 11. Removal Procedure

Step	Procedure
<b>8.Remove evaporator assy</b>	
a	<p>Remove 3 screws fixing evaporator assy.</p> 
b	<p>At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.</p> 
c	<p>First remove the left side of the evaporator from the groove of bottom case and then remove the right side from the clasp on the bottom case.</p> 
d	<p>Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.</p> 

# 11. Removal Procedure

Step	Procedure
<b>9. Remove motor and cross flow blade</b>	
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.</p> <p>Remove the bearing holder sub-assy.</p> <p>Remove the screw fixing step motor and then remove the step motor.</p> 

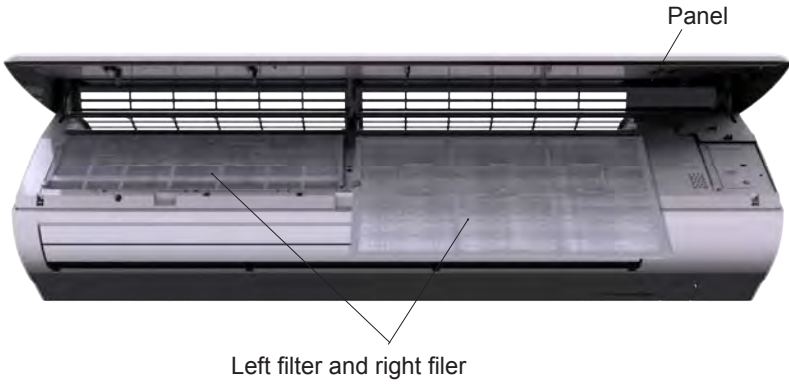
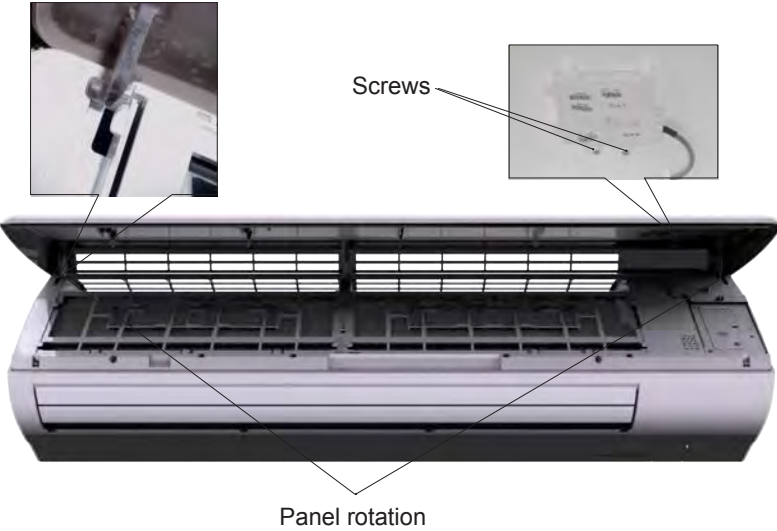
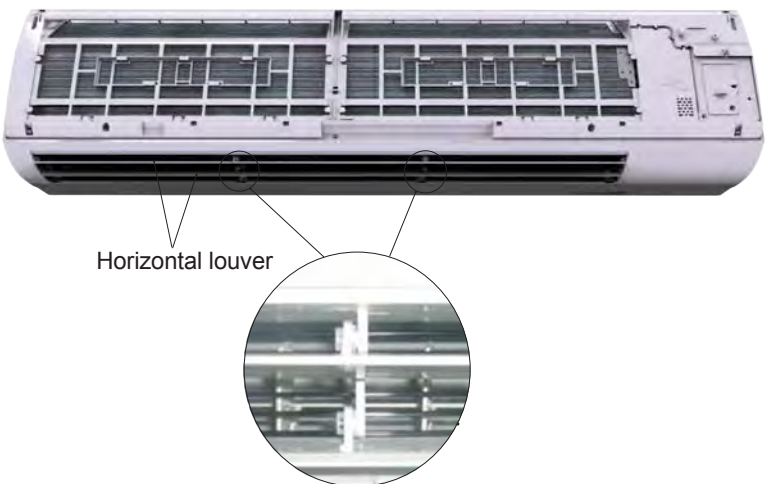


# 11. Removal Procedure


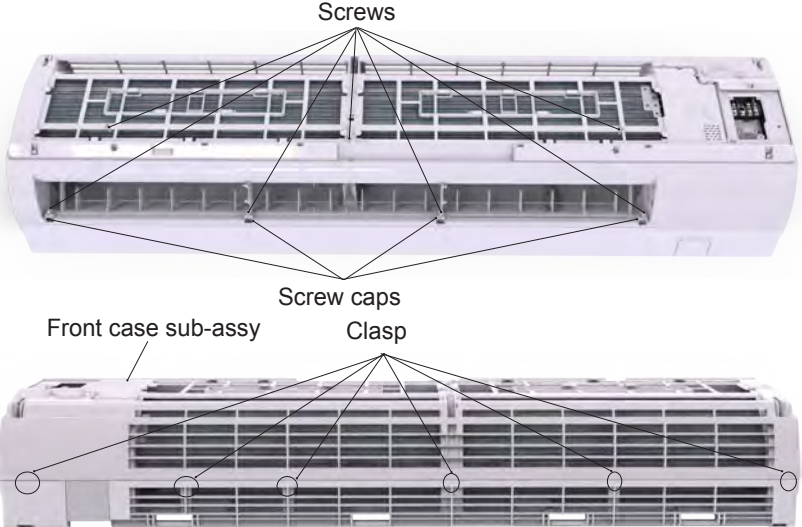

GWARC36S3  
GWHARC36S3



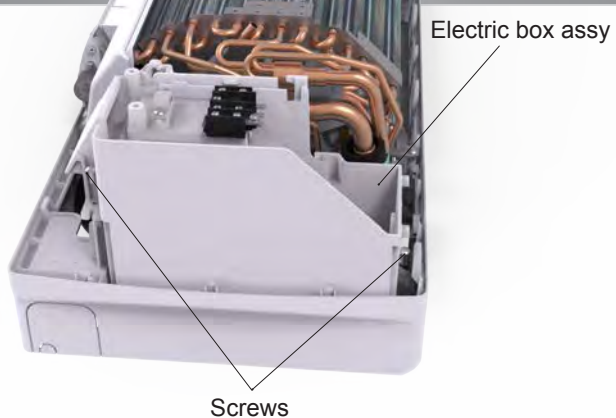
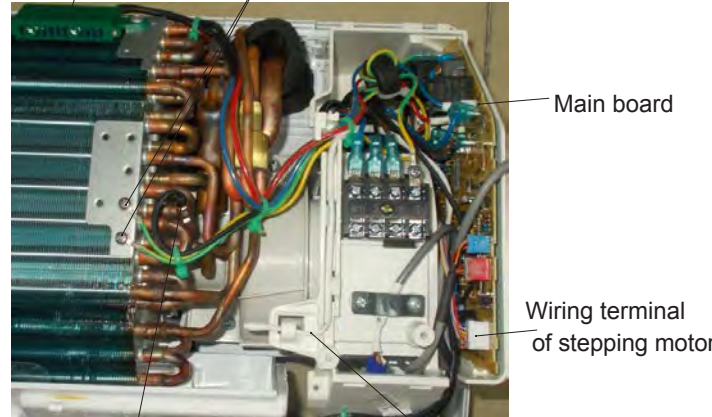
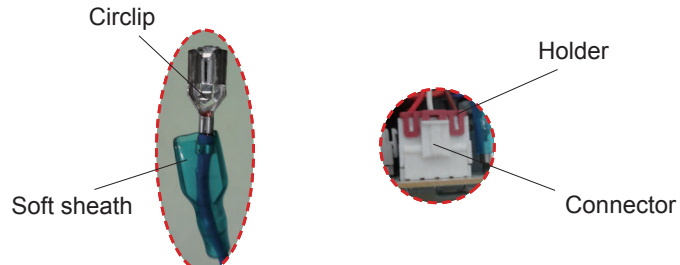
**Caution: discharge the refrigerant completely before removal.**

Step	Procedure
<b>1.Remove filter</b>	<p>Open the pane,Push up and pull down the filter</p> 
<b>2.Remove panel</b>	<p>Remove screws fixing display, and then remove the display. Separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> 
<b>3.Remove horizontal louver</b>	<p>Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p> 

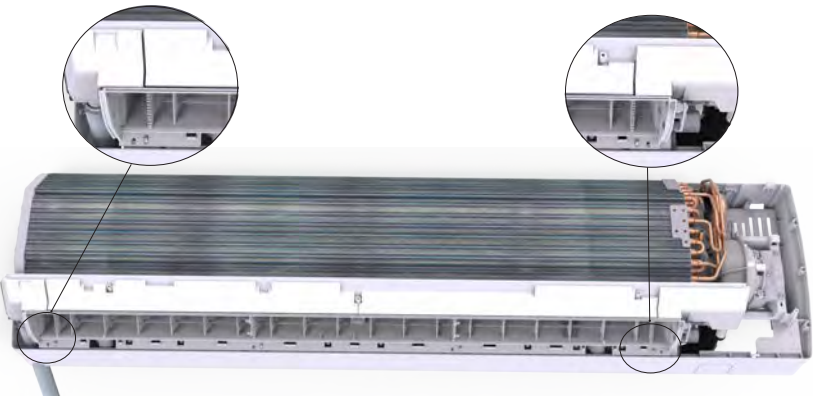
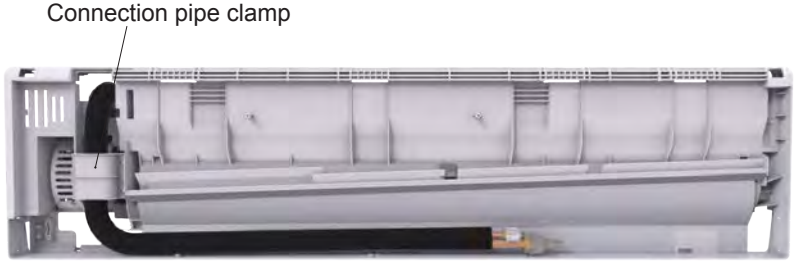
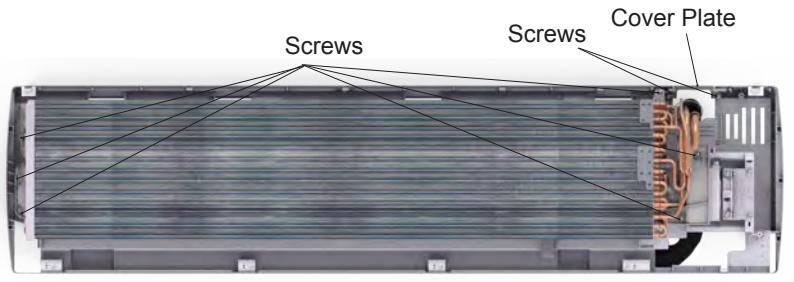
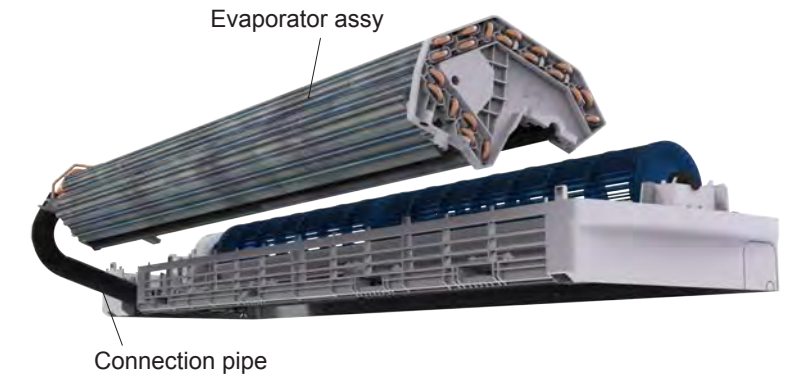
# 11. Removal Procedure

Step	Procedure	
<b>3.Remove electric box cover 2</b>		 <p>Electric box cover 2</p> <p>Screw</p> <p>Remove the screws on the electric box cover 2 to remove the electric box cover 2.</p>
<b>4.Remove front case sub-assy</b>	<p>a Open the screw caps on front case.</p> <p>b Remove the screws fixing front case.</p> <p>c Loosen the clasps of front case. Lift the front case sub-assy upwards to remove it.</p>	 <p>Screws</p> <p>Screw caps</p> <p>Clasp</p> <p>Front case sub-assy</p>
<b>5.Remove electric box cover</b>	<p>Remove the screw fixing electric box cover to remove the electric box cover.</p>	 <p>Screw</p> <p>Electric Box Cover</p>

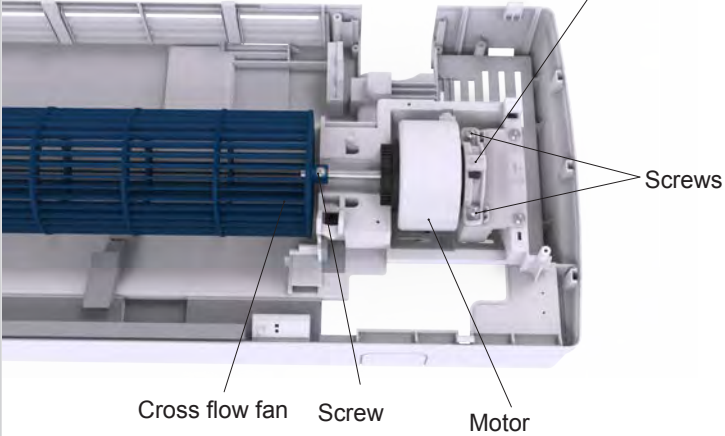
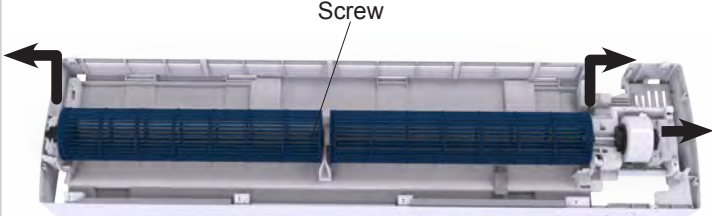
# 11. Removal Procedure

Step	Procedure
6.Remove electric box assy	
a	<p>Remove the screw fixing electric box assy.</p>
b	 <ol style="list-style-type: none"> <li>① Cut off the wire binder and pull out the indoor tube temperature sensor.</li> <li>② Screw off one grounding screw.</li> <li>③ Remove the wiring terminals of motor, cold plasma generator and stepping motor.</li> <li>④ Remove the electric box assy.</li> <li>⑤ Screw off the screws that are locking each.</li> </ol> <p>Instruction:Some wiring terminal of this products is with lock catch and other devices.The pulling method is as below:</p> <ol style="list-style-type: none"> <li>1.Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals,</li> <li>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.</li> </ol> 

# 11. Removal Procedure

Step	Procedure	Procedure
<b>7.Remove water tray sub-assy</b>		
	<p>Pull the water tray upwards, and then remove the water tray.</p>	
<b>8.Remove evaporator assy</b>		
a	<p>Remove two screws on pipe clamp, and then remove the pipe clamp.</p>	
b	<p>Remove two screws on cover plate, and then remove the cover plate. Remove the screws fixing left and right evaporator support, then slightly adjust the pipeline.</p>	
c	<p>Extract the evaporator up.</p>	

# 11. Removal Procedure

Step	Procedure
<b>8.Remove motor and cross flow fan</b>	
a	<p>Remove the screws fixing motor fixed clip 2 and then remove the motor fixed clip 2.</p> 
b	<p>Remove the screw on the motor shaft and pull out the motor. Remove the screw fixing cross flow fan, leave out of the cross flow fans.</p> 




# 11. Removal Procedure

## 11.2 Removal Procedure of Outdoor Unit

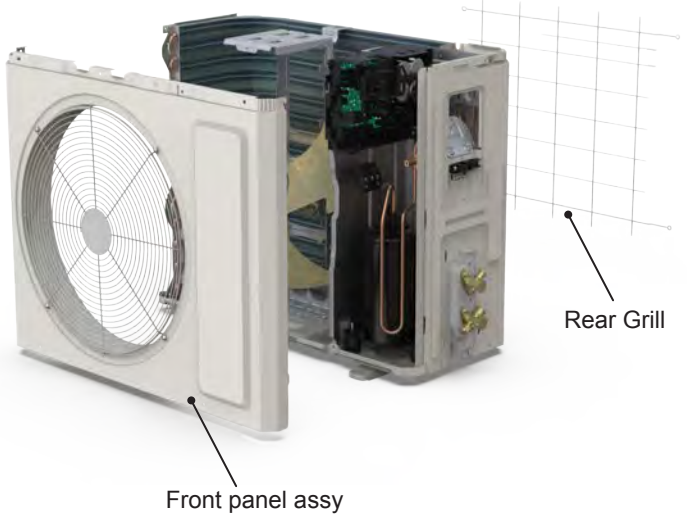
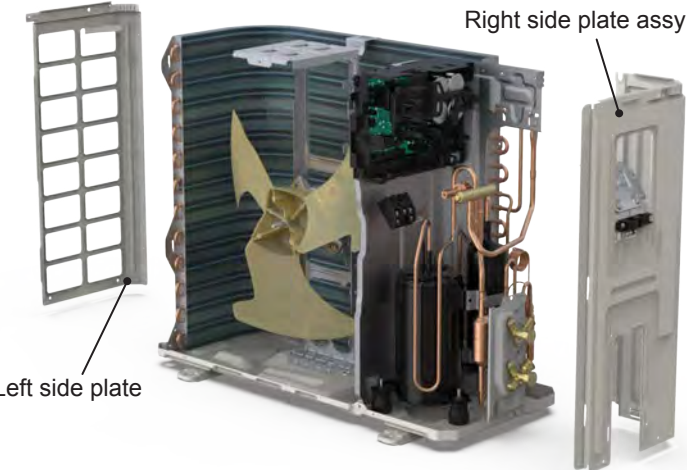
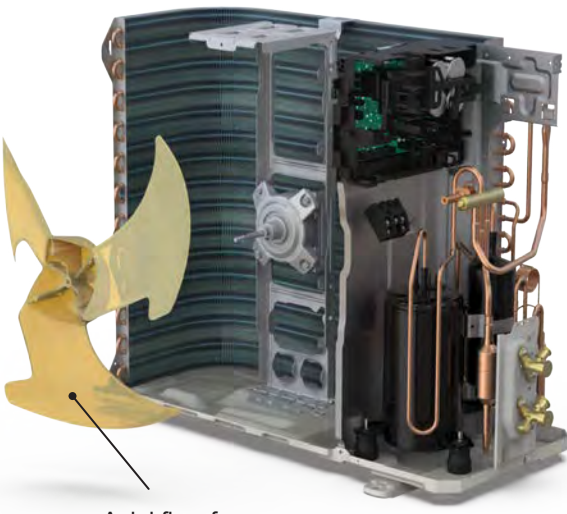
 **Caution:** discharge the refrigerant completely before removal.

GRHARC09ASA2 GRARC09AS2 GRHARC09AS2 GRARC12ASA2  
GRHARC12ASA2 GRARC12AS2 GRHARC12AS2

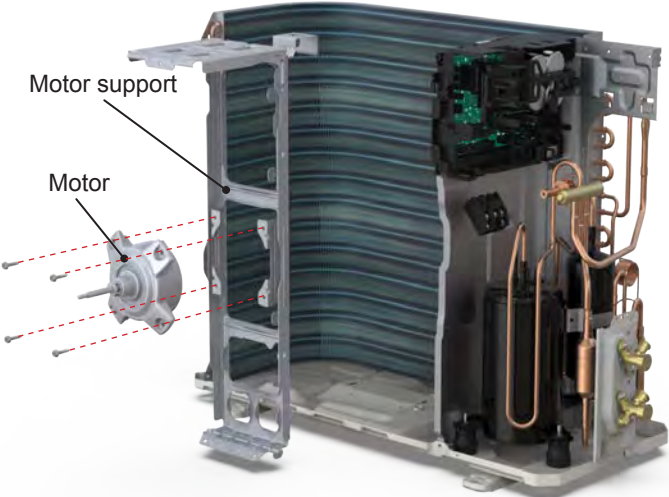

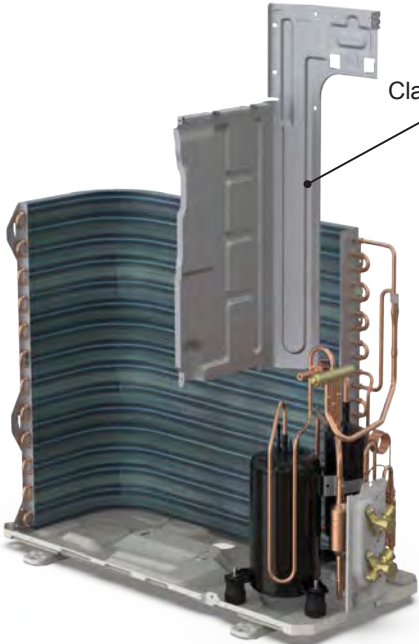
NOTE: Take heat pump for example.

Step	Procedure
<b>1. Before disassembly</b>	
<b>2. Remove Cover of Pass Wire and valve cover</b>	<p data-bbox="191 1148 789 1212">Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p>  <p data-bbox="1393 930 1508 978">Cover of Pass Wire</p> <p data-bbox="1336 1399 1458 1426">Valve cover</p>
<b>3. Remove top cover</b>	<p data-bbox="191 1749 789 1812">Remove the screws fixing top panel and then remove the top panel.</p>  <p data-bbox="1300 1476 1408 1502">Top cover</p>

# 11. Removal Procedure

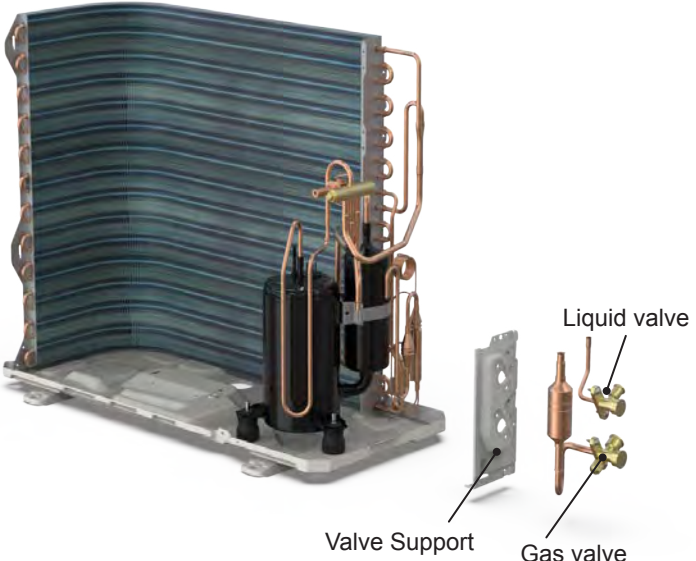
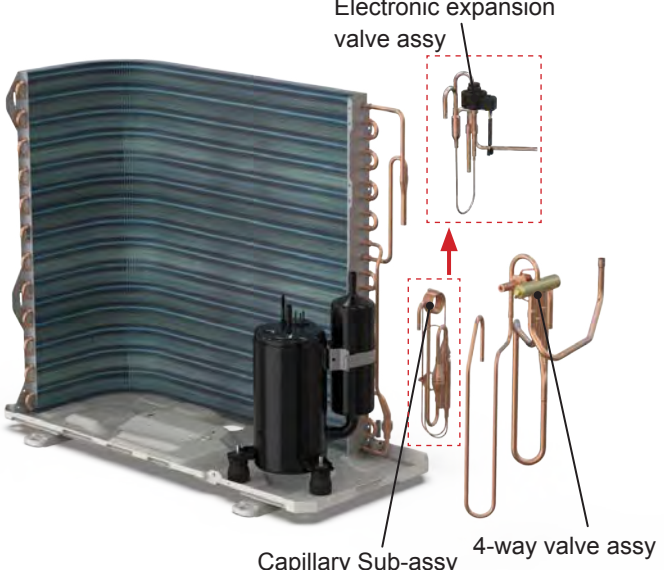
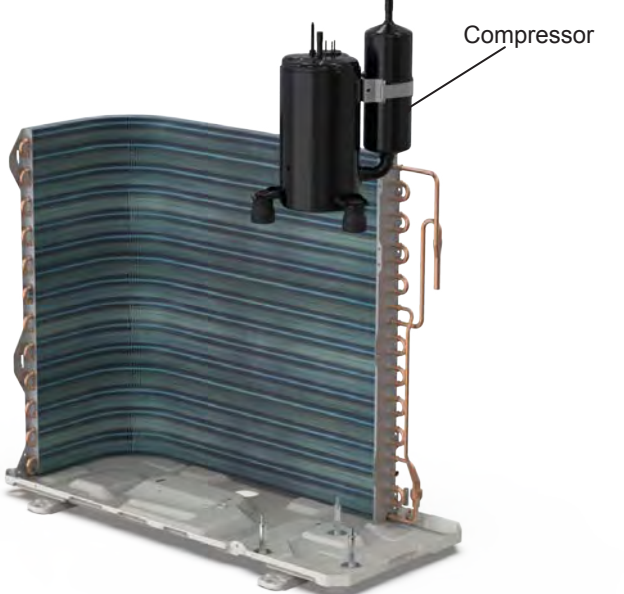
Step	Procedure
<b>4. Remove front panel assy and Rear Grill</b>	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p>  <p>The diagram shows a 3D cutaway view of the unit's front. A white front panel assembly is shown being lifted away from the main chassis. To the right, a separate white grid-like rear grill is shown being detached from the back of the unit. Labels with leader lines point to the 'Front panel assy' and the 'Rear Grill'.</p>
<b>5. Remove right side plate assy and left side plate</b>	<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>The diagram shows a 3D cutaway view of the unit's side. A white right side plate assembly is shown being removed from the right side of the chassis. A white left side plate is shown being removed from the left side. Labels with leader lines point to the 'Left side plate' and the 'Right side plate assy'.</p>
<b>6. Remove axial flow fan</b>	<p>Remove the nut on the fan and then remove the axial flow fan.</p>  <p>The diagram shows a 3D cutaway view of the unit's interior. A yellow axial flow fan is shown being removed from its mounting on the compressor. A label with a leader line points to the 'Axial flow fan'.</p>

# 11. Removal Procedure

Step	Procedure	Image
<b>7. Remove motor support and motor</b>	<p>Remove the screws fixing the motor support and lift the motor support to remove it.</p> <p>Remove the screws fixing the motor and then remove the motor.</p>	 <p>Motor support</p> <p>Motor</p>
<b>8. Remove electric box assy</b>	<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>Electric box assy</p>
<b>9. Remove clapboard assy</b>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p>	 <p>Clapboard assy</p>






# 11. Removal Procedure

Step	Procedure
<p><b>10. Remove gas valve and liquid valve</b></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><b>11. Remove 4-way valve and capillary Sub-assy(electronic expansion valve assy)</b></p> <p>Unsolder the welding joints connecting capillary Sub-assy(electronic expansion valve assy), and then remove it.</p> <p>Unsolder the welding joints connecting the 4-way valve assy with capillary sub-assy(electronic expansion valve assy), compressor and condenser; remove the 4-way valve and capillary Sub-assy(electronic expansion valve 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>Electronic expansion valve assy</p> <p>Capillary Sub-assy</p> <p>4-way valve assy</p>
<p><b>12. Remove compressor</b></p> <p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p>	 <p>Compressor</p>


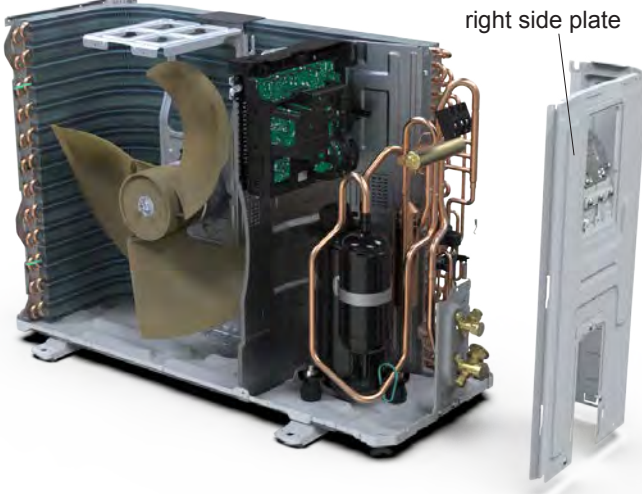
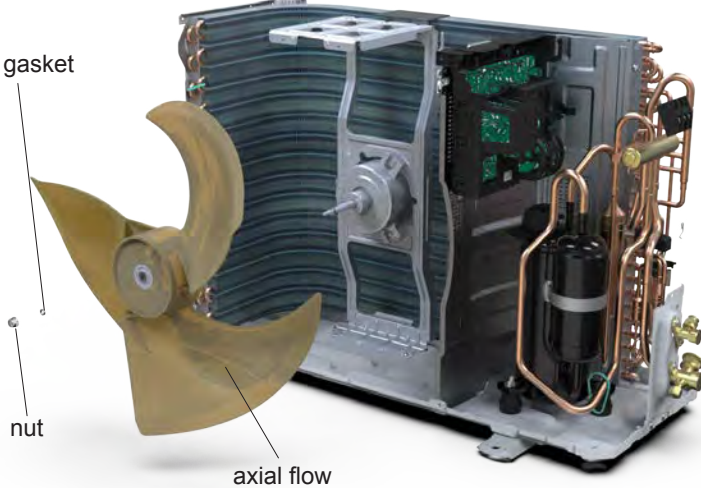
# 11. Removal Procedure

GRARC18AS2 GRHARC18AS2  
NOTE: Take heat pump for example.

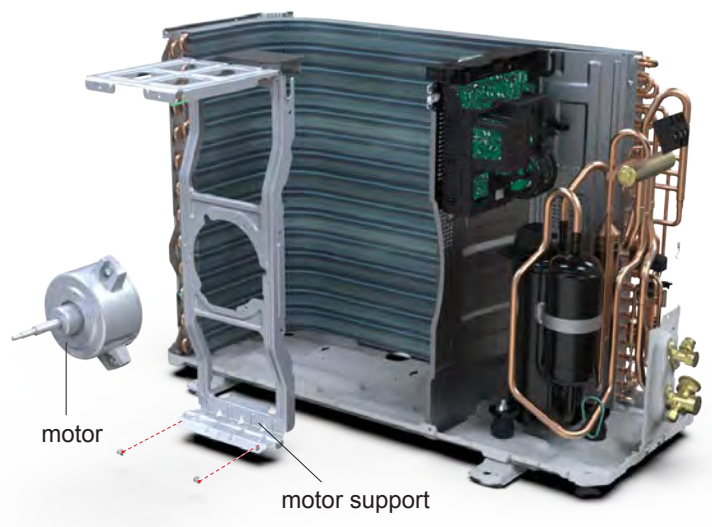


 Caution: discharge the refrigerant completely before removal.

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

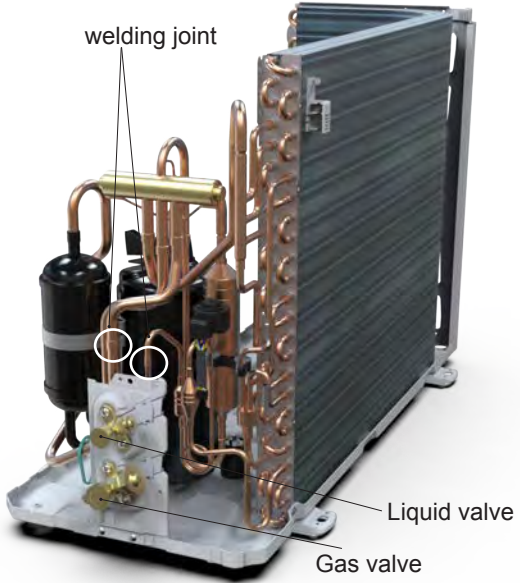
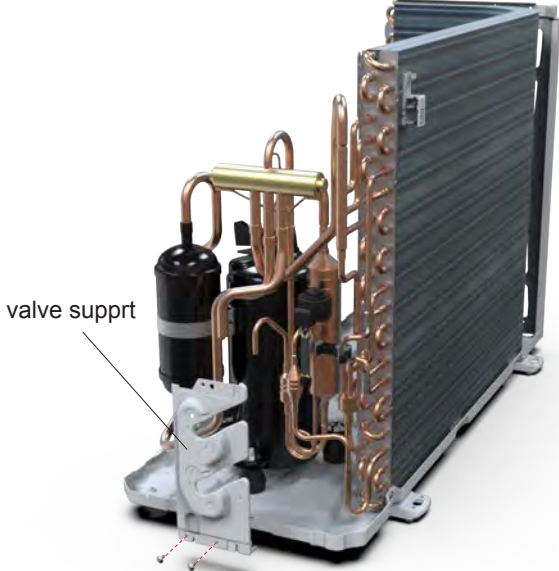
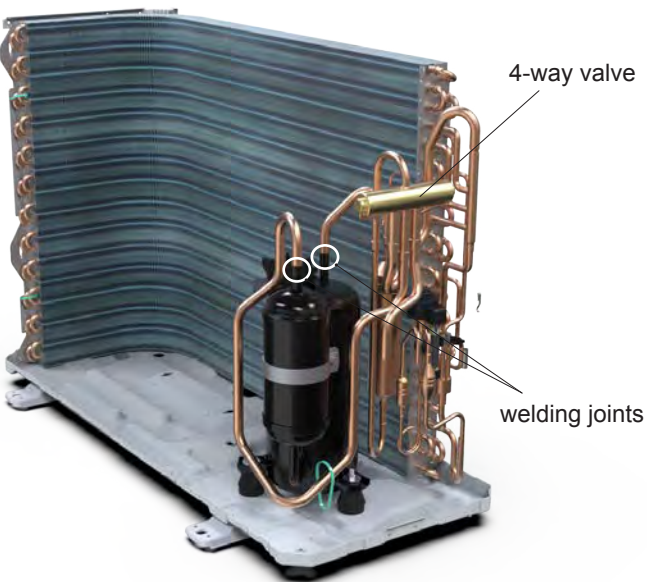
# 11. Removal Procedure

Step	Procedure
<b>4. Remove front panel assy and Rear Grill</b>	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p> 
<b>5. Remove right side plate</b>	<p>Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.</p> 
<b>6. Remove the nut and gasket on the blade and then remove the axial flow blade</b>	<p>Remove the nut and gasket on the blade and then remove the axial flow blade.</p> 

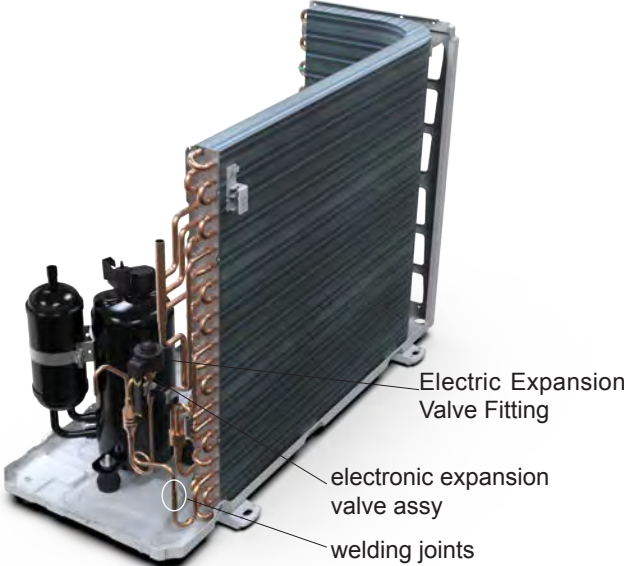
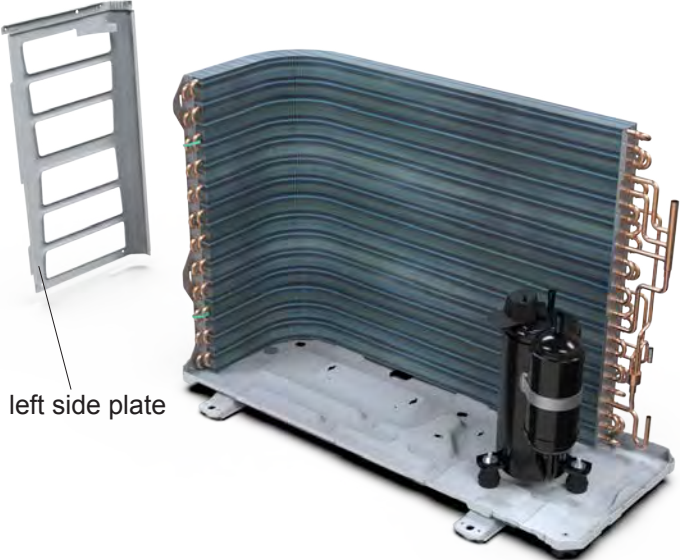
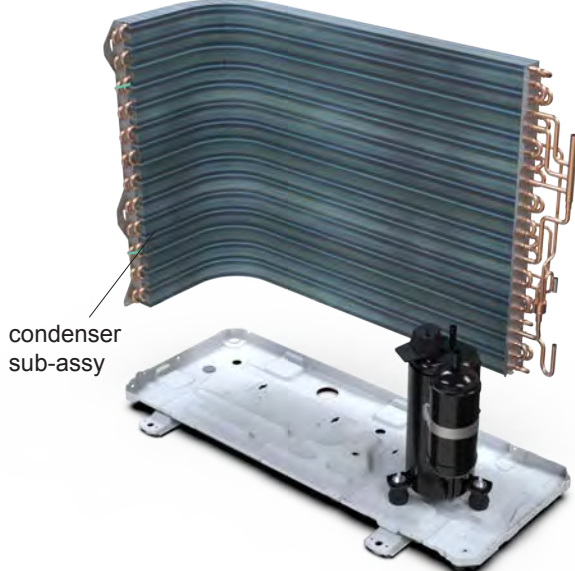
# 11. Removal Procedure

Step	Procedure
<b>7. Remove motor and motor support</b>	<p>Remove the tapping screws fixing the motor and disconnect the leading wire insert of the motor. Then remove the motor.</p> <p>Remove the tapping screws fixing the motor support and lift the motor support to remove it.</p>  <p>motor</p> <p>motor support</p>
<b>8. Remove Electric Box Assy</b>	<p>Remove screws fixing the electric box subassembly; loosen the wire bundle and unplug the wiring terminals. Then lift the electric box to remove it.</p>  <p>Electric Box Assy</p>
<b>9. Remove isolation sheet</b>	<p>Remove the screws fixing the isolation sheet and then remove the isolation sheet.</p>  <p>isolation sheet</p>

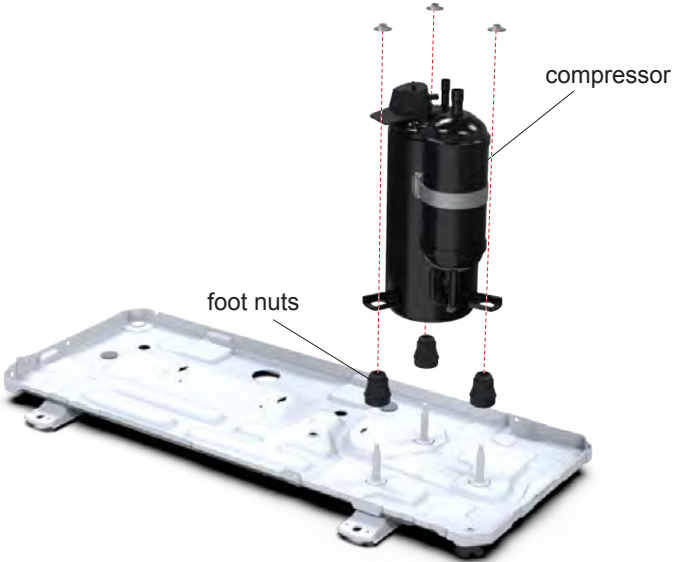
# 11. Removal Procedure

Step	Procedure
<p>10. Remove liquid valve and gas valve</p>	<p>Unsolder the welding joint connecting the valve with capillary and condenser; unsolder the welding joint connecting the gas valve and air-return pipe; remove the 2 screws fixing the gas valve to remove the gas valve.</p> <p>Unsolder the welding joint connecting the liquid valve and Y-shaped pipe; remove the 2 screws fixing the liquid valve to remove the liquid valve.</p> <p>Note: Before unsoldering the welding joint, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>11. Remove valve support</p>	<p>Remove the screws fixing valve support, then remove the valve support.</p> 
<p>12. Remove 4-way valve assy and cut-off valve</p>	<p>Unsolder the welding joints connecting the 4-way valve assy and cut-off valve, remove the 4-way valve and cutoff 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> 

# 11. Removal Procedure

Step	Procedure
13. Remove electronic expansion valve Assy	<p>Unsolder the welding joints connecting electronic expansion valve Assy then remove the electronic expansion valve Assy and 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>The diagram shows a condenser coil mounted on a metal base. On the left side of the coil, there is an electronic expansion valve assembly consisting of a black cylindrical valve with various fittings. Labels with leader lines point to the 'Electric Expansion Valve Fitting' at the top of the valve, the 'electronic expansion valve Assy' on the side, and the 'welding joints' where the valve is connected to the copper piping of the condenser coil.</p>
14. Remove left side plate	<p>Remove connection screws connecting the left side plate. Then remove the right side plate.</p>  <p>The diagram illustrates the removal of the side plates. The condenser coil is shown on its metal base. A separate metal plate with horizontal slats is shown to the left of the coil, with a leader line pointing to it labeled 'left side plate'. The condenser coil is currently held in place by the right side plate.</p>
15. Remove condenser sub-assy	<p>Remove the screws fixing the condenser sub-assy and then remove the condenser sub-assy.</p>  <p>The diagram shows the condenser sub-assembly being lifted away from the metal base. The sub-assembly includes the condenser coil and the electronic expansion valve assembly. A leader line points to the coil with the label 'condenser sub-assy'.</p>

# 11. Removal Procedure

Step	Procedure
16. Remove compressor	<p data-bbox="191 526 751 580">Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 




# 11. Removal Procedure

GRARC24AS2 GRHARC24AS2

NOTE: Take heat pump for example.


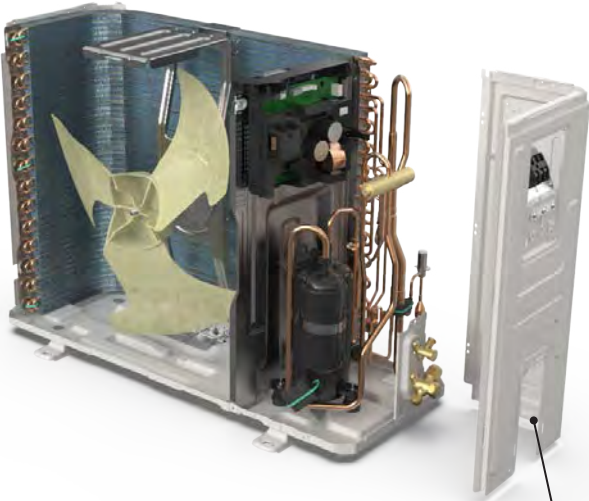
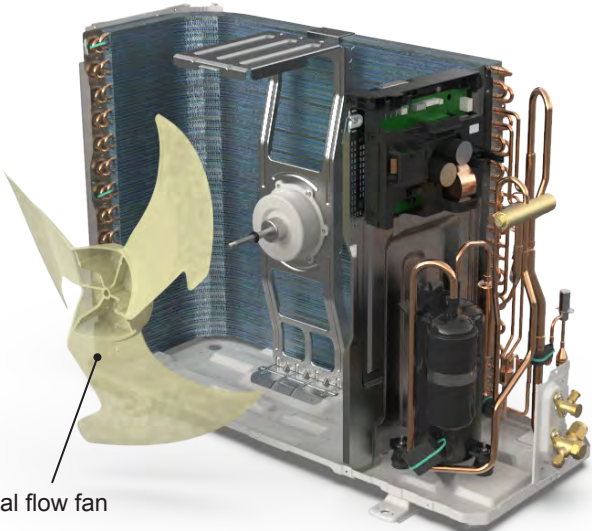


**Caution: discharge the refrigerant completely before removal.**

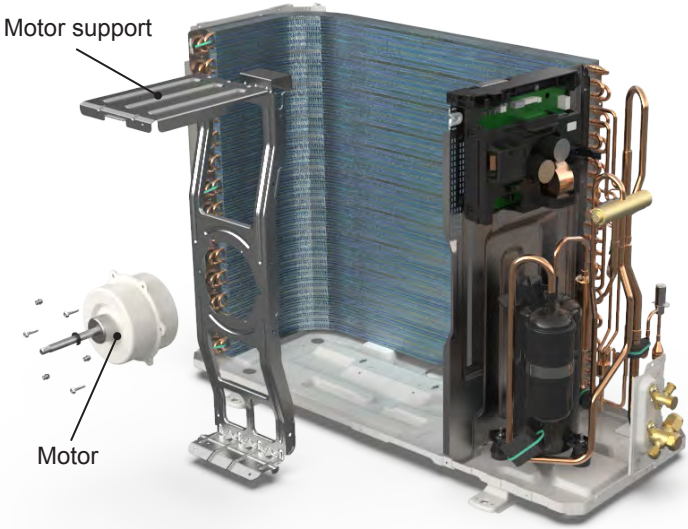
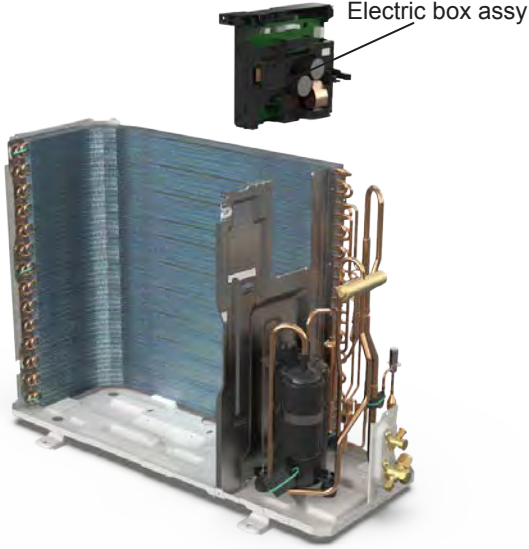
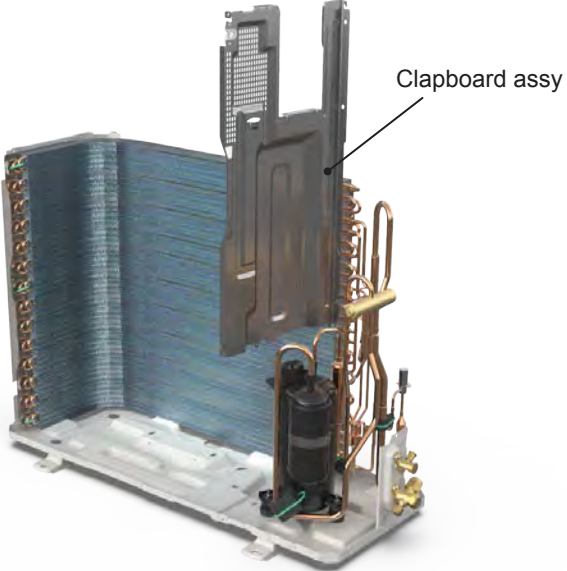
Step	Procedure
<p><b>1. Before disassembly</b></p>	
<p><b>2. Remove Cover of Pass Wire and valve cover</b></p>	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
<p><b>3. Remove top cover</b></p>	<p>Remove the screws fixing top panel and then remove the top panel.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



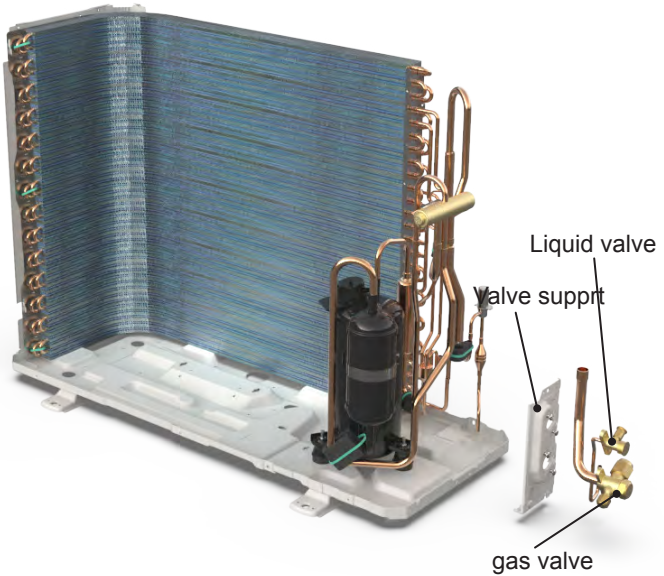
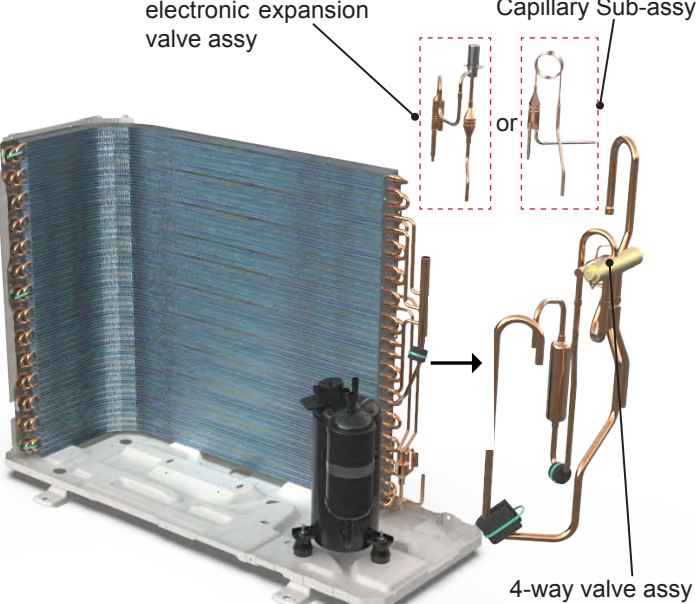
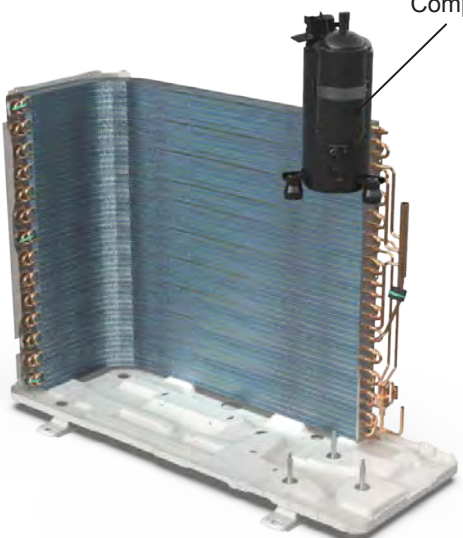
# 11. Removal Procedure

Step	Procedure
<b>4. Remove front panel assy</b>	<p>Remove connection screws connecting the front panel assy, and then remove the front panel assy.</p>  <p>Front panel</p>
<b>5. Remove right side plate assy</b>	<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>Right side plate</p>
<b>6. Remove axial flow fan</b>	<p>Remove the nut on the fan and then remove the axial flow fan.</p>  <p>Axial flow fan</p>

# 11. Removal Procedure

Step	Procedure	
<p data-bbox="99 209 568 238"><b>7. Remove motor and motor support</b></p>	<p data-bbox="191 465 786 572">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>The diagram shows the internal components of the unit with the motor and motor support removed. Labels indicate the 'Motor support' and the 'Motor'. The motor support is a metal frame structure, and the motor is a small cylindrical component with a shaft. The unit's base is visible, showing the mounting points for these components.</p>
<p data-bbox="99 827 454 856"><b>8. Remove electric box assy</b></p>	<p data-bbox="191 1094 786 1179">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>The diagram shows the internal components of the unit with the electric box assembly removed. A label indicates the 'Electric box assy'. The assembly is a black plastic component with various electrical terminals and connectors. The unit's base and other internal components are visible.</p>
<p data-bbox="99 1445 440 1474"><b>9. Remove clapboard assy</b></p>	<p data-bbox="191 1742 786 1797">Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p>	 <p>The diagram shows the internal components of the unit with the clapboard assembly removed. A label indicates the 'Clapboard assy'. The assembly is a metal frame structure with a mesh panel. The unit's base and other internal components are visible.</p>

# 11. Removal Procedure

Step	Procedure
<p><b>10. Remove gas valve, liquid valve and valve support</b></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>Liquid valve Valve support gas valve</p>
<p><b>11. Remove 4-way valve assy, electronic expansion valve assy(Capillary Sub-assy )</b></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>Unsolder the spot weld of electronic expansion valve assy and condenser, and then remove the electronic expansion valve 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>electronic expansion valve assy Capillary Sub-assy or 4-way valve assy</p>
<p><b>13. Remove compressor</b></p> <p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p>	 <p>Compressor</p>


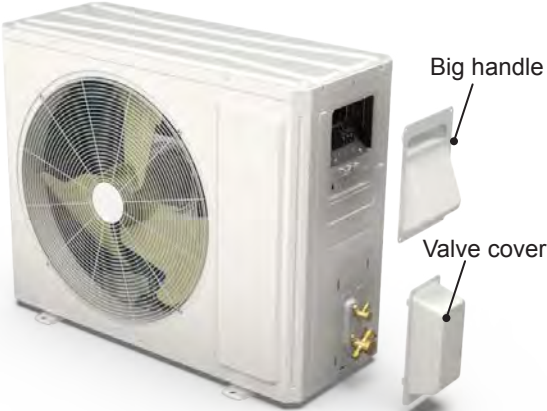

# 11. Removal Procedure

GRARC36AS3 GRHARC36AS3

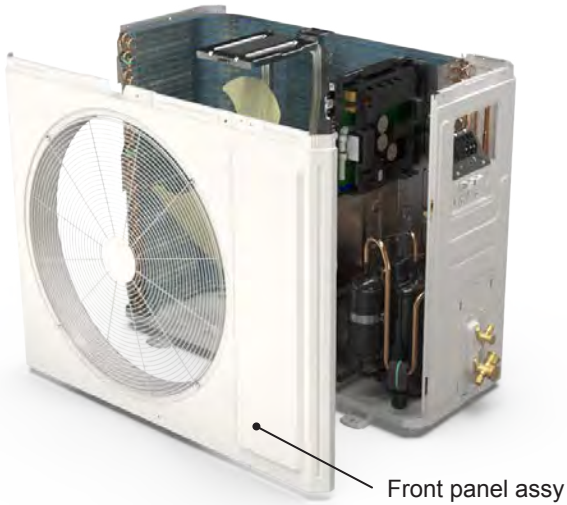
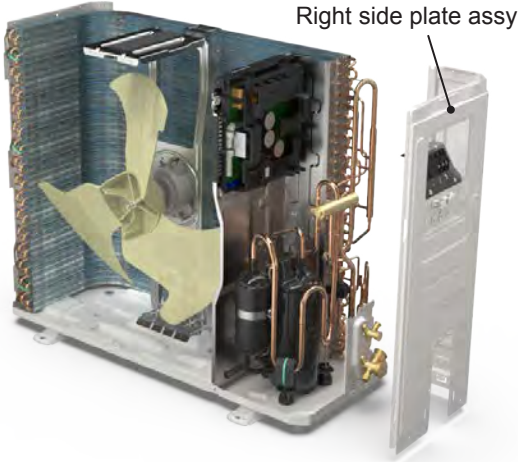
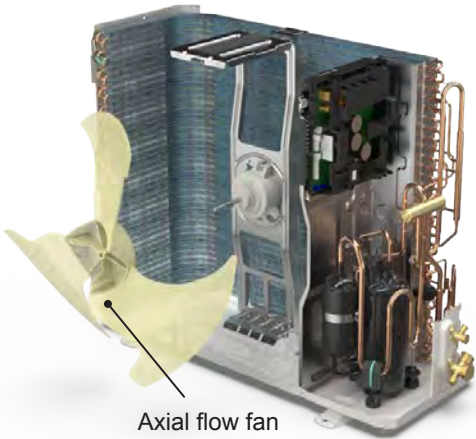


**Caution:** discharge the refrigerant completely before removal.

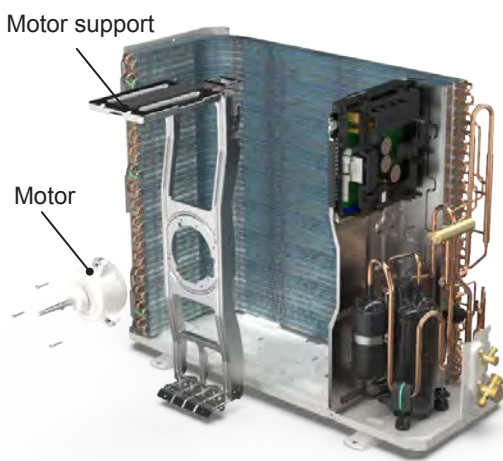
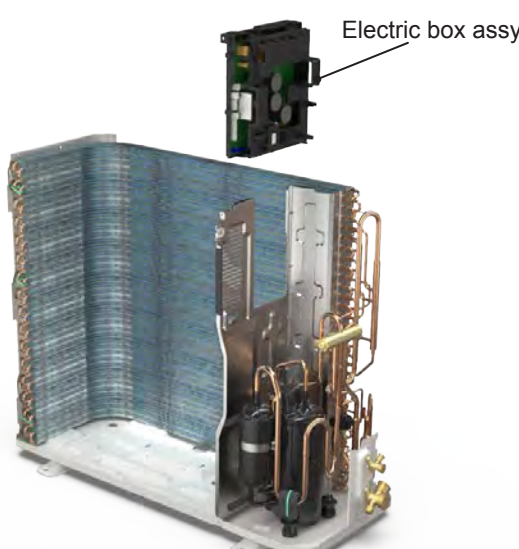
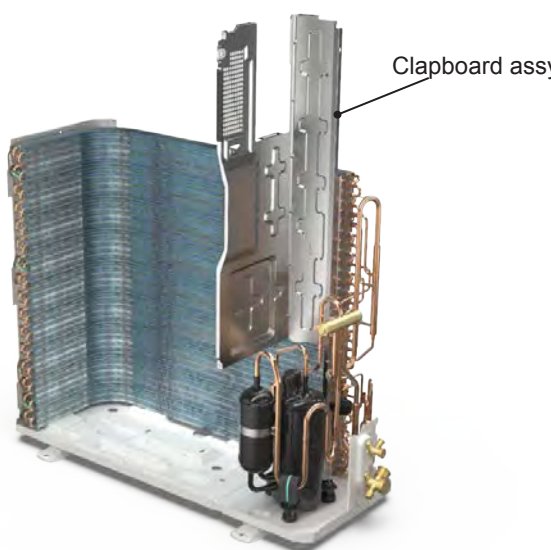
Note: Take heat pump model for example.

Step	Procedure
<b>1. Before disassembly</b>	
<b>2. Remove big handle and valve cover</b>	<p>Remove the screws fixing big handle, valve cover and then remove them.</p> 
<b>3. Remove top cover</b>	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

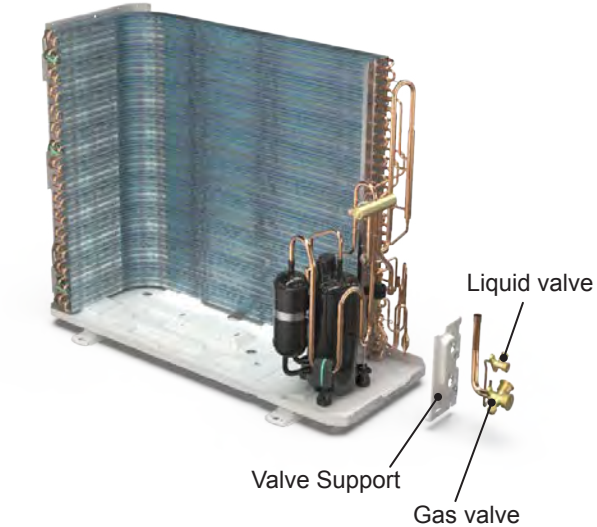
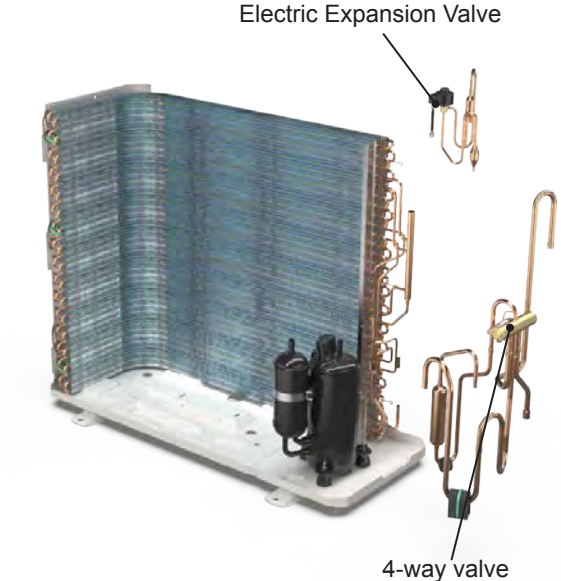
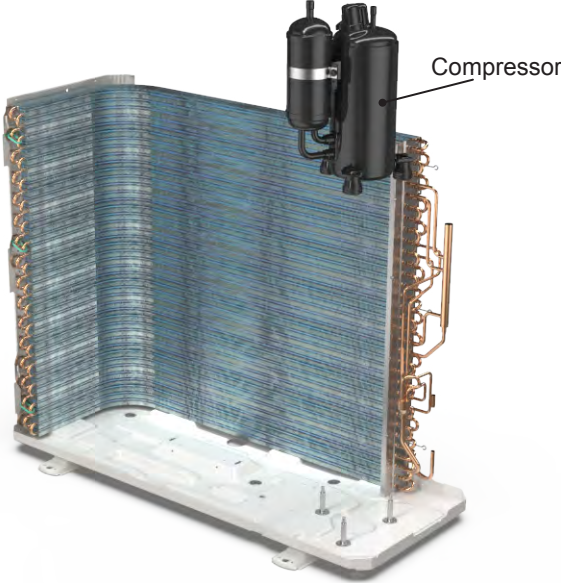
# 11. Removal Procedure

Step	Procedure
<b>4. Remove front panel assy</b>	<p>Remove connection screws connecting the front panel assy with the chassis and the motor support, and then remove the front panel assy.</p> 
<b>5. Remove right side plate assy</b>	<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 plate, and remove the right side plate assy.</p> 
<b>6. Remove axial flow fan</b>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

# 11. Removal Procedure

Step	Procedure
<b>7. Remove motor support and motor</b>	<p>Remove the screws fixing the motor support and lift the motor support to remove it.</p> <p>Remove the screws fixing the motor and then remove the motor.</p> 
<b>8. Remove electric box assy</b>	<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> 
<b>9. Remove clapboard assy</b>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

# 11. Removal Procedure

Step	Procedure
<b>10. Remove gas valve and liquid valve</b>	<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> 
<b>11. Remove 4-way valve and electric expansion valve</b>	<p>Unsolder the welding joints connecting the 4-way valve and electric expansion valve, and then remove them.</p> 
<b>12. Remove compressor</b>	<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:

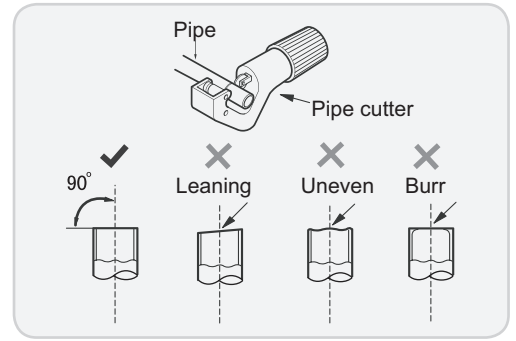
## Appendix 3: Pipe Expanding Method

### ⚠ Note:

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

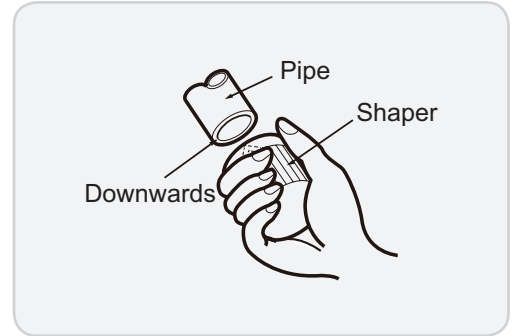
#### A: Cut the pipe

- 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

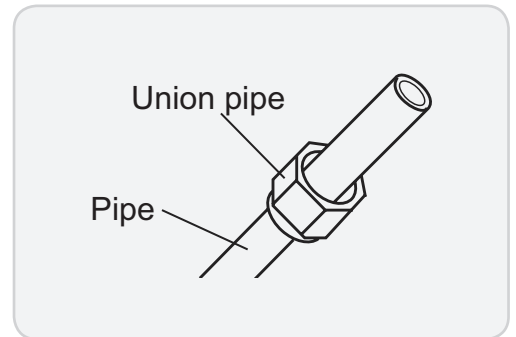
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



#### 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.



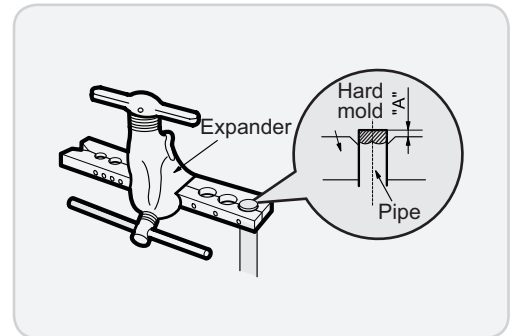
#### E: Expand the port

- Expand the port with expander.

### ⚠ Note:

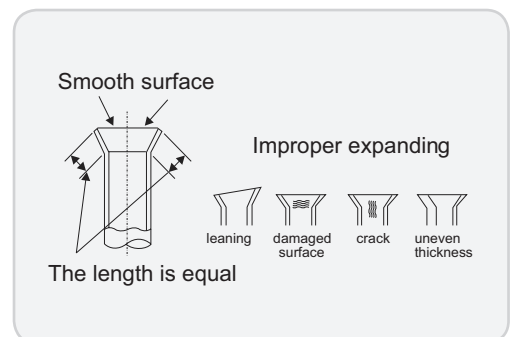
- "A" is different according to the diameter, please refer to the sheet below:

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:

## 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



JF00305393

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